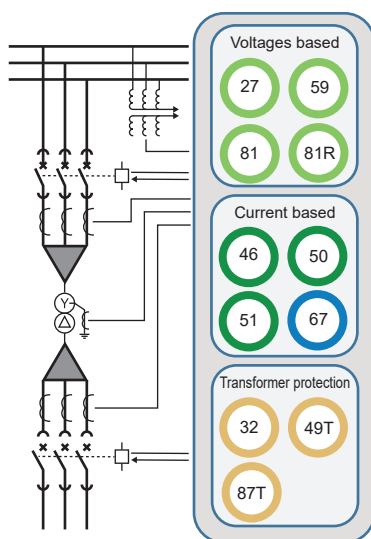# MVR-200 series Transformer and Busbar protection

Transformer (MVR-T2xx) and Busbar (MVR-V211) protection

MVR-21x series

MVR-25x series

Feature	Transformer				Bus
	T215	T216	T256	T257	V211
5 x AC current measurement	✕				
10 x AC current measurement (differential current included)		✕	✕	✕	
4 x AC voltage measurement	✕			✕	✕
3 x DI, 5 x relay output, 1 x System fault (Watchdog) output	✕	✕	✕	✕	✕
HW Option B: 8 x Isolated (2 groups) digital inputs, 10 to 200 V DC	✕	✕	✕	✕	✕
HW Option C: 5 x NO digital outputs, 220 V AC / 3 A or 220 V DC / 0.3 A	✕	✕	✕	✕	✕
HW Option I: 5 x analogue outputs 0(4) to 24 mA out, 1 x mA in*	✕	✕	✕	✕	✕
HW Option J: Double Fiber Ethernet interface**	✕	✕	✕	✕	✕
HW Option L: RS 232 interface + Serial fiber Plastic - Plastic (PP)**	✕	✕	✕	✕	✕
HW Option M: RS 232 interface + Serial fiber Plastic - Glass (PG)**	✕	✕	✕	✕	✕
HW Option N: RS 232 interface + Serial fiber Glass - Plastic (GP)**	✕	✕	✕	✕	✕
HW Option O: RS 232 interface + Serial fiber Glass - Glass (GG)**	✕	✕	✕	✕	✕
SW Option: Measuring class 0.25 (0.55 standard)	✕			✕	
SW Option: Active synchronizer with relay outputs for speed/voltage control					✕
SW Option: AVR control (Tap changer)				✕	
Number of option slots	3	2	10	9	5

* Max. 2 modules per relay.

** Only one communication option per relay.

Transformer and Busbar protections

Protection	Codes		Transformer				Bus
	IEC	ANSI	T215	T216	T256	T257	V211
Under-impedance protection	Z<	21	✖			✖	
Over-excitation protection	V/Hz	24	✖				
Synchrocheck	DV/DA/DF	25				✖	✖
Synchroniser		25					✖
Under-voltage protection stages INST, DT or IDMT	U< to U<<<<	27	✖			✖	✖
Positive/negative sequence under-/over-voltage protection stages, INST, DT or IDMT	U1</> (4)	27P/47/59P	✖				✖
Reverse-/under-/over-power protection stages INST, DT or IDMT	P</> (4)	32				✖	
Current unbalance/broken conductor protection stages, INST, DT or IDMT	I2 (I2/I1)	46 /R/L	✖	✖	✖	✖	
Transformer thermal overload protection	T>	49T		✖	✖	✖	
Three-phase over-current protection stages INST, DT or IDMT	I> to I>>>>	50	✖	✖	✖	✖	
Harmonic over-current protection/inrush blocking stages, INST, DT or IDMT	IXH> to IXH>>>>	50H/51H/68	✖	✖	✖	✖	
(Sensitive) Earth-fault protection stages INST, DT or IDMT	I0> to I0>>>>	50N/51N(S)	✖	✖	✖	✖	
Breaker failure protection	CBFP	50BF	✖	✖	✖	✖	✖
Three-phase over-current protection stages INST, DT or IDMT	I> to I>>>>	51	✖	✖	✖	✖	✖
Over-voltage protection stages INST, DT or IDMT	U> to U>>>>	59	✖			✖	✖
Residual voltage protection stages INST, DT or IDMT	U0> to U0>>>>	59N	✖			✖	✖
Fuse failure	VTS	60	✖			✖	✖
Directional three-phase over-current protection stages DT or IDMT	IDIR> to IDIR>>>>	67				✖	
Directional (sensitive) residual over-current protection stages DT or IDMT	I0DIR> to I0DIR>>>>	67N				✖	
Cold-load pick-up block	CLPU	68	✖				
Vector jump/surge		78					✖
Frequency protection stages	F>/ F< (8)	81O/U				✖	✖
Rate of change of frequency	dt/dt (8)	81R				✖	✖
Restricted earth-fault protection (low-imp)	I0D>	87N	✖	✖	✖	✖	
Cable-end differential protection		87	✖	✖	✖	✖	
Transformer, motor or generator differential protection, 2 winding	IDX>, IDX>>	87T/G/M		✖	✖		
Programmable stage		99	✖	✖	✖	✖	✖
Voltage memory						✖	
Current transformer supervision	CTS		✖	✖	✖	✖	
Switch onto fault logic	SOTF		✖	✖	✖	✖	
Disturbance recorder, 60 MB (for example, 100 disturbance records of 10 s, 15,000 events)	DR		✖	✖	✖	✖	✖

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