SSI Power Supply Lightning Protection
RTM Series

RTM surge protection devices provide protection to equipment connected to AC power supplies against the damaging effects of lightning strikes or voltage surges. The RTM Series offers single phase devices with MOV or SAD component technology, which help reduce the failure rate of Trackside Functional Modules (TFMs) during lightning storms, and therefore can improve Solid State Interlock (SSI) performance and prolong the service life of protected equipment.

They are employed on the incoming power supplies or tail cables, providing protection of the 110V, 140V and 650V power supplies in the SSI equipment cases and rooms. These highly innovative protection devices provide the ideal protection solution for signals, points, level crossings etc. at each, and in between, every station.

The RTM Series feature high surge current handling capabilities which operates in two stages to ensure continuity of transient suppression. Under normal conditions the RTM will automatically reset after clamping smaller, more commonly occurring surges, and two green lights indicate that full protection is present. However, should a surge current in excess of 75kA or 12kA (depending on the model selected), appear on the line, it will be clamped by the RTM, but the first protection stage may possibly suffer damage and fail safe.

In this instance, one green light from the damaged RTM module will be extinguished and although the system will still be protected, the unit should be replaced before a further large surge can remove the second stage.

There is no protection present when the RTM modules lights are not illuminated, although unprotected power is still supplied.

The RTM is fitted with a remote signalling facility, where volt free terminals (which can be connected as either normally open or normally closed), open or close when the first protection stage is lost (one green light on) and these can be used to activate a remote indicator such as a lamp or alarm.

The switching contacts are completely isolated from the supply and may be used for AC mains voltage 230V RMS 1 Amp or 30V DC 2 Amp loads.

Installation

The RTM is connected in parallel (or “shunt”) across the supply to be protected. The connecting cable does not carry the supply current, only the current associated with suppressing the transient overvoltage.

The unit is provided with mounting for Top hat style symmetric DIN rail (35 x 7.5), and terminals accept cables up to 35mm². However the RTM must be connected with cable having a cross section of not less than 10mm² and must be connected to supply terminals using cable of the shortest length possible (it is recommended that, if possible the cable length should not exceed 25cm.)

Fusing

The RTM Series is suitable for direct connection to a line rated up to 100A with 16mm² min connecting cables. However it should be remembered that if the unit were to see a surge in excess of its designed capability, then the main fuse would be ruptured and the supply disconnected.

Provision of additional inline disconnecting fuses to the RTM will overcome the above and also provide isolation for maintenance and exchange.

Units can be connected to a supply of greater than 100A providing inline fuses rated 50A min – 100A max (BS HD60269-2:2010, BS88-2:2010) are fitted. In order to discriminate with the supply fuse, the inline fuse should be in the ratio of 1:2. The inline fuses can be replaced by MCBs providing they are type C.

Maintenance

The RTM Series requires no maintenance, but the lights and condition of connecting cables and terminations should be checked regularly, particularly following lightning activity, to ensure full protection is present. The remote signalling facility is ideal where units are fitted in infrequently inspected housings.

PD Devices Ltd. Unit 1, Old Station Yard, South Brent, Devon. TQ10 9AL.
www.pddevices.co.uk +44 (0)1364 649248 info@pddevices.co.uk

Revision PD2, 13/12/11
Information subject to change without notice.

PD DEVICES LTD
POWER DEVELOPMENT

Component Technology

The RTM series of surge protection devices provides protection of critical assets through carefully matched high energy absorbing elements.

SAD Surge Protection Modules

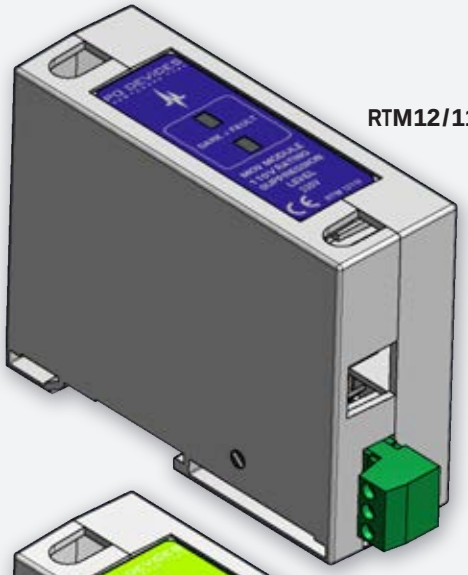
Silicon avalanche diode (SAD) models conduct maximum current without any increase in clamping voltage. They offer extremely low clamping of <500 volts and an exceptionally fast response time of less than <5 nanoseconds. The robust nature of this component technology offers long product life expectancy, ideally suited for mission critical applications.

MOV Surge Protection Modules

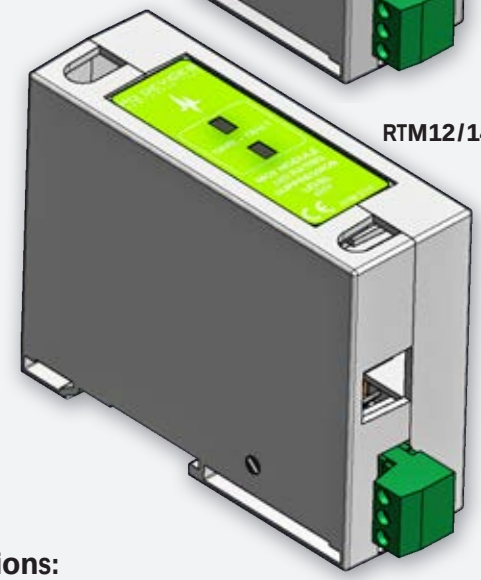
Metal oxide varistor (MOV) models provide excellent clamping of transients within <10 nanoseconds and are ideally suited for high/medium/low risk applications.

Features:

- Maximum surge current ratings exceed the 10kA requirements of BS6651:1999 Annex C, to provide long life and low maintenance
- Meets the requirements of BS EN62305:2006 (which replaced BS6651: 1999 Annex C in August 2008) and BS EN61643-11/12 – Type II, Class II
- BS6651:1999 Annex C – Location category C
- Protection of equipment connected to AC power supplies against the damaging effects of lightning strikes or voltage surges
- Fitment to nominal 110V, 140V and 650V SSI AC power supplies in the line side equipment housings
- Two stage (redundant) protection with pre-failure indication
- DIN Rail mountable
- Dual thermal and current overload fusing
- Full protection status indication with remote signalling
- 650V model (**RTM150/650**) approved for use on AC electrified, DC electrified and non-electrified lines
- 110V and 140V models (**RTM12/110** and **RTM12/140**) approved for use on AC electrified and non-electrified lines
- MOV and SAD component technology
- Compact design
- Low "let through" voltage.
- Resilient design with long service life
- Simple installation



RTM12/110.



RTM12/140.

Benefits:

- Service life of protected equipment extended
- Reduces failure rate of TFMs during lightning storms, improves system performance
- Cost of surge protection devices far outweighs safety issues, downtime and equipment replacement.

Applications:

- Protection for signals, points, level crossings etc at each, and in between, every station
- Protection of expensive power assets

Quality Assurance:

Approved to BS EN ISO9001

Approvals:

Network Rail Certificate of Acceptance PA05/00602 Issue 5

PD Devices Ltd. Unit 1, Old Station Yard, South Brent, Devon. TQ10 9AL.
www.pddevices.co.uk +44 (0)1364 649248 info@pddevices.co.uk

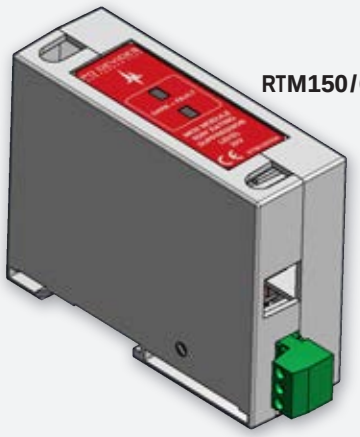
Revision PD2, 13/12/11
Information subject to change without notice.

PD DEVICES LTD
POWER DEVELOPMENT

Specifications

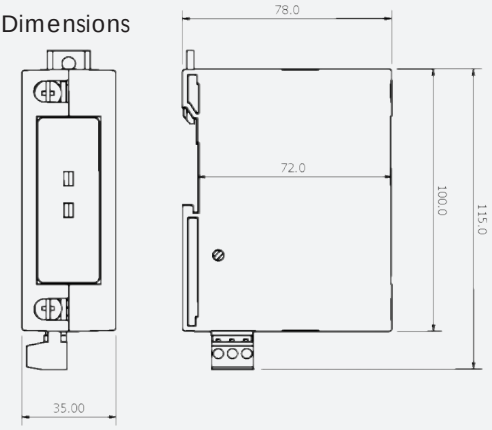


Part Code Network Rail Code	RTM12/110 PADS No: 086/047167	RTM12/140 PADS No: 086/047166	RTM150/650 PADS No: 086/047165
Description	12kA Single Phase 110V SAD Module	12kA Single Phase 140V SAD Module	75kA Single Phase 650V MOV Module
Voltage Rating:	110V rms	140V rms	650V rms
Operating Voltage Range:	121V rms Max.	154V rms Max.	650-800V rms
Maximum Current Rating	Unlimited (Parallel Connection)		
Maximum Surge Current Handling (8/20 µ s):	12kA	12kA	75kA
Response Time:	< 5 ns	< 5 ns	< 10 ns
Power Consumption:	Negligible		
No system impairments auto reset after surge has occurred:	YES	YES	YES
Terminals:	35mm² max. 2.5mm² max - Remote Signalling		
Operating Temperature:	-40°c to +70°c		
Light Emitting Diodes:	2 Green - Full Protection 1 Green - Reserve Protection No Green - No Protection, or No Power		
Case Material:	Light Grey FR ABS		
Type according to BS EN61643-11	SPD Type II, Class II		
Compliant With:	BS6651: 1999 Annex C Location Catergory C		
Dimensions:	100mm **L** x 35mm **W** x 78mm **D**		
Weight	160g	160g	160g
LET THROUGH VOLTAGE (6kA 8/20µs)	260V	370V	<1.9kV



RTM150/650.

Dimensions



All of the above information, including drawings, illustrations and graphic designs, reflects our present understanding and is to the best of our knowledge and belief correct and reliable. Users, however, should independently evaluate the suitability of each product for the desired application. Under no circumstances does this constitute an assurance of any particular quality or performance. Such an assurance is only provided in the context of our product specifications or explicit contractual arrangements. Our liability for these products is set forth in our standard terms and conditions of sale.

PD Devices Ltd. Unit 1, Old Station Yard, South Brent, Devon. TQ10 9AL.
www.pddevices.co.uk +44 (0)1364 649248 info@pddevices.co.uk

Revision PD2, 13/12/11
Information subject to change without notice.