Regione Emilia Romagna

Provincia di Ferrara

Comune di Bondeno

IMPIANTO AGROVOLTAICO DI 60MW SITO NEL COMUNE DI BONDENO (FE) E RELATIVE OPERE CONNESSE

PROGETTISTA INCARICATO:
Ing. Riccardo Clemeti
Pec: riccardo.clementi@ingpec.eu

Scala
n.d.

Formato
A4

Titolo elaborato:

Schede tecniche componenti

TECNICI COINVOLTI

Ing. Riccardo Clementi
Arch. Emiliano Manzato
Dott. Agr. Stefano Pesavento
Dott. Geol. Loris Tietto

CODICE ELABORATO

PROGETTO	CLASSE	TIPO	PROG.
RVFVER32	VIA2	R	29

Rev.	Data	Descrizione	Redige	Verifica	Approva
00	03/2023	Prima emissione	AI	GR	RC
01					
02					
03					
04					
05					
06					

GESTORE RETE ELETTRICA

Terna

SOCIETA' PROPONENTE:

Bondeno SRL
Via Mike Bongiorno, 13 - 20124 Milano
PEC: bondeno@pec-legal.it
REA: MI - 2677347
P.iva 05496160283

SOCIETA' di PROGETTAZIONE:

Renvalue SRL
Via Quattro Novembre, 2 Padova
PEC: cert@pec.renvalue.it

RENVALUE

GamesaElectric

Gamesa Electric
Proteus PV Stations

Larger MV solution for LCoE reduction

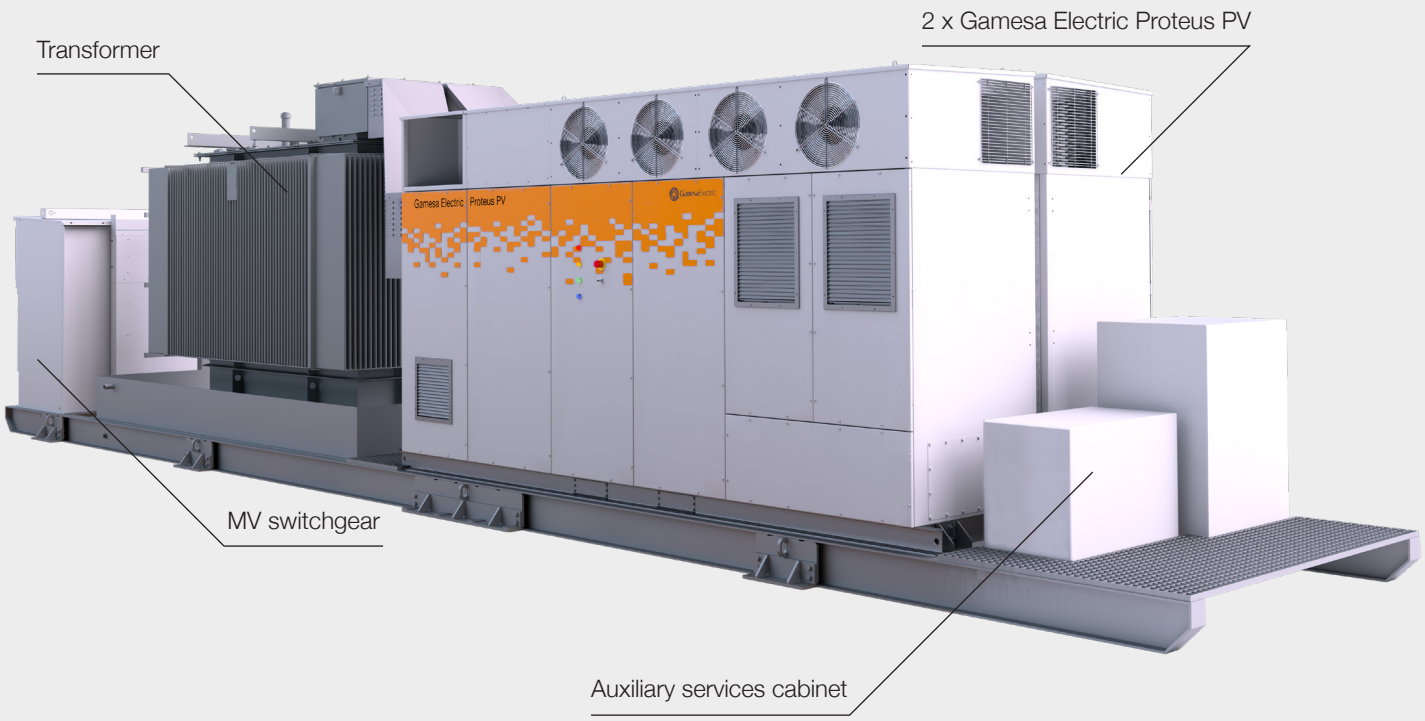
2023 | Datasheet

Compact and modular design

TDHI <1%

One-way efficiency 99.45%

Outdoor solution



Gamesa Electric
Proteus PV Station

Better LCoE

Largest single inverter power block in the market with 4,700 KVA

Fewer inverters per project thus lower Capex and Opex

DC/AC ratio of up to 200%

Higher yield

Market-leading efficiency with 99.45%

THDi < 1% which reduces losses

Enhanced temperature derating: keeping full power up to 40ºC [104ºF]

Built to last

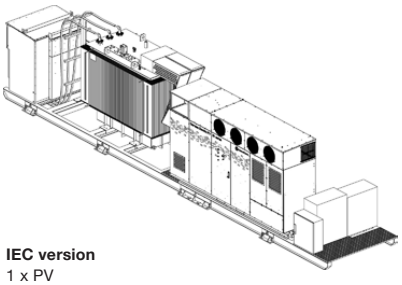
Designed and manufactured for a 30 year life span

CoolBrid: Smart hybrid cooling system that allows critical components to work far below the temperature limit

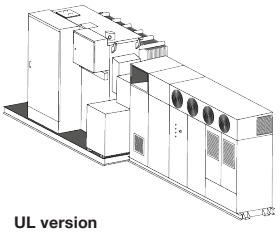
Lowest THDi in the market helps to extend power transformers lifespan

1 x Gamesa Electric Proteus PV Inverter Configurations

	Gamesa Electric Proteus PV Station			
Number of Gamesa Electric Proteus PV Inverters	1 x Proteus PV 4100	1 x Proteus PV 4300	1 x Proteus PV 4500	1 x Proteus PV 4700
DC Connection				
DC Voltage Range[1]	835 - 1500 V	875 - 1500 V	915 - 1500 V	955 - 1500 V
DC Voltage Range MPPT[1]	835 - 1300 V	875 - 1300 V	915 - 1300 V	955 - 1300 V
Number of Power Modules	2, not galvanically isolated, 1 MPPT			
Max. DC Current @40°C [104°F]	2 x 2500 A			
Max. DC Current @50°C [122°F]	2 x 2313 A			
Max. DC Current @55°C [131°F]	2 x 2220 A			
Max. DC Current @60°C [140°F]	2 x 1110 A			
Number of DC Ports[1]	max 24 fuse +/- monitored max 36 fuse + monitored			
AC Connection				
Number of Phases	Three-phase			
Nominal AC Power Total @40°C [104°F]	4095 kVA	4299 kVA	4504 kVA	4709 kVA
Nominal AC Power Total @50°C [122°F]	3790 kVA	3979 kVA	4169 kVA	4358 kVA
Nominal AC Power Total @55°C [131°F]	3637 kVA	3819 kVA	4001 kVA	4183 kVA
Nominal AC Power Total @60°C [140°F]	1819 kVA	1910 kVA	2001 kVA	2091 kVA
Maximum AC Current @40°C [104°F]	3940 Arms			
Nominal AC Voltage, LV side[1]	600 Vrms	630 Vrms	660 Vrms	690 Vrms
Nominal AC Voltage, MV side[1]	< 34.5 kV			
Nominal Voltage Allowance Range[1]	+/-10%			
Frequency Range[1]	47.5 - 53 / 57 - 63 Hz			
THD of AC Current	< 1% @Sn			
Power Factor Range	0 (inductive)-1-0 (capacitive)			
Protection devices				
DC Connection	Motorized disconnectors, Overvoltage protection (Type 1 + 2 SPD), reverse polarity detection, DC ground fault and insulation detection			
AC Connection	Motorized AC circuit breakers, Overvoltage protection (Type 1 + 2 SPD), Anti-islanding, Voltage failure, Frequency failure			
Over-temperature Protection	Included			
Emergency Push Button	Included			
Components Proteus PV Station				
Inverters	1 x Proteus PV 4100	1 x Proteus PV 4300	1 x Proteus PV 4500	1 x Proteus PV 4700
Transformer[1][6]	Dyn KNAN / ONAN			
Switchgear[1][6]	0L1V / 1L1V / 2L1V up to 36 kV			
Custom Auxiliary Transformer[1]	Optional			
Others[1]	Auxilliary cabinet			
Communications				
Control[1]	Modbus TCP / IP			
Monitoring[1]	Modbus TCP / IP			
Webserver	Included			



IEC version
1 x PV



UL version
1 x PV

Other Features	
LVRT	Yes
HVRT	Yes
Temperature Range - Operation[2]	-20°C / +60°C[-4°F/+140°F], Option -30°C[-22°F]
Relative Humidity	4% - 100% (without condensation)
Maximum Altitude (without derating)[3]	2,000 m[6561 ft]
Dimensions W x H x D(IEC / UL version)[4]	11800 x 2600 x 2100 mm / 30 x 8.5 x 8.6 ft
Protection	IP54
Cooling System	Liquid & forced air

Optionals
Low Temperature Kit up to -30 °C [-22°F]
Enhanced corrosion protection
Motorized MV Switchgear
UPS
Custom Auxiliary Transformer
Seismic Reinforcement

Standards/Directives[5]			
IEC 62109-1	IEC 62920	IEC 60529	NEC 2020
IEC 62109-2	EN 50530	IEC 61727	CEA 2007
IEC 61000-6-2/4	IEC 62116	NTS 631 v1.1 SENP, v2.1 SEPE	Rule 14, Rule 21
IEEE 1547	IEC 61683	UL 1741-SA	PRC 024
EN 55011	IEEE 519	CSA C22.2	UL 62109-1

2 x Gamesa Electric Proteus PV Inverters Configurations

	Gamesa Electric Proteus PV Station			
Number of Gamesa Electric Proteus PV Inverters	2 x Proteus PV 4100	2 x Proteus PV 4300	2 x Proteus PV 4500	2 x Proteus PV 4700
DC Connection				
DC Voltage Range[1]	835 - 1500 V	875 - 1500 V	915 - 1500 V	955 - 1500 V
DC Voltage Range MPPT[1]	835 - 1300 V	875 - 1300 V	915 - 1300 V	955 - 1300 V
Number of Power Modules	4, 2 independent MPPT			
Max. DC Current @40°C [104°F]	4 x 2500 A			
Max. DC Current @50°C [122°F]	4 x 2313 A			
Max. DC Current @55°C [131°F]	4 x 2220 A			
Max. DC Current @60°C [140°F]	4 x 1110 A			
Number of DC Ports[1]	max 48 fuse +/- monitored max 72 fuse + monitored			
AC Connection				
Number of Phases	Three-phase			
Nominal AC Power Total @40°C [104°F]	8190 kVA	8598 kVA	9008 kVA	9418 kVA
Nominal AC Power Total @50°C [122°F]	7580 kVA	7958 kVA	8338 kVA	8716 kVA
Nominal AC Power Total @55°C [131°F]	7274 kVA	7638 kVA	8002 kVA	8366 kVA
Nominal AC Power Total @60°C [140°F]	3638 kVA	3820 kVA	4002 kVA	4182 kVA
Maximum AC Current @40°C [104°F]	3940 Arms / 2 x 3940 Arms			
Nominal AC Voltage, LV side[1]	2 x 600 Vrms	2 x 630 Vrms	2 x 660 Vrms	2 x 690 Vrms
Nominal AC Voltage, MV side[1]	< 34.5 kV			
Nominal Voltage Allowance Range[1]	+/-10%			
Frequency Range[1]	47.5 - 53 / 57 - 63 Hz			
THD of AC Current	< 1% @Sn			
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Emergency Push Button	Included			
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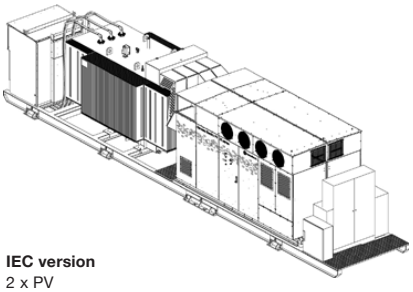
Monitoring[1]	Modbus TCP / IP			
Webserver	Included			



IEC version
2 x PV

Other Features	
LVRT	Yes
HVRT	Yes
Temperature Range - Operation[2]	-20°C / +60°C[-4°F/+140°F], Option -30°C[-22°F]
Relative Humidity	4% - 100% (without condensation)
Maximum Altitude (without derating)[3]	2,000 m[6561 ft]
Dimensions W x H x D(IEC / UL version)[4]	11800 x 2600 x 2100 mm / 30 x 8.5 x 8.6 ft
Protection	IP54
Cooling System	Liquid & forced air

Optionals
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Standards/Directives[5]			
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IEC 61000-6-2/4	IEC 62116	NTS 631 v1.1 SENP, v2.1 SEPE	Rule 14, Rule 21
IEEE 1547	IEC 61683	UL 1741-SA	PRC 024
EN 55011	IEEE 519	CSA C22.2	UL 62109-1

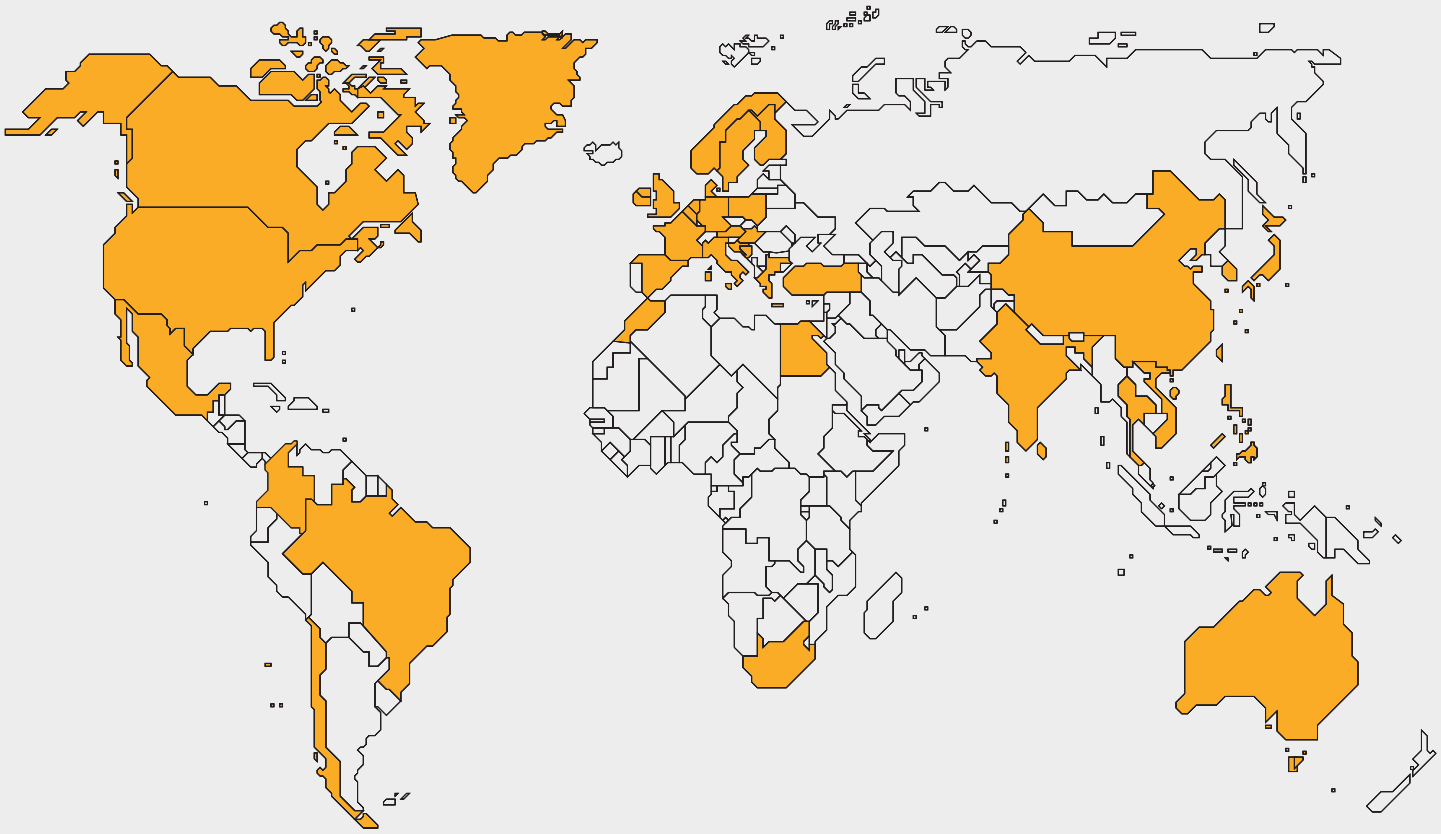
[1] Consult Gamesa Electric for a specific configuration
[2] With derating from 40°C [104°F]
[3] Up to 4,000m [13,123 ft] with derating as optional
[4] UL variant only available for 1-PV Inverter based configuration
[5] Consult Gamesa Electric for other Standards/Directives
[6] UL version: Padmounted Dyn (without external switchgear)

GamesaElectric | Shaping New Energy

+5 GW
SOLAR ENERGY

+127 GW
WIND POWER

+90
COUNTRIES



Worldwide presence

Australia
Austria
Belgium
Brazil
Canadá
Thailand

Chile
China
Croatia
Denmark
Egypt
Turkey

France
Germany
Greece
Hong Kong
Hungary
UK

India
Ireland
Italy
Japan
Korea
USA

Mexico
Morocco
Netherlands
Norway
Philippines
Colombia

Poland
Singapore
South Africa
Sri Lanka
Sweden

Bosnia and herzegovina

gamesaelectric@gamesacorp.com
www.gamesaelectric.com

January 2023

Draft

Hyper-ion 伏羲™

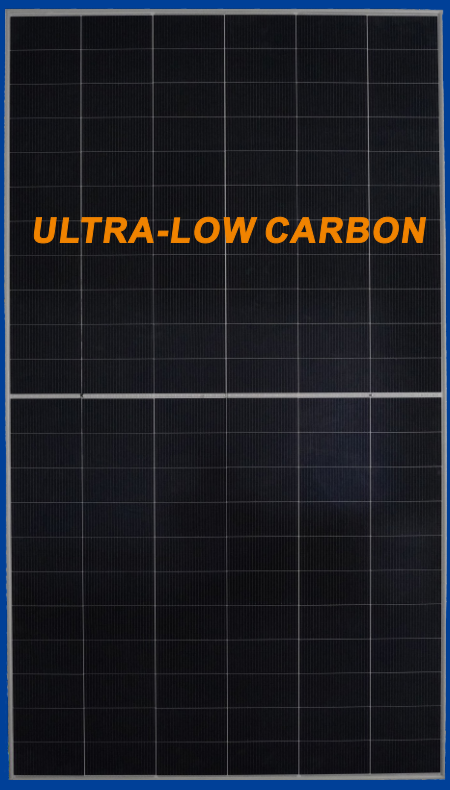
210 THIN WAFERS
HJT BIFACIAL MODULE

22.5%
Maximum Efficiency

675-700Wp
Power Output Range

132 cells
HJT Bifacial Module

1500VDC
Maximum System Voltage

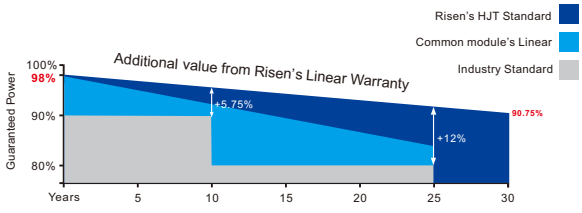


RSM132-8-675-700BHDG

KEY SALIENT FEATURES:

- Global, Tier 1 bankable brand, with independently certified state-of-the-art automated manufacturing
- N-type solar cell without LID caused by B-O
- No PID
- Better Temperature Coefficient
- Bifacial technology enables additional energy harvesting from rear side
- Positive power tolerance of 0~+3%
- Dual stage 100% EL Inspection warranting defect-free product
- Module Imp binning radically reduces string mismatch losses
- Excellent wind load 2400Pa & snow load 5400Pa under certain installation method
- Comprehensive product and system certification
  - IEC61215:2016; IEC61730-1/-2:2016;
  - ISO 9001:2015 Quality Management System
  - ISO 14001:2015 Environmental Management System
  - ISO 45001:2018 Occupational Health and Safety Management System

LINEAR PERFORMANCE WARRANTY



★ Please check the valid version of Limited Product Warranty which is officially released by Risen Energy Co., Ltd

- 12 Year Product Warranty
- 30 Year Linear Power Warranty
- 0.25% Annual Degradation over 30 years

ISO9001
ISO14001
ISO45001
IEC62941

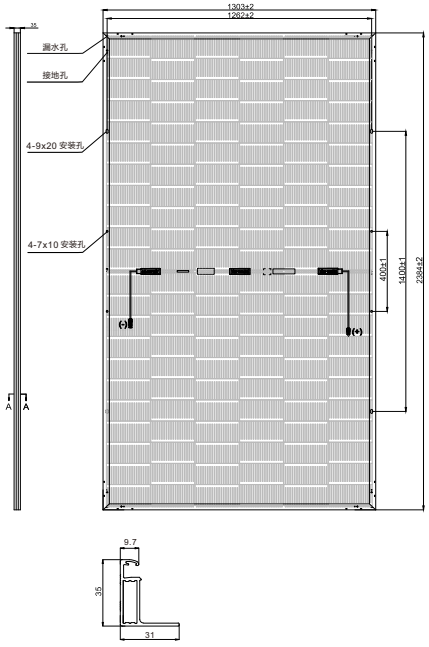
★ As there are different certification requirements in different markets, please contact your local Risen Energy sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

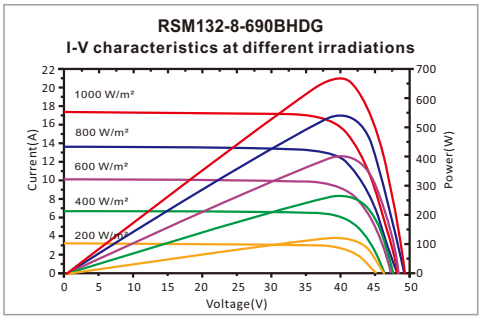
RISEN ENERGY CO., LTD.
Add: Tashan Industry Zone, Meilin, Ninghai 315609
Tel: 400-8291-000
Fax: +86-574-59953599
E-mail: marketing@risenenergy.com
Website: www.risenenergy.com

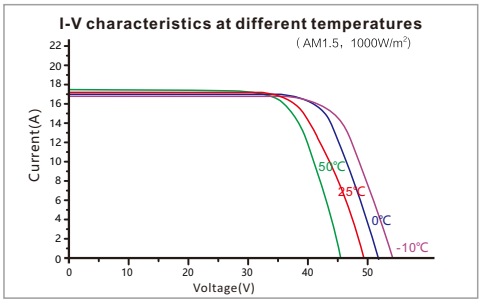
risen

Dimensions of PV Module

Unit: mm







Our Partners:

ELECTRICAL DATA (STC)

Model Number	RSM132-8-675BHDG	RSM132-8-680BHDG	RSM132-8-685BHDG	RSM132-8-690BHDG	RSM132-8-695BHDG	RSM132-8-700BHDG
Rated Power in Watts-Pmax(Wp)	**675**	**680**	**685**	**690**	**695**	**700**
Open Circuit Voltage-Voc(V)	49.38	49.47	49.56	49.65	49.74	49.83
Short Circuit Current-Isc(A)	17.40	17.48	17.56	17.66	17.74	17.82
Maximum Power Voltage-Vmpp(V)	41.41	41.48	41.56	41.63	41.71	41.78
Maximum Power Current-Impp(A)	16.32	16.41	16.50	16.60	16.68	16.77
Module Efficiency (%) ★	21.7	21.9	22.1	22.2	22.4	22.5

STC: Irradiance 1000 W/m², Cell Temperature 25°C, Air Mass AM1.5 according to EN 60904-3.
Bifacial factor:(%) 85±5 ★ Module Efficiency (%): Round-off to the nearest number

Electrical characteristics with 10% rear side power gain

Total Equivalent power -Pmax (Wp)	743	748	754	759	765	770
Open Circuit Voltage-Voc(V)	49.38	49.47	49.56	49.65	49.74	49.83
Short Circuit Current-Isc(A)	19.14	19.23	19.32	19.43	19.51	19.60
Maximum Power Voltage-Vmpp(V)	41.41	41.48	41.56	41.63	41.71	41.78
Maximum Power Current-Impp(A)	17.95	18.05	18.15	18.26	18.35	18.44

Rear side power gain: The additional gain from the rear side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

ELECTRICAL DATA (NMOT)

Model Number	RSM132-8-675BHDG	RSM132-8-680BHDG	RSM132-8-685BHDG	RSM132-8-690BHDG	RSM132-8-695BHDG	RSM132-8-700BHDG
Maximum Power-Pmax (Wp)	**515.6**	**519.3**	**523.0**	**527.2**	**530.9**	**534.5**
Open Circuit Voltage-Voc (V)	46.27	46.35	46.44	46.52	46.61	46.69
Short Circuit Current-Isc (A)	14.27	14.34	14.40	14.48	14.55	14.61
Maximum Power Voltage-Vmpp (V)	38.71	38.78	38.85	38.93	39.00	39.07
Maximum Power Current-Impp (A)	13.32	13.39	13.46	13.54	13.61	13.68

NMOT: Irradiance at 800 W/m², Ambient Temperature 20°C, Wind Speed 1 m/s.

MECHANICAL DATA

Solar cells	HJT cell
Cell configuration	132 cells (6×11+6×11)
Module dimensions	2384×1303×35mm
Weight	38.5kg
Superstrate	High Transmission, Low Iron, Tempered ARC Glass
Substrate	Tempered Glass
Frame	Anodized Aluminium Alloy type 6005-2T6, Silver Color
J-Box	Potted, IP68, 1500VDC, TÜV&UL Certified
Cables	4.0mm² (12AWG), Positive(+)350mm, Negative(-)230mm (Connector Included)
Connector	Risen Twinsel PV-SY02, IP68

TEMPERATURE & MAXIMUM RATINGS

Nominal Module Operating Temperature (NMOT)	43°C±2°C
Temperature Coefficient of Voc	-0.22%/°C
Temperature Coefficient of Isc	0.047%/°C
Temperature Coefficient of Pmax	-0.24%/°C
Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500VDC
Max Series Fuse Rating	35A
Limiting Reverse Current	35A

PACKAGING CONFIGURATION

	40ft(HQ)
Number of modules per container	558
Number of modules per pallet	31
Number of pallets per container	18
Packaging box dimensions (LxWxH) in mm	1320×1120×2515
Box gross weight[kg]	1245

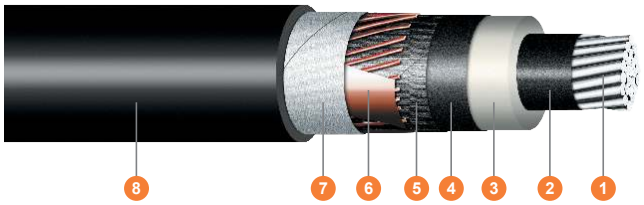
CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

THE POWER OF RISING VALUE

(N)A2XS(F)2Y 20.8/36

Mittelspannungskabel mit VPE-Isolierung

Medium voltage cables with XLPE Insulation



Standard: in Anlehnung an DIN VDE 0276-620

following DIN VDE 0276-620

Aufbau:

Design:

1. Aluminiumleiter
   Aluminium conductor
2. Innere Leitschicht
   Inner semi-conducting layer
3. VPE-Isolierung
   XLPE insulation
4. Äußere Leitschicht
   Outer semi-conducting layer
5. Bandierung
   Tape
6. Kupferdrahtschirm aus Kupferdrähten und Kupferband
   Copper wire screen and copper tape
7. Quellvlies
   Water-blocking tape
8. PE-Mantel
   PE outer sheath

Anwendung:

Application:

Die Kabel sind geeignet für die feste Verlegung in Innenräumen, im Freien und in Erde. Sie können direkt in den Boden oder in Kabelkanäle gelegt werden.
The cables are suitable for installation indoors, outdoors and in the ground. Installation to be carried out in the ground or in a cable channel.

Eigenschaften:

Properties:

Nennspannung *Rated voltage*	20.8/36 kV
Prüfspannung *Test voltage*	73 kV
Maximale Betriebstemperatur des Leiters *Maximal operating conductor temperature*	+90°C
Maximale Betriebstemperatur beim Kurzschluss *Maximal short-circuit temperature*	+250°C
Betriebstemperatur *Operating temperature range*	-35°C - +90°C
Mindesttemperatur für die Lagerung *Minimal storage temperature*	-35°C
Mindesttemperatur für die Verlegung *Minimal temperature for laying*	-20°C
Farbe der Isolierung *Colour of insulation*	ungefärbt *uncoloured*
Farbe des Mantels *Colour of sheath*	schwarz *black*
Flammwidrigkeit *Flame retardant*	nein *no*
Verpackung *Packaging*	Holz- oder Metalltrommeln *wooden or metal drums*
CE-Konformität *CE-Conformity*	ja *yes*

(N)A2XS(F)2Y 20.8/36

Technische Daten:

Technical details:

Aderzahl und Nennquerschnitt *Number of cores and cross-section* mm²	Leiterform *Shape of conductor*	Durchmesser des Leiters (ca.) *Conductor diameter (approx.)* mm	Nennwanddicke der Isolierung *Nominal insulation thickness* mm	Durchmesser über Isolation (ca.) *Diameter over insulation (approx.)* mm	Nennwanddicke des Mantels *Nominal sheath thickness* mm	Außendurch-messer (ca.) *Outer diameter (approx.)* mm	Biegeradius (min.) *Bending radius (min.)* mm	Gewicht (ca.) *Weight (approx.)* kg/km
1x50/16	RM	8.3	8.8	27.1	2.5	35	525	1074
1x70/16	RM	9.8	8.8	28.6	2.5	37	555	1181
1x95/16	RM	11.3	8.8	30.1	2.5	38	570	1307
1x120/16	RM	12.8	8.8	31.6	2.5	40	600	1430
1x150/25	RM	14.2	8.8	33.0	2.5	41	615	1634
1x185/25	RM	15.8	8.8	34.6	2.5	43	645	1802
1x240/25	RM	18.1	8.8	36.9	2.5	45	675	2038
1x300/25	RM	20.2	8.8	39.0	2.6	48	720	2294
1x400/35	RM	23.3	8.8	42.1	2.6	51	765	2808
1x500/35	RM	26.5	8.8	45.3	2.7	54	810	3235
1x630/35	RM	29.9	8.8	48.7	2.8	58	870	3763
1x800/35	RM	34.2	8.8	53.0	2.9	62	930	4439

Elektrische Eigenschaften:

Electrical properties:

Aderzahl und Nennquerschnitt *Number of cores and cross-section* **mm²**	**Gleichstrom-widerstand bei 20°C** *DC resistance at 20°C* **Ω/km**	**Kapazität (ca.)** *Capacitance (approx.)* **µF/km**	**Induktivität, Dreieck (ca.)** *Inductance, trefoil (approx.)* **mH/km**	**Induktivität in Erde, flach (ca.) [1]** *Inductance in ground, flat (approx.) [1]* **mH/km**
1x50/16	0.6410	0.13	0.48	0.73
1x70/16	0.4430	0.14	0.45	0.70
1x95/16	0.3200	0.15	0.44	0.67
1x120/16	0.2530	0.16	0.42	0.65
1x150/25	0.2060	0.17	0.40	0.62
1x185/25	0.1640	0.19	0.39	0.60
1x240/25	0.1250	0.20	0.37	0.58
1x300/25	0.1000	0.22	0.36	0.56
1x400/35	0.0778	0.25	0.35	0.53
1x500/35	0.0605	0.27	0.33	0.51
1x630/35	0.0469	0.30	0.31	0.49
1x800/35	0.0367	0.33	0.30	0.47

Anmerkung: [1]) Lichter Abstand zwischen den Kabeln: 7 cm
Remarks: *[1]) clearance between cables: 7 cm*

(N)A2XS(F)2Y 20.8/36

Aderzahl und Nennquerschnitt *Number of cores and cross-section* **mm²**	**Zulässiger Kurzschluss-strom, Leiter** *Conductor short-circuit current* **kA**	**Zulässiger Kurzschluss-strom, Schirm** *Screen short-circuit current* **kA**	**Erwärmungszeit-konstante, Dreieck*** *Heating time constant, trefoil** **s**	**Erwärmungszeit-konstante, flach*** *Heating time constant, flat** **s**	**Belastbarkeit an Luft, Dreieck*** *Current ratings in air, trefoil** **A**	**Belastbarkeit an Luft, flach*** *Current ratings in air, flat** **A**	**Belastbarkeit in Erde, Dreieck*** *Current ratings in ground, trefoil** **A**	**Belastbarkeit in Erde, flach*** *Current ratings in ground, flat** **A**
1x50/16	4.7	3.2	264	204	194	221	179	193
1x70/16	6.6	3.2	336	260	241	274	219	235
1x95/16	9.0	3.2	425	330	291	330	261	282
1x120/16	11.3	3.2	511	400	335	378	298	320
1x150/25	14.2	5.0	632	509	376	419	331	350
1x185/25	17.5	5.0	737	599	430	477	373	393
1x240/25	22.7	5.0	901	748	504	553	432	449
1x300/25	28.4	5.0	1086	913	574	626	485	500
1x400/35	37.8	7.0	1464	1305	659	698	547	542
1x500/35	47.3	7.0	1740	1608	756	786	617	592
1x630/35	59.6	7.0	2105	2000	866	889	690	653
1x800/35	75.6	7.0	2631	2588	984	992	770	723

Anmerkungen: *)
Die Strombelastbarkeitswerte basieren auf folgenden Bedingungen:
- Legung berührend im Dreieck oder flach mit 70 mm lichtem Abstand
- ein System mit Legetiefe 0,7 m
- beidseitige Erdung der Schirme
- Bodentemperatur 20°C
- spezifischer Bodenwärmewiderstand:
  - 1,0 K·m/W für feuchten Boden
  - 2,5 K·m/W für trockenen Boden
- keine zusätzlichen beeinflussenden Wärmequellen
- Lufttemperatur 30°C
- keine direkte Sonnenbestrahlung

Remarks: *)
The values of current-carrying capacity are based on following conditions:
- *touching trefoil or flat formation with 70 mm clearance*
- *one circuit at 0.7 m laying depth*
- *solid bonding of cable screens*
- *ground temperature 20°C*
- *soil thermal resistivity:*
  - *1.0 K·m/W for wet soil*
  - *2.5 K·m/W for dry soil*
- *no additional heat sources*
- *air temperature 30°C*
- *no exposure to direct solar radiation*

XZ1 (S) AL

RATED VOLTAGE U_0/U 0,6/1 kV

ALUMINIUM • XLPE • POLYOLEFIN LSZH

TS 162:01-2020

STANDARDS:

CONSTRUCTION	FIRE PERFORMANCE	
UNE-HD 603-5X	EN 60332-1-2	IEC 60332-1-2
(HD 603S1/A3)	EN 60754-1	IEC 60754-1
	EN 60754-2	IEC 60754-2
	EN 61034	IEC 61034

CONSTRUCTION:

1.CONDUCTOR

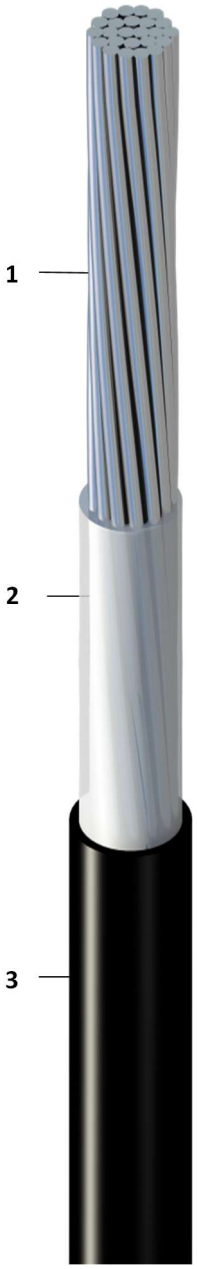
AL stranded class 2 to IEC 60228

2. INSULATION

XLPE Cross-linked polyethylene

3. SHEATH

LS0H Halogen-free thermoplastic polyolefin



GENERAL APPLICATIONS:

Cable for use in low voltage power distribution in permanent indoor and outdoor fixed installations, protected or not, in industrial areas, buildings, and similar applications.

These cables are recommended for installation in public places and in places where the level of security should be high.

GENERAL CHARACTERISTICS:

Test voltage	3,5 kV a.c. (5 min.)
Minimum operating temperature	-40 ºC
Maximum temperature rating of the conductor	+90 ºC
Short-circuit temperature of the conductor	250 ºC (t ≤5s)
Maximum pulling force over conductor (N)	over conductors 30 x Section mm^2 over sheath: 3 x d^2

APPROVALS:

The cables XZ1 (S) AL are certified by the brand ***AENOR***

Restriction:1x25mm^2, 1x50mm^2, 1x95mm^2, 1x150mm^2, 1x240mm^2

IBERDROLA *and* ***UNION FENOSA***
Restriction: 1x50mm^2, 1x95mm^2, 1x150mm^2, 1x240mm^2

ENDESA
Restriction: 1x95mm^2, 1x150mm^2, 1x240mm^2

CPR E_{ca} Nº DoP 010/* (162*E)

XZ1 (S) AL

HALOGEN FREE

ALCOBRE
A MEMBER OF HENGTONG GROUP

PHYSICAL AND ELECTRICAL CHARACTERISTICS

Alcobre code	Cross Section	Nominal overall diameter	Nominal weight	Minimum bending radius	Max. current rating		Voltage drop
					Air 30 ºC	Buried 20 ºC	Cos φ= 0,8
	nc x mm²	mm	kg/km	mm	A	A	V/A.km
16203001	1x25	10,7	148	40	135	96	2,235
16204001	1x35	11,8	186	45	169	115	1,639
16205001	1x50	12,8	229	50	207	135	1,234
16206001	1x70	15,0	316	60	268	167	0,876
16207001	1x95	16,7	402	65	328	197	0,654
16208001	1x120	18,3	484	75	383	223	0,534
16209001	1x150	20,2	593	80	444	251	0,449
16210001	1x185	22,5	747	90	510	281	0,373
16211001	1x240	25,2	941	130	607	324	0,303
16212001	1x300	27,7	1.217	140	703	365	0,257
16212501	1x400	31,6	1.567	160	823	----	0,217

- on the Air the current rating is in according to IEC 60364-5-52 table B.52.12, installation method E.
- Buried the current rating is in according to IEC 60364-5-52, table B.52.5, installation method D1.