File E356250
Project 4786318491

August 14, 2014

REPORT

on

Special-purpose Solid-state Overcurrent Protectors - COMPONENT

BLOCK TRANSFORMATOREN-ELEKTRONIK GMBH
Verden, Germany

DESCRIPTION

PRODUCT COVERED:

Component – Special-purpose Solid-state overcurrent protectors Model PM Series, see nomenclature breakdown for detailed information.

GENERAL:

These devices are special purpose, solid-state overcurrent protection devices. They are solid-state overcurrent protectors designed for special-purpose applications and consist of solid-state integrated circuits that limit output current when the output load exceeds the current-limit threshold or when a load-side short-circuit is present. These devices provide overcurrent and short-circuit protection when supplied by an electrical source and are suitable for supplementary overcurrent protection only.

ELECTRICAL RATINGS:

Table 1 – Operational Current Rating per Output

Model No.	Input voltage, Vdc	Number of outputs	Operational current rating per output, 2)3)4)5)	Trip rating
PM Series	24 Vdc	2 or 4 outputs	0.5A	0.85
			1.0A	1.7
			2.0A	3.4
			3.0A	5.1
			4.0A	6.8
			6.0A	10.2
			8.0A	13.6
			10.0A	17.0
			12.0A	20.4 A

1) Total Current depends on ambient temperature – see table 2 for details.
2) Operational Current Rating max 6 different out of table 1 per output.
3) Each channel can be used till its max current, but in total not more than specified per Model-No (see nomenclature breakdown below).
4) Channel settings can be adjustable or fixed. For fixed setting, different operational currents are able to be user selected.

5) Table 2 – Max total currents
6)

Model No.	Operating Ambient	Total Current
PM Series	25°C	48A
	50°C	40A
	70°C	32A

NOMENCLATURE BREAKDOWN:

PM-	08	24	-480	-0
A	B	C	D	E

A - Product-Family, PM

B – Type Separation, a8, where a = 0 - 8

C – Input Voltage, 24

D - Sum of total current (eg.4x12A=480)

E – Optional character 0-9, a-z, or blank Minor changes not related to electrical ratings.

Note:

B = mandatory character to identify setup

E = optional character to clarify product identification in case of overlapping total currents.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

Conditions of Acceptability –

For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

1. These devices are a network of solid-state integrated circuits and electrical spacings within the device are not specified.

2. These devices are entirely electronic in nature and **have no means** for manual operation or reset. **Manual current selection settings (including button) and/or reset of signal-monitoring circuits may be employed.**

3. These devices are designed to trip within the curve characteristics provided by the manufacturer.

4. The terminals of these devices have been evaluated for field-wiring. The connection suitability shall be determined in accordance with the end use application.

5. These devices have not been subjected to Tests for Telecom applications and their suitability for connection to telecommunication networks with outside plant connections should be determined in the end-use.

6. These devices were evaluated with respect to continuous current operation at the current levels shown in the electrical ratings section of this report.

7. These devices are intended for use in load circuits of switch mode power supplies or transformers having an isolated secondary supplying 24Vdc.

8. These devices were evaluated in an ambient indicate on page 1. Suitability for use in a higher ambient has not been determined.

9. The outputs of these devices are not intended to be interconnected.

10. These devices have only been evaluated for supplementary overcurrent protection of secondary circuits supplied by the load side of a transformer, power supply, or battery, and have not been evaluated for branch-circuit protection.

11. These devices have been subjected to environmental conditionings with respect to the following conditions (per UL 2367):
    Shipping and Storage #
    Thermal Cycling
    Endurance
    Abnormal
    # Temperature Range: -30 to +70°C

12. These devices have been investigated as electronic overcurrent protective devices in accordance with the requirements contained in the standard for Solid State Overcurrent Protectors, UL 2367, First Edition.

MARKING:

The manufacturer's name, trade name or trademark, catalog number, and voltage and current ratings. Marking may be provided on the smallest package or reel.

GENERAL CONSTRUCTION:

Spacings – No spacing requirements are specified.

Tolerance – Unless otherwise specified, all dimensions are nominal.

Corrosion Protection – All parts are of corrosion resistant material or are suitably plated to resist corrosion.

Current Carrying Parts – Copper or copper alloy. May be plated with tin, lead, silver or gold.

ADDITIONAL CONSTRUCTION DETAILS:

Refer to the following Figs. For overall view and dimensional information:

Model No.	Fig. No.	Comments
PM Series	1	External view of the device
	2	Top view of control board

Refer to the following Ills. For overall view and dimensional information:

Model Nos.	Ill. No.	Comments
PM Series	1	Component Layout Diagrams
	2	Trace Layout Diagrams
	3	Housing Mechanical Drawing

Series PM - FIGS. 1 and 2

General – The general design, shape and arrangement shall be as illustrated except where variations are specifically described.

*1. Overall housing – R/C (QMFZ2) SABIC INNOVATIVE PLASTICS B V, type 500R, rated V-0, 125°C or equivalent type, rated V-0, 125°C. Overall dimensions approximately 94 mm by 90 mm by 45 mm, min 1.5 mm thickness. Provided with ventilations as shown in ILL. **3**.

2. Input terminal block (X1) – R/C (XCFR2/8) PHOENIX CONTACT GMBH & CO KG, Type SPT 5-H-7.5, 24-8 AWG, min 300V, min 35 A, min 105°C or equivalent rated 24-8 AWG, min 300V, min 35 A, min 105°C. Provided on the Main PWB.

Alternate – R/C (XCFR2) WAGO KONTAKTTECHNIK GMBH & CO KG, Type 831-3102, 20-8 AWG, 600V, 42 A, 105°C. Provided on the Main PWB.

Alternate – Any (XCFR2), minimum rated 24-8 AWG, for copper conductors only, field wiring (FW-2), 300 V, 35 A, 105°C. Without changing the trace layouts of the printed wiring board.

3. Output terminal block (X2, X3) – R/C (XCFR2) PHOENIX CONTACT GMBH & CO KG, Type SPT 2.5-H-5, 24-12 AWG, min 300V, min 20 A, min 105°C or equivalent rated 24-12 AWG, min 300V, min 20 A, min 105°C. Provided on the Main PWB.

Alternate (X2 only) - R/C (XCFR2) WAGO KONTAKTTECHNIK GMBH & CO KG, Type 721-102, rated 300 V, 15 A, 22-12 AWG, 105°C. Provided on the Main PWB.

Alternate (X3 only) – R/C (XCFR2) WAGO KONTAKTTECHNIK GMBH & CO KG, Type 721-104, 22-12 AWG, 300V, 15 A, 105°C. Provided on the Main PWB.

Alternate – Any (XCFR2), minimum rated 24-12 AWG, for copper conductors only, field wiring (FW-2), 300V, 20 A, 105°C. Without changing the trace layouts of the printed wiring board.

4. Signal terminal block (X4) – R/C (XCFR2) PHOENIX CONTACT GMBH & CO KG, Type SPT 2.5-H-5, 24-12 AWG, min 300V, min 20 A, min 105°C or equivalent rated 24-12 AWG, min 300V, min 20 A, min 105°C. Provided on the Main PWB.

Alternate – R/C (XCFR2) WAGO KONTAKTTECHNIK GMBH & CO KG, Type 721-103, 22-12 AWG, 300V, 15 A, 105°C. Provided on the Main PWB.

Alternate – Any (XCFR2), minimum rated 24-12 AWG, for copper conductors only, field wiring (FW-2), 300V, 20 A, 105°C. Without changing the trace layouts of the printed wiring board.

5. Input Fuses (F1-F4) – R/C (JDYX2/8) Surface Mount Type, SCHURTER S A S, Type MSB, rated min 65 Vdc, max 15 A. Provided on the Main PWB or the Sandwich PWB depending upon max rated current.

6. Microcontroller (I11) - Microchip, Type PIC16F152x followed by any suffixes, rated 1.8-3.6 V. Provided on the Main PWB.

7. MOSFET (T2, T3, T4, T6 main PWB and T1,T2, T3, T4 sandwich PWB) - Type BTS282, N-channel type, rated min 49 V, min 80 A. Provided on the Main PWB or the Sandwich PWB depending upon max rated current.

8. Diode (D5, D8, D9, D10, D13, D16, D17, D21) – Type SM6T33A, Rated min 600 W, min 33 V or equivalent type rated min 600 W, min 33 V. Provided on the Main PWB.

9. Printed Wiring Board – R/C (ZPMV2), (ALL Boards) rated min V-1, min 130°C.