

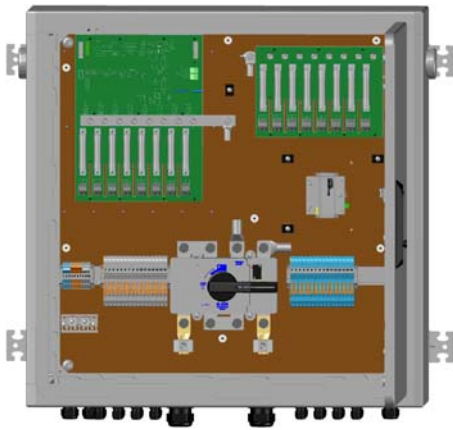
ArrayGuard®

Combiner Box

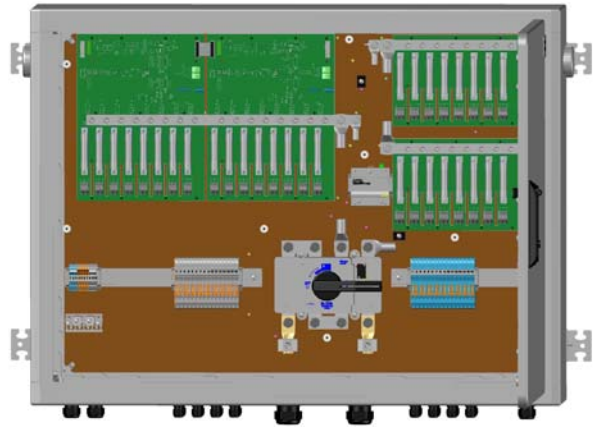


The heart of the intelligent combiner box is the CAN-Bus enabled string current monitoring system, which monitors the string currents at 100 millisecond intervals. The design of the ArrayGuard® adapts to the actual plant topology. It connects up to 24 PV strings and offers fuse protection for the PV+ and PV- pole, depending on the applicable

earthing principle. DC main switch, overvoltage protector as well as their status monitoring are integrated. A dedicated design and high-quality finish to industry standards ensure a robust control cabinet made of UV-resistant polycarbonate designed for a long service life in outdoor environments.



ArrayGuard® PV02 *)



ArrayGuard® PV05 *)

FUNCTIONS

- > Combines 8, 12, 16, 20, or 24 PV generator strings
- > Detects failures and decreased yields early
- > Highly precise and widely temperature-independent values acquired by Shunt measurement:
 - single string currents
 - system voltage
 - internal cabinet temperature
- > Data transfer to local data logger through CAN Bus
- > Options of fuse protection:
 - String fuses on PV+ or (type P)
 - String fuses on PV+ and PV- (type PM)
- > String connection through
 - cable glands and spring-type isolation terminals or
 - solar connectors
- > DC main cable screw connection, no cable lug required
- > Integrated DC main switch with monitored status signalling contact
- > Integrated overvoltage protector with monitored status signalling contact
- > No external power supply required, power is supplied through the data bus
- > Cabinet with venting valves, accumulation of condensed water is prevented by a membrane in the venting valve
- > Reliable throughout a long outdoor lifetime

*) Protection plate against contact not depicted

TYPES

The ArrayGuard® types vary in the number of PV strings, kind of fuse protection, rated fuse current, conductor cross section of DC main cable, and other.



TECHNICAL DATA

	PV01	PV02	PV17	PV09	PV07	PV05	PV12
STRING CONNECTIONS							
Number (with double assignment)	8(16)	8(16)	12	12(24)	16	16	20
Fuse protection	P	PM	P	PM	P	PM	P
Conductor cross section	max. 6 mm ² / 10 AWG, cable end sleeve possible						
Terminal type	disconnect terminal						
CURRENT MEASUREMENT							
Number of measurement channels	8	8	12	12	16	16	20
Measurement range of current / Precision	-25 A to +25 A at max. 1,000 V DC / ±0.5 % upper range value, within operational temperature range 100 ms single values are passed on as mean values per minute						
Fuses Available	8 A, 10 A optionally						
$I_{Fuse(min)} = I_{sc} \cdot 1.4$							
Rated current 8-25 A							
Rated breaking capacity 30 kA at DC 1,100 V (1 ms)	12 A	12 A	12 A	12 A	12 A	12 A	12 A
Melting integral I ² t 5-82 A ² s / 22-560 A ² s	16 A	16 A	16 A	16 A	16 A	16 A	16 A
Characteristics gPV	20 A	20 A	20 A	20 A	20 A	20 A	16 A
Rated voltage 1,100 V DC	25 A	25 A	25 A	25 A	25 A	25 A	25 A
Test switch-off voltage 1,100 V DC							
VOLTAGE MEASUREMENT							
Number of measurement channels	1						
Measurement range of voltage / Precision	0 V to 1,000 V DC / ±0.5 % upper range value, within operational temperature range 100 ms single values are passed on as mean values per minute						
TEMPERATURE MEASUREMENT							
Measurement range of temperature / Precision	-30 °C to 100 °C / -22 °F to 212 °F / ±2 % upper range value						
DATA TRANSFER CAN BUS							
Protocol	CANopen according to CiA standard DS-301						
Data rate	20 kBit/s						
Cable	Li2YCYv 8x2x0.5 (TP)						
ELECTRICAL DATA OF THE GENERATOR CONNECTION							
Rated operational and insulation voltage	max. 1,000 V DC						
Rated current	max. 230 A DC						
Rated impulse withstand voltage	6,000 V DC						
Rated voltages of auxiliary circuits	24 V DC through CAN-Bus						
Power consumption	max. 1.5 W						
grounded overvoltage protection, protection class II, environment A and B							
INTERFACES							
Current input	8	8	12	12	16	16	20
Voltage input	1						
2 potential-free digital inputs for signalling contacts							
CAN Bus	1						
DC main switch	250 A at 1000 V, 280 A at 800 V, 315 A at 600 V; DC21-B, 4 poles, safety interlock, signalling contact						
Overvoltage protector	universal protector type 1 and type 2, protects from close and direct strike; lightning current (10/350 µs) 12.5 kA/pole, signalling contact						
MECHANICAL DATA							
Degree of protection // impact energy	IP 54 / Nema 1, 2, 3R, 3S // IK 10						
Standards	DIN EN 61000-6-1: 2007-10, DIN EN 61000-6-2: 2006-03, DIN EN 61000-6-3: 2007-09, DIN EN 61000-6-4: 2007-09, DIN EN 60439-1 2002-08, DIN EN 50178: 1998-04.						
Dimensions 750 x w x 320 mm / 29.5 x w x 12.6 in	750 / 29.5	750 / 29.5	750 / 29.5	1000 / 39.8	1000 / 39.8	1000 / 39.8	1000 / 39.8
Weight in kg/lb	36 / 80	36 / 80	36 / 80	44 / 97	45 / 99	45 / 99	44 / 97
DC MAIN CABLE							
Permissible cross section for the terminal	25-300 mm ² / 4-600 AWG *)						
Terminal type	cable gland Al/Cu						
Permissible diameter including insulation for the cable gland	19-27 mm, up to 32 mm possible *)						
AMBIENT CONDITIONS							
Operation	-25 °C to +45 °C / -13 °F to +113 °F						
Storage temperature	-30 °C to +70 °C / -22 °F to +158 °F						
Relative air humidity	up to 95 %, non-condensing						

*) Make sure to order the extended cable entries if the conductor cross section is >240 mm² / 253 AWG

