HISbox®

DC/AC string boxes

part of **HIS** CONNECT®

HISBOX®
STRING COMBINER

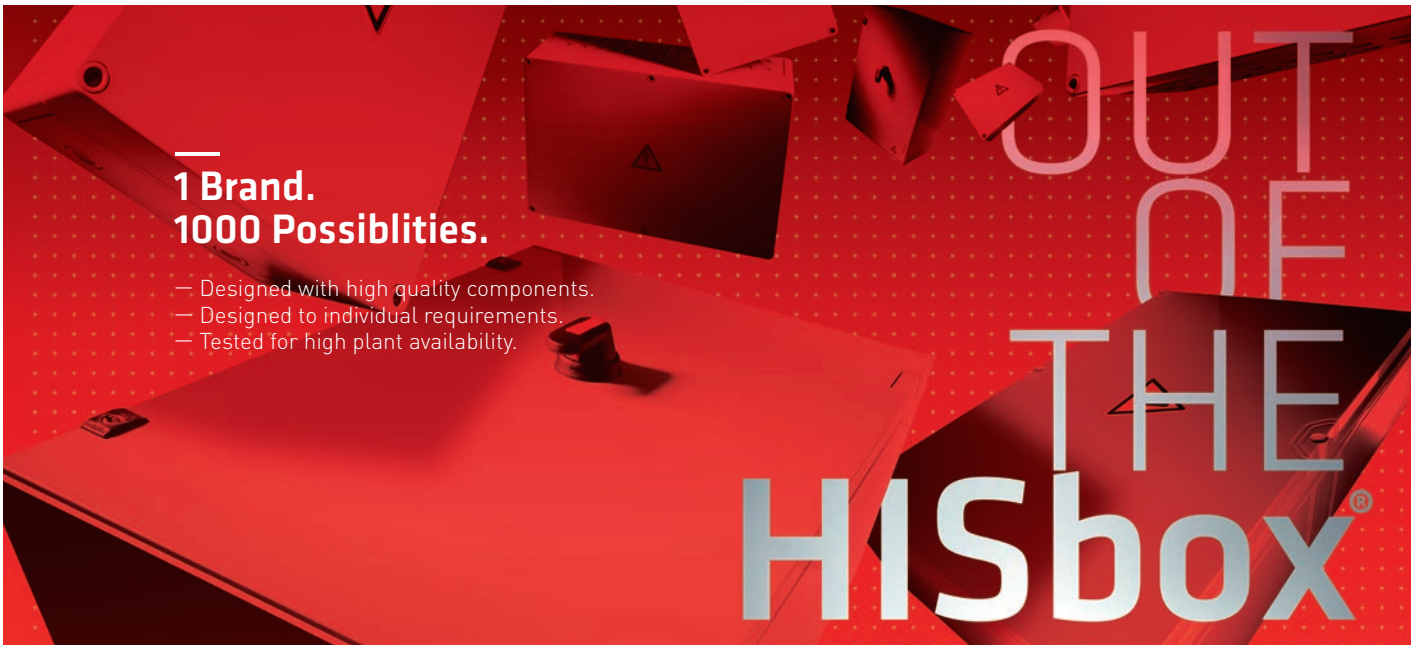
2023/2024

RESIDENTIAL - COMMERCIAL & INDUSTRIAL - UTILITY SCALE

HIS

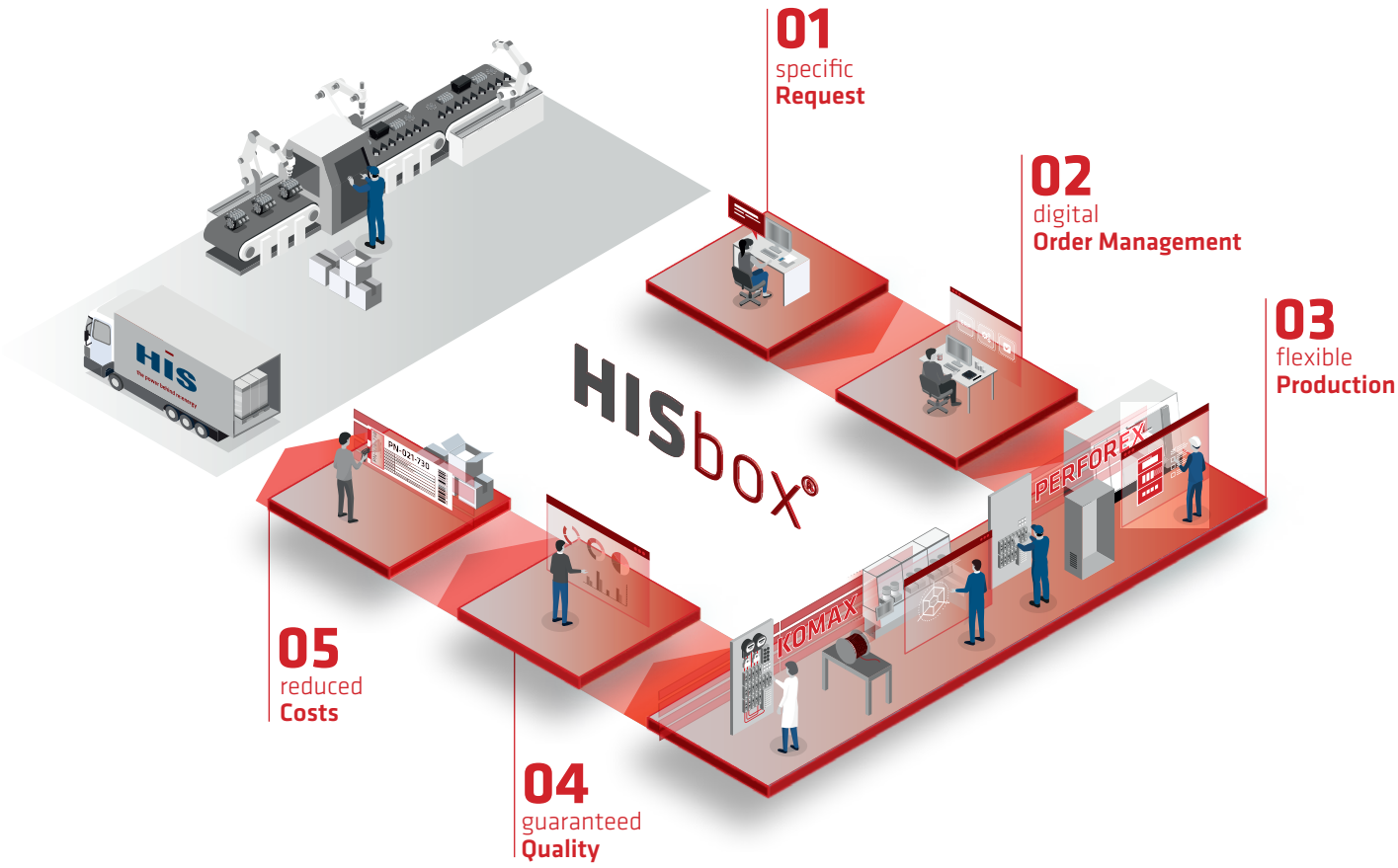
the power behind re:energy

CONTENT



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

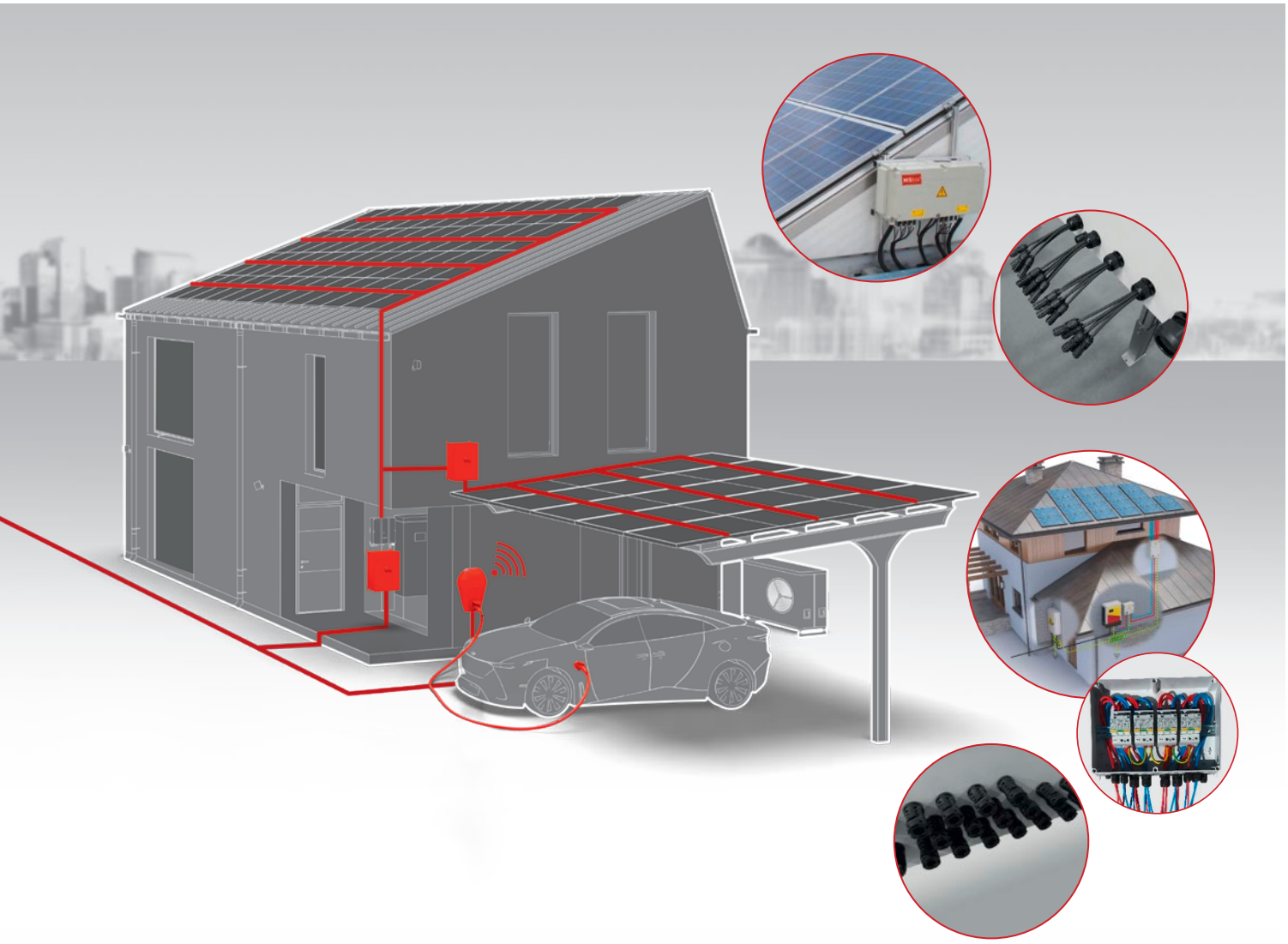
01
02
03
04
05
06

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®
string combiner

READY TO CONNECT DC COMBINER 1000V FOR STRING INVERTER



RESIDENTIAL

HISBOX® 1000V DC RESIDENTIAL

Electrical Characteristics	
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
Protection Devices	
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)
Inputs	
MPPTs	1 to 12
Strings per MPPT	1 to 6
Output	
Strings per MPPT	1 to 6
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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

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.

HUAWEI

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

HUAWEI

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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 Enviromental 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

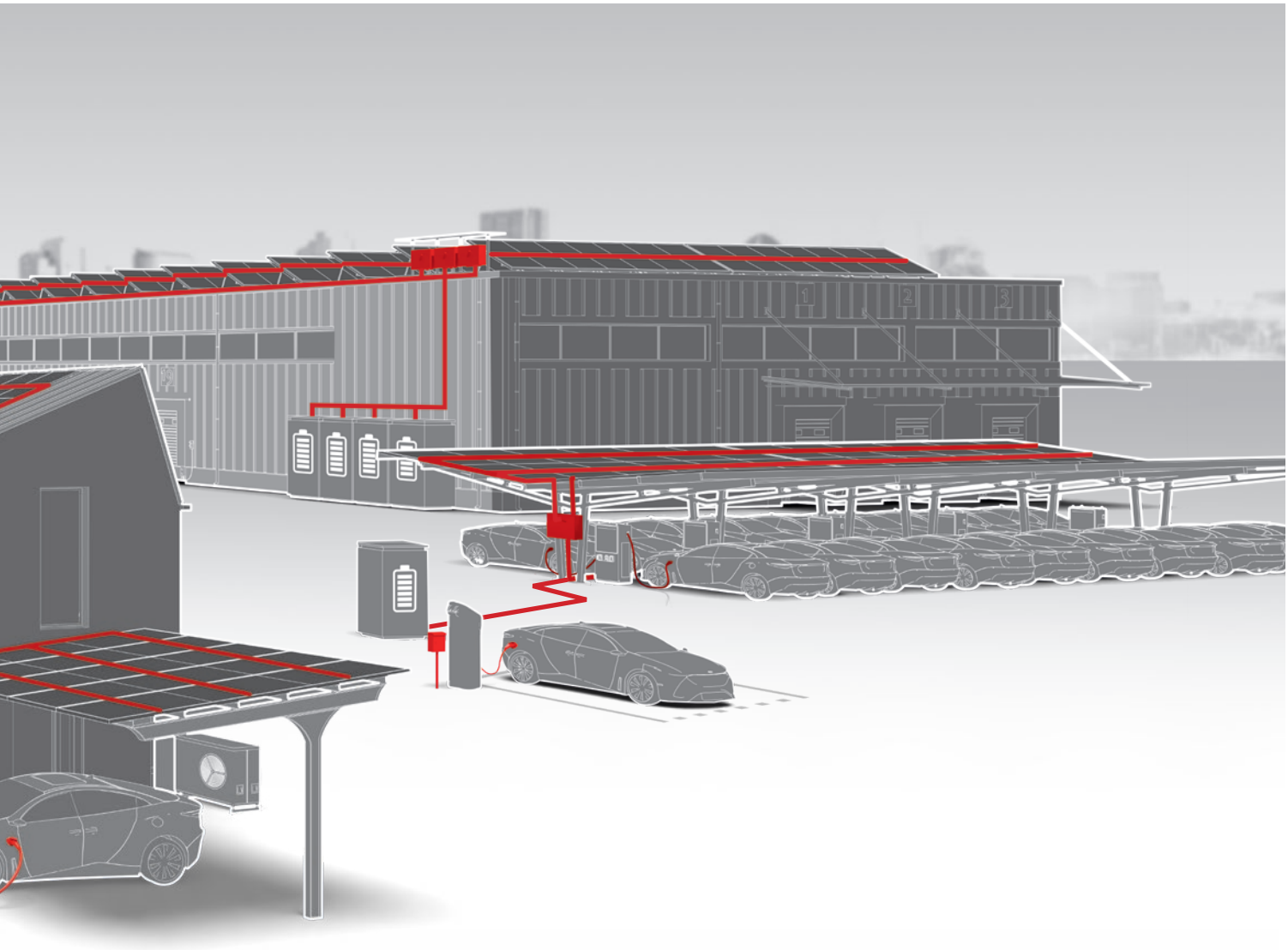
*(X) F: Fronius, S: SMA, H: Huawei, K: Kaco, G: Goodwe, SG: Sungrow

Please contact us for customized solutions!

SMA Fronius KACO new energy. GOODWE HUAWEI SUNGROW

HISbox®
string combiner

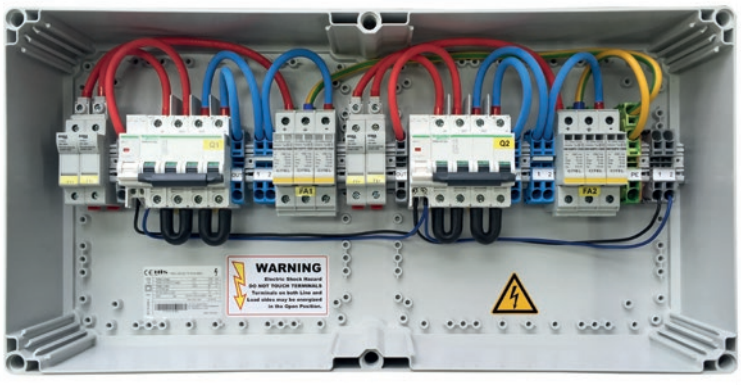
MAXIMUM SAFETY & RELIABILITY

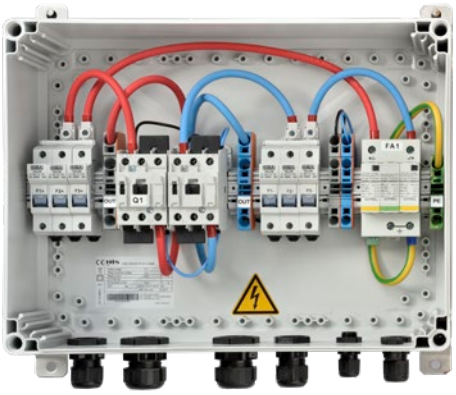


COMMERCIAL & INDUSTRIAL ROOFTOPS

HDC 1000V DC FIREMAN SWITCH UNDERVOLTAGE RELEASE

Electrical Characteristics	
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
Protection Devices	
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)
Inputs	
MPPTs	1 to 12
Strings per MPPT	1 to 8
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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



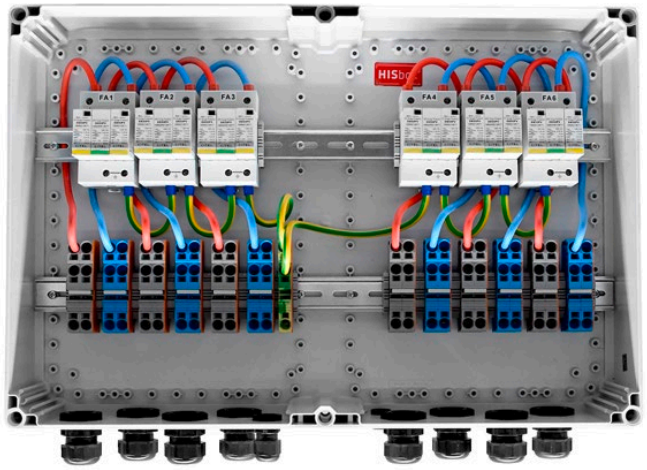


DC COMBINER MONITORING WITH REMOTE OPERATION (SINGLE-MPPT MAX. 12 INPUT)

Electrical Characteristics	
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
String Monitoring	
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
Protection Devices	
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)
Inputs	
MPPTs	1
Strings per MPPT	up to 12
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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

DC COMBINER 1000V MULTI-MPPT

Electrical Characteristics	
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
Protection Devices	
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)
Inputs	
MPPTs	1 to 12
Strings per MPPT	1 to 8
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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



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

Electrical Characteristics	
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
Protection Devices	
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)
Inputs	
MPPTs	1
Strings per MPPT	up to 16
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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

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.

Electrical Characteristics	
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)
Protection Devices	
Isolation Point / Coupling Switch	4 Pole AC power contactor / 4 pole switch disconnector with motor operation
Time delay relay	Yes (with switch disconnector)
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)
Overvoltage Protection	Yes (optional)
Cable Connections	
AC Input & Output	Cable feedthrough cable glands or cable grommets
PE - Grounding	Cable feedthrough cable gland
Enclosure	
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
Operation and Enviromental Conditions	
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)
Approvals	
Standard	EN 61439-2, IEC 61439-2, VDE-AR-N 4105:2018-11, VDE-AR-N 4110

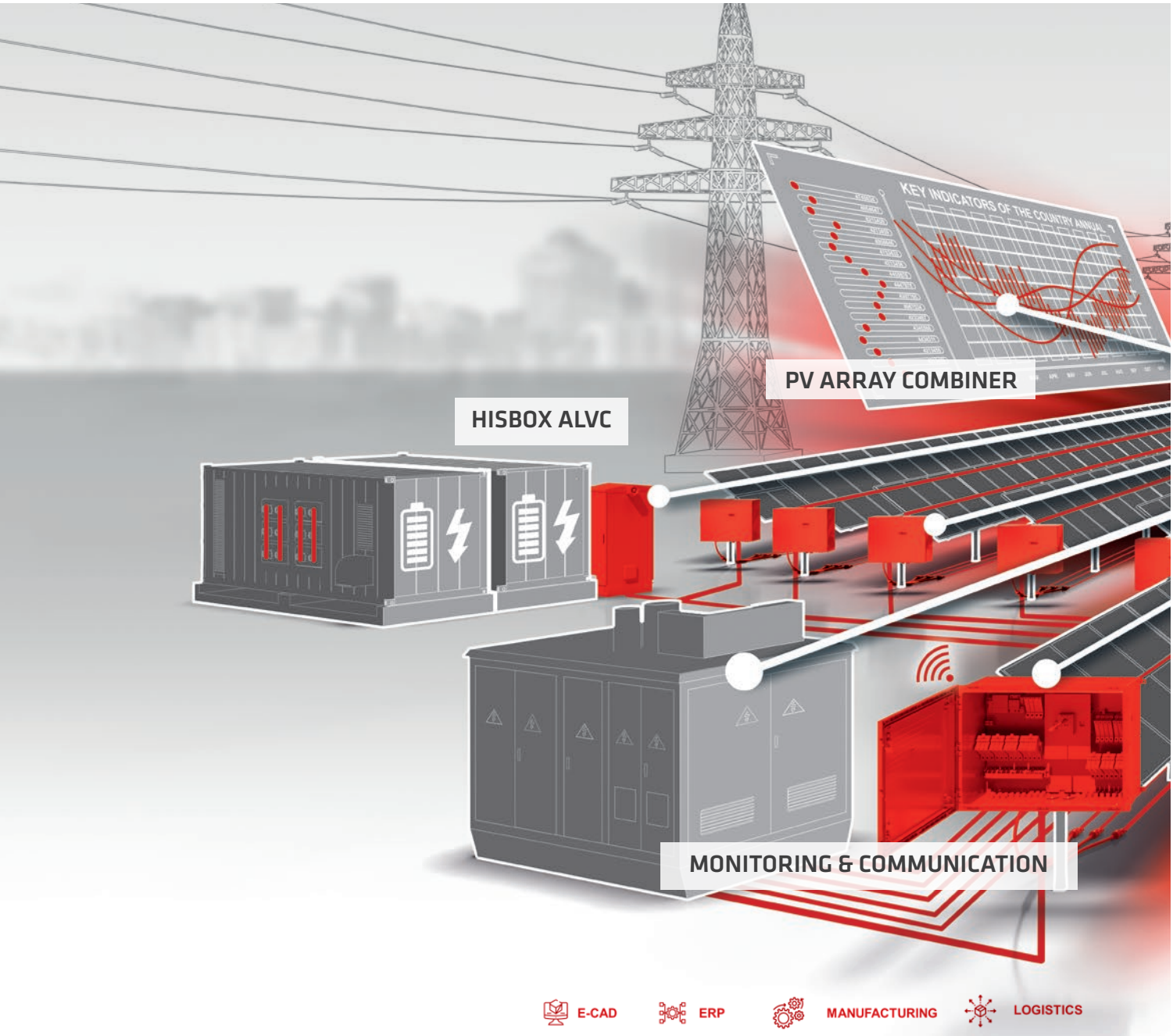
Features:

— 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®

string combiner

REALIZE SUCCESSFUL PV SYSTEMS WITH HOLISTIC SOLUTIONS



UTILITY SCALE

HM15 MONITORING 1500V DC (4-32A)

Electrical Characteristics	
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
String Monitoring	
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
Protection Devices	
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)
Inputs	
MPPTs	1
Strings per MPPT	up to 32
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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

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

Electrical Characteristics	
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
String Monitoring	
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
Protection Devices	
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)
Inputs	
MPPTs	1
Strings per MPPT	up to 16
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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

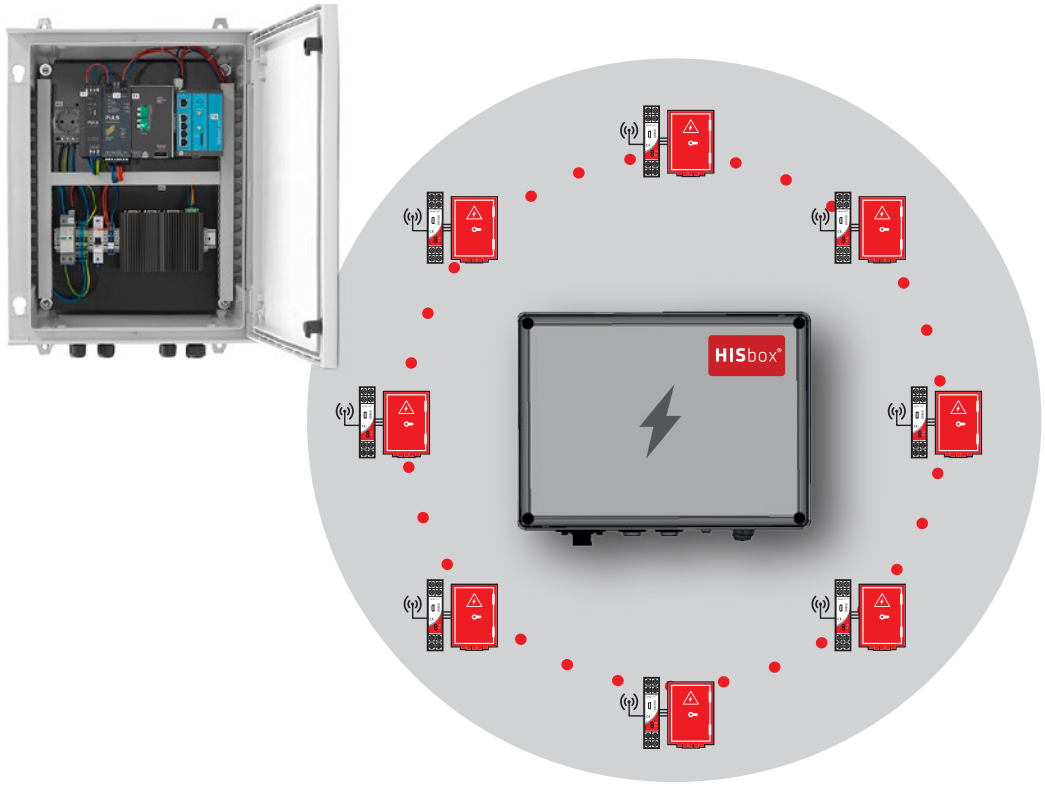
GATEWAY BOXES

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)

Electrical Characteristics	
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
String Monitoring	
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
Protection Devices	
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)
Inputs	
MPPTs	1
Strings per MPPT	up to 16
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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

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

Electrical Characteristics	
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
Protection Devices	
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)
Inputs	
MPPTs	1
Strings per MPPT	up to 16
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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

ARC FAULT DETECTION 1500V

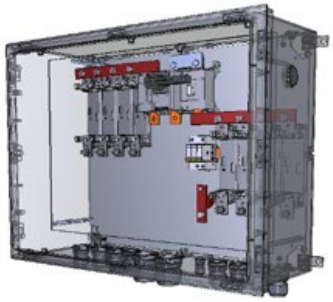
Electrical Characteristics	
Rated Voltage (Un)	1500 V DC
Rated Insulation Voltage (Ui)	1500 V DC
Max. Rated Current per String (InC)	20 A
Max. Rated Current (InA)	500 A
String Monitoring	
Monitoring Device	Hallsensor technology, up to 25A current, voltage, temperature measurement, two digital inputs
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
Protection Devices	
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)
Inputs	
MPPTs	1
Strings per MPPT	up to 32
Output	
Strings per MPPT	1 / 2
Grounding	Functional earth connection terminal
Cable Connections	
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
Enclosure	
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
Operation and Enviromental 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

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.

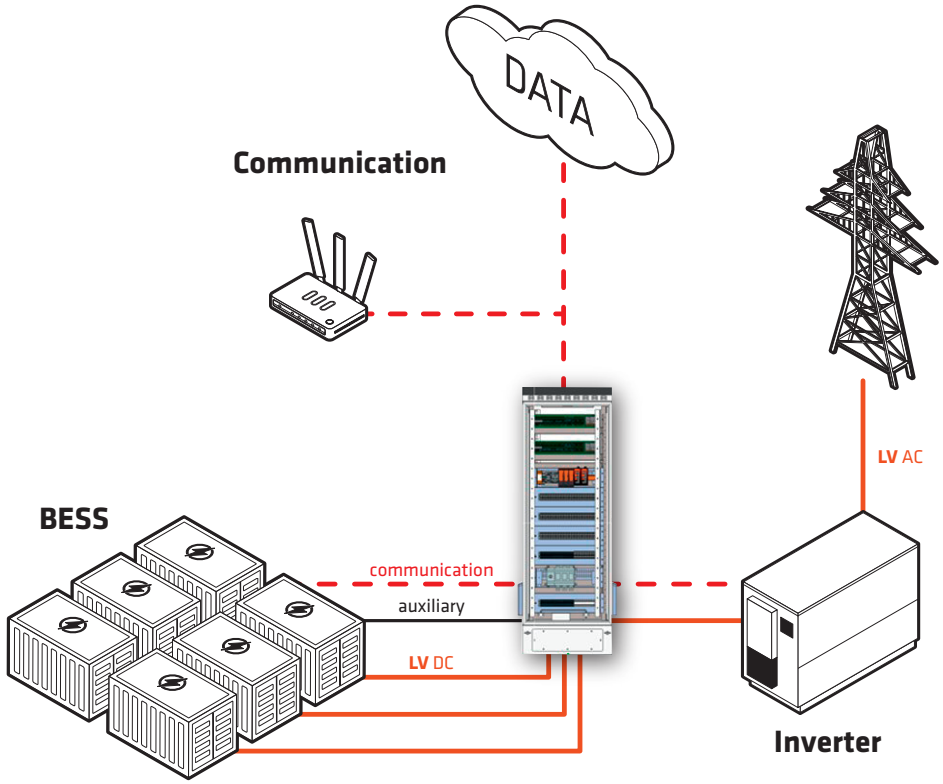
Technical Description	
Protection Class (acc. IEC 61140)	II, insulated
Conformity	IEC 61439-1;-2
Overvoltage device	Type 1+2 In = 15kA Imax = 40A
Fuse links	acc. IEC60269-6
Load break switch	IEC 60947-3
Enclosure	Glass-fiber reinforced Polyester (GRP); UV- and ozone stable; Incl. anti-pressure ventile; 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 (Ina)	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

HEADQUARTER & OFFICES

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*

the power behind re:energy

Headquarter Germany

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