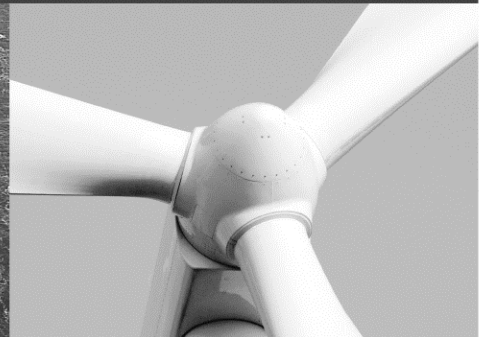
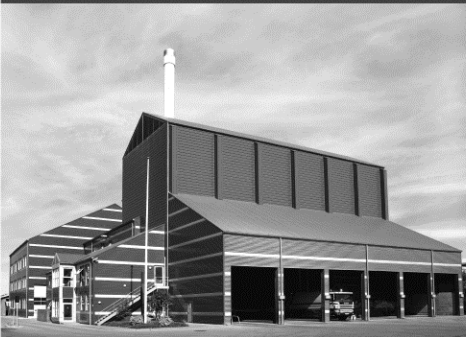




-power in control



Delomatic 400 GAS CHP controller TCP/IP Modbus communication



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1. About this document

General purpose

This document is the TCP/IP Modbus communication manual for DEIF's Delomatic-400 (DM-400) GAS Combined Heat and Power (CHP) plant controller.

The general purpose is to give the designer the data addresses of the TCP/IP Modbus.



Please make sure to read this handbook before working with the DM-400 GAS controller and the gen-set to be controlled. Failure to do this could result in damage to the equipment or human injury.

Intended users

This manual is mainly intended for the designer.

Contents/overall structure

The 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. Warnings and legal information

Legal information and responsibility

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

In order to obtain safe and trouble-free use of the DM 400 GAS it is important that transport, storage, mounting and commissioning is done according to standards. The units are not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

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.

Safety issues

Installing the unit implies 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.

Extra care must be taken that components are not replaced with power on the system.

Definitions

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

Notes



The notes provide general information which will be helpful for the reader to bear in mind.

Warnings



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

3. General

Hardware

Besides the TCP/IP webserver connection, the Ethernet TCP/IP holds the Modbus communication:

Hardware base: 10/100 BASE-T Ethernet
Ethernet port: RJ45 socket 8-pole (8P8C)
Cable to be used: EIA/TIA 568 B - cable

Software

Modbus TCP/IP: The Delomatic-4 is the slave in the Modbus communication
IP address: Configurable Factory setting: 192.168.2.21
Port: 30000

Function codes: 3 Read holding registers
6 Write single register



The address list is representing the standard DEIF layout. For specific customer solutions, separate dedicated lists are provided.

4. Function 3 (read)

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
application information						
4000		Software-Version - Application	16			
4001		Interface-Version - Modul #2	16			
4002		Hardware-Version Modul #2	16			
4003		Software-Version - Modul #2	16			
4004		Software-Revision Modul #2	16			
4005		Interface-Version - Modul #3	16			
4006		Hardware-Version Modul #3	16			
4007		Software-Version - Modul #3	16			
4008		Software-Revision Modul #3	16			
4009		Interface-Version - Modul #4	16			
4010		Hardware-Version Modul #4	16			
4011		Software-Version - Modul #4	16			
4012		Software-Revision Modul #4	16			
4013		Interface-Version - Modul #5	16			
4014		Hardware-Version Modul #5	16			
4015		Software-Version - Modul #5	16			
4016		Software-Revision Modul #5	16			
4017		Interface-Version - Modul #6	16			
4018		Hardware-Version Modul #6	16			
4019		Software-Version - Modul #6	16			
4020		Software-Revision Modul #6	16			
4021		Interface-Version - Modul #7	16			
4022		Hardware-Version Modul #7	16			
4023		Software-Version - Modul #7	16			
4024		Software-Revision Modul #7	16			
4025		Interface-Version - Modul #8	16			
4026		Hardware-Version Modul #8	16			
4027		Software-Version - Modul #8	16			
4028		Software-Revision Modul #8	16			
4029		Interface-Version - Modul #9	16			
4030		Hardware-Version Modul #9	16			
4031		Software-Version - Modul #9	16			
4032		Software-Revision Modul #9	16			
electrical values						
4100		generator voltage L1-L2	16	V		
4101		generator voltage L2-L3	16	V		
4102		generator voltage L3-L1	16	V		
4103		generator voltage L1-N	16	V		
4104		generator voltage L2-N	16	V		
4105		generator voltage L3-N	16	V		

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4106		generator frequency	16	Hz	1/10	
4107		generator current L1	16	A		
4108		generator current L2	16	A		
4109		generator current L3	16	A		
4110		generator active load	16	kW		
4111		generator reactive load	16	kvar		
4112		generator Cos Phi	16	-	1/100	
4113		mains voltage L1-L2	16	V		
4114		mains voltage L2-L3	16	V		
4115		mains voltage L3-L1	16	V		
4116		mains voltage L1-N	16	V		
4117		mains voltage L2-N	16	V		
4118		mains voltage L3-N	16	V		
4119		mains frequency	16	Hz	1/10	
4120		mains Cos Phi	16	-	1/100	
4121		busbar voltage L1-L2	16	V		
4122		busbar voltage L2-L3	16	V		
4123		busbar voltage L3-L1	16	V		
4124		busbar voltage L1-N	16	V		
4125		busbar voltage L2-N	16	V		
4126		busbar voltage L3-N	16	V		
4127		busbar current L1	16	A		
4128		busbar current L2	16	A		
4129		busbar current L3		A		
counters						
4200		active energy, generated [High]	16	kWh		
4201		active energy, generated [Low]	16	kWh		
4202		active energy, consumed [High]	16	kWh		
4203		active energy, consumed [Low]	16	kWh		
4204		reactive energy, generated [High]	16	kvarh		
4205		reactive energy, generated [Low]	16	kvarh		
4206		reactive energy, consumed [High]	16	kvarh		
4207		reactive energy, consumed [Low]	16	kvarh		
4208		operating time [High]	16	h		
4209		operating time [Low]	16	h		
4210		breaker operations GCB [High]	16			
4211		breaker operations GCB [Low]	16			
4212		breaker operations MCB [High]	16			
4213		breaker operations MCB [Low]	16			
4214		start attempts [High]	16			
4215		start attempts [Low]	16			
4216		service timer engine [High]	16	h		
4217		service timer engine [Low]	16	h		
4218		service timer oil [High]	16	h		
4219		service timer oil [Low]	16	h		
4220		service timer spark plugs [High]	16	h		
4221		service timer spark plugs [Low]	16	h		
4222		par. counter 1 [High]	16	Free		

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4223		par. counter 1 [Low]	16	Free		
4224		par. counter 2 [High]	16	Free		
4225		par. counter 2 [Low]	16	Free		
4226		par. counter 3 [High]	16	Free		
4227		par. counter 3 [Low]	16	Free		
4228		par. counter 4 [High]	16	Free		
4229		par. counter 4 [Low]	16	Free		
feedback circuit breakers						
4300	0	GCB closed	1			
4300	1	GCB position failure	1			
4300	2	MCB closed	1			
4300	3	MCB position failure	1			
4300	4	Spare	1			
4300	5	Spare	1			
4300	6	Spare	1			
4300	7	Spare	1			
4300	8	Spare	1			
4300	9	Spare	1			
4300	10	Spare	1			
4300	11	Spare	1			
4300	12	Spare	1			
4300	13	Spare	1			
4300	14	Spare	1			
4300	15	Spare	1			
digital input functions						
4400	0	smoke detector	1			
4400	1	emergency stop	1			
4400	2	watchdog	1			
4400	3	safety chain	1			
4400	4	low cool water level.	1			
4400	5	ext. loss of mains	1			
4400	6	Pickup	1			
4400	7	GCB opened	1			
4400	8	GCB tripped	1			
4400	9	fault engine cooling water flow	1			
4400	10	fault engine cooling	1			
4400	11	gas alarm fault	1			
4400	12	enable operation	1			
4400	13	start demand	1			
4400	14	Acknowledge	1			
4400	15	filter maintenance	1			
4401	0	CH4 calibrating	1			
4401	1	fault auxiliaries	1			
4401	2	gas pressure A	1			
4401	3	gas tight control A	1			
4401	4	gas temperature A	1			
4401	5	exhaust back pressure	1			
4401	6	room air limiter	1			

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4401	7	fault emerg. cooling system	1			
4401	8	mixer pos. lean	1			
4401	9	fault intercooler system	1			
4401	10	winding temp. lim.	1			
4401	11	lube oil level max	1			
4401	12	lube oil level min	1			
4401	13	com. Pressure	1			
4401	14	gas alarm warning	1			
4401	15	fault gas alarm device	1			
4402	0	com. temperature A	1			
4402	1	island operation	1			
4402	2	demand gas B	1			
4402	3	fresh oil min storage	1			
4402	4	waste oil max storage	1			
4402	5	fresh oil min day	1			
4402	6	gas tight control B	1			
4402	7	gas temperature B	1			
4402	8	fresh oil max level day tank	1			
4402	9	bypass opened	1			
4402	10	bypass closed	1			
4402	11	MCB opened	1			
4402	12	MCB tripped	1			
4402	13	gas pressure B	1			
4402	14	par. counter 1	1			
4402	15	par. counter 2	1			
4403	0	par. counter 3	1			
4403	1	par. counter 4	1			
4403	2	par. message 1	1			
4403	3	par. message 2	1			
4403	4	par. message 3	1			
4403	5	par. message 4	1			
4403	6	par. message 5	1			
4403	7	par. message 6	1			
4403	8	par. message 7	1			
4403	9	par. message 8	1			
4403	10	par. message 9	1			
4403	11	par. message 10	1			
4403	12	par. message 11	1			
4403	13	par. message 12	1			
4403	14	par. message 13	1			
4403	15	par. message 14	1			
4404	0	par. message 15	1			
4404	1	par. message 16	1			
4404	2	par. message 17	1			
4404	3	par. message 18	1			
4404	4	par. message 19	1			
4404	5	par. message 20	1			
4404	6	par. message 21	1			

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4404	7	par. message 22	1			
4404	8	par. message 23	1			
4404	9	par. message 24	1			
4404	10	par. message 25	1			
4404	11	par. message 26	1			
4404	12	par. message 27	1			
4404	13	par. message 28	1			
4404	14	par. message 29	1			
4404	15	par. message 30	1			
4405	0	SDB 1	1			
4405	1	Heating circuit dp-limiter	1			
4405	2	fresh oil min level	1			
4405	3	fault cool.sys.	1			
4405	4	start prepare ok	1			
4405	5	STB 1	1			
4405	6	STB 2	1			
4405	7	Limitstop emergency cooler cold	1			
4405	8	limitstop emergency cooler warm	1			
4405	9	limitstop heating circuit cold	1			
4405	10	limitstop heating circuit warm	1			
4405	11	SDB 2	1			
4405	12	fast stop	1			
4405	13	fault Heating circuit water flow	1			
4405	14	fault room vent.	1			
4405	15	mixer pos. rich	1			
4406	0	generator fuse (AC voltage lost)	1			
4406	1	automatic operation	1			
4406	2	Spare	1			
4406	3	Spare	1			
4406	4	Spare	1			
4406	5	Spare	1			
4406	6	Spare	1			
4406	7	Spare	1			
4406	8	Spare	1			
4406	9	Spare	1			
4406	10	Spare	1			
4406	11	Spare	1			
4406	12	Spare	1			
4406	13	Spare	1			
4406	14	Spare	1			
4406	15	Spare	1			
digital output functions						
4450	0	rearm safety chain	1			
4450	1	open safety chain	1			
4450	2	GCB on command	1			
4450	3	GCB trip (undervoltage coil)	1			
4450	4	GCB off command	1			
4450	5	open gas valve A1	1			

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4450	6	open gas valve A2	1			
4450	7	ignition	1			
4450	8	starter	1			
4450	9	PKG amplifier	1			
4450	10	Gas compressor on	1			
4450	11	Engine cooling pump on	1			
4450	12	Heating circuit pump on	1			
4450	13	Engine cooler pump/fan stage1	1			
4450	14	Engine cooling fan stage2	1			
4450	15	Engine cooling fan stage3	1			
4451	0	emergency cooling pump/fan stage1	1			
4451	1	emer. Fan stage2	1			
4451	2	emer. Fan stage3	1			
4451	3	fresh oil pump/valve	1			
4451	4	gas mixer clock	1			
4451	5	gas mixer direction	1			
4451	6	cooling water preheater	1			
4451	7	open air flaps	1			
4451	8	Room air reg. release	1			
4451	9	collective fault	1			
4451	10	collective warning	1			
4451	11	ready for operation	1			
4451	12	gas tight control A	1			
4451	13	kWH puls	1			
4451	14	close bypass	1			
4451	15	MCB on command	1			
4452	0	MCB trip command	1			
4452	1	MCB off command	1			
4452	2	gas tight control B	1			
4452	3	open gas valve B1	1			
4452	4	open gas valve B2	1			
4452	5	island stage 1	1			
4452	6	island stage 2	1			
4452	7	island stage 3	1			
4452	8	island stage 4	1			
4452	9	Heating circuit bridge flow sensor	1			
4452	10	Emergency cooling pump on	1			
4452	11	room vent. stage 1	1			
4452	12	room vent. stage 2	1			
4452	13	Emergency cooling valve to cold	1			
4452	14	Emergency cooling valve to warm	1			
4452	15	Emergency cooler stage 1	1			
4453	0	breaker back up	1			
4453	1	Heating circuit valve to cold	1			
4453	2	Heating circuit valve to warm	1			
4453	3	release voltage reg.	1			
4453	4	release cos phi reg.	1			
4453	5	waste oil pump	1			

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4453	6	engine running	1			
4453	7	Spare	1			
4453	8	Spare	1			
4453	9	Spare	1			
4453	10	Spare	1			
4453	11	Spare	1			
4453	12	Spare	1			
4453	13	Spare	1			
4453	14	Spare	1			
4453	15	Spare	1			
analogue input functions (Pt100/NiCr/Ni)						
4500		exh.temp. A	16	°C	1/10	
4501		exh.temp. B	16	°C	1/10	
4502		exh.temp. after catalyst	16	°C	1/10	
4503		exh. temp. after heat exchanger	16	°C	1/10	
4504		exh.temp. bef. catalyst	16	°C	1/10	
4505		NiCrNi Res. 19	16	°C	1/10	
4506		NiCrNi Res. 18	16	°C	1/10	
4507		NiCrNi Res. 17	16	°C	1/10	
4508		NiCrNi Res. 16	16	°C	1/10	
4509		NiCrNi Res. 15	16	°C	1/10	
4510		NiCrNi Res. 14	16	°C	1/10	
4511		NiCrNi Res. 13	16	°C	1/10	
4512		NiCrNi Res. 12	16	°C	1/10	
4513		NiCrNi Res. 11	16	°C	1/10	
4514		NiCrNi Res. 10	16	°C	1/10	
4515		NiCrNi Res. 9	16	°C	1/10	
4516		NiCrNi Res. 8	16	°C	1/10	
4517		NiCrNi Res. 7	16	°C	1/10	
4518		NiCrNi Res. 6	16	°C	1/10	
4519		NiCrNi Res. 5	16	°C	1/10	
4520		NiCrNi Res. 4	16	°C	1/10	
4521		NiCrNi Res. 3	16	°C	1/10	
4522		NiCrNi Res. 2	16	°C	1/10	
4523		NiCrNi Res. 1	16	°C	1/10	
4524		cool.water temp. out	16	°C	1/10	
4525		lube oil temp.	16	°C	1/10	
4526		receiver temp.	16	°C	1/10	
4527		Heating circuit temp.bef.exchanger	16	°C	1/10	
4528		Engine cooler water temp. in	16	°C	1/10	
4529		room air temp.	16	°C	1/10	
4530		cool.water temp. in	16	°C	1/10	
4531		Heating circuit temp. after emer cooler	16	°C	1/10	
4532		Heating circuit water temp. return	16	°C	1/10	
4533		Heating circuit water temp. flow	16	°C	1/10	
4534		Heating circuit temp.after exchanger	16	°C	1/10	
4535		cold junction	16	°C	1/10	
4536		winding temp. U	16	°C	1/10	

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4537		winding temp. V	16	°C	1/10	
4538		winding temp. W	16	°C	1/10	
4539		gen bearing A	16	°C	1/10	
4540		gen bearing B	16	°C	1/10	
analogue input functions (0/4...20mA)						
4600		throttle pos.	16	%	1/10	
4601		lube oil pressure	16	bar	1/100	
4602		lambda voltage	16	mA	1/10	
4603		receiver press.	16	mbar		
4604		demanded power	16	kW		
4605		cool.water press.	16	bar	1/100	
4606		lube oil level	16	%	1/10	
4607		mains power	16	kW		
4608		CH4 value	16	%	1/10	
4609		gas tank level	16	%	1/10	
4610		battery voltage	16	V	1/10	
4611		knocking signal	16			
4612		gas pressure	16	mbar		
analogue output functions (0/4...20mA)						
4700		speed governor	16	mA	1/10	
4701		voltage regulator	16	mA	1/10	
4702		setpoint Heating circuit valve	16	mA	1/10	
4703		setpoint Generator cooler valve	16	mA	1/10	
4704		kW instrument	16	mA	1/10	
4705		setpoint Emergency cooler valve	16	mA	1/10	
4706		setpoint air vent.	16	mA	1/10	
4707		setpoint air flap	16	mA	1/10	
4708		mixer (intern)	16			
Stopcondition Level 1						
4800	0	24V DC power down	1			101
4800	1	DM4 software update watchdog reset	1			102
4800	2	DM4 watchdog reset	1			10101
4800	3	DM4 20msec task not running frequently	1			10102
4800	4	DM4 IO card data exchange timeout	1			10103
4800	5	DM4 software fault under boot	1			10104
4800	6	DM4 100msec task not running frequently	1			10105
4800	7	DM4 1sec task not running frequently	1			10106
4800	8	emergency stop button	1			10201
4800	9	safety temperature limiter 1	1			10202
4800	10	safety temperature limiter 2	1			10203
4800	11	low water level cooling circuit	1			10204
4800	12	low water level heating circuit	1			10205
4800	13	differential pressure heating circuit	1			10207
4800	14	DM4 watchdog relay does not work	1			10208
4800	15	safety chain does not rearm	1			10209
4801	0	safety chain does not trip	1			10210
4801	1	safety chain relay fallen off	1			10211
4801	2	smoke alarm	1			10212

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4801	3	gas alarm	1			10213
4801	4	cooling water flow	1			10214
4801	5	gas temperature line A	1			10215
4801	6	gas temperature line B	1			10216
4801	7	DI 'emergency stop button' is not assigned	1			10331
4801	8	DI 'watchdog' is not assigned	1			10332
4801	9	DI 'safetychain' is not assigned	1			10333
4801	10	DI 'GCB closed' is not assigned	1			10334
4801	11	DI 'GCB opened' is not assigned	1			10335
4801	12	DO 'open safety chain' is not assigned	1			10336
4801	13	DO 'rearm safety chain' is not assigned	1			10337
4801	14	DO 'GCB on command' is not assigned	1			10338
4801	15	DO 'GCB off command' is not assigned	1			10339
4802	0	DO 'GCB trip command' is not assigned	1			10340
4802	1	manifold IO assignment	1			10341
4802	2	Reserve	1			
4802	3	Reserve	1			
4802	4	Reserve	1			
4802	5	Reserve	1			
4802	6	Reserve	1			
4802	7	Reserve	1			
4802	8	Reserve	1			
4802	9	Reserve	1			
4802	10	Reserve	1			
4802	11	Reserve	1			
4802	12	Reserve	1			
4802	13	Reserve	1			
4802	14	Reserve	1			
4802	15	Reserve	1			
Stopcondition Level 2						
4810	0	quick stop selected	1			20001
4810	1	gas pressure line B	1			20010
4810	2	gas pressure line A	1			20012
4810	3	outputs overloaded or voltage out of range IOM 03	1			20013
4810	4	outputs overloaded or voltage out of range IOM 04	1			20014
4810	5	outputs overloaded or voltage out of range IOM 05	1			20015
4810	6	outputs overloaded or voltage out of range IOM 06	1			20016
4810	7	outputs overloaded or voltage out of range IOM 07	1			20017
4810	8	max idle time elapsed	1			20019
4810	9	acceleration state timeout	1			20020
4810	10	start prepare timeout	1			20022
4810	11	IO card uncalibrated	1			20024
4810	12	open air flaps: G511 does not disappear	1			20026
4810	13	opening exhaust flap: G182 missing	1			20027

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4810	14	opening exhaust flap: G181 does not disappear	1			20028
4810	15	start failure	1			20033
4811	0	stop failure	1			20034
4811	1	testmode: starter operation too long	1			20035
4811	2	speed input defective or engine still turning	1			20036
4811	3	low lube oil level (analogue)	1			20038
4811	4	low lube oil level (digital)	1			20039
4811	5	low lube oil pressure	1			20040
4811	6	high lube oil pressure	1			20041
4811	7	lube oil overheated	1			20042
4811	8	high cooling water temperature engine exit	1			20043
4811	9	exhaust back pressure too high	1			20044
4811	10	timeout gasalarm stage 1	1			20045
4811	11	high cooling water temperature engine inlet	1			20046
4811	12	fault cooling water flow	1			20047
4811	13	low water level cooling circuit	1			20048
4811	14	winding temperature limiter	1			20049
4811	15	test mode	1			20099
4812	0	SCANIA stop lamp	1			20351
4812	1	generator tip fuse blown	1			20500
4812	2	overspeed	1			20501
4812	3	generator undervoltage	1			20502
4812	4	generator overvoltage	1			20503
4812	5	generator overfrequency	1			20504
4812	6	generator underfrequency	1			20505
4812	7	generator earth fault	1			20506
4812	8	gas leakage check failed	1			20507
4812	9	gas pressure controller before compressor	1			20508
4812	10	gas temperature controller before compressor	1			20509
4812	11	timeout open gas valves	1			20510
4812	12	outputs overloaded or voltage out of range IOM 08	1			20018
4812	13	Reserve	1			
4812	14	gen bearing excess temperature A	1			20050
4812	15	gen bearing excess temperature B	1			20051
4813	0	ignition-counter: warm boot log	1			20100
4813	1	Reserve	1			
4813	2	Reserve	1			
4813	3	Reserve	1			
4813	4	Reserve	1			
4813	5	Reserve	1			
4813	6	Reserve	1			
4813	7	Reserve	1			
4813	8	Reserve	1			
4813	9	Reserve	1			
4813	10	ignition-status: checksum error	1			20128

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4813	11	Reserve	1			
4813	12	Reserve	1			
4813	13	Reserve	1			
4813	14	Reserve	1			
4813	15	Reserve	1			
Stopcondition Level 3						
4820	0	manual mode	1			30001
4820	1	phase sequence error	1			30018
4820	2	U/f failure	1			30019
4820	3	synchronization failure	1			30020
4820	4	connect GCB timeout	1			30021
4820	5	synchronization MCB failure	1			30022
4820	6	fuse blown	1			30029
4820	7	G213: failure cooling water pump	1			30030
4820	8	deload timeout	1			30035
4820	9	generator breaker position failure	1			30610
4820	10	generator breaker has tripped	1			30611
4820	11	generator breaker does not close	1			30612
4820	12	generator breaker does not disconnect	1			30613
4820	13	generator breaker disturbed: fuse blown	1			30615
4820	14	generator overload 1	1			30630
4820	15	generator overload 2	1			30631
4821	0	generator overexcitation (reactive power export too high)	1			30632
4821	1	generator underexcitation (reactive power import too high)	1			30633
4821	2	generator overcurrent 1	1			30634
4821	3	generator overcurrent 2	1			30635
4821	4	thermal overcurrent	1			30636
4821	5	generator overcurrent 4	1			30637
4821	6	reverse power 1 fast	1			30638
4821	7	reverse power 2 time-lag	1			30639
4821	8	mains power failure	1			30649
4821	9	mains underfrequency 2: stopping	1			30650
4821	10	mains delta undervoltage 2: stopping	1			30651
4821	11	mains star undervoltage 2: stopping	1			30652
4821	12	mains overfrequency 2: stopping	1			30653
4821	13	mains delta overvoltage 2: stopping	1			30654
4821	14	mains star overvoltage 2: stopping	1			30655
4821	15	too many asymmetry trips	1			30656
4822	0	too many mains failures	1			30657
4822	1	winding excess temperature U	1			30680
4822	2	winding excess temperature V	1			30681
4822	3	winding excess temperature W	1			30682
4822	4	mixer control does not work	1			30231
4822	5	Spare	1			
4822	6	Spare	1			
4822	7	Spare	1			

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4822	8	Spare	1			
4822	9	Spare	1			
4822	10	Spare	1			
4822	11	Spare	1			
4822	12	Spare	1			
4822	13	Spare	1			
4822	14	Spare	1			
4822	15	Spare	1			
Stopcondition Level 4						
4830	0	Spare	1			
4830	1	Spare	1			
4830	2	Spare	1			
4830	3	Spare	1			
4830	4	Spare	1			
4830	5	Spare	1			
4830	6	Spare	1			
4830	7	Spare	1			
4830	8	Spare	1			
4830	9	Spare	1			
4830	10	Spare	1			
4830	11	Spare	1			
4830	12	Spare	1			
4830	13	Spare	1			
4830	14	Spare	1			
4830	15	Spare	1			
Stopcondition Level 5						
4840	0	operation blocked on switchboard panel	1			50002
4840	1	voltage control does not work	1			50031
4840	2	cos phi control does not work	1			50032
4840	3	speed control does not work	1			50033
4840	4	power control does not work	1			50034
4840	5	low water level intercooler	1			50035
4840	6	cooling water valve not moving: G212 does not disappear	1			50040
4840	7	too high cylinder temperature: LR too big	1			50057
4840	8	generator continuously below min power	1			50070
4840	9	sensor defect lube oil pressure	1			50071
4840	10	lube oil pressure too low while generator breaker closed	1			50072
4840	11	stop because of too hot exhaust	1			50077
4840	12	wire break P150 exhaust back pressure	1			50082
4840	13	P150> exhaust back pressure too high	1			50083
4840	14	wire break intercooler water temperature	1			50086
4840	15	intercooler water too hot	1			50087
4841	0	short circuit of sensor intercooler water temperature	1			50088
4841	1	sensor defect lube oil level (analogue)	1			50089
4841	2	lube oil level max (analogue)	1			50090

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4841	3	lube oil level max (digital)	1			50091
4841	4	load reduction because of gas level too low	1			50092
4841	5	stop because of gas level too low	1			50093
4841	6	wire break gas level	1			50094
4841	7	wire break gas pressure	1			50095
4841	8	operation stopped from remote	1			50099
4841	9	operation stopped	1			50100
4841	10	wire break T208 lube oil temp.	1			50117
4841	11	wire break T201 engine cooling water inlet temp.	1			50121
4841	12	wire break T202 engine cooling water outlet temp.	1			50122
4841	13	wire break T151 exhaust temp. after turbo charger	1			50123
4841	14	mains power import signal defective	1			50147
4841	15	stop: exhaust temp. before catalyst too hot	1			50152
4842	0	stop: exhaust temp. after catalyst too hot	1			50153
4842	1	stop: exhaust temp. after engine A too hot	1			50154
4842	2	stop: exhaust temp. after engine B too hot	1			50155
4842	3	stop: exhaust temp. after heat exchanger too hot	1			50156
4842	4	stop: wire break cooling water pressure	1			50160
4842	5	stop: cooling water pressure not in limit	1			50161
4842	6	stop: cooling water pressure too low	1			50162
4842	7	stop: cooling water pressure too high	1			50163
4842	8	sensor defect CH4	1			50165
4842	9	calibration timeout	1			50166
4842	10	stop: CH4-value too low	1			50167
4842	11	load reduction because of CH4 value too low	1			50168
4842	12	stop because of mains power	1			50170
4842	13	mains breaker position failure	1			50620
4842	14	mains breaker has tripped	1			50621
4842	15	mains breaker does not close	1			50622
4843	0	mains breaker does not disconnect	1			50623
4843	1	mains breaker disturbed: fuse blown	1			50625
4843	2	stop because of misfiring	1			50679
4843	3	load reduction because of misfiring	1			50680
4843	4	stop because of heat control	1			50681
4843	5	Spare	1			
4843	6	Spare	1			
4843	7	Spare	1			
4843	8	Spare	1			
4843	9	Spare	1			
4843	10	short circuit of sensor gen winding temp. U	1			50190
4843	11	short circuit of sensor gen winding temp. V	1			50191
4843	12	short circuit of sensor gen winding temp. W	1			50192
4843	13	short circuit of sensor gen bearing A	1			50193
4843	14	short circuit of sensor gen bearing B	1			50194
4843	15	sensor defect gen winding temp. U	1			50195

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4844	0	sensor defect gen winding temp. V	1			50196
4844	1	sensor defect gen winding temp. W	1			50197
4844	2	sensor defect gen bearing A	1			50198
4844	3	sensor defect gen bearing B	1			50199
4844	4	Reserve	1			
4844	5	Reserve	1			
4844	6	Reserve	1			
4844	7	Reserve	1			
4844	8	Reserve	1			
4844	9	Reserve	1			
4844	10	Reserve	1			
4844	11	Reserve	1			
4844	12	Reserve	1			
4844	13	Reserve	1			
4844	14	Reserve	1			
4844	15	Reserve	1			
4845	0	ignition-communication fault	1			50400
4845	1	ignition: read status fault	1			50401
4845	2	ignition: read counter fault	1			50402
4845	3	Reserve	1			
4845	4	Reserve	1			
4845	5	Reserve	1			
4845	6	ignition-status: disc error	1			50420
4845	7	ignition-status: overspeed shutdown	1			50421
4845	8	ignition-status: no charge	1			50422
4845	9	ignition-status: open primary	1			50423
4845	10	ignition-status: shorted primary	1			50424
4845	11	ignition-status: open secondary	1			50425
4845	12	Reserve	1			
4845	13	Reserve	1			
4845	14	Reserve	1			
4845	15	Reserve	1			
Stopcondition Level 6						
4850	0	opening air flaps timeout: G512 missing	1			60025
4850	1	room air temperature limiter	1			60026
4850	2	cooling water valve: G211 & G212 at the same time	1			60027
4850	3	low water level emergency cooler (L314)	1			60039
4850	4	fault emergency cooler (G313)	1			60040
4850	5	Heating circuit water after emergency cooler too cold	1			60041
4850	6	wire break heating circuit after emergency cooler	1			60042
4850	7	short circuit heating circuit after emergency cooler	1			60043
4850	8	LR because oil temperature	1			60120
4850	9	LR because water temperature engine exit	1			60121
4850	10	Spare	1			
4850	11	Spare	1			

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4850	12	Spare	1			
4850	13	Spare	1			
4850	14	Spare	1			
4850	15	Spare	1			
Stopcondition Level 7						
4860	0	closing air flaps timeout: G511 missing	1			70021
4860	1	closing air flaps: G512 does not disappear	1			70022
4860	2	fault limit-stops air flaps (closed and open)	1			70023
4860	3	closing exh.-flap: limit-stop G181 missing	1			70024
4860	4	closing exh.-flap: G182 does not disappear	1			70025
4860	5	fault limit-stops exhaust flap (closed and open)	1			70026
4860	6	fault waste oil pump	1			70041
4860	7	fresh oil level min	1			70042
4860	8	waste oil tank full	1			70043
4860	9	pickup signal missing	1			70050
4860	10	emerg. cooling valve: G311 & G312 at the same time	1			70051
4860	11	emerg. cooling valve not moving: G312 does not disappear	1			70052
4860	12	pump heating circuit disturbed	1			70060
4860	13	analogue power demand input defective	1			70100
4860	14	warning: exhaust temp. before catalyst too hot	1			70152
4860	15	warning: exhaust temp. after catalyst too hot	1			70153
4861	0	warning: exhaust temp. after engine A too hot	1			70154
4861	1	warning: exhaust temp. after engine B too hot	1			70155
4861	2	warning: exhaust temp. after heat exchanger too hot	1			70156
4861	3	service lube oil run out	1			70200
4861	4	service spark plugs run out	1			70201
4861	5	service engine run out	1			70202
4861	6	wire break T180 cold junction temperature	1			70203
4861	7	wire break room temperature sensor	1			70204
4861	8	heating water flow temperature too high	1			70208
4861	9	parameter file transfer failed	1			70209
4861	10	wirebreak T300 heating water temperature return	1			70210
4861	11	wirebreak T302 heating water temperature flow	1			70211
4861	12	wirebreak T152 exhaust temperature before catalyst	1			70212
4861	13	wirebreak T153 exhaust temperature after catalyst	1			70213
4861	14	timeout engine warming	1			70215
4861	15	manual mode: bypass demanded	1			70216
4862	0	manual mode: AWT demanded	1			70217
4862	1	limitstop lean does not disappear	1			70220
4862	2	limitstop lean does not appear	1			70221

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4862	3	limitstop lean reached in control mode	1			70222
4862	4	limitstop rich reached in control mode	1			70223
4862	5	steps missing > 300	1			70224
4862	6	sensor fault lambda voltage	1			70225
4862	7	wire break PT100 mixture temperature	1			70226
4862	8	short circuit PT100 mixture temperature	1			70227
4862	9	load reduction because mixture temperature	1			70228
4862	10	over temperature mixture	1			70229
4862	11	under temperature mixture	1			70230
4862	12	Reserve	1			
4862	13	timeout mixer moving to start position	1			70232
4862	14	timeout mixer moving to idle position	1			70233
4862	15	timeout mixer moving to parallel position	1			70234
4863	0	timeout mixer moving to island position	1			70235
4863	1	timeout mixer moving to rich position	1			70236
4863	2	sensor fault receiver pressure	1			70237
4863	3	BY: limit stop opened does not disappear	1			70238
4863	4	BY: limit stop closed does not appear	1			70239
4863	5	BY: limit stop closed does not disappear	1			70240
4863	6	BY: limit stop opened does not appear	1			70241
4863	7	BY: limit stops closed and open at the same time	1			70242
4863	8	BY: too many operations per hour	1			70243
4863	9	mixer limit stop lean and rich at the same time	1			70244
4863	10	room air too hot	1			70245
4863	11	cooling water pressure too low	1			70247
4863	12	cooling water pressure too high	1			70248
4863	13	wirebreak throttle position	1			70250
4863	14	deviation of throttle position	1			70251
4863	15	wirebreak T154 exhaust temperature after engine A	1			70254
4864	0	wirebreak T155 exhaust temperature after engine B	1			70255
4864	1	wirebreak T156 exhaust temperature after heat exchanger	1			70256
4864	2	gas alarm stage 1	1			70257
4864	3	gas detector device fault	1			70258
4864	4	short circuit PT100 heating water temperature return	1			70260
4864	5	short circuit PT100 heating water temperature flow	1			70261
4864	6	over temperature heating water temperature flow	1			70262
4864	7	short circuit PT100 heating water temp. after heat exchanger	1			70263
4864	8	wire break PT100 heating water temp. after heat exchanger	1			70264
4864	9	over temperature heating water temp. after heat exchanger	1			70265
4864	10	SCANIA warning lamp	1			70351

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4864	11	SCANIA communication timeout	1			70352
4864	12	misfirings detected	1			70680
4864	13	change gas type	1			70700
4864	14	Reserve	1			
4864	15	Reserve	1			
4865	0	ignition: spark reference A2 out of limit	1			70601
4865	1	ignition: spark reference A2 out of limit	1			70602
4865	2	ignition: spark reference B1 out of limit	1			70603
4865	3	ignition: spark reference B2 out of limit	1			70604
4865	4	ignition: spark reference C1 out of limit	1			70605
4865	5	ignition: spark reference C2 out of limit	1			70606
4865	6	ignition: spark reference D1 out of limit	1			70607
4865	7	ignition: spark reference D2 out of limit	1			70608
4865	8	ignition: spark reference E1 out of limit	1			70609
4865	9	ignition: spark reference E2 out of limit	1			70610
4865	10	ignition: spark reference F1 out of limit	1			70611
4865	11	ignition: spark reference F2 out of limit	1			70612
4865	12	Spare	1			
4865	13	Spare	1			
4865	14	Spare	1			
4865	15	Spare	1			
4866	0	no cranking speed detected	1			70066
4866	1	Spare	1			
4866	2	Spare	1			
4866	3	Spare	1			
4866	4	Spare	1			
4866	5	Spare	1			
4866	6	Spare	1			
4866	7	Spare	1			
4866	8	Spare	1			
4866	9	Spare	1			
4866	10	Spare	1			
4866	11	Spare	1			
4866	12	Spare	1			
4866	13	Spare	1			
4866	14	Spare	1			
4866	15	Spare	1			
Stopcondition (configurable messages)						
4870	0	par. message 1	1			10301 20201 30301 40301 50301 60301 70301

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4870	1	par. message 2	1			10302 20202 30302 40302 50302 60302 70302
4870	2	par. message 3	1			10303 20203 30303 40303 50303 60303 70303
4870	3	par. message 4	1			10304 20204 30304 40304 50304 60304 70304
4870	4	par. message 5	1			10305 20205 30305 40305 50305 60305 70305
4870	5	par. message 6	1			10306 20206 30306 40306 50306 60306 70306
4870	6	par. message 7	1			10307 20207 30307 40307 50307 60307 70307
4870	7	par. message 8	1			10308 20208 30308 40308 50308 60308 70308

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4870	8	par. message 9	1			10309 20209 30309 40309 50309 60309 70309
4870	9	par. message 10	1			10310 20210 30310 40310 50310 60310 70310
4870	10	par. message 11	1			10311 20211 30311 40311 50311 60311 70311
4870	11	par. message 12	1			10312 20212 30312 40312 50312 60312 70312
4870	12	par. message 13	1			10313 20213 30313 40313 50313 60313 70313
4870	13	par. message 14	1			10314 20214 30314 40314 50314 60314 70314
4870	14	par. message 15	1			10315 20215 30315 40315 50315 60315 70315

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4870	15	par. message 16	1			10316 20216 30316 40316 50316 60316 70316
4871	0	par. message 17	1			10317 20217 30317 40317 50317 60317 70317
4871	1	par. message 18	1			10318 20218 30318 40318 50318 60318 70318
4871	2	par. message 19	1			10319 20219 30319 40319 50319 60319 70319
4871	3	par. message 20	1			10320 20220 30320 40320 50320 60320 70320
4871	4	par. message 21	1			10321 20221 30321 40321 50321 60321 70321
4871	5	par. message 22	1			10322 20222 30322 40322 50322 60322 70322

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4871	6	par. message 23	1			10323 20223 30323 40323 50323 60323 70323
4871	7	par. message 24	1			10324 20224 30324 40324 50324 60324 70324
4871	8	par. message 25	1			10325 20225 30325 40325 50325 60325 70325
4871	9	par. message 26	1			10326 20226 30326 40326 50326 60326 70326
4871	10	par. message 27	1			10327 20227 30327 40327 50327 60327 70327
4871	11	par. message 28	1			10328 20228 30328 40328 50328 60328 70328
4871	12	par. message 29	1			10329 20229 30329 40329 50329 60329 70329

Ad- dress	Bit	Information	resol ution (bit)	Unit	Calc.	Error no.
4871	13	par. message 30	1			10330 20230 30330 40330 50330 60330 70330
4871	14	Spare	1			
4871	15	Spare	1			
Stopcondition mains protection						
4880	0	mains protection: underfrequency 1	1			30670 70670
4880	1	mains protection: delta undervoltage 1	1			30671 70671
4880	2	mains protection: star undervoltage 1	1			30672 70672
4880	3	mains protection: overfrequency 1	1			30673 70673
4880	4	mains protection: overvoltage 1 delta	1			30674 70674
4880	5	mains protection: overvoltage 1 star	1			30675 70675
4880	6	mains protection: vector jump	1			30676 70676
4880	7	df/dt	1			30677 70677
4880	8	current asymmetry	1			30678 70678
4880	9	mains protection external device	1			30679 70679
4880	10	mains protection: undervoltage sequence	1			30669 70669
4880	11	Spare	1			
4880	12	Spare	1			
4880	13	Spare	1			
4880	14	Spare	1			
4880	15	Spare	1			

5. Function 6 (write)

Addresses	Bit	write (analogue values)	Resolution (bit)	Unit	Calculation
10000		demanded power	16	%	0...1000 = 0...100.0%
10001		mains power	16		0...20000 = -10000kW...+10000kW
10002		CH4 value	16	%	0...1000 = 0...100.0%
10003		gas tank level	16	%	0...1000 = 0...100.0%
10100	0	start demand	1		0 = no start demand 1 = start demanded
10100	1	fast stop	1		0 = no fast stop 1 = fast stop
10100	2	acknowledge	1		edge 0 to 1 = acknowledge
10100	3	island operation	1		0 = no island operation demanded 1 = island operation demanded
10100	4	automatic operation	1		0 = manual mode / 1 = automatic operation
10100	5	CH4 calibrating	1		0 = CH4 measurement not in calibration 1 = CH4 measurement in calibration
10100	6	demand gas B	1		0 = gas type A selected 1 = gas type B selected
10100	7	Spare	1		
10100	8	Spare	1		
10100	9	Spare	1		
10100	10	Spare	1		
10100	11	Spare	1		
10100	12	Spare	1		
10100	13	Spare	1		
10100	14	Spare	1		
10100	15	Spare	1		

DEIF A/S reserves the right to change any of the above.