

- ◆ *Modular version*
- ◆ *Minimum and maximum voltage monitoring relays for single and three phase systems, without neutral*
- ◆ *Minimum and maximum current monitoring relays with dual thresholds*
- ◆ *Frequency monitoring relay*
- ◆ *Phase shift relay.*



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Voltage monitoring for single-phase systems



PMV55

Rated voltage to be controlled U _e	Catalog number	Price
[V] 50/60Hz		\$ each
Single-phase system. Minimum and maximum voltage control.		
208-240VAC	PMV55 A240	200.00
380-440VAC	PMV55 A440	200.00

General characteristics

- Voltage monitoring relay for high and low voltage conditions of single-phase systems; powered by the monitored voltage
- 4 programmable rated voltages:
 - For PMV55 A240: 208-220-230-240VAC
 - For PMV55 A440: 380-400-415-440VAC
- Excellent tripping accuracy
- TRMS measures (True Root Mean Square value)
- 1 relay output with 1 SPDT contact
- Modular housing, 1.38in (35mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

ADJUSTMENTS:

“V max”	Tripping threshold for high voltage 105-115% U _e
“V min”	Tripping threshold for low voltage 80-95% U _e
“Delay” for each	Tripping time 0.1-20 seconds
“Reset delay”	Resetting time 0.1-20 seconds.

Certifications and compliance

UL listed for USA and Canada, File E 93601.
Compliant with standards: IEC/EN 60255-6,
IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagram

See page W-12.

Voltage monitoring for three-phase systems without neutral



PMV10 A440

Rated voltage to be controlled U _e phase to phase	Catalog number	Price
[V] 50/60Hz		\$ each
Three-phase system, without neutral. Phase loss and incorrect phase sequence. Delayed tripping. 17.5mm/0.69in module.		
208-440VAC	PMV10 A440	125.00
35mm/1.4in module.		
100-240VAC	PMV20 A240	140.00
208-575VAC	PMV20 A575	140.00
380-600VAC	PMV20 A600	140.00

General characteristics

- Voltage monitoring relay for phase loss and incorrect phase sequence of three-phase systems, without neutral; powered by the monitored voltage. Delayed tripping
- Detection of phase loss if one of the voltages is <70% rated value
- Tripping time for phase loss: 60msec
- 1 relay output with 1 SPDT contact
- Modular housing, 1.38in (35mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance

UL listed for USA and Canada, File E 93601.
Compliant with standards: IEC/EN 60255-6,
IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagram

See page W-12.

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PMV20

Rated voltage to be controlled U _e phase to phase	Catalog number	Price
[V] 50/60Hz		\$ each
Three-phase system, without neutral. Phase loss, incorrect phase sequence and minimum voltage control. Delayed tripping.		
208-240VAC	PMV30 A240	170.00
380-575VAC	PMV30 A575	170.00
380-600VAC	PMV30 A600	170.00

General characteristics

- Voltage monitoring relay for phase loss, incorrect phase sequence and low voltage conditions of three-phase systems, without neutral; powered by the monitored voltage. Delayed tripping
- 4 programmable rated voltages for PMV30 A240: 208-220-230-240VAC
- 8 programmable rated voltages for PMV30 A575: 380-400-415-440-460-480-525-575VAC
- Excellent tripping accuracy
- TRMS measures (True Root Mean Square value)
- Control of phase-to-phase voltages
- Phase loss detection if one of the voltages is <70% rated value
- Tripping time for phase loss: 60msec
- 1 relay output with 1 SPDT contact
- Modular housing, 1.38in (35mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

ADJUSTMENTS:

“V min”	Tripping threshold for low voltage 80-95% U _e
“Delay”	Tripping time 0.1-20 seconds
“Reset delay”	Resetting time 0.1-20 seconds

Certifications and compliance

UL listed for USA and Canada, File E 93601.
Compliant with standards: IEC/EN 60255-6,
IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagram

See pages W-12 and W-13.



PMV30



PMV40

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PMV50

moduLo



PMV60

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PMV70

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Rated voltage to be controlled Ue phase to phase [V] 50/60Hz	Catalog number	Price
		\$ each
Three-phase system, without neutral. Phase loss, incorrect phase sequence and high asymmetry control. Delayed tripping.		
208-240VAC	PMV40 A240	200.00
380-575VAC	PMV40 A575	200.00
600VAC	PMV40 A600	200.00
Three-phase system, without neutral. Phase loss, incorrect phase sequence, minimum and maximum voltage control. Delayed tripping.		
208-240VAC	PMV50 A240	260.00
380-575VAC	PMV50 A575	260.00
600VAC	PMV50 A600	260.00
Three-phase system, without neutral. Phase loss, incorrect phase sequence, minimum voltage and high asymmetry control. Delayed tripping.		
208-240VAC	PMV60 A240	300.00
380-575VAC	PMV60 A575	300.00
600VAC	PMV60 A600	300.00
Three-phase system, without neutral. Phase loss, incorrect phase sequence, minimum and maximum voltage and high asymmetry control. Delayed tripping.		
208-240VAC	PMV70 A240	325.00
380-575VAC	PMV70 A575	325.00
600VAC	PMV70 A600	325.00

General characteristics

PMV40 is voltage monitoring relay for phase loss, incorrect phase sequence and high asymmetry conditions of three-phase systems, without neutral. PMV50 is a voltage monitoring relay for phase loss, incorrect phase sequence, low and high voltage conditions of three-phase systems, without neutral. PMV60 is a voltage monitoring relay for phase loss, incorrect phase sequence, low voltage and high asymmetry conditions of three-phase systems, without neutral. PMV70 is a voltage monitoring relay for phase loss, incorrect phase sequence, low and high voltage and high asymmetry conditions of three-phase systems, without neutral.

Features common to these 4 types:

- Powered by the monitored voltage
- Delayed tripping
- 4 programmable rated voltages for PMV... A240: 208-220-230-240VAC
- 8 programmable rated voltages for PMV... A575: 380-400-415-440-460-480-525-575VAC
- Excellent tripping accuracy
- TRMS measures (True Root Mean Square value)
- Control of phase-to-phase voltages
- Phase loss detection if one of the voltages is <70% rated value
- Tripping time for phase loss: 60msec
- 1 relay output with 1 SPDT contact
- Modular housing, 1.38in (35mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

ADJUSTMENTS FOR PMV40:

"Asymmetry" Tripping threshold for high voltage asymmetry 5-15% Ue
 "Delay" Tripping time 0.1-20 seconds
 "Reset delay" Resetting time 0.1-20 seconds.

ADJUSTMENTS FOR PMV50:

"V max" Tripping threshold for high voltage 105-115% Ue
 "V min" Tripping threshold for low voltage 80-95% Ue
 "Delay" for each Tripping time 0.1-20 seconds
 "Reset delay" Resetting time 0.1-20 seconds

ADJUSTMENTS FOR PMV60:

"V min" Tripping threshold for low voltage 80-95% Ue
 "Asymmetry" Tripping threshold for high voltage asymmetry 5-15% Ue
 "Delay" Tripping time 0.1-20 seconds
 "Reset delay" Resetting time 0.1-20 seconds

ADJUSTMENTS FOR PMV70:

"V max" Tripping threshold for high voltage 105-115% Ue
 "V min" Tripping threshold for low voltage 80-95% Ue
 "Delay" for each Tripping time 0.1-20 seconds
 "Asymmetry" Tripping threshold for high voltage asymmetry 5-15% Ue.

Certifications and compliance

UL listed for USA and Canada, File E 93601.
 Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagrams

See pages W-12 and W-13.

Current monitoring for single-phase systems



PMA20



Rated current le	Auxiliary control power	Catalog number	Price
[A]	[V]		\$ each

Single-phase system.
AC/DC undercurrent control. Auxiliary AC/DC supply.
Automatic or manual resetting.

0.02-1-5-16 multiscale	24-240V AC/DC	PMA20	1
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1 Coming in 2007, contact Sales & Technical Support for availability and pricing.

General characteristics

- Current monitoring for low current conditions of single-phase systems. AC/DC multivoltage auxiliary supply. Automatic or manual resetting
- Direct connection or by current transformer (CT)
- Excellent tripping accuracy
- TRMS current measures (True Root Mean Square value)
- Resetting and inhibition input
- 1 relay output with 1 SPDT contact
- Modular housing, 2.07in (52.5mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

ADJUSTMENTS:

"I min"	Tripping threshold for low current 5-100% end scale
"Reset Hysteresis"	Resetting hysteresis 5-30%
"Trip delay"	Tripping time 0.1-20 seconds
"Inhibition time"	Inhibition time 0.1-20 seconds.

Certifications and compliance

UL listing for USA and Canada, pending completion.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagram

See page W-13.

Overcurrent relay



PMA21



Rated current le	Auxiliary control power	Catalog number	Price
[A]	[V]		\$ each

Single-phase system.
AC/DC undercurrent control. Auxiliary AC/DC supply.
Automatic or manual resetting.

0.02-1-5-16 multiscale	24-240V AC/DC	PMA21	1
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1 Coming in 2007, contact Sales & Technical Support for availability and pricing.

General characteristics

- Current monitoring for high current conditions of single-phase systems. AC/DC multivoltage auxiliary supply. Automatic or manual resetting
- Direct connection or by current transformer (CT)
- Excellent tripping accuracy
- TRMS current measures (True Root Mean Square value)
- Resetting and inhibition input
- 1 relay output with 1 SPDT contact
- Modular housing, 2.07in (52.5mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

ADJUSTMENTS:

"I max"	Tripping threshold for high current 5-100% end scale
"Reset hysteresis"	Resetting hysteresis 5-30%
"Trip delay"	Tripping time 0.1-20 seconds
"Inhibition time"	Inhibition time 0.1-20 seconds.

Certifications and compliance

UL listing for USA and Canada, pending completion.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagram

See page W-13.

Combination under/overcurrent relay



PMA30



Rated current le	Auxiliary control power	Catalog number	Price
[A]	[V]		\$ each

Single-phase system.
AC/DC under/overcurrent control.
Auxiliary AC/DC supply. Automatic or manual resetting.

0.02-1-5-16 multiscale	24-240V AC/DC	PMA30	1
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1 Coming in 2007, contact Sales & Technical Support for availability and pricing.

General characteristics

- Current monitoring for high/low current conditions of single-phase systems. AC/DC multivoltage auxiliary supply. Automatic or manual resetting
- 4 selectable tripping functions:
 - Low current
 - High current
 - Low current with reset pulsing
 - High current with reset pulsing
- Direct connection or by current transformer (CT)
- Excellent tripping accuracy
- TRMS current measures (True Root Mean Square value)
- Resetting and inhibition input
- 1 relay output with 1 SPDT contact
- Modular housing, 2.07in (52.5mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

ADJUSTMENTS:

"Set point"	Tripping threshold for low current 5-100% end scale
"Reset Hysteresis"	Resetting hysteresis 5-30%
"Trip delay"	Tripping time 0.1-20 seconds
"Inhibition time"	Inhibition time 0.1-20 seconds
"Reset delay"	Time delay for resetting 0.1-20 seconds
"Mode"	A to H operating mode.

Certifications and compliance

UL listing for USA and Canada, pending completion.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagram

See page W-14.

Frequency monitoring



PMF20

moduLo

Control power	Catalog number	Price
[V] 50/60Hz		\$ each
Minimum and/or maximum frequency control.		
220-240VAC	PMF20 A240	360.00
380-415VAC	PMF20 A415	360.00

General characteristics

- Frequency monitoring for high and low frequency conditions; powered by the monitored voltage
- Rated frequency choice: 50Hz or 60Hz
- 4 operating modes
 - Tripping threshold for high frequency in not function
 - Tripping threshold for high frequency
 - Tripping threshold for low frequency
 - Tripping threshold for low and high
- Tripping threshold for low or high frequency
- Excellent tripping accuracy
- 1 relay output with 1 SPDT contact
- Modular housing, 1.38in (35mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

ADJUSTMENTS:

	frequency
"Delay"	Tripping time 0.1-20 seconds
"Hz max"	Tripping threshold for high frequency +1 to +10%
"Hz min"	Tripping threshold for low frequency -1 to -10%
"Reset delay"	Resetting time 0.1-20seconds.

Certifications and compliance

UL listed for USA and Canada, File E 93601.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagram

See page W-14.

Phase shift monitoring



PMA40

moduLo

Rated current Ie	Auxiliary control power	Catalog number	Price
[A]	[V]		\$ each
Single and three-phase systems. For pump protection. AC control power.			
0.02-1-5-16 multiscale	220-240VAC	PMA40 A240	①
	380-415VAC	PMA40 A415	①
Single and three-phase systems. Phase shift control. AC control power. Automatic or manual resetting.			
0.02-1-5-16 multiscale	220-240VAC	PMA50 A240	①
	380-415VAC	PMA50 A415	①

① Coming in 2007, contact Sales & Technical Support for availability and pricing.

General characteristics

PMA40 is a phase control relay for pump protection against dry running. Suitable for single and three-phase systems. Auxiliary AC control power.
PMA50 is a phase shift monitoring relay for single or three-phase systems. Auxiliary AC control power. Automatic or manual resetting.

Programmable operating modes:

For PMA40:

- Single phase control
- Three phase control

For PMA50

- Minimum control for three phases
- Maximum control for three phases
- Minimum control for single phase
- Maximum control for single phase

Features common to both types:

- Direct connection or by external CT
- Selector for single or three-phase system
- Resetting for inhibition input
- Excellent tripping accuracy
- 1 relay output with 1 SPDT contact
- Modular housing, 2.07in (52.5mm) wide
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

ADJUSTMENTS FOR PMA40

"Set point cosφ" Tripping threshold for minimum cosφ 0-1

"Trip delay Sec" Tripping time 0.1-20 seconds

ADJUSTMENTS FOR PMA50:

"Set point cosφ" Tripping threshold for minimum cosφ 0-1

"Hysteresis" Resetting hysteresis 5-30%

"Trip delay" Tripping time 0.1-20 seconds

"Inhibition" Inhibition time 0.1-20 seconds

"Reset delay" Resetting time 0.1-20 seconds.

Certifications and compliance

UL listing for USA and Canada pending.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

Operational diagram

See page W-14.



PMA50

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Dimensions
page D-30

Wiring diagrams
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Technical characteristics
page TC-39



moduLo

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LEVEL MONITORING RELAYS

- Single or dual voltage
- Emptying or filling functions
- Multifunction
- Automatic resetting.



ELECTRODES

- Single pole
- Three pole.

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moduLo

PAGE 12-5

MODULAR START-UP PRIORITY CHANGE RELAYS

- Alternate starting control of two motors.

- ◆ *Level monitoring for electrically conductive liquids*
- ◆ *Modular version*
- ◆ *Adjustable 2.5-200k Ω sensitivity*
- ◆ *Startup priority change relays.*



PLANET - DIN

Level monitoring relays

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Start-up priority change relays

Priority change relays	12-	5
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