

## **PIVM PV 800 Vseries**

- Lightning impulse current and surge arresters type T1+T2 intended for photovoltaic systems (PV).
- Products are designed in a Y-type connection, which is resistant to earth faults of working conductors.
- Particular varistor sectors, connected between the terminals L+, L-, PE, are equipped with internal disconnectors, which are activated when the varistors fail (overheat) and they are able to interrupt the DC current.
- Special construction of the internal disconnector allows installation without a back-up fuse.

- They are installed on the DC side in PV applications with external LPS, where a sufficient distance "s" is not observed.
- Suitable for level LPL III or IV.
- Ensure the equipotential bonding of plus and minus busbars of PV systems and the elimination of transient overvoltage resulting from the atmospheric discharges (including direct lightning strike to the PV system) or switching processes.
- **M** indication specifies a type of construction with removable module.
- **DS** indication specifies a version with remote monitoring.

Туре		PIVM PV 800 Vseries
Test class according to EN 61643-11:2012 and EN 61643-31:2019		T1, T2
System		DC
PV system type		Ungrounded
SPD connection type		Y
Maximum continuous operating voltage (+/-)	U <sub>CPV</sub>	870 V DC
Maximum continuous operating voltage (±/PE)	U <sub>CPV</sub>	870 V DC
Max. voltage of PV generator $U_{OCSTC} \le U_{CPV} / 1.2$	U <sub>OCSTC</sub>	730 V
Short-circuit current rating	I <sub>SCPV</sub>	10 kA
Impulse discharge current for class I test (10/350)	I <sub>imp</sub>	6.5 kA
Charge	Q	3.25 As
Specific energy for class I test	W/R	10.56 kJ/Ω
Maximum discharge current (8/20)	I <sub>max</sub>	40 kA
Nominal discharge current for class II test (8/20)	I <sub>n</sub>	15 kA
Voltage protection level at In (L+/L-)	Up	< 3.3 kV
Response time	t <sub>A</sub>	< 25 ns
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	θ	-40 ÷ 70 °C
Humidity range	RH	5 ÷ 95 %
Minimum cross-section of connected Cu conductors according to IEC 61643-32:2017 (doesn't apply to "V" connection) for T1	S	6 mm² (L+, L-) 16 mm² (PE)
Minimum cross-section of connected Cu conductors according to IEC 61643-32:2017 (doesn't apply to "V" connection) for T2	S	2.5 mm² (L+, L-) 6 mm² (PE)
Clamp fastening range (solid conductor)		2.5 ÷ 35 mm <sup>2</sup>
Clamp fastening range (stranded conductor)		$2.5 \div 25 \text{ mm}^2$
Tightening moment		4 Nm
Installation		On DIN rail 35 mm



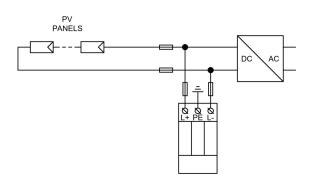
Modular width          Operating position          Product placement environment          SPD failure mode          Signalling at the device          Importance of local signaling          Remote signalling          Modular design          Article number of spare module          Lifetime          Designed according to standards          Requirements and test methods for SPDs for photovoltaic installations          Safety of Flammability of Plastic Materials          Application standards          Protection against lightning          Selection and application principles for SPDs connected to photovoltaic installations          Low-voltage electrical installations – Photovoltaic (PV) systems          Ordering, packaging and additional data       m         Mass (including the packaging)       m         Mass (including the packaging)       m         Packaging dimensions (H x W x D)          Packaging value       V         ETIM class       Customs tariff no.	PIVM PV 800 Vseries
Product placement environment SPD failure mode Signalling at the device Importance of local signaling Remote signalling Modular design Article number of spare module Lifetime Designed according to standards Requirements and test methods for SPDs for photovoltaic installations Safety of Flammability of Plastic Materials Application standards Protection against lightning Selection and application principles for SPDs connected to photovoltaic installations Low-voltage electrical installations – Photovoltaic (PV) systems Ordering, packaging and additional data Mass (including the packaging) Packaging dimensions (H x W x D) Packaging value ETIM group ETIM group	3 TE
SPD failure mode       initiality         Signalling at the device       initiality         Importance of local signaling       initiality         Remote signalling       initiality         Modular design       initiality         Article number of spare module       initiality         Lifetime       initiality         Designed according to standards       initiality         Requirements and test methods for SPDs for photovoltaic installations       initiality         Safety of Flammability of Plastic Materials       initiality         Application standards       initiality         Protection against lightning       initiality         Selection and application principles for SPDs connected to photovoltaic installations       initiality         Low-voltage electrical installations – Photovoltaic (PV) systems       initiality         Ordering, packaging and additional data       m         Mass       m         Mass (including the packaging)       m         Packaging dimensions (H x W x D)       initiality         Packaging value       V         ETIM group       initiality	Any
Signalling at the device       Importance of local signaling         Remote signalling       Importance of local signaling         Modular design       Importance of spare module         Article number of spare module       Importance         Lifetime       Importance         Designed according to standards       Importance         Requirements and test methods for SPDs for photovoltaic installations       Importance         Safety of Flammability of Plastic Materials       Importance         Application standards       Importance         Protection against lightning       Importance         Selection and application principles for SPDs connected to photovoltaic installations       Importance         Low-voltage electrical installations – Photovoltaic (PV) systems       Importance         Ordering, packaging and additional data       Importance         Mass       Importance         Mass (including the packaging)       Importance         Packaging dimensions (H x W x D)       Importance         Packaging value       V         ETIM group       Importance         ETIM class       Importance	Internal
Importance of local signaling Remote signalling Modular design Article number of spare module Lifetime Designed according to standards Requirements and test methods for SPDs for photovoltaic installations Safety of Flammability of Plastic Materials Application standards Protection against lightning Selection and application principles for SPDs connected to photovoltaic installations Low-voltage electrical installations – Photovoltaic (PV) systems Ordering, packaging and additional data Mass (including the packaging) m Packaging dimensions (H x W x D) Packaging value ETIM group ETIM class	OCFM
Remote signalling       Image: Standards         Article number of spare module       Image: Standards         Lifetime       Image: Standards         Designed according to standards       Image: Standards         Requirements and test methods for SPDs for photovoltaic installations       Image: Stafety of Flammability of Plastic Materials         Application standards       Image: Stafety of Flammability of Plastic Materials         Application standards       Image: Stafety of SPDs connected to photovoltaic installations         Selection and application principles for SPDs connected to photovoltaic installations       Image: Stafety of SPDs connected to photovoltaic installations         Low-voltage electrical installations – Photovoltaic (PV) systems       Image: Stafety of SPDs connected to photovoltaic installations         Mass (including the packaging and additional data       Image: Stafety of SPDs connected to photovoltaic installations         Mass (including the packaging)       Image: Stafety of SPDs connected to photovoltaic installations         Mass (including the packaging)       Image: Stafety of SPDs connected to photovoltaic installations         Packaging dimensions (H x W x D)       Image: Stafety of SPDs connected to photovoltaic installations         Packaging value       V         ETIM group       Image: Stafety of SPDs connected to photovoltaic installations         ETIM class       Image: Stafety of SPDs connected to photovoltaic	Optic
Modular design       Image: Control of Spare module         Article number of spare module       Image: Control of Spare module         Lifetime       Image: Control of Contro of Contro of Control of Control of Contro of Control of	OK – green target FAULT – red target
Article number of spare module         Lifetime         Designed according to standards         Requirements and test methods for SPDs for photovoltaic installations         Safety of Flammability of Plastic Materials         Application standards         Protection against lightning         Selection and application principles for SPDs connected to photovoltaic installations         Low-voltage electrical installations – Photovoltaic (PV) systems         Ordering, packaging and additional data         Mass       m         Mass (including the packaging)       m         Packaging value       V         ETIM group       I         ETIM class       I	No
Lifetime       Designed according to standards         Requirements and test methods for SPDs for photovoltaic installations       Image: Constant and actions         Safety of Flammability of Plastic Materials       Application standards         Protection against lightning       Image: Constant and application principles for SPDs connected to photovoltaic installations         Selection and application principles for SPDs connected to photovoltaic installations       Image: Constant and additional data         Ordering, packaging and additional data       Image: Constant and additional data         Mass (including the packaging)       Image: Constant and additional data         Packaging value       V         ETIM group       Image: Constant and additional data         ETIM class       Image: Constant and additional data	Yes
Designed according to standards         Requirements and test methods for SPDs for photovoltaic installations         Safety of Flammability of Plastic Materials         Application standards         Protection against lightning         Selection and application principles for SPDs connected to photovoltaic installations         Low-voltage electrical installations – Photovoltaic (PV) systems         Ordering, packaging and additional data         Mass (including the packaging)       m         Packaging dimensions (H x W x D)       V         ETIM group       V	16 075
Requirements and test methods for SPDs for photovoltaic installations         Safety of Flammability of Plastic Materials         Application standards         Protection against lightning         Selection and application principles for SPDs connected to photovoltaic installations         Low-voltage electrical installations – Photovoltaic (PV) systems         Ordering, packaging and additional data         Mass       m         Mass (including the packaging)       m         Packaging value       V         ETIM group       ETIM class	> 100 000 h
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Application standards         Protection against lightning         Selection and application principles for SPDs connected to photovoltaic installations         Low-voltage electrical installations – Photovoltaic (PV) systems         Ordering, packaging and additional data         Mass       m         Mass (including the packaging)       m         Packaging dimensions (H x W x D)       V         ETIM group       V	IEC 61643-31:2018
Protection against lightning         Protection against lightning         Selection and application principles for SPDs connected to photovoltaic installations         Low-voltage electrical installations – Photovoltaic (PV) systems         Ordering, packaging and additional data         Mass       m         Mass (including the packaging)       m         Packaging dimensions (H x W x D)       V         ETIM group       V	UL 94
Selection and application principles for SPDs connected to photovoltaic installations Low-voltage electrical installations – Photovoltaic (PV) systems Ordering, packaging and additional data Mass Mass (including the packaging) m Packaging dimensions (H x W x D) Packaging value V ETIM group ETIM class	
Low-voltage electrical installations – Photovoltaic (PV) systems       Ordering, packaging and additional data         Mass       m         Mass (including the packaging)       m         Packaging dimensions (H x W x D)       V         Packaging value       V         ETIM group       ETIM class	IEC 62305:2010
Ordering, packaging and additional data         Mass       m         Mass (including the packaging)       m         Packaging dimensions (H x W x D)       m         Packaging value       V         ETIM group       ETIM class	CLC/TS 50539-12:2010
Mass m Mass (including the packaging) m Packaging dimensions (H x W x D) Packaging value V ETIM group ETIM class	HD 60364-7-712:2016
Mass (including the packaging) m Packaging dimensions (H x W x D) Packaging value V ETIM group ETIM class	
Packaging dimensions (H x W x D)       Packaging value       V       ETIM group       ETIM class	390 g
Packaging value V ETIM group ETIM class	409 g
ETIM class	60 x 111 x 87 mm
ETIM class	0.58 dm <sup>3</sup>
	EG000021
Customs tariff no.	EC001457
	85363010
EAN code	8590681112137
Art. number	16 073



**The link in the QR code** leads to the online presentation of the **PIVM PV 800 Vseries**. There, in addition to the always up-to-date data sheet, you will also find all diagrams and drawings, declarations of conformity, or 2D or 3D models and other necessary materials. For more information, visit **www.hakel.com** 



## Application wiring diagram (installation)



## Internal diagram

