

# HISBOX<sup>®</sup> STRING COMBINER

RESIDENTIAL - COMMERCIAL & INDUSTRIAL - UTILITY SCALE

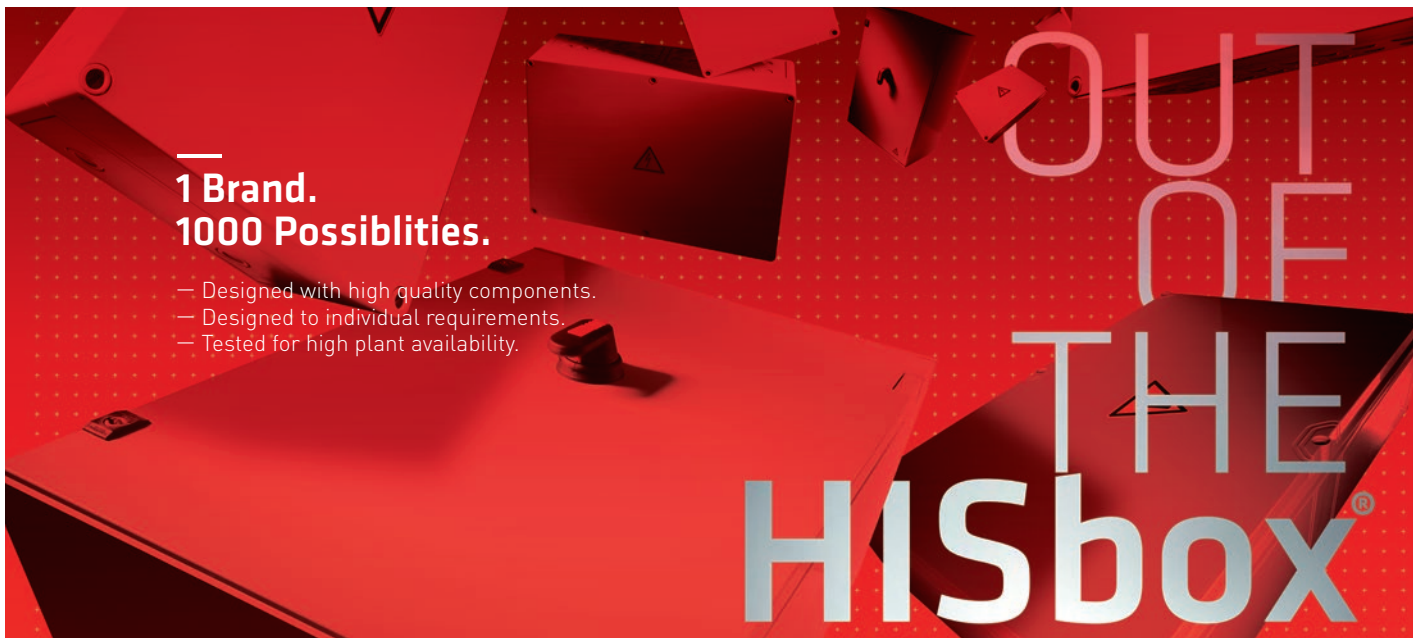
 2023/2024



# CONTENT

---

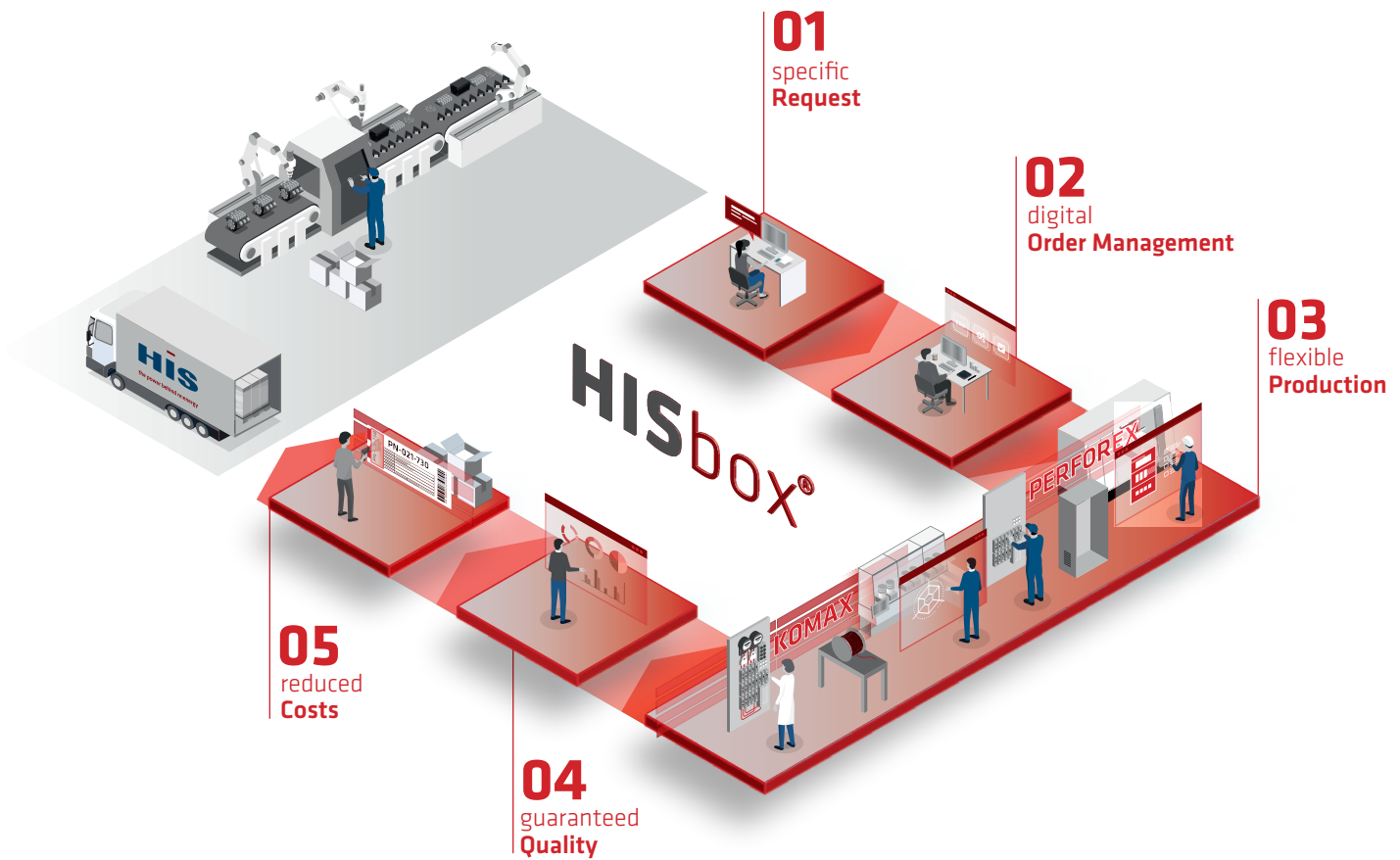
<b>Complete Solutions</b>	_ 3
<b>HISbox® Residential</b>	
—HISbox® 1000V DC Residential	_ 5
—HU Backup Boxes 1-phase/3-phase	_ 9
<b>HISbox® Commercial &amp; Industrial Rooftops</b>	
—HDC 1000V DC Fireman Switch Undervoltage Release	_ 11
—DC Combiner Monitoring with Remote Operation (Single-MPPT max. 12 Input)	_ 12
—DC Combiner 1000V Multi-MPPT	_ 13
—HDC 1000V Single-MPPT 10 /12/14 /16 Strings	_ 14
—HISbox® Smart Power & Metering	_ 15
—HNA Grid Protection VDE-AR-N 4105:2018-11, VDE-AR-N 4110	_ 16
<b>HISbox® Utility Scale</b>	
—HM15 Monitoring 1500V DC (4-32A)	_ 18
—HM15 Monitoring High Current 1500V DC (35-80A)	_ 19
—Gateway Boxes	_ 20
—PV Array Box 1500V DC (4-32A)	_ 21
—PV Array Box High Current 1500V DC (35-80A)	_ 22
—Arc Fault Detection 1500V	_ 23
—Array Box - Cable Trunk Solutions	_ 24
—ALVC - Auxiliary Low Voltage Combiner	_ 25



# DESIGNED WITH HIGH QUALITY COMPONENTS TESTED FOR HIGH RETURN ON INVESTMENT.



## ENGINEERING - TESTING - PRODUCTION



### QUALITY & TESTING

Engineering, manufacturing and testing under one roof. Additional testing for special requirements.



### EASY TO INSTALL

Well thought out. Ready to use. Including necessary accessories to make installation safe, simple and quick.



### COST OPTIMIZED CONCEPTS

Smart design to save costs (CapEx) helps to avoid extensive work during installation and operations (OpEX)



# HIS ARTICLE CODE

## HDC-AA-BB-CCC-DDX-YYYY

**Product Category**

**Main components**

- 00** Combiner
- 01** SPD Type 2
- 02** SPD Type 1+2
- 03** SPD Type 2; Load Break Switch
- 04** SPD Type 1+2; Load Break Switch
- 05** SPD Type 2; Load Break Switch, undervoltage release
- 06** SPD Typ 1+2; Load Break Switch undervoltage release
- 07** Load Break Switch
- 08** Load Break Switch undervoltage release
- 30** DC MCB
- 31** DC MCB; SPD Type 2
- 32** DC MCB; SPD Type 1+2
- 33** DC MCB shunt release
- 34** DC MCB shunt release; SPD Type 2
- 35** DC MCB shunt release; SPD Type 1+2

**Input Strings per MPPT**

- 01
- 02
- 03
- 04
- 05
- 06

**Purchase number**

- E01
- E02
- E03
- E04
- E05
- E06
- E07
- E08
- E09
- E10
- E11
- E12

**Amount of MPPT**

- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08
- 09
- 10
- 11
- 12

**Output Strings per MPPT**

- 01
- 02
- 03
- 04
- 05
- 06

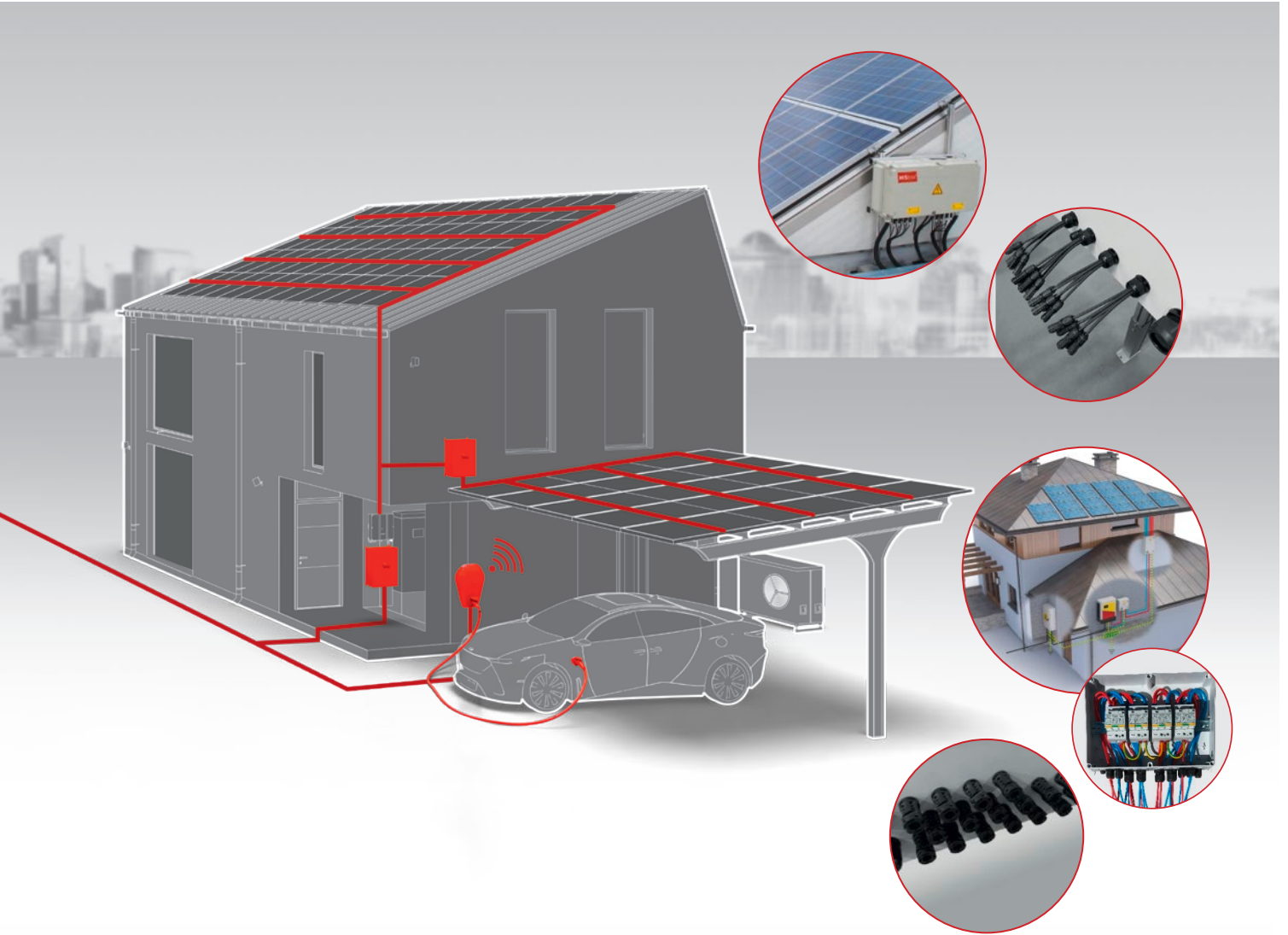
**Connection Type**

- FFM Fuse/Fuse - Multi Sealing Glands
- FFG Fuse/Fuse - Single Sealing Glands
- FFC Fuse/Fuse - PV Connectors
- FFL1 Fuse/Fuse - PV Flying Leads
- FTM Fuse/Terminal - Multi Sealing Glands
- FTG Fuse/Terminal - Single Sealing Glands
- FTC Fuse/Terminal - PV Connectors
- FTL1 Fuse/Terminal - PV Flying Leads
- TTM Terminal/Terminal - Multi Sealing Glands
- TTG Terminal/Terminal - Single Sealing Glands
- TTC1 Terminal/Terminal - PV Connectors
- TTL1 Terminal/Terminal - PV Flying Leads
  
- XXL1 Staubli
- XXL2 Phoenix Contact
- XXL3 Amphenol

# HISbox<sup>®</sup>

— string combiner

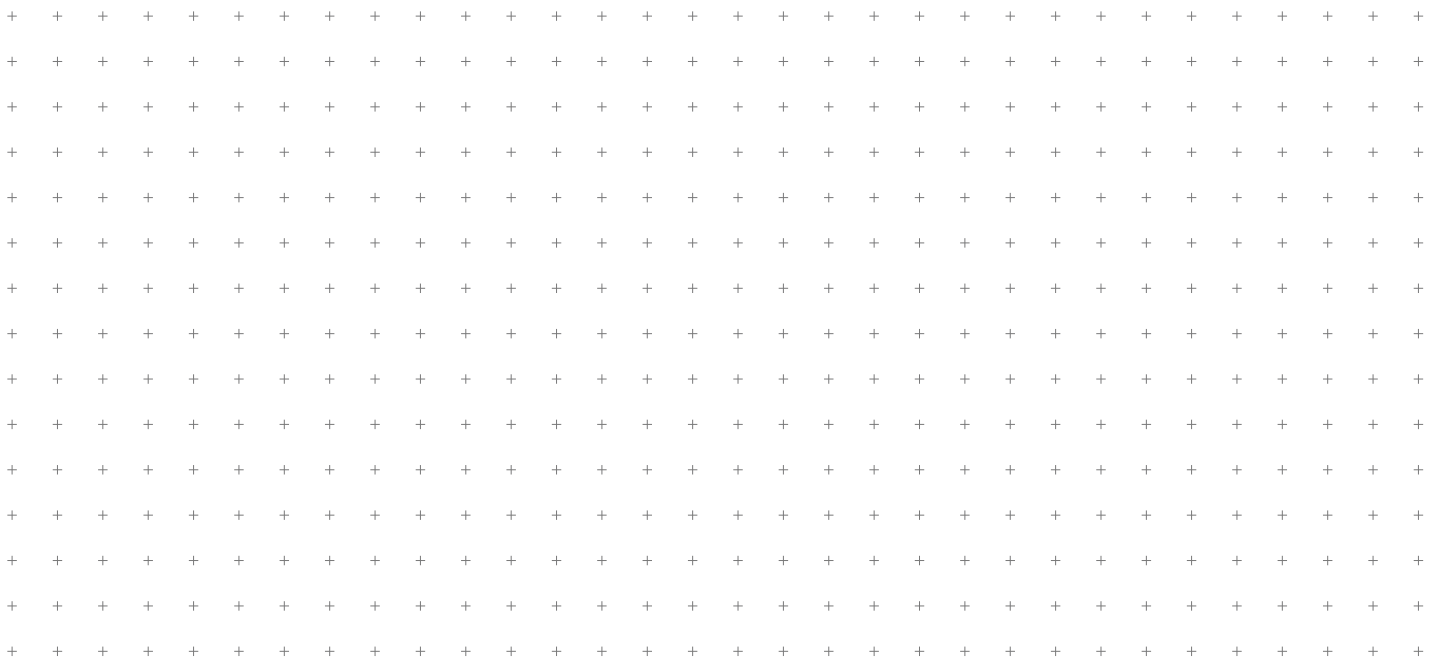
**READY TO CONNECT DC COMBINER 1000V FOR STRING INVERTER**



# RESIDENTIAL

# HISBOX® 1000V DC RESIDENTIAL

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1000 V DC
Rated Insulation Voltage (Ui)	1000 V DC
Max. Rated Current per String (InC)	20 A
Max. rated current (InA)	60 A
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling upon request)
Fuse Links	10x38mm gPV Fuses (optional)
Load Break Switch	1000 V DC, per MPPT (optional) (auxiliary status contact upon request)
Accessory	230V AC, undervoltage release function for Fireman switch applications (optional)
<b>Inputs</b>	
MPPTs	1 to 12
Strings per MPPT	1 to 6
<b>Output</b>	
Strings per MPPT	1 to 6
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester) or Polycarbonate
Enclosure Lid	Opaque (RAL7035) or transparent
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Direct wall mounting or wall mounting brackets
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Environmental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



# HISBOX® 1000V DC RESIDENTIAL PLUG ´N´ PLAY

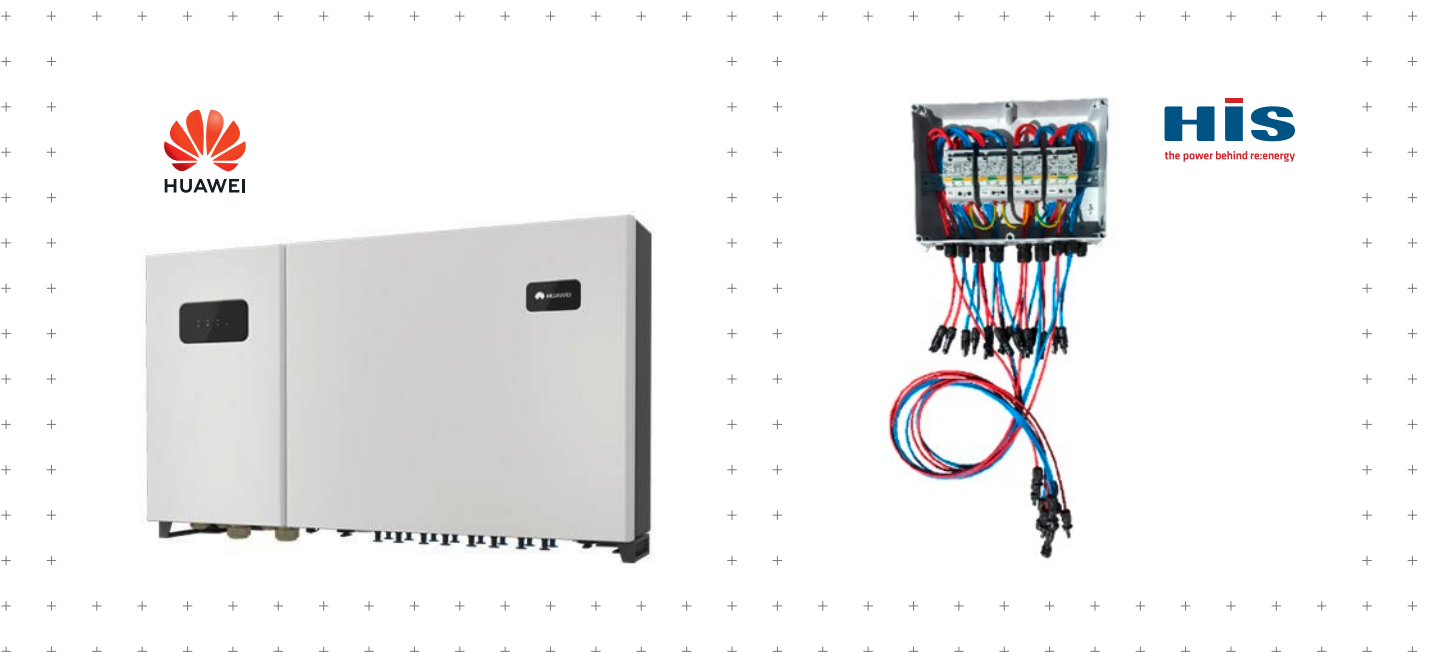
Easy Plug Combiner from HIS Renewables allow you a quick and easy installation on the construction site. Thanks to the pre-assembled HIKRA® solar cable and matching PV-connectors to the inverter, you have an industrially manufactured plug & play solution with the lowest possible contact resistances.



Inverter Manufacturer / Inverter Type	Order no.	Amount MPPT	Amount Ingoing MPPT	Amount Outgoing MPPT
Huawei SUN2000-8KTL	HDC-02-02-TTL1-012-E01	2	2	1
Huawei SUN2000-17KTL / 20	HDC-02-02-TTL1-013-E01	3	2	1
Huawei SUN2000-33KTL / 36KTL	HDC-02-02-TTL1-014-E01	4	2	1
Huawei SUN2000-60KTL-HV-D1-001	HDC-02-02-TTL1-016-E01	6	2	1
Huawei SUN2000-100KTL-M1	HDC-02-02-TTL1-110-E01	10	2	1

### Your advantages:

- More quality: simple and safe installation due to completely ready-to-connect combiner boxes
- Cost reduction: Through industrial production including fully automated cable production
- Sure your yield through long-lasting protective devices
- Flexible splitter concept to meet your requirements
- Work in compliance with standards and always use the right connector and cross-connections thanks to HIS flexibility



# HISBOX® 1000V DC RESIDENTIAL OVERVIEW



Inverter Manufacturer / Inverter Type	Order no.	Amount MPPT	Amount Ingoing MPPT	Amount Outgoing MPPT	Fuses	SPD	DC Switch
SMA Sunny Boy 1.52.5	HDC-02-02-TTG-011-E01	1	2	1	-	Typ 1+2	-
SMA Sunny Boy 3.0 / 3.6 / 4.0 / 5.0	HDC-02-02-TTG-012-E01	2	2	1	-	Typ 1+2	-
	HDC-02-02-TTG-022-E01	2	2	2	-	-	-
	HDC-02-02-TTG-012-E01	2	2	1	✓	-	-
	HDC-02-02-TTG-022-E01	2	2	2	✓	-	-
SMA STP Tripower 5000-12000TL	HDC-02-02-TTG-012-E01	2	2	1	-	Typ 1+2	-
	HDC-02-02-TTG-022-E01	2	2	2	-	-	-
	HDC-02-02-FFG-012-E01	2	2	1	✓	-	-
	HDC-02-02-FFG-022-E01	2	2	2	✓	-	-
SMA STP Tripower 15000-25000TL	HDC-02-03-FFG-012-E01	2	3	1	✓	Typ 1+2	-
	HDC-02-03-FFG-032-E01	2	3	3	✓	-	✓
SMA Sunny Tripower 60	HDC-02-01-TTG-011-E01	1	1	1	-	Typ 1+2	-
	HDC-04-12-FFM-011-E01	1	12	1	✓	-	✓
SMA Sunny Tripower Core 1	HDC-02-02-TTM-016-E01	6	2	1	-	Typ 1+2	-
	HDC-02-02-TTM-026-E01	6	2	2	-	-	-
	HDC-02-02-FFM-016-E01	6	2	1	✓	-	-
	HDC-02-02-FFM-026-E01	6	2	2	✓	-	-



Inverter Manufacturer / Inverter Type	Order no.	Amount MPPT	Amount Ingoing MPPT	Amount Outgoing MPPT	Fuses	SPD	DC Switch
Solaredge SE5k / SE10K	HDC-02-02-TTG-011-E01	1	2	1	-	Typ 1+2	-
	HDC-02-02-FFG-011-E01	1	2	1	✓	-	-
Solaredge SE25K / SE27.6K	HDC-02-02-TTG-021-E01	1	2	2	-	Typ 1+2	-
	HDC-02-02-FFG-021-E01	1	2	2	✓	-	-
	HDC-02-03-FFG-031-E01	1	3	3	✓	-	-
	HDC-04-03-FFG-031-E01	1	3	3	✓	-	✓



Inverter Manufacturer / Inverter Type	Order no.	Amount MPPT	Amount Ingoing MPPT	Amount Outgoing MPPT	Fuses	SPD	DC Switch
Huawei SUN2000-8KTL	HDC-02-02-TTG-012-E01	2	2	1	-	Typ 1+2	-
	HDC-02-02-TTG-022-E01	2	2	2	-	-	-
	HDC-02-02-FFG-012-E01	2	2	1	✓	-	-
	HDC-02-02-FFG-022-E01	2	2	2	✓	-	-
Huawei SUN2000-17KTL / 20	HDC-02-02-TTM-013-E01	3	2	1	-	Typ 1+2	-
	HDC-02-02-TTM-023-E01	3	2	2	-	-	-
	HDC-02-02-FFM-013-E01	3	2	1	✓	-	-
	HDC-02-02-FFM-023-E01	3	2	2	✓	-	-
Huawei SUN2000-33KTL / 36KTL	HDC-02-02-TTM-014-E01	4	2	1	-	Typ 1+2	-
	HDC-02-02-TTM-024-E01	4	2	2	-	-	-
	HDC-02-02-FFM-014-E01	4	2	1	✓	-	-
	HDC-02-02-FFM-024-E01	4	2	2	✓	-	-
Huawei SUN2000-60KTL-HV-D1-001	HDC-02-02-TTM-014-E01	4	2	1	-	Typ 1+2	-
	HDC-02-02-TTM-024-E01	4	2	2	-	-	-
	HDC-02-02-FFM-014-E01	4	2	1	✓	-	-
	HDC-02-02-FFM-024-E01	4	2	2	✓	-	-
Huawei SUN2000-60KTK-M0	HDC-02-02-TTM-016-E01	6	2	1	-	Typ 1+2	-
	HDC-02-02-TTM-026-E01	6	2	2	-	-	-
	HDC-02-02-FFM-016-E01	6	2	1	✓	-	-
	HDC-02-02-FFM-026-E01	6	2	2	✓	-	-



Inverter Manufacturer / Inverter Type	Order no.	Amount MPPT	Amount Ingoing MPPT	Amount Outgoing MPPT	Fuses	SPD	DC Switch
Sungrow SG10KTL-M / SG12KTL-M	HDC-02-02-TTG-011-E01	1	2	1	-	Typ 1+2	-
Sungrow SG36KTL-M	HDC-02-03-FFM-013-E01	3	3	1	✓	Typ 1+2	-
	HDC-02-03-FFM-033-E01	3	3	3	✓	-	-
Sungrow SG60KTL	HDC-04-16-FFM-011-E01	1	16	1	✓	Typ 1+2	✓



Inverter Manufacturer / Inverter Type	Order no.	Amount MPPT	Amount Ingoing MPPT	Amount Outgoing MPPT	Fuses	SPD	DC Switch
Fronius Symo 3.0-3-M / 3.7.3-M / 4.5-3-M	HDC-02-02-TTG-022-E01	2	2	2	-	Typ 1+2	-
Fronius Symo 3.0-3-S / 3.7.3-S / 4.5-3-S	HDC-02-03-FFG-031-E01	1	3	3	✓	Typ 1+2	-
Fronius Symo 10.0-3-M / 10.0-3-M-OS / 12.5-3-M	HDC-02-03-FFG-032-E01	2	3	3	✓	Typ 1+2	-
Fronius Eco 25.0-3-S / 27.0-3-S	HDC-02-06-FFM-061-E01	1	6	6	✓	Typ 1+2	-



# HU BACKUP BOXES 1-PHASE/3-PHASE

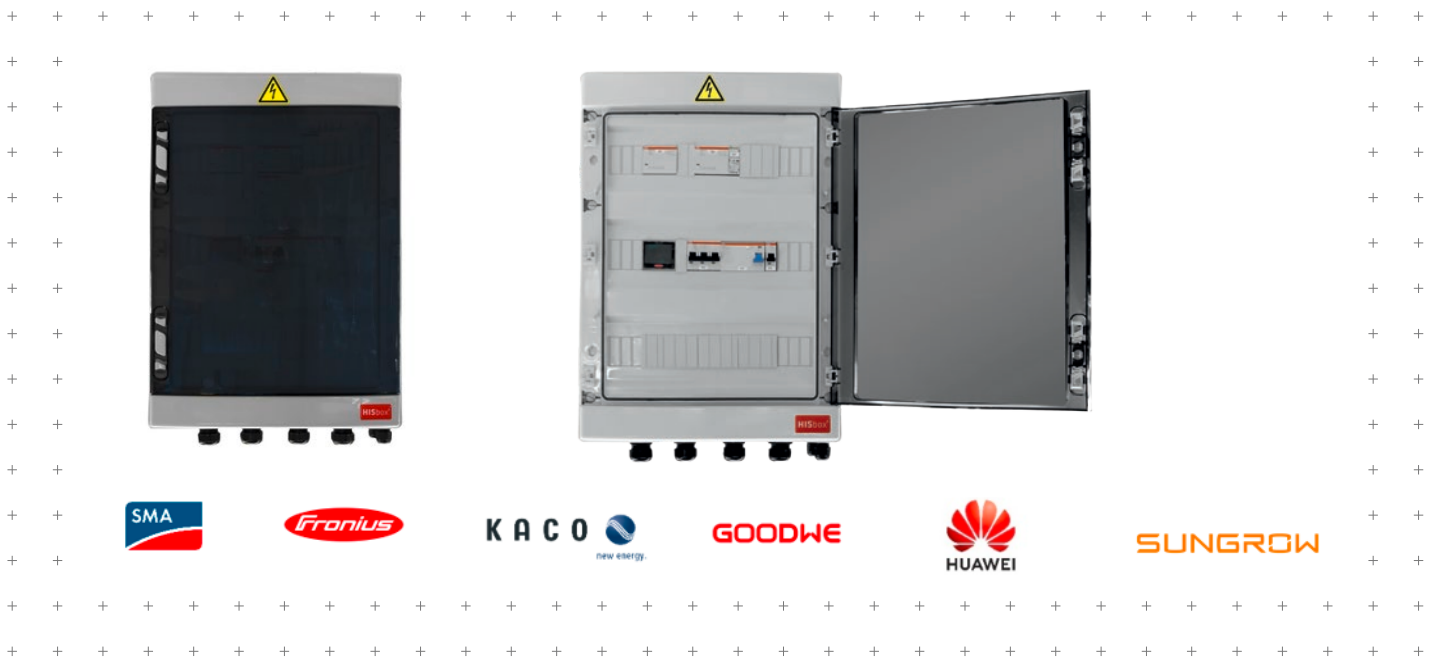
The Backup Box is an advanced switching solution that is designed to help PV installers optimize their PV systems performance with its backup power function. Including the advanced power management system and automatic backup load shedding feature, the Backup Boxes ensures that your PV system operates safely and efficiently, even during power outages or other unforeseen events.

Electrical Characteristics	
Rated Voltage (Un)	230 V AC / 400 V AC
Rated Insulation Voltage (Ui)	400 V AC
Grid Configuration	TN-S, TN-C-S, TT*
Max. Rated Current (InA)	50 A
Cable Connections	
Input	Cable feedthrough cable glands; modular connection system: optionally with industrial sockets
Output	Cable feedthrough cable glands; modular connection system: optionally with industrial sockets
PE - Grounding	Cable feedthrough cable gland
Enclosure	
Material	GRP, Polystyrene, ABS, Polycarbonate
Enclosure Lid	Transparent
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Direct wall mounting or wall mounting brackets
Anti-condensation	Venting (pressure compensation) valve (optional)
Impact Resistance	IK08
Operation and Environmental Conditions	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
Approvals	
Standard	EN 61439-2, IEC 61439-2

Order No.	
HU1-N-20-40-E01(X)	Single Phase, 20A, Grid Tied Switching Box
HU1-N-50-63-E01(X)	Single Phase, 50A, Grid Tied Switching Box
HU3-N-50-63-E01(X)	Three Phase, 3 Poles, 50A, Grid Tied Switching Box
HU4-N-50-63-E01(X)	Three Phase, 4 Poles, 50A, Grid Tied Switching Box

\*[X] F: Fronius, S: SMA, H: Huawei, K: Kaco, G: Goodwe, SG: Sungrow

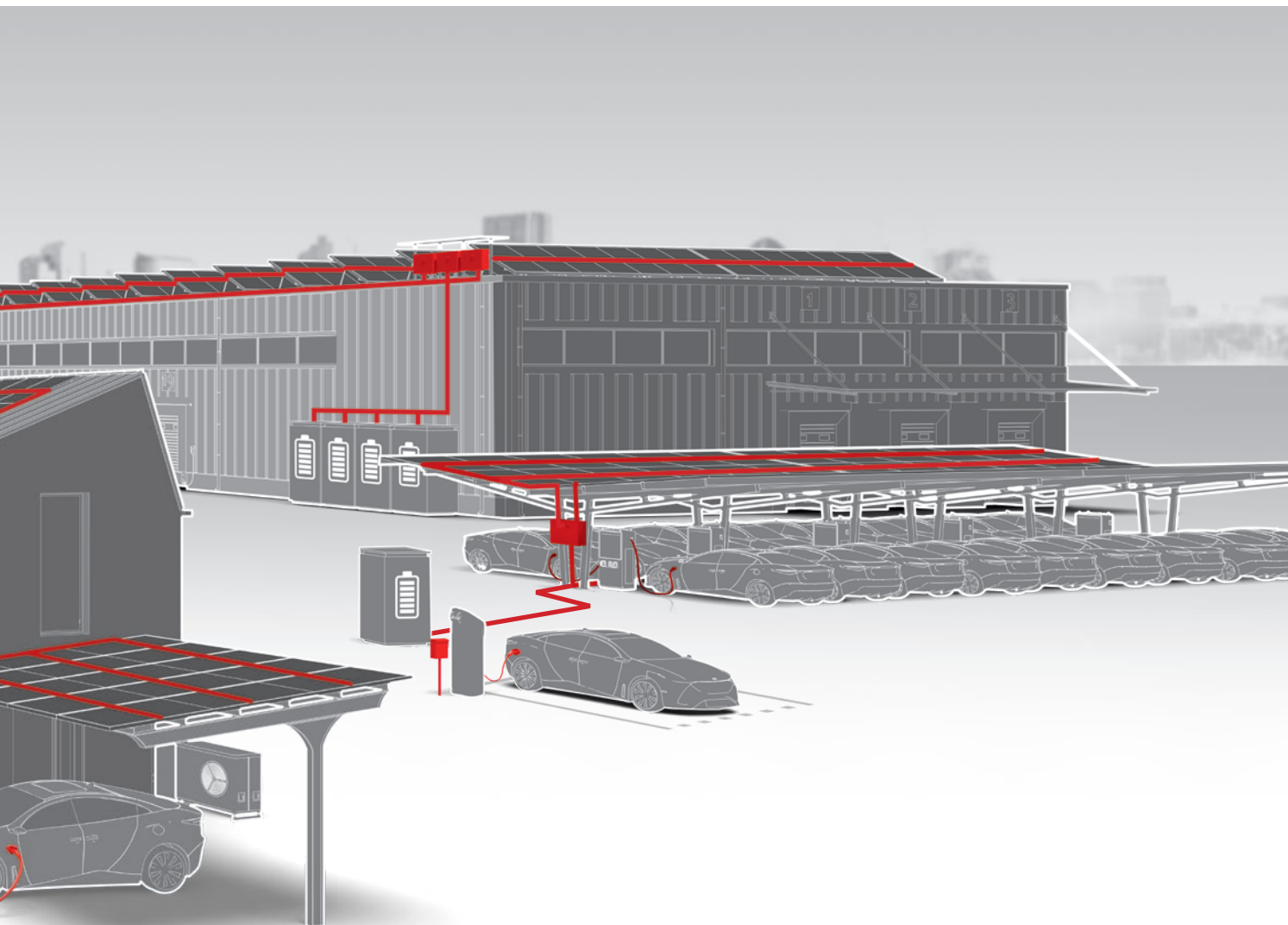
Please contact us for customized solutions!



# HISbox<sup>®</sup>

string combiner

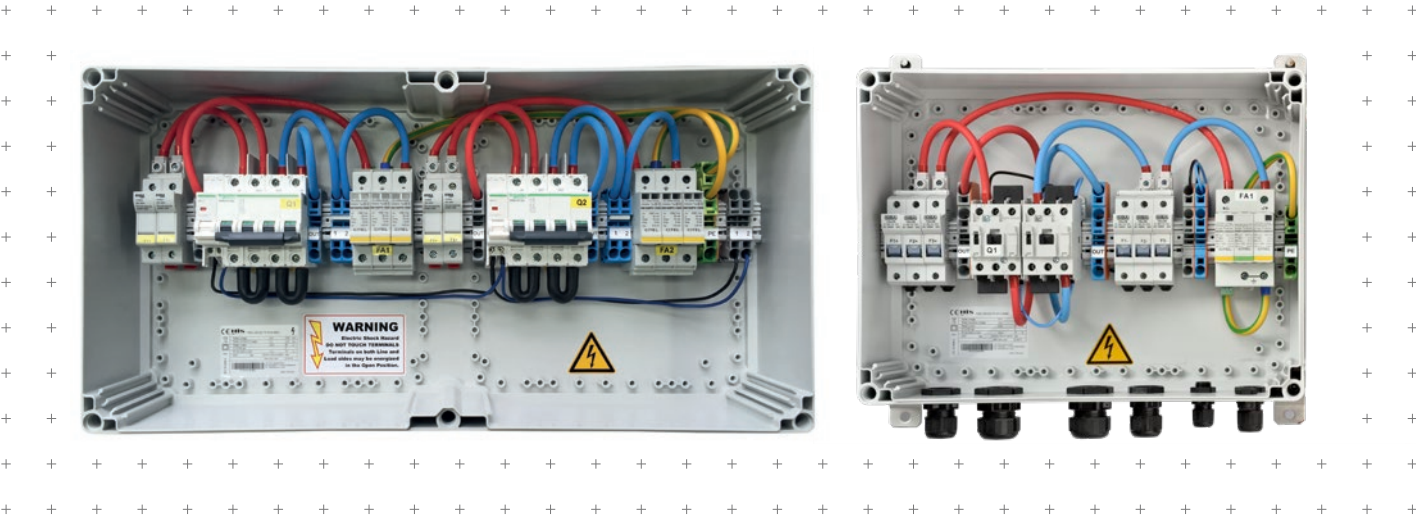
**MAXIMUM SAFETY & RELIABILITY**



# COMMERCIAL & INDUSTRIAL ROOFTOPS

# HDC 1000V DC FIREMAN SWITCH UNDERVOLTAGE RELEASE

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1000 V DC
Rated Insulation Voltage (Ui)	1000 V DC
Max. Rated Current per String (InC)	20 A
Max. Rated Current (InA)	80 A
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling upon request)
Fuse Links	10x38mm gPV Fuses (optional)
Load Break Switch	1000 V DC, per MPPT (optional) (auxiliary status contact upon request)
Fireman Switch Application	230V AC, undervoltage release function for Fireman switch applications (included)
<b>Inputs</b>	
MPPTs	1 to 12
Strings per MPPT	1 to 8
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester) or Polycarbonate
Enclosure Lid	Opaque (RAL7035) or transparent
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Direct wall mounting or wall mounting brackets
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Enviromental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



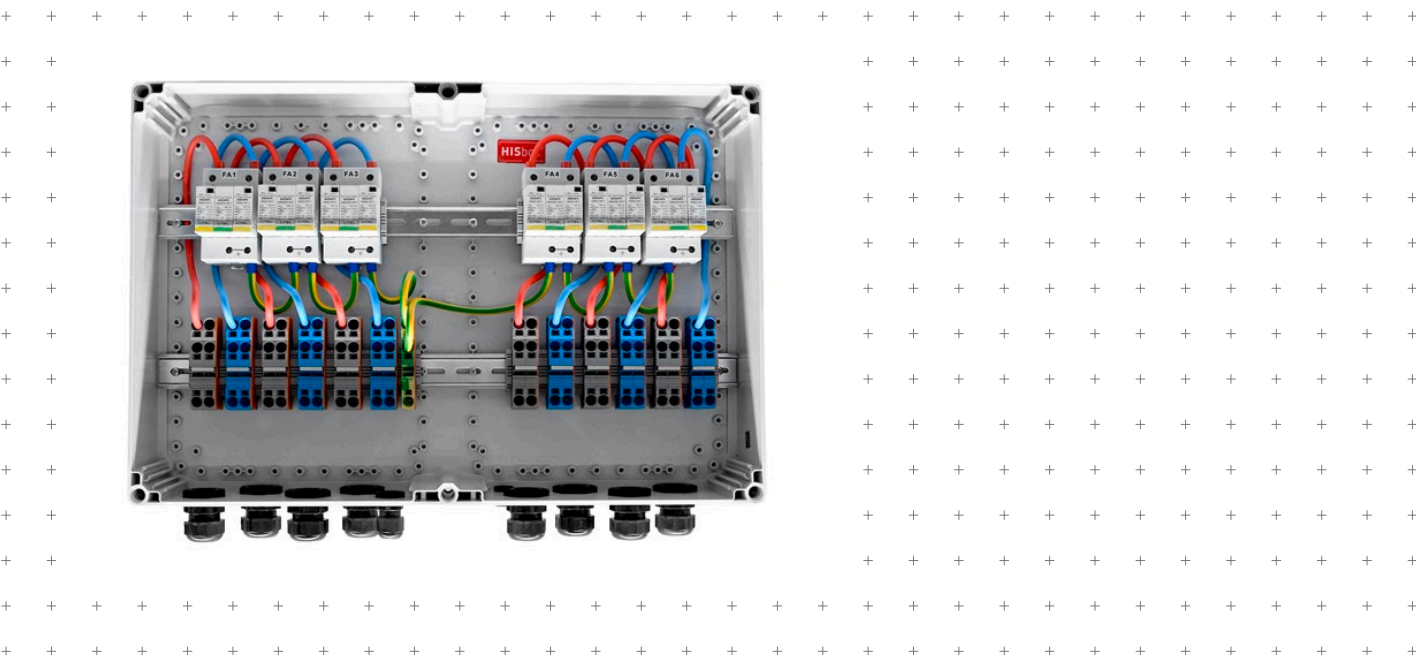
# DC COMBINER MONITORING WITH REMOTE OPERATION (SINGLE-MPPT MAX. 12 INPUT)

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1500 V DC
Rated Insulation Voltage (Ui)	1500 V DC
Max. Rated Current per String (InC)	20 A
Max. Rated Current (InA)	250 A
<b>String Monitoring</b>	
Monitoring Device	Hallsensor technology, up to 25A current, voltage, temperature measurement, two digital inputs
Power Supply	Integrated DC/DC Converter 1500 V DC / 24V
Communication Protocol	RS485 Modbus/RTU or optionally LoRa or Wifi
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling included)
Overvoltage Protection for Data Line	12 V RS485 data SPD (included)
Fuse Links	10x85mm gPV Fuses
Load Break Switch	1500 V DC (auxiliary status contact included)
Accessory	External operation handle (IP65)
Remote Operations	24 V DC / 230 V AC shunt opening release for remote operation (included)
<b>Inputs</b>	
MPPTs	1
Strings per MPPT	up to 12
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable gland
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester)
Orientation	Landscape or Portrait
Body	Opaque (RAL7035)
Enclosure Lid	Opaque (RAL7035) or transparent
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Direct wall mounting or wall mounting brackets
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Enviromental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



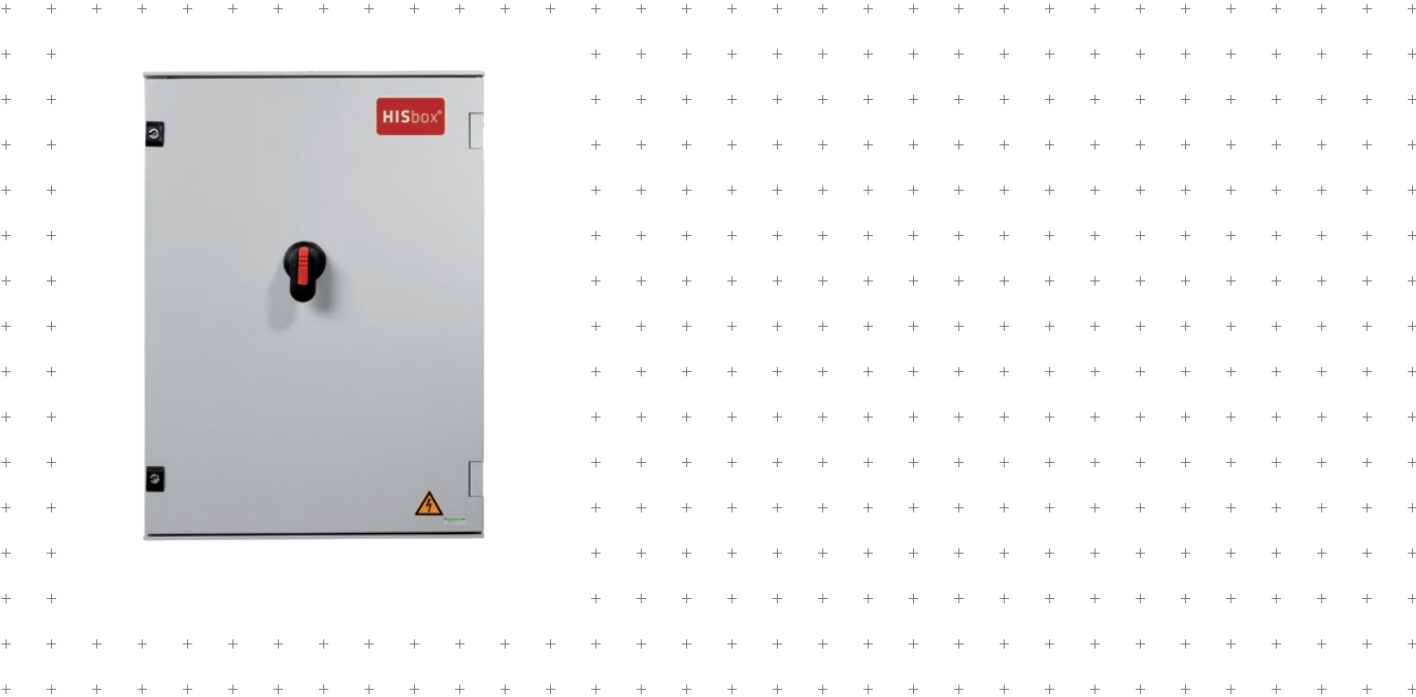
# DC COMBINER 1000V MULTI-MPPT

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1000 V DC
Rated Insulation Voltage (Ui)	1000 V DC
Max. Rated Current per String (InC)	20 A
Max. Rated Current (InA)	80 A
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling upon request)
Fuse Links	10x38mm gPV Fuses (optional)
Load Break Switch	1000 V DC, per MPPT (optional) (auxiliary status contact upon request)
Fireman Switch Application	230V AC, undervoltage release function for Fireman switch applications (included)
<b>Inputs</b>	
MPPTs	1 to 12
Strings per MPPT	1 to 8
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester) or Polycarbonate
Enclosure Lid	Opaque (RAL7035) or transparent
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Direct wall mounting or wall mounting brackets
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Enviromental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



# DC COMBINER 1000V SINGLE-MPPT 10/12/14/16 STRINGS

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1000 V DC
Rated Insulation Voltage (Ui)	1000 V DC
Max. Rated Current per String (InC)	20 A
Max. Rated Current (InA)	250 A
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling upon request)
Fuse Links	10x38mm gPV Fuses (optional)
Load Break Switch	1000 V DC, per MPPT (optional) (auxiliary status contact upon request)
Accessory	External operation handle (IP65)
<b>Inputs</b>	
MPPTs	1
Strings per MPPT	up to 16
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable glands
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester)
Enclosure Lid	Opaque (RAL7035)
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Stainless steel wall mounting brackets
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Environmental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



## HISBOX® SMART POWER & METERING

Power fluctuations and electrical faults can cause serious damage to solar power systems and disrupt their operation, resulting in downtime and lost revenue.

At HIS, we understand the importance of maintaining the safety and reliability of your solar power system. That's why we offer a range of grid and system protection boxes designed to safeguard your system from electrical faults, ensuring optimal performance and longevity.

Our protection boxes assume the monitoring and protective function, which includes checking the mains voltage, the mains frequency and detecting possible isolated operation. As soon as one or more functions deviate from the target range, the signal to switch off is sent to the central section switch and to section switches that are integrated in the generating plants.

HISbox® Smart Power & Metering boxes are engineered to meet the highest safety and reliability standards and are designed to protect your solar power system against overvoltage, undervoltage, overcurrent, and other electrical faults including the advanced communication skills.

### Features:

- Complies with VDE 4105 Requirements
- Integrated AC Combiner (Inverter Collector)
- Realtime Monitoring & Control
- Schnittstelle Direktvermarktung RE
- Automatic or Manual Operations
- Suitable for Indoor & Outdoor Applications
- ACC. TO IEC61439-1 & 2



# HNA GRID PROTECTION VDE-AR-N 4105:2018-11, VDE-AR-N 4110

HISbox® Grid and Plant Protection takes over all functions required by the power supply company for grid and plant protection in your PV plant. HISbox® Grid and Plant Protection contains the CM-UFD.M31 grid monitoring device with a remotely controllable 4-pole switch as well as the associated components. The fully pre-wired switchgear combination is used between the grid connection point and the inverter.

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	230 V / 400 V AC
Rated Insulation Voltage (Ui)	400 V AC
Max. Rated AC Power	up to 135 kVA
Grid Configuration	TN-S, TN-C-S, TT (IT, TNC networks on request)
<b>Protection Devices</b>	
Isolation Point / Coupling Switch	4 Pole AC power contactor / 4 pole switch disconnecter with motor operation
Time delay relay	Yes (with switch disconnecter)
Grid Monitoring Relay	CM-UFD.M31, remotely triggered in accordance with the low voltage directive
Shutdown times	Switching point: <100ms and total switch-off time: <200ms (including grid and plant protective relay)
Fireman Switch Application	230V AC, undervoltage release function for Fireman switch applications (optional)
Overtvoltage Protection	Yes (optional)
<b>Cable Connections</b>	
AC Input & Output	Cable feedthrough cable glands or cable grommets
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester)
Enclosure Lid	Opaque (RAL7035) or transparent
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Stainless steel wall mounting brackets
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Environmental Conditions</b>	
Ambient Temperature	-15 °C up to max. +40 °C (+35 °C 24 h mean value) (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2, VDE-AR-N 4105:2018-11, VDE-AR-N 4110

## Features:

- Designed in accordance with VDE-AR-N 4105:2018-11 and optimally VDE-AR-N 4110 (from 135kVA).
- Easy commissioning thanks to preset basic programs for country-specific directives.
- Ready for connection to TNS and TT networks. (IT-, TNC- networks on request)
- Fulfills all functions required by the power supply company for network and system protection.
- Contains, in addition to the control unit, 1 remotely controllable 4-pole disconnection point and the associated components.
- Current measured values are displayed and stored on the LC display.
- Retrievability of the last 300 mains faults with time stamp/real-time clock.
- Remote disconnection via ripple control signal receiver and monitoring of the connected coupling switches.
- Isolated network detection df/dt (ROCOF)

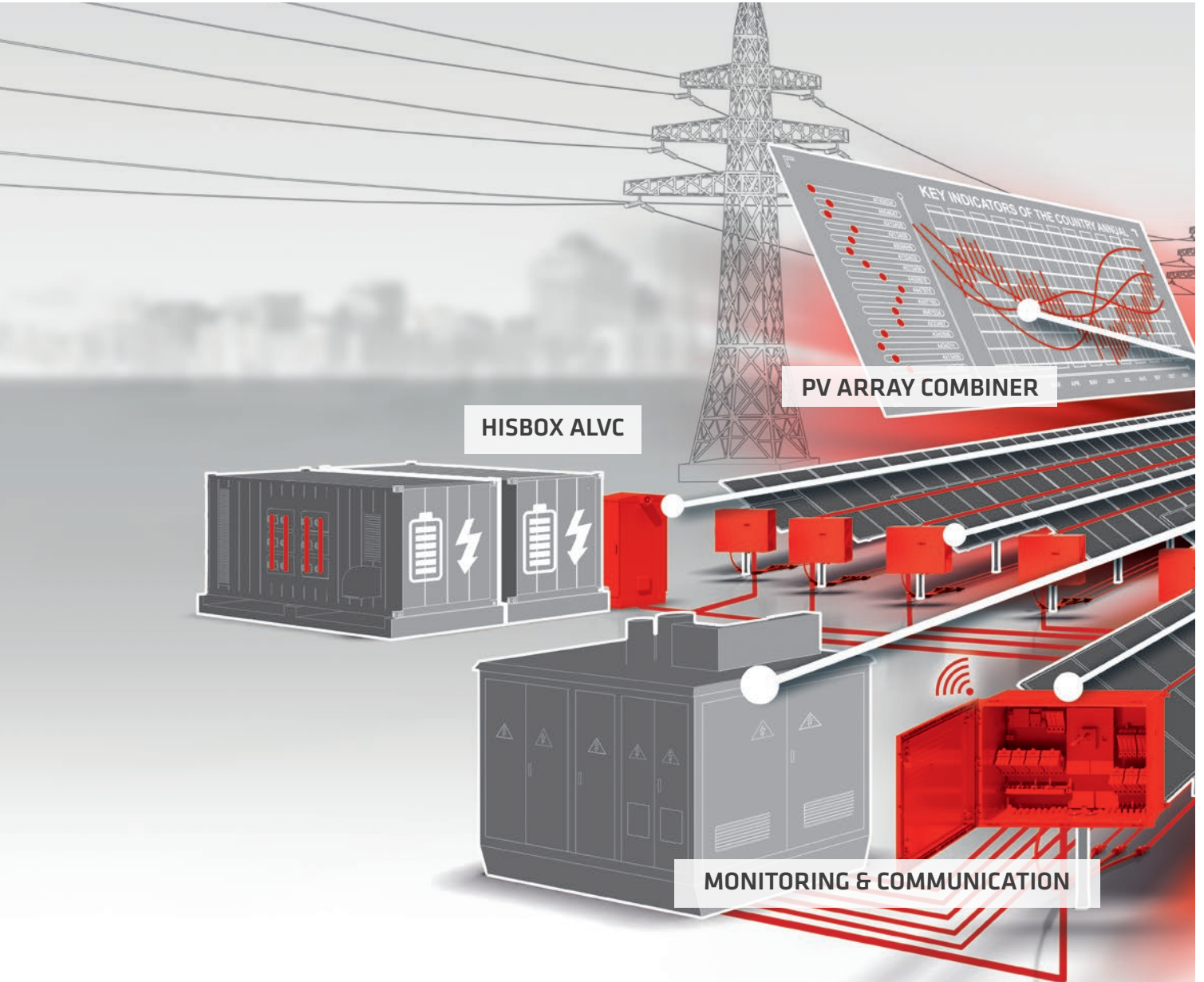




# HISbox<sup>®</sup>

string combiner

REALIZE SUCCESSFUL PV SYSTEMS WITH HOLISTIC SOLUTIONS



HISBOX ALVC

PV ARRAY COMBINER

MONITORING & COMMUNICATION



E-CAD



ERP



MANUFACTURING

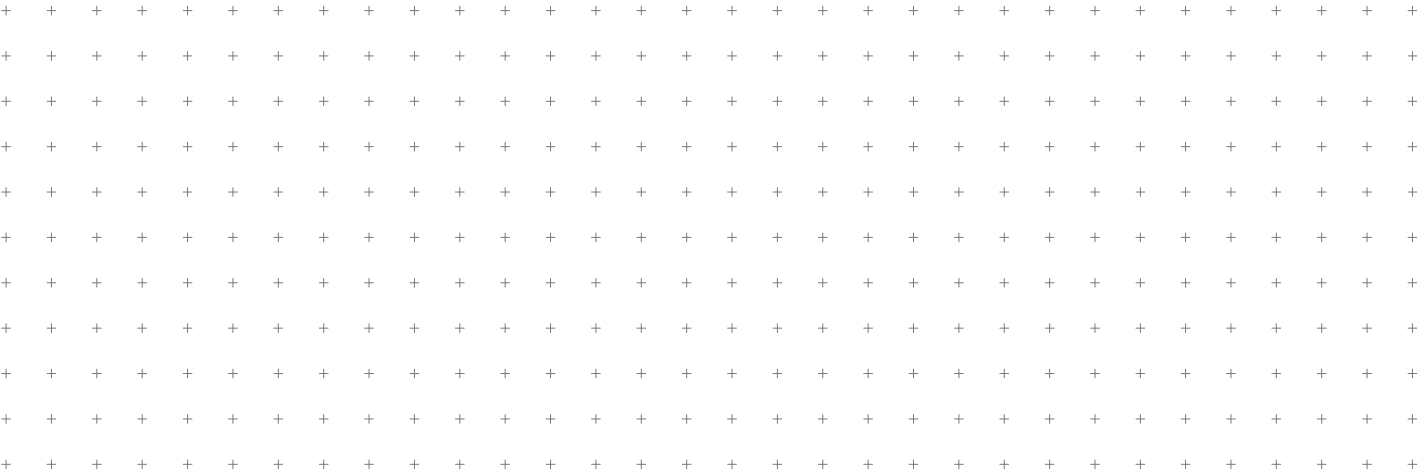


LOGISTICS

# UTILITY SCALE

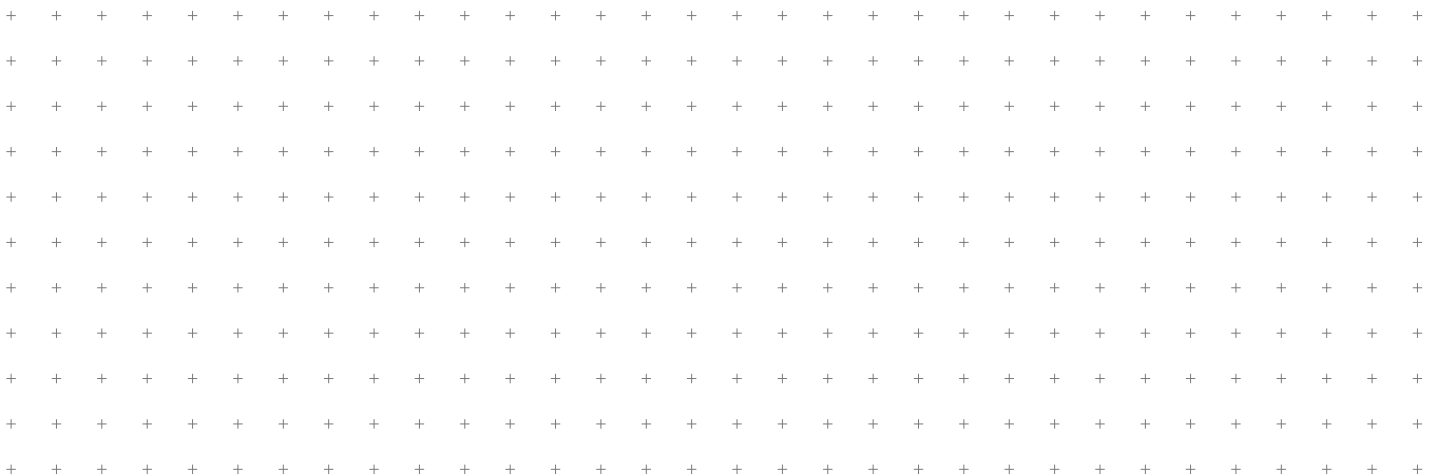
# HM15 MONITORING 1500V DC (4-32A)

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1500 V DC
Rated Insulation Voltage (Ui)	1500 V DC
Max. Rated Current per String (InC)	20 A
Max. Rated Current (InA)	500 A
<b>String Monitoring</b>	
Monitoring Device	Hallsensor technology, up to 25A current, voltage, temperature measurement, two digital inputs
Power Supply	Integrated DC/DC Converter 1500 V DC / 24V
Communication Protocol	RS485 Modbus/RTU or optionally LoRa or Wifi
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling included)
Overvoltage Protection for Data Line	12 V RS485 data SPD (included)
Fuse Links	10x85mm gPV Fuses
Load Break Switch	1500 V DC, 400 A, 500 A, 630 A (auxiliary status contact included)
Accessory	External operation handle (IP65)
Remote Operations	24 V DC / 230 V AC shunt opening release for remote operation (included)
<b>Inputs</b>	
MPPTs	1
Strings per MPPT	up to 32
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable glands
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester)
Orientation	Landscape or Portrait
Body	Opaque (RAL7035)
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Direct wall mounting or wall mounting brackets
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Enviromental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



# HM15 MONITORING HIGH CURRENT 1500V DC (35-80A)

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1500 V DC
Rated Insulation Voltage (Ui)	1500 V DC
Max. Rated Current per String (InC)	40 A
Max. Rated Current (InA)	630 A
<b>String Monitoring</b>	
Monitoring Device	Hallsensor technology, up to 25A current, voltage, temperature measurement, two digital inputs
Power Supply	Integrated DC/DC Converter 1500 V DC / 24V
Communication Protocol	RS485 Modbus/RTU or optionally LoRa or Wifi
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling included)
Fuse Links	10x85mm gPV Fuses
Load Break Switch	1500 V DC, 400 A, 500 A, 630 A, 800 A (auxiliary status contact included)
Accessory	External operation handle (IP65)
Remote Operations	24 V DC, 230 V AC shunt opening release for remote operation (optional)
<b>Inputs</b>	
MPPTs	1
Strings per MPPT	up to 16
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable gland
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester)
Orientation	Landscape or Portrait
Body	Opaque (RAL7035)
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Stainless steel wall mounting brackets, standalone pedestal (optional)
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Enviromental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



# GATEWAY BOXES

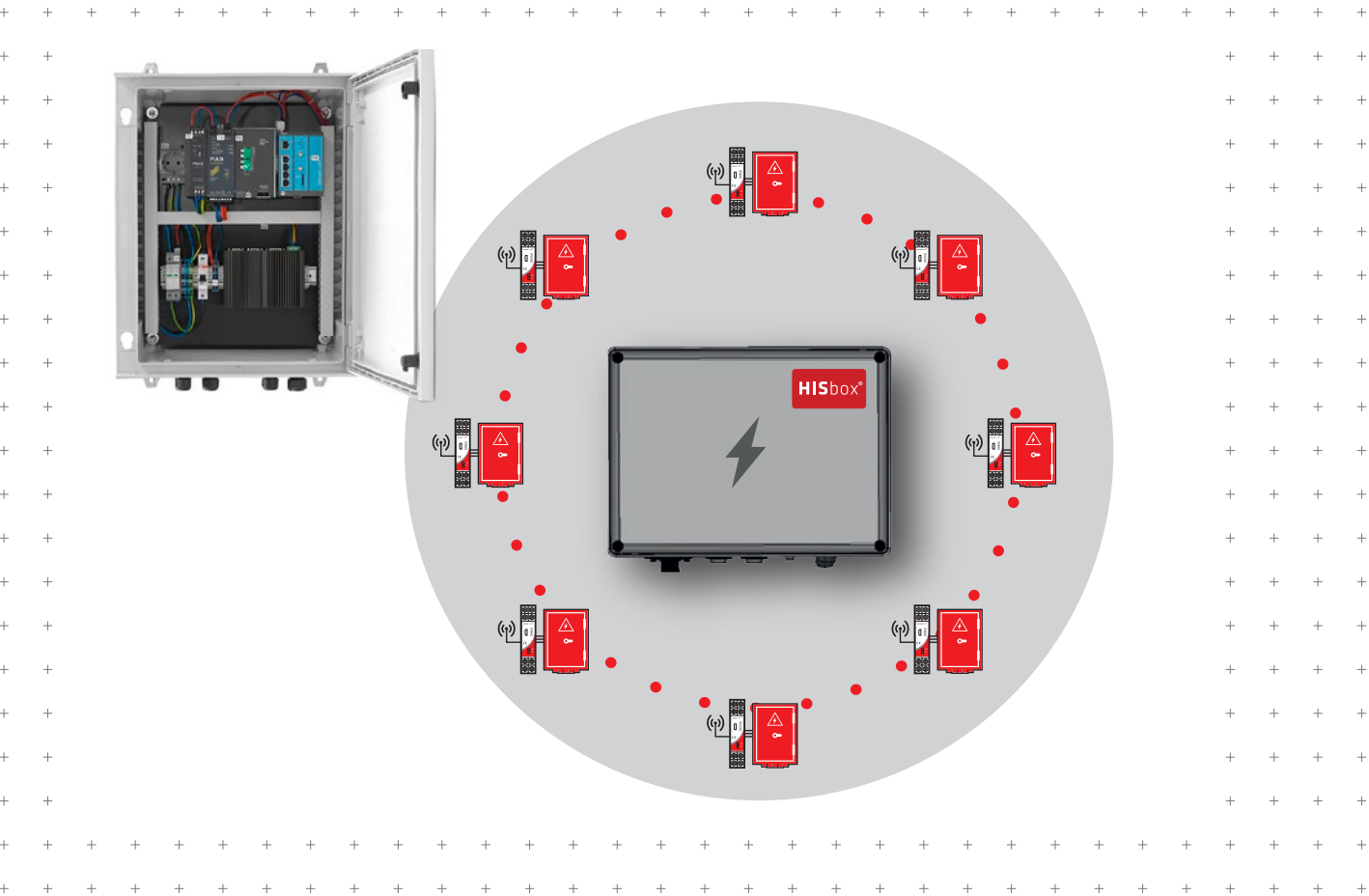
Communication plays an essential role in monitoring and controlling DC combiner boxes for efficient operation and maintenance.

Typically, DC combiner boxes incorporate communication protocols that allow them to transmit relevant information to a central monitoring system or supervisory control and data acquisition (SCADA) system.

This communication enable the exchange of information such as voltage, current, temperature, alarms, and status data between the DC combiner boxes and the monitoring or control systems. By monitoring these parameters, operators can identify potential issues, perform preventive maintenance, and optimize the overall performance of the PV plant.

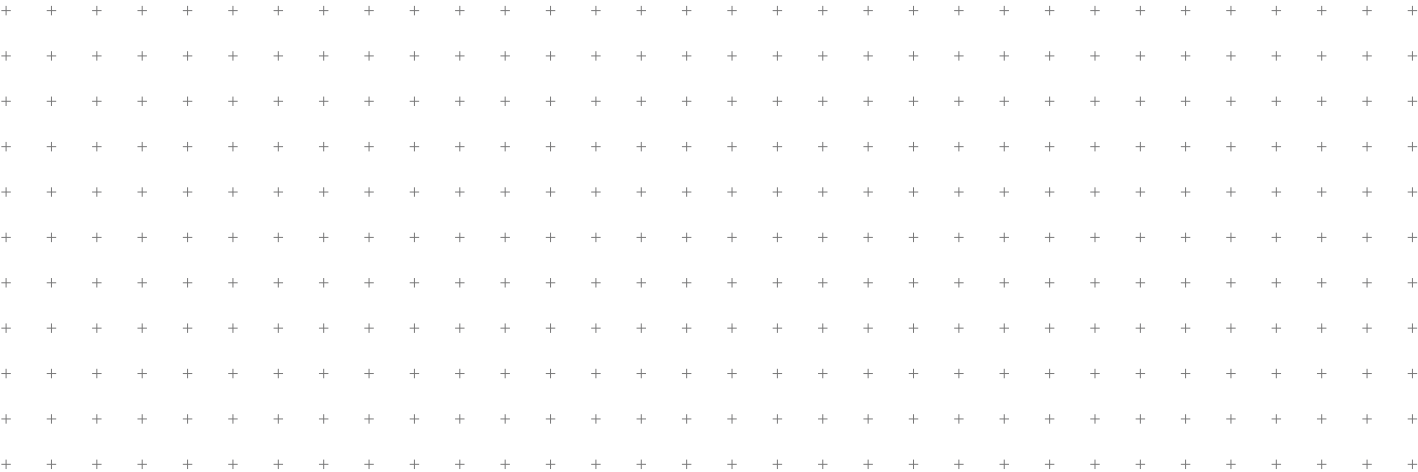
HIS Renewables completes the utility scale solution portfolio with the wireless gateways including Wi-Fi and LoRa applications. Seamlessly connect your Modbus RS-485 devices (DC Combiners) to wireless networks, enabling efficient data transfer and remote monitoring.

Order No.	
Gateway-LoRa-E001	RS485 to LoRa Gateway Box, 24V DC Power Supply needed
Gateway-Advanticsys-E001	RS485 to WiFi Gateway Box, 24V DC Power Supply needed



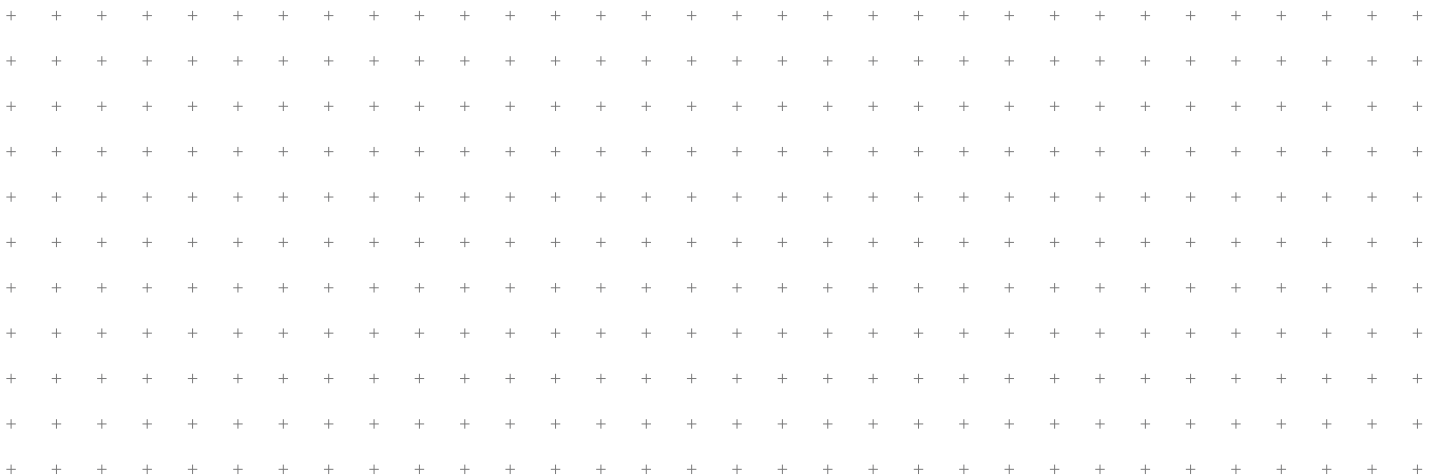
# PV ARRAY BOX 1500V DC (4-32A)

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1500 V DC
Rated Insulation Voltage (Ui)	1500 V DC
Max. Rated Current per String (InC)	40 A
Max. Rated Current (InA)	630 A
<b>String Monitoring</b>	
Monitoring Device	Hallsensor technology, up to 25A current, voltage, temperature measurement, two digital inputs
Power Supply	Integrated DC/DC Converter 1500 V DC / 24V
Communication Protocol	RS485 Modbus/RTU or optionally LoRa or Wifi
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling included)
Fuse Links	10x85mm gPV Fuses
Load Break Switch	1500 V DC, 400 A, 500 A, 630 A, 800 A (auxiliary status contact included)
Accessory	External operation handle (IP65)
Remote Operations	24 V DC, 230 V AC shunt opening release for remote operation (optional)
<b>Inputs</b>	
MPPTs	1
Strings per MPPT	up to 16
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable gland
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester)
Orientation	Landscape or Portrait
Body	Opaque (RAL7035)
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Stainless steel wall mounting brackets, standalone pedestal (optional)
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Enviromental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



# PV ARRAY BOX HIGH CURRENT 1500V DC (35-80A)

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1500 V DC
Rated Insulation Voltage (Ui)	1500 V DC
Max. Rated Current per String (InC)	40 A
Max. Rated Current (InA)	630 A
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling upon request)
Fuse Links	22x58mm gPV Fuses
Load Break Switch	1500 V DC, 400 A, 500 A, 630 A, 800 A (auxiliary status contact upon request)
Accessory	External operation handle (IP65)
Remote Operations	24 V DC, 230 V AC shunt opening release for remote operation (optional)
<b>Inputs</b>	
MPPTs	1
Strings per MPPT	up to 16
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable gland
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester)
Orientation	Landscape or Portrait
Body	Opaque (RAL7035)
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Stainless steel wall mounting brackets, standalone pedestal (optional)
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Environmental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2



# ARC FAULT DETECTION 1500V

<b>Electrical Characteristics</b>	
Rated Voltage (Un)	1500 V DC
Rated Insulation Voltage (Ui)	1500 V DC
Max. Rated Current per String (InC)	20 A
Max. Rated Current (InA)	500 A
<b>String Monitoring</b>	
Monitoring Device	Hallsensor technology, up to 25A current, voltage, temperature measurement, two digital inputs
Arc Fault Detection	Yes, String arc and busbar arc detection
Power Supply	Integrated DC/DC Converter 1500 V DC / 24V
Communication Protocol	RS485 Modbus/RTU or optionally LoRa or Wifi
<b>Protection Devices</b>	
Overvoltage Protection	Type 2 or Type 1+2 (remote signalling included)
Fuse Links	10x85mm gPV Fuses
Load Break Switch	1500 V DC, 400 A, 500 A, 630 A (auxiliary status contact included)
Accessory	External operation handle (IP65)
Remote Operations	24 V DC, 230 V AC shunt opening release for remote operation (optional)
<b>Inputs</b>	
MPPTs	1
Strings per MPPT	up to 32
<b>Output</b>	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
<b>Cable Connections</b>	
DC Input	Cable feedthrough cable glands; modular connection system: optionally with PV-connectors or flying leads
DC Output	Cable feedthrough cable glands
PE - Grounding	Cable feedthrough cable gland
<b>Enclosure</b>	
Material	GRP (Glassfibre reinforced polyester)
Orientation	Landscape or Portrait
Body	Opaque (RAL7035)
Ingress Protection	IP54 (up to IP65)
Protection Class	II (Total Insulation)
Mounting	Stainless steel wall mounting brackets, standalone pedestal (optional)
Anti-condensation	Venting (pressure compensation) valve included
Impact Resistance	IK08
UV Resistance	Yes
<b>Operation and Enviromental Conditions</b>	
Ambient Temperature	-20 °C up to max. +55°C (derating factor applies)
Installation	Indoor and Outdoor, shaded (protected from rain and direct sunlight, installation manual applies)
Altitude Above Sea Level (MLS)	Standard 2000m above, max. 4000m (derating factor applies)
Relative Humidity	Indoor: max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)
<b>Approvals</b>	
Standard	EN 61439-2, IEC 61439-2

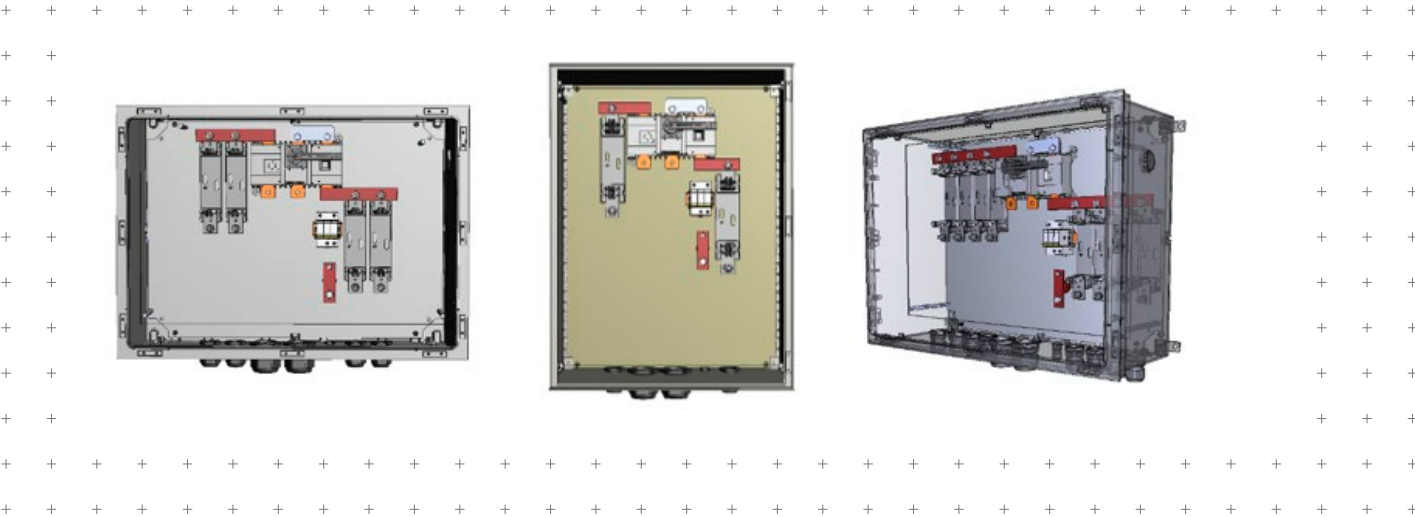


# ARRAY BOX - CABLE TRUNK SOLUTIONS

HISbox® String boxes are synonymous with uncompromising product quality, the greatest possible cost-efficiency and longevity. We plan, develop and manufacture string boxes optimized and ready for connection from high quality industrial components of leading manufacturers to meet the exact requirements of your plant.

Technical Description	
Protection Class (acc. IEC 61140)	II, insulated
Conformity	IEC 61439-1;-2
Overvoltage device	Type 1+2 In = 15kA I <sub>max</sub> = 40A
Fuse links	acc. IEC60269-6
Load break switch	IEC 60947-3
Enclosure	Glass-fiber reinforced Polyester (GRP); UV- and ozone stable; Incl. anti-pressure ventile; mounting brackets in stainless steel
Cable feedthrough	Cable glands (Ø 6mm to 13mm); Optionally with Stäubli MC4, MC4-EVO2 (2,5-10mm²), Phoenix Contact Sunclix (6-16mm²)
Ambient temperature	-20 °C to max. +55°C
Altitude above sea level (MLS)	Standard 2000m above, max. 4000m (DERATING applies)
Relative Humidity	Indoor: Max. 50% at +40°C, max. 90% at +20°C (not condensating) Outdoor application: temporarily up to 95% at +25°C (not condensating)

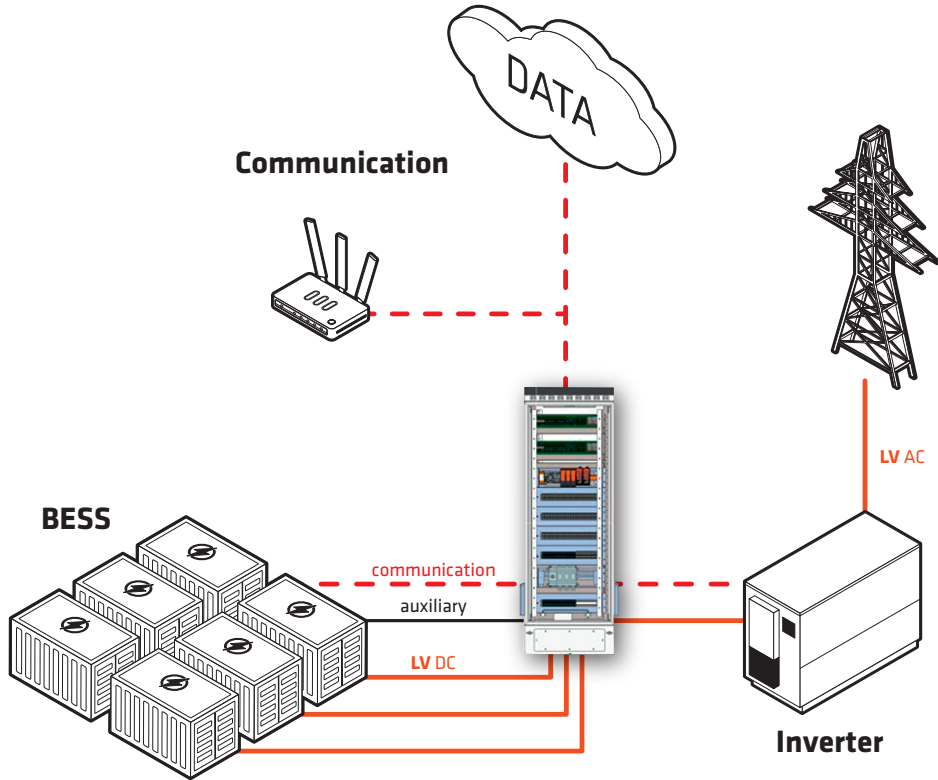
Part No.	Amount strings	Max. rated current (In)	Fuses (+)	Fuses (-)	Standard
HDC1500-15-08-FF-011-E011	8	240	Yes	Yes	IEC
HDC1500-15-08-FT-011-E011	8	240	Yes	No	IEC
HDC1500-15-08-FF-011-E012	8	240	Yes	Yes	AS/NZ
HDC1500-15-08-FT-011-E012	8	240	Yes	No	AS/NZ
HDC1500-15-09-FF-011-E011	9	270	Yes	Yes	IEC
HDC1500-15-09-FT-011-E011	9	270	Yes	No	IEC
HDC1500-15-09-FF-011-E012	9	270	Yes	Yes	AS/NZ
HDC1500-15-09-FT-011-E012	9	270	Yes	No	AS/NZ
HDC1500-04-01-TT-011-E013	1	320	No	No	IEC
HDC1500-04-01-TT-011-E014	1	320	No	No	AS/NZ
HDC1500-04-01-FF-011-E012	1	320	Yes	Yes	IEC
HDC1500-04-01-FF-011-E013	1	320	Yes	Yes	AS/NZ





## ALVC - AUXILIARY LOW VOLTAGE COMBINER

HISbox® String boxes are synonymous with uncompromising product quality, the greatest possible cost-efficiency and longevity. We plan, develop and manufacture string boxes optimized and ready for connection from high quality industrial components of leading manufacturers to meet the exact requirements of your plant.



### HISBOX® ALVC (AUXILIARY LOW VOLTAGE CABINETS)

- Auxiliary services
- Communications
- Measurement & monitoring
- Power plant control
- Fire protection
- Power line switchgear assembly
- CCTV boxes



ENGINEERING & PRODUCTION  
FROM A SINGLE SOURCE



HIS Renewables is one of the leading European providers of system solutions for the integration of renewable energy. Whether integrated photovoltaics, storage solutions, self-consumption optimization or EV charging technology: All HIS solutions have been developed at the company's location in Germany for more than 25 years and are manufactured on state-of-the-art machines and systems.

The result: Holistic, innovative and reliable solutions based on the plug & play approach, which ensure fast project implementation and a reduced risk of errors, and which enable HIS customers to carry out their tasks in the implementation of the energy transition quickly, safely and affordably in the long term.

## FIELDS OF ACTIVITY

<p><b>UTILITY SCALE</b> WORKS BEST WITH [T]HIS</p>		<p>[T]HIS IS MADE FOR <b>C&amp;I ROOFTOPS</b></p>	
<p>[T]HIS IS WHAT <b>RESIDENTIAL PV</b> REALLY NEEDS</p>		<p><b>STORAGE</b> YOUR ENERGY WITH [T]HIS</p>	
<p>TAKE [T]HIS FOR YOUR <b>E-MOBILITY</b></p>		<p>[T]HIS <b>OEM SERVICE</b> IS BEST FOR YOUR BUSINESS</p>	

## HEADQUARTER & OFFICES

Netherlands + + Poland  
 France + + **Germany** Headquarter  
 Spain & South America + + Bosnia-Herzegovina  
 + Turkey & MENA

more than **40 GW** of successfully connected PV projects

**>2000 customers** in more than **60 countries** worldwide

more than **25 years experience** in the PV sector



### Headquarter Germany

Engineering, Production,  
Sales

#### HIS Renewables GmbH

Siemensstraße 4  
D-64760 Oberzent

T +49 6068 9314 430

E sales@his-solar.de

### HIS Renouvelables SARL

48, rue Claude Balbastre  
34070 Montpellier

T +33 4 67 27 68 20

E info.fr@his-solar.com

### HIS Soluciones de Sistemas Solares S.L.

Avenida de Brasil 17  
Madrid, 28020

T +34 916 320 493

E info.es@his-solar.com

### HIS Solar Sistemleri A.Ş

Alsancak Mah. 1479 Sk. N:15/17  
Kristal 2 İş Merkezi K:3 D:12  
35220 Konak - İzmir

T +90 232 4220 931

E info.tr@his-solar.com

More information at [www.his-solar.com](http://www.his-solar.com)



© 2023/2024 by HIS Renewables GmbH. All rights reserved. 01.06.2023. CSZ