

INTRODUCTION

This document explains how to install Furse MMP photovoltaic protectors:

MMP C100PV, MMP C550PV, MMP C1000PV



1. Safety note:

Warning! Installation by person with electrotechnical expertise only.

Warnung! Installation nur durch elektrotechnische Fachkraft.

Avvertenza! Fare installare solo da un elettricista qualificato.

Avertissement! Installation uniquement par des personnes qualifiées en électricité.

Advertencia! La instalación deberá ser realizada únicamente por electricistas especializados.

2. Application

2.1 Furse Type 2 (Class II) MMP CPV Series

Protectors are suitable for use on the DC side of Photovoltaic (PV) solar panel systems, to prevent transient overvoltages (surges) damaging equipment.

Note: Additional mains power SPDs should be installed on the AC side of a photovoltaic system protect against transients on the 230 V AC line from DC/AC inverter to the local sub-distribution board.

3. Before installation

3.1 Ensure that the MMP Protector's maximum DC voltage is suitable for the installation.

	Maximum DC Voltage
MMP C100PV	100 V
MMP C550PV	550 V
MMP C1000PV	1000 V

4. Installation

4.1 Mounting location

The MMP Protector should be installed very close to the DC/AC inverter to be protected.

Where the distance between the PV module and the DC/AC inverter is less than 10 m, a single MMP Protector close to the DC/AC inverter will suffice.

However, where the distance between the PV module and the DC/AC inverter is greater than 10 m, then two MMP Protectors must be installed, one close to the inverter and the other close to the PV module.

4.2 Enclose the MMP Protector

The MMP Protector has exposed terminals and therefore, for electrical safety, must be installed within an enclosure (MMP ENC4).

Use cable glands to retain the enclosure's IP rating.

MMP Protectors should always be installed in a dry environment.

4.3 Parallel connection

The MMP Protector should be connected in parallel with the supply to be protected (see Figures 1 & 2). The connecting leads do not carry the load current of the supply, only the current associated with suppressing the transient overvoltage.

Connecting leads to the MMP Protector need to be kept short in order to minimise additive inductive voltages. The total lead length between + conductors, SPD and earth conductor should ideally be no more than 0.5 m (see Section 4.5 - Length of connecting leads).

Connections should be made to each supply conductor including earth (terminals are suitably marked).

When connecting line conductors, strip the conductor insulation back by 15 mm. This then ensures the protector complies with the degree of insulation protection, IP20 (safe from finger contact).

Note: Hand tighten connections only. Do NOT use power driven screwdrivers to make connections to the MMP Protector.

It is good practice to be able to isolate or disconnect the MMP Protector from the supply.

A means of isolation should therefore be installed in the connection to the MMP Protector.

Where it is also necessary to fuse the connection to the MMP Protector, this can be achieved through use of a switchfuse, MCCB or type 'C' MCB.

4.4 Fuse connecting leads

The connecting lead to the + terminal of the MMP Protector should be suitably fused.

This is to protect the connecting lead in the event of a short circuit.

Fuses specifically designed for use on PV systems are recommended.

Determine the most appropriate fuse from assessment of the nominal current of the photovoltaic module, and the open circuit voltage of the PV array, as follows:

1. Multiply the nominal current of the photovoltaic module by a factor of 1.4 and select the closest, higher value fuse to the calculated figure.
2. Multiply the open circuit voltage of the PV array by a factor of 1.2 & ensure that the selected fuse has a higher voltage withstand than the calculated figure.

4.5 Size of connecting leads

The size (cross-sectional area) of the connecting leads between the terminals of the MMP Protector and the power supply should be a minimum size of 6 mm² multi-stranded conductor (copper).

Note: the size of connecting leads to the MMP Protector must not be less than the size of leads of the associated system.

If required, the protector's terminals will accept connecting leads of up to 25 mm² (multi-stranded copper conductor).

4.6 Length of connecting leads

The connecting leads should be kept as short as possible and ideally should not exceed 25 cm (10 inches) from the busbars to the MMP Protector's terminals. Protectors can be mounted upside down or on their side if this facilitates shorter connecting leads.

WARNING: The longer the connecting leads (between cable/busbars and the protector's terminals) the greater the voltage let-through the protector. If the let-through voltage is higher than the withstand voltage level of the equipment to be protected, damage will result.

4.7 Bind connecting leads

Connecting leads should be tightly bound together using Ty-Raps®, tape or spiral wrap. This should be done for the entire length of the cable or as far as is possible.

5. Protector operation/status indication

5.1 The MMP Protector includes an internal thermal supervision device which continually monitors its operation. Status is displayed via the front facing window. During normal operation the status display is clear. Should a fault occur, the supervision device disconnects the MMP Protector from the mains supply and displays a red indicator in the status window.

Note: After the supervision device has disconnected surge protection, the MMP Protector should be replaced to prevent the risk of flashover causing dangerous sparking and equipment damage.

6. Remote indication

6.1 This section is only applicable to MMP

Protectors with the /S suffix in the part number. The remote indication facility enables the MMP Protector to be linked to a building management system. A volt free contact on the MMP Protector allows a remote alarm to be tripped if a fault develops within the protector. When a fault occurs terminals 11-14 (14 is NC) break contact and terminals 11-12 (12 is NO) make contact.

Note: Unless further specific surge protection is in place the signalling wires for remote alarm contact should only be routed inside the building, otherwise the overall surge protection may be affected.

6.2 The operation of the remote facility can be verified by removing the protection module from its base unit. The NC terminals should break and the NO terminals should close.

6.3 The terminal for the volt free contact accepts 1.5 mm² cable and is located on the top of the MMP Protector. The MMP Protector's remote indication is rated at 0.5 Amp, 250 V AC.

7. Maintenance

7.1 Maintenance should be conducted at least once a year and also following lightning activity. Visually check:

- (i) Status indication window (clear = ok, red = fault/disconnected)
- (ii) Condition of connecting leads and terminations

If the status indication window shows red, the replaceable module of the Protector should be replaced. Contact Furse.

