



INTELLIGENT DESIGN

P&Bs MM5 relay retrofit provides a quick and direct replacement for your current MM5 relay.

The easy to navigate interface and design reliability provide users with total peace of mind.

P&Bs retrofit approach provides risk-free customised solution for breakdown, life extension and obsolescence challenges faced by many of the worlds operators and end users.





P&Bs MM5 retrofit uses the latest MV2 technology which follows an evolving product lifecycle based upon functional safety and use in critical applications.

MV2 is designed for fault free and long life operation in challenging high duty and high ambient temperature environments.



The P&B MM5 retrofit can be used to replace the S&I MM5.

The MM5 retrofit uses a horizontally mounted Motorvision (MV2) protection relay complete with terminal adaptor assembly which converts the standard MV2 terminal connections to become pin for pin to the MM5 relay.

The MV2 is mounted within an adaptor plate which simplifies the installation and mechanical fit to the starter tray. Therefore, no wiring changes and no panel aperture changes are required. P&B's MM5 retrofit is a direct and fast fit solution minimising the downtime during on site installation.





6x multichannel RTD's

RELAY DIMENSIONS	211 x 67 x 96mm	211 x 67 x 96mm
DISPLAY	2 Digit Display, 8 LED indicators, 5 software driven function keys.	Fully Graphic LCD display, 2 tri-color LED's and 4 software driven function keys
DIGTIAL INPUTS	12x semi-programmable	12xProgrammable inputs
OUTPUT RELAYS	3NO & 1NC configurable contacts	4 confirgurable changeover contacts
ESD	24VDC coil and 1 CO contact	24VDC coil and 1NO contact
ANALOGUE	3x CT 1A or 5A rated 1x CT 1A rated (EF CT)	4X CT 1A or 5A rated or LPCS input
SUPPLY VOLTAGE	115V AC or 230V AC	80-265V AC /DC 24-75V DC LV PSU available
COMMUNICATION	RS485	RS485 rear port and USB front port Modbus RTU / P&B Protocol.



MM5m

MV2 MM5m (RETROFIT)



Mechanical protection

Acceleration time alarm

Setting range 1 – 300s or off Setting step 1s

Acceleration time trip

Setting range 1-300s or off Setting step 1s

Stalled rotor trip level

Setting range 1.5 - 5.0 xFLC or off Setting step 0.1 xFLC

Stalled rotor trip delay

Setting range 0.5 – 300s Setting step 0.1s



Maximum start time (48/14)

Reset Auto, Panel, Setting range Serial, Remote

Trip time

Setting range 1 – 250s Setting step 1s

Overcurrent (50/51)

Characteristic

Setting range DEFT, NINV, VINV, EINV

Trip level (% of FLC)

Setting range 150 – 900% Setting step 5%

Time multiplier

Setting range 0.10-10.00 Setting step 0.1

Trip time (DEFT ONLY)

Setting range 0.1 – 10.00 Setting step 0.1s

Reset

Setting range Auto, Panel, Serial, Remote

Undercurrent (50/51)

Trip level (% of ARC)

Setting range 30 – 95% Setting step 5%

Trip time

1 – 100% FLC or off

1% FLC

Setting range 1 – 60s Setting step 1s

U/C reset delay

Setting range 0 – 1200s Setting step 10s

Reset

Setting range Auto, Panel, Serial, Remote

Under current alarm level

Setting range Setting step

Under current alarm delay

Setting range 1 – 300s Setting step 1s

Under current trip level

Setting range 1 – 100% FLC or off Setting step 1% FLC

Under current trip delay

Setting range 1 – 300s Setting step 0.1s

Under current inhibit level

Setting range 1-30% FLC or off Setting step 1% FLC



MM5m		MV2 MM5m (RETROFIT)	
Mechanical protection		Undercurrent (37)	
Under power alarm level Setting range Setting step	0.1 – 6553.5kW or off 0.1kW	Trip level (% of ARC) Setting range Setting step	30 – 95% 5%
Under power alarm delay Setting range Setting step	0 – 300s 1s	Trip time Setting range Setting step	1 – 60s 1s
Under power trip level Setting range Setting step	0.1 – 6553.5kW or off 0.1kW	U/C reset delay Setting range Setting step	0 – 1200s 10s
Under power trip delay Setting range Setting step	1 – 60s 1s	Reset Setting range	Auto, Panel, Serial, Remo
Under current inhibit level Setting range Setting step	0.1 – 6553.5kW or off 0.1kW		

Communications

Communication with existing CMAC can be achieved, or P&B can supply the Xcell RTU to replace CMAC and provide a scalable fully fault tolerant data concentrator system

	system		
Temperature protection		Over temperature (38/49	→)
Comp. temp. alarm level		Resistance type	
Setting range	0.5 – 100°C or off	Setting range	RTD/PTC/NTC
Setting step	0.5°C	Jetting range	
- '		RTD compensation	
Comp. temp. alarm delay		Setting range	0 – 250°C
Setting range	1 – 300s	Setting step	1°C
Setting step	1s		
		Clear compensation	
Comp. temp. trip level	0.5 100%	Setting range	No/Yes
Setting range	0.5 – 100°C or off 0.5°C		
Setting step	0.5 C	RTD trip level	0 25006
Comp. temp. trip delay		Setting range	0 – 250°C
Setting range	0 – 300s	Setting step	1°C
Setting range Setting step	0.1s	PTC/NTC trip	
Setting step		Setting range	1 – 30 kΩ
		Setting range Setting step	100Ω
		Setting step	10012
		RTD alarm	
		Setting range	0 – 250°C
		Setting step	1°C
		PTC/NTC alarm	
		Setting range	1 – 30 kΩ
		Setting step	100Ω
		/ 1	
		Trip/alarm time	10 250
		Setting range Setting step	10 – 250s 1s
		Setting step	15
		Reset	
		Setting range	Auto, Panel,
			Serial, Remote



MM5m		MV2 MM5m (RETROFIT)	
Thermal protection		Thermal Model (26/49)	
Full load current Setting range Setting step	0.1-1000A 0.1A	Motor full load current (FLC) Setting range	10 – 250% of
High speed full load current Setting range	0.1-100A	Setting step	CT Primary 0.01A/0.1A/1A
Setting step Thermal curve multiplier Setting range	0.1A 0.1->15.0	t6x Setting range Setting step	0.5 – 120s 0.1s
Setting stage Pickup level Setting range	0.1 1.01->2.00xFLC	Hot/cold ratio Setting range Setting step	20 – 80% 1%
Setting stage Load increase alarm Setting range Setting stage	0.01 0.01 – 2.00%xFLC 0.01	Cool time factor Setting range Setting step	25 – 2000% 5%
Hot/cold curve Setting range Setting stage	0.0 – 100% 1%	Pre alarm Setting range Setting step	55 – 99% 1%
Motor cooling time stopped Setting range Setting step	1-300min 1min	Overload level Setting range Setting step	105 – 130% 1%
Motor cooling time running Setting range Setting step	1-300min 1min	Cutoff Multiple Setting range Setting step	6, 8,10, 12x 2x
Motor heating time Setting range Setting stage	1-300min 1min	Reset Setting range	Auto, Panel, Serial, Remote
Minimise reset time Setting range	Enabled/Disabled		
Automatic overload reset Setting range	Enabled/Disabled		



MM5m		MV2 MM5m (RETR	ROFIT)
Electrical protection		Earth Fault (51n)
Earth fault alarm level		Characteristic	
Setting range	0.1 – 30.0A or off	Setting range	DEFT, NINV,
Setting step	0.1A	Trip lavel	VINV, EINV
		Trip level Setting range	1 – 40%
Earth fault alarm delay	4 200	Setting step	0.1%
Setting range	1 – 300s	Setting step	0.170
Setting step	1s	Time multiplier	
Earth fault trip level		Setting range	0.10-10.00
Setting range	0.1 – 30.0A, or off	Setting step	0.01
Setting range Setting step	0.1A		
		Trip time (DEFT ONLY)	
Earth fault trip delay		Setting range	0.1 – 5.0s
Setting range	0 – 300s	Setting step	0.1s
Setting step	0.1s	Reset	
		Setting range	Auto, Panel,
		Setting range	Serial, Remot
EF start up alarm level	0.1 – 30.0A or off		Serial, Refilot
Setting range	0.1 – 30.0A or oπ 0.1A		
Setting step	0.17		
EF start up alarm delay			
Setting range	0 – 300s		
Setting step	0.1s		
3 · · ·			
EF start up trip level			
Setting range	0.1 – 30.0A, or off		
Setting step	0.1A		
EF start up trip delay	0 – 300s		
Setting range Setting step	0 – 300s 0.1s		
Setting step	0.13		
EF start up time			
Setting range	1 – 300s or off		
Setting step	0.1s		
		Unbalance (46)	
Imbalance alarm level		Trip level (% of FLC)	
Setting range	1 – 100% or off	Setting range	30-95%
Setting step	1%	Setting step	5%
Imbalance alarm delay Setting range	1 200-	Trip time	
SOTTING YOUGH	1 – 300s 1s	Setting range	1 - 60s
	13	Setting step	1s
Setting step		Reset	
Setting step Imbalance trip level	1 – 100% or off	Reset	Auto Panel
Setting step Imbalance trip level Setting range	1 – 100% or off 1%	Reset Setting range	Auto, Panel, Serial, Remot
Setting step Imbalance trip level Setting range			
Setting step Imbalance trip level Setting range Setting step	1%		
Setting range Setting step Imbalance trip level Setting range Setting step Imbalance trip delay Setting range Setting step Setting range Setting step			Auto, Panel, Serial, Remote



MM5m Motor data		MV2 MM5m (RETROFIT) Too many starts (66)	
Max starts per hour Setting range	Off - 12	Start inhibit time Setting range Setting step	1 - 120min 1min
		Start period Setting range Setting step	1 - 60min 1min
		Start inhibit type Setting range	IT/RSP/RSF
		Reset Setting range	Auto, Pane Serial, Rem