Parameters specifications

IPMAT Ⅱ series（MEIDEN multi-function digital relay）

Functions	Specifications			R1	R2	R3	T	B	F1	F2	H	
				HV incoming 1	MV transformer secondary	HV incoming 2	Protection of transformer	MV bus	3-phase MV feeder	1-phase MV feeder	MV motor	
Protection	Device	Setting range	Operating time									
	51L	1.0 to 8.0 A, lock (steps of 0.1 A)	N = 0.5 to 10.0 (steps of 0.1), inverse time	○3			○3					
	51L	1.0 to 8.0 A, lock (steps of 0.1 A)	N = 0.5 to 10.0 (steps of 0.1) 3 characteristics (inverse, long, ultra)		○2	○3			○2	○		
	51H	10 to 80 A, lock (steps of 1 A)	40 ms or less, definite time	○3		○3	○3					
	51H	10 to 80 A, lock (steps of 1 A)	0.04 to 1.00 s, definite time (steps of 0.01 s)		○2				○2	○		
	51	In × 2.0 to 16.0, lock (steps of 0.5)	0.05 to 1.00 s, definite time (steps of 0.05 s)								○	
	51G	0.1 to 2.5 A, lock (steps of 0.1 A)	0.05 to 1.00 s, definite time (steps of 0.01 s) with malfunction countermeasures against inrush current	○		○					○	
	27	50 to 110 V, lock (steps of 1 V)	0.05 to 5.00 s, definite time (steps of 0.05 s)		○			○				
	59	100 to 150 V, lock (steps of 1 V)	0.1 to 10.0 s, definite time (steps of 0.1 s)					○				
	64H(EVT)	5 to 80 V, lock (steps of 1V)	0.2 to 30.0 s, definite time (steps of 0.1 s)					○				
	64L(EVT)	5 to 80 V, lock (steps of 1V)	0.2 to 30.0 s, definite time (steps of 0.1 s)					○				
	64H(ZPD)	50 to 400 mV, lock (steps of 5 mV)	0.2 to 30.0 s, definite time (steps of 0.1 s)					○				
	64L(ZPD)	50 to 400 mV, lock (steps of 5 mV)	0.2 to 30.0 s, definite time (steps of 0.1 s)					○				
	67G(EVT)	IO: 100 to 1000 mA, lock ZCT primary (steps of 10 mA) V0: 3 to 80V (steps of 1 V) ϕ: Advance of 0 to 80° (steps of 1°)	0.1 to 2.0 s, definite time (steps of 0.1s)						○	○	○	
	67G(ZPD)	IO: 100 to 1000 mA, lock ZCT primary (steps of 10 mA) V0: 30 to 400 mV (steps of 5 mV) ϕ: Advance of 0 to 80° (steps of 1°)	0.1 to 2.0 s, definite time (steps of 0.1 s)		○				○	○	○	
	49TR	In × 1.05 to 1.20, lock (steps of 0.01)	2 to 120 s, definite time (steps of 1 s)								○	
	49AL	Permissible increase 60 to 125℃, lock (step of 5℃) Rated increase 5 to 150℃, lock (step of 1℃)	Heating time constant: 0 to 180 minutes (steps of 5 minutes)								○	
	48	In × 2.0 to 4.0, lock (steps of 0.1)	2 to 120 (steps of 1s)								○	
	46	2.0, lock	1s								○	
	47	0.4 to 0.8, lock (steps of 0.01)	1.0 to 4.0 s, definite time (steps of 0.1 s)								○	
	87T	30 to 50%, lock (steps of 10%)	50 ms or shorter				○3					
	87I	Id ≧ 8 PU, lock	45 ms or shorter				○3					
Measurement	Item	Measuring range	Class									
	Current	0.03 to 1.62 of CT primary current	Class 1.5, response: 0.5 s	○3	○3	○3	○3		○3	○	○3	
	Demand current	0.03 to 1.62 of CT primary current	Class 1.5 — Demand: 0 to 30 s (steps of 5 seconds)	○3	○3	○3	○3		○3	○		
			Class 1.5 — Demand: 0 to 30 minutes								○3	
	Maximum demand current	0.03 to 1.62 of CT primary current	Class 1.5	○	○	○	○		○	○	○	
	Voltage	0.03 to 1.39 of VT primary voltage	Class 1.5, response: 0.5 s		○3			○3				
	Zero phase voltage	0.03 to 1.39 of EVT primary voltage	Class 1.5, response: 0.5 s					○				
	Zero phase voltage	0.03 to 1.39 of ZPD primary voltage	Response: 0.5 s		○			○				
	Maximum zero phase voltage	0.03 to 1.39 of EVT primary voltage	Class 1.5 response: 5 cycles					○				
	Maximum zero phase voltage	0.03 to 1.39 of ZPD primary voltage	Response: 5 cycles		○			○				
	Frequency	45~65Hz	Class 0.5, response: 0.5 s		○							
	Power factor	+0.00~1.00~−0.00	Class 3.0, response: 0.5 s		○							
	Active power	±0.00 to 99.99 kW × multiplying factor	Class 1.5, response: 0.5 s		○				○	○	○	
	Reactive power	±0.00 to 99.99 kvar × multiplying factor	Class 1.5, response: 0.5 s		○							
	Amount of active power	0 to 999999 kWh × multiplying factor	Class 2.0, response: 0.5 s		○				○	○		
	Amount of reactive power	0 to 999999 kvarh × multiplying factor	Class 2.0, response: 0.5 s		○							
	Leakage current (residual)	0.03 to 1.62 of zero phase primary current	Class 1.5, response: 0.5 s	○		○					○	
	Leakage current (ZCT)	0.05 to 21.30 of zero phase primary current	Class 1.5, response: 0.5 s		○				○	○	○	
Maintenance data	CB interruption, releasing, make time			○	○	○	○	○	○	○	○	
	Maximum starting current, starting time										○	
Differential current	0.030~9.999PU		Class 2.5, response: 0.5 s				○					