



-power in control



PARAMETER LIST



Automatic Genset Controller, AGC-4

- Alarm list
- Parameter list



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Table of contents

1. General information	5
1.1 Warnings, legal information and safety	5
1.1.1 Warnings and notes	5
1.1.2 Legal information and disclaimer	5
1.1.3 Safety issues	5
1.1.4 Electrostatic discharge awareness	5
1.1.5 Factory settings	5
1.2 About the Parameter List	6
1.2.1 General purpose of the Parameter List	6
1.2.2 Intended users	6
1.2.3 Contents and overall structure	6
2. Alarm list	7
2.1 General information about the alarm list	7
2.1.1 Alarm list features and options	7
2.2 Protection parameters	9
2.2.1 Reverse power and overcurrent protection	9
2.2.2 Voltage protections	14
2.2.3 Frequency protections	17
2.2.4 Busbar voltage protections	20
2.2.5 Busbar frequency protections	23
2.2.6 Mains failure protections	26
2.2.7 Overload protections	28
2.2.8 Current unbalance protection	30
2.2.9 Voltage unbalance protection	31
2.2.10 Reactive power import (loss of excitation) protection	32
2.2.11 Reactive power export (overexcitation) protection	32
2.2.12 Negative sequence	33
2.2.13 Zero sequence	34
2.2.14 Directional overcurrent protection	35
2.2.15 Busbar unbalance voltage	36
2.2.16 Time-dependent undervoltage	37
2.2.17 Power-dependent reactive power import	40
2.2.18 Power-dependent reactive power export	41
2.2.19 Non-essential load trip (load shedding)	42
2.2.20 Undervoltage and reactive power low	45
2.3 Control parameters - synchronisation	47
2.3.1 Synchronisation and breaker alarms	47
2.3.2 Mains sync. inhibit	51
2.4 Control parameters - regulation	52
2.4.1 Regulation alarms	52
2.5 Input/output parameters - binary input setup	54
2.5.1 Digital input 23-27 setup	54
2.5.2 Digital input 43-55 setup	55
2.5.3 Digital input 91-97 setup	56
2.5.4 Digital input 102-108 setup	57
2.5.5 Digital input 112-117 setup	58
2.5.6 Emergency stop	59
2.5.7 Digital input 127-133 setup	59
2.5.8 M-Logic alarm 1-5 setup	60
2.6 Input/output parameters - analogue input setup	61
2.6.1 Analogue input setup (option M15.6)	61
2.6.2 Analogue input setup (option M15.8)	65
2.6.3 Analogue input setup (option M16.6)	69
2.6.4 Analogue input setup (option M16.8)	80
2.7 Multi-functional analogue input setup	90
2.7.1 Multi-input no. 102	90
2.7.2 Multi-input no. 105	95
2.7.3 Multi-input no. 108	100
2.7.4 Speed and running feedback setup	105
2.7.5 Differential measurement	108
2.7.6 Aux. supply setup	113
2.8 System parameters - general setup	115
2.8.1 Stop coil wirebreak and internal communication alarms	115
2.8.2 Engine heater failure	115

2.8.3 Running detection	116
2.8.4 Battery tests	116
2.8.5 Max. ventilation	119
2.8.6 Switchboard error - Block and Stop	120
2.8.7 Switchboard error - Not in auto	121
2.8.8 Oil renewal	121
2.8.9 Avg U BB	122
2.9 System parameters - communication	123
2.9.1 External communication error	123
2.9.2 Engine interface communication alarms	124
2.9.3 Power management communication error	128
2.9.4 Internal CAN communication error	129
2.10 External I/O parameters	130
2.10.1 External I/O alarm setup	130
2.10.2 Analogue inputs	130
2.10.3 External analogue input scale	131
2.10.4 Digital inputs	131
3. Parameter list	132
3.1 General information about the parameter list	132
3.1.1 Parameter list settings	132
3.2 Control parameters - synchronisation	133
3.2.1 Synchronisation	133
3.3 Control parameters - regulation	135
3.3.1 Regulation	135
3.4 Control parameters - output setup	142
3.4.1 Digital output setup	142
3.5 Control parameters - analogue output	147
3.5.1 Analogue output limits	147
3.6 Control parameters - transducer outputs	148
3.6.1 Transducer outputs	148
3.7 Control parameters - analogue regulator output setup	153
3.7.1 Regulator output selection	153
3.8 System parameters	153
3.9 System parameters - general setup	154
3.9.1 General setup	154
3.9.2 Counters and timers	157
3.9.3 Alarm horn	158
3.9.4 Run coil setup	158
3.9.5 Running, start and stop	159
3.9.6 Breaker control	160
3.9.7 Power derate	161
3.9.8 Idle start	162
3.9.9 Engine heater	163
3.9.10 Analogue load sharing lines output	163
3.9.11 Master clock	164
3.9.12 Cooling ventilation	164
3.9.13 Summer/winter time	164
3.9.14 Fuel transfer pump logic	165
3.9.15 Fan logic	166
3.9.16 Diagnostics	168
3.9.17 I thermal demand	168
3.9.18 Pulse counter	169
3.9.19 Alarm jump	169
3.9.20 Tank capacity	169
3.9.21 Command timers	170
3.10 System parameters - mains setup	171
3.10.1 Mains setup	171
3.10.2 Test	172
3.10.3 Controller settings	172
3.10.4 Mains failure	173
3.10.5 Y1(X1) droop curve	174
3.10.6 Y2(X2) droop curve	175
3.10.7 Power offset	176
3.10.8 Cosphi offset	176
3.11 System parameters - external communication	177
3.11.1 External communication	177

3.11.2 Power management internal communication	177
3.12 System parameters - engine interface communication	178
3.12.1 Engine interface communication	178
3.12.2 Digital AVR parameters (option T2)	179
3.12.3 CAN port setup	182
3.13 System parameters - external I/O communication setup	183
3.13.1 External I/O communication setup	183
3.13.2 Event printer	184
3.14 System parameters - power management setup	185
3.14.1 Power management setup	185
3.15 System parameters - jump menus	193
3.15.1 Jump menus	193
3.15.2 9000 Software version	193
3.15.3 9010 Display character test	193
3.15.4 9020 Service port	193
3.15.5 9030 Scaling	193
3.15.6 9070 M4 software version	194
3.15.7 9100 Device type	194
3.15.8 911x Password	194
3.15.9 9120 Service menu	195
3.15.10 9130 AC config	195
3.15.11 9140 Angle compensation BB/G	195
3.15.12 9150 Backlight dimmer	195
3.15.13 9160 Application drawing	196
3.15.14 9170 Internal CAN protocol	196
3.15.15 9180 Quick setup (AGC diesel generator)	196
3.15.16 9180 Quick setup (AGC mains)	197
3.15.17 9190 Application broadcast	197
3.15.18 9230 Memory backup	198
3.16 System parameters - utility software	198
3.16.1 GSM settings	198
3.17 System parameters - VDO inputs	199
3.17.1 VDO 102	199
3.17.2 VDO 105	200
3.17.3 VDO 108	200
3.17.4 Multi-input selections 102, 105, 108	201
3.17.5 Multi-input selections option M16.6	202
3.17.6 Multi-input selections M16.8	203
3.17.7 4-20 mA input scaling	203
3.17.8 Parameter ID	204
3.18 System parameters - external digital outputs	204
3.18.1 External digital outputs	204
3.18.2 External module status	204
3.18.3 13000 SuperVision	205

1. General information

1.1 Warnings, legal information and safety

1.1.1 Warnings and notes

Throughout this document, a number of warnings and notes with helpful user information will be presented. To ensure that these are noticed, they will be highlighted as follows in order to separate them from the general text.

Warnings



Warnings indicate a potentially dangerous situation, which could result in death, personal injury or damaged equipment, if certain guidelines are not followed.

Notes



Notes provide general information, which will be helpful for the reader to bear in mind.

1.1.2 Legal information and disclaimer

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the engine/generator controlled by the Multi-line 2 unit, the company responsible for the installation or the operation of the set must be contacted.



The Multi-line 2 unit is not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Disclaimer

DEIF A/S reserves the right to change any of the contents of this document without prior notice.

1.1.3 Safety issues

Installing and operating the Multi-line 2 unit may imply work with dangerous currents and voltages. Therefore, the installation should only be carried out by authorised personnel who understand the risks involved in working with live electrical equipment.



Be aware of the hazardous live currents and voltages. Do not touch any AC measurement inputs as this could lead to injury or death.

1.1.4 Electrostatic discharge awareness

Sufficient care must be taken to protect the terminals against static discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.

1.1.5 Factory settings

The Multi-line 2 unit is delivered from factory with certain factory settings. These are based on average values and are not necessarily the correct settings for matching the engine/generator set in question. Precautions must be taken to check the settings before running the engine/generator set.

1.2 About the Parameter List

1.2.1 General purpose of the Parameter List

This document is a complete parameter list including all parameters, which means that some of the option parameters included may not be accessible in the system in question.

The document includes a complete standard alarm list and a complete standard parameter list for setup. Therefore, this document is to be used for reference, when information about specific alarms and parameters is needed.



Please make sure to read this document before starting to work with the Multi-line 2 unit and the genset to be controlled. Failure to do this could result in human injury or damage to the equipment.

1.2.2 Intended users

This Parameter List is mainly intended for the person responsible for the unit parameter setup. In most cases, this would be a panel builder designer. Naturally, other users might also find useful information here.


1.2.3 Contents and overall structure

This document is divided into chapters, and in order to make the structure simple and easy to use, each chapter will begin from the top of a new page.

2. Alarm list

2.1 General information about the alarm list

2.1.1 Alarm list features and options

 In the following, these abbreviations are used:
G: Generator
GB: Generator breaker
TB: Tie breaker (for mains unit)
MB: Mains breaker
BTB: Bus tie breaker
BA: Busbar A (BTB unit)
BB: Busbar (BTB unit: Busbar B)
N/A: Not available

This chapter includes a complete alarm list, including all possible options. Therefore, this chapter is to be used for reference when specific information about the individual parameters is needed for the unit setup.

The table consists of the following possible adjustments:

Setpoint: The alarm setpoint is adjusted in the setpoint menu. The setting is a percentage of the nominal values.

Delay: The timer setting is the time that must expire from the alarm level is reached until the alarm occurs.

Relay output A: A relay can be activated by output A.

Relay output B: A relay can be activated by output B.

An alarm is activated if no relay output, A or B, is selected.

Do not select Limits/Limit relay if you want an alarm to be raised together with a relay output A or B.

Enable: The alarm can be activated or deactivated.

Fail class: When the alarm occurs the unit will react depending on the selected fail class.

Fail classes are:

Fail class	DG (diesel generator)	Mains unit	BTB (bus tie breaker)
F1	Block	Block	Block
F2	Warning	Warning	Warning
F3	Trip GB	Trip TB	Trip BTB
F4	Trip + Stop	Trip MB	N/A
F5	Shutdown	N/A	N/A
F6	Trip MB	N/A	N/A
F7	Safety stop	N/A	N/A
F8	Trip MB/GB	N/A	N/A



Small differences due to the character of the parameters may exist between the individual tables.

It is also possible to configure the parameters by using the PC utility software. It will be possible to make the same configurations as described above.

By using the PC utility software, extra functionality is available. For all the protections it is possible to make an automatic acknowledgement of the alarm.



2.2 Protection parameters

2.2.1 Reverse power and overcurrent protection

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1000 Reverse power 1						
1001	-P> 1	Set-point	-200.0% 0.0%	-5.0%	Designer's Reference Handbook	The alarm and fail class are activated when the reverse power has been continuously above the programmed value during the programmed delay.
1002	-P> 1	Timer	0.1 s 100.0 s	5.0 s		
1003	-P> 1	Relay output A	Not used Option-dependent	Not used		
1004	-P> 1	Relay output B	Not used Option-dependent	Not used		
1005	-P> 1	Enable	OFF ON	ON		
1006	-P> 1	Fail class	F1...F8	Trip GB (F3)		
1010 Reverse power 2						
1011	-P> 2	Set-point	-200.0% 0.0%	-5.0%	Designer's Reference Handbook	The alarm and fail class are activated when the reverse power has been continuously above the programmed value during the programmed delay.
1012	-P> 2	Timer	0.1 s 100.0 s	10.0 s		
1013	-P> 2	Relay output A	Not used Option-dependent	Not used		
1014	-P> 2	Relay output B	Not used Option-dependent	Not used		
1015	-P> 2	Enable	OFF ON	ON		
1016	-P> 2	Fail class	F1...F8	Trip GB (F3)		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1030 Overcurrent 1						
1031	I> 1	Set-point	50.0% 200.0%	115.0%	Designer's Reference Handbook	The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1032	I> 1	Timer	0.1 s 3200.0 s	10.0 s		
1033	I> 1	Relay output A	Not used Option-dependent	Not used		
1034	I> 1	Relay output B	Not used Option-dependent	Not used		
1035	I> 1	Enable	OFF ON	ON		
1036	I> 1	Fail class	F1...F8	Warning (F2)		
1040 Overcurrent 2						
1041	I> 2	Set-point	50.0% 200.0%	120.0%	Designer's Reference Handbook	The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1042	I> 2	Timer	0.1 s 3200.0 s	5.0 s		
1043	I> 2	Relay output A	Not used Option-dependent	Not used		
1044	I> 2	Relay output B	Not used Option-dependent	Not used		
1045	I> 2	Enable	OFF ON	ON		
1046	I> 2	Fail class	F1...F8	Trip GB (F3)		
1050 Overcurrent 3						
1051	I> 3	Set-point	50.0% 200.0%	115.0%	Designer's Reference Handbook	The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1052	I> 3	Timer	0.1 s 3200.0 s	10.0 s		
1053	I> 3	Relay output A	Not used Option-dependent	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1054	I > 3	Relay output B	Not used Option-dependent	Not used			
1055	I > 3	Enable	OFF ON	ON			
1056	I > 3	Fail class	F1...F8	Trip GB (F3)			
1060 Overcurrent 4							
1061	I > 4	Set-point	50.0% 200.0%	120.0%		Designer's Reference Handbook	The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1062	I > 4	Timer	0.1 s 3200.0 s	5.0 s			
1063	I > 4	Relay output A	Not used Option-dependent	Not used			
1064	I > 4	Relay output B	Not used Option-dependent	Not used			
1065	I > 4	Enable	OFF ON	ON			
1066	I > 4	Fail class	F1...F8	Trip GB (F3)			
1100 Voltage-dependent overcurrent curve setting							
1101	G Iv > (50%)	Set-point I1	50.0% 200.0%	110.0%	@50% nom. voltage	Designer's Reference Handbook	Settings relate to nominal generator current. The condition has to be true i.e. I1<I2<I3<I4<I5<I6. If this is not fulfilled, the worst-case setpoint I1 will be used. Setpoints 3 to 6 include Relay output A and B.
1102	G Iv > (60%)	Set-point I2	50.0% 200.0%	125.0%	@60% nom. voltage		
1103	G Iv > (70%)	Set-point I3	50.0% 200.0%	140.0%	@70% nom. voltage		
1104	G Iv > (80%)	Set-point I4	50.0% 200.0%	155.0%	@80% nom. voltage		
1105	G Iv > (90%)	Set-point I5	50.0% 200.0%	170.0%	@90% nom. voltage		
1106	G Iv > (100%)	Set-point I6	50.0% 200.0%	200.0%	@100% nom. voltage		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1110 Voltage-dependent overcurrent alarm						
1110	G lv >	Set-point	50.0% 200.0%	110.0%	Designer's Reference Handbook	The alarm and fail class are activated when the overcurrent has been continuously above the programmed value during the programmed delay. The setpoint value is calculated automatically by the values in menus 1101-1106.
1111	G lv >	Timer	0.1 s 300.0 s	1.0 s		
1112	G lv >	Relay output A	Not used Option-dependent	Not used		
1113	G lv >	Relay output B	Not used Option-dependent	Not used		
1114	G lv >	Activate	OFF ON	ON		
1115	G lv >	Fail class	F1...F8	Trip GB (F3)		
1130 Fast overcurrent 1						
1131	I>> 1	Set-point	150.0% 350.0%	150.0%	Designer's Reference Handbook	The alarm settings relate to the nominal current setting. The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay.
1132	I>> 1	Timer	0.0 s 100.0 s	2.0 s		
1133	I>> 1	Re-play output A	Not used Option-dependent	Not used		
1134	I>> 1	Relay output B	Not used Option-dependent	Not used		
1135	I>> 1	Enable	OFF ON	OFF		
1136	I>> 1	Fail class	F1...F8	Trip GB (F3)		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1140 Fast overcurrent 2						
1141	I>> 2	Set-point	150.0% 350.0%	200%		Designer's Reference Handbook The alarm and fail class are activated when the current has been continuously above the programmed value during the programmed delay
1142	I>> 2	Delay	0.0 s 100.0 s	0.5 s		
1143	I>> 2	Re-play output A	Not used Option-dependent	Not used		
1144	I>> 2	Relay output B	Not used Option-dependent	Not used		
1145	I>> 2	Enable	OFF ON	OFF		
1146	I>> 2	Fail class	F1...F8	Trip GB (F3)		

2.2.2 Voltage protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1150 G/M/BA overvoltage 1							
1151	G/M/BA U> 1	Set- point	100.0% 120.0%	103.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1152	G/M/BA U> 1	Timer	0.1 s 100.0 s	10.0 s			
1153	G/M/BA U> 1	Relay output A	Not used Option- dep.	Not used			
1154	G/M/BA U> 1	Relay output B	Not used Option- dep.	Not used			
1155	G/M/BA U> 1	Enable	OFF ON	OFF			
1156	G/M/BA U> 1	Fail class	F1...F8	Warning (F2)			
1160 G/M/BA overvoltage 2							
1161	G/M/BA U> 2	Set- point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1162	G/M/BA U> 2	Timer	0.1 s 100.0 s	5.0 s			
1163	G/M/BA U> 2	Relay output A	Not used Option- dep.	Not used			
1164	G/M/BA U> 2	Relay output B	Not used Option- dep.	Not used			
1165	G/M/BA U> 2	Enable	OFF ON	OFF			
1166	G/M/BA U> 2	Fail class	F1...F8	Warning (F2)			
1170 G/M/BA undervoltage 1							
1171	G/M/BA U< 1	Set- point	40.0% 100.0%	97%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1172	G/M/BA U< 1	Timer	0.1 s 100.0 s	10.0 s			
1173	G/M/BA U< 1	Relay output A	Not used Option- dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1174	G/M/BA U< 1	Relay output B	Not used Option- dep.	Not used			
1175	G/M/BA U< 1	Enable	OFF ON	OFF			
1176	G/M/BA U< 1	Fail class	F1...F8	Warning (F2)			
1180 G/M/BA undervoltage 2							
1181	G/M/BA U< 2	Set-point	40.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1182	G/M/BA U< 2	Timer	0.1 s 100.0 s	5.0 s			
1183	G/M/BA U< 2	Relay output A	Not used Option- dep.	Not used			
1184	G/M/BA U< 2	Relay output B	Not used Option- dep.	Not used			
1185	G/M/BA U< 2	Enable	OFF ON	OFF			
1186	G/M/BA U< 2	Fail class	F1...F8	Warning (F2)			
1190 G/M/BA undervoltage 3							
1191	G/M/BA U< 3	Set-point	40.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1192	G/M/BA U< 3	Timer	0.1 s 100.0 s	5.0 s			
1193	G/M/BA U< 3	Relay output A	Not used Option- dep.	Not used			
1194	G/M/BA U< 3	Relay output B	Not used Option- dep.	Not used			
1195	G/M/BA U< 3	Enable	OFF ON	OFF			
1196	G/M/BA U< 3	Fail class	F1...F8	Warning (F2)			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1200 Calculation method						
1201	G/M/BA voltage trip	Set-point	Ph-Ph Ph-N	Ph-Ph	Designer's Reference Handbook	Selection between phase-phase or phase-neutral voltage detection. When phase-phase tripping is selected, the voltage alarms relate to the nominal voltage. When phase-neutral tripping is selected, the voltage alarms relate to the nominal voltage divided by $\sqrt{3}$.
1202	BB voltage trip	Set-point	Ph-Ph Ph-N	Ph-Ph		
1203	Unbalance I	Set-point	Ref. to nominal Ref. to average	Ref. to nominal		
1204	Frequency trip type	Set-point	L1 L1 and L2 and L3	L1 or L2 or L3		

2.2.3 Frequency protections



Frequency settings relate to the nominal frequency setting.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1210 G/M/BA overfrequency 1						
1211	G/M/BA f> 1	Set-point	100.0% 120.0%	103.0%	Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay. Frequency settings relate to nominal frequency setting.
1212	G/M/BA f> 1	Timer	0.2 s 100.0 s	10.0 s		
1213	G/M/BA f> 1	Relay output A	Not used Option-dependent	Not used		
1214	G/M/BA f> 1	Relay output B	Not used Option-dependent	Not used		
1215	G/M/BA f> 1	Enable	OFF ON	OFF		
1216	G/M/BA f> 1	Fail class	F1...F8	Warning (F2)		
1220 G/M/BA overfrequency 2						
1221	G/M/BA f> 2	Set-point	100.0% 120.0%	105.0%	Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1222	G/M/BA f> 2	Timer	0.2 s 100.0 s	5.0 s		
1223	G/M/BA f> 2	Relay output A	Not used Option-dependent	Not used		
1224	G/M/BA f> 2	Relay output B	Not used Option-dependent	Not used		
1225	G/M/BA f> 2	Enable	OFF ON	OFF		
1226	G/M/BA f> 2	Fail class	F1...F8	Warning (F2)		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1230 G/M/BA overfrequency 3							
1231	G/M/BA f>3	Set-point	100.0% 120.0%	105.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1232	G/M/BA f>3	Timer	0.2 s 100.0 s	5.0 s			
1233	G/M/BA f>3	Relay output A	Not used Option-dependent	Not used			
1234	G/M/BA f>3	Relay output B	Not used Option-dependent	Not used			
1235	G/M/BA f>3	Enable	OFF ON	OFF			
1236	G/M/BA f>3	Fail class	F1...F8	Warning (F2)			
1240 G/M/BA underfrequency 1							
1241	G/M/BA f<1	Set-point	80.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1242	G/M/BA f<1	Timer	0.2 s 100.0 s	10.0 s			
1243	G/M/BA f<1	Relay output A	Not used Option-dependent	Not used			
1244	G/M/BA f<1	Relay output B	Not used Option-dependent	Not used			
1245	G/M/BA f<1	Enable	OFF ON	OFF			
1246	G/M/BA f<1	Fail class	F1...F8	Warning (F2)			
1250 G/M/BA underfrequency 2							
1251	G/M/BA f<2	Set-point	80.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1252	G/M/BA f<2	Timer	0.2 s 100.0 s	5.0 s			
1253	G/M/BA f<2	Relay output A	Not used Option-dependent	Not used			
1254	G/M/BA f<2	Relay output B	Not used Option-dependent	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1255	G/M/ BA f<2	Enable	OFF ON	OFF			
1256	G/M/ BA f<2	Fail class	F1...F8	Warning (F2)			
1260 G/M/BA underfrequency 3							
1261	G/M/ BA f<3	Set- point	80.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1262	G/M/ BA f<3	Timer	0.2 s 100.0 s	5.0 s			
1263	G/M/ BA f<3	Relay output A	Not used Option-de- pendent	Not used			
1264	G/M/ BA f<3	Relay output B	Not used Option-de- pendent	Not used			
1265	G/M/ BA f<3	Enable	OFF ON	OFF			
1266	G/M/ BA f<3	Fail class	F1...F8	Warning (F2)			

2.2.4 Busbar voltage protections



Voltage settings relate to the nominal voltage setting.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1270 Busbar overvoltage 1						
1271	BB U> 1	Set-point	100.0% 120.0%	103.0%	Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1272	BB U> 1	Timer	0.0 s 99.99 s	10.0 s		
1273	BB U> 1	Relay output A	Not used Option-de- pendent	Not used		
1274	BB U> 1	Relay output B	Not used Option-de- pendent	Not used		
1275	BB U> 1	Enable	OFF ON	OFF		
1276	BB U> 1	Fail class	F1...F8	Warning (F2)		
1280 Busbar overvoltage 2						
1281	BB U> 2	Set-point	100.0% 120.0%	105.0%	Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1282	BB U> 2	Timer	0.0 s 99.99 s	5.0 s		
1283	BB U> 2	Relay output A	Not used Option-de- pendent	Not used		
1284	BB U> 2	Relay output B	Not used Option-de- pendent	Not used		
1285	BB U> 2	Enable	OFF ON	OFF		
1286	BB U> 2	Fail class	F1...F8	Warning (F2)		
1290 Busbar overvoltage 3						
1291	BB U> 3	Set-point	100.0% 120.0%	105.0%	Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously above the programmed value during the programmed delay.
1292	BB U> 3	Timer	0.0 s 99.99 s	5.0 s		
1293	BB U> 3	Relay output A	Not used Option-de- pendent	Not used		
1294	BB U> 3	Relay output B	Not used Option-de- pendent	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1295	BB U> 3	Enable	OFF ON	OFF			
1296	BB U> 3	Fail class	F1...F8	Warning (F2)			
1300 Busbar undervoltage 1							
1301	BB U< 1	Set-point	40.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1302	BB U< 1	Timer	0.00 s 99.99 s	10.00 s			
1303	BB U< 1	Relay output A	Not used Option-dependent	Not used			
1304	BB U< 1	Relay output B	Not used Option-dependent	Not used			
1305	BB U< 1	Enable	OFF ON	OFF			
1306	BB U< 1	Fail class	F1...F8	Warning (F2)			
1310 Busbar undervoltage 2							
1311	BB U< 2	Set-point	40.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1312	BB U< 2	Timer	0.00 s 99.99 s	5.0 s			
1313	BB U< 2	Relay output A	Not used Option-dependent	Not used			
1314	BB U< 2	Relay output B	Not used Option-dependent	Not used			
1315	BB U< 2	Enable	OFF ON	OFF			
1316	BB U< 2	Fail class	F1...F8	Warning (F2)			
1320 Busbar undervoltage 3							
1321	BB U< 3	Set-point	40.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1322	BB U< 3	Timer	0.00 s 99.99 s	10.0 s			
1323	BB U< 3	Relay output A	Not used Option-dependent	Not used			
1324	BB U< 3	Relay output B	Not used Option-dependent	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1325	BB U<3	Enable	OFF ON	OFF			
1326	BB U<3	Fail class	F1...F8	Warning (F2)			
1330 Busbar undervoltage 4							
1331	BB U<4	Set-point	40.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the voltage has been continuously under the programmed value during the programmed delay.
1332	BB U<4	Timer	0.00 s 99.99 s	5.0 s			
1333	BB U<4	Relay output A	Not used Option-dep.	Not used			
1334	BB U<4	Relay output B	Not used Option-dep.	Not used			
1335	BB U<4	Enable	OFF ON	OFF			
1336	BB U<4	Fail class	F1...F8	Warning (F2)			
1340 Busbar voltage trip							
1341	BB voltage trip	Set-point	Ph-Ph Ph-N	Ph-Ph		Designer's Reference Handbook	Selection between phase-phase or phase-neutral voltage detection.

2.2.5 Busbar frequency protections



Frequency settings relate to the nominal frequency setting.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1350 Busbar overfrequency 1						
1351	BB f> 1	Set-point	100.0% 120.0%	103.0%	Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1352	BB f> 1	Timer	0.0 s 99.99 s	10.0 s		
1353	BB f> 1	Relay output A	Not used Option-dep.	Not used		
1354	BB f> 1	Relay output B	Not used Option-dep.	Not used		
1355	BB f> 1	Enable	OFF ON	OFF		
1356	BB f> 1	Fail class	F1...F8	Warning (F2)		
1360 Busbar overfrequency 2						
1361	BB f> 2	Set-point	100.0% 120.0%	105.0%	Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1362	BB f> 2	Timer	0.00 s 99.99 s	5.0 s		
1363	BB f> 2	Relay output A	Not used Option-dep.	Not used		
1364	BB f> 2	Relay output B	Not used Option-dep.	Not used		
1365	BB f> 2	Enable	OFF ON	OFF		
1366	BB f> 2	Fail class	F1...F8	Warning (F2)		
1370 Busbar overfrequency 3						
1371	BB f> 3	Set-point	100.0% 120.0%	105.0%	Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously above the programmed value during the programmed delay.
1372	BB f> 3	Timer	0.00 s 99.99 s	5.0 s		
1373	BB f> 3	Relay output A	Not used Option-dep.	Not used		
1374	BB f> 3	Relay output B	Not used Option-dep.	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1375	BB f> 3	Enable	OFF ON	OFF			
1376	BB f> 3	Fail class	F1...F8	Warning (F2)			
1380 Busbar underfrequency 1							
1381	BB f< 1	Set-point	80.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1382	BB f< 1	Timer	0.00 s 99.99 s	10.0 s			
1383	BB f< 1	Relay output A	Not used Option-dep.	Not used			
1384	BB f< 1	Relay output B	Not used Option-dep.	Not used			
1385	BB f< 1	Enable	OFF ON	OFF			
1386	BB f< 1	Fail class	F1...F8	Warning (F2)			
1390 Busbar underfrequency 2							
1391	BB f< 2	Set-point	80.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1392	BB f< 2	Timer	0.00 s 99.99 s	5.0 s			
1393	BB f< 2	Relay output A	Not used Option-dep.	Not used			
1394	BB f< 2	Relay output B	Not used Option-dep.	Not used			
1395	BB f< 2	Enable	OFF ON	OFF			
1396	BB f< 2	Fail class	F1...F8	Warning (F2)			
1400 Busbar underfrequency 3							
1401	BB f< 3	Set-point	80.0% 100.0%	97.0%		Designer's Reference Handbook	The alarm and fail class are activated when the frequency has been continuously under the programmed value during the programmed delay.
1402	BB f< 3	Timer	0.00 s 99.99 s	10.0 s			
1403	BB f< 3	Relay output A	Not used Option-dep.	Not used			
1404	BB f< 3	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1405	BB f< 3	Enable	OFF ON	OFF			
1406	BB f< 3	Fail class	F1...F8	Warning (F2)			
1410 Busbar underfrequency 4							
1411	BB f< 4	Set- point	80.0% 100.0%	95.0%		Designer's Reference Handbook	The alarm and fail class are ac- tivated when the frequency has been continuously under the programmed value during the programmed delay.
1412	BB f< 4	Timer	0.00 s 99.99 s	5.0 s			
1413	BB f< 4	Relay output A	Not used Option- dep.	Not used			
1414	BB f< 4	Relay output B	Not used Option- dep.	Not used			
1415	BB f< 4	Enable	OFF ON	OFF			
1416	BB f< 4	Fail class	F1...F8	Warning (F2)			

2.2.6 Mains failure protections

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1420 Df/dt (ROCOF)							
1421	Df/dt (ROCOF)	Set-point	1.5 Hz/s 10.0 Hz/s	5.0 Hz/s		Option A1	The alarm and fail class are activated when the df/dt rate has been continuously above the programmed value during the programmed number of periods (delay).
1422	Df/dt (ROCOF)	Timer	3 periods 20 periods	6 periods			
1423	Df/dt (ROCOF)	Relay output A	Not used Option-dep.	Not used			
1424	Df/dt (ROCOF)	Relay output B	Not used Option-dep.	Not used			
1425	Df/dt (ROCOF)	Enable	OFF ON	OFF			
1426	Df/dt (ROCOF)	Fail class	F1...F8	Trip MB (F6)			
1430 Vector jump							
1431	Vector jump	Set-point	1.0 deg. 90.0 deg.	10.0 deg.		Option A1	The alarm and fail class are activated when a vector jump is detected.
1432	Vector jump	Relay output A	Not used Option-dep.	Not used			
1433	Vector jump	Relay output B	Not used Option-dep.	Not used			
1434	Vector jump	Enable	OFF ON	OFF			
1435	Vector jump	Fail class	F1...F8	Trip MB (F6)			
1440 Busbar positive sequence voltage low							
1441	BB pos seq volt	Set-point	10.0% 110.0%	70.0%		Option A4	The alarm and fail class are activated when the symmetrical (positive sequence) voltage has been continuously below the programmed value during the programmed delay. The timer factory setting is set to 2 periods. This means that the error has to be active in 2 whole periods before the alarm will be tripped. E.g. in a 50 Hz system, the alarm will be activated if the positive
1442	BB pos seq volt	Timer	1 period 9 periods	2 periods			
1443	BB pos seq volt	Relay output A	Not used Option-dep.	Not used			
1444	BB pos seq volt	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1445	BB pos seq volt	Enable	OFF ON	OFF			sequence is below 70% of U nominal voltage for 40 ms. The alarm will trip the fail class as soon as possible after this delay.
1446	BB pos seq volt	Fail class	F1...F8	Trip MB (F6)			

2.2.7 Overload protections

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1450 Overload 1						
1451	P> 1	Set point	-200.0 % 200.0 %	100.0 %	Designer's Reference Handbook	Settings relate to nominal power. The alarm and fail class are activated when the power has been continuously above the programmed value during the programmed delay.
1452	P> 1	Timer	0.1 s 3200.0 s	10.0 s		
1453	P> 1	Relay output A	Not used Option-dep.	Not used		
1454	P> 1	Relay output B	Not used Option-dep.	Not used		
1455	P> 1	Enable	OFF ON	OFF		
1456	P> 1	Fail class	F1...F8	Warning (F2)		
1460 Overload 2						
1461	P> 2	Set point	-200.0 % 200.0 %	110.0 %	Designer's Reference Handbook	The alarm and fail class are activated when the power has been continuously above the programmed value during the programmed delay.
1462	P> 2	Timer	0.1 s 3200.0 s	5.0 s		
1463	P> 2	Relay output A	Not used Option-dep.	Not used		
1464	P> 2	Relay output B	Not used Option-dep.	Not used		
1465	P> 2	Enable	OFF ON	OFF		
1466	P> 2	Fail class	F1...F8	Trip GB (F3)		
1470 Overload 3						
1471	P> 3	Set point	-200.0 % 200.0 %	100.0 %	Designer's Reference Handbook	The alarm and fail class are activated when the power has been continuously above the programmed value during the programmed delay.
1472	P> 3	Timer	0.1 s 3200.0 s	10.0 s		
1473	P> 3	Relay output A	Not used Option-dep.	Not used		
1474	P> 3	Relay output B	Not used Option-dep.	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1475	P> 3	Enable	OFF ON	OFF			
1476	P> 3	Fail class	F1...F8	Trip GB (F3)			
1480 Overload 4							
1481	P> 4	Set point	-200.0 % 200.0 %	110.0 %		Designer's Reference Handbook	The alarm and fail class are activa- ted when the power has been conti- nuously above the programmed value during the programmed de- lay.
1482	P> 4	Timer	0.1 s 3200.0 s	5.0 s			
1483	P> 4	Relay output A	Not used Option- dep.	Not used			
1484	P> 4	Relay output B	Not used Option- dep.	Not used			
1485	P> 4	Enable	OFF ON	OFF			
1486	P> 4	Fail class	F1...F8	Trip GB (F3)			
1490 Overload 5							
1491	P> 5	Set point	-200.0 % 200.0 %	100.0 %		Designer's Reference Handbook	The alarm and fail class are activa- ted when the power has been conti- nuously above the programmed value during the programmed de- lay.
1492	P> 5	Timer	0.1 s 3200.0 s	10.0 s			
1493	P> 5	Relay output A	Not used Option- dep.	Not used			
1494	P> 5	Relay output B	Not used Option- dep.	Not used			
1495	P> 5	Enable	OFF ON	OFF			
1496	P> 5	Fail class	F1...F8	Trip GB (F3)			

2.2.8 Current unbalance protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1500 Unbalanced current							
1501	Unbalance curr.	Set-point	0.0% 100.0%	30.0%		Design-er's Reference Handbook	Settings relate to nominal generator current. The alarm and fail class are activated when the difference between the max. reading and the min. reading of the 3 measured currents has been continuously above the programmed value during the programmed delay.
1502	Unbalance curr.	Timer	0.1 s 100.0 s	10.0 s			
1503	Unbalance curr.	Relay output A	Not used Option-dep.	Not used			
1504	Unbalance curr.	Relay output B	Not used Option-dep.	Not used			
1505	Unbalance curr.	Enable	OFF ON	OFF			
1506	Unbalance curr.	Fail class	F1...F8	Trip GB (F3)			

2.2.9 Voltage unbalance protection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1510 Unbalanced voltage							
1511	Unbalance volt.	Set-point	0.0% 50.0%	10.0%		Design-er's Reference Handbook	Settings relate to nominal voltage. The alarm and fail class are activated when the difference between the max. reading and the min. reading of the 3 measured generator voltages has been continuously above the programmed value during the programmed delay.
1512	Unbalance volt.	Timer	0.1 s 100.0 s	10.0 s			
1513	Unbalance volt.	Relay output A	Not used Option-dep.	Not used			
1514	Unbalance volt.	Relay output B	Not used Option-dep.	Not used			
1515	Unbalance volt.	Enable	OFF ON	OFF			
1516	Unbalance volt.	Fail class	F1...F8	Trip GB (F3)			

2.2.10 Reactive power import (loss of excitation) protection

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1520 Reactive power import (loss of excitation)						
1521	-Q>	Setpoint	0.0% 150.0%	50.0%		Designer's Reference Handbook Settings relate to nominal power. The alarm and fail class are activated when imported VAr has been continuously above the programmed value during the programmed delay.
1522	-Q>	Timer	0.1 s 100.0 s	10.0 s		
1523	-Q>	Relay output A	Not used Option-dep.	Not used		
1524	-Q>	Relay output B	Not used Option-dep.	Not used		
1525	-Q>	Enable	OFF ON	OFF		
1526	-Q>	Fail class	F1...F8	Warning (F2)		

2.2.11 Reactive power export (overexcitation) protection

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1530 Reactive power export (overexcitation)						
1531	Q>	Setpoint	0.0% 100.0%	60.0%		Designer's Reference Handbook Settings relate to nominal power. The alarm and fail class are activated when exported VAr has been continuously above the programmed value during the programmed delay.
1532	Q>	Timer	0.1 s 100.0 s	10.0 s		
1533	Q>	Relay output A	Not used Option-dep.	Not used		
1534	Q>	Relay output B	Not used Option-dep.	Not used		
1535	Q>	Enable	OFF ON	OFF		
1536	Q>	Fail class	F1...F8	Warning (F2)		

2.2.12 Negative sequence

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1540 Negative sequence current							
1541	Neg seq I	Set-point	1.0% 100.0%	20.0%		Option C2	Settings relate to nominal current. The alarm and fail class are activated when the negative sequence has been continuously above the programmed value during the programmed delay.
1542	Neg seq I	Timer	0.2 s 100.0 s	0.5 s			
1543	Neg seq I	Relay output A	Not used Option-dep.	Not used			
1544	Neg seq I	Relay output B	Not used Option-dep.	Not used			
1545	Neg seq I	Enable	OFF ON	OFF			
1546	Neg seq I	Fail class	F1...F8	Trip MB (F6)			
1550 G/M/BA negative sequence voltage							
1551	G/M/BA neg seq U	Set-point	1.0% 100.0%	5.0%		Option C2	Settings relate to nominal voltage. The alarm and fail class are activated when the negative sequence has been continuously above the programmed value during the programmed delay.
1552	G/M/BA neg seq U	Timer	0.2 s 100.0 s	0.5 s			
1553	G/M/BA neg seq U	Relay output A	Not used Option-dep.	Not used			
1554	G/M/BA neg seq U	Relay output B	Not used Option-dep.	Not used			
1555	G/M/BA neg seq U	Enable	OFF ON	OFF			
1556	G/M/BA neg seq U	Fail class	F1...F8	Trip MB (F6)			
1560 Negative sequence selection							
1561	Neg seq select	Set-point	G/M/BA measurement BB measurement	G/M/BA measurement		Option C2	Selection between generator or busbar measurement of negative sequence voltage.

2.2.13 Zero sequence

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1570 Zero sequence current							
1571	Zero seq I	Set-point	0.0% 100.0%	20.0%		Option C2	Settings relate to nominal current. The alarm and fail class are activated when the zero sequence has been continuously above the programmed value during the programmed delay.
1572	Zero seq I	Timer	0.2 s 100.0 s	0.5 s			
1573	Zero seq I	Relay output A	Not used Option-dep.	Not used			
1574	Zero seq I	Relay output B	Not used Option-dep.	Not used			
1575	Zero seq I	Enable	OFF ON	OFF			
1576	Zero seq I	Fail class	F1...F8	Trip MB (F6)			
1580 G/M/BA zero sequence voltage							
1581	G/M/BA zero seq U	Set-point	0.0% 100.0%	5.0%		Option C2	Settings relate to nominal voltage. The alarm and fail class are activated when the zero sequence has been continuously above the programmed value during the programmed delay.
1582	G/M/BA zero seq U	Timer	0.2 s 100.0 s	0.5 s			
1583	G/M/BA zero seq U	Relay output A	Not used Option-dep.	Not used			
1584	G/M/BA zero seq U	Relay output B	Not used Option-dep.	Not used			
1585	G/M/BA zero seq U	Enable	OFF ON	OFF			
1586	G/M/BA zero seq U	Fail class	F1...F8	Trip MB (F6)			
1590 Zero sequence selection							
1591	Zero seq select	Set-point	G/M/BA measurement BB measurement	G/M/BA measurement		Option C2	Selection between generator or busbar measurement of zero sequence voltage.

2.2.14 Directional overcurrent protection

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1600 Directional overcurrent 1						
1601	I> direct 1	Set-point	-200.0% 200.0%	120.0%		Option A5 Settings relate to nominal current. The alarm and fail class are activated when the directional current has been continuously above the programmed value during the programmed delay. The current measurement is positive when current is supplied from the mains to the plant. The current measurement is negative when current is being supplied to the mains.
1602	I> direct 1	Timer	0.0 s 100.0 s	0.1 s		
1603	I> direct 1	Relay output A	Not used Option-dep.	Not used		
1604	I> direct 1	Relay output B	Not used Option-dep.	Not used		
1605	I> direct 1	Enable	OFF ON	OFF		
1606	I> direct 1	Fail class	F1...F8	Trip MB (F6)		
1610 Directional overcurrent 2						
1611	I> direct 2	Set-point	-200.0% 200.0%	130.0%		Option A5 Settings relate to nominal current. The alarm and fail class are activated when the directional current has been continuously above the programmed value during the programmed delay. The current measurement is positive when current is supplied from the mains to the plant. The current measurement is negative when current is being supplied to the mains.
1612	I> direct 2	Timer	0.0 s 100.0 s	0.1 s		
1613	I> direct 2	Relay output A	Not used Option-dep.	Not used		
1614	I> direct 2	Relay output B	Not used Option-dep.	Not used		
1615	I> direct 2	Enable	OFF ON	OFF		
1616	I> direct 2	Fail class	F1...F8	Trip MB (F6)		

2.2.15 Busbar unbalance voltage

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1620 BB unbalance U						
1621	BB unbalance U	Set-point	0.0% 50.0%	6.0%	Designer's Reference Handbook	Settings relate to average actual voltage. The alarm and fail class are activated when the difference between the max. reading and the min. reading of the 3 measured busbar voltages has been continuously above the programmed value during the programmed delay.
1622	BB unbalance U	Timer	0.1 s 100.0 s	10.0 s		
1623	BB unbalance U	Relay output A	Not used Option-dep.	Not used		
1624	BB unbalance U	Relay output B	Not used Option-dep.	Not used		
1625	BB unbalance U	Enable	OFF ON	OFF		
1626	BB unbalance U	Fail class	F1...F8	Warning (F2)		

2.2.16 Time-dependent undervoltage

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1630 Time-dependent undervoltage 1 1-3						
1631	Ut < 1	Setting 1	30.0% 120.0%	30.0%		Option A1 Curve setting for time-dependent undervoltage. Settings relate to nominal generator voltage. The condition has to be true i.e. $Ut(1)1 \leq Ut(2) \leq Ut(3) \leq Ut(4) \leq Ut(5) \leq Ut(6)$. If this is not fulfilled, the worst-case set-point $Ut(6)$ will be used.
1632	Ut < 1	Delay 1	0.00 s 20.00 s	0.15 s		
1633	Ut < 1	Setting 2	30.0% 120.0%	70.0%		
1634	Ut < 1	Delay 2	0.00 s 20.00 s	0.15 s		
1635	Ut < 1	Setting 3	30.0% 120.0%	70.0%		
1636	Ut < 1	Delay 3	0.00 s 20.00 s	0.70 s		
1640 Time-dependent undervoltage 1 4-6						
1641	Ut < 1	Setting 4	30.0% 120.0%	90.0%		Option A1 Curve setting for time-dependent undervoltage. Settings relate to nominal generator voltage. The condition has to be true i.e. $Ut(1)1 \leq Ut(2) \leq Ut(3) \leq Ut(4) \leq Ut(5) \leq Ut(6)$. If this is not fulfilled, the worst-case set-point $Ut(6)$ will be used.
1642	Ut < 1	Delay 4	0.00 s 20.00 s	1.50 s		
1643	Ut < 1	Setting 5	30.0% 120.0%	90.0%		
1644	Ut < 1	Delay 5	0.00 s 20.00 s	2.00 s		
1645	Ut < 1	Setting 6	30.0% 120.0%	90.0%		
1646	Ut < 1	Delay 6	0.00 s 20.00 s	3.00 s		
1650 Time-dependent undervoltage 1 activation						
1651	Ut < act 1	Activate	30.0% 120.0%	90%		Option A1 Activate is the voltage value where the function timer starts. Reset is the value where the function timer is reset to 0 ms. Delay is the delay timer for the reset. The relay outputs will activate immediately when the function timer starts.
1652	Ut < act 1	Recovery	30.0% 120.0%	95%		
1653	Ut < act 1	Delay	0.0 s 320.0 s	1.00 s		
1654	Ut < act 1	Relay output A	Not used Option-dep.	Not used		
1655	Ut < act 1	Relay output B	Not used Option-dep.	Not used		
1656	Ut < act 1	Enable	OFF ON	OFF		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1660 Time-dependent undervoltage 1						
1661	Ut < 1	Relay output A	Not used Option-dep.	Not used	Option A1	The alarm and fail class is activated instantaneously when the voltage value is under the programmed value curve.
1662	Ut < 1	Relay output B	Not used Option-dep.	Not used		
1663	Ut < 1	Enable	OFF ON	OFF		
1664	Ut < 1	Fail class	F1...F8	Trip MB (F6)		
1670 Time-dependent undervoltage 2 1-3						
1671	Ut < 2	Setting 1	30.0% 120.0%	30.0%	Option A1	Curve setting for time-dependent undervoltage. Settings relate to nominal generator voltage. The condition has to be true i.e. $Ut(1)1 \leq Ut(2) \leq Ut(3) \leq Ut(4) \leq Ut(5) \leq Ut(6)$. If this is not fulfilled, the worst-case set-point $Ut(6)$ will be used.
1672	Ut < 2	Delay 1	0.00 s 20.00 s	0.15 s		
1673	Ut < 2	Setting 2	30.0% 120.0%	70.0%		
1674	Ut < 2	Delay 2	0.00 s 20.00 s	0.15 s		
1675	Ut < 2	Setting 3	30.0% 120.0%	70.0%		
1676	Ut < 2	Delay 3	0.00 s 20.00 s	0.70 s		
1680 Time-dependent undervoltage 2 4-6						
1681	Ut < 2	Setting 4	30.0% 120.0%	90.0%	Option A1	Curve setting for time-dependent undervoltage. Settings relate to nominal generator voltage. The condition has to be true i.e. $Ut(1)1 \leq Ut(2) \leq Ut(3) \leq Ut(4) \leq Ut(5) \leq Ut(6)$. If this is not fulfilled, the worst-case set-point $Ut(6)$ will be used.
1682	Ut < 2	Delay 4	0.00 s 20.00 s	1.50 s		
1683	Ut < 2	Setting 5	30.0% 120.0%	90.0%		
1684	Ut < 2	Delay 5	0.00 s 20.00 s	2.00 s		
1685	Ut < 2	Setting 6	30.0% 120.0%	90.0%		
1686	Ut < 2	Delay 6	0.00 s 20.00 s	3.00 s		
1690 Time-dependent undervoltage 2 activation						
1691	Ut < act 2	Activate	30.0% 120.0%	90%	Option A1	Activate is the voltage value where the function timer starts.
1692	Ut < act 2	Recovery	30.0% 120.0%	95%		Reset is the value where the function timer is reset to 0 ms.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1693	Ut < act 2	Delay	0.0 s 320.0 s	1.00 s			Delay is the delay timer for the reset. The relay outputs will activate immediately when the function timer starts.
1694	Ut < act 2	Relay output A	Not used Option- dep.	Not used			
1695	Ut < act 2	Relay output B	Not used Option- dep.	Not used			
1696	Ut < act 2	Enable	OFF ON	OFF			
1700 Time-dependent undervoltage 2							
1701	Ut < 2	Relay output A	Not used Option- dep.	Not used		Option A1	The alarm and fail class is activated instantaneously when the voltage value is under the programmed value curve.
1702	Ut < 2	Relay output B	Not used Option- dep.	Not used			
1703	Ut < 2	Enable	OFF ON	OFF			
1704	Ut < 2	Fail class	F1...F8	Trip MB (F6)			

2.2.17 Power-dependent reactive power import

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1740 G P dep Q< 1-3							
1741	G P dep Q< Q1	Setpoint	0% 100%	20%		Designer's Reference Handbook	
1742	G P dep Q< P1	Setpoint	0% 100%	0%			
1743	G P dep Q< Q2	Setpoint	0% 100%	22%			
1744	G P dep Q< P2	Setpoint	0% 100%	7%			
1745	G P dep Q< Q3	Setpoint	0% 100%	27%			
1746	G P dep Q< P3	Setpoint	0% 100%	12%			
1750 G P dep Q< 4-6							
1751	G P dep Q< Q4	Setpoint	0% 100%	18%		Designer's Reference Handbook	
1752	G P dep Q< P4	Setpoint	0% 100%	55%			
1753	G P dep Q< Q5	Setpoint	0% 100%	21%			
1754	G P dep Q< P5	Setpoint	0% 100%	97%			
1755	G P dep Q< Q6	Setpoint	0% 100%	1%			
1756	G P dep Q< P6	Setpoint	0% 100%	100%			
1760 G P dep Q<							
1761	G P dep Q<	Timer	0.1 s 300.0 s	1.0 s		Designer's Reference Handbook	
1762	G P dep Q<	Relay output A	Not used Variant-dep.	Not used			
1763	G P dep Q<	Relay output B	Not used Variant-dep.	Not used			
1764	G P dep Q<	Enable	OFF ON	OFF			
1765	G P dep Q<	Fail class	F1...F8	Trip GB (F3)			
1766	G P dep Q<	S	10-20000 kVA	600 kVA			

2.2.18 Power-dependent reactive power export

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Descrip- tion
1770 G P dep Q> 1-3							
1771	G P dep Q> Q1	Setpoint	0% 100%	88%		Designer's Refer- ence Handbook	
1772	G P dep Q> P1	Setpoint	0% 100%	0%			
1773	G P dep Q> Q2	Setpoint	0% 100%	86%			
1774	G P dep Q> P2	Setpoint	0% 100%	24%			
1775	G P dep Q> Q3	Setpoint	0% 100%	77%			
1776	G P dep Q> P3	Setpoint	0% 100%	53%			
1780 G P dep Q> 4-6							
1781	G P dep Q> Q4	Setpoint	0% 100%	60%		Designer's Refer- ence Handbook	
1782	G P dep Q> P4	Setpoint	0% 100%	80%			
1783	G P dep Q> Q5	Setpoint	0% 100%	33%			
1784	G P dep Q> P5	Setpoint	0% 100%	95%			
1785	G P dep Q> Q6	Setpoint	0% 100%	1%			
1786	G P dep Q> P6	Setpoint	0% 100%	100%			
1790 G P dep Q>							
1791	G P dep Q>	Timer	0.1 s 300.0 s	1.0 s		Designer's Refer- ence Handbook	
1792	G P dep Q>	Relay out- put A	Not used Variant-dep.	Not used			
1793	G P dep Q>	Relay out- put B	Not used Variant-dep.	Not used			
1794	G P dep Q>	Enable	OFF ON	OFF			
1795	G P dep Q>	Fail class	F1...F8	Trip GB (F3)			
1796	G P dep Q>	S	10-20000 kVA	600 kVA			

2.2.19 Non-essential load trip (load shedding)



Setting values relate to the nominal setting.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1800 NEL 1 overcurrent						
1801	NEL 1 >	Setpoint	50.0% 200.0%	100.0%	Designer's Reference Handbook	Trip of non-essential load due to overcurrent. This function activates NEL group 1.
1802	NEL 1 >	Timer	0.1 s 100.0 s	5.0 s		
1803	NEL 1 >	Enable	OFF ON	OFF		
1810 NEL 2 overcurrent						
1811	NEL 2 >	Setpoint	50.0% 200.0%	100.0%	Designer's Reference Handbook	Trip of non-essential load due to overcurrent. This function activates NEL group 2.
1812	NEL 2 >	Timer	0.1 s 100.0 s	8.0 s		
1813	NEL 2 >	Enable	OFF ON	OFF		
1820 NEL 3 overcurrent						
1821	NEL 3 >	Setpoint	50.0% 200.0%	100.0%	Designer's Reference Handbook	Trip of non-essential load due to overcurrent. This function activates NEL group 3.
1822	NEL 3 >	Timer	0.1 s 100.0 s	10.0 s		
1823	NEL 3 >	Enable	OFF ON	OFF		
1830 NEL 1 busbar underfrequency						
1831	NEL 1 bus f<	Setpoint	70.0% 100.0%	95.0%	Designer's Reference Handbook	Trip of non-essential load due to low frequency. This function activates NEL group 1.
1832	NEL 1 bus f<	Timer	0.1 s 100.0 s	5.0 s		
1835	NEL 1 bus f<	Enable	OFF ON	OFF		
1840 NEL 2 busbar underfrequency						
1841	NEL 2 bus f<	Setpoint	70.0% 100.0%	95.0%	Designer's Reference Handbook	Trip of non-essential load due to low frequency. This function activates NEL group 2.
1842	NEL 2 bus f<	Timer	0.1 s 100.0 s	8.0 s		
1845	NEL 2 bus f<	Enable	OFF ON	OFF		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
1850 NEL 3 busbar underfrequency						
1851	NEL 3 bus f<	Setpoint	70.0% 100.0%	95.0%	Designer's Reference Handbook	Trip of non-essential load due to low frequency. This function activates NEL group 3.
1852	NEL 3 bus f<	Timer	0.1 s 100.0 s	10.0 s		
1855	NEL 3 bus f<	Enable	OFF ON	OFF		
1860 NEL 1 overload						
1861	NEL 1 P>	Setpoint	10.0% 200.0%	100.0%	Designer's Reference Handbook	Trip of non-essential load due to overload. This function activates NEL group 1.
1862	NEL 1 P>	Timer	0.1 s 100.0 s	5.0 s		
1865	NEL 1 P>	Enable	OFF ON	OFF		
1870 NEL 2 overload						
1871	NEL 2 P>	Setpoint	10.0% 200.0%	100.0%	Designer's Reference Handbook	Trip of non-essential load due to overload. This function activates NEL group 2.
1872	NEL 2 P>	Timer	0.1 s 100.0 s	8.0 s		
1875	NEL 2 P>	Enable	OFF ON	OFF		
1880 NEL 3 overload						
1881	NEL 3 P>	Setpoint	10.0% 200.0%	100.0%	Designer's Reference Handbook	Trip of non-essential load due to overload. This function activates NEL group 3.
1882	NEL 3 P>	Timer	0.1 s 100.0 s	10.0 s		
1885	NEL 3 P>	Enable	OFF ON	OFF		
1890 NEL 1 high overload						
1891	NEL 1 P>>	Setpoint	10.0% 200.0%	110.0%	Designer's Reference Handbook	Trip of non-essential load due to high overload. This function activates NEL group 1.
1892	NEL 1 P>>	Timer	0.1 s 999.9 s	1.0 s		
1895	NEL 1 P>>	Enable	OFF ON	OFF		
1900 NEL 2 high overload						
1901	NEL 2 P>>	Setpoint	10.0% 200.0%	110.0%	Designer's Reference Handbook	Trip of non-essential load due to high overload. This function activates NEL group 2.
1902	NEL 2 P>>	Timer	0.1 s 999.9 s	1.0 s		
1905	NEL 2 P>>	Enable	OFF ON	OFF		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1910 NEL 3 high overload							
1911	NEL 3 P>>	Setpoint	10.0% 200.0%	110.0%		Designer's Reference Handbook	Trip of non-essential load due to high overload. This function activates NEL group 3.
1912	NEL 3 P>>	Timer	0.1 s 999.9 s	1.0 s			
1915	NEL 3 P>>	Enable	OFF ON	OFF			

2.2.20 Undervoltage and reactive power low

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1960 U and Q < 1							
1961	U and Q < 1	Set point	40.0 % 100.0 %	85.0 %		Option A1	The setting relates to the generator nominal voltage. The condition for trip is that the actual voltage drops below the setting value and the reactive power is ≤ 0 kVAr.
1962	U and Q < 1	Timer	0.1 s 3200.0 s	0.5 s			
1963	U and Q < 1	Relay output A	Option-dep.	Not used			
1964	U and Q < 1	Relay output B	Option-dep.	Not used			
1965	U and Q < 1	Enable	OFF ON	OFF			
1966	U and Q < 1	Fail class	F1...F8	Warning (F2)			
1970 U and Q < 2							
1971	U and Q < 2	Set point	40.0 % 100.0 %	85.0 %		Option A1	The setting relates to the generator nominal voltage. The condition for trip is that the actual voltage drops below the setting value and the reactive power is ≤ 0 kVAr.
1972	U and Q < 2	Timer	0.1 s 3200.0 s	0.5 s			
1973	U and Q < 2	Relay output A	Option-dep.	Not used			
1974	U and Q < 2	Relay output B	Option-dep.	Not used			
1975	U and Q < 2	Enable	OFF ON	OFF			
1976	U and Q < 2	Fail class	F1...F8	Warning (F2)			
1980 GB/MB external trip							
1981	GB ext. trip	Enable	OFF ON	ON		Designer's Reference Handbook	The generator breaker or the mains breaker has been tripped by an external device.
1982	GB ext. trip	Fail class	F1...F8	Warning (F2)			
1983	MB ext. trip	Enable	OFF ON	ON			
1984	MB ext. trip	Fail class	F1...F8	Warning (F2)			

Minimum current and minimum Phi angle

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
1990 U and Q< 1							
1991	I Min. 1	Set point	0 % 20 %	0 %		Option A1	Settings relate to U and Q< parameters 1960 and 1970. Condition for "U and Q<" trip is that the current exceeds the I Min. set point. Min. Phi angle expands the tripping window.
1992	Angle 1	Set point	0 ° 6 °	0 °			
1990 U and Q< 2							
1993	I Min. 2	Set point	0 % 20 %	0 %		Option A1	Settings relate to U and Q< parameters 1960 and 1970. Condition for "U and Q<" trip is that the current exceeds the I Min. set point. Min. Phi angle expands the tripping window.
1994	Angle 2	Set point	0 ° 6 °	0 °			

2.3 Control parameters - synchronisation

2.3.1 Synchronisation and breaker alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2120 Synchronisation window							
2121	Sync window	Set-point	2.0% 20.0%	15.0%		Designer's Reference Handbook	The alarm will activate if the actual voltage deviates from nominal voltage with the set percentage.
2122	Sync window	Timer	0.1 s 2.0 s	0.5 s			
2123	Sync window	Relay output A	Not used Option-dep.	Not used			
2124	Sync window	Relay output B	Not used Option-dep.	Not used			
2125	Sync window	Enable	OFF ON	OFF			
2130 GB/TB/BTB breaker synchronisation failure							
2131	GB/TB/BTB sync failure	Timer	5.0 s 999.9 s	60.0 s		Designer's Reference Handbook	The controller has unsuccessfully tried to synchronise the breaker to the busbar within the time delay.
2132	GB/TB/BTB sync failure	Relay output A	Not used Option-dep.	Not used			
2133	GB/TB/BTB sync failure	Relay output B	Not used Option-dep.	Not used			
2134	GB/TB/BTB sync failure	Enable	OFF ON	ON			
2135	GB/TB/BTB sync failure	Fail class	F1...F8	Block (F1)			
2140 Mains breaker synchronisation failure							
2141	MB sync failure	Timer	5.0 s 999.9 s	60.0 s		Designer's Reference Handbook	The controller has unsuccessfully tried to synchronise the breaker to the busbar within the time delay.
2142	MB sync failure	Relay output A	Not used Option-dep.	Not used			
2143	MB sync failure	Relay output B	Not used Option-dep.	Not used			
2144	MB sync failure	Enable	OFF ON	ON			
2145	MB sync failure	Fail class	F1...F8	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2150 Phase sequence error DG/Mains/Busbar A							
2151	Phase seq error	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The controller has detected that the rotation direction is the opposite of the selected direction. Compares phase rotation to expected direction at all times, not only during synchronisation.
2152	Phase seq error	Relay output B	Not used Option-dep.	Not used			
2153	Phase seq error	Fail class	F1...F8	Block (F1)			
2154	Phase rotation	Set-point	L1L2L3 L1L3L2	L1L2L3			
2155 Phase sequence error BB/Busbar B							
2155	Phase seq error	Relay output A	Not used Option-dep.	Not used			The controller has detected that the rotation direction is the opposite of the selected direction. Compares phase rotation to expected direction at all times, not only during synchronisation.
2156	Phase seq error	Fail class	F1...F8	Block (F1)			
2160 GB/TB/BTB open failure							
2161	GB/TB/BTB open fail	Timer	1.0 s 10.0 s	2.0 s		Designer's Reference Handbook	The breaker open failure will occur if the unit has transmitted a breaker open signal and the breaker feedback has not changed position from ON to OFF within the time delay.
2162	GB/TB/BTB open fail	Relay output A	Not used Option-dep.	Not used			
2163	GB/TB/BTB open fail	Relay output B	Not used Option-dep.	Not used			
2164	GB/TB/BTB open fail	Enable	OFF ON	ON			
2165	GB/TB/BTB open fail	Fail class	F1...F8	Warning (F2)			
2170 GB/TB/BTB breaker close failure							
2171	GB/TB/BTB close fail	Timer	1.0 s 5.0 s	2.0 s		Designer's Reference Handbook	The breaker close failure will occur if the unit has transmitted a breaker close signal and the breaker feedback has not changed position from OFF to ON within the time delay.
2172	GB/TB/BTB close fail	Relay output A	Not used Option-dep.	Not used			
2173	GB/TB/BTB close fail	Relay output B	Not used Option-dep.	Not used			
2174	GB/TB/BTB close fail	Enable	OFF ON	ON			
2175	GB/TB/BTB close fail	Fail class	F1...F8	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2180 GB/TB/BTB breaker position failure							
2181	GB/TB/BTB pos fail	Timer	1.0 s 5.0 s	1.0 s		Designer's Reference Handbook	This alarm will occur if the breaker feedbacks for ON and OFF are both missing or active for more than the time delay.
2182	GB/TB/BTB pos fail	Relay output A	Not used Option-dep.	Not used			
2183	GB/TB/BTB pos fail	Relay output B	Not used Option-dep.	Not used			
2184	GB/TB/BTB pos fail	Enable	OFF ON	ON			
2185	GB/TB/BTB pos fail	Fail class	F1...F8	Warning (F2)			
2200 MB open failure							
2201	MB open fail	Timer	1.0 s 10.0 s	2.0 s		Designer's Reference Handbook	The breaker open failure will occur if the unit has transmitted a breaker open signal and the breaker feedback has not changed position from ON to OFF within the time delay.
2202	MB open fail	Relay output A	Not used Option-dep.	Not used			
2203	MB open fail	Relay output B	Not used Option-dep.	Not used			
2204	MB open fail	Enable	ON	ON			
2205	MB open fail	Fail class	F1...F8	Warning (F2)			
2210 MB close failure							
2211	MB close fail	Timer	1.0 s 5.0 s	2.0 s		Designer's Reference Handbook	The breaker close failure will occur if the unit has transmitted a breaker close signal and the breaker feedback has not changed position from OFF to ON within the time delay.
2212	MB close fail	Relay output A	Not used Option-dep.	Not used			
2213	MB close fail	Relay output B	Not used Option-dep.	Not used			
2214	MB close fail	Enable	ON	ON			
2215	MB close fail	Fail class	F1...F8	Warning (F2)			
2220 MB position failure							
2221	MB pos fail	Timer	1.0 s 5.0 s	1.0 s		Designer's Reference Handbook	This alarm will occur if the breaker feedbacks for ON and OFF are both missing or active for more than the time delay.
2222	MB pos fail	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2223	MB pos fail	Relay output B	Not used Option-dep.	Not used			
2224	MB pos fail	Enable	ON	ON			
2225	MB pos fail	Fail class	F1...F8	Warning (F2)			
2270 Close before excitation failure							
2271	Cl.bef.exc.fail	Timer	0.0 s 999.0 s	5.0 s		Designer's Reference Handbook	This alarm will occur if the generator and breaker are not operating within the limits of the Close Before Excitation. The alarm will open the generator breaker and enable the regulation synchronising the generator in a normal way.
2272	Cl.bef.exc.fail	Relay output A	Not used Option-dep.	Not used			
2273	Cl.bef.exc.fail	Relay output B	Not used Option-dep.	Not used			
2274	Cl.bef.exc.fail	Enable	OFF ON	OFF			
2275	Cl.bef.exc.fail	Fail class	F1...F8	Warning (F2)			

2.3.2 Mains sync. inhibit

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
2280 Mains sync. inhibit settings						
2281	M sync. inh. U	Low limit U	80% 100%	85%	Designer's Reference Handbook	This function is used to inhibit the synchronising of the mains breaker after blackout.
2282	M sync. inh. U	High limit U	100% 120%	110%		
2283	M sync. inh. F	Low limit F	90% 100%	95%		
2284	M sync. inh. F	High limit F	100% 110%	101%		
2285	M sync. inh.	Enable	OFF ON	OFF		
2286	M sync. inh.	Fail class	F1...F8	Trip GB		
2290 Mains sync. inhibit recovery settings						
2291	Delay act. re2	Recovery selection timer	0 s 20 s	3 s	Designer's Reference Handbook	After blackout, the timer in menu 2291 will start to run, and if the mains voltage and frequency are inside the tolerance ranges (menus 2281-2282) before the timer runs out, the short interruption timer (menu 2292) will be started. When the timers have run out, the synchronising of MB will start.
2292	Recovery del. 1	Delay time	0 s 60 s	5 s		
2293	Recovery del. 1	Relay output A	Not used Option-dep.	Not used		
2294	Recovery del. 2	Delay time	0 s 900 s	60 s		
2295	Recovery del. 2	Relay output A	Not used Option-dep.	Not used		

2.4 Control parameters - regulation

2.4.1 Regulation alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2300 Section P>							
2301	Sec-tion P>	MW	0 30000	0		Option T1	Short-circuit limitation: Used to limit the power on the busbar in a power management system. Setpoint in menus 2301+2302 are used as limit value for max. allowed power in the system. These values are all common setpoint in the power management system.
2302	Sec-tion P>	KW	0 999	0			
2303	Sec-tion P>	Delay	0 s 999 s	1 s			
2304	Sec-tion P>	Relay output A	Not used Option-dep.	Not used			
2305	Sec-tion P>	Enable	On Off	Off			
2306	Sec-tion P>	Fail class	F1...F8	Warn- ing (F2)			
2310 Section P>							
2311	Sec-tion P>	Factor	1.00 25.5	1.0		Option T1	This value is used as a weighing factor for the Pnom. value KW) of each transformer or generator in the power management system. In case of two equal sized.
2560 Governor regulation fail							
2561	Gov. reg fail	Dead band	1.0% 100.0%	30.0%		Design- er's Ref- erence Hand- book	The alarm is activated if the difference between the measured value and the setpoint is outside the dead band for longer than the time delay.
2562	Gov. reg fail	Timer	10.0 s 300.0 s	60.0 s			
2563	Gov. reg fail	Relay output A	Not used Option-dep.	Not used			
2564	Gov. reg fail	Relay output B	Not used Option-dep.	Not used			
2565	Gov. reg fail	Fail class	F1...F8	Warn- ing (F2)			
2630 Deload error							
2631	Deload error	Timer	0.0 s 60.0 s	10.0 s		Design- er's Ref- erence Hand- book	The alarm is activated if the generator fails to deload within the time delay.
2632	Deload error	Relay output A	Not used Option-dep.	Not used			
2633	Deload error	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2634	Deload error	Enable	OFF ON	ON			
2635	Deload error	Fail class	F1...F8	Warn- ing (F2)			
2680 AVR regulation failure							
2681	AVR reg. failure	Dead band	1.0% 100.0%	30.0%		Option D1	The alarm is activated if the difference between the measured value and the setpoint is outside the setting "Dead band" for a longer time period than specified in the timer setpoint.
2682	AVR reg. failure	Timer	10.0 s 300.0 s	60.0 s			
1153	AVR reg. failure	Relay output A	Not used Option- dep.	Not used			
1154	AVR reg. failure	Relay output B	Not used Option- dep.	Not used			
1155	AVR reg. failure	Fail class	F1...F8	Warn- ing (F2)			



These parameters are used when a digital input is used as protection input or to activate a limit relay.

2.5 Input/output parameters - binary input setup

2.5.1 Digital input 23-27 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3000 Digital input 23							
3001	Dig. input 23	Timer	0.0 s 100.0 s	10.0 s		Designer's Reference Handbook	The input is configurable and can have different functions in different units. Inputs 24-27 are by default used for breaker feedback. These inputs are only available if no MB or TB is present in the application.
3002	Dig. input 23	Relay output A	Not used Option-dep.	Not used			
3003	Dig. input 23	Relay output B	Not used Option-dep.	Not used			
3004	Dig. input 23	Enable	OFF ON	OFF			
3005	Dig. input 23	Fail class	F1...F8	Warning (F2)			
3006	Dig. input 23	High Alarm	OFF ON	ON			



The same settings apply to inputs 24-27, menus 3010 to 3040.

2.5.2 Digital input 43-55 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3130 Digital input 43							
3131	Dig. input 43	Timer	0.0 s 100.0 s	10.0 s		Option M12	The input is configurable and can have different functions in different units.
3132	Dig. input 43	Relay out- put A	Not used Option- dep.	Not used			
3133	Dig. input 43	Relay out- put B	Not used Option- dep.	Not used			
3134	Dig. input 43	Enable	OFF ON	OFF			
3135	Dig. input 43	Fail class	F1...F8	Warning (F2)			
3136	Dig. input 43	High Alarm	OFF ON	ON			



The same settings apply to inputs 44-55, menus 3140 to 3250.

2.5.3 Digital input 91-97 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3330 Digital input 91							
3331	Dig. input 91	Timer	0.0 s 100.0 s	10.0 s		Option M13.6	The input is configurable and can have different functions in different units.
3332	Dig. input 91	Relay output A	Not used Option-dep.	Not used			
3333	Dig. input 91	Relay output B	Not used Option-dep.	Not used			
3334	Dig. input 91	Enable	OFF ON	OFF			
3335	Dig. input 91	Fail class	F1...F8	Warning (F2)			
3336	Dig. input 91	High Alarm	OFF ON	ON			



The same settings apply to inputs 92-97, menus 3340 to 3390.

2.5.4 Digital input 102-108 setup

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
3400 Digital input 102						
3401	Wire fail 102	Enable	OFF ON	OFF	Designer's Reference Handbook	The input is configurable and can have different functions in different units. (Only available if multi-input 102 is configured to "binary" in menu 10980).
3402	Dig. input 102	Timer	0.0 s 100.0 s	10.0 s		
3403	Dig. input 102	Relay output A	Not used Option-dep.	Not used		
3404	Dig. input 102	Relay output B	Not used Option-dep.	Not used		
3405	Dig. input 102	Enable	OFF ON	OFF		
3406	Dig. input 102	Fail class	F1...F8	Warning (F2)		
3410 Digital input 105						
3411	Wire fail 105	Enable	OFF ON	OFF	Designer's Reference Handbook	The input is configurable and can have different functions in different units. (Only available if multi-input 105 is configured to "binary" in menu 10990).
3412	Dig. input 105	Timer	0.0 s 100.0 s	10.0 s		
3413	Dig. input 105	Relay output A	Not used Option-dep.	Not used		
3414	Dig. input 105	Relay output B	Not used Option-dep.	Not used		
3415	Dig. input 105	Enable	OFF ON	OFF		
3416	Dig. input 105	Fail class	F1...F8	Warning (F2)		
3420 Digital input 108						
3421	Wire fail 108	Enable	OFF ON	OFF	Designer's Reference Handbook	The input is configurable and can have different functions in different units.
3422	Dig. input 108	Timer	0.0 s 100.0 s	10.0 s		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3423	Dig. input 108	Relay output A	Not used	Not used			(Only available if multi-input 108 is configured to "binary" in menu 11000).
3424	Dig. input 108	Relay output B	Not used	Not used			
3425	Dig. input 108	Enable	OFF ON	OFF			
3426	Dig. input 108	Fail class	F1...F8	Warning (F2)			

2.5.5 Digital input 112-117 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3430 Digital input 112							
3431	Dig. input 112	Timer	0.0 s 100.0 s	10.0 s		Designer's Reference Handbook	The input is configurable and can have different functions in different units.
3432	Dig. input 112	Relay output A	Not used	Not used			
3433	Dig. input 112	Relay output B	Not used	Not used			
3434	Dig. input 112	Enable	OFF ON	OFF			
3435	Dig. input 112	Fail class	F1...F8	Warning (F2)			
3436	Dig. input 112	High Alarm	OFF ON	ON			



The same settings apply to inputs 113-117, menus 3440 to 3480.

2.5.6 Emergency stop

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3490 Emergency stop							
3491	Emer. stop	Timer	0.0 s 60.0 s	0.0 s		Designer's Reference Handbook	Emergency stop input is intended for a normally closed contact.
3492	Emer. stop	Relay output A	Not used Option-dependent	Not used			
3493	Emer. stop	Relay output B	Not used Option-dependent	Not used			
3494	Emer. stop	Enable	OFF ON	ON			
3495	Emer. stop	Fail class	F1...F8	Shut-down (F5)			

2.5.7 Digital input 127-133 setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
3500 Digital input 127							
3501	Dig. input 127	Timer	0.0 s 100.0 s	10.0 s		Option M13.8	The input is configurable and can have different functions in different units.
3502	Dig. input 127	Relay output A	Not used Option-dep.	Not used			
3503	Dig. input 127	Relay output B	Not used Option-dep.	Not used			
3504	Dig. input 127	Enable	OFF ON	OFF			
3505	Dig. input 127	Fail class	F1...F8	Warning (F2)			
3506	Dig. input 127	High Alarm	OFF ON	ON			



The same settings apply to inputs 128-133, menus 3510 to 3560.

2.5.8 M-Logic alarm 1-5 setup

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
3570 Mlogic alarm 1						
3570	Mlogic alarm 1	Timer	0.0 s 100.0 s	10.0 s		The input is configurable.
3571	Mlogic alarm 1	Relay output A	Not used Option-dep.	Not used		
3572	Mlogic alarm 1	Relay output B	Not used Option-dep.	Not used		
3573	Mlogic alarm 1	Enable	OFF ON	OFF		
3574	Mlogic alarm 1	Fail class	F1...F8	Warning (F2)		
3575	Mlogic alarm 1	High alarm	OFF ON	ON		



The same settings apply to alarm inputs 2-5, menus 3580 to 3610.

2.6 Input/output parameters - analogue input setup

2.6.1 Analogue input setup (option M15.6)

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4000 4-20 mA 91.1						
4001	4-20 mA 91.1	Setpoint	4 mA 20 mA	10 mA	Option M15.6: 4 x 4-20 mA in-puts	Configurable analogue input.
4002	4-20 mA 91.1	Timer	0.0 s 600.0 s	120.0 s		
4003	4-20 mA 91.1	Relay output A	Not used Option-dep.	Not used		
4004	4-20 mA 91.1	Relay output B	Not used Option-dep.	Not used		
4005	4-20 mA 91.1	Enable	OFF ON	OFF		
4006	4-20 mA 91.1	Fail class	F1...F8	Warning (F2)		
4010 4-20 mA 91.2						
4011	4-20 mA 91.2	Setpoint	4 mA 20 mA	10 mA	Option M15.6: 4 x 4-20 mA in-puts	Configurable analogue input.
4012	4-20 mA 91.2	Timer	0.0 s 600.0 s	120.0 s		
4013	4-20 mA 91.2	Relay output A	Not used Option-dep.	Not used		
4014	4-20 mA 91.2	Relay output B	Not used Option-dep.	Not used		
4015	4-20 mA 91.2	Enable	OFF ON	OFF		
4016	4-20 mA 91.2	Fail class	F1...F8	Warning (F2)		
4020 Wire fail 4-20 mA 91						
4021	W. fail ana 91	Relay output A	Not used Option-dep.	Not used	Option M15.6: 4 x 4-20 mA in-puts	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4022	W. fail ana 91	Relay output B	Not used Option-dep.	Not used		
4023	W. fail ana 91	Enable	OFF ON	OFF		
4024	W. fail ana 91	Fail class	F1...F8	Warning (F2)		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4030 4-20 mA 93.1						
4031	4-20 mA 93.1	Setpoint	4 mA 20 mA	10 mA	Option M15.6: 4 x 4-20 mA in-puts	Configurable analogue input.
4032	4-20 mA 93.1	Timer	0.0 s 600.0 s	120.0 s		
4033	4-20 mA 93.1	Relay output A	Not used Option-dep.	Not used		
4034	4-20 mA 93.1	Relay output B	Not used Option-dep.	Not used		
4035	4-20 mA 93.1	Enable	OFF ON	OFF		
4036	4-20 mA 93.1	Fail class	F1...F8	Warning (F2)		
4040 4-20 mA 93.2						
4041	4-20 mA 93.2	Setpoint	4 mA 20 mA	10 mA	Option M15.6: 4 x 4-20 mA in-puts	Configurable analogue input.
4042	4-20 mA 93.2	Timer	0.0 s 600.0 s	120.0 s		
4043	4-20 mA 93.2	Relay output A	Not used Option-dep.	Not used		
4044	4-20 mA 93.2	Relay output B	Not used Option-dep.	Not used		
4045	4-20 mA 93.2	Enable	OFF ON	OFF		
4046	4-20 mA 93.2	Fail class	F1...F8	Warning (F2)		
4050 Wire fail 4-20 mA 93						
4051	W. fail ana 93	Relay output A	Not used Option-dep.	Not used	Option M15.6: 4 x 4-20 mA in-puts	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4052	W. fail ana 93	Relay output B	Not used Option-dep.	Not used		
4053	W. fail ana 93	Enable	OFF ON	OFF		
4054	W. fail ana 93	Fail class	F1...F8	Warning (F2)		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4060 4-20 mA 95.1						
4061	4-20 mA 95.1	Setpoint	4 mA 20 mA	10 mA	Option M15.6: 4 x 4-20 mA in-puts	Configurable analogue input.
4062	4-20 mA 95.1	Timer	0.0 s 600.0 s	120.0 s		
4063	4-20 mA 95.1	Relay output A	Not used Option-dep.	Not used		
4064	4-20 mA 95.1	Relay output B	Not used Option-dep.	Not used		
4065	4-20 mA 95.1	Enable	OFF ON	OFF		
4066	4-20 mA 95.1	Fail class	F1...F8	Warning (F2)		
4070 4-20 mA 95.2						
4071	4-20 mA 95.2	Setpoint	4 mA 20 mA	10 mA	Option M15.6: 4 x 4-20 mA in-puts	Configurable analogue input.
4072	4-20 mA 95.2	Timer	0.0 s 600.0 s	120.0 s		
4073	4-20 mA 95.2	Relay output A	Not used Option-dep.	Not used		
4074	4-20 mA 95.2	Relay output B	Not used Option-dep.	Not used		
4075	4-20 mA 95.2	Enable	OFF ON	OFF		
4076	4-20 mA 95.2	Fail class	F1...F8	Warning (F2)		
4080 Wire fail 4-20 mA 95						
4081	W. fail ana 95	Relay output A	Not used Option-dep.	Not used	Option M15.6: 4 x 4-20 mA in-puts	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4082	W. fail ana 95	Relay output B	Not used Option-dep.	Not used		
4083	W. fail ana 95	Enable	OFF ON	OFF		
4084	W. fail ana 95	Fail class	F1...F8	Warning		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4090 4-20 mA 97.1						
4091	4-20 mA 97.1	Setpoint	4 mA 20 mA	10 mA	Option M15.6: 4 x 4-20 mA in- puts	Configurable analogue input.
4092	4-20 mA 97.1	Timer	0.0 s 600.0 s	120.0 s		
4093	4-20 mA 97.1	Relay output A	Not used Option- dep.	Not used		
4094	4-20 mA 97.1	Relay output B	Not used Option- dep.	Not used		
4095	4-20 mA 97.1	Enable	OFF ON	OFF		
4096	4-20 mA 97.1	Fail class	F1...F8	Warning (F2)		
4100 4-20 mA 97.2						
4101	4-20 mA 97.2	Setpoint	4 mA 20 mA	10 mA	Option M15.6: 4 x 4-20 mA in- puts	Configurable analogue input.
4102	4-20 mA 97.2	Timer	0.0 s 600.0 s	120.0 s		
4103	4-20 mA 97.2	Relay output A	Not used Option- dep.	Not used		
4104	4-20 mA 97.2	Relay output B	Not used Option- dep.	Not used		
4105	4-20 mA 97.2	Enable	OFF ON	OFF		
4106	4-20 mA 97.2	Fail class	F1...F8	Warning (F2)		
4110 Wire fail 4-20 mA 97						
4111	W. fail ana 97	Relay output A	Not used Option- dep.	Not used	Option M15.6: 4 x 4-20 mA in- puts	The wire fault will de- tect if the current drops below 2 mA or ex- ceeds 22 mA. In both cases the alarm will be activated.
4112	W. fail ana 97	Relay output B	Not used Option- dep.	Not used		
4113	W. fail ana 97	Enable	OFF ON	OFF		
4114	W. fail ana 97	Fail class	F1...F8	Warning (F2)		

2.6.2 Analogue input setup (option M15.8)

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4800 4-20 mA 127.1							
4801	4-20 mA 127.1	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA in- puts (M15.8)	Configurable ana- logue input.
4802	4-20 mA 127.1	Timer	0.0 s 600.0 s	120.0 s			
4803	4-20 mA 127.1	Relay output A	Not used Option- dep.	Not used			
4804	4-20 mA 127.1	Relay output B	Not used Option- dep.	Not used			
4805	4-20 mA 127.1	Enable	OFF ON	OFF			
4806	4-20 mA 127.1	Fail class	F1...F8	Warning (F2)			
4810 4-20 mA 127.2							
4811	4-20 mA 127.2	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA in- puts (M15.8)	Configurable ana- logue input.
4812	4-20 mA 127.2	Timer	0.0 s 600.0 s	120.0 s			
4813	4-20 mA 127.2	Relay output A	Not used Option- dep.	Not used			
4814	4-20 mA 127.2	Relay output B	Not used Option- dep.	Not used			
4815	4-20 mA 127.2	Enable	OFF ON	OFF			
4816	4-20 mA 127.2	Fail class	F1...F8	Warning (F2)			
4820 wire fail 4-20 mA 127							
4821	W. fail ana 127	Relay output A	Not used Option- dep.	Not used		Option: 4 x 4-20 mA in- puts (M15.8)	The wire fault will de- tect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4822	W. fail ana 127	Relay output B	Not used Option- dep.	Not used			
4823	W. fail ana 127	Enable	OFF ON	OFF			
4824	W. fail ana 127	Fail class	F1...F8	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4830 4-20 mA 129.1							
4831	4-20 mA 129.1	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4832	4-20 mA 129.1	Timer	0.0 s 600.0 s	120.0 s			
4833	4-20 mA 129.1	Relay output A	Not used Option-dep.	Not used			
4834	4-20 mA 129.1	Relay output B	Not used Option-dep.	Not used			
4835	4-20 mA 129.1	Enable	OFF ON	OFF			
4836	4-20 mA 129.1	Fail class	F1...F8	Warning (F2)			
4840 4-20 mA 129							
4841	4-20 mA 129	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4842	4-20 mA 129	Timer	0.0 s 600.0 s	120.0 s			
4843	4-20 mA 129	Relay output A	Not used Option-dep.	Not used			
4844	4-20 mA 129	Relay output B	Not used Option-dep.	Not used			
4845	4-20 mA 129	Enable	OFF ON	OFF			
4846	4-20 mA 129	Fail class	F1...F8	Warning (F2)			
4850 Wire fail 4-20 mA 129.2							
4851	W. fail ana 129	Relay output A	Not used Option-dep.	Not used		Option: 4 x 4-20 mA inputs (M15.8)	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4852	W. fail ana 129	Relay output B	Not used Option-dep.	Not used			
4853	W. fail ana 129	Enable	OFF ON	OFF			
4854	W. fail ana 129	Fail class	F1...F8	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4860 4-20 mA 131.1							
4861	4-20 mA 131.1	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4862	4-20 mA 131.1	Timer	0.0 s 600.0 s	120.0 s			
4863	4-20 mA 131.1	Relay output A	Not used Option-dep.	Not used			
4864	4-20 mA 131.1	Relay output B	Not used Option-dep.	Not used			
4865	4-20 mA 131.1	Enable	OFF ON	OFF			
4866	4-20 mA 131.1	Fail class	F1...F8	Warning (F2)			
4870 4-20 mA 131.2							
4871	4-20 mA 131.2	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4872	4-20 mA 131.2	Timer	0.0 s 600.0 s	120.0 s			
4873	4-20 mA 131.2	Relay output A	Not used Option-dep.	Not used			
4874	4-20 mA 131.2	Relay output B	Not used Option-dep.	Not used			
4875	4-20 mA 131.2	Enable	OFF ON	OFF			
4876	4-20 mA 131.2	Fail class	F1...F8	Warning (F2)			
4880 Wire fail 4-20 mA 131							
4881	W. fail ana 131	Relay output A	Not used Option-dep.	Not used		Option: 4 x 4-20 mA inputs (M15.8)	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4882	W. fail ana 131	Relay output B	Not used Option-dep.	Not used			
4883	W. fail ana 131	Enable	OFF ON	OFF			
4884	W. fail ana 131	Fail class	F1...F8	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4890 4-20 mA 133.1							
4891	4-20 mA 133.1	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4892	4-20 mA 133.1	Timer	0.0 s 600.0 s	120.0 s			
4893	4-20 mA 133.1	Relay output A	Not used Option-dep.	Not used			
4894	4-20 mA 133.1	Relay output B	Not used Option-dep.	Not used			
4895	4-20 mA 133.1	Enable	OFF ON	OFF			
4896	4-20 mA 133.1	Fail class	F1...F8	Warning (F2)			
4900 4-20 mA 133.2							
4901	4-20 mA 133.2	Setpoint	4 mA 20 mA	10 mA		Option: 4 x 4-20 mA inputs (M15.8)	Configurable analogue input.
4902	4-20 mA 133.2	Timer	0.0 s 600.0 s	120.0 s			
4903	4-20 mA 133.2	Relay output A	Not used Option-dep.	Not used			
4904	4-20 mA 133.2	Relay output B	Not used Option-dep.	Not used			
4905	4-20 mA 133.2	Enable	OFF ON	OFF			
4906	4-20 mA 133.2	Fail class	F1...F8	Warning (F2)			
4910 Wire fail 4-20 mA 133							
4911	W. fail ana 133	Relay output A	Not used Option-dep.	Not used		Option: 4 x 4-20 mA inputs (M15.8)	The wire fault will detect if the current drops below 2 mA or exceeds 22 mA. In both cases the alarm will be activated.
4912	W. fail ana 133	Relay output B	Not used Option-dep.	Not used			
4913	W. fail ana 133	Enable	OFF ON	OFF			
4914	W. fail ana 133	Fail class	F1...F8	Warning (F2)			

2.6.3 Analogue input setup (option M16.6)

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4000 4-20 mA 91.1						
4001	4-20 mA 91.1	Set-point	4 mA 20 mA	10 mA	Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11120.
4002	4-20 mA 91.1	Timer	0.0 s 600.0 s	120.0 s		
4003	4-20 mA 91.1	Relay output A	Not used Option-dep.	Not used		
4004	4-20 mA 91.1	Relay output B	Not used Option-dep.	Not used		
4005	4-20 mA 91.1	Enable	OFF ON	OFF		
4006	4-20 mA 91.1	Fail class	F1...F8	Warning (F2)		
4000 VDC 91.1						
4001	VDC 91.1	Set-point	0 V 5 V	2 V	Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11120.
4002	VDC 91.1	Timer	0.0 s 600.0 s	120.0 s		
4003	VDC 91.1	Relay output A	Not used Option-dep.	Not used		
4004	VDC 91.1	Relay output B	Not used Option-dep.	Not used		
4005	VDC 91.1	Enable	OFF ON	OFF		
4006	VDC 91.1	Fail class	F1...F8	Warning (F2)		
4000 Pt100 91.1						
4001	Pt100 91.1	Set-point	-49°C 482°C	80°C	Three different input types are available with Option M16.6:	The value shown in this parameter group is available when Pt100 is selected in parameter

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4002	Pt100 91.1	Timer	0.0 s 600.0 s	120.0 s		<ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	11120.
4003	Pt100 91.1	Relay output A	Not used Option-dep.	Not used			
4004	Pt100 91.1	Relay output B	Not used Option-dep.	Not used			
4005	Pt100 91.1	Enable	OFF ON	OFF			
4006	Pt100 91.1	Fail class	F1...F8	Warning (F2)			
4010 4-20 mA 91.2							
4011	4-20 mA 91.2	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11120.
4012	4-20 mA 91.2	Timer	0.0 s 600.0 s	120.0 s			
4013	4-20 mA 91.2	Relay output A	Not used Option-dep.	Not used			
4014	4-20 mA 91.2	Relay output B	Not used Option-dep.	Not used			
4015	4-20 mA 91.2	Enable	OFF ON	OFF			
4016	4-20 mA 91.2	Fail class	F1...F8	Warning (F2)			
4010 VDC 91.2							
4011	VDC 91.2	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11120.
4012	VDC 91.2	Timer	0.0 s 600.0 s	120.0 s			
4013	VDC 91.2	Relay output A	Not used Option-dep.	Not used			
4014	VDC 91.2	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4015	VDC 91.2	Enable	OFF ON	OFF			
4016	VDC 91.2	Fail class	F1...F8	Warning (F2)			
4010 Pt100 91.2							
4011	Pt100 91.2	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11120.
4012	Pt100 91.2	Timer	0.0 s 600.0 s	120.0 s			
4013	Pt100 91.2	Relay output A	Not used Option-dep.	Not used			
4014	Pt100 91.2	Relay output B	Not used Option-dep.	Not used			
4015	Pt100 91.2	Enable	OFF ON	OFF			
4016	Pt100 91.2	Fail class	F1...F8	Warning (F2)			
4020 Wire fail 91							
4021	W. fail ana 91	Relay output A	Not used Option-dep.	Not used		Option M16.6	For function description of wire fail, see the Option M16 manual.
4022	W. fail ana 91	Relay output B	Not used Option-dep.	Not used			
4023	W. fail ana 91	Enable	OFF ON	OFF			
4024	W. fail ana 91	Fail class	F1...F8	Warning (F2)			
4030 4-20 mA 93.1							
4031	4-20 mA 93.1	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11130.
4032	4-20 mA 93.1	Timer	0.0 s 600.0 s	120.0 s			
4033	4-20 mA 93.1	Relay output A	Not used Option-dep.	Not used			
4034	4-20 mA 93.1	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4035	4-20 mA 93.1	Enable	OFF ON	OFF			
4036	4-20 mA 93.1	Fail class	F1...F8	Warning (F2)			
4030 VDC 93.1							
4031	VDC 93.1	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11130.
4032	VDC 93.1	Timer	0.0 s 600.0 s	120.0 s			
4033	VDC 93.1	Relay output A	Not used Option-dep.	Not used			
4034	VDC 93.1	Relay output B	Not used Option-dep.	Not used			
4035	VDC 93.1	Enable	OFF ON	OFF			
4036	VDC 93.1	Fail class	F1...F8	Warning (F2)			
4030 Pt100 93.1							
4031	Pt100 93.1	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11130.
4032	Pt100 93.1	Timer	0.0 s 600.0 s	120.0 s			
4033	Pt100 93.1	Relay output A	Not used Option-dep.	Not used			
4034	Pt 93.1	Relay output B	Not used Option-dep.	Not used			
4035	Pt100 93.1	Enable	OFF ON	OFF			
4036	Pt100 93.1	Fail class	F1...F8	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4040 4-20 mA 93.2							
4041	4-20 mA 93.2	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11130.
4042	4-20 mA 93.2	Timer	0.0 s 600.0 s	120.0 s			
4043	4-20 mA 93.2	Relay output A	Not used Option-dep.	Not used			
4044	4-20 mA 93.2	Relay output B	Not used Option-dep.	Not used			
4045	4-20 mA 93.2	Enable	OFF ON	OFF			
4046	4-20 mA 93.2	Fail class	F1...F8	Warning (F2)			
4040 VDC 93.2							
4041	VDC 93.2	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11130.
4042	VDC 93.2	Timer	0.0 s 600.0 s	120.0 s			
4043	VDC 93.2	Relay output A	Not used Option-dep.	Not used			
4044	VDC 93.2	Relay output B	Not used Option-dep.	Not used			
4045	VDC 93.2	Enable	OFF ON	OFF			
4046	VDC 93.2	Fail class	F1...F8	Warning (F2)			
4040 Pt100 93.2							
4041	Pt100 93.2	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11130.
4042	Pt100 93.2	Timer	0.0 s 600.0 s	120.0 s			
4043	Pt100 93.2	Relay output A	Not used Option-dep.	Not used			
4044	Pt100 93.2	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4045	Pt100 93.2	Enable	OFF ON	OFF			
4046	Pt100 93.2	Fail class	F1...F8	Warning (F2)			
4050 Wire fail 93							
4051	W. fail ana 93	Relay output A	Not used Option- dep.	Not used		Option M15.6	For function description of wire fail, see the Op- tion M16 manual.
4052	W. fail ana 93	Relay output B	Not used Option- dep.	Not used			
4053	W. fail ana 93	Enable	OFF ON	OFF			
4054	W. fail ana 93	Fail class	F1...F8	Warn- ing (F2)			
4060 4-20 mA 95.1							
4061	4-20 mA 95.1	Set- point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11140.
4062	4-20 mA 95.1	Timer	0.0 s 600.0 s	120.0 s			
4063	4-20 mA 95.1	Relay output A	Not used Option- dep.	Not used			
4064	4-20 mA 95.1	Relay output B	Not used Option- dep.	Not used			
4065	4-20 mA 95.1	Enable	OFF ON	OFF			
4066	4-20 mA 95.1	Fail class	F1...F8	Warn- ing (F2)			
4060 VDC 95.1							
4061	VDC 95.1	Set- point	0 V 5 V	2 V		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11140.
4062	VDC 95.1	Timer	0.0 s 600.0 s	120.0 s			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4060 VDC 95.1						
4063	VDC 95.1	Relay output A	Not used Option-dep.	Not used		
4064	VDC 95.1	Relay output B	Not used Option-dep.	Not used		
4065	VDC 95.1	Enable	OFF ON	OFF		
4066	VDC 95.1	Fail class	F1...F8	Warning (F2)		
4060 Pt100 95.1						
4061	Pt100 95.1	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 The value shown in this parameter group is available when Pt100 is selected in parameter 11140.
4062	Pt100 95.1	Timer	0.0 s 600.0 s	120.0 s		
4063	Pt 95.1	Relay output A	Not used Option-dep.	Not used		
4064	Pt 95.1	Relay output B	Not used Option-dep.	Not used		
4065	Pt100 95.1	Enable	OFF ON	OFF		
4066	Pt100 95.1	Fail class	F1...F8	Warning (F2)		
4070 4-20 mA 95.2						
4071	4-20 mA 95.2	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 The value shown in this parameter group is available when 4-20 mA is selected in parameter 11140.
4072	4-20 mA 95.2	Timer	0.0 s 600.0 s	120.0 s		
4073	4-20 mA 95.2	Relay output A	Not used Option-dep.	Not used		
4074	4-20 mA 95.2	Relay output B	Not used Option-dep.	Not used		
4075	4-20 mA 95.2	Enable	OFF ON	OFF		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4076	4-20 mA 95.2	Fail class	F1...F8	Warning (F2)			
4070 VDC 95.2							
4071	VDC 95.2	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11140.
4072	VDC 95.2	Timer	0.0 s 600.0 s	120.0 s			
4073	VDC 95.2	Relay output A	Not used Option-dep.	Not used			
4074	VDC 95.2	Relay output B	Not used Option-dep.	Not used			
4075	VDC 95.2	Enable	OFF ON	OFF			
4076	VDC 95.2	Fail class	F1...F8	Warning (F2)			
4070 Pt100 95.2							
4071	Pt100 95.2	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11140.
4072	Pt100 95.2	Timer	0.0 s 600.0 s	120.0 s			
4073	Pt100 95.2	Relay output A	Not used Option-dep.	Not used			
4074	Pt 95.2	Relay output B	Not used Option-dep.	Not used			
4075	Pt100 95.2	Enable	OFF ON	OFF			
4076	Pt100 95.2	Fail class	F1...F8	Warning (F2)			
4080 Wire fail 95							
4081	W. fail ana 95	Relay output A	Not used Option-dep.	Not used		Option M16.6	For function description of wire fail, see the Option M16 manual.
4082	W. fail ana 95	Relay output B	Not used Option-dep.	Not used			
4083	W. fail ana 95	Enable	OFF ON	OFF			
4084	W. fail ana 95	Fail class	F1...F8	Warning			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4090 4-20 mA 97.1							
4091	4-20 mA 97.1	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11150.
4092	4-20 mA 97.1	Timer	0.0 s 600.0 s	120.0 s			
4093	4-20 mA 97.1	Relay output A	Not used Option-dep.	Not used			
4094	4-20 mA 97.1	Relay output B	Not used Option-dep.	Not used			
4095	4-20 mA 97.1	Enable	OFF ON	OFF			
4096	4-20 mA 97.1	Fail class	F1...F8	Warning (F2)			
4090 VDC 97.1							
4091	VDC 97.1	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11150.
4092	VDC 97.1	Timer	0.0 s 600.0 s	120.0 s			
4093	VDC 97.1	Relay output A	Not used Option-dep.	Not used			
4094	VDC 97.1	Relay output B	Not used Option-dep.	Not used			
4095	VDC 97.1	Enable	OFF ON	OFF			
4096	VDC 97.1	Fail class	F1...F8	Warning (F2)			
4090 Pt100 97.1							
4091	Pt100 97.1	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11150.
4092	Pt100 97.1	Timer	0.0 s 600.0 s	120.0 s			
4093	Pt100 97.1	Relay output A	Not used Option-dep.	Not used			
4094	Pt100 97.1	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4095	Pt100 97.1	Enable	OFF ON	OFF			
4096	Pt100 97.1	Fail class	F1...F8	Warning (F2)			
4100 4-20 mA 97.2							
4101	4-20 mA 97.2	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11150.
4102	4-20 mA 97.2	Timer	0.0 s 600.0 s	120.0 s			
4103	4-20 mA 97.2	Relay output A	Not used Option-dep.	Not used			
4104	4-20 mA 97.2	Relay output B	Not used Option-dep.	Not used			
4105	4-20 mA 97.2	Enable	OFF ON	OFF			
4106	4-20 mA 97.2	Fail class	F1...F8	Warning (F2)			
4100 VDC 97.2							
4101	VDC 97.2	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11150.
4102	VDC 97.2	Timer	0.0 s 600.0 s	120.0 s			
4103	VDC 97.2	Relay output A	Not used Option-dep.	Not used			
4104	VDC 97.2	Relay output B	Not used Option-dep.	Not used			
4105	VDC 97.2	Enable	OFF ON	OFF			
4106	VDC 97.2	Fail class	F1...F8	Warning (F2)			
4100 Pt100 97.2							
4101	Pt100 97.2	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.6: <ul style="list-style-type: none"> • 4-20 mA 	The value shown in this parameter group is available when Pt100 is selected in parameter
4102	Pt100 97.2	Timer	0.0 s 600.0 s	120.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4103	Pt100 97.2	Relay output A	Not used Option- dep.	Not used		<ul style="list-style-type: none"> • 0-5 V • Pt100 	11150.
4104	Pt100 97.2	Relay output B	Not used Option- dep.	Not used			
4105	Pt100 97.2	Enable	OFF ON	OFF			
4106	Pt100 97.2	Fail class	F1...F8	Warn- ing (F2)			
4110 Wire fail 97							
4111	W. fail ana 97	Relay output A	Not used Option- dep.	Not used		Option M15.6	For function description or wire fail, see the Op- tion M16 manual.
4112	W. fail ana 97	Relay output B	Not used Option- dep.	Not used			
4113	W. fail ana 97	Enable	OFF ON	OFF			
4114	W. fail ana 97	Fail class	F1...F8	Warn- ing (F2)			

2.6.4 Analogue input setup (option M16.8)

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4800 4-20 mA 127.1						
4801	4-20 mA 127.1	Set-point	4 mA 20 mA	10 mA	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11160.
4802	4-20 mA 127.1	Timer	0.0 s 600.0 s	120.0 s		
4803	4-20 mA 127.1	Relay output A	Not used Option-dep.	Not used		
4804	4-20 mA 127.1	Relay output B	Not used Option-dep.	Not used		
4805	4-20 mA 127.1	Enable	OFF ON	OFF		
4806	4-20 mA 127.1	Fail class	F1...F8	Warning (F2)		
4800 VDC 127.1						
4801	VDC 127.1	Set-point	0 V 5 V	2 V	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group are available when 0-5 V is selected in parameter 11160.
4802	VDC 127.1	Timer	0.0 s 600.0 s	120.0 s		
4803	VDC 127.1	Relay output A	Not used Option-dep.	Not used		
4804	VDC 127.1	Relay output B	Not used Option-dep.	Not used		
4805	VDC 127.1	Enable	OFF ON	OFF		
4806	VDC 127.1	Fail class	F1...F8	Warning (F2)		
4800 Pt100 127.1						
4801	Pt100 127.1	Set-point	-49°C 482°C	80°C	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11160.
4802	Pt100 127.1	Timer	0.0 s 600.0 s	120.0 s		
4803	Pt100 127.1	Relay output A	Not used Option-dep.	Not used		
4804	Pt100 127.1	Relay output B	Not used Option-dep.	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4805	Pt100 127.1	Enable	OFF ON	OFF			
4806	Pt100 127.1	Fail class	F1...F8	Warning (F2)			
4810 4-20 mA 127.2							
4811	4-20 mA 127.2	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11160.
4812	4-20 mA 127.2	Timer	0.0 s 600.0 s	120.0 s			
4813	4-20 mA 127.2	Relay output A	Not used Option-dep.	Not used			
4814	4-20 mA 127.2	Relay output B	Not used Option-dep.	Not used			
4815	4-20 mA 127.2	Enable	OFF ON	OFF			
4816	4-20 mA 127.2	Fail class	F1...F8	Warning (F2)			
4810 VDC 127.2							
4811	VDC 127.2	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11160.
4812	VDC 127.2	Timer	0.0 s 600.0 s	120.0 s			
4813	VDC 127.2	Relay output A	Not used Option-dep.	Not used			
4814	VDC 127.2	Relay output B	Not used Option-dep.	Not used			
4815	VDC 127.2	Enable	OFF ON	OFF			
4816	VDC 127.2	Fail class	F1...F8	Warning (F2)			
4810 Pt100 127.2							
4811	Pt100 127.2	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11160.
4812	Pt100 127.2	Timer	0.0 s 600.0 s	120.0 s			
4813	Pt100 127.2	Relay output A	Not used Option-dep.	Not used			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4810 Pt100 127.2						
4814	Pt100 127.2	Relay output B	Not used Option-dep.	Not used		
4815	Pt100 127.2	Enable	OFF ON	OFF		
4816	Pt100 127.2	Fail class	F1...F8	Warning (F2)		
4820 Wire fail 127						
4821	W. fail ana 127	Relay output A	Not used Option-dep.	Not used	Option M16.8	For function description of wire fail, see the Option M16 manual.
4822	W. fail ana 127	Relay output B	Not used Option-dep.	Not used		
4823	W. fail ana 127	Enable	OFF ON	OFF		
4824	W. fail ana 127	Fail class	F1...F8	Warning (F2)		
4830 4-20 mA 129.1						
4831	4-20 mA 129.1	Set-point	4 mA 20 mA	10 mA	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11170.
4832	4-20 mA 129.1	Timer	0.0 s 600.0 s	120.0 s		
4833	4-20 mA 129.1	Relay output A	Not used Option-dep.	Not used		
4834	4-20 mA 129.1	Relay output B	Not used Option-dep.	Not used		
4835	4-20 mA 129.1	Enable	OFF ON	OFF		
4836	4-20 mA 129.1	Fail class	F1...F8	Warning (F2)		
4830 VDC 129.1						
4831	VDC 129.1	Set-point	0 V 5 V	2 V	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11170.
4832	VDC 129.1	Timer	0.0 s 600.0 s	120.0 s		
4833	VDC 129.1	Relay output A	Not used Option-dep.	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4834	VDC 129.1	Relay output B	Not used Option-dep.	Not used			
4835	VDC 129.1	Enable	OFF ON	OFF			
4836	VDC 129.1	Fail class	F1...F8	Warning (F2)			
4830 Pt100 129.1							
4831	Pt100 129.1	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11170.
4832	Pt100 129.1	Timer	0.0 s 600.0 s	120.0 s			
4833	Pt 129.1	Relay output A	Not used Option-dep.	Not used			
4834	Pt100 129.1	Relay output B	Not used Option-dep.	Not used			
4835	Pt100 129.1	Enable	OFF ON	OFF			
4836	Pt100 129.1	Fail class	F1...F8	Warning (F2)			
4840 4-20 mA 129.2							
4841	4-20 mA 129.2	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11170.
4842	4-20 mA 129.2	Timer	0.0 s 600.0 s	120.0 s			
4843	4-20 mA 129.2	Relay output A	Not used Option-dep.	Not used			
4844	4-20 mA 129.2	Relay output B	Not used Option-dep.	Not used			
4845	4-20 mA 129.2	Enable	OFF ON	OFF			
4846	4-20 mA 129.2	Fail class	F1...F8	Warning (F2)			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4840 VDC 129.2						
4841	VDC 129.2	Set-point	0 V 5 V	2 V	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11170.
4842	VDC 129.2	Timer	0.0 s 600.0 s	120.0 s		
4843	VDC 129.2	Relay output A	Not used Option-dep.	Not used		
4844	VDC 129.2	Relay output B	Not used Option-dep.	Not used		
4845	VDC 129.2	Enable	OFF ON	OFF		
4846	VDC 129.2	Fail class	F1...F8	Warning (F2)		
4840 Pt100 129.2						
4841	Pt100 129.2	Set-point	-49°C 482°C	80°C	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11170.
4842	Pt100 129.2	Timer	0.0 s 600.0 s	120.0 s		
4843	Pt100 129.2	Relay output A	Not used Option-dep.	Not used		
4844	Pt100 129.2	Relay output B	Not used Option-dep.	Not used		
4845	Pt100 129.2	Enable	OFF ON	OFF		
4846	Pt100 129.2	Fail class	F1...F8	Warning (F2)		
4850 Wire fail 129						
4851	W. fail ana 129	Relay output A	Not used Option-dep.	Not used	Option M16.8	For function description of wire fail, see the Option M16 manual.
4852	W. fail ana 129	Relay output B	Not used Option-dep.	Not used		
4853	W. fail ana 129	Enable	OFF ON	OFF		
4854	W. fail ana 129	Fail class	F1...F8	Warning (F2)		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4860 4-20 mA 131.1						
4861	4-20 mA 131.1	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 The value shown in this parameter group is available when 4-20 mA is selected in parameter 11180.
4862	4-20 mA 131.1	Timer	0.0 s 600.0 s	120.0 s		
4863	4-20 mA 131.1	Relay output A	Not used Option-dep.	Not used		
4864	4-20 mA 131.1	Relay output B	Not used Option-dep.	Not used		
4865	4-20 mA 131.1	Enable	OFF ON	OFF		
4866	4-20 mA 131.1	Fail class	F1...F8	Warning (F2)		
4860 VDC 131.1						
4861	VDC 131.1	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 The value shown in this parameter group is available when 0-5 V is selected in parameter 11180.
4862	VDC 131.1	Timer	0.0 s 600.0 s	120.0 s		
4863	VDC 131.1	Relay output A	Not used Option-dep.	Not used		
4864	VDC 131.1	Relay output B	Not used Option-dep.	Not used		
4865	VDC 131.1	Enable	OFF ON	OFF		
4866	VDC 131.1	Fail class	F1...F8	Warning (F2)		
4860 Pt100 131.1						
4861	Pt100 131.1	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 The value shown in this parameter group is available when Pt100 is selected in parameter 11180.
4862	Pt100 131.1	Timer	0.0 s 600.0 s	120.0 s		
4863	Pt100 131.1	Relay output A	Not used Option-dep.	Not used		
4864	Pt100 131.1	Relay output B	Not used Option-dep.	Not used		
4865	Pt100 131.1	Enable	OFF ON	OFF		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4866	Pt100 131.1	Fail class	F1...F8	Warning (F2)			
4870 4-20 mA 131.2							
4871	4-20 mA 131.2	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11180.
4872	4-20 mA 131.2	Timer	0.0 s 600.0 s	120.0 s			
4873	4-20 mA 131.2	Relay output A	Not used Option-dep.	Not used			
4874	4-20 mA 131.2	Relay output B	Not used Option-dep.	Not used			
4875	4-20 mA 131.2	Enable	OFF ON	OFF			
4876	4-20 mA 131.2	Fail class	F1...F8	Warning (F2)			
4870 VDC 131.2							
4871	VDC 131.2	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11180.
4872	VDC 131.2	Timer	0.0 s 600.0 s	120.0 s			
4873	VDC 131.2	Relay output A	Not used Option-dep.	Not used			
4874	VDC 131.2	Relay output B	Not used Option-dep.	Not used			
4875	VDC 131.2	Enable	OFF ON	OFF			
4876	VDC 131.2	Fail class	F1...F8	Warning (F2)			
4870 Pt100 131.2							
4871	Pt100 131.2	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11180.
4872	Pt100 131.2	Timer	0.0 s 600.0 s	120.0 s			
4873	Pt100 131.2	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4874	Pt100 131.2	Relay output B	Not used Option-dep.	Not used			
4875	Pt100 131.2	Enable	OFF ON	OFF			
4876	Pt100 131.2	Fail class	F1...F8	Warning (F2)			
4880 Wire fail 131							
4881	W. fail ana 131	Relay output A	Not used Option-dep.	Not used		Option M16.8	For function description of wire fail, see the Option M16 manual.
4882	W. fail ana 131	Relay output B	Not used Option-dep.	Not used			
4883	W. fail ana 131	Enable	OFF ON	OFF			
4884	W. fail ana 131	Fail class	F1...F8	Warning (F2)			
4890 4-20 mA 133.1							
4891	4-20 mA 133.1	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 4-20 mA is selected in parameter 11190.
4892	4-20 mA 133.1	Timer	0.0 s 600.0 s	120.0 s			
4893	4-20 mA 133.1	Relay output A	Not used Option-dep.	Not used			
4894	4-20 mA 133.1	Relay output B	Not used Option-dep.	Not used			
4895	4-20 mA 133.1	Enable	OFF ON	OFF			
4896	4-20 mA 133.1	Fail class	F1...F8	Warning (F2)			
4890 VDC 133.1							
4891	VDC 133.1	Set-point	0 V 5 V	2 V		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11190.
4892	VDC 133.1	Timer	0.0 s 600.0 s	120.0 s			
4893	VDC 133.1	Relay output A	Not used Option-dep.	Not used			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4890 VDC 133.1						
4894	VDC 133.1	Relay output B	Not used Option-dep.	Not used		
4895	VDC 133.1	Enable	OFF ON	OFF		
4896	VDC 133.1	Fail class	F1...F8	Warning (F2)		
4890 Pt100 133.1						
4891	Pt100 133.1	Set-point	-49°C 482°C	80°C		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 The value shown in this parameter group is available when Pt100 is selected in parameter 11190.
4892	Pt100 133.1	Timer	0.0 s 600.0 s	120.0 s		
4893	Pt100 133.1	Relay output A	Not used Option-dep.	Not used		
4894	Pt 133.1	Relay output B	Not used Option-dep.	Not used		
4895	Pt100 133.1	Enable	OFF ON	OFF		
4896	Pt100 133.1	Fail class	F1...F8	Warning (F2)		
4900 4-20 mA 133.2						
4901	4-20 mA 133.2	Set-point	4 mA 20 mA	10 mA		Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 The value shown in this parameter group is available when 4-20 mA is selected in parameter 11190.
4902	4-20 mA 133.2	Timer	0.0 s 600.0 s	120.0 s		
4903	4-20 mA 133.2	Relay output A	Not used Option-dep.	Not used		
4904	4-20 mA 133.2	Relay output B	Not used Option-dep.	Not used		
4905	4-20 mA 133.2	Enable	OFF ON	OFF		
4906	4-20 mA 133.2	Fail class	F1...F8	Warning (F2)		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4900 VDC 133.2						
4901	VDC 133.2	Set-point	0 V 5 V	2 V	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when 0-5 V is selected in parameter 11190.
4902	VDC 133.2	Timer	0.0 s 600.0 s	120.0 s		
4903	VDC 133.2	Relay output A	Not used Option-dep.	Not used		
4904	VDC 133.2	Relay output B	Not used Option-dep.	Not used		
4905	VDC 133.2	Enable	OFF ON	OFF		
4906	VDC 133.2	Fail class	F1...F8	Warning (F2)		
4900 Pt100 133.2						
4901	Pt100 133.2	Set-point	-49°C 482°C	80°C	Three different input types are available with Option M16.8: <ul style="list-style-type: none"> • 4-20 mA • 0-5 V • Pt100 	The value shown in this parameter group is available when Pt100 is selected in parameter 11190.
4902	Pt100 133.2	Timer	0.0 s 600.0 s	120.0 s		
4903	Pt100 133.2	Relay output A	Not used Option-dep.	Not used		
4904	Pt100 133.2	Relay output B	Not used Option-dep.	Not used		
4905	Pt100 133.2	Enable	OFF ON	OFF		
4906	Pt100 133.2	Fail class	F1...F8	Warning (F2)		
4910 Wire fail 133						
4911	W. fail ana 133	Relay output A	Not used Option-dep.	Not used	Option M16.8	For function description or wire fail, see the Option M16 manual.
4912	W. fail ana 133	Relay output B	Not used Option-dep.	Not used		
4913	W. fail ana 133	Enable	OFF ON	OFF		
4914	W. fail ana 133	Fail class	F1...F8	Warning (F2)		

2.7 Multi-functional analogue input setup

2.7.1 Multi-input no. 102



The available menus for multi-input no. 102 depend on the input type configured in the PC utility software (menu 10980).

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4120 4-20 mA 102.1						
4121	4-20 mA 102.1	Setpoint	4 mA 20 mA	10 mA	Designer's Reference Handbook	The multi-input 102 has been configured as 4-20 mA.
4122	4-20 mA 102.1	Timer	0.0 s 999.0 s	120.0 s		
4123	4-20 mA 102.1	Relay output A	Not used Option-dep.	Not used		
4124	4-20 mA 102.1	Relay output B	Not used Option-dep.	Not used		
4125	4-20 mA 102.1	Enable	OFF ON	OFF		
4126	4-20 mA 102.1	Fail class	F1...F8	Warning (F2)		
4130 4-20 mA 102.2						
4131	4-20 mA 102.2	Setpoint	4 mA 20 mA	10 mA	Designer's Reference Handbook	The multi-input 102 has been configured as 4-20 mA.
4132	4-20 mA 102.2	Timer	0.0 s 999.0 s	120.0 s		
4133	4-20 mA 102.2	Relay output A	Not used Option-dep.	Not used		
4134	4-20 mA 102.2	Relay output B	Not used Option-dep.	Not used		
4135	4-20 mA 102.2	Enable	OFF ON	OFF		
4136	4-20 mA 102.2	Fail class	F1...F8	Warning (F2)		
4140 V DC 102.1						
4141	V DC 102.1	Setpoint	0.0V DC 40.0V DC	20.0V DC	Designer's Reference Handbook	The multi-input 102 has been configured as V DC.
4142	V DC 102.1	Timer	0.2 s 999.0 s	10.0 s		
4143	V DC 102.1	Relay output A	Not used Option-dep.	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4144	V DC 102.1	Relay output B	Not used Option-dep.	Not used			
4145	V DC 102.1	Enable	OFF ON	OFF			
4146	V DC 102.1	Fail class	F1...F8	Warning (F2)			
4150 V DC 102.2							
4151	V DC 102.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 102 has been configured as V DC.
4152	V DC 102.2	Timer	0.2 s 999.0 s	10.0 s			
4153	V DC 102.2	Relay output A	Not used Option-dep.	Not used			
4154	V DC 102.2	Relay output B	Not used Option-dep.	Not used			
4155	V DC 102.2	Enable	OFF ON	OFF			
4156	V DC 102.2	Fail class	F1...F8	Warning (F2)			
4160 Pt100 102.1							
4161	PT 102.1	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 102 has been configured as Pt100. Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (menu 10970).
4162	PT 102.1	Timer	0.0 s 999.0 s	5.0 s			
4163	PT 102.1	Relay output A	Not used Option-dep.	Not used			
4164	PT 102.1	Relay output B	Not used Option-dep.	Not used			
4165	PT 102.1	Enable	OFF ON	OFF			
4166	PT 102.1	Fail class	F1...F8	Warning (F2)			
4170 Pt100 102.2							
4171	PT 102.2	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 102 has been configured as Pt100.
4172	PT 102.2	Timer	0.0 s 999.0 s	10.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4173	PT 102.2	Relay output A	Not used Option-dep.	Not used			Pt100 setpoint can be in deg. C or Fahrenheit, dependent on the unit selection (menu 10970).
4174	PT 102.2	Relay output B	Not used Option-dep.	Not used			
4175	PT 102.2	Enable	OFF ON	OFF			
4176	PT 102.2	Fail class	F1...F8	Warning (F2)			
4180 VDO oil 102.1							
4181	VDO oil 102.1	Setpoint	0.0 145.0	4.0		Designer's Reference Handbook	The multi-input 102 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4182	VDO oil 102.1	Timer	0.0 s 999.0 s	5.0 s			
4183	VDO oil 102.1	Relay output A	Not used Option-dep.	Not used			
4184	VDO oil 102.1	Relay output B	Not used Option-dep.	Not used			
4185	VDO oil 102.1	Enable	OFF ON	OFF			
4186	VDO oil 102.1	Fail class	F1...F8	Warning (F2)			
4190 VDO oil 102.2							
4191	VDO oil 102.2	Setpoint	0.0 145.0	5.0		Designer's Reference Handbook	The multi-input 102 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4192	VDO oil 102.2	Timer	0.0 s 999.0 s	5.0 s			
4193	VDO oil 102.2	Relay output A	Not used Option-dep.	Not used			
4194	VDO oil 102.2	Relay output B	Not used Option-dep.	Not used			
4195	VDO oil 102.2	Enable	OFF ON	OFF			
4196	VDO oil 102.2	Fail class	F1...F8	Warning (F2)			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4200 VDO water 102.1						
4201	VDO water 102.1	Setpoint	-49 482	100	Designer's Reference Handbook	The multi-input 102 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4202	VDO water 102.1	Timer	0.0 s 999.0 s	5.0 s		
4203	VDO water 102.1	Relay output A	Not used Option-dep.	Not used		
4204	VDO water 102.1	Relay output B	Not used Option-dep.	Not used		
4205	VDO water 102.1	Enable	OFF ON	OFF		
4206	VDO water 102.1	Fail class	F1...F8	Warning (F2)		
4210 VDO water 102.2						
4211	VDO water 102.2	Setpoint	-49 482	110	Designer's Reference Handbook	The multi-input 102 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4212	VDO water 102.2	Timer	0.0 s 999.0 s	5.0 s		
4213	VDO water 102.2	Relay output A	Not used Option-dep.	Not used		
4214	VDO water 102.2	Relay output B	Not used Option-dep.	Not used		
4215	VDO water 102.2	Enable	OFF ON	OFF		
4216	VDO water 102.2	Fail class	F1...F8	Warning (F2)		
4220 VDO fuel level 102.1						
4221	VDO fuel 102.1	Setpoint	0% 100%	10%	Designer's Reference Handbook	The multi-input 102 has been configured as VDO fuel level.
4222	VDO fuel 102.1	Timer	0.0 s 999.0 s	10.0 s		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4223	VDO fuel 102.1	Relay output A	Not used Option-dep.	Not used			
4224	VDO fuel 102.1	Relay output B	Not used Option-dep.	Not used			
4225	VDO fuel 102.1	Enable	OFF ON	OFF			
4226	VDO fuel 102.1	Fail class	F1...F8	Warning (F2)			
4230 VDO fuel level 102.2							
4231	VDO fuel 102.2	Setpoint	0% 100%	5%		Designer's Reference Handbook	The multi-input 102 has been configured as VDO fuel level.
4232	VDO fuel 102.2	Timer	0.0 s 999.0 s	10.0 s			
4233	VDO fuel 102.2	Relay output A	Not used Option-dep.	Not used			
4234	VDO fuel 102.2	Relay output B	Not used Option-dep.	Not used			
4235	VDO fuel 102.2	Enable	OFF ON	OFF			
4236	VDO fuel 102.2	Fail class	F1...F8	Warning (F2)			
4240 Wire fail 102							
4241	W. fail 102	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wire break fault detection is activated.
4242	W. fail 102	Relay output B	Not used Option-dep.	Not used			
4243	W. fail 102	Enable	OFF ON	OFF			
4244	W. fail 102	Fail class	F1...F8	Warning (F2)			

2.7.2 Multi-input no. 105



The available menus for multi-input no. 105 depend on the input type configured in the PC utility software (menu 10990).

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4250 4-20 mA 105.1						
4251	4-20 mA 105.1	Setpoint	4 mA 20 mA	10 mA	Designer's Reference Handbook	The multi-input 105 has been configured as 4-20 mA.
4252	4-20 mA 105.1	Timer	0.0 s 999.0 s	120.0 s		
4253	4-20 mA 105.1	Relay output A	Not used Option-dep.	Not used		
4254	4-20 mA 105.1	Relay output B	Not used Option-dep.	Not used		
4255	4-20 mA 105.1	Enable	OFF ON	OFF		
4256	4-20 mA 105.1	Fail class	F1...F8	Warning (F2)		
4260 4-20 mA 105.2						
4261	4-20 mA 105.2	Setpoint	4 mA 20 mA	10 mA	Designer's Reference Handbook	The multi-input 105 has been configured as 4-20 mA.
4262	4-20 mA 105.2	Timer	0.0 s 999.0 s	120.0 s		
4263	4-20 mA 105.2	Relay output A	Not used Option-dep.	Not used		
4264	4-20 mA 105.2	Relay output B	Not used Option-dep.	Not used		
4265	4-20 mA 105.2	Enable	OFF ON	OFF		
4266	4-20 mA 105.2	Fail class	F1...F8	Warning (F2)		
4270 V DC 105.1						
4271	V DC 105.1	Setpoint	0.0V DC 40.0V DC	20.0V DC	Designer's Reference Handbook	The multi-input 105 has been configured as V DC.
4272	V DC 105.1	Timer	0.2 s 999.0 s	10.0 s		
4273	V DC 105.1	Relay output A	Not used Option-dep.	Not used		
4274	V DC 105.1	Relay output B	Not used Option-dep.	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4275	V DC 105.1	Enable	OFF ON	OFF			
4276	V DC 105.1	Fail class	F1...F8	Warning (F2)			
4280 V DC 105.2							
4281	V DC 105.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 105 has been configured as V DC.
4282	V DC 105.2	Timer	0.2 s 999.0 s	10.0 s			
4283	V DC 105.2	Relay output A	Not used Option- dep.	Not used			
4284	V DC 105.2	Relay output B	Not used Option- dep.	Not used			
4285	V DC 105.2	Enable	OFF ON	OFF			
4286	V DC 105.2	Fail class	F1...F8	Warning (F2)			
4290 Pt100 105.1							
4291	PT 105.1	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 105 has been configured as Pt100. Pt100 setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4292	PT 105.1	Timer	0.0 s 999.0 s	5.0 s			
4293	PT 105.1	Relay output A	Not used Option- dep.	Not used			
4294	PT 105.1	Relay output B	Not used Option- dep.	Not used			
4295	PT 105.1	Enable	OFF ON	OFF			
4296	PT 105.1	Fail class	F1...F8	Warning (F2)			
4300 Pt100 105.2							
4301	PT 105.2	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 105 has been configured as Pt100. Pt100 setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4302	PT 105.2	Timer	0.0 s 999.0 s	10.0 s			
4303	PT 105.2	Relay output A	Not used Option- dep.	Not used			
4304	PT 105.2	Relay output B	Not used Option- dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4305	PT 105.2	Enable	OFF ON	OFF			
4306	PT 105.2	Fail class	F1...F8	Warning (F2)			
4310 VDO oil 105.1							
4311	VDO oil 105.1	Setpoint	0.0 145.0	4.0		Designer's Reference Handbook	The multi-input 105 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4312	VDO oil 105.1	Timer	0.0 s 999.0 s	5.0 s			
4313	VDO oil 105.1	Relay output A	Not used Option-dep.	Not used			
4314	VDO oil 105.1	Relay output B	Not used Option-dep.	Not used			
4315	VDO oil 105.1	Enable	OFF ON	OFF			
4316	VDO oil 105.1	Fail class	F1...F8	Warning (F2)			
4320 VDO oil 105.2							
4321	VDO oil 105.2	Setpoint	0.0 145.0	5.0		Designer's Reference Handbook	The multi-input 105 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4322	VDO oil 105.2	Timer	0.0 s 999.0 s	5.0 s			
4323	VDO oil 105.2	Relay output A	Not used Option-dep.	Not used			
4324	VDO oil 105.2	Relay output B	Not used Option-dep.	Not used			
4325	VDO oil 105.2	Enable	OFF ON	OFF			
4326	VDO oil 105.2	Fail class	F1...F8	Warning (F2)			
4330 VDO water 105.1							
4331	VDO water 105.1	Setpoint	-49 482	100		Designer's Reference Handbook	The multi-input 105 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4332	VDO water 105.1	Timer	0.0 s 999.0 s	5.0 s			
4333	VDO water 105.1	Relay output A	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4334	VDO water 105.1	Relay output B	Not used Option-dep.	Not used			
4335	VDO water 105.1	Enable	OFF ON	OFF			
4336	VDO water 105.1	Fail class	F1...F8	Warning (F2)			
4340 VDO water 105.2							
4341	VDO water 105.2	Setpoint	-49 482	110		Designer's Reference Handbook	The multi-input 105 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4342	VDO water 105.2	Timer	0.0 s 999.0 s	5.0 s			
4343	VDO water 105.2	Relay output A	Not used Option-dep.	Not used			
4344	VDO water 105.2	Relay output B	Not used Option-dep.	Not used			
4345	VDO water 105.2	Enable	OFF ON	OFF			
4346	VDO water 105.2	Fail class	F1...F8	Warning (F2)			
4350 VDO fuel level 105.1							
4351	VDO fuel 105.1	Setpoint	0% 100%	10%		Designer's Reference Handbook	The multi-input 105 has been configured as VDO fuel level.
4352	VDO fuel 105.1	Timer	0.0 s 999.0 s	10.0 s			
4353	VDO fuel 105.1	Relay output A	Not used Option-dep.	Not used			
4354	VDO fuel 105.1	Relay output B	Not used Option-dep.	Not used			
4355	VDO fuel 105.1	Enable	OFF ON	OFF			
4356	VDO fuel 105.1	Fail class	F1...F8	Warning (F2)			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4360 VDO fuel level 105.2						
4361	VDO fuel 105.2	Setpoint	0% 100%	5%	Designer's Reference Handbook	The multi-input 105 has been configured as VDO fuel level.
4362	VDO fuel 105.2	Timer	0.0 s 999.0 s	10.0 s		
4363	VDO fuel 105.2	Relay output A	Not used Option-dep.	Not used		
4364	VDO fuel 105.2	Relay output B	Not used Option-dep.	Not used		
4365	VDO fuel 105.2	Enable	OFF ON	OFF		
4366	VDO fuel 105.2	Fail class	F1...F8	Warning (F2)		
4370 Wire fail 105						
4371	W. fail 105	Relay output A	Not used Option-dep.	Not used	Designer's Reference Handbook	The wire break fault detection is activated.
4372	W. fail 105	Relay output B	Not used Option-dep.	Not used		
4373	W. fail 105	Enable	OFF ON	OFF		
4374	W. fail 105	Fail class	F1...F8	Warning (F2)		

2.7.3 Multi-input no. 108



The available menus for multi-input no. 108 depend on the input type configured in the PC utility software (menu 11000).

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4380 4-20 mA 108.1						
4381	4-20 mA 108.1	Setpoint	4 mA 20 mA	10 mA	Designer's Reference Handbook	The multi-input 108 has been configured as 4-20 mA.
4382	4-20 mA 108.1	Timer	0.0 s 999.0 s	120.0 s		
4383	4-20 mA 108.1	Relay output A	Not used Option- dep.	Not used		
4384	4-20 mA 108.1	Relay output B	Not used Option- dep.	Not used		
4385	4-20 mA 108.1	Enable	OFF ON	OFF		
4386	4-20 mA 108.1	Fail class	F1...F8	Warning (F2)		
4390 4-20 mA 108.2						
4391	4-20 mA 108.2	Setpoint	4 mA 20 mA	10 mA	Designer's Reference Handbook	The multi-input 108 has been configured as 4-20 mA.
4392	4-20 mA 108.2	Timer	0.0 s 999.0 s	120.0 s		
4393	4-20 mA 108.2	Relay output A	Not used Option- dep.	Not used		
4394	4-20 mA 108.2	Relay output B	Not used Option- dep.	Not used		
4395	4-20 mA 108.2	Enable	OFF ON	OFF		
4396	4-20 mA 108.2	Fail class	F1...F8	Warning (F2)		
4400 V DC 108.1						
4401	V DC 108.1	Setpoint	0.0V DC 40.0V DC	20.0V DC	Designer's Reference Handbook	The multi-input 108 has been configured as V DC.
4402	V DC 108.1	Timer	0.2 s 999.0 s	10.0 s		
4403	V DC 108.1	Relay output A	Not used Option- dep.	Not used		
4404	V DC 108.1	Relay output B	Not used Option- dep.	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4405	V DC 108.1	Enable	OFF ON	OFF			
4406	V DC 108.1	Fail class	F1...F8	Warning (F2)			
4410 V DC 108.2							
4411	V DC 108.2	Setpoint	0.0V DC 40.0V DC	20.0V DC		Designer's Reference Handbook	The multi-input 108 has been configured as V DC.
4412	V DC 108.2	Timer	0.2 s 999.0 s	10.0 s			
4413	V DC 108.2	Relay output A	Not used Option-dep.	Not used			
4414	V DC 108.2	Relay output B	Not used Option-dep.	Not used			
4415	V DC 108.2	Enable	OFF ON	OFF			
4416	V DC 108.2	Fail class	F1...F8	Warning (F2)			
4420 Pt100 108.1							
4421	PT 108.1	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 108 has been configured as Pt100. Pt100 setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4422	PT 108.1	Timer	0.0 s 999.0 s	5.0 s			
4423	PT 108.1	Relay output A	Not used Option-dep.	Not used			
4424	PT 108.1	Relay output B	Not used Option-dep.	Not used			
4425	PT 108.1	Enable	OFF ON	OFF			
4426	PT 108.1	Fail class	F1...F8	Warning (F2)			
4430 Pt100 108.2							
4431	PT 108.2	Setpoint	-49 482	80		Designer's Reference Handbook	The multi-input 108 has been configured as Pt100. Pt100 setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4432	PT 108.2	Timer	0.0 s 999.0 s	10.0 s			
4433	PT 108.2	Relay output A	Not used Option-dep.	Not used			
4434	PT 108.2	Relay output B	Not used Option-dep.	Not used			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4435	PT 108.2	Enable	OFF ON	OFF			
4436	PT 108.2	Fail class	F1...F8	Warning (F2)			
4440 VDO oil 108.1							
4441	VDO oil 108.1	Setpoint	0.0 145.0	4.0		Designer's Reference Handbook	The multi-input 108 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4442	VDO oil 108.1	Timer	0.0 s 999.0 s	5.0 s			
4443	VDO oil 108.1	Relay output A	Not used Option-dep.	Not used			
4444	VDO oil 108.1	Relay output B	Not used Option-dep.	Not used			
4445	VDO oil 108.1	Enable	OFF ON	OFF			
4446	VDO oil 108.1	Fail class	F1...F8	Warning (F2)			
4450 VDO oil 108.2							
4451	VDO oil 108.2	Setpoint	0.0 145.0	5.0		Designer's Reference Handbook	The multi-input 108 has been configured as VDO oil pressure. Oil pressure setpoint can be in Bar or PSI, dependent on the unit selection (menu 10970).
4452	VDO oil 108.2	Timer	0.0 s 999.0 s	5.0 s			
4453	VDO oil 108.2	Relay output A	Not used Option-dep.	Not used			
4454	VDO oil 108.2	Relay output B	Not used Option-dep.	Not used			
4455	VDO oil 108.2	Enable	OFF ON	OFF			
4456	VDO oil 108.2	Fail class	F1...F8	Warning (F2)			
4460 VDO water 108.1							
4461	VDO water 108.1	Setpoint	-49 482	100		Designer's Reference Handbook	The multi-input 108 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4462	VDO water 108.1	Timer	0.0 s 999.0 s	5.0 s			
4463	VDO water 108.1	Relay output A	Not used Option-dep.	Not used			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4460 VDO water 108.1						
4464	VDO water 108.1	Relay output B	Not used Option-dep.	Not used		
4465	VDO water 108.1	Enable	OFF ON	OFF		
4466	VDO water 108.1	Fail class	F1...F8	Warning (F2)		
4470 VDO water 108.2						
4471	VDO water 108.2	Setpoint	-49 482	110	Designer's Reference Handbook	The multi-input 108 has been configured as VDO water temperature. Water temperature setpoint can be in deg. C or F, dependent on the unit selection (menu 10970).
4472	VDO water 108.2	Timer	0.0 s 999.0 s	5.0 s		
4473	VDO water 108.2	Relay output A	Not used Option-dep.	Not used		
4474	VDO water 108.2	Relay output B	Not used Option-dep.	Not used		
4475	VDO water 108.2	Enable	OFF ON	OFF		
4476	VDO water 108.2	Fail class	F1...F8	Warning (F2)		
4480 VDO fuel level 108.1						
4481	VDO fuel 108.1	Setpoint	0% 100%	10%	Designer's Reference Handbook	The multi-input 108 has been configured as VDO fuel level.
4482	VDO fuel 108.1	Timer	0.0 s 999.0 s	10.0 s		
4483	VDO fuel 108.1	Relay output A	Not used Option-dep.	Not used		
4484	VDO fuel 108.1	Relay output B	Not used Option-dep.	Not used		
4485	VDO fuel 108.1	Enable	OFF ON	OFF		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4486	VDO fuel 108.1	Fail class	F1...F8	Warning (F2)			
4490 VDO fuel level 108.2							
4491	VDO fuel 108.2	Setpoint	0% 100%	5%		Designer's Reference Handbook	The multi-input 108 has been configured as VDO fuel level.
4492	VDO fuel 108.2	Timer	0.0 s 999.0 s	10.0 s			
4493	VDO fuel 108.2	Relay output A	Not used Option-dep.	Not used			
4494	VDO fuel 108.2	Relay output B	Not used Option-dep.	Not used			
4495	VDO fuel 108.2	Enable	OFF ON	OFF			
4496	VDO fuel 108.2	Fail class	F1...F8	Warning (F2)			
4500 Wire fail 108							
4501	W. fail 108	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wire break fault detection is activated.
4502	W. fail 108	Relay output B	Not used Option-dep.	Not used			
4503	W. fail 108	Enable	OFF ON	OFF			
4504	W. fail 108	Fail class	F1...F8	Warning (F2)			

2.7.4 Speed and running feedback setup

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4510 Overspeed 1						
4511	Over-speed 1	Set-point	100.0% 150.0%	110.0%	Designer's Reference Handbook	The setpoint in percentage relates to nominal RPM.
4512	Over-speed 1	Timer	0.0 s 100.0 s	5.0 s		
4513	Over-speed 1	Relay output A	Not used Option-dep.	Not used		
4514	Over-speed 1	Relay output B	Not used Option-dep.	Not used		
4515	Over-speed 1	Enable	OFF ON	OFF		
4516	Over-speed 1	Fail class	F1...F8	Warning (F2)		
4520 Overspeed 2						
4521	Over-speed 2	Set-point	100.0% 150.0%	120.0%	Designer's Reference Handbook	The setpoint in percentage relates to nominal RPM.
4522	Over-speed 2	Timer	0.0 s 100.0 s	1.0 s		
4523	Over-speed 2	Relay output A	Not used Option-dep.	Not used		
4524	Over-speed 2	Relay output B	Not used Option-dep.	Not used		
4525	Over-speed 2	Enable	OFF ON	OFF		
4526	Over-speed 2	Fail class	F1...F8	Wg (F5)		
4530 Crank failure						
4531	Crank failure	Set-point	1 RPM 400 RPM	50 RPM	Designer's Reference Handbook	If MPU is chosen as the primary running feedback, this alarm will be raised if the specified RPM is not reached before the delay has expired.
4532	Crank failure	Timer	0.0 s 20.0 s	2.0 s		
4533	Crank failure	Relay output A	Not used Option-dep.	Not used		
4534	Crank failure	Relay output B	Not used Option-dep.	Not used		
4535	Crank failure	Enable	OFF ON	OFF		
4536	Crank failure	Fail class	F1...F8	Warning (F2)		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4540 Running feedback failure							
4541	Run feedb. fail	Timer	0.0 s 20.0 s	2.0 s		Designer's Reference Handbook	If running is detected on the frequency (secondary), but the primary running feedback, e.g. digital input, has not detected running, this alarm will be raised after the adjusted delay time.
4542	Run feedb. fail	Relay output A	Not used Option-dep.	Not used			
4543	Run feedb. fail	Relay output B	Not used Option-dep.	Not used			
4544	Run feedb. fail	Enable	ON	ON			
4545	Run feedb. fail	Fail class	F1...F8	Warning (F2)			
4550 Magnetic pick-up wirebreak							
4551	MPU wire-break	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wirebreak monitoring is only active when the engine is at standstill.
4552	MPU wire-break	Relay output B	Not used Option-dep.	Not used			
4553	MPU wire-break	Enable	OFF ON	OFF			
4554	MPU wire-break	Fail class	F1...F8	Warning (F2)			
4560 Hz/voltage failure							
4561	Hz/V failure	Timer	1.0 s 99.0 s	30.0 s		Designer's Reference Handbook	If the frequency and voltage are not within the limits after the running feedback is received, this alarm will be raised when the delay time has expired. Limits are placed in menu 2110 (Sync. blackout).
4562	Hz/V failure	Relay output A	Not used Option-dep.	Not used			
4563	Hz/V failure	Relay output B	Not used Option-dep.	Not used			
4564	Hz/V failure	Enable	OFF ON	ON			
4565	Hz/V failure	Fail class	F1...F8	Shut-down (F5)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4570 Start failure							
4571	Start failure	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The start failure alarm occurs if the genset has not started after the number of start attempts.
4572	Start failure	Relay output B	Not used Option-dep.	Not used			
4573	Start failure	Fail class	F1...F8	Block (F1)			
4580 Stop failure							
4581	Stop failure	Timer	10.0 s 120.0 s	30.0 s		Designer's Reference Handbook	A stop failure alarm will appear if the primary running feedback or the generator voltage and frequency are still present after the delay time has expired.
4582	Stop failure	Relay output A	Not used Option-dep.	Not used			
4583	Stop failure	Relay output B	Not used Option-dep.	Not used			
4584	Stop failure	Enable	OFF ON	ON			
4585	Stop failure	Fail class	F1...F8	Shut-down (F5)			
4590 Underspeed 1							
4591	Underspeed	Set-point	50.0% 100.0%	90.0%		Designer's Reference Handbook	The setpoint in percentage relates to nominal RPM.
4592	Underspeed	Timer	0.0 s 100.0 s	5.0 s			
4593	Underspeed	Relay output A	Not used Option-dep.	Not used			
4594	Underspeed	Relay output B	Not used Option-dep.	Not used			
4595	Underspeed	Enable	OFF ON	OFF			
4596	Underspeed	Fail class	F1...F8	Warning (F2)			

2.7.5 Differential measurement

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4600 Delta analogue 1.1							
4601	Delta Ana1 InpA	Input	Multi-input 102-EIC	Multi-input 102		Designer's Reference Handbook	Inputs for differential measurements can be chosen as the list below shows: Input: <ul style="list-style-type: none"> - Multi-input 102 - Multi-input 105 - Multi-input 108 - Ext. I/O analog In 1-8 - EIC oil pressure - EIC cooling water temp. - EIC oil temp. - EIC ambient temp. - EIC intercool temp. - EIC fuel temp. - EIC fuel delivery press - EIC air filter f1 diff. press. - EIC air filter f2 diff. press. - EIC fuel supply pump press. - EIC fuel filter diff. press. - EIC oil filter diff. press. - EIC T. exhaust left - EIC T. exhaust right - EIC P. fuel f diff.
4602	Delta Ana1 InpB	Input	Multi-input 102-EIC	Multi-input 102			
4603	Delta Ana2 InpA	Input	Multi-input 102-EIC	Multi-input 102			
4604	Delta Ana2 InpB	Input	Multi-input 102-EIC	Multi-input 102			
4605	Delta Ana3 InpA	Input	Multi-input 102-EIC	Multi-input 102			
4606	Delta Ana3 InpB	Input	Multi-input 102-EIC	Multi-input 102			
4610 Delta analogue 1.1							
4611	Delta Ana1.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 1.1
4612	Delta Ana1.1	Timer	0.0 s 999.0 s	5.0 s			
4613	Delta Ana1.1	Relay output A	Not used Option-dep.	Not used			
4614	Delta Ana1.1	Relay output B	Not used Option-dep.	Not used			
4615	Delta Ana1.1	Enable	OFF ON	OFF			
4616	Delta Ana1.1	Fail class	F1...F8	Warning (F2)			
4620 Delta analogue 1.2							
4621	Delta Ana1.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 1.2
4622	Delta Ana1.2	Timer	0.0 s 999.0 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4623	Delta Ana1.2	Relay output A	Not used Option-dep.	Not used			
4624	Delta Ana1.2	Relay output B	Not used Option-dep.	Not used			
4625	Delta Ana1.2	Enable	OFF ON	OFF			
4626	Delta Ana1.2	Fail class	F1...F8	Warning (F2)			
4630 Delta analogue 2.1							
4631	Delta Ana2.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 2.1
4632	Delta Ana2.1	Timer	0.0 s 999.0 s	5.0 s			
4633	Delta Ana2.1	Relay output A	Not used Option-dep.	Not used			
4634	Delta Ana2.1	Relay output B	Not used Option-dep.	Not used			
4635	Delta Ana2.1	Enable	OFF ON	OFF			
4636	Delta Ana2.1	Fail class	F1...F8	Warning (F2)			
4640 Delta analogue 2.2							
4641	Delta Ana2.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 2.2
4642	Delta Ana2.2	Timer	0.0 s 999.0 s	5.0 s			
4643	Delta Ana2.2	Relay output A	Not used Option-dep.	Not used			
4644	Delta Ana2.2	Relay output B	Not used Option-dep.	Not used			
4645	Delta Ana2.2	Enable	OFF ON	OFF			
4646	Delta Ana2.2	Fail class	F1...F8	Warning (F2)			
4650 Delta analogue 3.1							
4651	Delta Ana3.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 3.1
4652	Delta Ana3.1	Timer	0.0 s 999.0 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4653	Delta Ana3.1	Relay output A	Not used Option-dep.	Not used			
4654	Delta Ana3.1	Relay output B	Not used Option-dep.	Not used			
4655	Delta Ana3.1	Enable	OFF ON	OFF			
4656	Delta Ana3.1	Fail class	F1...F8	Warning (F2)			
4660 Delta analogue 3.2							
4661	Delta Ana3.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 3.2
4662	Delta Ana3.2	Timer	0.0 s 999.0 s	5.0 s			
4663	Delta Ana3.2	Relay output A	Not used Option-dep.	Not used			
4664	Delta Ana3.2	Relay output B	Not used Option-dep.	Not used			
4665	Delta Ana3.2	Enable	OFF ON	OFF			
4666	Delta Ana3.2	Fail class	F1...F8	Warning (F2)			
4670 Delta analog input 4, 5, 6							
4671	Delta Ana4 InpA	Input	Multi-input 102-EIC	Multi-input 102		Designer's Reference Handbook	Inputs for differential measurements can be chosen as the list below shows: Input: <ul style="list-style-type: none"> - Multi-input 102 - Multi-input 105 - Multi-input 108 - Ext. I/O analog In 1-8 - EIC oil pressure - EIC cooling water temp. - EIC oil temp. - EIC ambient temp. - EIC intercool temp. - EIC fuel temp. - EIC fuel delivery press - EIC air filter f1 diff. press. - EIC air filter f2 diff. press. - EIC fuel supply pump press. - EIC fuel filter diff. press. - EIC oil filter diff. press.
4672	Delta Ana4 InpB	Input	Multi-input 102-EIC	Multi-input 102			
4673	Delta Ana5 InpA	Input	Multi-input 102-EIC	Multi-input 102			
4674	Delta Ana5 InpB	Input	Multi-input 102-EIC	Multi-input 102			
4675	Delta Ana6 InpA	Input	Multi-input 102-EIC	Multi-input 102			
4676	Delta Ana6 InpB	Input	Multi-input 102-EIC	Multi-input 102			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
							- EIC T. exhaust left - EIC T. exhaust right - EIC P. fuel f diff.
4680 Delta analogue 4.1							
4681	Delta Ana4.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 4.1
4682	Delta Ana4.1	Timer	0.0 s 999.0 s	5.0 s			
4683	Delta Ana4.1	Relay output A	Not used Option-dep.	Not used			
4684	Delta Ana4.1	Relay output B	Not used Option-dep.	Not used			
4685	Delta Ana4.1	Enable	OFF ON	OFF			
4686	Delta Ana4.1	Fail class	F1...F8	Warning (F2)			
4690 Delta analogue 4.2							
4691	Delta Ana4.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 4.2
4692	Delta Ana4.2	Timer	0.0 s 999.0 s	5.0 s			
4693	Delta Ana4.2	Relay output A	Not used Option-dep.	Not used			
4694	Delta Ana4.2	Relay output B	Not used Option-dep.	Not used			
4695	Delta Ana4.2	Enable	OFF ON	OFF			
4696	Delta Ana4.2	Fail class	F1...F8	Warning (F2)			
4700 Delta analogue 5.1							
4701	Delta Ana5.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 5.1
4702	Delta Ana5.1	Timer	0.0 s 999.0 s	5.0 s			
4703	Delta Ana5.1	Relay output A	Not used Option-dep.	Not used			
4704	Delta Ana5.1	Relay output B	Not used Option-dep.	Not used			
4705	Delta Ana5.1	Enable	OFF ON	OFF			
4706	Delta Ana5.1	Fail class	F1...F8	Warning (F2)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4710 Delta analogue 5.2							
4711	Delta Ana5.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 5.2
4712	Delta Ana5.2	Timer	0.0 s 999.0 s	5.0 s			
4713	Delta Ana5.2	Relay output A	Not used Option-dep.	Not used			
4714	Delta Ana5.2	Relay output B	Not used Option-dep.	Not used			
4715	Delta Ana5.2	Enable	OFF ON	OFF			
4716	Delta Ana5.2	Fail class	F1...F8	Warning (F2)			
4720 Delta analogue 6.1							
4721	Delta Ana6.1	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 6.1
4722	Delta Ana6.1	Timer	0.0 s 999.0 s	5.0 s			
4653	Delta Ana6.1	Relay output A	Not used Option-dep.	Not used			
4724	Delta Ana6.1	Relay output B	Not used Option-dep.	Not used			
4725	Delta Ana6.1	Enable	OFF ON	OFF			
4726	Delta Ana6.1	Fail class	F1...F8	Warning (F2)			
4730 Delta analogue 6.2							
4731	Delta Ana6.2	Setpoint	-9999 9999	10		Designer's Reference Handbook	Delta analogue alarm setting 6.2
4732	Delta Ana6.2	Timer	0.0 s 999.0 s	5.0 s			
4733	Delta Ana6.2	Relay output A	Not used Option-dep.	Not used			
4734	Delta Ana6.2	Relay output B	Not used Option-dep.	Not used			
4735	Delta Ana6.2	Enable	OFF ON	OFF			
4736	Delta Ana6.2	Fail class	F1...F8	Warning (F2)			

2.7.6 Aux. supply setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
4960 U< auxiliary power supply terminal 1							
4961	U< aux. term. 1	Setpoint	8.0V DC 32.0V DC	18.0V DC		Designer's Reference Handbook	The power supply on terminal 1 and 2 has been continuously below the adjusted setpoint during the programmed delay.
4962	U< aux. term. 1	Timer	0.0 s 999.0 s	1.0 s			
4963	U< aux. term. 1	Relay output A	Not used Option-dep.	Not used			
4964	U< aux. term. 1	Relay output B	Not used Option-dep.	Not used			
4965	U< aux. term. 1	Enable	OFF ON	ON			
4966	U< aux. term. 1	Fail class	F1...F8	Warning (F2)			
4970 U> auxiliary power supply terminal 1							
4971	U> aux. term. 1	Setpoint	12.0V DC 36.0V DC	30.0V DC		Designer's Reference Handbook	The power supply on terminal 1 and 2 has been continuously above the adjusted setpoint during the programmed delay.
4972	U> aux. term. 1	Timer	0.0 s 999.0 s	1.0 s			
4973	U> aux. term. 1	Relay output A	Not used Option-dep.	Not used			
4974	U> aux. term. 1	Relay output B	Not used Option-dep.	Not used			
4975	U> aux. term. 1	Enable	OFF ON	ON			
4976	U> aux. term. 1	Fail class	F1...F8	Warning (F2)			
4980 U< auxiliary power supply terminal 98							
4981	U> aux. term. 98	Setpoint	8.0V DC 32.0V DC	18.0V DC		Designer's Reference Handbook	The power supply on terminal 98 and 99 has been continuously below the adjusted setpoint during the programmed delay.
4982	U> aux. term. 98	Timer	0.0 s 999.0 s	1.0 s			
4983	U> aux. term. 98	Relay output A	Not used Option-dep.	Not used			
4984	U> aux. term. 98	Relay output B	Not used Option-dep.	Not used			
4985	U> aux. term. 98	Enable	OFF ON	ON			
4986	U> aux. term. 98	Fail class	F1...F8	Warning (F2)			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
4990 U> auxiliary power supply terminal 98						
4991	U> aux. term. 98	Setpoint	12.0V DC 36.0V DC	30.0V DC	Designer's Reference Handbook	The power supply on terminal 98 and 99 has been continu- ously above the adjusted set- point during the programmed delay.
4992	U> aux. term. 98	Timer	0.0 s 999.0 s	1.0 s		
4993	U> aux. term. 98	Relay output A	Not used Option- dep.	Not used		
4994	U> aux. term. 98	Relay output B	Not used Option- dep.	Not used		
4995	U> aux. term. 98	Enable	OFF ON	ON		
4996	U> aux. term. 98	Fail class	F1...F8	Warning (F2)		

2.8 System parameters - general setup

2.8.1 Stop coil wirebreak and internal communication alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6270 Stop coil wirebreak							
6271	Stop coil wirebreak	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	The wirebreak monitoring is only active when the stop coil output is deactivated.
6272	Stop coil wirebreak	Relay output B	Not used Option-dep.	Not used			
6273	Stop coil wirebreak	Enable	OFF ON	OFF			
6274	Stop coil wirebreak	Fail class	F1...F8	Warning (F2)			
6280 Internal communication fail							
6281	Int. comm. fail	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	This is the alarm for communication fail between the main processor and the engine interface processor. The alarm will also occur if there is no supply on terminal 98-99 for Option M4.
6282	Int. comm. fail	Relay output B	Not used Option-dep.	Not used			
6283	Int. comm. fail	Fail class	F1...F8	Warning (F2)			

2.8.2 Engine heater failure

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6330 Engine heater 1							
6331	Engine heater 1	Set point	10 deg 250 deg	30 deg		Designer's Reference Handbook	
6332	Engine heater 1	Timer	1.0 s 300.0 s	10.0 s			
6333	Engine heater 1	Relay output A	Not used Option-dep.	Not used			
6334	Engine heater 1	Relay output B	Not used Option-dep.	Not used			
6335	Engine heater 1	Enable	OFF ON	OFF			
6336	Engine heater 1	Fail class	F1...F8	Warning (F2)			

2.8.3 Running detection

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6350 Running detection							
6351	Running detection	Timer	1.0 s 1200.0 s	10.0 s		Designer's Reference Handbook	
6352	Ext. eng. Stop	Timer	1.0 s 1200.0 s	10.0 s			
6353	Ext. eng. Stop	Enable	OFF ON	OFF			
6354	Ext. eng. Stop	Fail class	F1...F8	Warning (F2)			

2.8.4 Battery tests

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6410 Battery test							
6411	Battery test	Setpoint	8.0 V 32.0 V	18.0 V		Designer's Reference Handbook	If the battery voltage drops below setpoint during crank test the alarm activates.
6412	Battery test	Timer	1 s 300 s	20 s			
6413	Battery test	Type	Power supply Multi-input 102 Multi-input 105 Multi-input 108 Power supply 98/99	Power supply			
6414	Battery test	Relay output A	Not used Option-dep.	Not used			
6415	Battery test	Enable	OFF ON	OFF			
6416	Battery test	Fail class	F1...F8	Warning (F2)			
6420 Auto battery test							
6421	Auto batt test	Enable	On Off	Off		Designer's Reference Handbook	Automatic battery test time setting.
6422	Auto batt test	Day	Monday Sunday	Monday			
6423	Auto batt test	Hours	0 h 23 h	10h			
6424	Auto batt test	Week	1 52	52			
6425	Auto batt test	Relay output A	Not used Option-dep.	Not used			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6430 Battery asymmetry						
6431	Batt. asymme- try	T1	Power sup- ply Multi-input 102 Multi-input 105 Multi-input 108 Power sup- ply 98/99	Multi-in- put 105	Designer's Reference Handbook	Battery asymmetry in- put selections.
6432	Batt. asymme- try	RF1	Power sup- ply Multi-input 102 Multi-input 105 Multi-input 108 Power sup- ply 98/99	Power supply		
6433	Batt. asymme- try	T2	Power sup- ply Multi-input 102 Multi-input 105 Multi-input 108 Power sup- ply 98/99	Multi-in- put 108		
6434	Batt. asymme- try	RF2	Power sup- ply Multi-input 102 Multi-input 105 Multi-input 108 Power sup- ply 98/99	Multi-in- put 102		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6440 Battery asymmetry 1							
6441	Battery asym 1	Setpoint	0.1 V 15.0 V	1.0 V		Designer's Reference Handbook	If the battery voltage asymmetry between the single batteries exceeds the setting, the alarm will activate.
6442	Battery asym 1	Timer	0.0 s 10.0 s	1.0 s			
6443	Battery asym 1	Relay output A	Not used Option-dep.	Not used			
6444	Battery asym 1	Relay output B	Not used Option-dep.	Not used			
6445	Battery asym 1	Enable	OFF ON	OFF			
6450 Battery asymmetry 2							
6451	Battery asym 2	Setpoint	0.1 V 15.0 V	1.0 V		Designer's Reference Handbook	If the battery voltage asymmetry between the single batteries exceeds the setting, the alarm will activate.
6452	Battery asym 2	Timer	0.0 s 10.0 s	1.0 s			
6453	Battery asym 2	Relay output A	Not used Option-dep.	Not used			
6454	Battery asym 2	Relay output B	Not used Option-dep.	Not used			
6455	Battery asym 2	Enable	OFF ON	OFF			

2.8.5 Max. ventilation

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6470 Max vent 1						
6471	Max vent 1	Set point	20 deg 250 deg	95 deg	Designer's Reference Handbook	If the cooling fans fail to operate and the coolant temperature exceeds the setting, the alarm will activate.
6472	Max vent 1	Timer	0.0 s 60.0 s	1.0 s		
6473	Max vent 1	Relay output A	Not used Option-dep.	Not used		
6474	Max vent 1	Relay output B	Not used Option-dep.	Not used		
6475	Max vent 1	Enable	OFF ON	OFF		
6476	Max vent 1	Fail class	F1...F8	Warning (F2)		
6480 Max vent 2						
6481	Max vent 2	Set point	20 deg 250 deg	98 deg	Designer's Reference Handbook	If the cooling fans fail to operate and the coolant temperature exceeds the setting, the alarm will activate.
6482	Max vent 2	Timer	0.0 s 60.0 s	1.0 s		
6483	Max vent 2	Relay output A	Not used Option-dep.	Not used		
6484	Max vent 2	Relay output B	Not used Option-dep.	Not used		
6485	Max vent 2	Enable	OFF ON	OFF		
6486	Max vent 2	Fail class	F1...F8	Shut-down (F5)		

2.8.6 Switchboard error - Block and Stop

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6500 Block switchboard error							
6501	Blk. swbd er- ror	Timer	0.0 s 999.0 s	10.0 s		Designer's Reference Handbook	If the binary input "switchboard error" activates, a stopped generator will be blocked for start. Parameter 6502: OFF: Only AMF start is affected. ON: All starts are affected.
6502	Blk. swbd er- ror	Parallel	ON OFF	OFF			
6503	Blk. swbd er- ror	Relay output A	Not used Option- dep.	Not used			
6504	Blk. swbd er- ror	Relay output B	Not used Option- dep.	Not used			
6505	Blk. swbd er- ror	Enable	OFF ON	OFF			
6506	Blk. swbd er- ror	Fail class	F1...F8	Warning (F2)			
6510 Stop switchboard error							
6511	Stp. swbd er- ror	Timer	0.0 s 999.0 s	1.0 s		Designer's Reference Handbook	If the binary input "switchboard error" activates, the generator will be stopped.
6512	Stp. swbd er- ror	Relay output A	Not used Option- dep.	Not used			
6513	Stp. swbd er- ror	Relay output B	Not used Option- dep.	Not used			
6514	Stp. swbd er- ror	Enable	OFF ON	OFF			
6515	Stp. swbd er- ror	Fail class	F1...F8	Shut- down (F5)			

2.8.7 Switchboard error - Not in auto

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6540 Not in auto							
6541	Not in auto	Timer	10.0 s 900.0 s	300.0 s		Designer's Reference Handbook	
6542	Not in auto	Relay output A	Not used Option-dep.	Not used			
6543	Not in auto	Relay output B	Not used Option-dep.	Not used			
6544	Not in auto	Enable	OFF ON	OFF			
6545	Not in auto	Fail class	F1...F8	Warning (F2)			

2.8.8 Oil renewal

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6890 Oil renewal							
6891	Oil renewal	Setpoint	1 h 999 h	750 h		Designer's Reference Handbook	Setup of oil renewal.
6892	Oil renewal	Relay output A	Not used Option-dep.	Not used			
6893	Oil renewal	Relay output B	Not used Option-dep.	Not used			
6894	Oil renewal	Password level	Basic Customer Service	Basic			

2.8.9 Avg U BB

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7480 Avg U BB> 1							
7481	Avg U BB> 1	Setpoint	100.0% 120.0%	110.0%		Option A1	Busbar overvoltage alarm based on average measure- ment of the voltage of the busbar.
7482	Avg U BB> 1	Timer	0.1 s 3200.0 s	10.0 s			
7483	Avg U BB> 1	Relay output A	Not used Option-dep.	Not used			
7484	Avg U BB> 1	Enable	OFF ON	OFF			
7485	Avg U BB> 1	Fail class	F1...F8	Warning (F2)			
7486	Avg U BB> 1	AVG timer	30.0 s 900.0 s	600.0 s			
7490 Avg U BB> 2							
7491	Avg U BB> 2	Setpoint	100.0% 120.0%	110.0%		Option A1	Busbar overvoltage alarm based on average measure- ment of the voltage of the busbar.
7492	Avg U BB> 2	Timer	0.1 s 3200.0 s	10.0 s			
7493	Avg U BB> 2	Relay output A	Not used Option-dep.	Not used			
7494	Avg U BB> 2	Enable	OFF ON	OFF			
7495	Avg U BB> 2	Fail class	F1...F8	Warning (F2)			
7496	Avg U BB> 2	AVG timer	30.0 s 900.0 s	600.0 s			

2.9 System parameters - communication

2.9.1 External communication error

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7520 External communication error							
7521	Ext. comm. error	Delay	1.0 s 100.0 s	10.0 s		Option: Modbus (H2) Profibus (H3)	Supervision of the external communication line. The alarm will occur when there has not been any communication during the time delay.
7522	Ext. comm. error	Relay output A	Not used Option-dep.	Not used			
7523	Ext. comm. error	Relay output B	Not used Option-dep.	Not used			
7524	Ext. comm. error	Enable	OFF ON	OFF			
7525	Ext. comm. error	Fail class	F1...F8	Warning (F2)			
7530 Internal communication ID							
						Designer's Reference Handbook	The mode decides the reaction of the power management system in case of different errors on the CAN communication lines. Mode: - Manual - Semi auto - No mode change
7532	Int. comm. ID	CAN fail. mode	Manual Semi auto No mode change	Manual			
7533	Int. comm. ID	Missing all units	F1...F8	Warning (F2)			
7534	Int. comm. ID	Fatal CAN error	F1...F8	Warning (F2)			
7535	Int. comm. ID	Any DG missing	F1...F8	Warning (F2)			
7536	Int. comm. ID	Any mains missing	F1...F8	Warning (F2)			

2.9.2 Engine interface communication alarms

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7570 EI comm. error							
7571	EI comm. error	Timer	0.0 s 100.0 s	0.0 s		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	Supervision of the EIC communication line. The alarm will occur when there has not been any communication during the time delay.
7572	EI comm. error	Relay output A	Not used Option-dep.	Not used			
7573	EI comm. error	Relay output B	Not used Option-dep.	Not used			
7574	EI comm. error	Enable	OFF ON	ON			
7575	EI comm. error	Fail class	F1...F8	Warning (F2)			
7580 EIC warning							
7581	EIC warning	Timer	0.0 s 100.0 s	0.0 s		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7582	EIC warning	Relay output A	Not used Option-dep.	Not used			
7583	EIC warning	Relay output B	Not used Option-dep.	Not used			
7584	EIC warning	Enable	OFF ON	ON			
7585	EIC warning	Fail class	F1...F8	Warning (F2)			
7590 EIC shutdown							
7591	EIC shutdown	Timer	0.0 s 100.0 s	0.0 s		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7592	EIC shutdown	Relay output A	Not used Option-dep.	Not used			
7593	EIC shutdown	Relay output B	Not used Option-dep.	Not used			
7594	EIC shutdown	Enable	OFF ON	OFF			
7595	EIC shutdown	Fail class	F1...F8	Shutdown (F5)			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7600 EIC overspeed							
7601	EIC over-speed	Setpoint	100.0% 150.0%	110.0%		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7602	EIC over-speed	Timer	0.0 s 100.0 s	5.0 s			
7603	EIC over-speed	Relay output A	Not used Option-dep.	Not used			
7604	EIC over-speed	Relay output B	Not used Option-dep.	Not used			
7605	EIC over-speed	Enable	OFF ON	OFF			
7606	EIC over-speed	Fail class	F1...F8	Warning (F2)			
7610 EIC coolant temp. 1							
7611	EIC coolant t. 1	Setpoint	-40 deg 410 deg	100 deg		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7612	EIC coolant t. 1	Timer	0.0 s 100.0 s	5.0 s			
7613	EIC coolant t. 1	Relay output A	Not used Option-dep.	Not used			
7614	EIC coolant t. 1	Relay output B	Not used Option-dep.	Not used			
7615	EIC coolant t. 1	Enable	OFF ON	OFF			
7616	EIC coolant t. 1	Fail class	F1...F8	Warning (F2)			
7620 EIC coolant temp. 2							
7621	EIC coolant t. 2	Setpoint	-40 deg 410 deg	110 deg		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7622	EIC coolant t. 2	Timer	0.0 s 100.0 s	5.0 s			
7623	EIC coolant t. 2	Relay output A	Not used Option-dep.	Not used			
7624	EIC coolant t. 2	Relay output B	Not used Option-dep.	Not used			
7625	EIC coolant t. 2	Enable	OFF ON	OFF			
7626	EIC coolant t. 2	Fail class	F1...F8	Warning (F2)			
7630 EIC oil pressure 1							
7631	EIC oil press. 1	Setpoint	0.0 bar 145.0 bar	2.0 bar		Option: J1939 and MTU ADEC/ MDEC (H5)	
7632	EIC oil press. 1	Timer	0.0 s 100.0 s	5.0 s			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
7633	EIC oil press. 1	Relay output A	Not used Option-dep.	Not used	Cummins Modbus (H6) J1939 (H7)	
7634	EIC oil press. 1	Relay output B	Not used Option-dep.	Not used		
7635	EIC oil press. 1	Enable	OFF ON	OFF		
7636	EIC oil press. 1	Fail class	F1...F8	Warning (F2)		
7640 EIC oil pressure 2						
7641	EIC oil press. 2	Setpoint	0.0 bar 145.0 bar	1.0 bar	Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7642	EIC oil press. 2	Timer	0.0 s 100.0 s	5.0 s		
7643	EIC oil press. 2	Relay output A	Not used Option-dep.	Not used		
7644	EIC oil press. 2	Relay output B	Not used Option-dep.	Not used		
7645	EIC oil press. 2	Enable	OFF ON	OFF		
7646	EIC oil press. 2	Fail class	F1...F8	Shutdown (F5)		
7650 EIC oil temp 1						
7651	EIC oil temp. 1	Setpoint	0 deg 410 deg	40 deg	Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7652	EIC oil temp. 1	Timer	0.0 s 100.0 s	5.0 s		
7653	EIC oil temp. 1	Relay output A	Not used Option-dep.	Not used		
7654	EIC oil temp. 1	Relay output B	Not used Option-dep.	Not used		
7655	EIC oil temp. 1	Enable	OFF ON	OFF		
7656	EIC oil temp. 1	Fail class	F1...F8	Warning (F2)		
7660 EIC oil temp 2						
7661	EIC oil temp. 2	Setpoint	0 deg 410 deg	50 deg	Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7662	EIC oil temp. 2	Timer	0.0 s 100.0 s	5.0 s		
7663	EIC oil temp. 2	Relay output A	Not used Option-dep.	Not used		
7664	EIC oil temp. 2	Relay output B	Not used Option-dep.	Not used		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
7665	EIC oil temp. 2	Enable	OFF ON	OFF		
7666	EIC oil temp. 2	Fail class	F1...F8	Shutdown (F5)		
7670 EIC coolant level 1						
7671	EIC coolant level 1	Setpoint	0% 100%	20%	Designer's Reference Handbook/option: Cummins Modbus (H6) J1939 and MTU ADEC/ MDEC (H5) J1939 (H7)	
7672	EIC coolant level 1	Timer	0.0 s 100.0 s	5.0 s		
7673	EIC coolant level 1	Relay output A	Not used Variant-dep.	Not used		
7674	EIC coolant level 1	Relay output B	Not used Variant-dep.	Not used		
7675	EIC coolant level 1	Enable	OFF ON	OFF		
7676	EIC coolant level 1	Fail class	F1...F8	Warning (F2)		
7680 EIC coolant level 2						
7681	EIC coolant level 2	Setpoint	0% 100%	10%	Designer's Reference Handbook/option: Cummins Modbus (H6) J1939 and MTU ADEC/ MDEC (H5) J1939/H7)	
7682	EIC coolant level 2	Timer	0.0 s 100.0 s	5.0 s		
7683	EIC coolant level 2	Relay output A	Not used Variant-dep.	Not used		
7684	EIC coolant level 2	Relay output B	Not used Variant-dep.	Not used		
7685	EIC coolant level 2	Enable	OFF ON	OFF		
7686	EIC coolant level 2	Fail class	F1...F8	Shutdown (F5)		
7690 EIC Cyl dif. 1						
7691	EIC Cyl dif. 1	Setpoint	0 9999	100 deg	Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7692	EIC Cyl dif. 1	Timer	0.0 s 100.0 s	5.0 s		
7693	EIC Cyl dif. 1	Relay output A	Not used Option-dep.	Not used		
7694	EIC Cyl dif. 1	Relay output B	Not used Option-dep.	Not used		
7695	EIC Cyl dif. 1	Enable	OFF ON	OFF		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7696	EIC Cyl dif. 1	Fail class	F1...F8	Warning (F2)			
7700 EIC Cyl dif. 2							
7701	EIC Cyl dif. 2	Setpoint	0 9999	110 deg		Option: J1939 and MTU ADEC/ MDEC (H5) Cummins Modbus (H6) J1939 (H7)	
7702	EIC Cyl dif. 2	Timer	0.0 s 100.0 s	5.0 s			
7703	EIC Cyl dif. 2	Relay output A	Not used Option-dep.	Not used			
7704	EIC Cyl dif. 2	Relay output B	Not used Option-dep.	Not used			
7705	EIC Cyl dif. 2	Enable	OFF ON	OFF			
7706	EIC Cyl dif. 2	Fail class	F1...F8	Warning (F2)			

2.9.3 Power management communication error

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7870 Any BTB missing/appl hazard							
7871	Any BTB missing	Fail class	F1...F8	Warning (F2)		Designer's Reference Handbook	The "Any BTB missing" alarm is activated if the communication to any BTB unit failed. The application hazard alarm is activated if different applications are installed in the controllers.
7872	Appl hazard	Enable	ON OFF	ON			
7873	Appl hazard	Fail class	F1...F8	Warning (F2)			

2.9.4 Internal CAN communication error

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7930 CAN1 communication error							
7931	CAN1 com error	Timer	10.0 s 600.0 s	10.0 s		Option: External I/O modules (H8.2)	If both options H8.x are present, an error on any of these will activate the alarm.
7932	CAN1 com error	Relay output A	Not used Option- dep.	Not used			
7933	CAN1 com error	Relay output B	Not used Option- dep.	Not used			
7934	CAN1 com error	Enable	OFF ON	ON			
7935	CAN1 com error	Fail class	F1...F8	Warning (F2)			
7940 CAN2 comm error							
7941	CAN2 comm er- ror	Timer	10.0 s 600.0 s	10.0 s		Option: External I/O modules (H8.2)	If both options H8.x are present, an error on any of these will activate the alarm.
7942	CAN2 comm er- ror	Relay output A	Not used Option- dep.	Not used			
7943	CAN2 comm er- ror	Relay output B	Not used Option- dep.	Not used			
7944	CAN2 comm er- ror	Enable	OFF ON	ON			
7945	CAN2 comm er- ror	Fail class	F1...F8	Warning (F2)			

2.10 External I/O parameters

2.10.1 External I/O alarm setup



The alarms based on external I/O modules can only be configured using the PC utility software.

2.10.2 Analogue inputs

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Descrip- tion
12000 Ext. Ain 1.1						
	Ext. Ain 1.1	Setpoint	0 10	10		Option: External I/O modules (H8.x)
	Ext. Ain 1.1	Timer	0.0 s 600.0 s	10.0 s		
	Ext. Ain 1.1	Fail class	F1...F8	Warning (F2)		
	Ext. Ain 1.1	Relay output A	Not used Option-dep.	Not used		
	Ext. Ain 1.1	Relay output B	Not used Option-dep.	Not used		
	Ext. Ain 1.1	Enable	OFF ON	OFF		
12010 Ext. Ain 1.2						
	Ext. Ain 1.2	Setpoint	0 10	10		Option: External I/O modules (H8.x)
	Ext. Ain 1.2	Timer	0.0 s 600.0 s	10.0 s		
	Ext. Ain 1.2	Fail class	F1...F8	Warning (F2)		
	Ext. Ain 1.2	Relay output A	Not used Option-dep.	Not used		
	Ext. Ain 1.2	Relay output B	Not used Option-dep.	Not used		
	Ext. Ain 1.2	Enable	OFF ON	OFF		



The same settings apply to external analogue inputs 2-8, menus 12030-12220.

2.10.3 External analogue input scale

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
12230 4-20 mA Ext in 1 scale						
	4-20 mA Ext in 1 scale	Setpoint	No decimal Two decimal	One decimal	Option: External I/O modules (H8.x)	Selecting "Enable" and writing the new setpoint will scale the associated min., max. and value automatically.
	4-20 mA Ext in 1 scale	Enable	OFF ON	OFF		

2.10.4 Digital inputs

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
12540 Ext. dig. in 1						
	Ext. dig. in 1	Timer	0.0 s 100.0 s	10.0 s	Option: External I/O modules (H8.x)	
	Ext. dig. in 1	Fail class	F1...F8	Warning (F2)		
	Ext. dig. in 1	Relay output A	Not used Option-dep.	Not used		
	Ext. dig. in 1	Relay output B	Not used Option-dep.	Not used		
	Ext. dig. in 1	Enable	OFF ON	OFF		
	Ext. dig. in 1	High alarm	OFF ON	ON		



The same settings apply to external digital inputs 2-16, menus 12550-12690.

3. Parameter list

3.1 General information about the parameter list

3.1.1 Parameter list settings

The parameter list contains settings for regulators and other non-alarm-related settings.

3.2 Control parameters - synchronisation

3.2.1 Synchronisation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2000 Sync type							
2001	Sync. type	Type	Dynamic sync Static sync	Dynamic sync		Designer's Reference Handbook	Static sync aims at a frequency difference of 0 Hz. Dynamic sync aims at a frequency difference (mid-point between setting 2021 dfMax. and 2022 dfMin.). OFF = dynamic sync, ON = static sync.
2020 Dynamic sync							
2021	Dynamic sync	dfMax	0.0 Hz 0.5 Hz	0.3 Hz		Designer's Reference Handbook	Menu 2020 is only applicable if "Dynamic sync." is chosen in menu 2001.
2022	Dynamic sync	dfMin	-0.5 Hz 0.3 Hz	0.0 Hz			
2023	Dynamic sync	dUMax	2% 10%	5%			
2024	Dynamic sync	Sync t. GB/BTB/TB	40 ms 300 ms	50 ms			
2025	Dynamic sync	Sync t. MB	40 ms 300 ms	50 ms			
2030 Static sync							
2031	Static sync	dfMax	0.00 Hz 0.50 Hz	0.10 Hz		Designer's Reference Handbook	Menu 2030 is only applicable if "Static sync" is chosen in menu 2001.
2032	Static sync	dUMax	1% 10%	5%			
2033	Static sync	Close window	0.1 deg 20.0 deg	10.0 deg			
2034	Static sync	Timer	0.1 s 99.0 s	1.0 s			
2035	Static sync	GB sync. type	Breaker Infinite sync.	Breaker			
2036	Static sync	MB sync. type	Breaker Infinite sync.	Breaker			
2040 Frequency synchronisation control analogue							
2041	f sync	f Kp	0.00 60.00	2.50		Option E1, E2, EF2, EF4, EF5	PID controller for dynamic sync. This menu is only applicable if "analogue" or "PWM" or "EIC" is selected in menu 2780.
2042	f sync	f Ti	0.00 s 60.00 s	1.50 s			
2043	f sync	f Td	0.00 s 2.00 s	0.00 s			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
2050 Frequency synchronisation control relay						
2051	f sync	Kp	0 100	10		Designer's Reference Handbook This menu is only applicable if "relay" is selected in menu 2780.
2060 Phase sync analogue						
2061	Phase sync	Phase Kp	0.00 60.00	0.50		Designer's Reference Handbook PID controller for static sync. This menu is only applicable if "analogue" or "PWM" or "EIC" is selected in menu 2780.
2062	Phase sync	Phase Ti	0.00 s 60.00 s	3.00 s		
2063	Phase sync	Phase Td	0.00 s 2.00 s	0.00 s		
2070 Phase control relay						
2071	Phase	Kp	0 100	10		Designer's Reference Handbook This menu is only applicable if "relay" is selected in menu 2780.
2110 Synchronisation blackout						
2111	Sync blackout	dfMax	0.0 Hz 5.0 Hz	3.0 Hz		Designer's Reference Handbook Settings are accepted limits for closing of the breaker, referring to nominal frequency and voltage.
2112	Sync blackout	dUMax	2% 10%	5%		
2240 Separate synchronisation relay						
2241	Sep sync relay	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook The output activates during synchronisation and thereby a separate synchronising unit can be activated.
2242	Sep sync relay	Relay output B	Not used Option-dep.	Not used		
2250 Close before excitation						
2251	Close bef. exc.	Setpoint	0 rpm 4000 rpm	400 rpm		Designer's Reference Handbook If set ON the function will close the breaker at the selected speed. The relay output is used for the excitation ON signal. Remember to set the selected relay in "Limit" mode.
2252	Close bef. exc.	Timer	0.0 s 999.0 s	5.0 s		
2253	Close bef. exc.	Relay output A	Not used Option-dep.	Not used		
2254	Close bef. exc.	Enable	OFF ON	OFF		
2260 Breaker sequence						
2261	Breaker seq.	Break	Close GB Close GB +TB	Close GB		Designer's Reference Handbook The sequence is used for the closed before excitation function. The excitation will be activated at the selected speed in menu 2263.
2262	Breaker seq.	Timer	0.0 s 999.0 s	5.0 s		
2263	Breaker seq.	RpmOK	0 rpm 4000 rpm	1450 rpm		
2264	Volt. discharge	Timer	1.0 s 20.0 s	5.0 s		

3.3 Control parameters - regulation

3.3.1 Regulation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2510 Frequency control analogue							
2511	f control	f Kp	0.00 60.00	2.50		Designer's Reference Handbook	PID controller for frequency control. This menu is only applicable if "analogue" is selected in menu 2781. The droop setting will be applied on top of the regulation output.
2512	f control	f Ti	0.00 s 60.00 s	1.50 s			
2513	f control	f Td	0.00 s 2.00 s	0.00 s			
2514	f droop	Droop setting	0% 10%	0%			
2530 Power control analogue							
2531	P control	P Kp	0.00 60.00	2.50		Designer's Reference Handbook	PID controller for power control. This menu is only applicable if "analogue" is selected in menu 2781.
2532	P control	P Ti	0.00 s 60.00 s	1.50 s			
2533	P control	P Td	0.00 s 2.00 s	0.00 s			
2540 Power load sharing control analogue							
2541	P LS control	P LS Kp	0.00 60.00	2.50		Designer's Reference Handbook	PID controller for load sharing control. This menu is only applicable if "analogue" is selected in menu 2781.
2542	P LS control	P LS Ti	0.00 s 60.00 s	1.50 s			
2543	P LS control	P LS Td	0.00 s 2.00 s	0.00 s			
2550 Analogue governor offset							
2551	Ana- logue GOV	Offset	0% 100%	50%		Designer's Reference Handbook	PID controller for freq. control. This menu is only applicable if "analogue" is selected in menu 2781.
2552	Ana- logue GOV	Offset	0% 100%	50%			
2553	Ana- logue GOV	Offset	0% 100%	50%			
2554	Ana- logue GOV	Offset	0% 100%	50%			
2570 Frequency control relay output							
2571	f control relay	Dead band	0.2% 10.0%	1.0%		Designer's Reference Handbook	This menu is only applicable if "relay" is selected in menu 2781. The droop setting will be applied on top of the regulation output.
2572	f control relay	Kp	0 100	10			
2573	f droop relay	Droop setting	0% 10%	0%			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
2580 Power control relay output						
2581	P control relay	Dead band	0.2% 10.0%	2.0%	Designer's Reference Handbook	This menu is only applicable if "relay" is selected in menu 2781.
2582	P control relay	Kp	0 100	10		
2590 Load sharing control relay output						
2591	LS ctrl. relay	f dead band	0.2% 10.0%	1.0%	Designer's Reference Handbook	This menu is only applicable if "relay" is selected in menu 2781.
2592	LS ctrl. relay	LS Kp	0 100	10		
2593	LS ctrl. relay	P dead band	0.2% 10.0%	2.0%		
2594	LS ctrl. relay	P weight	0.0% 100.0%	10.0%		
2600 Relay control						
2601	Relay control	GOV ON time	10 ms 6500 ms	500 ms	Designer's Reference Handbook	This menu is only applicable if "relay" is selected in menu 2781. NOTE: In the PC utility software, settings 2603/2604 are found under menu 2602. Output A is increase and output B is decrease.
2602	Relay control	GOV period time	50 ms 32500 ms	2500 ms		
2603	Relay control	Relay output A (Increase relay)	Not used Option-dep.	Not used		
2604	Relay control	Relay output B (Decrease relay)	Not used Option-dep.	Not used		
2610 Power ramp up						
2611	Power ramp up	Speed	0.1%/s 20.0%/s	2.0%/s	Designer's Reference Handbook	The delay point determines when the generator will make a temporary stop ramping up after closing of the generator breaker to preheat the engine before commencing load taking. If the delay function is not needed, set this time to 0. Power % settings relate to nominal generator power.
2612	Power ramp up	Delay point	1% 100%	10%		
2613	Power ramp up	Delay time	0 s 9900 s	10 s		
2614	Power ramp up	Load/steps	OFF ON	OFF		
2615	Power ramp up	Steps	0 100	1		
2616	Power ramp up 2	Speed	0.1%/s 20%/s	0.1%/s		Can be activated by ch. 2624 or M-Logic.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2620 Power ramp down							
2621	Power ramp down	Speed	0.1%/s 20.0%/s	3.3%/s		Designer's Reference Handbook	The breaker open point determines when the "open breaker" relay output is activated to open the generator breaker before reaching 0 kW. Power % settings relate to nominal generator power.
2622	Power ramp down	Breaker open point	1% 20%	5%			
2623	Power ramp down 2	Speed	0.1%/s 20.0%/s	0.1%/s			Slope of Ramp 2, when ramping down. (Not used for deload)
2624	Auto ramp select	Enable	OFF ON	ON			ON: Ramp 2 is used with Freq. dependent P droop OFF: Ramp 2 is enabled via M-Logic
2640 Voltage control analogue							
2641	U control	U Kp	0.00 60.00	2.50		Option: AVR control (D1)	PID controller for voltage control. This menu is only applicable if analogue output is selected in menu 2783. The droop setting will be applied on top of the regulation output.
2642	U control	U Ti	0.00 s 60.00 s	1.50 s			
2643	U control	U Td	0.00 s 2.00 s	0.00 s			
2644	U droop	Droop setting	0% 10%	0%			
2650 Reactive power control analogue							
2651	Q control	Q Kp	0.00 60.00	2.50		Option: AVR control (D1)	PID controller for reactive power control. The reactive power control is used for power factor as well as reactive power control. This menu is only applicable if analogue output is selected in menu 2783.
2652	Q control	Q Ti	0.00 s 60.00 s	1.50 s			
2653	Q control	Q Td	0.00 s 2.00 s	0.00 s			
2660 Reactive power load sharing control analogue							
2661	Q load sh. ctrl	Q LS Kp	0.00 60.00	2.50		Option: AVR control (D1)	The VAr (Q) load sharing is based on a mix of voltage and VAr control. The setting 2664 is setting the impact of the VAr controller over the voltage controller. This menu is only applicable if analogue output is selected in menu 2783.
2662	Q load sh. ctrl	Q LS Ti	0.00 s 60.00 s	1.50 s			
2663	Q load sh. ctrl	Q LS Td	0.00 s 2.00 s	0.00 s			
2664	Q load sh. ctrl	Q weight	0.0% 100.0%	10.0%			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
2670 Analogue AVR output offset						
2671	Ana- logue AVR	Offset	0% 100%	50%		Option: AVR con- trol (D1) This setting sets the offset of the analogue output when starting the generator. This menu is only applicable if analogue output is selected in menu 2783.
2672	Ana- logue AVR	Offset	0% 100%	50%		
2673	Ana- logue AVR	Offset	0% 100%	50%		
2674	Ana- logue AVR	Offset	0% 100%	50%		
2690 Voltage control relay						
2691	U con- trol	U dead band	0.0% 10.0%	2.0%		Option: AVR con- trol (D1) PI controller for voltage control. This menu is only applicable if "relay" is selected in menu 2783. The droop setting will be applied on top of the regulation output.
2692	U con- trol	U Kp	0 100	10		
2693	U droop relay	Droop setting	0% 10%	0%		
2700 Reactive power control relay						
2701	Q con- trol	Q dead band	0.0% 10.0%	2.0%		Option: AVR con- trol (D1) PI controller for reactive power control. The reactive power control is used for power factor as well as reactive power control. This menu is only applicable if "relay" is selected in menu 2783.
2702	Q con- trol	Q Kp	0 100	10		
2710 Reactive power load sharing control relay						
2711	Q load sh. ctrl	U dead band	0.0% 10.0%	1.0%		Option: AVR con- trol (D1) The VAr (Q) load sharing is based on a mix of voltage and VAr control. The setting 2664 is setting the impact of the VAr controller over the voltage controller. This menu is only applicable if "relay" is selected in menu 2783.
2712	Q load sh. ctrl	U Kp	0 100	10		
2713	Q load sh. ctrl	Q dead band	0.0% 10.0%	2.0%		
2714	Q load sh. ctrl	Q weight	0.0% 100.0%	10.0%		
2720 Relay control setup (AVR)						
2721	Relay control	AVR ON time t_N	10 ms 3000 ms	100 ms		Option: AVR con- trol (D1) Relay outputs for voltage/ VAr/power factor control. This menu is only applicable if "relay" is selected in menu 2783.
2722	Relay control	AVR per time t_P	50 ms 15000 ms	500 ms		
2723	Relay control	Relay output A (U in- crease)	Not used Option- dep.	Not used		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2724	Relay control	Relay output B (U decrease)	Not used Option-dep.	Not used			
2740 Delay regulation							
2741	Delay reg.	Timer	0 s 9900 s	3 s		Designer's Reference Handbook	Delay of activating regulation after running feedback has been detected.
2742	Delay reg.	Relay output A	Not used Option-dep.	Not used			
2743	Delay reg.	Relay output B	Not used Option-dep.	Not used			
2744	Delay reg.	Enable	OFF ON	OFF			
2760 Overlap							
2761	Overlap	Setpoint	OFF ON	OFF		Designer's Reference Handbook	If set ON the generator and mains breaker will never both be closed for a longer time period than the selected.
2762	Overlap	Timer	0.10 s 99.90 s	0.30 s			
2770 EIC speed control							
2771	Scania control	Droop	0.0% 25.0%	0.0%	Only applicable if "Scania" is selected in menu 7561.	Option: J1939 (H5 or H7)	Setting of speed control via engine communication interface.
2772	Scania control	rpm	User 1500 RPM 1800 RPM Low idle	User			
2773	Cummins Gain	Kp	0.00 10.00	5.00			
2780 Regulator output							
2781	Reg. output	GOV	Relay EIC Analogue	Relay		Designer's Reference Handbook	Selection of the speed output: Relay, analogue or engine interface communication. Analogue and EIC are option-dependent.
2782	Man step	GOV	0.1 sec 10 sec	5 sec		Designer's Reference Handbook	This timer is used to define how long the governor up/down pulse should be, by activating an AOP button or a digital input.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2783	Reg. output	AVR	Relay Analogue EIC	Relay		Option: AVR control (D1) Option: J1939 (H5 or H7)	Generator voltage control based on relay, analogue or EIC output signals. Analogue selection is only available if option E1, E2, EF2, EF4 or F2 is present.
2784	Man step	AVR	0.1 sec 10 sec	5 sec		Designer's Reference handbook	This timer is used to define how long the AVR up/down pulse should be, by activating an AOP button or a digital input.
2790 EIC speed demand switch							
2791	EIC speed dem. sw.	Local norm sw.	Ana. CAN Up/Down ECU Up/Down CAN Ana. ECU Ana. ECU rel. Frequency	Ana. CAN		Option: Engine communication (H5)	See description in option H5 manual.
2792	EIC speed dem. sw.	Local Emerg sw.	Ana. CAN Up/Down ECU Up/Down CAN Ana. ECU Ana. ECU rel. Frequency	Ana. CAN			
2793	EIC speed dem. sw.	Remote norm sw.	Ana. CAN Up/Down ECU Up/Down CAN Ana. ECU Ana. ECU rel. Frequency	Ana. CAN			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
2794	EIC speed dem. sw.	Remote Emerg sw.	Ana. CAN Up/Down ECU Up/Down CAN Ana. ECU Ana. ECU rel. Frequen- cy	Ana. CAN			
2950 Base load							
2951	Base load	Power set	10% 120%	90%		Designer's Reference Handbook	Setting and enabling of base load running. Note: Base load is only possible in semi auto mode. Menu 2953 specifies what mode to return to after base load is completed.
2952	Base load	Enable	OFF ON	OFF			
2953	Base load	Return mode	Semi au- to mode Auto mode	Auto mode			

3.4 Control parameters - output setup

3.4.1 Digital output setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5000 Relay 05							
5001	Relay 05	Function	Alarm relay ND Alarm relay NE	Horn relay		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5002	Relay 05	OFF delay	0.0 s 999.9 s	5.0 s			
5010 Relay 08							
5011	Relay 08	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if no mains breaker is controlled by the AGC.
5012	Relay 08	OFF delay	0.0 s 999.9 s	5.0 s			
5020 Relay 11							
5021	Relay 11	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if no mains breaker is controlled by the AGC.
5022	Relay 11	OFF delay	0.0 s 999.9 s	5.0 s			
5030 Relay 14							
5031	Relay 14	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if no generator breaker is controlled by the AGC.
5032	Relay 14	OFF delay	0.0 s 999.9 s	5.0 s			
5040 Relay 17							
5041	Relay 17	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option G4 and G5	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if no generator breaker is controlled by the AGC.
5042	Relay 17	OFF delay	0.0 s 999.9 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5050 Relay 20							
5051	Relay 20	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if "Relay" is selected in menu 5271.
5052	Relay 20	OFF de- lay	0.0 s 999.9 s	5.0 s			
5060 Relay 21							
5061	Relay 21	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Designer's Reference Handbook	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE This relay is only available if "Relay" is selected in menu 5272.
5062	Relay 21	OFF de- lay	0.0 s 999.9 s	5.0 s			
5070 Relay 29							
5071	Relay 29	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Option M14.2	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5072	Relay 29	OFF de- lay	0.0 s 999.9 s	5.0 s			
5080 Relay 31							
5081	Relay 31	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Option M14.2	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5082	Relay 31	OFF de- lay	0.0 s 999.9 s	5.0 s			
5090 Relay 33							
5091	Relay 33	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Option M14.2	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5092	Relay 33	OFF de- lay	0.0 s 999.9 s	5.0 s			
5100 Relay 35							
5101	Relay 35	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Option M14.2	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5102	Relay 35	OFF de- lay	0.0 s 999.9 s	5.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5110 Relay 57							
5111	Relay 57	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M12	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5112	Relay 57	OFF delay	0.0 s 999.9 s	5.0 s			
5120 Relay 59							
5121	Relay 59	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M12	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5122	Relay 59	OFF delay	0.0 s 999.9 s	5.0 s			
5130 Relay 61							
5131	Relay 61	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M12	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5132	Relay 61	OFF delay	0.0 s 999.9 s	5.0 s			
5140 Relay 63							
5141	Relay 63	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Option M12	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5142	Relay 63	OFF delay	0.0 s 999.9 s	5.0 s			
5150 Relay 65							
5151	Relay 65	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Used for governor UP command if "Relay" is selected in menu 2781. Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5152	Relay 65	OFF delay	0.0 s 999.9 s	5.0 s			
5160 Relay 67							
5161	Relay 67	Function	Alarm relay ND Alarm relay NE	Alarm relay ND		Designer's Reference Handbook	Used for governor DOWN command if "Relay" is selected in menu 2781. Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5162	Relay 67	OFF delay	0.0 s 999.9 s	0.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5170 Relay 69							
5171	Relay 69	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Designer's Reference Handbook	Used for AVR UP command if "Relay" is selected in menu 2783. Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5172	Relay 69	OFF de- lay	0.0 s 999.9 s	5.0 s			
5180 Relay 71							
5181	Relay 71	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Designer's Reference Handbook	Used for AVR DOWN com- mand if "Relay" is selected in menu 2783. Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5182	Relay 71	OFF de- lay	0.0 s 999.9 s	5.0 s			
5190 Relay 90							
5191	Relay 90	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Option M14.6: 4 x relay output, slot 6	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5192	Relay 90	OFF de- lay	0.0 s 999.9 s	5.0 s			
5200 Relay 92							
5201	Relay 92	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Option M14.6: 4 x relay output, slot 6	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5202	Relay 92	OFF de- lay	0.0 s 999.9 s	5.0 s			
5210 Relay 94							
5211	Relay 94	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Option M14.6: 4 x relay output, slot 6	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5212	Relay 94	OFF de- lay	0.0 s 999.9 s	5.0 s			
5220 Relay 96							
5221	Relay 96	Function	Alarm re- lay ND Alarm re- lay NE	Alarm re- lay ND		Option M14.6: 4 x relay output, slot 6	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5222	Relay 96	OFF de- lay	0.0 s 999.9 s	5.0 s			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
5230 Relay 126						
5231	Relay 126	Function	Alarm relay ND Alarm relay NE	Alarm relay ND	Option M14.8: 4 x relay output, slot 8	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5232	Relay 126	OFF delay	0.0 s 999.9 s	5.0 s		
5240 Relay 128						
5241	Relay 128	Function	Alarm relay ND Alarm relay NE	Alarm relay ND	Option M14.8: 4 x relay output, slot 8	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5242	Relay 128	OFF delay	0.0 s 999.9 s	5.0 s		
5250 Relay 130						
5251	Relay 130	Function	Alarm relay ND Alarm relay NE	Alarm relay ND	Option M14.8: 4 x relay output, slot 8	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5252	Relay 130	OFF delay	0.0 s 999.9 s	5.0 s		
5260 Relay 132						
5261	Relay 132	Function	Alarm relay ND Alarm relay NE	Alarm relay ND	Option M14.8: 4 x relay output, slot 8	Function selections: - Alarm relay ND - Limit relay - Horn relay - Alarm relay NE
5262	Relay 132	OFF delay	0.0 s 999.9 s	5.0 s		
5270 Transistor output setup						
5271	Transistor 20	T20	kWh pulse Relay	kWh pulse	Designer's Reference Handbook	The transistor outputs on terminals 21 and 22 can be configured as relay outputs or pulse signals. If "Relay" is selected, the relays 20 and 21 will be available. If set to "Relay", external relays are needed due to limited current output. Max. 10 mA.
5272	Transistor 21	T21	kVArh pulse Relay	kVArh pulse		

3.5 Control parameters - analogue output

3.5.1 Analogue output limits

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
5720 PWM 68 limits						
5721	PWM 68 limits	Min.	0% 50%	10%	Option: PWM output (EF5)	For Caterpillar engines.
5722	PWM 68 limits	Max.	50% 100%	90%		
5780 Aout 66 limits						
5781	AOut 66 limits	Min.	-25/0 mA 10 mA	-20/0 mA	Option: 2 x analogue out- puts (E1/E2)	Min. range and factory setting value is option- dependent.
5782	AOut 66 limits	Max.	10 mA 25 mA	20 mA		
5790 Aout 71 limits						
5791	AOut 71 limits	Min.	-25/0 mA 10 mA	-20/0 mA	Option: 2 x analogue out- puts (E1/E2)	Min. range and factory setting value is option- dependent.
5792	AOut 71 limits	Max.	10 mA 25 mA	20 mA		
5800 Aout 91 limits						
5801	AOut 91 limits	Min.	0 mA 10 mA	0 mA	Option: 2 x analogue out- puts (F1)	Min. range and factory setting value is option- dependent.
5802	AOut 91 limits	Max.	10 mA 20 mA	20 mA		
5810 Aout 95 limits						
5811	AOut 95 limits	Min.	0 mA 10 mA	0 mA	Option: 2 x analogue out- puts (F1)	Min. range and factory setting value is option- dependent.
5812	AOut 95 limits	Max.	10 mA 20 mA	20 mA		

3.6 Control parameters - transducer outputs

3.6.1 Transducer outputs

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5820 P output 1							
5821	P output 1	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	Setpoint selec- tions for all transducer out- puts: - Disabled - 0-20 mA - 4-20 mA - 0-10 V - -10-0-10 V
5822	P output 1	Transducer B	Disabled Option-dep.	Disabled			
5823	P output 1	Setpoint	Disabled -10-0-10 V	Disabled			
5824	P output 1	Max. value	0 kW 20000 kW	500 kW			
5825	P output 1	Min. value	-9999 kW 20000 kW	0 kW			
5830 P output 2							
5831	P output 2	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5832	P output 2	Transducer B	Disabled Option-dep.	Disabled			
5833	P output 2	Setpoint	Disabled -10-0-10 V	Disabled			
5834	P output 2	Max. value	0 kW 20000 kW	500 kW			
5835	P output 2	Min. value	-9999 kW 20000 kW	0 kW			
5840 P output 3							
5841	P output 3	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5842	P output 3	Transducer B	Disabled Option-dep.	Disabled			
5843	P output 3	Setpoint	Disabled -10-0-10 V	Disabled			
5844	P output 3	Max. value	0 kW 20000 kW	500 kW			
5845	P output 3	Min. value	-9999 kW 20000 kW	0 kW			
5850 S output							
5851	S output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5852	S output	Transducer B	Disabled Option-dep.	Disabled			
5853	S output	Setpoint	Disabled -10-0-10 V	Disabled			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5854	S output	Max. value	0 kVA 20000 kVA	600 kVA			
5855	S output	Min. value	-9999 kVA 20000 kVA	0 kVA			
5860 Q output							
5861	Q output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5862	Q output	Transducer B	Disabled Option-dep.	Disabled			
5863	Q output	Setpoint	Disabled -10-0-10 V	Disabled			
5864	Q output	Max. value	0 kVAr 16000 kVAr	400 kVAr			
5865	Q output	Min. value	8000 kVA 16000 kVA	0 kVAr			
5870 PF output							
5871	PF output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	Positive value means inductive. Negative value means capacitive.
5872	PF output	Transducer B	Disabled Option-dep.	Disabled			
5873	PF output	Setpoint	Disabled -10-0-10 V	Disabled			
5874	PF output	Max. value	0.50 0.99	0.80			
5875	PF output	Min. value	-0.99 -0.50	-0.80			
5880 f output							
5881	F output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5882	F output	Transducer B	Disabled Option-dep.	Disabled			
5883	F output	Setpoint	Disabled -10-0-10 V	Disabled			
5884	F output	Max. value	0.0 Hz 70.0 Hz	55.0 Hz			
5885	F output	Min. value	0.0 Hz 70.0 Hz	45.0 Hz			
5890 U output							
5891	U output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	The voltage output represents L1-L2 voltage.
5892	U output	Transducer B	Disabled Option-dep.	Disabled			
5893	U output	Setpoint	Disabled -10-0-10 V	Disabled			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5890 U output							
5894	U output	Max. value	0 V 28000 V	500 V			
5895	U output	Min. value	0 V 28000 V	0 V			
5900 I output							
5901	I output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	The current output represents L1 current.
5902	I output	Transducer B	Disabled Option-dep.	Disabled			
5903	I output	Setpoint	Disabled -10-0-10 V	Disabled			
5904	I output	Max. value	0 A 9000 A	1000 A			
5905	I output	Min. value	0 A 9000 A	0 A			
5910 U BB output							
5911	U BB output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	The voltage output represents L1-L2 voltage.
5912	U BB output	Transducer B	Disabled Option-dep.	Disabled			
5913	U BB output	Setpoint	Disabled -10-0-10 V	Disabled			
5914	U BB output	Max. value	0 V 28000 V	500 V			
5915	U BB output	Min. value	0 V 28000 V	0 V			
5920 f BB output							
5921	F BB output	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5922	F BB output	Transducer B	Disabled Option-dep.	Disabled			
5923	F BB output	Setpoint	Disabled -10-0-10 V	Disabled			
5924	F BB output	Max. value	0.0 Hz 70.0 Hz	55.0 Hz			
5925	F BB output	Min. value	0.0 Hz 70.0 Hz	45.0 Hz			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5930 Multi-input 102							
5931	Multi-input 102	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5932	Multi-input 102	Transducer B	Disabled Option-dep.	Disabled			
5933	Multi-input 102	Setpoint	Disabled -10-0-10 V	Disabled			
5934	Multi-input 102	Max. value	0 28000	500			
5935	Multi-input 102	Min. value	0 28000	0			
5940 Multi-input 105							
5941	Multi-input 105	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5942	Multi-input 105	Transducer B	Disabled Option-dep.	Disabled			
5943	Multi-input 105	Setpoint	Disabled -10-0-10 V	Disabled			
5944	Multi-input 105	Max. value	0 28000	500			
5945	Multi-input 105	Min. value	0 28000	0			
5950 Multi-input 108							
5951	Multi-input 108	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5952	Multi-input 108	Transducer B	Disabled Option-dep.	Disabled			
5953	Multi-input 108	Setpoint	Disabled -10-0-10 V	Disabled			
5954	Multi-input 108	Max. value	0 28000	500			
5955	Multi-input 108	Min. value	0 28000	0			
5960 P total consumed							
5961	P total consumed	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5962	P total consumed	Transducer B	Disabled Option-dep.	Disabled			
5963	P total consumed	Setpoint	Disabled -10-0-10 V	Disabled			
5964	P total consumed	Max. value	0 kW 20000 kW	500 kW			
5965	P total consumed	Min. value	-9999 kW 20000 kW	0 kW			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
5970 P total available							
5971	P total available	Transducer A	Disabled Option-dep.	Disabled		Option: Analogue outputs (E2 or F1 or EF2)	
5972	P total available	Transducer B	Disabled Option-dep.	Disabled			
5973	P total available	Setpoint	Disabled -10-0-10 V	Disabled			
5974	P total available	Max. value	0 kW 20000 kW	500 kW			
5975	P total available	Min. value	-9999 kW 20000 kW	0 kW			

3.7 Control parameters - analogue regulator output setup

3.7.1 Regulator output selection

 These menus are used to select which analogue output to use for governor/AVR (option D1) control.

No.	Setting	Available settings	Factory setting	Notes	Ref.	Description
5980 Governor output						
5981	Governor output	Transducer A	Disabled Transducer 66 Transducer 71	Disabled		Option: Analogue governor output (E1/EF)
5990 AVR output						
5991	AVR output	Transducer A	Disabled Transducer 66 Transducer 71	Disabled		Option: Analogue AVR output (E1/EF and D1)

3.8 System parameters

 These menus include parameters for the system setup.

3.9 System parameters - general setup

3.9.1 General setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6000 Nominal settings 1							
6001	Nom. settings 1	Frequency	48.0 Hz 62.0 Hz	50.0 Hz		Designer's Reference Handbook	The selection of nominal settings to be used is set in menu 6006. A binary input or selection in M-logic can also be used. Voltage and power range depends on scaling setting in menu 9030.
6002	Nom. settings 1	Power	1 kW 900 MW	480 kW			
6003	Nom. settings 1	Current	0 A 9000 A	867 A			
6004	Nom. settings 1	Voltage	10 V 160 kV	400 V			
6005	Nom. settings 1	RPM	100 RPM 4000 RPM	1500 RPM			
6006	Nom. settings 1	Setting	1-4	1			
6010 Nominal settings 2							
6011	Nom. settings 2	Frequency	48.0 Hz 62.0 Hz	50.0 Hz		Designer's Reference Handbook	Voltage and power range depends on scaling setting in menu 9030.
6012	Nom. settings 2	Power	1 kW 900 MW	230 kW			
6013	Nom. settings 2	Current	0 A 9000 A	345 A			
6014	Nom. settings 2	Voltage	10 V 160 kV	480 V			
6015	Nom. settings 2	RPM	100 RPM 4000 RPM	1500 RPM			
6020 Nominal settings 3							
6021	Nom. settings 3	Frequency	48.0 Hz 62.0 Hz	60.0 Hz		Designer's Reference Handbook	Voltage and power range depends on scaling setting in menu 9030.
6022	Nom. settings 3	Power	1 kW 900 MW	230 kW			
6023	Nom. settings 3	Current	0 A 9000 A	345 A			
6024	Nom. settings 3	Voltage	10 V 160 kV	480 V			
6025	Nom. settings 3	RPM	100 RPM 4000 RPM	1800 RPM			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6030 Nominal settings 4						
6031	Nom. settings 4	Frequency	48.0 Hz 62.0 Hz	60.0 Hz	Designer's Reference Handbook	Voltage and power range depends on scaling setting in menu 9030.
6032	Nom. settings 4	Power	1 kW 900 MW	230 kW		
6033	Nom. settings 4	Current	0 A 9000 A	345 A		
6034	Nom. settings 4	Voltage	10 V 160 kV	480 V		
6035	Nom. settings 4	RPM	100 RPM 4000 RPM	1800 RPM		
6040 Gen/Mains/busbar A transformer						
6041	G/M/BA transformer	U primary	10 V 160 kV	400 V	Designer's Reference Handbook	If no voltage transformer is present, the primary and secondary side values are set to generator nominal value. Gen/mains/busbar primary voltage range depends on scaling setting in menu 9030.
6042	G/M/BA transformer	U secondary	100 V 690 V	400 V		
6043	G/M/BA transformer	I primary	5 A 9000 A	1000 A		
6044	G/M/BA transformer	I secondary	1 A 5 A	5 A		
6050 Busbar settings 1						
6051	BB setting 1	U primary	10 V 160 kV	400 V	Designer's Reference Handbook	If no voltage transformer is present, the primary and secondary side values are set to generator nominal value. BB primary voltage range depends on scaling setting in menu 9030.
6052	BB setting 1	U secondary	100 V 690 V	400 V		
6053	BB setting 1	Nominal U 1	10 V 160 kV	400 V		
6054	BB setting 1	Bus nom. set	Param set 1 Param set 2	Param set 1		
6060 Busbar settings 2						
6061	BB setting 2	U primary	10 V 160 kV	400 V	Designer's Reference Handbook	If no voltage transformer is present, the primary and secondary side values are set to generator nominal value. BB primary voltage range depends on scaling setting in menu 9030.
6062	BB setting 2	U secondary	100 V 690 V	400 V		
6063	BB setting 2	Nominal U 2	10 V 160 kV	400 V		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6070 Genset mode						
6071	Genset mode		Island Power management		Designer's Reference Handbook	Selections are: <ul style="list-style-type: none"> - Island - Auto Mains Failure - Peak Shaving - Fixed power - Mains power export - Load takeover - Power management (option G5) - Remote maintenance - Plant management (option G7) - Ventilation (option T2) - Dry alternator (option T2)
6080 Language						
6081	Language		English Language 11	English	Designer's Reference Handbook	The master language is English. Additionally, 11 different languages can be configured with the PC utility software.

3.9.2 Counters and timers

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6090 Date and time						
6091	Date and time	Year	2001 2100	2008	Designer's Reference Handbook	Used to set up the clock in the unit. Only available from the display.
6092	Date and time	Month	1 12	1		
6093	Date and time	Date	1 31	1		
6094	Date and time	Week day	1 7	1		
6095	Date and time	Hour	0 23	3		
6096	Date and time	Minute	0 59	5		
6100 Counters						
6101	Counters	Running hour	0 hrs 999 hrs	0 hrs	Designer's Reference Handbook	Setting 6105 resets the kWh counter to 0. It automatically reverts to OFF after being set ON.
6102	Counters	Running, th. hours	0 th. hrs 999 th. hrs	0 th. hrs		
6103	Counters	GB/TB/ BTB operations	0 20000	0		
6104	Counters	MB operations	0 20000	0		
6105	Counters	kWh	OFF ON	OFF		
6106	Counters	Start attempts	0 20000	0		
6110 Service timer 1						
6111	Service timer 1	Enable	OFF ON	ON	Designer's Reference Handbook	The timer is reset by enabling menu 6116. The menu automatically goes OFF.
6112	Service timer 1	Running hours	0 hrs 9000 hrs	500 hrs		
6113	Service timer 1	Days	1 days 1000 days	365 days		
6114	Service timer 1	Fail class	F1...F8	F2 (Warning)		
6115	Service timer 1	Output A	Not used Option-dep.	Not used		
6116	Service timer 1	Reset	OFF ON	OFF		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6120 Service timer 2							
6121	Service timer 2	Enable	OFF ON	ON		Designer's Reference Handbook	The timer is reset by enabling menu 6126. The menu automatically goes OFF.
6122	Service timer 2	Running hours	0 hrs 9000 hrs	500 hrs			
6123	Service timer 2	Days	1 days 1000 days	365 days			
6124	Service timer 2	Fail class	F1...F8	F2 (Warning)			
6125	Service timer 2	Relay output A	Not used Option-dep.	Not used			
6126	Service timer 2	Reset	OFF ON	OFF			

3.9.3 Alarm horn

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6130 Alarm horn							
6131	Alarm horn	ON time	0.0 sec 990.0 sec	20.0 sec		Designer's Reference Handbook	If the setting is adjusted to 0 s, the horn relay will be activated continuously until the alarm is acknowledged.

3.9.4 Run coil setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6150 Run coil setup							
6151	Run coil setup	ON time	0.0 sec 600.0 sec	1.0 sec		Designer's Reference Handbook	
6152	Run coil setup	Type	Pulse Continuous	Pulse		Designer's Reference Handbook	Pulse: Reset for each start attempt. Continuous: High throughout all start attempts.

3.9.5 Running, start and stop

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6160 Run status							
6161	Run status	Timer	0.0 s 300.0 s	5.0 s		Designer's Reference Handbook	If a relay output is used, the relay in question must be set to "limit".
6162	Run status	Relay output A	Not used Option-dep.	Not used			
6163	Run status	Relay output B	Not used Option-dep.	Not used			
6164	Run status	Enable	OFF ON	OFF			
6170 Running detection							
6171	Running detect.	No. of teeth	0 teeth 500 teeth	0 teeth		Designer's Reference Handbook	If menu 6171 is set to 0, the magnetic pickup input is not active. Available running detection types: - Binary input - MPU input - Frequency - EIC (engine communication) If menu 6175 is set to 0.0, the oil pressure running detection is OFF.
6172	Running detect.	Type	Binary input EIC	Frequency			
6173	Running detect.	Running RPM	0 RPM 4000 RPM	1000 RPM			
6174	Running detect.	Remove starter	1 RPM 2000 RPM	400 RPM			
6175	Running detect.	Pressure level	0.0 bar 150.0 bar	0.0 bar			
6180 Starter							
6181	Starter	Start prepare	0.0 s 600.0 s	5.0 s		Designer's Reference Handbook	Menu 6185 and 6186 relate to using oil pressure as running feedback. If menu 6186 is set to 0.0, the oil pressure running feedback is disregarded.
6182	Starter	Ext. prepare	0.0 s 600.0 s	0.0 s			
6183	Starter	Start ON time	1.0 s 180.0 s	5.0 s			
6184	Starter	Start OFF time	1.0 s 99.0 s	5.0 s			
6185	Starter	Input type	Multi-input 102 Multi-input 108	Multi-input 102			
6186	Starter	Setpoint	0.0 bar 300.0 bar	0.0 bar			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6190 Start attempts						
6191	Start attempts	Setpoint	1 10	3		Designer's Reference Handbook Number of start attempts.
6200 Shutdown override						
6201	Shut-down override	Attempts	1 10	7		Designer's Reference Handbook Shutdown override turns all shutdowns into warnings. Only exception is overspeed and emergency stop.
6202	Shut-down override	Cooling down	0 s 9900 s	240 s		
6203	Shut-down override	Enable	OFF ON	OFF		
6210 Stop						
6211	Stop	Cooling down	0.0 s 9900.0 s	240.0 s		Designer's Reference Handbook The extended stop timer starts when the running feedback disappears. During the delay time it is not possible to start the engine.
6212	Stop	Extended stop	1.0 s 99.0 s	5.0 s		
6213	Stop	TYPE	Multi-input 102 EIC	Multi-input 102		
6214	Stop	Setpoint	0 deg. 482 deg.	0 deg.		
6220 Hz/V OK						
6221	HZ/V OK	Timer	1.0 s 99.0 s	5.0 s		Designer's Reference Handbook The voltage and frequency have to be continuously within the limits during the delay timer before the breaker can be closed.

3.9.6 Breaker control

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6230 Gen/Mains/Tie/Bus tie breaker control						
6231	GB/MB/TB/BTB control	Close delay	0.0 s 30.0 s	2.0 s		Designer's Reference Handbook Menu 6232 is for compact breakers (need to charge spring before closing).
6232	GB/MB/TB/BTB control	Load time	0.0 s 30.0 s	0.0 s		

3.9.7 Power derate

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6240 Power derate							
6241	Power derate 1	Input	Multi-inp. 102 EIC	Multi-inp. 102		Designer's Reference Handbook	The derate function lowers the max. power of the generator set based on e.g. water temperature. Input: - Multi-input 102 - Multi-input 105 - Multi-input 108 - M-logic - EIC water temp - EIC oil temp - Ambient temp - Intercool temp
6242	Power derate 1	Start derate	0 units 20000 units	16 units			
6243	Power derate 1	Derate slope	0.1 %/ unit 100.0 %/ unit	5.0 %/ unit			
6244	Power derate 1	Proportional	OFF ON	OFF			
6245	Power derate 1	Enable	OFF ON	OFF			
6246	Power derate 1	Limit	0.0% 100.0%	80.0%			
6250 Power derate 2							
6251	Power derate 2	Input	Multi-inp. 102 EIC	Multi-inp. 102		Designer's Reference Handbook	The derate function lowers the max. power of the generator set based on e.g. water temperature. Input: - Multi-input 102 - Multi-input 105 - Multi-input 108 - M-logic - EIC water temp - EIC oil temp - Ambient temp - Intercool temp
6252	Power derate 2	Start derate	0 units 20000 units	16 units			
6253	Power derate 2	Derate slope	0.1 %/ unit 100.0 %/ unit	5.0 %/ unit			
6254	Power derate 2	Proportional	OFF ON	OFF			
6255	Power derate 2	Enable	OFF ON	OFF			
6256	Power derate 2	Limit	0.0% 100.0%	80.0%			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6260 Power derate 3						
6261	Power derate 3	Input	Multi-inp. 102 EIC	Multi-inp. 102	Designer's Reference Handbook	The derate function lowers the max. power of the generator set based on e.g. water temperature. Input: - Multi-input 102 - Multi-input 105 - Multi-input 108 - M-logic - EIC water temp - EIC oil temp - Ambient temp - Intercool temp
6262	Power derate 3	Start derate	0 units 20000 units	16 units		
6263	Power derate 3	Derate slope	0.1 %/ unit 100.0 %/ unit	5.0 %/ unit		
6264	Power derate 3	Proportional	OFF ON	OFF		
6265	Power derate 3	Enable	OFF ON	OFF		
6266	Power derate 3	Limit	0.0% 100.0%	80.0%		

3.9.8 Idle start

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6290 Idle running						
6291	Idle start	Start timer	0.0 sec. 59940.0 sec.	18000.0 sec.	Designer's Reference Handbook	
6292	Idle start	Enable start	OFF ON	OFF		
6293	Idle stop	Stop timer	0.0 sec. 59940.0 sec.	18000.0 sec.		
6294	Idle stop	Enable stop	OFF ON	OFF		
6295	Idle active	Relay output A	Not used Option-dep.	Not used		
6296	Idle active	Enable	OFF ON	OFF		

3.9.9 Engine heater

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6320 Engine heater							
6321	Engine heater	Setpoint	20 deg. 250 deg.	40 deg.		Designer's Reference Handbook	Heater function for standstill. Type: - Multi-input 102 - Multi-input 105 - Multi-input 108 - EIC
6322	Engine heater	Relay output A	Not used Option-dep.	Not used			
6323	Engine heater	Type	Multi-inp 102 EIC	Multi-inp 102			
6324	Engine heater	Hysteresis	1 deg. 70 deg.	3 deg.			
6325	Engine heater	Enable	OFF ON	OFF			

3.9.10 Analogue load sharing lines output

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6380 Load share out							
6381	Load share out	Setpoint	1.0 V 5.0 V	4.0 V		Option G3 Analogue load sharing	Adjustment of the analogue load sharing line max. value.
6390 Load share type							
6391	Load share type	Setpoint	Adjustable Selco T4800			Option G3 Analogue load sharing	Selection between selectable load sharing line max. value (setting 6381) or adaptation to Selco T4800 load sharing line.

3.9.11 Master clock

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6400 Master clock							
6401	Master clock	Start hour	0 h 23 h	8 h		Designer's Reference Handbook	Compensation for frequency variation related clock time in the system.
6402	Master clock	Stop hour	0 h 23 h	8 h			
6403	Master clock	Difference	1 s 999 s	20 s			
6404	Master clock	Compensation	0.1 Hz 1.0 Hz	0.1 Hz			
6405	Master clock	Enable	OFF ON	OFF			

3.9.12 Cooling ventilation

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6460 Max. ventilation							
6461	Max. ventilation	Set point	20 deg. 250 deg.	90 deg.		Designer's Reference Handbook	Ventilation fan control.
6462	Max. ventilation	Relay output A	Not used Option-dep.	Not used			
6463	Max. ventilation	Hysteresis	1 deg. 70 deg.	5 deg.			
6464	Max. ventilation	Enable	OFF ON	OFF			

3.9.13 Summer/winter time

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6490 Summer/winter time							
6491	Sum/win time	Enable	OFF ON	OFF		Designer's Reference Handbook	The summer/winter time change follows the mainland Europe rules.

3.9.14 Fuel transfer pump logic

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6550 Fuel pump logic							
6551	Fuel pump logic	Set-point start	0% 100%	20%		Designer's Reference Handbook	Type: - Multi-input 102 - Multi-input 105 - Multi-input 108 - Ext. ana. In 1-8 - Auto detection Note: when using RMI for fuel pump logic, choose "Auto detection".
6552	Fuel pump logic	Set-point stop	0% 100%	80%			
6553	Fuel pump logic	Fill check time	0.1 s 300.0 s	60.0 s			
6554	Fuel pump logic	Relay output A	Not used Option-dep.	Not used			
6555	Fuel pump logic	Set-point	Multi-inp 102 Auto de-tection	Multi-inp 102			
6556	Fuel pump logic	Fail class	F1...F8	Warn- ing (F2)			

3.9.15 Fan logic

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6560 Fan input settings							
6561	Fan input	Type	-Multi-input 102 -Multi-input 105 -Multi-input 108	Multi-input 102		Designer's Reference Handbook	Selection of fan input: - Multi-input 102, 105, 108 EIC: - water/oil temp. - water temp. - oil temp. - ambient temp. - inter cool temp. - fuel temp. Ext. analog input: - 1-8 (option H8)
6562	Fan prio update	Priority	0 h 200 h	0 h			
6563	1 st prio fan	Setpoint start	20 deg 250 deg	70 deg			
6564	1 st pr. fan	Hysteresis	0 deg 50 deg	10 deg			
6565	2 nd prio fan	Setpoint start	20 deg 250 deg	80 deg			
6566	2 nd pr. fan	Hysteresis	0 deg 50 deg	10 deg			
6570 3rd prio fan							
6571	3 rd prio fan	Setpoint start	20 deg 250 deg	90 deg		Designer's Reference Handbook	Selection of fan input: - Multi-input 102, 105, 108 EIC: - water/oil temp. - water temp. - oil temp. - ambient temp. - inter cool temp. - fuel temp. Ext. analog input: - 1-8 option (H8)
6572	3 rd pr. fan	Hysteresis	0 deg 50 deg	10 deg			
6573	4 th prio fan	Setpoint start	20 deg 250 deg	100 deg			
6574	4 th pr. fan	Hysteresis	0 deg 50 deg	10 deg			
6580 Fan outputs							
6581	Fan A output	Relay output A	Not used Option-dep.	Not used		Designer's Reference Handbook	Selection of relays for activating fans
6582	Fan B output	Relay output B	Not used Option-dep.	Not used			
6583	Fan C output	Relay output C	Not used Option-dep.	Not used			
6584	Fan D output	Relay output D	Not used Option-dep.	Not used			
6585	Fan run. hour reset	Reset	OFF ON	OFF			
6586	Fan start delay	Timer	0.0 s 30.0 s	10.0 s			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6590 Fan A failure							
6591	Fan A failure	Timer	0.1 s 300.0 s	10.0 s		Designer's Reference Handbook	
6592	Fan A failure	Output A	Not used Option-dep.	Not used			
6593	Fan A failure	Output B	Not used Option-dep.	Not used			
6594	Fan A failure	Enable	OFF ON	OFF			
6595	Fan A failure	Fail class	F1...F8	Warning (F2)			
6600 Fan B failure							
6601	Fan B failure	Timer	0.1 s 300.0 s	10.0 s		Designer's Reference Handbook	
6602	Fan B failure	Output A	Not used Option-dep.	Not used			
6603	Fan B failure	Output B	Not used Option-dep.	Not used			
6604	Fan B failure	Enable	OFF ON	OFF			
6605	Fan B failure	Fail class	F1...F8	Warning (F2)			
6610 Fan C failure							
6611	Fan C failure	Timer	0.1 s 300.0 s	10.0 s		Designer's Reference Handbook	
6612	Fan C failure	Output A	Not used Option-dep.	Not used			
6613	Fan C failure	Output B	Not used Option-dep.	Not used			
6614	Fan C failure	Enable	OFF ON	OFF			
6615	Fan C failure	Fail class	F1...F8	Warning (F2)			
6620 Fan D failure							
6621	Fan D failure	Timer	0.1 s 300.0 s	10.0 s		Designer's Reference Handbook	
6622	Fan D failure	Output A	Not used Option-dep.	Not used			
6623	Fan D failure	Output B	Not used Option-dep.	Not used			
6624	Fan D failure	Enable	OFF ON	OFF			
6625	Fan D failure	Fail class	F1...F8	Warning (F2)			

3.9.16 Diagnostics

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6700 Diagnostics							
6701	Diagnostics	Timer	0 s 30 s	30		Designer's Reference Handbook	Activates diagnostics mode to read ECU data without starting engine.
6702	Diagnostics	Enable	OFF ON	OFF			

3.9.17 I thermal demand

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
6840 I thermal demand							
6841	I thermal demand	Timer	0 min. 20 min.	8 min.		Designer's Reference Handbook	Setup of I thermal period.
6842	I thermal demand	Enable	OFF ON	OFF			Enabled is used for reset.
6843	I max. demand	Enable	OFF ON	OFF			Reset I max. demand.

3.9.18 Pulse counter

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6850 Pulse counter 1						
6851	Pulse counter 1	Setpoint	0 1000	1	Designer's Reference Handbook	Setup of pulse counter.
6852	Pulse counter 1	Unit	Unit/Pulse Pulse/Unit	Unit/Pulse		
6853	Pulse counter 1	Decimals	No decimals One decimal Two decimals Three decimals	No decimals		
6860 Pulse counter 2						
6861	Pulse counter 2	Setpoint	0 1000	1	Designer's Reference Handbook	Setup of pulse counter.
6862	Pulse counter 2	Unit	Unit/Pulse Pulse/Unit	Unit/Pulse		
6863	Pulse counter 2	Decimals	No decimals One decimal Two decimals Three decimals	No decimals		


3.9.19 Alarm jump

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6900 Alarm jump						
6901	Alarm jump	Enable	OFF ON	ON	Designer's Reference Handbook	Selection of jump to alarm list view on the display if an alarm appears (ON), or stay at present view (OFF).


3.9.20 Tank capacity

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6910 Tank capacity						
6911	Tank capacity	0 9999	1250		Designer's Reference Handbook	This setting is for entering the capacity of the day tank.

3.9.21 Command timers

 There are four identical command timers in the unit, menu 6960-6996, but only command timer 1 is displayed in this manual.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
6960 Command start/stop timer 1						
6961	Start timer 1 days	Set point	MO MO-TU- WE-TH- FR-SA-SU	OFF	Designer's Reference Handbook	Selections are: MO TU WE TH FR SA SU MO-TU-WE-TH MO-TU-WE-TH-FR SA-SU MO-TU-WE-TH-FR- SA-SU
6962	Start timer 1 hour	Set point	0 23	10	Designer's Reference Handbook	
6963	Start timer 1 min	Set point	0 59	0	Designer's Reference Handbook	
6964	Stop timer 1 days	Set point	MO MO-TU- WE-TH- FR-SA-SU	MO-TU- WE-TH- FR-SA- SU	Designer's Reference Handbook	Selections are: MO TU WE TH FR SA SU MO-TU-WE-TH MO-TU-WE-TH-FR SA-SU MO-TU-WE-TH-FR- SA-SU
6965	Stop timer 1 hour	Set point	0 23	10	Designer's Reference Handbook	
6966	Stop timer 1 min	Set point	0 59	0	Designer's Reference Handbook	

 Start/stop timers can be used in M-Logic.

3.10 System parameters - mains setup

3.10.1 Mains setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7000 Mains power							
7001	Mains power	Day	-20000 kW 20000 kW	750 kW		Designer's Reference Handbook	Menu 7000 is for peak shaving/ mains power export modes. Set values in the AGC mains unit. Menu 7001/7002 must be a positive value for mains power export or peak shaving mode. Menu 7001/7002 must be a negative value for mains power import.
7002	Mains power	Night	-20000 kW 20000 kW	1000 kW			
7003	Mains power	Transducer max	0 kW 20000 kW	0 kW			
7004	Mains power	Transducer min	-20000 kW 0 kW	0 kW			
7010 Daytime period							
7011	Daytime period	Start hour	0 h 23 h	8 h		Designer's Reference Handbook	Menu 7010 is for peak shaving/ mains power export modes. The period outside the daytime period is defined as the night period.
7012	Daytime period	Start minute	0 min 59 min	0 min			
7013	Daytime period	Stop hour	0 h 23 h	16 h			
7014	Daytime period	Stop period	0 min 59 min	0 min			
7020 Start generator							
7021	Start generator	Setpoint	5% 100%	80%		Designer's Reference Handbook	Menu 7020 is for peak shaving/ mains power export modes. The setpoint refers to the menu 7000 mains power setting.
7022	Start generator	Timer	0.0 s 990.0 s	10.0 s			
7023	Start generator	Minimum load	0% 100%	5%			
7030 Stop generator							
7031	Stop generator	Setpoint	0% 80%	60%		Designer's Reference Handbook	Menu 7030 is for peak shaving/ mains power export modes. The setpoint refers to the menu 7000 mains power setting.
7032	Stop generator	Timer	0.0 s 990.0 s	30.0 s			

3.10.2 Test

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7040 Test running							
7041	Test	Setpoint	1% 100%	80%		Designer's Reference Handbook	Available test types: - Simple (engine run only) - Load (parallel to mains) - Full (disconnects mains)
7042	Test	Test time	0.0 sec. 59940.0 sec.	300.0 sec.			
7043	Test	Return mode	Semi-auto mode Auto mode	Auto mode			
7044	Test	Test type	Simple test Full test	Simple test			

3.10.3 Controller settings

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7050 Fixed power settings							
7051	Fixed power settings	Power	0% 100%	100%		Designer's Ref- erence Hand- book	Fixed power par- allel with mains settings.
7052	Fixed power settings	Power fac- tor	0.60 1.00	0.90			
7053	Fixed power settings	Power fac- tor	Inductive Capacitive	Inductive			

3.10.4 Mains failure

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7060 U Mains Failure							
7061	U Mains failure	Fail. de-lay	0.5 s 990.0 s	5.0 s		Designer's Reference Handbook	Menus 7063 and 7064 relate to nominal settings. Menu 7066 refers to the mean value of the measured voltage.
7062	U Mains failure	Mains OK delay	2 s 9900 s	60 s			
7063	U Mains failure	U<	30% 100%	90%			
7064	U Mains failure	U>	100% 120%	110%			
7065	U Mains failure	Mains fail. control	Start eng. + open MB Start engine	Start eng. + open MB			
7066	U Mains failure	U unbalance	2% 100%	100%			
7070 f Mains Failure							
7071	f Mains failure	Fail. de-lay	0.5 s 990.0 s	5.0 s		Designer's Reference Handbook	Menus 7073 and 7074 relate to nominal settings.
7072	f Mains failure	Mains OK delay	2 s 9900 s	60 s			
7073	f Mains failure	f<	80.0% 100.0%	95.0%			
7074	f Mains failure	f>	100.0% 120.0%	105.0%			
7080 MB control							
7081	MB control	Mode shift	OFF ON	OFF		Designer's Reference Handbook	Mode shift allows switching to AMF mode.
7082	MB control	MB close delay	0.0 s 30.0 s	0.5 s			
7083	MB control	Back sync.	OFF ON	OFF			
7084	MB control	Sync to Mains	OFF ON	ON			
7085	MB control	Load time	0.0 s 30.0 s	0.0 s			
7090 Mains failure hysteresis							
7091	Mains fail. hyst.	Low volt. hyst.	0% 70%	0%		Designer's Reference Handbook	Hysteresis for when mains is healthy again.
7092	Mains fail. hyst.	High volt. hyst.	0% 20%	0%			
7093	Mains fail. hyst.	Low freq. hyst.	0.0% 20.0%	0.0%			
7094	Mains fail. hyst.	High freq. hyst.	0.0% 20.0%	0.0%			

3.10.5 Y1(X1) droop curve

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7120 Y1(x1) Dead band							
7121	Y1(x1) Dead band	Dead band low	0.00% 99.99%	0.40%		Designer's Reference Handbook	
7122	Y1(x1) Dead band	Dead band high	0.00% 99.99%	0.50%			
7123	Y1(x1) Dead band	Hysterese low	0.00% 99.99%	0.50%			
7124	Y1(x1) Dead band	Hysterese high	0.00% 99.99%	0.50%			
7130 P(x1) Slope							
7131	P(x1) Slope	MIN	0 kW 20000 kW	200 kW		Designer's Reference Handbook	
7132	P(x1) Slope	MAX	0 kW 20000 kW	480 kW			
7133	P(x1) Slope	Slope low	-20000 kW 20000 kW	50 kW			
7134	P(x1) Slope	Slope high	-20000 kW 20000 kW	-50 kW			
7140 Droop curve 1							
7141	Droop curve 1	P(x1)	P(x1) P(x1)	P(x1)		Designer's Reference Handbook	
7142	Droop curve 1	X1	f f	f			
7143	Droop curve 1	Enable	OFF ON	OFF			

3.10.6 Y2(X2) droop curve

No.	Setting		Min. Max.	Factory set- ting	Notes	Ref.	Descrip- tion
7150 Y2(x2) Dead band							
7151	Y2(x2) Dead band	Dead band low	0.00% 99.99%	2.00%		Option D1	
7152	Y2(x2) Dead band	Dead band high	0.00% 99.99%	2.00%			
7153	Y2(x2) Dead band	Hysteresis low	0.00% 99.99%	2.10%			
7154	Y2(x2) Dead band	Hysteresis high	0.00% 99.99%	2.10%			
7160 Q(x2) Slope							
7161	Q(x2) Slope	MIN	-20000 kVAr 20000 kVAr	200 kVAr		Option D1	
7162	Q(x2) Slope	MAX	-20000 kVAr 20000 kVAr	480 kVAr			
7163	Q(x2) Slope	Slope low	-20000 kVAr 20000 kVAr	50 kVAr			
7164	Q(x2) Slope	Slope high	-20000 kVAr 20000 kVAr	-50 kVAr			
7170 Cosphi(x2) Slope							
7171	Cosphi(x2) Slope	MIN	0.60 1.00	0.80		Option D1	
7172	Cosphi(x2) Slope	I/C	Inductive Capacitive	Inductive			
7173	Cosphi(x2) Slope	MAX	0.60 1.00	1.00			
7174	Cosphi(x2) Slope	I/C	Inductive Capacitive	Inductive			
7175	Cosphi(x2) Slope	Slope low	-1.000 1.000	-0.005			
7176	Cosphi(x2) Slope	Slope high	-1.000 1.000	0.005			
7180 Droop curve 2							
7181	Droop curve 2	Cosphi(x2)	Cosphi(x2) Q(x2)	Cosphi(x2)		Option D1	
7182	Droop curve 2	X2	U P	U			
7183	Droop curve 2	Enable	OFF ON	OFF			

3.10.7 Power offset

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7220 Power offset							
7221	Power offset 1	Setpoint	-20000 kW 20000 kW	0 kW		Designer's Reference Handbook	Setup of power offset.
7222	Power offset 1	Enable	OFF ON	OFF			
7223	Power offset 2	Setpoint	-20000 kW 20000 kW	0 kW			
7224	Power offset 2	Enable	OFF ON	OFF			
7225	Power offset 3	Setpoint	-20000 kW 20000 kW	0 kW			
7226	Power offset 3	Enable	OFF ON	OFF			

3.10.8 Cosphi offset

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7240 Cosphi offset							
7241	Cosphi offset 1	Setpoint	-0.8 0.8	0		Designer's Reference Handbook	Setup of cosphi offset.
7242	Cosphi offset 1	Enable	OFF ON	OFF			
7243	Cosphi offset 2	Setpoint	-0.8 0.8	0			
7244	Cosphi offset 2	Enable	OFF ON	OFF			
7245	Cosphi offset 3	Setpoint	-0.8 0.8	0			
7246	Cosphi offset 3	Enable	OFF ON	OFF			

3.11 System parameters - external communication

3.11.1 External communication

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7500 Communication control							
7501	Comm. control	Power	OFF ON	OFF		Option H2 or H3: Modbus or Profibus	These settings must be ON if commands are to be sent via Modbus communication. When enabled, the Modbus values will overrule external and internal settings. Voltage, power factor and reactive power control requires AVR control (option D1).
7502	Comm. control	Frequency	OFF ON	OFF			
7503	Comm. control	Voltage	OFF ON	OFF			
7504	Comm. control	Cosphi	OFF ON	OFF			
7505	Comm. control	Reactive power	OFF ON	OFF			
7510 External communication							
7511	Ext. communication	ID	1 247	1		Option H2 or H3: Modbus or Profibus	The mode ASCII is used for modem communication (ASCII: 7 data bit, RTU: 8 data bit).
7512	Ext. communication	Baud rate	9600 19200	9600		Option H2: Modbus	
7513	Ext. communication	Mode	RTU ASCII	RTU		Option H2: Modbus	

3.11.2 Power management internal communication

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
7530 Internal communication ID							
7531	Int. comm. ID	ID	1 16	1		Designer's Reference Handbook	

3.12 System parameters - engine interface communication

3.12.1 Engine interface communication

No.	Setting		Min. Max.	Factory set- ting	Notes	Ref.	Description
7560 Engine I/F							
7561	En- gine I/F	En- gine type	OFF Cummins QSX15 Cummins QSK23/45/60/78 Cummins QST30	OFF		Option: Cum- mins Modbus (H6)	The setting affects the displayed data, but not the Modbus data (option H2).
7561	En- gine I/F	En- gine type	OFF DDEC EMR JDEC Iveco Perkins Caterpillar Volvo Penta Volvo Penta EMS 2 Scania EMS Scania EMS 2 MDEC 2000/4000 M.302 MDEC 2000/4000 M.303 MTU ADEC Cummins Generic J1939 MTU J1939 Smart Connect MTU ADEC Module 501	OFF		Option: J1939/ MTU ADEC/ MTU MDEC (H5) J1939 (H7)	MTU MDEC is only available in option H5 or H13. Please choose MDEC 2000/4000 M.303 when M.201 or M.304 is required. Menu 7562 is only applicable when MTU ADEC is selected as engine type. Menu 7563 is for enabling the EIC commands transmission. Menu 7564: When set to "ON", up to 19 extra views (of 3 lines) are added to the 15 original V1 views (of 3 lines). These extra views are displaying all the present engine com. values broadcasted on this CAN communication when this function is set to "ON". Menu 7565: "Caterpillar CDVR" will not work if MTU protocols are selected in menu 7561.
7562	CAN- open ID	Node ID	0 16	6			
7563	EIC Con- trols	En- able	OF F ON	ON			
7564	EIC Auto view	En- able	OF F ON	OFF			
7565	Digital AVR	Inter- face proto- col	OFF Caterpillar CDVR	OFF			
7566	TSC1 SA	Source addr.	-1 255	-1			

3.12.2 Digital AVR parameters (option T2)

Menu	Description	Min. value Max. value	Default value	Comment
2262	Soft-start timer for CBE	0.0 s 999.0 s	5.0 s	This setting determines the slope of the soft-start during a CBE start.
6004	Generator nominal voltage - nominal set 1	100 V 160 kV	400 V	The nominal voltage for the generator. Nominal set 1.
6014	Generator nominal voltage - nominal set 2	100 V 160 kV	480 V	The nominal voltage for the generator. Nominal set 2.
6024	Generator nominal voltage - nominal set 3	100 V 160 kV	480 V	The nominal voltage for the generator. Nominal set 3.
6034	Generator nominal voltage - nominal set 4	100 V 160 kV	480 V	The nominal voltage for the generator. Nominal set 4.
6041	Generator voltage transformer primary side	100 V 160 kV	400 V	The nominal voltage for the voltage transformer's primary side. Placed on generator side of breaker.
6042	Generator voltage transformer secondary side	100 V 690 V	400 V	The nominal voltage for the voltage transformer's secondary side. Placed on generator side of breaker.
6051	Busbar voltage transformer primary side – busbar nominal set 1	100 V 160 kV	400 V	The nominal voltage for the voltage transformer's primary side. Placed on busbar side of breaker. Busbar nominal set 1.
6052	Busbar voltage transformer secondary side – busbar nominal set 1	100 V 160 kV	400 V	The nominal voltage for the voltage transformer's secondary side. Placed on busbar side of breaker. Busbar nominal set 1.
6061	Busbar voltage transformer primary side – busbar nominal set 2	100 V 160 kV	400 V	The nominal voltage for the voltage transformer's primary side. Placed on busbar side of breaker. Busbar nominal set 2.
6062	Busbar voltage transformer secondary side – busbar nominal set 2	100 V 690 V	400 V	The nominal voltage for the voltage transformer's secondary side. Placed on busbar side of breaker. Busbar nominal set 2.
7564	EIC Auto view	OFF ON	OFF	Enables a Multi-line 2 unit to display readings from the digital AVR. If a reading is not available, the unit will display N.A. When this setting has been set to ON, the setting will be set to OFF afterwards. This is only a pulse that has been sent, but the Multi-line 2 unit will still display the readings, if any readings are available.
7565	Digital AVR	OFF DEIF DVC 310	OFF	Selects the CAN bus protocol for interfacing between a digital AVR and a Multi-line 2 unit.
7741	DAVR primary voltage	100 V 25000 V	400 V	Decides the primary side of a voltage transformer for the DVC. (This is the transformer side that is in contact with the generator voltage).

Menu	Description	Min. value Max. value	Default value	Comment
7742	DAVR secondary voltage	100 V 690 V	400 V	Decides the secondary side of a voltage transformer for the DVC. (This is the transformer side that is in contact with the DVC 310).
7743	DAVR busbar primary voltage	100 V 25000 V	400 V	Decides the primary side of a voltage transformer to the busbar. (This is the transformer side that is in contact with the busbar).
7744	DAVR busbar secondary voltage	100 V 690 V	400 V	Decides the secondary side of a voltage transformer to the busbar. (This is the transformer side that is in contact with the DVC 310).
7745	DAVR enable	OFF ON	OFF	When set to ON, the DVC 310 expects voltage measurements on the busbar.
7751	PWM threshold	0.00 % 100.00 %	10.00 %	Decides the output of the start-on threshold function. A higher number will give a steeper slope on the start-on threshold function.
7752	Activation threshold	0.00 % 100.00 %	35.00 %	Decides the upper limit of the start-on threshold function. When this limit has been reached, the soft-start function will take action. The percentage is of nominal voltage.
7753	Soft-start ramp	0.1 s 120.0 s	2.0 s	This parameter decides the slope of the soft-start function.
7761	DAVR warning	OFF ON	OFF	Enables the Multi line 2 to receive warnings from the DVC 310.
7762	DAVR warning fail class	Warning Trip GB	Warning	Decides the fail class if a warning is sent from the DVC 310.
7763	DAVR trip	OFF ON	OFF	Enables the Multi line 2 to receive trip alarms from the DVC 310.
7764	DAVR trip fail class	Warning Trip GB	Warning	Decides the fail class if a trip alarm is sent from the DVC 310.
7771	Knee set point percent of nominal frequency	70.0 % 100.0 %	96.0 %	Sets the knee set point, from which the DVC 310 will lower the voltage set point.
7772	U/F slope	1.0 3.0	1.0	Decides the slope for the U/F. A higher value will make the slope steeper.
7773	Soft voltage recovery adjustment	0.1 s/10 Hz 30.0 s/10 Hz	2.0 s/10 Hz	Decides how fast the voltage should recover from a load impact. It is required to have the Load Acceptance Module activated to use this. A lower value will make a steeper slope.
7774	Soft voltage recovery	OFF ON	OFF	Enables the soft voltage recovery.
7775	Adjustment of Load Acceptance Module	70 % 100 %	90 %	Decides how much the voltage is allowed to drop instantaneously, when a load impact is applied. A lower value allows a bigger voltage drop.

Menu	Description	Min. value Max. value	Default value	Comment
7776	Load Acceptance Module	OFF ON	OFF	Enables the Load Acceptance Module.
7781	Q droop compensation	0.0 % 10.0 %	2.0 %	Decides the slope of the Q droop compensation. A higher value allows more droop.
7782	U droop compensation	0.0 % 10.0 %	2.0 %	Decides the slope of the U droop compensation. A higher value allows more droop.
7783	Droop compensation type	Q droop compensation OFF	Q droop compensation	Only one of the droop types can be enabled.
7791	I excitation reference for Dry Alternator mode	0.0 A 20.0 A	1.5 A	Decides the excitation current in Dry Alternator mode.
7792	I excitation reference for Close Before Excitation	0.0 A 0.5 A	0.0 A	Decides how much excitation is allowed in a Close Before Excitation sequence. This is during the remanence phase.
7793	Transformer excitation current limit	0.0 % 300.0 %	100.0 %	Current maximum during transformer excitation sequence. The value is percentage of nominal current.
7794	Induction motor starting current limit	0.0 % 300.0 %	100.0 %	Current maximum during an induction motor starting sequence. The value is percentage of nominal current.
7795	I stator limitation function enable	OFF Magnetisation	OFF	Makes it possible to have the stator current limitation functions disabled, only induction motor starting, or both induction motor starting and transformer excitation.
7801	PID factor	1 100	20	Makes it possible to make the AVR regulation faster or slower.
7802	PID average or True RMS	Average RMS	Average	Decides whether the DVC 310 should make the voltage readings as average or true RMS values.
7803	Write all settings to DVC 310	OFF ON	OFF	When set to ON, the Multi-line 2 unit will send all the relevant parameters to the DVC 310.
7804	DAVR bias range	1.0 % 30.0 %	10.0 %	This setting control defines the outer limits for the regulation. 10 % on a 400 V generator means that voltage can be regulated from 360 to 440 V.
7805	DAVR controls	OFF ON	ON	Decides who has the control. When set to ON, the DVC 310 is allowed to change regulator mode, and the DVC 310 will not receive any parameters from the Multi-line 2 unit.
7806	DAVR bias analogue range	4 to 20 mA -10 to 0 to 10 V	-10 to 0 to 10 V	If the DVC 310 uses analogue bias for regulation, this defines the type of analogue interfacing for the DVC 310. The analogue input on the DVC 310 is hardcoded to be at terminal AI1.

Menu	Description	Min. value Max. value	Default value	Comment
7811	PT100_1 threshold	50 °C 250 °C	160 °C	Determines the maximum temperature of the winding in phase 1 of the alternator.
7812	PT100_2 threshold	50 °C 250 °C	160 °C	Determines the maximum temperature of the winding in phase 2 of the alternator.
7813	PT100_3 threshold	50 °C 250 °C	160 °C	Determines the maximum temperature of the winding in phase 3 of the alternator.
7821	Voltage loss detection enable	OFF ON	OFF	Enables the voltage loss protection.
7822	Excitation current protection	OFF ON	OFF	Enables the excitation current protection.
7823	Over-voltage protection	OFF ON	OFF	Enables the over-voltage protection.
7824	Diode fault	OFF ON	OFF	Enables the diode fault protection.
7825	Shutdown diodes	OFF ON	OFF	Enables the shutdown diodes function.
7831	DAVR communication error timer	0.0 s 100.0 s	0.0 s	A timer for an alarm for communication error to the DVC 310.
7832	DAVR communication error output A	Not used Relay 63	Not used	If the DAVR communication fails, it is possible to activate a relay.
7833	DAVR communication error output B	Not used Relay 63	Not used	If the DAVR communication fails, it is possible to activate a relay.
7834	DAVR communication error alarm enable	OFF ON	OFF	Enables/disables the alarm for communication error between the DVC 310 and the Multi-line 2 unit.
7835	DAVR communication error alarm fail class	Warning Trip GB	Warning	Decides what the Multi-line 2 unit should do, if the DAVR communication alarm occurs.

3.12.3 CAN port setup

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
7840 CAN select						
7841	CAN A		PM CAN PRIMARY			
7842	CAN B		PM CAN SECONDARY			
7843	CAN C		OFF			
7844	CAN D		OFF			
7845	CAN E		OFF			
7846	CAN F		OFF			

3.13 System parameters - external I/O communication setup

3.13.1 External I/O communication setup

No.	Setting	Min. Max.	Fac- tory set- ting	Notes	Ref.	Description
7890 CIO configuration						
7891	CIO enable	ON OFF	OFF			Enabling CIO communication.
7950 KL320x config						
7951	KL320x config	Mod- ule 1	Pt100 (2/3-wire) 10- 1200 Ω (2-wire)		Option: External I/ O mod- ules (H8)	Selection for analogue modules. The selections for KL 3202/3204 can- not be changed. After changing module type, the pa- rameter list in the PC USW must be uploaded again.
7952	KL320x config	Mod- ule 2				
7953	KL320x config	Mod- ule 3				
7954	KL320x config	Mod- ule 4				
7970 CAN 1						
7971	CAN 1	Type	OFF Beckhoff	OFF	Option: External I/ O mod- ules (H8)	This menu is only activated if option H8.2 is activated. After changing type, the parameter list in the PC USW must be uploaded again. Menu 7974 is for reestablishing com- munication after a fault/disconnec- tion.
7972	CAN 1	Baud	50k 125k 250k	125k		
7973	CAN 1	ID	1 to 64	1		
7974	CAN 1	Reset	OFF ON	OFF		
7980 CAN 2						
7981	CAN 2	Type	OFF Beckhoff	OFF	Option: External I/ O mod- ules (H8)	This menu is only activated if option H8.8 is activated. After changing type, the parameter list in the PC USW must be uploaded again. Menu 7984 is for reestablishing com- munication after a fault/disconnec- tion.
7982	CAN 2	Baud	50k 125k 250k	125k		
7983	CAN 2	ID	1 to 64	1		
7984	CAN 2	Reset	OFF ON	OFF		

3.13.2 Event printer

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
7990 Event printer						
7991	Event printer	Enable	OFF ON	OFF		Enable this when the printer is connected to the service port.
7992	Event printer	Print add data	OFF ON	OFF		Enable this if additional data is to be printed for every event; additional data such as power, voltage, etc.
7993	Event printer	Event records	1 150	5		This counter is the number of events that will be printed with additional data, when the digital input "Print event log" is activated.
7994	Event printer	Log type select	Event Battery	Event		Log types: Event Alarm Battery
7995	Event printer	Auto status	0 min 990 min	0 min		Time interval between the automatic status prints. If auto status is set to 0, the auto print is disabled.

3.14 System parameters - power management setup

3.14.1 Power management setup

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8000 Load-dependent start							
8001	Load-dep. start	P set-point	1 kW 20000 kW	100 kW		Designer's Reference Handbook	
8002	Load-dep. start	S set-point	1 kVA 20000 kVA	100 kVA			
8003	Load-dep. start	% set-point	1% 100%	90%			
8004	Load-dep. start	Timer	0.0 s 990.0 s	10.0 s			
8005	Load-dep. start	Min. load	0 kW 20000 kW	20 kW			
8010 Load-dependent stop							
8011	Load-dep. stop	P set-point	1 kW 20000 kW	200 kW		Designer's Reference Handbook	Menu 8015 set to "ON" will block the load-dependent stop if a heavy consumer is connected.
8012	Load-dep. stop	S set-point	1 kVA 20000 kVA	200 kVA			
8013	Load-dep. stop	% set-point	1% 100%	70%			
8014	Load-dep. stop	Timer	5.0 s 990.0 s	30.0 s			
8015	Load-dep. stop	Select	Blocked ON Blocked OFF	Blocked ON			
8020 PM config							
8021	PM config	Enable	Remote Local	Remote		Designer's Reference Handbook	Remote and local decide if the start/stop command of the plant is given Remote (digital input) or Local (from the display). Update is used to define if the change of a running mode will affect all AGCs connected on the power management CAN line or only the local unit where the running mode is changed.
8022	PM config	Update	Update local Update all	Update all			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8030 Priority selection							
8031	Priority select.	Priority	Manual abs. Running hours abs. Fuel optimisation Manual rel. Running hours rel.	Manual abs.		Option G4 and G5	Setup of priorities.
8080 Priority (1-5)							
8081	Priority 1	ID	1 16	1		Option G4 and G5	Menu 8086 is only applicable if "Manual" is selected in menu 8031. Menu 8086 resets itself to OFF automatically once the new settings have been transmitted.
8082	Priority 2	ID	1 16	2			
8083	Priority 3	ID	1 16	3			
8084	Priority 4	ID	1 16	4			
8085	Priority 5	ID	1 16	5			
8086	Transmit new priority	Enable	ON OFF	OFF			
8090 Priority (6-11)							
8091	Priority 6	ID	1 16	6		Option G4 and G5	
8092	Priority 7	ID	1 16	7			
8093	Priority 8	ID	1 16	8			
8094	Priority 9	ID	1 16	9			
8095	Priority 10	ID	1 16	10			
8096	Priority 11	ID	1 16	11			
8100 Priority (12-16)							
8101	Priority 12	ID	1 16	12		Option G4 and G5	
8102	Priority 13	ID	1 16	13			
8103	Priority 14	ID	1 16	14			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8104	Priority 15	ID	1 16	15			
8105	Priority 16	ID	1 16	16			
8110 Running hours							
8111	Running hours	Priority Update	1 hrs 20000 hrs	175 hrs		Designer's Reference Handbook	If menu 8113 is set "ON", the trip counter in the unit will be reset to 0 hours.
8112	Running hours	Type	Total Trip LoadProfiled	Absolute			
8113	Running hours	Trip counter	OFF ON	OFF			
8120 Ground relay							
8121	Ground relay	Output A	Not used Option-dep.	Not used		Designer's Reference Handbook	Selection of relay output for start point grounding (8121 and 8122). 8123 is used to enable the ground relay feature. The timer setting is for how long a ground relay feedback failure is accepted.
8122	Ground relay	Output B	Not used Option-dep.	Not used			
8123	Ground relay	Enable	OFF ON	OFF			
8124	Ground failure	Timer	1 s 5 s	1 s			
8125	Ground failure	Fail class	F1...F8	Trip GB (F3)			
8130 Ground relay position							
8131	Gnd open fail	Timer	1 s 5 s	1 s		Designer's Reference Handbook	Alarms related to the position of the ground failure breaker.
8132	Gnd open fail	Fail class	F1...F8	Trip GB (F3)			
8133	Gnd close fail	Timer	1 s 5 s	1 s			
8134	Gnd close fail	Fail class	F1...F8	Block (F1)			
8135	Gnd pos fail	Timer	1 s 5 s	1 s			
8136	Gnd pos fail	Fail class	F1...F8	Trip GB (F3)			
8140 Stop non-connected DGs							
8141	Stop non-con. DGs	Delay	10.0 s 600.0 s	60.0 s		Option G5	Stop timer for non-connected gensets.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
8170 Fuel optimise						
8171	Fuel optimise	Setpoint	30% 100%	80%		Option G5
8172	Fuel optimise	Swap setpoint	10 kW 20000 kW	200 kW		
8173	Fuel optimise	Timer	0.0 s 999.0 s	10.0 s		
8174	Fuel optimise	Hours	1 hrs 20000 hrs	175 hrs		
8175	Fuel optimise	Enable hour	OFF ON	OFF		
8180 Mains config.						
8181	Mb failure start	Enable	OFF ON	OFF		Option G5 Only available in AGC mains unit. Auto switch selections: -OFF -Static section -Dynamic section -All sections
8182	Parallel	Enable	OFF ON	OFF		
8183	No break transfer	Enable	OFF ON	OFF		
8184	Auto switch	Select	OFF All sections	OFF		
8185	Run type	Select	Run all mains Run one mains	Run one mains		
8186	Run type	ID to run	17 32	17		
8190 Tie breaker						
8191	Tie breaker	TB open point	0 kW 20000 kW	50 kW		Option G5 Only available in AGC mains unit.
8192	Tie breaker	Power Capacity	1 kW 20000 kW	50 kW		
8193	Tie breaker	P. cap. Overrule	5.0 s 999.9 s	30.0 s		
8194	Tie breaker	P cap. Overrule	OFF ON	OFF		
8195	Tie breaker	Load time	0.0 s 30.0 s	0.0 s		
8200 Heavy consumer 1						
8201	Heavy consumer 1	Req. value	10 kVA 9999 kVA	500 kVA		Option G5 Only available in AGC DG units.
8202	Heavy consumer 1	Nom. power	10 kW 9999 kW	400 kW		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8203	Heavy consumer 1	Load type	Fixed load Variable load	Fixed load			
8210 Heavy consumer 2							
8211	Heavy consumer 2	Req. value	10 kVA 9999 kVA	500 kVA		Option G5	Only available in AGC DG units.
8212	Heavy consumer 2	Nom. power	10 kW 9999 kW	400 kW			
8213	Heavy consumer 2	Load type	Fixed load Variable load	Fixed load			
8220 Available power 1							
8221	Avail. power 1	Setpoint	10 kW 20000 kW	1000 kW		Option G5	The setting can be used for conditional connection of load groups. The relay(s) used must be set to "Limit" mode.
8222	Avail. power 1	Timer	1.0 s 999.9 s	10.0 s			
8223	Avail. power 1	Relay output A	Not used Option-dep.	Not used			
8224	Avail. power 1	Relay output B	Not used Option-dep.	Not used			
8225	Avail. power 1	Enable	OFF ON	OFF			
8230 Available power 2							
8231	Avail. power 2	Setpoint	10 kW 20000 kW	1000 kW		Option G5	The setting can be used for conditional connection of load groups. The relay(s) used must be set to "Limit" mode.
8232	Avail. power 2	Timer	2.0 s 999.9 s	10.0 s			
8233	Avail. power 2	Relay output A	Not used Option-dep.	Not used			
8234	Avail. power 2	Relay output B	Not used Option-dep.	Not used			
8235	Avail. power 2	Enable	OFF ON	OFF			

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
8240 Available power 3						
8241	Avail. power 3	Setpoint	10 kW 20000 kW	1000 kW		Option G5 The setting can be used for conditional connection of load groups. The relay(s) used must be set to "Limit" mode.
8242	Avail. power 3	Timer	3.0 s 999.9 s	10.0 s		
8243	Avail. power 3	Relay output A	Not used Option-dep.	Not used		
8244	Avail. power 3	Relay output B	Not used Option-dep.	Not used		
8245	Avail. power 3	Enable	OFF ON	OFF		
8250 Available power 4						
8251	Avail. power 4	Setpoint	10 kW 20000 kW	1000 kW		Option G5 The setting can be used for conditional connection of load groups. The relay(s) used must be set to "Limit" mode.
8252	Avail. power 4	Timer	4.0 s 999.9 s	10.0 s		
8253	Avail. power 4	Relay output A	Not used Option-dep.	Not used		
8254	Avail. power 4	Relay output B	Not used Option-dep.	Not used		
8255	Avail. power 4	Enable	OFF ON	OFF		
8260 Available power 5						
8261	Avail. power 5	Setpoint	10 kW 20000 kW	1000 kW		Option G5 The setting can be used for conditional connection of load groups. The relay(s) used must be set to "Limit" mode.
8262	Avail. power 5	Timer	5.0 s 999.9 s	10.0 s		
8263	Avail. power 5	Relay output A	Not used Option-dep.	Not used		
8264	Avail. power 5	Relay output B	Not used Option-dep.	Not used		
8265	Avail. power 5	Enable	OFF ON	OFF		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8270 TB power							
8271	TB power	Transducer max.	0 kW 20000 kW	0 kW		Option G5	AGC mains only: If the TB needs to be deloaded before opening, a power transducer must be connected to multi-input 105.
8272	TB power	Transducer min.	-20000 kW 0 kW	0 kW			
8280 Asymmetric load sharing							
8281	Asymmetric LS	Setpoint	1% 100%	80%		Option G5	Please refer to the option G4/G5 manual.
8282	Asymmetric LS	Enable	OFF ON	OFF			
8880 Load-dependent start/stop calc.							
8881	Start/stop calc.	S1	kW kVA	kW		Option G5	These settings are used to decide how the load-dependent start and stop commands in the power management system should be calculated.
8882	Start/stop calc.	S2	Value Per-centage	Value			
8920 Secured mode							
8921	Secured mode	Sec	Secured mode OFF Secured mode ON	Secured mode OFF		Option G5	Multi-start setpoint 1 and 2: - Auto calculation - 1 DG - 2 DG - 3 DG - 4 DG - 5 DG - 6 DG - 7 DG - 8 DG - 9 DG - 10 DG - 11 DG - 12 DG - 13 DG - 14 DG - 15 DG - 16 DG Minimum number of running DGs: 1-16 DGs. Multi-start configuration: Selects between setpoint 1 and 2.
8922	Multi-start setpoint 1	Setpoint 1	Auto calculation Start 16 DG	Auto calculation			
8923	Multi-start setpoint 1	Run 1	Minimum number run. 1-16	1			
8924	Multi-start config.	Select	Multi-start set 1 Multi-start set 2	Multi-start set 1			
8925	Multi-start setpoint 2	Setpoint 2	Auto calculation Start 16 DG	Start 16 DG			
8926	Multi-start setpoint 2	Run 2	Minimum number run. 1-16	1			

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
8930 Heavy consumer 1 variable load							
8931	HC 1 VAR load	Type	Multi-in 102 Multi-in 108	Multi-in 102			Type: - Multi-input 102 - Multi-input 105 - Multi-input 108 The function is only avail- able in AGC DG units.
8932	HC 1 VAR load	Setpoint min.	0 mA 10 mA	0 mA			
8933	HC 1 VAR load	Setpoint max.	10 mA 20 mA	20 mA			
8940 Heavy consumer 2 variable load							
8941	HC 2 VAR load	Type	Multi-in 102 Multi-in 108	Multi-in 105			Type: - Multi-input 102 - Multi-input 105 - Multi-input 108 The function is only avail- able in AGC DG units.
8942	HC 2 VAR load	Setpoint min.	0 mA 10 mA	0 mA			
8943	HC 2 VAR load	Setpoint max.	10 mA 20 mA	20 mA			
8990 BTB closed ring							
8991	Closed ring	Enable	ON OFF	OFF		Option G5	This parameter deter- mines whether it is al- lowed to close all BTBs in a ring bus at the same time.

3.15 System parameters - jump menus

3.15.1 Jump menus

A number of menus can only be entered using the jump menu.

3.15.2 9000 Software version

Information about the application software version downloaded to the unit. Please check this before contacting DEIF regarding service and support matters. This menu also shows the clock and the date in the unit.

Option N: "W1" displays the IP address and Subnet mask, and "W2" displays the Gateway address and software image version.

No.	Description	Notes
9000 software version		
9000	Shows the software version of the unit. Also shows the date and clock in the unit.	
9001	Shows the revision of the software in the unit.	
9002	Shows the IP address and the subnet mask.	Requires Option N
9003	Shows the gateway and the image version of the Option N.	Requires Option N

3.15.3 9010 Display character test

Shows a test print of the character set in the display.

3.15.4 9020 Service port

The service port can be set up to use the ASCII communication. The ASCII communication is used when the utility software is connected through a modem.



Selection "0" must be used for cable connection between the AGC and the PC. Selection "1" must be used for modem connection between the AGC and the PC.

3.15.5 9030 Scaling

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
9030 Scaling of voltage reference						
9030	Scaling	Setting	10 V-2500 V 10 kV-160 kV	100 V-25000 V	Designer's Reference Handbook	This parameter is used to scale the voltage reference. Selections: 10 V-2500 V 100 V-25000 V 10 kV-160 kV 1 kV-75 kV

3.15.6 9070 M4 software version

Information about the software version in the engine interface printed circuit board placed in slot 7.

No.	Description	Notes
9070 M4 software version		
9070	Shows the M4 software version	Requires Option M4
9071	Shows the M4 protocol version	Requires Option M4
9072	Shows the M4 software revision	Requires Option M4
9073	Shows the internal protocol version	Requires Option M4

3.15.7 9100 Device type

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9100 Device type							
9100	Device type	Device type	DG unit BTB unit	DG unit		Designer's Reference Handbook	This setting is only accessible using the JUMP' button on the display. Available selections: - DG unit (diesel generator) - Mains unit (mains connection) - BTB unit (bus tie breaker)



The unit will return to factory parameter settings if setting in menu 9100 is changed!

3.15.8 911x Password

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
911x Password							
9116	User password	Setting	0 32000	2000		Designer's Reference Handbook	It is recommended to change the password levels of the user, service and master password if access to parameter settings must be restricted.
9117	User password	Setting	0 32000	2001			
9118	User password	Setting	0 32000	2002			

3.15.9 9120 Service menu

This menu is used to show the different timer values, the digital in- and outputs and the status of the different lines in M-Logic.

No.	Description	Notes
9120 Service menu		
9121	Shows the values of differential timers.	
9123	Shows the status of the digital inputs of the unit.	
9124	Shows the status of the outputs of the unit.	
9125	Shows the status of the different lines in M-Logic.	

3.15.10 9130 AC config.

This menu is used to choose the AC configuration.

No.	Setting	Description
9130 AC config.		
9130	AC config.	Setting Selections: - 3 phase L1L2L3 - 2 phase L1L3 - 2 phase L1L2 - 1 phase L1

Phase angles:



L1L2L3:	120 degrees with neutral.
L1L3:	180 degrees (split phase, neutral in the centre).
L1L2:	120 degrees with neutral.
L1:	Single phase with phase-neutral.

3.15.11 9140 Angle compensation BB/G

This menu is used to compensate the transformer phase angle when the generator and busbar measurements are made on each side of a transformer.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
9140 Angle comp. BB/G						
9140	Angle comp. BB/G 1	Angle	-179.0 deg. 179.0 deg.	0.0		Designer's Reference Handbook
9142	Angle comp. BB/G 2	Angle	-179.0 deg. 179.0 deg.	0.0		Designer's Reference Handbook

3.15.12 9150 Backlight dimmer

In this menu, it is possible to change the dim of the backlight in the display.

No.	Setting	Description
9150 Backlight dim		
9150	Backlight dimmer	Sets the light intensity for the display.

3.15.13 9160 Application drawing

This menu is used to change between different applications. In the bottom right corner, it is shown which application is active. When placed on active application, it will say ACT in bottom right corner of the display, otherwise INACT if not placed on active application.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
9160 User-defined application						
9160	Application	A 1 A 4	A 1		Designer's Reference Handbook	The 4 different applications available make it possible to shift between different plant types.

3.15.14 9170 Internal CAN protocol

Menu 9170 is used to make it possible to interface to AGC units using application SW version 3.20.x or earlier. Menus 9171 and 9172 are used to speed up power management telegrams between controllers.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
9170 Internal CAN protocol						
9170	Application		Protocol 1 Protocol 2	Protocol 2		Option G4, G5 and G8 power management
9171	Int. CAN units	<=15 units <=40 units		<=40 units		
9172	Int. CAN Baud	125 kbit 250 kbit		250 kbit		

3.15.15 9180 Quick setup (AGC diesel generator)

This menu makes it possible to set up the power management application without using the "Application configuration" tool in the PC utility software.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
9180 Quick setup						
9180	Quick set-up	Mode	OFF Setup stand-alone Setup plant	OFF		When using this menu, it will not be possible to design applications with AGC bus tie units.
9180	Quick set-up	CAN	OFF CAN A CAN B CAN A+B	CAN A		
9180	Quick set-up	MB	Pulse No breaker Continuous Compact	Pulse		
9180	Quick set-up	GB	Pulse Continuous Compact	Pulse		

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9180	Quick set-up	Mains	Mains present No mains present	Mains present			
9180	Quick set-up	Plant type	Standard Single DG	Standard			

3.15.16 9180 Quick setup (AGC mains)

This menu makes it possible to set up the power management application without using the "Application configuration" tool in the PC utility software.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9180 Quick setup							
9180	Quick set-up	Mode	OFF Setup stand-alone Setup plant	OFF			When using this menu, it will not be possible to design applications with AGC bus tie units.
9180	Quick set-up	CAN	OFF CAN A CAN B CAN A+B	CAN A			
9180	Quick set-up	MB	Pulse No breaker EXT/ATS Continuous Compact	Pulse			
9180	Quick set-up	TB	Pulse No breaker Continuous Compact	Pulse			
9180	Quick set-up	NX	Normally open Normally closed	Normally open			

3.15.17 9190 Application broadcast

This menu makes it possible to broadcast an application between all AGC units connected on the CAN A or CAN B line.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
9190 Application broadcast							
9190	Application broadcast	Enable	OFF Broadcast Broadcast + activate	OFF			
9190	Application broadcast	Application	Application 1 Application 2 Application 3 Application 4	Application 1			

3.15.18 9230 Memory backup

This menu makes it possible to back-up the memory before changing the internal battery. For additional information, please refer to the designer's reference handbook.

No.	Setting	Description
9230 Memory backup		
9231	Backup memory	This function stores the memory
9232	Restore memory	This function restores the memory



The unit will reboot after loading of an image.

3.16 System parameters - utility software

3.16.1 GSM settings



GSM settings are only accessible in the utility software.

No.	Setting		Min. Max.	Factory setting	Notes	Ref.	Description
10320 GSM Pin code							
10320	GSM Pin code	Function	0 9999	1933		Designer's Reference Handbook	
10330 Telephone no. 1							
10330	Telephone 1	Function	0 9999999999	12345678903		Designer's Reference Handbook	



Telephone numbers 2-5 are available in menus 10340-10373.

3.17 System parameters - VDO inputs

3.17.1 VDO 102



VDO 102 settings are only accessible in the utility software.

No.	Setting	Min. Max.	Factory set- ting	Notes	Ref.	Description
10460 VDO 1 type						
10460	VDO 1 type	Sensor type 1 Configurable VDO	Sensor type 1		Designer's Refer- ence Handbook	Selections are: -Sensor type 1 -Sensor type 2 -Sensor type 3 -Configurable VDO
10470 VDO 1 input setpoint 1						
10470	VDO 1 inp. setp. 1	0 Ohm 1800 Ohm	10 Ohm		Designer's Refer- ence Handbook	Configurable VDO curve.
10480 VDO 1 output setpoint 1						
10480	VDO 1 outp. setp. 1	-49 482	40		Designer's Refer- ence Handbook	Configurable VDO curve.
10490 VDO 1 input setpoint 2						
10490	VDO 1 inp. setp. 2	0 Ohm 1800 Ohm	44.9 Ohm		Designer's Refer- ence Handbook	Configurable VDO curve.
10500 VDO 1 output setpoint 2						
10500	VDO 1 outp. setp. 2	-49 482	50		Designer's Refer- ence Handbook	Configurable VDO curve.
10510 VDO 1 input setpoint 3						
10510	VDO 1 inp. setp. 3	0 Ohm 1800 Ohm	81 Ohm		Designer's Refer- ence Handbook	Configurable VDO curve.
10520 VDO 1 output setpoint 3						
10520	VDO 1 outp. setp. 3	-49 482	60		Designer's Refer- ence Handbook	Configurable VDO curve.
10530 VDO 1 input setpoint 4						
10530	VDO 1 inp. setp. 4	0 Ohm 1800 Ohm	134.7 Ohm		Designer's Refer- ence Handbook	Configurable VDO curve.
10540 VDO 1 output setpoint 4						
10540	VDO 1 outp. setp. 4	-49 482	80		Designer's Refer- ence Handbook	Configurable VDO curve.
10550 VDO 1 input setpoint 5						
10550	VDO 1 inp. setp. 5	0 Ohm 1800 Ohm	184 Ohm		Designer's Refer- ence Handbook	Configurable VDO curve.

No.	Setting	Min. Max.	Factory set- ting	Notes	Ref.	Description
10560 VDO 1 output setpoint 5						
10560	VDO 1 outp. setp. 5	-49 482	100		Designer's Refer- ence Handbook	Configurable VDO curve.
10570 VDO 1 input setpoint 6						
10570	VDO 1 inp. setp. 6	0 Ohm 1800 Ohm	200 Ohm		Designer's Refer- ence Handbook	Configurable VDO curve.
10580 VDO 1 output setpoint 6						
10580	VDO 1 outp. setp. 6	-49 482	110		Designer's Refer- ence Handbook	Configurable VDO curve.
10590 VDO 1 input setpoint 7						
10590	VDO 1 inp. setp. 7	0 Ohm 1800 Ohm	210 Ohm		Designer's Refer- ence Handbook	Configurable VDO curve.
10600 VDO 1 output setpoint 7						
10600	VDO 1 outp. setp. 7	-49 482	115		Designer's Refer- ence Handbook	Configurable VDO curve.
10610 VDO 1 input setpoint 8						
10610	VDO 1 inp. setp. 8	0 Ohm 1800 Ohm	220 Ohm		Designer's Refer- ence Handbook	Configurable VDO curve.
10620 VDO 1 output setpoint 8						
10620	VDO 1 outp. setp. 8	-49 482	120		Designer's Refer- ence Handbook	Configurable VDO curve.

3.17.2 VDO 105



VDO 105 settings are only accessible in the utility software.



Menus 10630-10790 equal the settings for VDO 102 (10460-10620).

3.17.3 VDO 108



VDO 108 settings are only accessible in the utility software.



Menus 10800-10960 equal the settings for VDO 102 (10460-10620).

3.17.4 Multi-input selections 102, 105, 108

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
10970 Engineering units						
10970	Engineering units	Bar/Celsius Psi/Fahrenheit	Bar/Celsius			
10980 Multi-input configuration 102						
10980	Multi-inp. conf. 102	4-20 mA Binary	0-40V DC			Possible selections: 4-20 mA 0-40V DC Pt100 Pt1000 VDO oil pressure VDO water temp VDO fuel level Binary
10990 Multi-input configuration 105						
10990	Multi-inp. conf. 105	4-20 mA Binary	0-40V DC			Possible selections: 4-20 mA 0-40V DC Pt100 Pt1000 VDO oil pressure VDO water temp VDO fuel level Binary
11000 Multi-input configurable 108						
11000	Multi-inp. conf. 108	4-20 mA Binary	0-40V DC			Possible selections: 4-20 mA 0-40V DC Pt100 Pt1000 VDO oil pressure VDO water temp VDO fuel level Binary

3.17.5 Multi-input selections option M16.6

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
11120 Multi-input configuration 91						
11120	Multi-inp. conf. 91	4-20 mA Pt100	0-5V DC		Option M16.6	Possible selections: 4-20 mA 0-5V DC Pt100
11130 Multi-input configuration 93						
11130	Multi-inp. conf. 93	4-20 mA Pt100	0-5V DC		Option M16.6	Possible selections: 4-20 mA 0-5V DC Pt100
11140 Multi-input configuration 95						
11140	Multi-inp. conf. 95	4-20 mA Pt100	0-5V DC		Option M16.6	Possible selections: 4-20 mA 0-5V DC Pt100
11150 Multi-input configurable 97						
11150	Multi-inp. conf. 97	4-20 mA Pt100	0-5V DC		Option M16.6	Possible selections: 4-20 mA 0-5V DC Pt100

3.17.6 Multi-input selections M16.8

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
11160 Multi-input configuration 127						
11160	Multi-inp. conf. 127	4-20 mA Pt100	0-5V DC		Option M16.8	Possible selections: 4-20 mA 0-5V DC Pt100
11170 Multi-input configuration 129						
11170	Multi-inp. conf. 129	4-20 mA Pt100	0-5V DC		Option M16.8	Possible selections: 4-20 mA 0-5V DC Pt100
11180 Multi-input configuration 131						
11180	Multi-inp. conf. 131	4-20 mA Pt100	0-5V DC		Option M16.8	Possible selections: 4-20 mA 0-5V DC Pt100
11190 Multi-input configurable 133						
11190	Multi-inp. conf. 133	4-20 mA Pt100	0-5V DC		Option M16.8	Possible selections: 4-20 mA 0-5V DC Pt100

3.17.7 4-20 mA input scaling

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
11010 4-20 mA input scale 102						
	4-20 mA input scale 102	Setpoint	No decimal Two decimal	No decimal		Selecting "Enable" and writing the new setpoint will scale the associated min., max. and value automatically.
	4-20 mA input scale 102	Enable	OFF ON	OFF		



The same settings apply to menus 11020-11110.

3.17.8 Parameter ID

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
11200 Parameter ID						
11201	Parameter ID	Setpoint	"Insert text"	"Insert text"	Designer's Reference Handbook	Setup of parameter ID.
11202	Parameter ID	Password level	Basic Customer Service	Customer		

3.18 System parameters - external digital outputs


3.18.1 External digital outputs

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
12790 Ext. dig. out 1						
	Ext. dig. out 1	Function	Alarm relay ND Limit Alarm relay NE	Alarm relay ND	Option: External I/O modules (H8)	
	Ext. dig. out 1	OFF delay	0.0 s 999.9 s	5.0 s		

 The same settings apply to menus 12800-12940.

3.18.2 External module status

No.	Setting	Min. Max.	Notes	Ref.	Description
12950	Ext module 0 STATUS	-32768 32767		Option: External I/O modules (H8)	This is a number read in the external module and displayed in the USW only. Please refer to option H8 description for details.

 The same settings apply to menus 12951-12983 (external modules 1 to 33).

3.18.3 13000 SuperVision

The following menus define the data used for the "SuperVision" page in the utility software.

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
13000 Fuel consumption						
13000	F. cons. 0% load	Setpoint	0 l/h 3000 l/h	2 l/h		Menu 13005 activates display of the expected fuel rate in the utility software SuperVision page.
13001	F. cons. 50% load	Setpoint	0 l/h 3000 l/h	114.8 l/h		
13002	F. cons. optimum load	Setpoint	0 l/h 3000 l/h	168.7 l/h		
13003	F. cons. 100% load	Setpoint	0 l/h 3000 l/h	228.5 l/h		
13004	Optimum load	Setpoint	51% 99%	75%		
13005	Fuel rate expected	Enable	OFF ON	OFF		

No.	Setting	Min. Max.	Factory setting	Notes	Ref.	Description
13010 Oil pressure, coolant temp, fuel level input						
13010	Oil press. input	Setpoint	Multi-in 102 Auto detection	Auto detection		Selections are: - Multi-input 102 - Multi-input 105 - Multi-input 108 - Auto detection - EIC oil pressure
13011	Cool water input	Setpoint	Multi-in 102 Auto detection	Auto detection		
13012	Fuel level input	Setpoint	Multi-in 102 Auto detection	Auto detection		