SSM-U-1610 / SSM-U-2410 / SSM-U-3210 /
SSM-U-1615 / SSM-U-2415 / SSM-U-3215

Flexible

- For PV voltages of 1,000 V and 1,500 V
- Voltage supply from PV field or external
- Variable DC wiring and fuse positioning

Easy to Use

- Connection via Sunclix plug with DC fuse adapter
- Rapid wiring on-site without special tools
- Compact structure for easy installation

Robust

- Can be used at ambient temperatures of -40°C to +60°C and altitudes of up to 4,000 m
- Optimum heat dissipation counteracts aging processes

Communicative

- Communication via Ethernet, directly via optical fiber cable as an option
- Open Modbus TCP data protocol

SMA STRING-MONITOR

Flexible and efficient monitoring of energy outputs

The new SMA String-Monitor for system voltages of 1,000 V and 1,500 V enables both reliable protection of reverse currents and optimum monitoring of the connected PV generators. For precise performance and fault analysis, every string is measured individually and the data is sent in a matter of seconds. Not only does the innovative inline fuse technology with Sunclix quick connectors increase flexibility during system construction, it also simplifies and accelerates DC wiring on-site. The fuses have been relocated outwards to the string connections. Thanks to this, string fuses can be suitably positioned depending on the PV system layout, and the SMA String-Monitor cannot fail to impress with its extremely compact dimensions.

SMA STRING-MONITOR for 1000 V_{DC} systems

Technical Data	SSM-U-1610	SSM-U-2410	SSM-U-3210
Input (DC)			
Rated voltage	1,000 V	1,000 V	1,000 V
Altitude derating (rated voltage)	2,001 m to 3,000 m MSL = reduction by 1.0% per 100 m 3,001 m to 4,000 m MSL = reduction by 1.2% per 100 m		
Number of string inputs	16	24	32
Rated current per measuring input	17.5 A	17.5 A	17.5 A
String connection	SUNCLIX	SUNCLIX	SUNCLIX
Output (DC)			
Rated current	315 A	315 A	315 A
Temperature derating (rated current)	>50°C operating temperature = reduction by 2.5% per K		
DC switch	400 A / 1,000 V	400 A / 1,000 V	400 A / 1,000 V
Surge arrester	Type 2 (monitored), In = 20 kA; Imax = 40 kA		
DC output	Busbar (ring terminal lug M12) / V box terminal (Al/Cu)*		
Number of DC outputs	1 / 2	1 / 2	1 / 2
Conductor cross-section	Busbar 70 mm² to 400 mm² / V box terminal max. 300 mm²		
Sealing range of cable glands	17 mm to 38.5 mm	17 mm to 38.5 mm	17 mm to 38.5 mm
Current Measurement / Voltage Measurement			
Number of current measuring channels	16	24	32
Current measuring range / accuracy	–2.5 A to +17.5 A / 0.5% measuring range end value (typical)		
Number of voltage measuring channels	1	1	1
Voltage measuring range / accuracy	+250 VDC to +1,500 VDC / ±0.5% measuring range end value (typical)		
Temperature Measurement			
SSM-U internal temperature / accuracy	–40°C to +100°C / ±2% measuring range end value		
Enclosure / Ambient Parameters			
IP degree of protection according to IEC 60529	IP 54 / self-ventilated	IP 54 / self-ventilated	IP 54 / self-ventilated
Enclosure material	Glass-fiber reinforced plastic / self-extinguishing, halogen-free, UV stable		
Dimensions (W / H / D), wall mounting bracket and sting cable harness included	630 / 1,055 / 320 mm (24.80 / 41.54 / 12.60 inch)		
Max. weight	34 kg (75 lb)		
Protection class (according to IEC 60529)	II	II	II
Mounting type	Wall mounting / pole mounting*		
Operating / storage temperature	–40°C to +60°C / –40°C to +70°C		
Relative humidity	0% to 95%, condensation possible		
Max. altitude above MSL	4,000 m	4,000 m	4,000 m
Interfaces			
Module or ambient temperature	2 x PT100/PT1000; two-, three- or four-conductor measurement		
Digital input	1; incl. electricity supply 24 VDC 150 mA		
Monitoring surge arrester	1	1	1
Status alarm contact DC switch*	1	1	1
Digital output	1, potential-free change-over contact		
Analog input 4 mA to 20 mA	1; Irradiation / wind speed		
Communication			
Protocol / Fieldbus	Modbus (TCP) / Ethernet		
Transfer medium	Cat-5 cable S-UTP, F-UTP / multimode optical fiber cable (SC)*		
Measured value interval	1 s	1 s	1 s
Power supply	Internal power supply 200 VDC to 1000 VDC / ext. supply 230 VAC*		
Standards			
Compliance	CE, IEC 61439-1, EN 61000-6-2 , EN 61000-6-3		
* accessory required			

SMA STRING-MONITOR for 1500 V_{DC} systems

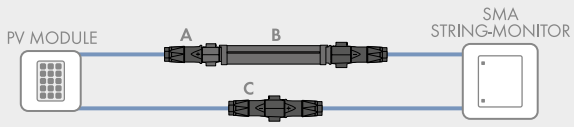
Technical Data	SSM-U-1615	SSM-U-2415	SSM-U-3215
Input (DC)			
Rated voltage	1,500 V	1,500 V	1,500 V
Altitude derating (rated voltage)	2,001 m to 3,000 m MSL = reduction by 1.0% per 100 m 3,001 m to 4,000 m MSL = reduction by 1.2% per 100 m		
Number of string inputs	16	24	32
Rated current per measuring input	17.5 A	17.5 A	17.5 A
String connection	SUNCLIX	SUNCLIX	SUNCLIX
Output (DC)			
Rated current	315 A	315 A	315 A
Temperature derating (rated current)	>50°C operating temperature = reduction by 2.5% per K		
DC switch	400 A / 1,500 V	400 A / 1,500 V	400 A / 1,500 V
Surge arrester	Type 2 (monitored), In = 20 kA; Imax = 40 kA		
DC output	Busbar (ring terminal lug M12) / V box terminal (Al/Cu)*		
Number of DC outputs	1 / 2	1 / 2	1 / 2
Conductor cross-section	Busbar 70 mm² to 400 mm² / V box terminal max. 300 mm²		
Sealing range of cable glands	17 mm to 38.5 mm	17 mm to 38.5 mm	17 mm to 38.5 mm
Current Measurement / Voltage Measurement			
Number of current measuring channels	16	24	32
Current measuring range / accuracy	–2.5 A to +17.5 A / 0.5% measuring range end value (typical)		
Number of voltage measuring channels	1	1	1
Voltage measuring range / accuracy	+250 VDC to +1,500 VDC / ±0.5% measuring range end value (typical)		
Temperature Measurement			
SSM-U internal temperature / accuracy	–40°C to +100°C / ±2% measuring range end value		
Enclosure / Ambient Parameters			
IP degree of protection according to IEC 60529	IP 54 / self-ventilated	IP 54 / self-ventilated	IP 54 / self-ventilated
Enclosure material	Glass-fiber reinforced plastic / self-extinguishing, halogen-free, UV stable		
Dimensions (W / H / D), wall mounting bracket and sting cable harness included	630 / 1,055 / 320 mm (24.80 / 41.54 / 12.60 inch)		
Max. weight	34 kg (75 lb)		
Protection class (according to IEC 60529)	II	II	II
Mounting type	Wall mounting / pole mounting*		
Operating / storage temperature	–40°C to +60°C / –40°C to +70°C		
Relative humidity	0% to 95%, condensation possible		
Max. altitude above MSL	4,000 m	4,000 m	4,000 m
Interfaces			
Module or ambient temperature	2 x PT100/PT1000; two-, three- or four-conductor measurement		
Digital input	1; incl. electricity supply 24 VDC 150 mA		
Monitoring surge arrester	1	1	1
Status alarm contact DC switch*	1	1	1
Digital output	1, potential-free change-over contact		
Analog input 4 mA to 20 mA	1; Irradiation / wind speed		
Communication			
Protocol / Fieldbus	Modbus (TCP) / Ethernet		
Transfer medium	Cat-5 cable S-UTP, F-UTP / multimode optical fiber cable (SC)*		
Measured value interval	1 s	1 s	1 s
Power supply	Internal power supply 200 VDC to 1,500 VDC / ext. supply 230 VAC*		
Standards			
Compliance	CE, IEC 61439-1, EN 61000-6-2 , EN 61000-6-3		

* accessory required

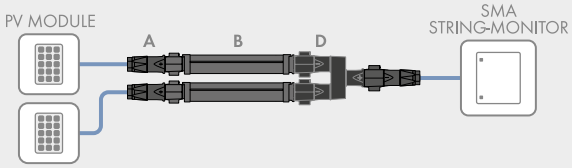
Accessory	
PV connector set	Field connector 6 mm² and 16 mm²
Inline fuse connector set	All current fuse sizes 1,000 V and 1,500 V
Y connector set	
Optical fiber interface module	
Optical fiber splice box set	
Pole mounting set	For mounting to masts with round or square cross-section 160 mm to 370 mm
Alarm contact set	
Ethernet overvoltage protection set	
Power supply assembly for external power supply	
Overvoltage protection set supply voltage 230 VAC	Overvoltage protection for power supply assembly
V box terminal set	

CIRCUITRY OPTIONS WITH INLINE STRING FUSES

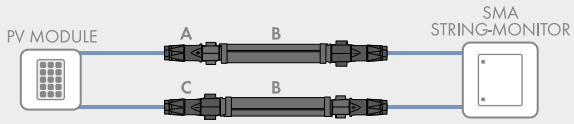
One-Sided Fuse Protection on the Positive or Negative Terminal



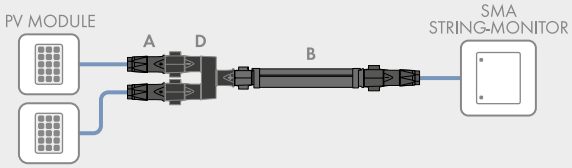
Two Fuses on One String via Y Adapter



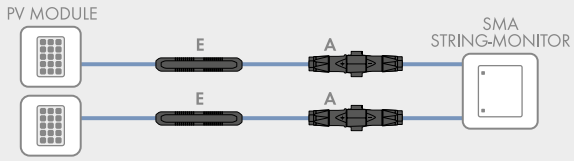
Two-Sided Fuse Protection on the Positive and Negative Terminal



Two Strings on One Fuse via Y Adapter



Prefabricated Cable Harnesses With Integrated String Fuses



A	PV connector (positive terminal)
B	Inline fuse connector
C	PV connector (negative terminal)
D	Y connector
E	Integrated string fuses

SYSTEM EXAMPLE