

Business Unit

# Technology



## Solutions for renewable energy



# Small components ... big impact

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## Our Partners

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# Our commitment to industry

Since 1990 DKSH has been serving the Australian renewable energy industry with innovative and quality Balance of System (BoS) solutions and value-add services.

DKSH is the exclusive Australian distributor for a diverse range of products from reputable manufacturers who are leaders in their field and have long, stable corporate backgrounds.

We continually strive to offer products with the highest standards of quality, on-time delivery and cost-effectiveness - all important factors our customers need to succeed.

Our solutions are considered in the industry as "best-in-class" and we are privileged to have supported over 4,500 MW of solar projects in Australia across the residential, commercial and large scale segments.



## Our partners



## Genuine MC4 Connector System

### MC4 Cable Couplers

The components of the MC4 connector system for photovoltaics are designed to allow time-saving and safe serial and parallel wiring of PV modules for building-integrated and free-standing solar installations. Coupler housing (insulator) and contact pin are supplied as a pair under the one part number.

#### Technical Data

|                            |                                       |
|----------------------------|---------------------------------------|
| Voltage Rating             | 1000 V DC (IEC), 1500V DC (2Pfg2330)* |
| Temperature Range          | -40° C to + 850° C                    |
| Ingress Protection (mated) | IP65, IP68 (1hr/1m)                   |
| Type of termination        | Crimp                                 |
| Flame Class                | UL94-V0                               |
| Approvals                  | TUV, UL                               |

\* 2Pfg2330 : only approved for locations with restricted access



#### PV-KBT4 Range

| Female (socket) Cable Coupler | Conductor size (mm <sup>2</sup> ) | Cable OD clamping range (mm) | Current rating (A) |
|-------------------------------|-----------------------------------|------------------------------|--------------------|
| 32.0010P0001                  | 2.5                               | 5.0 - 6.0                    | 22.5               |
| 32.0014P0100                  | 4 - 6                             | 5.5 - 7.4                    | 39                 |
| 32.0016P0001                  | 4 - 6                             | 5.9 - 8.8                    | 39                 |
| 32.0034P0001                  | 10                                | 5.9 - 8.8                    | 45                 |

#### PV-KST4 Range

| Male (plug) Cable Coupler | Conductor size (mm <sup>2</sup> ) | Cable OD clamping range (mm) | Current rating (A) |
|---------------------------|-----------------------------------|------------------------------|--------------------|
| 32.0011P0001              | 2.5                               | 5.0 - 6.0                    | 22.5               |
| 32.0015P0100              | 4 - 6                             | 5.5 - 7.4                    | 39                 |
| 32.0017P0001              | 4 - 6                             | 5.9 - 8.8                    | 39                 |
| 32.0035P0001              | 10                                | 5.9 - 8.8                    | 45                 |

### MC4 Branch Plugs

Branch plugs and sockets are an economical method of joining 2 strings in parallel. The IP rated connectors make for a safe and reliable connection and save running 2 cables on the long return path from the far end of the PV array, saving time and money.



#### PV-AZB4

##### Branch socket

|         |                       |
|---------|-----------------------|
| 32.0018 | 2 x Female - 1 x Male |
|---------|-----------------------|

#### PV-AZS4

##### Branch plug

|         |                       |
|---------|-----------------------|
| 32.0019 | 2 x Male - 1 x Female |
|---------|-----------------------|

### MC4 Panel Receptacles

MC4 panel-receptacle connectors are the interface between an inverter or junction box or preassembled cable. M12 locknut is supplied with unit for fast, efficient mounting. Protection class IP68 guarantees the highest connection safety.



#### PV-ADBP4 Range

##### Female panel receptacle

|              |                              |
|--------------|------------------------------|
| 32.0076P0001 | 2.5mm <sup>2</sup> conductor |
| 32.0078P0001 | 4-6mm <sup>2</sup> conductor |
| 32.0107P0001 | Socket Pin                   |

#### PV-ADSP4 Range

##### Male panel receptacle

|              |                              |
|--------------|------------------------------|
| 32.0077P0001 | 2.5mm <sup>2</sup> conductor |
| 32.0079P0001 | 4-6mm <sup>2</sup> conductor |
| 32.0507P0001 | Plug pin                     |

## Genuine MC4-EVO 2 Connector System

IEC 62852 Approved, 1500V DC

### MC4-EVO 2 Cable Couplers

The components of the MC4-EVO 2 connector system for photovoltaics are designed to allow time-saving and safe serial and parallel wiring of PV modules for building-integrated and free-standing solar installations. Coupler housing (insulator) and contact pin are supplied as a pair under the one part number.

#### Features:

- The MC4-EVO2 is fully intermateable with the MC4 connector family
- Guaranteed intermateability with the MC4 connector family by Multi-Contact and certified by TÜV as well as recognized by UL
- International Certifications for 1500 V IEC, 1000 V UL recognized and JET

#### Technical Data

|                                     |   |
|-------------------------------------|---|
| Voltage Rating                      | 1000 V DC / 1500 V DC (IEC)<br>600 V DC / 1000 V DC (UL)<br>1500V DC (JET)  |
| Rated Current                       | 22 A (1,5 mm <sup>2</sup> )<br>39 A (2,5 mm <sup>2</sup> / 14 AWG)<br>45 A (4,0 mm <sup>2</sup> / 12 AWG)<br>53 A (6,0 mm <sup>2</sup> / 10 AWG)<br>69 A (10,0 mm <sup>2</sup> / 8 AWG) |
| Test Voltage                        | 12 kV (1000V), 16kV (1500V)   |
| Ambient Temperature Range           | -40 to + 85°C   |
| Degree of protection, mated         | IP 65 / IP68 (1m/1h)  |
| Type of termination                 | Crimping  |
| Connector system                    | MC4 (full intermateable with existing MC4 Family)   |
| Contact material                    | Copper, tin plated  |
| Contact resistance                  | ≤ 0,35 mΩ   |
| Additional environmental protection | Ammonia resistance according TÜV  |
| Certifications                      | UL recognized according to UL6703 E349713<br>TÜV Rheinland certified according to FDIS IEC 62852<br>R60083124   |



PV-KBT4-EVO 2 Range

| Female (socket) Cable Coupler | Conductor size (mm <sup>2</sup> ) | Cable OD clamping range (mm) | Current rating (A) |
|-------------------------------|-----------------------------------|------------------------------|--------------------|
| 32.0086P0001                  | 4 - 6                             | 4.7 - 6.4                    | 45 - 53            |
| 32.0088P0001                  | 4 - 6                             | 6.4 - 8.4                    | 45 - 53            |
| 32.0092P0001                  | 10                                | 6.4 - 8.4                    | 69                 |



PV-KST4-EVO 2 Range

| Male (plug) Cable Coupler | Conductor size (mm <sup>2</sup> ) | Cable OD clamping range (mm) | Current rating (A) |
|---------------------------|-----------------------------------|------------------------------|--------------------|
| 32.0087P0001              | 4 - 6                             | 4.7 - 6.4                    | 45 - 53            |
| 32.0089P0001              | 4 - 6                             | 6.4 - 8.4                    | 45 - 53            |
| 32.0093P0001              | 10                                | 6.4 - 8.4                    | 69                 |



PV-ADB4-EVO 2

| Female (socket) Cable Coupler | Conductor size (mm <sup>2</sup> ) | Current rating (A)                              |
|-------------------------------|-----------------------------------|---|
| 32.0022P0001                  | 4 - 6                             | 42A 4.0mm <sup>2</sup> , 47A 6.0mm <sup>2</sup> |



PV-ADS4-EVO 2

| Male (plug) Cable Coupler | Conductor size (mm <sup>2</sup> ) | Current rating (A)                              |
|---------------------------|-----------------------------------|---|
| 32.0023P0001              | 4 - 6                             | 42A 4.0mm <sup>2</sup> , 47A 6.0mm <sup>2</sup> |

## Genuine MC4 Connector System

EN50521 Compliant IP68, 1500V DC



Custom lengths also available

### Preassembled leads

Our preassembled leads are made with TUV certified DC solar cable and fitted with genuine male and female Multi-Contact connectors. Custom lengths and variations on plug options can be manufactured upon request.

| Preassembled leads | 4mm <sup>2</sup> leads | 6mm <sup>2</sup> leads |
|--------------------|------------------------|------------------------|
| 2 metre            | XPMC4EN4/2M            | XPMC4EN6/2M            |
| 5 metre            | XPMC4EN4/5M            | XPMC4EN6/5M            |
| 8 metre            | XPMC4EN4/8M            | XPMC4EN6/8M            |
| 10 metre           | XPMC4EN4/10M           | XPMC4EN6/10M           |
| 12 metre           | XPMC4EN4/12M           | XPMC4EN6/12M           |
| 15 metre           | XPMC4EN4/15M           | XPMC4EN6/15M           |

### Safety lock clip MC4

The pluggable safety lock clip secures the MC4 plug connection and can only be unlocked with the tool PV-MS.



32.5280 PV-SSH4 Lock Clip

### MC4 sealing caps

Sealing caps provide IP protection to plugged MC4 connectors.



32.0716 Suits female  
32.0717 Suits male

### Open end spanner (pair)

To tighten and unscrew the cable gland and to open the locking device of the connection



32.6024 PV-MS Spanner

## Tooling



32.6027 PV-AZM Stripping Pliers



32.6020.19100 2.5, 4, 6mm<sup>2</sup> Crimp Tool



32.6025 2.5, 4, 6mm<sup>2</sup> crimp tool

## Spare parts for tooling



32.6021.20100 4, 10mm<sup>2</sup> Crimp Die



32.6021.19100 2.5, 4, 6mm<sup>2</sup> Crimp Die

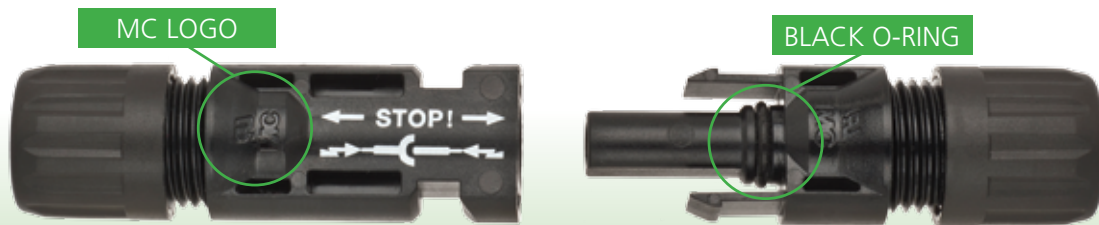


32.6040 PV-LOC

# If it's not STAÜBLI it's not MC4

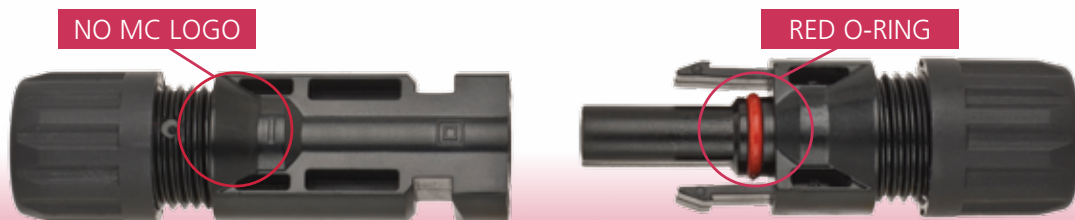
Why would you risk it for the cost of just a few cents more?  
**Ask for the name you can trust, demand genuine MC4 connectors.**

## ORIGINAL MC4 MADE IN SWITZERLAND



✓ GENUINE MC ✓ PROVEN QUALITY ✓ FULLY TESTED ✓ RELIABLE

## COPY MADE WHERE?



✗ INFERIOR COPY ✗ INFERIOR QUALITY ✗ CAN BE DISASTROUS ✗ RISK TO WARRANTIES

A growing number of suspect copies of Staübli's MC4 Solar components have recently appeared on the market. Stringent testing\* has revealed substantial deficiencies in quality resulting in compromised safety and impaired system performance.

\*A temperature increase test by the TÜV Rheinland with copied PV connectors from various manufacturers showed significant differences in higher temperature. This was in stark contrast to the excellent results of the MC4 -PV connectors.



Multi-Contact

MC

STÄUBLI GROUP

STÄUBLI

## Electron beam cross-linked solar PV single core cable

### Description

These cables are developed according to TUV EN50618 requirements and designed to meet the rigours of the outdoor application environment to provide long term durability and flexibility, combined with ease of installation.

Single core solar cables provide a durable, high performance interconnection solution between photovoltaic (PV) panels and from the panels to the inverter.

Direct burial applicable, high water-resistant performance.

### Sheath colour

Black

### Inner insulation

XLPE (White)

### Sheath insulation

XLPO (Crosslinked Polyolefin)

### Nominal voltage

1500 V/max. 1800 V (U0) (IEC)

### Test voltage according to EN 50395-6

6,5 kV AC / 15 kV DC (5 min.)

### Rated voltage

1500 V DC IEC

### Rated current

55 A (4.0 mm<sup>2</sup>), 70 A (6.0 mm<sup>2</sup>), 98A (10mm<sup>2</sup>)

### Insulation resistance of the complete cable

≥ 1000 MΩkm in accordance to EN 50395-8.2

### Ambient temperature

-40°C ...+90°C

### Maximum conductor temperature

max. +120 °C

### Bending radius

Dynamic: >5 × OD, Static >4 × OD

### Resistant to

UV: HD 605/A1 / Ozone: EN 50396  
Acids, alcalis and oil (IRM902)

### TUV Approvals

Approval according to EN50618 H1Z2Z2-K  
JBT 10696.9.2011 (termite-resistant)  
R50359551  
Certified and compliant to TUV 2Pfg  
1169/08.07 PV1-F

### Packaging

Standard: 500m or 1000m drum.  
Other packaging available on request.

### Marking

Meter marked.



| Part No.      | Conductor cross section mm <sup>2</sup> | Approx. overall Ø mm | Strand design: Number x Ø (mm) | Conductor resistance/20°C Ω / km | Jacket colour | Approvals   | Reel weight (kg) | Reel Size |
|---------------|---|----------------------|--------------------------------|----------------------------------|---------------|-------------|------------------|-----------|
| SC1C4TEN500   | 1 x 4                                   | 5.4                  | 52 x Ø 0.30                    | 5.09                             | Black         | TUV EN50618 | 29               | 500m      |
| SC1C6TEN500   | 1 x 6                                   | 6.0                  | 78 x Ø 0.30                    | 3.39                             | Black         | TUV EN50618 | 39               | 500m      |
| SC1C10TEN500  | 1 x 10                                  | 7.2                  | 77 x Ø 0.40                    | 1.95                             | Black         | TUV EN50618 | 62               | 500m      |
| SC1C4TEN1000  | 1 x 4                                   | 5.4                  | 52 x Ø 0.30                    | 5.09                             | Black         | TUV EN50618 | 58               | 1000m     |
| SC1C6TEN1000  | 1 x 6                                   | 6.0                  | 78 x Ø 0.30                    | 3.39                             | Black         | TUV EN50618 | 78               | 1000m     |
| SC1C10TEN1000 | 1 x 10                                  | 7.2                  | 77 x Ø 0.40                    | 1.95                             | Black         | TUV EN50618 | 124              | 1000m     |

Larger conductor sizes also available - see page 10 for details.



## Electron beam cross-linked Solar PV twin core cable

### Description:

These cables are developed according to PV1-F requirements and designed to meet the rigours of the outdoor application environment and provide long term durability and flexibility, combined with ease of installation.

### Inner insulation:

XLPE (Black, Red)

### Sheath insulation:

XLPE (Crosslinked Polyethylene)

### Nominal voltage:

U0 / U: 0,6 / 1 kV AC / max. 1.5 kV DC

### Test voltage according to

#### EN 50395-6:

6,5 kV AC / 15 kV DC (5 min.)

### Rated current:

55 A (4.0 mm<sup>2</sup>), 70 A (6.0 mm<sup>2</sup>)

### Insulation resistance of the complete cable:

≥ 1000 MΩkm in accordance to EN 50395-8.2

### Ambient temperature:

-40 °C ...+90 °C

### Bending radius:

Dynamic: >4 × OD

### Resistance to... tested according to

#### IEC 60811-2-1

Acids and alkali

### Approvals:

T50400254 (tested according to 2PFG 1169/08.2007)

### Packaging:

Standard: 100m and 500m drums. Meter marked.

### Marking:

RALOS CABLE 0.9/1.8KV DC 2X6 SQ.MM DC SOLAR CABLE RED TÜV 2PFG 1169 PV1-F TYPE APPROVED.

## DC SOLAR CABLE 0.9/1.5kV DC TUV 2PFG 1169 PV1-F

| Part No.   | Conductor cross section mm <sup>2</sup> | Conductor Ø mm | Outer Ø mm | Strand design: Number x Ø (mm) | Conductor resistance/ 20°C Ω / km | Insulation colours | Jacket colour | Approvals | Reel Size |
|------------|---|----------------|------------|--------------------------------|-----------------------------------|--------------------|---------------|-----------|-----------|
| RC2C4T100  | 2 x 4.0                                 | 2.4            | 9.4 x 4.6  | 52 x Ø 0.30                    | 5.09                              | Black / Red        | Black         | TUV       | 100m      |
| RC2C4T500  | 2 x 4.0                                 | 2.4            | 9.4 x 4.6  | 52 x Ø 0.30                    | 5.09                              | Black / Red        | Black         | TUV       | 500m      |
| RC2C6T100  | 2 x 6.0                                 | 3.06           | 10.8 x 5.3 | 78 x Ø 0.30                    | 3.39                              | Black / Red        | Black         | TUV       | 100m      |
| RC2C6T500  | 2 x 6.0                                 | 3.06           | 10.8 x 5.3 | 78 x Ø 0.30                    | 3.39                              | Black / Red        | Black         | TUV       | 500m      |
| RC2C10T100 | 2 x 10.0                                | 4.6            | 16.9 x 8.3 | 84 x Ø 0.40                    | 1.95                              | Black / Red        | Black         | TUV       | 100m      |
| RC2C10T500 | 2 x 10.0                                | 4.6            | 16.9 x 8.3 | 84 x Ø 0.40                    | 1.95                              | Black / Red        | Black         | TUV       | 500m      |

### Construction

Constructed using fine stranded tinned copper conductors insulated with a temperature-resistant, halogen-free cross-linked co-polymer compound and protected by an outer sheath of flame-retardant, abrasion and UV-resistant, halogen-free cross-linked co-polymer.

### Rated voltage

AC 1000V, DC 1500V (max)

### Temperature range

Ambient -40°C to +90°C

### Approvals

EN 50618 H1Z2Z2-K IEC 62930

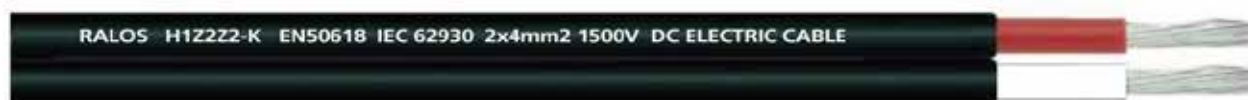
### Minimum bending radius

Flexing: 5 x cable diameter

Fixed: 4 x cable diameter

### Marking

Meter marked



| Part No.   | Conductor cross section mm <sup>2</sup> | Conductor Ø mm <sup>2</sup> | Outer Ø mm <sup>2</sup> | Conductor resistance 20°C Ω / km | Insulation color | Jacket color | Approval type | Drum size | Drum weight (approx.) |
|------------|---|-----------------------------|-------------------------|----------------------------------|------------------|--------------|---------------|-----------|-----------------------|
| RC2C4EN100 | 2 x 4                                   | 2.4                         | 5.4 x 11.1              | 5.09                             | White / Red      | Black        | EN 50618      | 100m      | 62 kg                 |
| RC2C6EN100 | 2 x 6                                   | 3.0                         | 6.0 x 12.0              | 3.39                             | White / Red      | Black        | EN 50618      | 100m      | 81 kg                 |
| RC2C4EN500 | 2 x 4                                   | 2.4                         | 5.4 x 11.1              | 5.09                             | White / Red      | Black        | EN 50618      | 500m      | 128 kg                |
| RC2C6EN500 | 2 x 6                                   | 3.0                         | 6.0 x 12.0              | 3.39                             | White / Red      | Black        | EN 50618      | 500m      | 165 kg                |

## Electron beam cross-linked solar PV DC string cable - single core

### Description

The Byson DC Solar cables provide the optimal cable connection between the solar modules and from the solar modules to the inverter or DC main cable. These cables are insulated by a high-temperature cross-linked polymer jacket to provide maximum performance and durability for 25 years.

### Construction

Constructed using class 5, fine stranded tinned copper conductors insulated with a high temperature resistant, halogen-free cross-linked co-polymer compound and protected by an outer sheath of flame-retardant, weather, abrasion and UV-resistant, halogen-free black cross-linked co-polymer.

### Rated voltage

AC 1000V, DC 1500V (max)

### Temperature range

Ambient -40°C to +90°C

### Approvals

TUV EN50618 H1Z2Z2-K  
Certificate No. R 50357489

IEC 62930 : 2017

Certificate No. R 50404890

JBT 10696.9.2011 (Termite resistant)

### Minimum bending radius

Flexing: 5 x cable diameter

Fixed: 4 x cable diameter

### Drum sizes (metres)

Standard - 500m and 1,000m

Other sizes (up to 12km) - available on request

### Marking

Meter marked

### Features

- Acid and alkaline-resistant
- Suitable for permanent outdoor use
- Suitable for direct burial
- High water resistant performance
- Inner sheath has contrasting colour to easily identify any damage to outer sheath



| Part No.     | Conductor cross section mm <sup>2</sup> | Conductor Ø mm <sup>2</sup> | Outer Ø mm <sup>2</sup> | Conductor resistance 20°C Ω / km | Insulation color | Jacket color | TUV Approval | Drum size | Drum weight (approx.) |
|--------------|---|-----------------------------|-------------------------|----------------------------------|------------------|--------------|--------------|-----------|-----------------------|
| BC1C16EN500  | 1 x 16                                  | 5.1                         | 8.7                     | 1.24                             | White            | Black        | EN 50618     | 500m      | 99 kg                 |
| BC1C25EN500  | 1 x 25                                  | 6.3                         | 10.4                    | 0.79                             | White            | Black        | EN 50618     | 500m      | 130 kg                |
| BC1C35EN500  | 1 x 35                                  | 7.6                         | 12.2                    | 0.57                             | White            | Black        | EN 50618     | 500m      | 178 kg                |
| BC1C16EN1000 | 1 x 16                                  | 5.1                         | 8.7                     | 1.24                             | White            | Black        | EN 50618     | 1000m     | 194kg                 |
| BC1C25EN1000 | 1 x 25                                  | 6.3                         | 10.4                    | 0.79                             | White            | Black        | EN 50618     | 1000m     | 268 kg                |
| BC1C35EN1000 | 1 x 35                                  | 7.6                         | 12.2                    | 0.57                             | White            | Black        | EN 50618     | 1000m     | 367 kg                |

## Earth cable - single core



| Part No.     | Conductor cross section mm <sup>2</sup> | Conductor Ø mm <sup>2</sup> | Outer Ø mm <sup>2</sup> | Conductor resistance 20°C Ω / km | Insulation color | Jacket color | Approval Type | Drum size | Drum weight (approx.) |
|--------------|---|-----------------------------|-------------------------|----------------------------------|------------------|--------------|---------------|-----------|-----------------------|
| BCE1C4IEC100 | 1 x 4                                   | 2.4                         | 4.82                    | 5.09                             | White            | Grn / Ylw    | IEC           | 100m      | 29 kg                 |
| BCE1C6IEC100 | 1 x 6                                   | 3.0                         | 5.53                    | 3.39                             | White            | Grn / Ylw    | IEC           | 100m      | 39 kg                 |
| BCE1C4IEC500 | 1 x 4                                   | 2.4                         | 4.82                    | 5.09                             | White            | Grn / Ylw    | IEC           | 500m      | 58 kg                 |
| BCE1C6IEC500 | 1 x 6                                   | 3.0                         | 5.53                    | 3.39                             | White            | Grn / Ylw    | IEC           | 500m      | 78 kg                 |

**Approvals:** IEC 60332, IEC 60228, IEC 60754, IEC 61034

# DC Solar Cable



## Electron beam cross-linked solar PV DC string cable - single core

Termite-resistant

### Description

The Byson Termite Resistant DC Solar cables are specifically designed for direct burial and are the optimum solution to termite attack.

### Construction

Constructed using class 5, fine stranded tinned copper conductors insulated with Polyamide (Type PA6) and high temperature resistant, halogen-free cross-linked co-polymer compound and protected by an outer sheath of flame-retardant, weather, abrasion and UV-resistant, halogen-free black cross-linked co-polymer.

### Rated voltage

AC 1000V, DC 1500V (max)

### Temperature range

Ambient -40°C to +90°C

### Approvals

TUV EN50618 H1Z2Z2-K  
Certificate No. R 50357489

IEC 62930, 60228,60332, 60754

### Minimum bending radius

Flexing: 5 x cable diameter

Fixed: 4 x cable diameter

### Marking

Meter marked

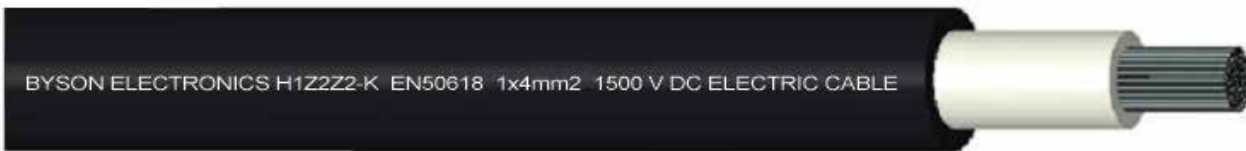
### Drum sizes (metres)

Standard - 1,000m

Option of up to 12,000m

### Features

- Suitable for direct burial, anti-termite
- Acid and alkaline-resistant
- High water resistant performance
- Inner sheath has contrasting colour to easily identify any damage to outer sheath



| Part No.      | Conductor cross section mm <sup>2</sup> | Outer Ø mm <sup>2</sup> | Conductor resistance 20°C Ω / km | Insulation color | Jacket color | Polyamide | TUV Approval | Drum size | Drum weight (approx.) |
|---------------|---|-------------------------|----------------------------------|------------------|--------------|-----------|--------------|-----------|-----------------------|
| BC1C4NEN1000  | 1 x 4                                   | 5.7 +/-0.4mm            | 5.09                             | White            | Black        | PA6       | EN 50618     | 1000m     | 62 kg                 |
| BC1C6NEN1000  | 1 x 6                                   | 6.3 +/-0.5mm            | 3.39                             | White            | Black        | PA6       | EN 50618     | 1000m     | 84 kg                 |
| BC1C10NEN1000 | 1 x 10                                  | 7.5 +/-0.5mm            | 1.95                             | White            | Black        | PA6       | EN 50618     | 1000m     | 134 kg                |



# Rubber Cable



## R-E-110 Rubber SDI Cable

Highly flexible single conductor, SDI, halogen free power cable

### Construction

Class 6 super fine copper conductors, EPR thermosetting compound type R-E-110 insulation, halogen-free, low smoke, flame and heat retardant, UV, oil, chemical and weather-resistant orange thermosetting compound R-E-110 sheath. Other colours available on request subject to minimum order quantity and lead time.

### Approvals

AS/NZS 5000:1, IEC 60228  
AS/NZS 3808, 3008  
IEC 61034-2, IEC 60754-2

### Minimum Bending Radius

Fixed: 6 x cable diameter  
Flexing: 10 x cable diameter

### Nominal Voltage

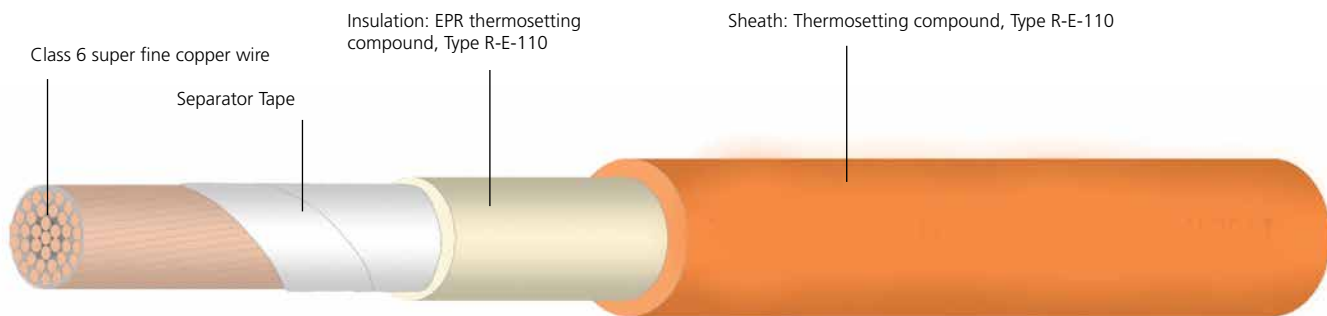
0.6/1 kV AC  
0.9/1.5 kV DC

### Features

- UV resistant
- Halogen free
- 110° rated

### Temperature Range

Fixed: -40°C to +110°C  
Flexing: -25°C to +90°C



| Part No. | Nominal conductor area mm <sup>2</sup> and number of cores | Stranding  | Current rating* (AMPS) | Approx. overall Ø mm | Approx. weight kg/km |
|----------|--|------------|------------------------|----------------------|----------------------|
| G-012568 | 10mm <sup>2</sup> 1 core                                   | 301 x 0.2  | 80                     | 8.65                 | 149                  |
| G-012569 | 16mm <sup>2</sup> 1 core                                   | 470 x 0.2  | 105                    | 9.80                 | 202                  |
| G-012570 | 25mm <sup>2</sup> 1 core                                   | 726 x 0.2  | 139                    | 11.35                | 293                  |
| G-012571 | 35mm <sup>2</sup> 1 core                                   | 1040 x 0.2 | 172                    | 12.70                | 390                  |
| G-022907 | 50mm <sup>2</sup> 1 core                                   | 1499 x 0.2 | 217                    | 14.35                | 535                  |
| G-012573 | 70mm <sup>2</sup> 1 core                                   | 2165 x 0.2 | 273                    | 16.30                | 725                  |
| G-012574 | 95mm <sup>2</sup> 1 core                                   | 2745 x 0.2 | 329                    | 18.70                | 870                  |
| G-012575 | 120mm <sup>2</sup> 1 core                                  | 1554 x 0.3 | 390                    | 20.65                | 1205                 |
| G-012576 | 150mm <sup>2</sup> 1 core                                  | 1961 x 0.3 | 450                    | 23.00                | 1500                 |
| G-012577 | 185mm <sup>2</sup> 1 core                                  | 2331 x 0.3 | 516                    | 25.45                | 1840                 |
| G-012579 | 240mm <sup>2</sup> 1 core                                  | 3172 x 0.3 | 620                    | 28.30                | 2350                 |
| G-012581 | 300mm <sup>2</sup> 1 core                                  | 3965 x 0.3 | 714                    | 31.15                | 2915                 |
| G-012582 | 400mm <sup>2</sup> 1 core                                  | 5246 x 0.3 | 855                    | 34.90                | 3817                 |

\*AS/NZS 3008.1.1:2009 Table 9 (Fixed-Unenclosed, Touching, Flexible Copper Conductor) 110°C operating temperature, 40°C air temperature, 25°C soil temperature.

# Rubber Cable



## Rubber Cable

H07RN-F power and control cable

### Construction

Class 5 tinned copper conductors, colour or number coded ethylene-propylene rubber insulating material, flame-retardant, UV, ozone and oil-resistant black rubber sheath, metre marked.

### Minimum Bending Radius

Flexing: 4 x cable diameter (up to 12mm Ø)  
 5 x cable diameter (12-20mm Ø)  
 6 x cable diameter (over 20mm Ø)  
 Fixed: 3 x cable diameter (up to 12mm Ø)  
 4 x cable diameter (over 12mm Ø)

### Features

- Submersible to 500 metres
- UV resistant
- Oil resistant
- Tinned conductors

### Temperature Range

-40°C to +90°C

### Nominal Voltage

0.6/1 kV AC  
 0.9/1.5 kV DC

### Colour Coding

Colour coding of power conductors comply to HD 308, DIN VDE 0293-308.

- 2-core: Blue and brown
- 3-core: Blue, brown, green-yellow
- 4-core: Brown, black, grey, green-yellow
- 5-core: Blue, brown, black, grey
- Above 5-core: Black numbered cores with a green-yellow earth core



| Part No. | Nominal conductor area mm <sup>2</sup> and number of cores | Approx. overall Ø mm | Approx. weight kg/km |
|----------|--|----------------------|----------------------|
| G-022938 | 16mm <sup>2</sup> 1 core                                   | 11.1                 | 248                  |
| G-022940 | 25mm <sup>2</sup> 1 core                                   | 12.9                 | 356                  |
| G-022944 | 35mm <sup>2</sup> 1 core                                   | 14.3                 | 476                  |
| G-022945 | 50mm <sup>2</sup> 1 core                                   | 16.8                 | 657                  |
| G-022946 | 70 mm <sup>2</sup> 1 core                                  | 19.0                 | 884                  |

| Part No. | Nominal conductor area mm <sup>2</sup> and number of cores | Approx. overall Ø mm | Approx. weight kg/km |
|----------|--|----------------------|----------------------|
| G-023032 | 95 mm <sup>2</sup> 1 core                                  | 21.9                 | 1156                 |
| G-023033 | 120mm <sup>2</sup> 1 core                                  | 23.4                 | 1420                 |
| G-023034 | 150mm <sup>2</sup> 1 core                                  | 26.0                 | 1762                 |
| G-023035 | 185mm <sup>2</sup> 1 core                                  | 29.1                 | 2145                 |
| G-023036 | 240mm <sup>2</sup> 1 core                                  | 31.2                 | 2720                 |

## Earth

Flexible rubber earth cable to AS/NZS 3808

### Construction

Class 5 super fine tinned copper wire. Green/yellow ozone, oil & UV resistant, halogen-free and flame-retardant type X-HF-110 metre marked insulation.

### Minimum Bending Radius

Fixed: 4 x cable diameter

### Nominal Voltage

0.6/1kV AC  
 0.9/1.5kV DC

### Features

- UV-resistant
- Halogen-free
- 110° rated

### Temperature Range

-40°C to +110°C



| Part No.    | Nominal conductor area mm <sup>2</sup> and number of cores | Drum size | Approx. overall Ø mm | Approx. weight kg/km |
|-------------|--|-----------|----------------------|----------------------|
| HF1X4GN/YW  | 4mm <sup>2</sup> 1 core                                    | 100m      | 3.9                  | 57                   |
| HF1X6GN/YW  | 6mm <sup>2</sup> 1 core                                    | 100m      | 4.4                  | 73                   |
| HF1X10GN/YW | 10mm <sup>2</sup> 1 core                                   | 100m      | 5.4                  | 102                  |
| HF1X16GN/YW | 16mm <sup>2</sup> 1 core                                   | 100m      | 6.4                  | 150                  |
| HF1X25GN/YW | 25mm <sup>2</sup> 1 core                                   | 100m      | 7.9                  | 232                  |

| Part No.     | Nominal conductor area mm <sup>2</sup> and number of cores | Drum size | Approx. overall Ø mm | Approx. weight kg/km |
|--------------|--|-----------|----------------------|----------------------|
| HF1X35GN/YW  | 35mm <sup>2</sup> 1 core                                   | 100m      | 9.1                  | 321                  |
| HF1X50GN/YW  | 50mm <sup>2</sup> 1 core                                   | 100m      | 10.6                 | 457                  |
| HF1X70GN/YW  | 70mm <sup>2</sup> 1 core                                   | 100m      | 12.9                 | 645                  |
| HF1X95GN/YW  | 95mm <sup>2</sup> 1 core                                   | 100m      | 14.6                 | 841                  |
| HF1X120GN/YW | 120mm <sup>2</sup> 1 core                                  | 100m      | 16.4                 | 1076                 |

# Rubber Cable

## 3.3kV 110° Single Core SDI

Highly flexible single core, SDI, 3.3kV rubber cable

### Construction

Class 5 fine wire stranded tinned copper conductors, EPR insulated (white), sheathed with a 5GM3 rubber compound (Black), rated to 110°C, metre marked.

### Application

Suitable for the wiring of traction vehicles, switchboard wiring, and submersible pump applications.

### Features

- UV resistant
- Oil resistant
- Varnish resistant
- Submersible to 100 metres
- Abrasion resistant
- Tinned copper conductors

### Minimum Bending Radius

Flexing: 5 x cable diameter  
Fixed: 4 x cable diameter

### Nominal Voltage

1.9 / 3.3kV AC  
2.8 / 4.6kV DC  
Test Voltage: 6kV

### Temperature Range

Flexing: -25°C to +110°C  
Fixed: -35°C to +110°C



| Part No. | Nominal conductor area mm <sup>2</sup><br>and number of cores |  | Approx.<br>overall Ø mm<br>minimum | Approx.<br>overall Ø mm<br>maximum | Approx<br>weight<br>kg/km |
|----------|---|--|------------------------------------|------------------------------------|---------------------------|
| A009085  | 1.5mm <sup>2</sup> 1 core                                     |  | 5.5                                | 7.0                                | 50                        |
| A009086  | 2.5mm <sup>2</sup> 1 core                                     |  | 5.9                                | 7.5                                | 65                        |
| A009087  | 4mm <sup>2</sup> 1 core                                       |  | 6.4                                | 8.0                                | 80                        |
| A009088  | 6mm <sup>2</sup> 1 core                                       |  | 7.0                                | 8.6                                | 105                       |
| A009089  | 10mm <sup>2</sup> 1 core                                      |  | 8.2                                | 10.0                               | 155                       |
| A009090  | 16mm <sup>2</sup> 1 core                                      |  | 9.2                                | 11.1                               | 215                       |
| A009091  | 25mm <sup>2</sup> 1 core                                      |  | 11.3                               | 13.4                               | 330                       |
| A009092  | 35mm <sup>2</sup> 1 core                                      |  | 12.5                               | 14.6                               | 430                       |
| A009093  | 50mm <sup>2</sup> 1 core                                      |  | 14.1                               | 16.4                               | 590                       |
| A009044  | 70mm <sup>2</sup> 1 core                                      |  | 15.9                               | 18.3                               | 785                       |
| A009045  | 95mm <sup>2</sup> 1 core                                      |  | 18.2                               | 20.8                               | 1030                      |
| A009046  | 120mm <sup>2</sup> 1 core                                     |  | 19.6                               | 22.4                               | 1300                      |
| A009047  | 150mm <sup>2</sup> 1 core                                     |  | 21.7                               | 24.7                               | 1560                      |
| A009048  | 185mm <sup>2</sup> 1 core                                     |  | 23.6                               | 26.7                               | 1930                      |
| A009049  | 240mm <sup>2</sup> 1 core                                     |  | 26.3                               | 29.7                               | 2390                      |
| A009050  | 300mm <sup>2</sup> 1 core                                     |  | 29.3                               | 32.9                               | 3040                      |
| A009051  | 400mm <sup>2</sup> 1 core                                     |  | 32.5                               | 36.4                               | 3960                      |
| A009052  | 500mm <sup>2</sup> 1 core                                     |  | 36.5                               | 40.7                               | 5150                      |

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# Orange Circular



## Power Cable

Australian standard power distribution cable

### Cable Construction

Class 2 stranding, coloured PVC insulation, flame retardant, UV resistant orange PVC sheath and metre marked.

### Minimum Bending Radius

≤ 25mm<sup>2</sup> 4 x cable diameter  
 ≥ 35mm<sup>2</sup> 6 x cable diameter

### Nominal Voltage

0.6/1 kV AC  
 0.9/1.5kV DC

### Temperature Range:

-30°C to +90°C

### Colour Coding

- 2 core + earth : Red, Black, Green/Yellow
- 3 core + earth : Red, White, Blue, Green/Yellow
- 4 core + earth : Red, White, Blue, Black, Green/Yellow

### Features

- UV resistant
- Non compacted conductors
- Oil & chemical resistant
- Flame retardant
- Metre marked



| Part No.              | Nominal conductor area mm <sup>2</sup> and number of cores | Approx. overall Ø mm | Approx. weight kg/km |
|-----------------------|--|----------------------|----------------------|
| <b>2 core + earth</b> |  |                      |                      |
| OC3G1.5               | 1.5mm <sup>2</sup> 2 core + earth                          | 10.10                | 146                  |
| OC3G2.5               | 2.5mm <sup>2</sup> 2 core + earth                          | 11.20                | 192                  |
| OC3G4                 | 4mm <sup>2</sup> 2 core + earth                            | 12.50                | 253                  |
| OC3G6                 | 6mm <sup>2</sup> 2 core + earth                            | 13.00                | 299                  |
| OC3G10                | 10mm <sup>2</sup> 2 core + earth                           | 15.10                | 432                  |
| OC3G16                | 16mm <sup>2</sup> 2 core + earth                           | 16.90                | 599                  |
| <b>3 core + earth</b> |  |                      |                      |
| OC4G1.5               | 1.5mm <sup>2</sup> 3 core + earth                          | 11.00                | 175                  |
| OC4G2.5               | 2.5mm <sup>2</sup> 3 core + earth                          | 12.10                | 231                  |
| OC4G4                 | 4mm <sup>2</sup> 3 core + earth                            | 13.80                | 314                  |
| OC4G6                 | 6mm <sup>2</sup> 3 core + earth                            | 14.50                | 379                  |
| OC4G10                | 10mm <sup>2</sup> 3 core + earth                           | 16.80                | 553                  |
| OC4G16                | 16mm <sup>2</sup> 3 core + earth                           | 18.90                | 778                  |
| OC4G25                | 25mm <sup>2</sup> 3 core + earth                           | 22.10                | 1136                 |
| OC4G35                | 35mm <sup>2</sup> 3 core + earth                           | 24.60                | 1519                 |
| OC4G50                | 50mm <sup>2</sup> 3 core + earth                           | 28.30                | 2050                 |
| OC4G70                | 70mm <sup>2</sup> 3 core + earth                           | 31.90                | 2825                 |
| <b>4 core + earth</b> |  |                      |                      |
| OC5G1.5               | 1.5mm <sup>2</sup> 4 core + earth                          | 11.90                | 211                  |
| OC5G2.5               | 2.5mm <sup>2</sup> 4 core + earth                          | 13.20                | 280                  |
| OC5G4                 | 4mm <sup>2</sup> 4 core + earth                            | 15.20                | 389                  |
| OC5G6                 | 6mm <sup>2</sup> 4 core + earth                            | 15.90                | 474                  |
| OC5G10                | 10mm <sup>2</sup> 4 core + earth                           | 18.50                | 696                  |
| OC5G16                | 16mm <sup>2</sup> 4 core + earth                           | 20.90                | 989                  |
| OC5G25                | 25mm <sup>2</sup> 4 core + earth                           | 24.80                | 1464                 |
| OC5G35                | 35mm <sup>2</sup> 4 core + earth                           | 27.50                | 1933                 |
| OC5G50                | 50mm <sup>2</sup> 4 core + earth                           | 32.00                | 2625                 |
| OC5G70                | 70mm <sup>2</sup> 4 core + earth                           | 36.20                | 3628                 |

## PA6-VO Polyamide (nylon) Conduit

Industrial standard medium duty conduit

### Construction

Internally and externally corrugated PA6-VO plastic tubing.

### Temperature range

-40°C to +115°C. Short term 150°C.

### Material

Polyamide 6

### Colour

Black

### Protection class

IP 68

### Properties

- Flame-retardant VO (UL94)
- Gas and liquid-tight
- Highly flexible
- Stretch and crush-resistant
- Glossy surface
- Wind-resistant high mechanical strength
- Resistant to oil, acids and solvents
- Anti-friction
- UV-resistant
- Self-extinguishing (FMVSS 302)
- Medium wall thickness
- Halogen, phosphor and cadmium-free
- Passed RoHS



## WY-PA6-VO Polyamide Tubing

| Part No.          | Conduit Size | Inner Ø (mm) | Outer Ø (mm) | Weight (kg/m+10%) | PU (m/roll) |
|-------------------|--------------|--------------|--------------|-------------------|-------------|
| WY-PA6-VO-AD13.0B | AD13.0       | 10.0         | 13.0         | 0.026             | 100         |
| WY-PA6-VO-AD15.8B | AD15.8       | 12.0         | 15.8         | 0.038             | 100         |
| WY-PA6-VO-AD21.2B | AD21.2       | 17.0         | 21.2         | 0.061             | 50          |
| WY-PA6-VO-AD28.5B | AD28.5       | 23.0         | 28.5         | 0.095             | 50          |
| WY-PA6-VO-AD34.5B | AD34.5       | 29.0         | 34.5         | 0.125             | 25          |
| WY-PA6-VO-AD42.5B | AD42.5       | 36.0         | 42.5         | 0.186             | 25          |
| WY-PA6-VO-AD54.5B | AD54.5       | 48.0         | 48.0         | 0.264             | 25          |

### Easy to install

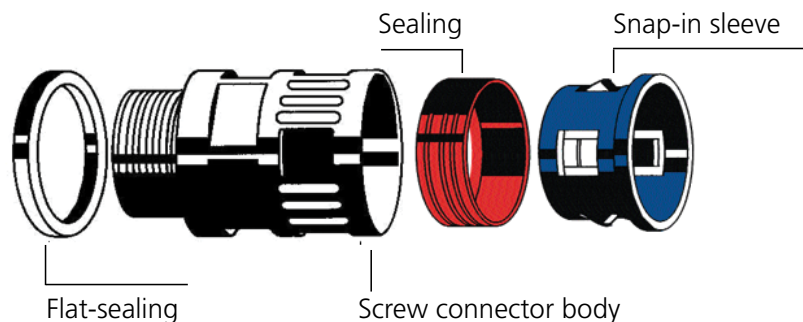
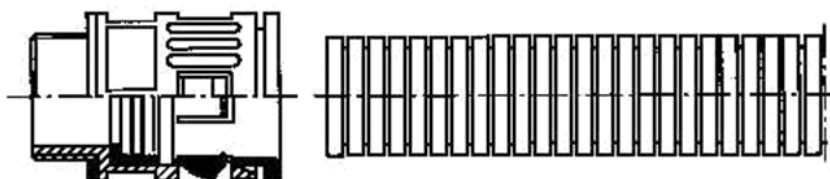


### Quick to uninstall

Press the ring of the snap-in-sleeve to the connector and pull the tubing out



### IP 68 connector structure





## Polyamide Connectors and Clamps

Industrial standard conduit

### Quick Screw Connector

| Part No.        | For conduit size | Outer Ø (mm) | Thread Dimension | Thread length (mm) | Pack Qty |
|-----------------|------------------|--------------|------------------|--------------------|----------|
| WQG-M12B/AD13.0 | AD13.0           | 13.0         | M12×1.5          | 11.5               | 50       |
| WQG-M16B/AD15.8 | AD15.8           | 15.8         | M16×1.5          | 12.0               | 50       |
| WQG-M20B/AD21.2 | AD21.2           | 21.2         | M20×1.5          | 13                 | 50       |
| WQG-M25B/AD28.5 | AD28.5           | 28.5         | M25×1.5          | 13                 | 25       |
| WQG-M32B/AD34.5 | AD34.5           | 34.5         | M32×1.5          | 15                 | 25       |
| WQG-M40B/AD42.5 | AD42.5           | 42.5         | M40×1.5          | 15                 | 10       |
| WQG-M50B/AD54.5 | AD54.5           | 54.5         | M50×1.5          | 16                 | 10       |

**Comes complete with seals and locknuts**



### Elbow Connector

| Part No.        | For conduit size | Outer Ø (mm) | Thread dimension | Thread length (mm) | Pack Qty |
|-----------------|------------------|--------------|------------------|--------------------|----------|
| WQW-M12B/AD13.0 | AD13.0           | 20           | M12 x 1.5        | 11.5               | 50       |
| WQW-M16B/AD15.8 | AD15.8           | 23           | M16 x 1.5        | 12                 | 50       |
| WQW-M20B/AD21.2 | AD21.2           | 29.5         | M20 x 1.5        | 13                 | 25       |
| WQW-M25B/AD28.5 | AD28.5           | 37           | M25 x 1.5        | 13                 | 25       |
| WQW-M32B/AD34.5 | AD34.5           | 44           | M32 x 1.5        | 15                 | 10       |
| WQW-M40B/AD42.5 | AD42.5           | 52           | M40 x 1.5        | 15                 | 5        |
| WQW-M50B/AD54.5 | AD54.5           | 64           | M50 x 1.5        | 16                 | 4        |

**Comes complete with seals and locknuts**



### Tubing Clamp

| Part No.      | For conduit size | Fixing screw | Width (mm) | Pack Qty |
|---------------|------------------|--------------|------------|----------|
| SKM-AD13.0    | AD13.0           | M4           | 9          | 100      |
| SKM-AD15.8    | AD15.8           | M4           | 9          | 100      |
| SKM-AD21.2/M5 | AS21.2           | M5           | 9          | 50       |
| SKM-AD28.5    | AD28.5           | M5           | 13         | 25       |
| SKM-AD34.5    | AD34.5           | M6           | 13         | 25       |
| SKM-AD42.5    | AD42.5           | M6           | 13         | 20       |
| SKM-AD54.5    | AD54.5           | M6           | 13         | 20       |



### Mounting Clip

| Part No.     | For conduit size | Fastening bore hole (mm) | Pack Qty |
|--------------|------------------|--------------------------|----------|
| WQSC-AD13.0B | AD13.0           | 4.2                      | 50       |
| WQSC-AD15.8B | AD15.8           | 4.2                      | 50       |
| WQSC-AD21.2B | AD21.2           | 4.2                      | 50       |
| WQSC-AD28.5B | AD28.5           | 4.2                      | 25       |
| WQSC-AD34.5B | AD34.5           | 4.2                      | 25       |
| WQSC-AD42.5B | AD42.5           | 4.2                      | 10       |
| WQSC-AD54.5B | AD54.5           | 4.2                      | 10       |



## Nylon Cable Glands

**Material:**  
Body: Polyamide

**Temperature range:**  
-20°C to +100°C

**Protection class:**  
IP 68

| Supplied with locknut | Metric thread | Cable Ø range (mm) |
|-----------------------|---------------|--------------------|
| 53111206              | M 12          | 3.5 – 7            |
| 53111216              | M 16          | 4.5 – 10           |
| 53111226              | M 20          | 7 – 13             |
| 53111236              | M 25          | 9 – 17             |
| 53111246              | M 32          | 11 – 21            |
| 53111256              | M 40          | 19 – 28            |
| 53111266              | M 50          | 27 – 35            |
| 53111270C             | M 63          | 34 – 45            |



## Cable Glands without Locknuts for Quick Assembly

The most innovative cable insertion system on the market for very fast, highly flexible assembly. Simply click in - turn to left - turn to right - finished. Result: fixed, centred, strain relief, and IP68 protection in seconds.

**Material:**  
Body: Special polyamide

**Temperature range:**  
-20°C to +100°C

**Protection class:**  
IP 68 - 5 bar

| Part No. | Size | Colour     | Cable Ø range (mm) | Pack size |
|----------|------|------------|--------------------|-----------|
| 53112923 | M 12 | Black      | 3.5 - 7            | 50        |
| 53112882 | M 16 | Black      | 5 - 9              | 50        |
| 53112687 | M 20 | Light grey | 7 - 13             | 25        |
| 53112883 | M 20 | Black      | 7 - 13             | 25        |
| 53112688 | M 25 | Light grey | 9 - 17             | 25        |
| 53112884 | M 25 | Black      | 9 - 17             | 25        |



## Multi Hole Insert

Turns the cable gland into a multiple gland. A sealing ring with several holes is used in place of the inner sealing insert to enable several cables to be fed simultaneously through one gland whilst retaining IP68.

| Part No. | Suits gland | No. of cables x cable Ø mm |
|----------|-------------|----------------------------|
| 53320250 | M 20        | 2 x 5                      |
| 53320260 | M 20        | 2 x 6                      |
| 53320353 | M 20        | 3 x 5,3                    |
| 53325260 | M 25        | 2 x 6                      |
| 53325350 | M 25        | 3 x 5                      |
| 53325360 | M 25        | 3 x 6                      |
| 53325370 | M 25        | 3 x 7                      |
| 53325450 | M 25        | 4 x 5                      |
| 53325540 | M 25        | 5 x 4                      |

| Part No. | Suits gland | No. of cables x cable Ø mm |
|----------|-------------|----------------------------|
| 53332270 | M 32        | 2 x 7                      |
| 53332280 | M 32        | 2 x 8                      |
| 53332290 | M 32        | 2 x 9                      |
| 53332370 | M 32        | 3 x 7                      |
| 53332380 | M 32        | 3 x 8                      |
| 53332460 | M 32        | 4 x 6                      |
| 53332470 | M 32        | 4 x 7                      |
| 53332560 | M 32        | 5 x 6                      |
| 53332460 | M 32        | 4 x 6                      |



## Black Polyester Coated Stainless Steel Cable Ties

316 Grade Stainless Steel

### Features

- Fully rounded edges and exclusive easy thread lead-in design provides the ultimate support for network cables.
- Self-locking head design speeds installation and locks into place at any length along the cable tie body.
- Provides a strong, durable method of cable bundling.
- Can be used for a wide range of indoor, outdoor, and underground applications (including direct burial).
- Smooth surfaces and rounded edges assures cable protection and worker safety.

Other sizes available upon request.

### Product Specifications

#### Material

Stainless Steel Grade 316  
Fully wrapped with Polyester Resin

#### Temperature Range

Stainless Steel:  
-80°C to +538°C  
Polyester Coating:  
-40°C to +130°C

#### Water absorption

Stainless steel part: none

#### Ultraviolet resistance

Excellent



| Part No. | Description   |
|----------|---------------|
| HT-338   | Cable Tie Gun |



| Part No.         | Length (mm) | Width (mm) | Max. Strength Range (kgs) | Min. Diameter (mm) | Max. Diameter (mm) | Pack Qty |
|------------------|-------------|------------|---------------------------|--------------------|--------------------|----------|
| TS1-4-46200-316C | 200         | 4.6        | 45                        | 15                 | 50                 | 100      |
| TS1-4-46360-316C | 360         | 4.6        | 45                        | 15                 | 102                | 100      |
| TS1-4-79200-316C | 200         | 7.9        | 120                       | 15                 | 50                 | 100      |
| TS1-4-79360-316C | 360         | 7.9        | 120                       | 15                 | 102                | 100      |

## Solar PV Installation Tool

Designed to assist with installation of solar PV Modules, this spacer enables rapid installation and will maintain uniform with the array to give your job a professional finish.

Solar Spacer allows you to achieve a consistent pattern when fixing modules and helps to ensure that all panels are laid equidistant from each other (providing a symmetrical finish - as you or your customer would expect).

| Colour | DKSH Part No. | Description                                     | Compatible with                 |
|--------|---------------|---|---------------------------------|
|        | SSYEL20       | Solar Spacer 20mm X 20mm spacing, Bright Yellow | Schettler and Sunlock           |
|        | SSRED17       | Solar Spacer 17mm X 17mm spacing, Bright Red    | Clenergy, Antai                 |
|        | SSBLK20       | Solar Spacer 20mm X 10mm spacing, Black         | Schettler (Built for landscape) |
|        | SSBLU22.5     | Solar Spacer 22.5mm X 22.5mm spacing, Blue      | Radiant                         |



## Cable Clips

Long-lasting, wire management clips

Engineered for high quality wire management solutions, the Wiley Cable Clips simplify wire management and create a cleaner look to solar PV arrays. Able to last a lifetime, the corrosion resistant 304 stainless steel clips are a durable solution for all environments. Coined edges prevent damage to cable insulation.





The design is easy to install and no tools are required. Clips can be used in a wide variety of mounting configurations (including 90-degree) for module and rail applications. Custom designs are available upon request.



## Features and Benefits

- Reliability for use throughout the lifetime of the PV system
- UL1565 Listed as positioning device
- Accommodates a broad range of cable combinations and sizes
- Compatible on modules with flange thickness range 1.3 to 2.5mm
- High quality wire management solutions
- Constructed of corrosion resistant 304 stainless steel
- Dual wire compartments
- Wide variety of mounting configurations
- Special tab for easy installation & removal
- Coined edges to prevent damage to cable insulation
- Custom designs are available upon request
- Multiuse capabilities
- Can be reused, unlike cable ties

### Rail Clips





|   | Part No.  | Length (mm) | Width (mm) | Height (mm) | Wire   |
|---|-----------|-------------|------------|-------------|--|
|  | ACC-R2    | 37.41       | 10.00      | 20.50       | 1-2 micron inverter trunk cables or 1-2 AC cables<br>Wire diameter : 1 wire - min. 6.2mm / max. 14mm or<br>2 wires - min. 4.1mm / max. 11mm                                      |
|  | ACC-R2-E  | 30.10       | 12.50      | 16.81       | 1-2 micro inverter trunk cables or 1-2 AC cables<br>Wire diameter : 1 wire - min. 4.1mm / max. 14mm<br>or 2 wires - min. 4.1mm / max. 11mm                                       |
|  | ACC-R4    | 39.46       | 10.00      | 16.05       | 1-4 wires PV wires<br>Wire diameter : min. 4.1mm / max. 7.49mm   |
|  | ACC-RBC15 | 23.00       | 16.50      | 12.00       | Snap into rail channels of all designs. Micro inverter trunk cables, AC cable or PV cable.<br>Fits bundles of wires up to 15mm diameter.<br>Rail channel width: 6.35mm to 13.5mm |







## Cable Clips

Long-lasting, wire management clips

### Module Frame Clips

|   | Part No. | Length (mm) | Width (mm) | Height (mm) | Wire   |
|---|----------|-------------|------------|-------------|--|
|   | ACC      | 16.85       | 10.00      | 10.00       | 1-2 PV wire<br>Wire diameter: min 4.1mm / max 6.7mm<br>Module thickness range: 1.5-2.5mm   |
|   | ACC-PV   | 18.42       | 10.00      | 12.60       | 1-2 PV wires<br>Wire diameter: min 4.1mm / max 7.49mm<br>Module thickness range: 1.5-2.5mm |
|   | ACC-FLD  | 19.00       | 10.00      | 12.70       | 1-2 PV wire<br>Wire diameter: min 4.1mm / max 7.49mm<br>Module thickness range: 1.5-2.5mm  |
|  | ACC-FPV  | 23.33       | 12.50      | 14.22       | 1-2 PV wire<br>Wire diameter: min 4.1mm / max 8.50mm<br>Module thickness range: 1.3-3.5mm  |

### 90° Module Frame Clips

|  | Part No.   | Length (mm) | Width (mm) | Height (mm) | Wire  |
|--|------------|-------------|------------|-------------|---|
|  | ACC-F90-1  | 20.58       | 13.08      | 14.22       | 1-2 PV wire<br>Wire diameter: min 4.1mm / max 7.49mm<br>Module Thickness Range: 1.5-2.5mm   |
|  | ACC-F2-90  | 29.49       | 10.51      | 15.10       | 1-2 micro inverter trunk cables or 1-2 AC cables<br>Wire diameter: 1 wire - min 4.1mm / max 14mm<br>or 2 wires - min 4.1mm / max 11mm |
|  | ACC-F4-90  | 34.72       | 10.51      | 14.31       | 1-4 wires PV wires<br>Wire diameter: min 4.1mm / max 7.49mm<br>Module thickness range: 1.5-2.5mm                                      |
|  | ACC-F1-270 | 23.50       | 10.00      | 19.55       | 2 PV wires or 1 Micro Inverter Trunk<br>Wire diameter: min 4.1mm / max 14mm<br>Module thickness range: 1.5-2.5mm                      |

### Installation examples



ACC-FPV



ACC-F90-1



ACC-F90-1

## WEEB Washer

### Washer, Electrical Equipment Bond

The WEEB line of products is designed to bond solar PV modules to mounting structures and create an electrical path to ground. WEEBs eliminate the need for older, more costly grounding methods and greatly reduce the amount of labor and materials used in installations.

The innovative WEEB design removes the need to run ground wire to each individual module and eliminates the need for surface preparation on anodized aluminum components.

To install, WEEBs are placed between PV modules and mounting rails at clamping points or at bolted connections. When anti-seize is applied and the hardware is tightened down to the appropriate torque spec, the WEEBs' specialized teeth embed into anodized aluminum, galvanized steel, or any electrically conductive metal to establish a gas tight electrical connection.

#### Data

- Material: 304 stainless steel
- Listed to ANSI-UL 467 by Intertek ETL for use in Canada and the USA
- Maximum electrical equipment ground conductor size when used with 2 WEEBs contacting each module in an assembly: 6 AWG
- Outdoor rated.



#### What is a WEEB?

The WEEB (Washer, Electrical Equipment Bond) is the first production part specifically intended for use in grounding photovoltaic systems. There is a family of WEEB parts, one for each kind of photovoltaic mounting system. The WEEBs are used to bond photovoltaic modules to the mounting structure. A ground is connected to the resulting composite structure so that the photovoltaic modules are also grounded. This is more technically described in NEC sections 250.136 and 250.134 and discussed at the company website, [http://www.welc.com/WEEB\\_nec.html](http://www.welc.com/WEEB_nec.html).

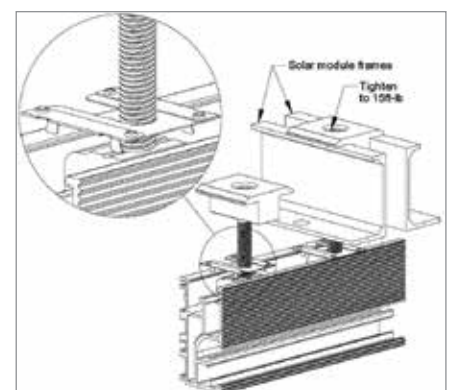
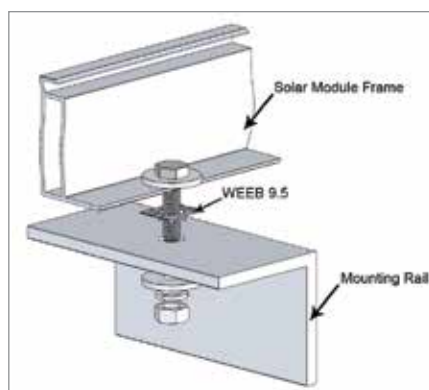
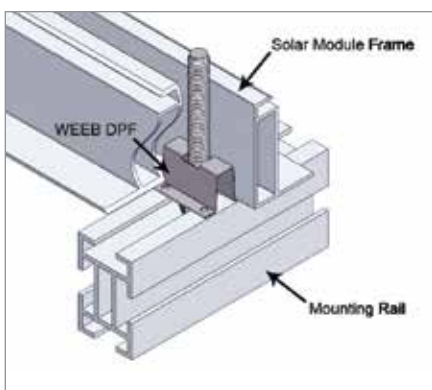
#### How much current can WEEBs carry?

All WEEBs are tested to carry a current of 1530 Amperes for 6 seconds. This is much more than any photovoltaic module can source and is why the WEEBs offer better lightning protection than previous grounding methods. All WEEBs meet ANSI/UL 467, standard for grounding and bonding equipment.

#### Why Should I Use it?

- It saves you time! No more running ground wire to every PV module
- It's safe... meets ANSI/UL467 requirements for bonding/grounding systems
- It's reliable
- Patented design features stainless steel teeth that pierce into anodized aluminum, providing a gas tight connection which prevents oxidation and gives more consistent results than the method of scraping off the anodized coating by hand and using star washers.

The products use patent pending technology for bonding anodized aluminum surfaces together. Bonding PV modules to a mounting structure removes the need to wire the modules separately: just the mounting structure needs to be wired to ground.

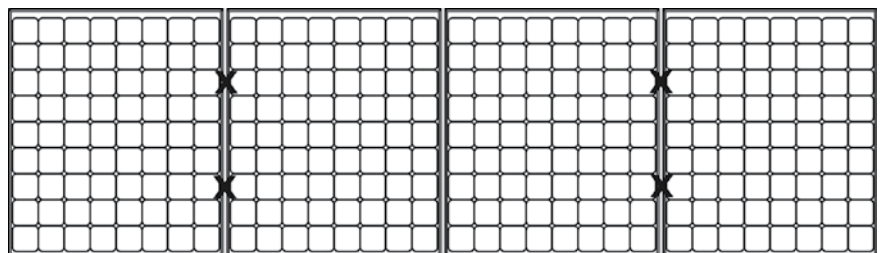


## WEEB Washer

Washer, Electrical Equipment Bond



| Company                     | Mounting System                                  | WEEB -              | LUG and B.J. |
|-----------------------------|--|---------------------|--------------|
| AET                         | T6 w/ box modules                                | ATF                 | 6.7          |
| Array Technologies          | Wattsun Micro MW Horizontal Beam Tracker         | WMR1/ WMR2          |              |
| BP Solar                    | BP Solar   | SMC2                | 8.0          |
| Conergy                     | SolarGiant III                                   | CSG/ Electrivedge   | 6.7          |
| Conergy                     | SunTop   | CMC                 | 8.2          |
| Clenergy                    | PV-ezRack PV Mounting Systems                    | CMC                 | 15.8         |
| DP & W                      | Ground Mount                                     | 9.5/ 9.5NL          | 6.7          |
| DP & W                      | Multi-Pole Mount                                 | DMC/ 11.5/ 9.5NL    | 6.7          |
| DP & W                      | Top-of-Pole Mount                                | 9.5/ 9.5NL          | 6.7          |
| DP & W                      | Power-Fab CRS                                    | 9.5/ 11.5/ DPF/ WMC | 8.0          |
| DP & W                      | Power Grid                                       | DPF/ WMC            | 8.0          |
| DP & W                      | Power Rail                                       | DMC                 | 6.7          |
| DP & W                      | Power Rail P6                                    | DPF                 | 8.0          |
| HES-Home Energy Solutions   | Fast Rack  | DPF                 | 8.0          |
| IronRidge                   | XLR  | DMC                 | 6.7          |
| IronRidge                   | XRS  | DMC                 | 6.7          |
| JAC Products                | JacRack  | JJR                 | 8.0          |
| K2 Systems                  | K2 Systems                                       | KMC                 | 6.7          |
| Lumos                       | Powermount Racking System w/ box modules***      | UMC                 | 6.7          |
| NCP                         | NCP Solar Mounting System                        | DPF                 | 8.0          |
| NorthGrid                   | NorthGrid Solar Mounting System                  | DPF                 | 8.0          |
| Professional Solar Products | RoofTrac   | PMC                 | 6.7          |
| ProtekPark Solar            | ProtekPark Solar -depends on clamp and module*** | DMC or UMC          | 6.7          |
| RBI Solar                   | Ground Mount w/ box modules***                   | UMC                 | 6.7          |
| Schletter                   | Eco 05, Solo 05 and Profil 05                    | SMC2                | 8.0          |
| Schuco                      | ezFlatRoof 2.0/ ezGroundMount 2.0                | SMC2                | 8.0          |
| SolarCity                   | Heavy Duty Rail - depends on clamp***            | UMC or DMC          | 6.7          |
| Solar Liberty               | Dynoraxx   | SSF                 | 6.7          |
| Sollega                     | InstaRack  | 11.5                | 6.7          |
| SnapNrack                   | PV Mounting System w/ box modules                | PMC                 | 6.7          |
| SunEarth                    | Comprail PV Racking                              | SCR                 | 6.7          |
| SunEarth                    | Solar Strut                                      | SSR                 | 6.7          |
| Sunmodo                     | Ez Helio***                                      | UMC                 | 6.7          |
| Terrafix Solarpark          | Terrafix Solarpark                               | SMC2                | 8.0          |
| T.R.A.-Mage                 | Tegra  | SMC2                | 8.0          |
| TTI                         | TTI w/ box modules                               | WMC                 | 6.7          |
| Unirac                      | RapidRac G10                                     | 9.5                 | 6.7          |
| Unirac                      | SolarMount w/ box modules or Sanyo low lip***    | UMC or DMC          | 6.7          |
| Unirac                      | SolarMount-I w/ box modules                      | UGC-2               | 6.7          |



**X Denotes place to install WEEB washers.**

\*\*\*A WEEB-UMC can only be used in applications with modules frames that have a "boxed" cross-section. Refer to Installation Manuals for compatibility and details: [http://www.we-llc.com/WEEB\\_datasheets.html](http://www.we-llc.com/WEEB_datasheets.html)

## Lugs

### WEEB, Lay-in Lug, and Hardware

The lug consists of a WEEB (Washer, Electrical Equipment Bond), lay-in lug, and hardware. It is used with one solid or stranded copper wire (6AWG to 14AWG), or two copper wires (10AWG to 12AWG) to provide a continuous ground on photovoltaic solar systems. Unlike traditional lay-in lugs, the lug does not require surface preparation of a rail or module to install.

The lug is installed using a 1/4"-20 stainless steel screw which embeds the specialized WEEB teeth into anodized aluminum, galvanized steel, or any electrically conductive metal to establish a gas tight electrical connection.

The tin-plated lug assures minimum contact resistance and protection against corrosion. The copper wire is secured by a 1/4"-28 stainless steel screw, which is horizontal to the tang for easy access when mounted under a PV module. The low profile of the lug allows it to be installed in a variety of positions and comes with hardware to mount it to a rail or through a 1/4 inch clearance hole.

#### Data

- Material: 304 Stainless Steel, tin-plated copper, outdoor rated
- Low profile design

- Multiple equipment ground conductor allowance: One 14 AWG to 6 AWG or two 10 AWG, two 12 AWG
- Listed to ANSI/UL 467 by Intertek ETL.



#### WEEB LUG6.7A

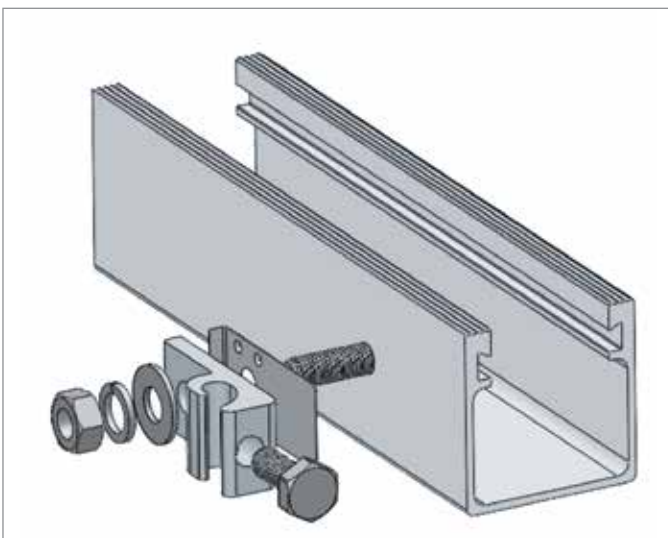
Comes with: Lug 6.7, WEEB 6.7, 1/4"-28 terminal screw, washers and 1/4"-20 mounting hardware

#### WEEB LUG8.0

Comes with: Lug 8.0, WEEB 8.0, 1/4"-28 terminal screw  
 • No mounting hardware included. (Uses 5/16" hardware.)

#### WEEB LUG15.8

Comes with: Lug 15.8, WEEB 15.8, 1/4"-28 terminal screw  
 • No mounting hardware included. (Uses 5/16" hardware.)



Pro Solar Roof Trac



DP&W Power Rail



## Bonding Jumpers

### WEEB, Bonding Jumpers

The Bonding Jumper is used to create an electrical connection between two pieces of anodized aluminum, galvanized steel, or any electrically conductive metal which has been mechanically spliced. Long spans of mounting rails are sometimes constructed from two shorter rail sections.

Manufacturers may recommend that a floating splice be used to allow for thermal expansion. A floating splice is rigidly attached to only one rail, and allows the rails to expand and contract in line with each other. In such cases, via NEC code, it is also necessary to make an electrical splice, which can be done with a WEEB Bonding Jumper.

The Bonding Jumper is constructed of tin plated, braided copper wire with a WEEB attached at each end of the Jumper. The WEEBs provide a reliable, gas tight electrical connection, and the braided copper wire allows for thermal expansion. The examples below illustrate two ways to install the WEEB Bonding Jumper.



#### WEEB BJ6.7A

Comes with: 9" bonding jumper, 2 WEEB 6.7, washers and 1/4"-20 mounting hardware



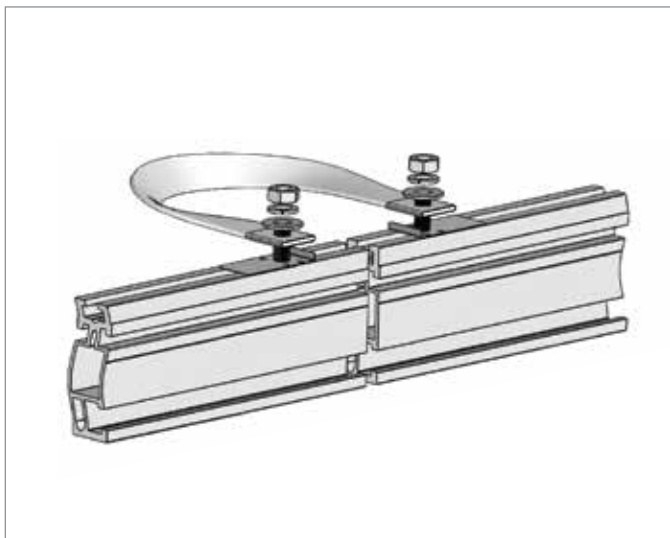
#### WEEB BJ8.0

Comes with: 6" bonding jumper, 2 WEEB 8.0  
No hardware included  
(Uses 5/16" mounting hardware)

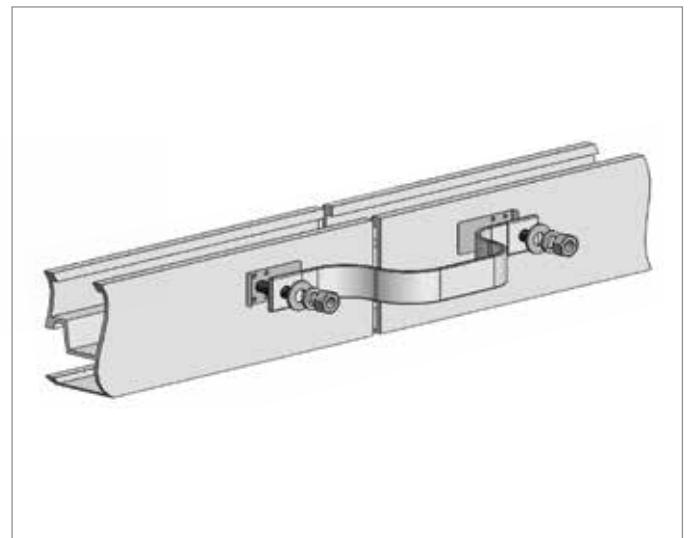


#### WEEB BJ8.2

Available from Conergy



Unirac SolarMount



AEE SnapNRack

## AC Circuit Breakers

### 6kA C Curve

The Ex9BN series of miniature circuit breakers provides isolation and protection for AC systems. Also available in different breaking capacities, tripping curves and current ratings.

### Tripping Curve

- C Type

### Breaking Capacity

- 6 kA

### Standards and approvals

- IEC/EN/AS60898-1
- GB10963.1
- SAA101237EA

### Electrical Specifications

|                                   |                |                       |
|-----------------------------------|----------------|-----------------------|
| Rated insulation voltage (V)      | Ui             | 690                   |
| Rated impulse voltage (kV)        | Uimp           | 4                     |
| Ultimate breaking capacity (kA)   | Icu            | 6                     |
| Curve type                        |                | C                     |
| Tripping type                     |                | Thermal magnetic type |
| Service Life - Mechanical         | Actual Value   | 20000                 |
| "                                 | Standard Value | 4000                  |
| Service Life Electrical           | Actual Value   | 10000                 |
| "                                 | Standard Value | 4000                  |
| Conductor size (mm <sup>2</sup> ) |                | 1~35mm <sup>2</sup>   |
| Temperature (°C)                  |                | -20 to +70            |



| Current Rating (A) | 1 pole | 2 pole | 3 pole |
|--------------------|--------|--------|--------|
| 10                 | 86288  | 86301  | 86314  |
| 16                 | 86289  | 86302  | 86315  |
| 20                 | 86290  | 86303  | 86316  |
| 25                 | 86291  | 86304  | 86317  |
| 32                 | 86292  | 86305  | 86318  |
| 40                 | 86293  | 86306  | 86319  |
| 50                 | 86294  | 86307  | 86320  |
| 63                 | 86295  | 86308  | 86321  |

## Enclosures to suit...

DKSH have a wide range of enclosures for your circuit breakers. For full details see pages 38-39.



## 500V and 1000V DC Circuit Breakers

### Non-polarised

The Ex9BP-N series of miniature circuit breakers from Noark Electric, are non polarised and available in 2 and 4 pole designs.

The 4 pole design is already looped internally, saving time in wiring and minimising errors.

### DC switching voltage

250V DC per pole

e.g. 4 pole = 1000V DC

### Standards and approvals

- IEC/EN/AS60947-2
- GB14048.2
- SAA101238EA



### Locking Device

Part No. 86218

### Electrical Specifications

|                                   |                |                       |
|-----------------------------------|----------------|-----------------------|
| Rated insulation voltage (V DC)   | Ui             | 1000                  |
| Rated impulse voltage (kV)        | Uimp           | 4                     |
| Ultimate breaking capacity (kA)   | Icu            | 6                     |
| Curve type                        |                | K                     |
| Tripping type                     |                | Thermal magnetic type |
| Service Life - Mechanical         | Actual Value   | 20000                 |
| "                                 | Standard Value | 8500                  |
| Service Life Electrical           | Actual Value   | 10000                 |
| "                                 | Standard Value | 1500                  |
| Conductor size (mm <sup>2</sup> ) |                | 1~35mm <sup>2</sup>   |
| Temperature (°C)                  |                | -20 to +70            |



| Current Rating (A) | 2 pole 500V DC | 4 pole 1000V DC |
|--------------------|----------------|-----------------|
| 10                 | 10000146       | 10000162        |
| 16                 | 10000147       | 10000163        |
| 20                 | 10000148       | 10000164        |
| 25                 | 10000149       | 10000165        |
| 32                 | 10000150       | 10000166        |
| 40                 | 10000151       | 10000167        |
| 50                 | 10000152       | 10000168        |
| 63                 | 10000153       | 10000169        |

# Surge Protection

## Surge Protection Devices

### Class II

Surge protective devices, are voltage limiting Class II devices which present high impedance when there is no surge.

If a surge occurs, the impedance will drop rapidly to limit the voltage at its output terminals to the specified range.

### Approvals

- IEC61643-1.
- EN61643-11.

### DC Type

| Part No. | Remote signalling Part No. | Poles | I <sub>max</sub> (kA) | I <sub>n</sub> (kA) | U <sub>c</sub> (DC V) | Type               |
|----------|----------------------------|-------|-----------------------|---------------------|-----------------------|--------------------|
| 108016   | 108017                     | 1     | 40                    | 20                  | 600                   | Ex9UEP 20P 1P 600  |
| 108022   | 108023                     | 3     | 40                    | 20                  | 1200                  | Ex9UEP 20P 3P 1200 |

### Spare Plug-in Module

| Part No. | Suitable for | Type               |
|----------|--------------|--------------------|
| 108024   | 108016       | Ex9UEP 20P 1P 600  |
| 108027   | 108022       | Ex9UEP 20P 3P 1200 |



## High Current, Non-Polarised

The Ex9MD range of moulded case circuit breakers (MCCB) provide high current breaking capabilities for DC circuits.

Used primarily on battery banks, these MCCBs provide a more serviceable approach to protection than standard NH fuse bases.

### Features:

- 5 frame sizes - 80A to 800A
- High breaking capacity
- Installation flexibility
- Field installable accessories
- Certified to EN 60947

### DC switching voltage

250V DC per pole e.g. 2 pole = 500V DC

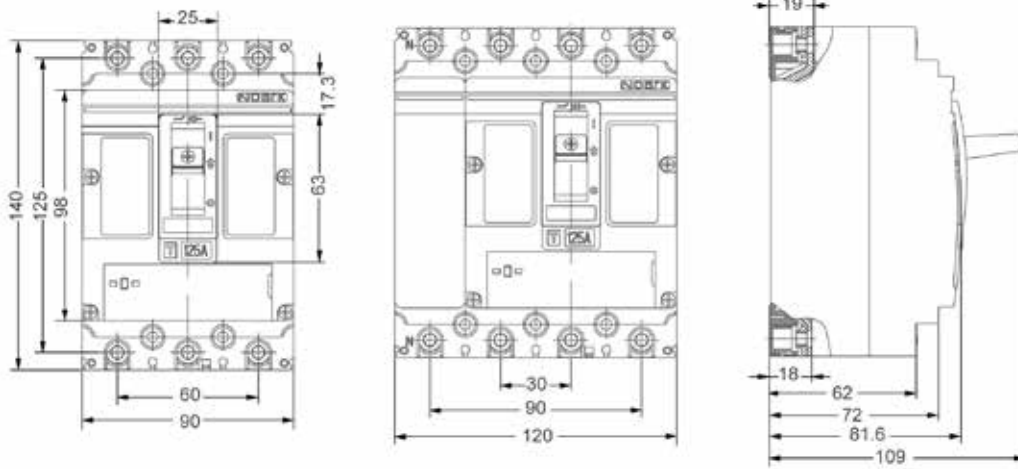


| Part No. | Type                | Current rating | Number of poles | Total voltage DC | Frame size | Dimensions      |       |
|----------|---------------------|----------------|-----------------|------------------|------------|-----------------|-------|
|          |                     |                |                 |                  |            | L               | W x H |
| 28707    | EX9MD1B TM DC80 2P  | 80A            | 2               | 500V             | 1          | 90 x 140 x 109  |       |
| 28708    | EX9MD1B TM DC100 2P | 100A           | 2               | 500V             | 1          | 90 x 140 x 109  |       |
| 28709    | EX9MD1B TM DC125 2P | 125A           | 2               | 500V             | 1          | 90 x 140 x 109  |       |
| 28901    | EX9MD2B TM DC160 2P | 160A           | 2               | 500V             | 2          | 105 x 157 x 126 |       |
| 28902    | EX9MD2B TM DC180 2P | 180A           | 2               | 500V             | 2          | 105 x 157 x 126 |       |
| 28903    | EX9MD2B TM DC200 2P | 200A           | 2               | 500V             | 2          | 105 x 157 x 126 |       |
| 28905    | EX9MD2B TM DC250 2P | 250A           | 2               | 500V             | 2          | 105 x 157 x 126 |       |
| 26025    | EX9MD3B TM DC315 3P | 315A           | 3               | 750V             | 3          | 140 x 225 x 172 |       |
| 26027    | EX9MD3B TM DC400 3P | 400A           | 3               | 750V             | 3          | 140 x 225 x 172 |       |
| 27019    | EX9MD4B TM DC500 3P | 500A           | 3               | 750V             | 4          | 195 x 300 x 142 |       |
| 27020    | EX9MD4B TM DC630 3P | 630A           | 3               | 750V             | 4          | 195 x 300 x 142 |       |
| 28019    | EX9MD5B TM DC700 3P | 700A           | 3               | 750V             | 5          | 195 x 300 x 142 |       |
| 28020    | EX9MD55 TM DC800 3P | 800A           | 3               | 750V             | 5          | 195 x 300 x 142 |       |

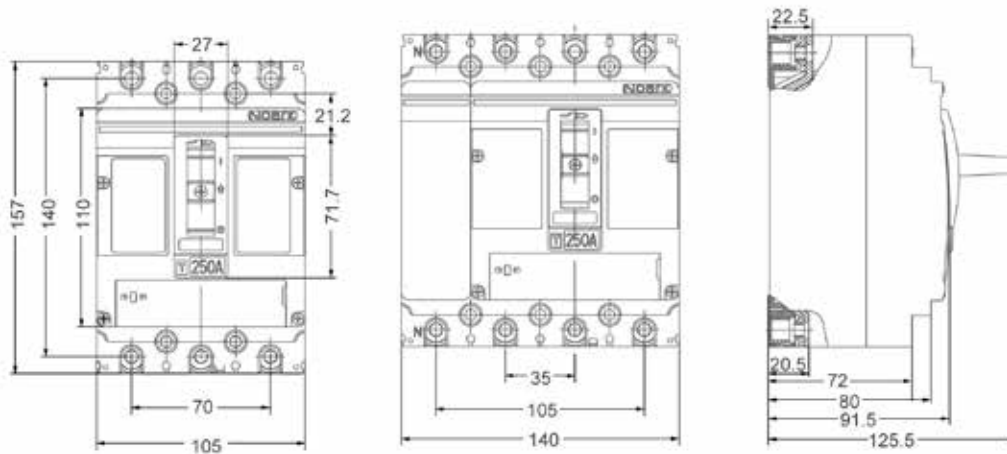
## Accessories

| Part No. | Type              | Suits frame | Auxiliary contacts | Description               |
|----------|-------------------|-------------|--------------------|---------------------------|
| 20297    | AX21              | 1 to 5      | 1NO,1NC            | Auxiliary Contact         |
| 20282    | AL21              | 1 to 5      | 1NO,1NC            | Alarm Contact             |
| 20302    | ERH 21            | 1           | -                  | Extended Rotary Handle    |
| 20306    | TCE 21 3P         | 1           | -                  | Terminal Shields          |
| 20290    | SHT 21 AC220-240V | 1           | -                  | Shunt release 240V AC     |
| 20300    | UVT 21 AC380-415V | 1           | -                  | Undervoltage Release 415V |
| 23188    | ERH 22            | 2           | -                  | Extended Rotary Handle    |
| 23192    | TCE 22 3P         | 2           | -                  | Terminal Shields          |
| 23177    | SHT 22 AC220-240V | 2 to 5      | -                  | Shunt release 240V AC     |
| 23186    | UVT 22 AC380-415V | 2 to 5      | -                  | Undervoltage Release 415V |
| 25121    | ERH 23            | 3           | -                  | Extended Rotary Handle    |
| 25125    | TCE 23 3P         | 3           | -                  | Terminal Shields          |
| 26920    | ERH 24            | 4,5         | -                  | Extended Rotary Handle    |
| 26904    | TCE 24 3P         | 4,5         | -                  | Terminal Shields          |

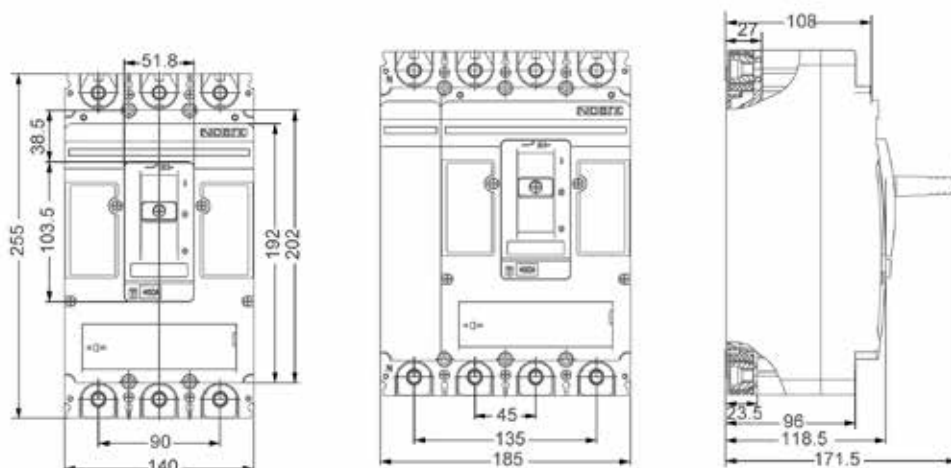
## DIMENSIONS 80A - 125A



## DIMENSIONS 160A - 250A



## DIMENSIONS 315A - 400A



## DC switch disconnectors for solar photovoltaic (PV) 25A, 40A and 58A

### Description

The German made, non-polarised range of switch disconnectors are designed for DC applications. The KFD25, KGD40 and KGD58 have been specifically selected for the demands of the Australian market. Available as DIN rail mount or in UV stabilized plastic enclosures with red/yellow padlockable handle and with a degree of protection to IP 66/67, they can be installed in the most arduous of environments.

### Technical specifications

- Utilisation Category DC-21B, DC-PV2
- Enclosure made from self-extinguishing material and conforms to UL94-VO
- Plastic enclosed unit: IP67
- Non polarised, switchable under load
- Compliant with:
  - AS/NZS 5033 : 2014
  - EN 60947-3 respectively VDE 0660 Part 107
  - IEC 60364-7-712 : 2002
- Touch protected terminals
- Lockable in OFF position with padlock.
- UV resistant
- Enclosed unit retains IP67 rating regardless of mounting position; vertically, horizontally or sideways
- External mounts



**Designed for Australian conditions**



| Part No.  | Mounting              | Dimensions (mm) | Entries                         | Type Code                  |
|-----------|-----------------------|-----------------|---------------------------------|----------------------------|
| 110363011 | 25 Amp DIN mount      | 76 x 55 x 45    | N/A                             | KFD25 T306/AUP0025 VE2     |
| 110348987 | 25 Amp IP67 enclosure | 132 x 85 x 64   | 4 x M25 & 2x M20 threaded       | KFD25 T206/AUP0013 KT11V   |
| 110457907 | 25 Amp IP67 enclosure | 190 x 100 x 93  | 6 x M25 knockouts               | KFD25B T206/AUP0013 KL11V  |
| 110567982 | 40 Amp DIN mount      | 100 x 80 x 75   | N/A                             | KGD40B TD106/AUP0035 VE2   |
| 110560552 | 40 Amp IP67 enclosure | 250 x 145 x 124 | 2 x M25 & 4 x M25/M40 knockouts | KGD40B TD206/AUP0033 KL11V |
| 110598648 | 58 Amp DIN mount      | 135 x 80 x 75   | N/A                             | KGD58B TD104/AUP0039 VE2   |
| 110598647 | 58 Amp IP67 enclosure | 250 x 145 x 124 | 2 x M25 & 4 x M25/M40 knockouts | KGD58B TD204/AUP0038 KL11V |

| Part No.   | Type Code: <b>KFD25</b>    | Rated Value |            |             |             |             |             |             |
|--|----------------------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|
|  |                            | 80°C        | 80°C       | 80°C        | 80°C        | 70°C        | 60°C        | 50°C        |
| <b>110348987</b><br>2 Pole - 3 contacts per circuit<br>(2 x 3 in series) | Ambient Temperature        | 80°C        | 80°C       | 80°C        | 80°C        | 70°C        | 60°C        | 50°C        |
|  | Operational Current DC-21B | <b>7 A</b>  | <b>9 A</b> | <b>12 A</b> | <b>14 A</b> | <b>19 A</b> | <b>24 A</b> | <b>25 A</b> |
|  | 1.2 x Voc 2 pole           | 1500 V      | 1500 V     | 1500 V      | 1500 V      | 1380 V      | 1200 V      | 1000 V      |
|  | 1.2 x Voc on each side     | 1200 V      | 1100 V     | 1000 V      | 900 V       | 690 V       | 600 V       | 510 V       |
|  | Insulation Voltage         | 1500 V      | 1500 V     | 1500 V      | 1500 V      | 1500 V      | 1500 V      | 1500 V      |
|  | Ambient Temperature        | 80°C        | 80°C       | 80°C        | 80°C        | 80°C        | 70°C        | 70°C        |
|  | Operational Current DC-PV2 | <b>3 A</b>  | <b>4 A</b> | <b>8 A</b>  | <b>9 A</b>  | <b>13 A</b> | <b>17 A</b> | <b>19 A</b> |
|  | 1.2 x Voc 2 pole           | 1500 V      | 1500 V     | 1500 V      | 1500 V      | 1380 V      | 1200 V      | 1000 V      |
|  | 1.2 x Voc on each side     | 1200 V      | 1100 V     | 1000 V      | 900 V       | 690 V       | 600 V       | 510 V       |
|  | Insulation Voltage         | 1500 V      | 1500 V     | 1500 V      | 1500 V      | 1500 V      | 1500 V      | 1500 V      |

| Part No.   | Type Code: <b>KFD25</b>    | Rated Value |            |             |             |             |             |             |
|--|----------------------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|
|  |                            | 80°C        | 80°C       | 80°C        | 80°C        | 70°C        | 60°C        | 50°C        |
| <b>110457907</b><br>2 Pole - 3 contacts per circuit<br>(2 x 3 in series) | Ambient Temperature        | 80°C        | 80°C       | 80°C        | 80°C        | 70°C        | 60°C        | 50°C        |
|  | Operational Current DC-21B | <b>7 A</b>  | <b>9 A</b> | <b>12 A</b> | <b>14 A</b> | <b>19 A</b> | <b>24 A</b> | <b>25 A</b> |
|  | 1.2 x Voc 2 pole           | 1500 V      | 1500 V     | 1500 V      | 1500 V      | 1380 V      | 1200 V      | 1000 V      |
|  | 1.2 x Voc on each side     | 1200 V      | 1100 V     | 1000 V      | 900 V       | 690 V       | 600 V       | 510 V       |
|  | Insulation Voltage         | 1500 V      | 1500 V     | 1500 V      | 1500 V      | 1500 V      | 1500 V      | 1500 V      |
|  | Ambient Temperature        | 80°C        | 80°C       | 80°C        | 80°C        | 80°C        | 70°C        | 70°C        |
|  | Operational Current DC-PV2 | <b>3 A</b>  | <b>4 A</b> | <b>8 A</b>  | <b>9 A</b>  | <b>13 A</b> | <b>17 A</b> | <b>19 A</b> |
|  | 1.2 x Voc 2 pole           | 1500 V      | 1500 V     | 1500 V      | 1500 V      | 1380 V      | 1200 V      | 1000 V      |
|  | 1.2 x Voc on each side     | 1200 V      | 1100 V     | 1000 V      | 900 V       | 690 V       | 600 V       | 510 V       |
|  | Insulation Voltage         | 1500 V      | 1500 V     | 1500 V      | 1500 V      | 1500 V      | 1500 V      | 1500 V      |

| Part No.   | Type Code: <b>KGD40B</b>   | Rated Value |             |             |
|--|----------------------------|-------------|-------------|-------------|
|  |                            | 80°C        | 70°C        | 60°C        |
| <b>110560552</b><br>2 Pole - 3 contacts per circuit<br>(2 x 3 in series) | Ambient Temperature        | 80°C        | 70°C        | 60°C        |
|  | Operational Current DC-21B | <b>20 A</b> | <b>30 A</b> | <b>40 A</b> |
|  | 1.2 x Voc 2 pole           | 1000 V      | 1000 V      | 1000 V      |
|  | 1.2 x Voc on each side     | 1000 V      | 750 V       | 600 V       |
|  | Insulation Voltage         | 1000 V      | 1000 V      | 1000 V      |
|  | Ambient Temperature        | 80°C        | 70°C        | 60°C        |
|  | Operational Current DC-PV2 | <b>20 A</b> | <b>30 A</b> | <b>40 A</b> |
|  | 1.2 x Voc 2 pole           | 1000 V      | 1000 V      | 1000 V      |
|  | 1.2 x Voc on each side     | 1000 V      | 750 V       | 560 V       |
|  | Insulation Voltage         | 1000 V      | 1000 V      | 1000 V      |

| Part No.   | Type Code: <b>KGD58B</b>   | Rated Value |             |             |
|--|----------------------------|-------------|-------------|-------------|
|  |                            | 80°C        | 60°C        | 50°C        |
| <b>110598647</b><br>2 Pole - 4 contacts per circuit<br>(2 x 4 in series) | Ambient Temperature        | 80°C        | 60°C        | 50°C        |
|  | Operational Current DC-21B | <b>40 A</b> | <b>58 A</b> | <b>63 A</b> |
|  | 1.2 x Voc 2 pole           | 1000 V      | 1000 V      | 800 V       |
|  | 1.2 x Voc on each side     | 500 V       | 500 V       | 400 V       |
|  | Insulation Voltage         | 1000 V      | 1000 V      | 1000 V      |
|  | Ambient Temperature        | 80°C        | 60°C        | 50°C        |
|  | Operational Current DC-PV2 | <b>40 A</b> | <b>58 A</b> | <b>63 A</b> |
|  | 1.2 x Voc 2 pole           | 700 V       | 700 V       | 600 V       |
|  | 1.2 x Voc on each side     | 350 V       | 350 V       | 300 V       |
|  | Insulation Voltage         | 1000 V      | 1000 V      | 1000 V      |



Fully assembled models also available

- plug & play
- flying leads
- other customer-specific requirements

# String Combiners

## HISbox DC Combiner 1500V DC

### Description

Designed and manufactured in Germany, the HISbox DC Combiners are fully optimized and made of industrial components, specifically for your PV system. This gives you the greatest possible customization in keeping with the industrial standard, and at a fair price.

### Features

- Designed, manufactured and tested according to IEC61439-1; -2
- Further country specific set-ups such as UTE, NEN 101:2015 are available on request
- Overvoltage protection; Load break switches; optionally with remote switching
- Modular concept with countless possible combinations
- Robust housing for outdoor use. Up to IP65, UV-stable incl. pressure equalization valve

Customer specific solutions also available.



| Order No.                | HDC-04-16-FF-011-   | HDC-04-20-FF-011-   | HDC-04-24-FF-011- | HDC-04-32-FF-011- |
|--------------------------|---|---|-------------------|-------------------|
| Max. string input        | 16  | 20  | 24                | 32                |
| Nominal voltage (Ue)     | 1000V DC & 1500V DC   |   |                   |                   |
| Max. rated current (InA) | 250 A   | 315 A   | 315 A             | 500 A             |
| Load Break Switch        | 2 pole; DC-21B (IEC60947)   |   |                   |                   |
| Fuses                    | Plus and minus pole fused with gPV fuse-links 10x38mm (acc. IEC 60269-6)                                      |   |                   |                   |
| Overvoltage protection   | Type 1+2 (Max. discharge current I <sub>max</sub> (8/20) μs: 40kA / Rated discharge current (8/20) μs: 15kA ) |   |                   |                   |
| DC output and connection | M8 tubular cable lugs<br>(e.g. 35-120mm <sup>2</sup> Cu /Al)  | M12 tubular cable lugs up to max. 400mm <sup>2</sup> or 2x240mm <sup>2</sup> per pole |                   |                   |
| Installation             | Open air, in shade (protected from rain and direct sunlight), upto IP65                                       |   |                   |                   |
| Standard                 | CE in conformity with IEC 61439-1/-2  |   |                   |                   |

## HISbox AC Combiner

### Description

Feed the power of your string inverters together in a HISbox AC Combiner. As well as a multitude of standard solutions, the HIS Renewables Development and Construction team offers customer specific solutions. By means of a simple check list, you can specify your requirements. Among other things, the following points are relevant.

### NH00-Fused switch disconnect busbar

| Order No.                       | HAC-AA-03X-   |
|---------------------------------|---|
| No. of inverter                 | AA -> 2-8 inverter  |
| Nominal voltage (Ue)            | 230V AC / 400AC (50 Hz grid frequency)  |
| Short circuit withstand current | 10kA  |
| Inverter fuse protection        | 3 pole NH00-Fused switch disconnect I <sub>max</sub> 160A   |
| Fuse protection                 | Without, direct connection to common busbar (optional incl. NH-Load Break Switch or power circuit breakers) |
| Overvoltage protection          | Optional incl. Type 1+2+3 incl. appropriate protective fuse   |
| Installation                    | Open air, in shade (protected from rain and direct sunlight), upto IP65                                     |
| Standard                        | CE in conformity with IEC 61439-1/-2  |

### NH00-Fuse isolator

| Order No.                       | HAC-AA-03X-   |
|---------------------------------|---|
| No. of inverter                 | AA -> 2-8 inverter  |
| Nominal voltage (Ue)            | 230V AC / 400AC (50 Hz grid frequency)  |
| Short circuit withstand current | 25kA  |
| Inverter fuse protection        | 3 pole NH00-Fuse isolator I <sub>max</sub> 160A (optional incl. residual current circuit breaker) |
| Fuse protection                 | 3 pole power circuit breakers 630A (optional 4 pole fuse protection)                              |
| Overvoltage protection          | Optional incl. Type 1+2+3 incl. pre fuse  |
| Installation                    | Open air, in shade (protected from rain and direct sunlight), upto IP65                           |
| Standard                        | CE in conformity with IEC 61439-1/-2  |



**On request: Custom built plugs, terminals for communication wiring and ready made connection and communication cables.**

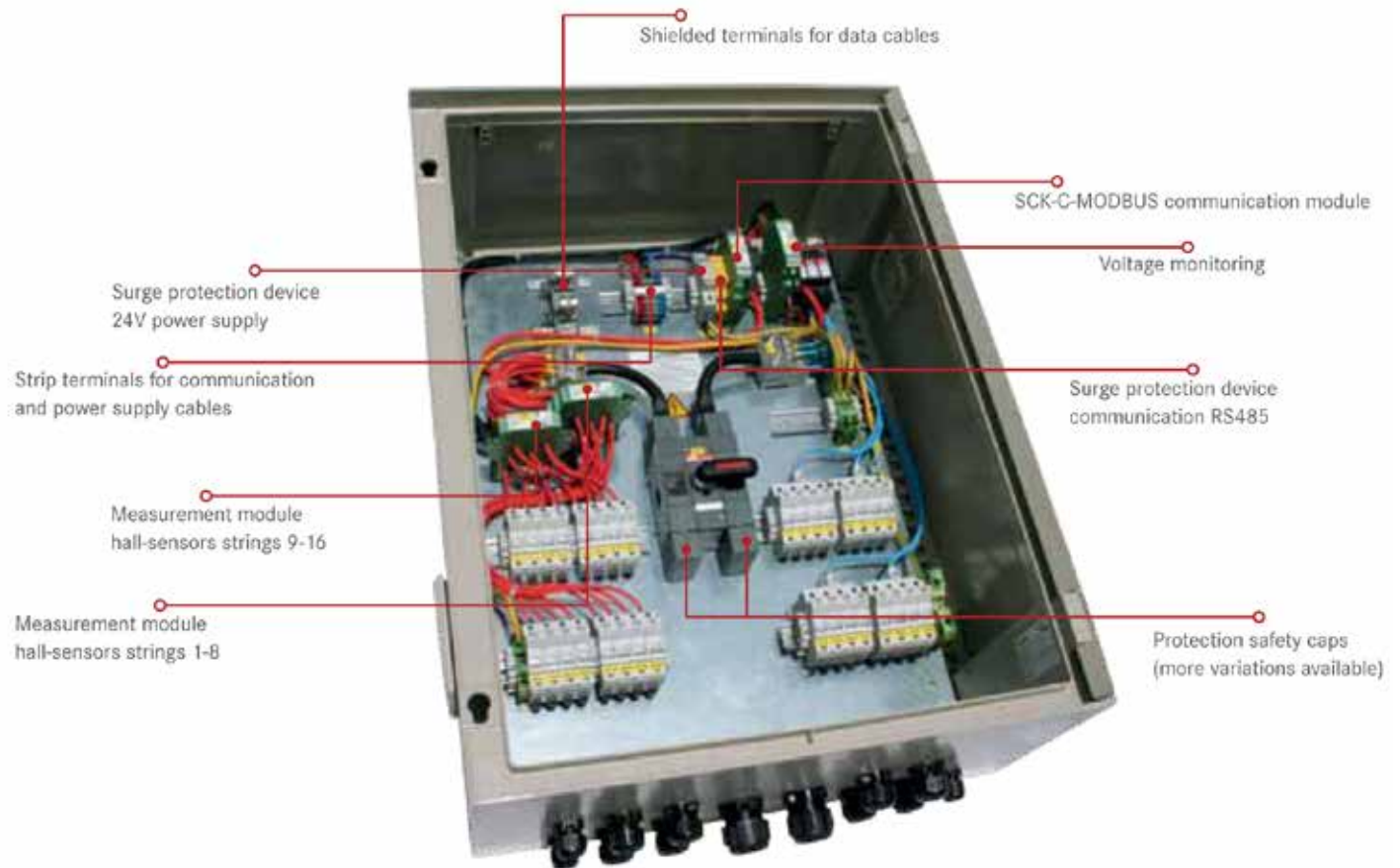


# String Monitoring

## HISbox DC Monitoring - 1500 V DC

### Description

Monitor and optimize your system's yield and safety with string-specific HISbox®-Monitoring-SCK. We offer optimized solutions for your PV-plant including the necessary protective gear, according to Australian requirements. We offer the complete solution in the well-established HISbox® quality with all the requisite protective, isolation and surge facilities.



| Order No.                  | HMP-08-16  | HMP-12-12   | HMP-12-24    | HMP-16-16    | HMP-20-20    | HMP-24-24    |
|----------------------------|--|-------------|--------------|--------------|--------------|--------------|
| Measurement channels       | 8  | 12          | 16           | 20           | 24           |              |
| Max. string input          | 16   | 12          | 24           | 16           | 20           | 24           |
| Nominal rated voltage (Ue) | 1000V DC & 1500V DC  |             |              |              |              |              |
| Rated current (Ie)         | 200 A  | 150 A       | 300 A        | 200 A        | 300 A        | 300 A        |
| Measurement technology     | Current: max. 25A <1%, voltage monitoring: 1500V <1,5%, power supply:24V, IOs: 4xDigIn, 1x PT100 Input, 1x0..10V Input,1x0..20mA Input |             |              |              |              |              |
| Communication              | RS485 (MODBUS RTU)   |             |              |              |              |              |
| Load Break Switch          | 2 pole; DC-21B (IEC60947)  |             |              |              |              |              |
| Fuses                      | Plus and minus pole fused with gPV fuse-links 10x85mm (acc. IEC 60269-6)   |             |              |              |              |              |
| Surge protection device    | Type 1+2   |             |              |              |              |              |
| DC output and connection   | M12 tubular cable lugs up to max. 400mm² or 2x240mm² per pole  |             |              |              |              |              |
| Dimension -1000V           | 845x635x300  | 845x635x300 | 845x635x300  | 845x635x300  | 845x635x300  | 845x635x300  |
| Dimension -1500V           | 1056x852x350   | On request  | 1056x852x350 | 1056x852x350 | 1056x852x350 | 1056x852x350 |
| Housing type               | GRP – Glassfibre reinforced Polyester enclosure (acc. IEC 62208); UV- and ozone stabile; incl. compensation ventile                    |             |              |              |              |              |
| Installation               | Open air, in shade (protected from rain and direct sunlight), upto IP65; IK10  |             |              |              |              |              |
| Standard                   | CE in conformity with IEC 61439-1/-2   |             |              |              |              |              |

## HISkon Splitter

### Description

Minimize the amount of installation work and increase operational safety with customized ready-to-plug cables for your system.

By using modern welding technology and high quality components an optimum interconnection can be achieved with lowest contact losses.



### Technical Data

|                            |   |
|----------------------------|---|
| Nominal voltage            | 1500V DC  |
| Max. current ampacity      | Without connectors, Single layed, free in air at 90°C:<br>4,0mm <sup>2</sup> 39,5 A; 6,0mm <sup>2</sup> -> 49,7 A; 10,0mm <sup>2</sup> -> 69,58 A (acc. IEC 60364-5-52) |
| IP-Class of cable splitter | IP65/68 (1m/24h) (Take note of connector's IP-protection!)  |
| Protection class           | II (reinforced Insulation) acc. IEC 61140   |
| Flame class                | Self-extinguishing UL94-V2  |
| Temperature range          | Ambient temperature -40° C to +90°C (without mechanical impact)   |
| Termination of splitter    | Monitored resistance welding process. Direct connection   |
| Molding material           | Specialised material, UV-stabile for outdoor usage  |
| Termination                | MC4, MC4-EVO2, Amphenol H4/UTX, Phoenix Sunclix, Hosiden HSC  |

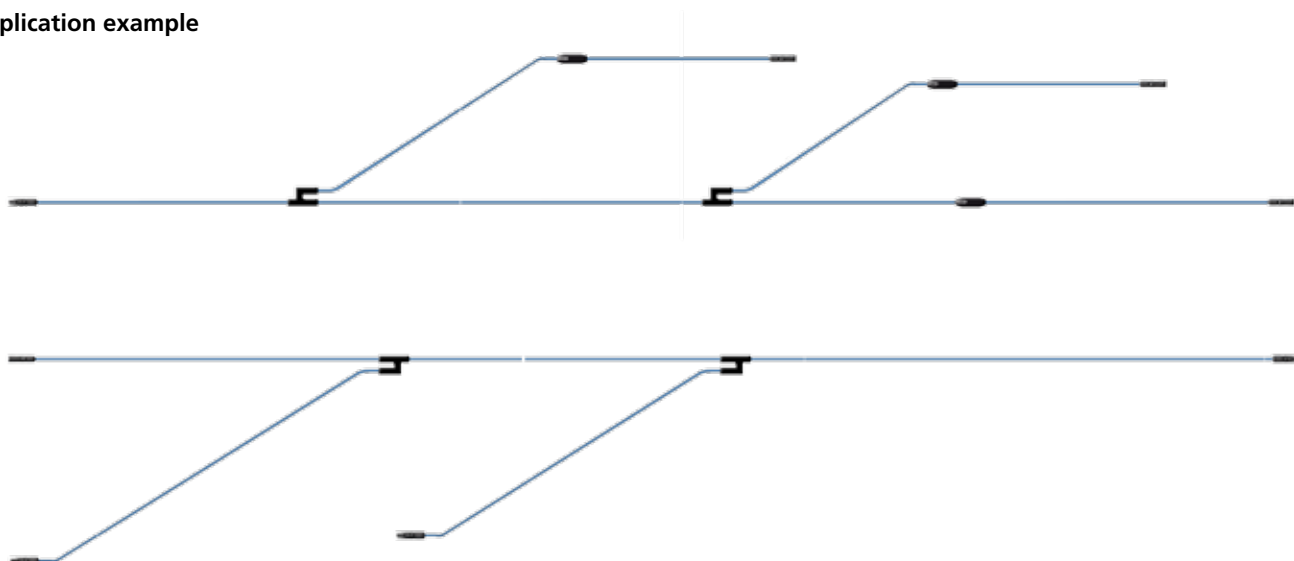


## HISkon Pre-assembled String Cable Harnesses

### Your benefits

- Ready to plug in, no wasted off-cuts and field assembly
- Monitored crimp quality and reduced contact resistance
- Completely identifiable cable systems to prevent reserve polarity
- Fast on-site execution

### Application example



# In-line Fuse Assembly

## HISkon In-line fuse 1500V DC

### Description

Reduce installation time and cost with a ready-to-plug in-line fuse connector.

The fully moulded construction provides weather tight housing preventing moisture from getting to the fuse construction. The in-line fuse connector provides the needed electrical protection to prevent damage to the solar array should a ground fault occur.

### Part No.

ILF.15A.1500V.MC4

### Features

- Rugged, low cost solution
- Replace combiner boxes
- 1A to 20A current rating available
- Single-pole, Non-Serviceable
- Genuine Multi-Contact connectors (MC4)

### Product Specifications

|                     |                                       |
|---------------------|---------------------------------------|
| Volts               | 1500V DC                              |
| Amps                | 15 A                                  |
| Flammability Rating | VO per UL94-V2                        |
| Protection rating   | IP68                                  |
| Fuse-link           | gPV 10x85<br>IEC-60296-6              |
| Temperature         | Ambient temperature<br>-40°C to +50°C |

### More options available

|                  |                  |
|------------------|------------------|
| Amps (fuse-link) | 2A, 4A, 10A, 20A |
| Connectors       | MC, MC4-EVO 2    |

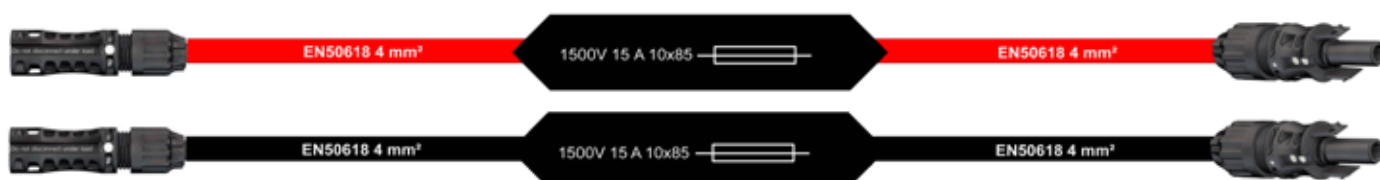


## HISkon In-line fuse assembly 1500V DC

Do you need to fit fuses to your PV system? As well as the protection in the inverter or combiner box, you can safeguard DC-strings with an in-line fuse. Moreover we offer you the possibility of also connecting several strings on the cable level with our U- or E-distributors permitting connection in parallel and the ability to protect each string individually.

### Technical Data

|                           |  |
|---------------------------|--|
| Cable                     | Solar cable H1Z2Z2-K (1500V DC); Minimum length each side 160mm                                    |
| Fuse-link                 | 1000V DC : gPV 10x38 acc. IEC 60269-6 (If=1,45)<br>1500V DC : gPV 10x85 acc. IEC-60296-6 (If=1,45) |
| Termination options       | MC4, MC-EVO2, Amphenol H4, Amphenol UTX, Phoenix Contact Sunclix, Hosiden HSC                      |
| Nominal voltage           | 1000V DC (10x38mm); 1500V DC (10x85mm)   |
| Rated current (fuse-link) | 2-20A (Derating factors and manufacturers guideline for fuse-links applies)                        |
| Insulation material       | Special-Hotmelt, UV-stable, IP68 (please take note of connector's IP-protection)                   |
| Flame class               | Self-extinguishing UL94-V2   |
| Temperature range         | Ambient temperature: -40°C to +50°C;   |



# Fusing

## gPV Series Fuses

1000V DC, 10 x 38mm fuse



### gPV Series Fuses

A range of 10 x 38mm fuse links specifically designed for the protection and isolation of photovoltaic strings. The fuse links are capable of interrupting low overcurrents associated with faulted PV (reverse current, multi-array fault) string arrays.

| Part No. | Rating        |
|----------|---------------|
| 30F2PV   | 2 A 1000V DC  |
| 30F6PV   | 6 A 1000V DC  |
| 30F8PV   | 8 A 1000V DC  |
| 30F10PV  | 10 A 1000V DC |
| 30F12PV  | 12 A 1000V DC |
| 30F15PV  | 15 A 1000V DC |
| 30F20PV  | 20 A 1000V DC |

## DIN Rail Mount Fuse Carriers

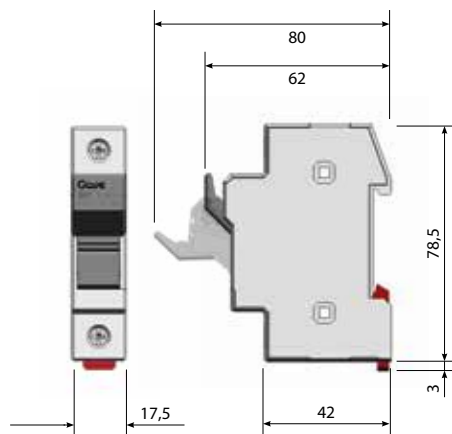
1000V DC, 10 x 38mm fuse



### Solartec Fuse Carriers

Solartec fuse carriers from Gawe are rated at 1000V DC and feature a low profile making them ideal for fitting inside low profile terminal boxes for rooftop mounting. Available in one pole and two pole versions.

| Part No. | Description                |
|----------|----------------------------|
| 211PV    | Single pole PV Fuse Holder |
| 212PV    | Double pole PV Fuse Holder |

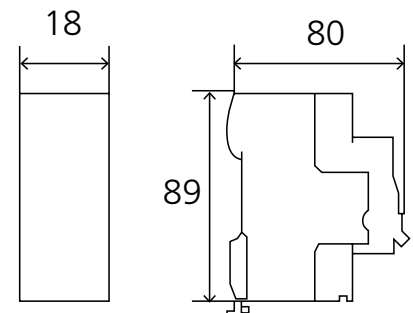


### Noark Fuse Carriers

Noark fuse carriers are rated at 1000V DC and feature a profile similar to a circuit breaker, making them ideal for fitting inside a consumer unit. Noark fuse holders also include a built in fuse integrity indicator which lights up if a fuse blows, simplifying the process of fault finding in multi-string arrays. Available in one pole and two pole versions.

| Part No. | Description                |
|----------|----------------------------|
| 85500    | Single pole PV Fuse Holder |
| 85515    | Double pole PV Fuse Holder |

Includes fuse integrity indicator.



## NH Fuse Switch Disconnectors

For Use on Stand Alone Systems Incorporating Battery Banks

### Functions

NH fuse switch disconnectors are used on low voltage electrical systems that require high protection against shortcircuit while securing on load circuit disconnection and isolation.

### According to standards

IEC/EN 60 947-3  
VDE 0660 / part 100  
IEC/EN 60 269-2-1  
VDE 0636 / part 201



### Base

Manufactured out of re-inforced fiber glass with high thermal stability and self extinguishing halogen free synthetic materials. Copper contacts are galvanic surface coated. Contact springs are made of stainless steel. Symmetrical switch suitable for bottom / top cable terminal connections.

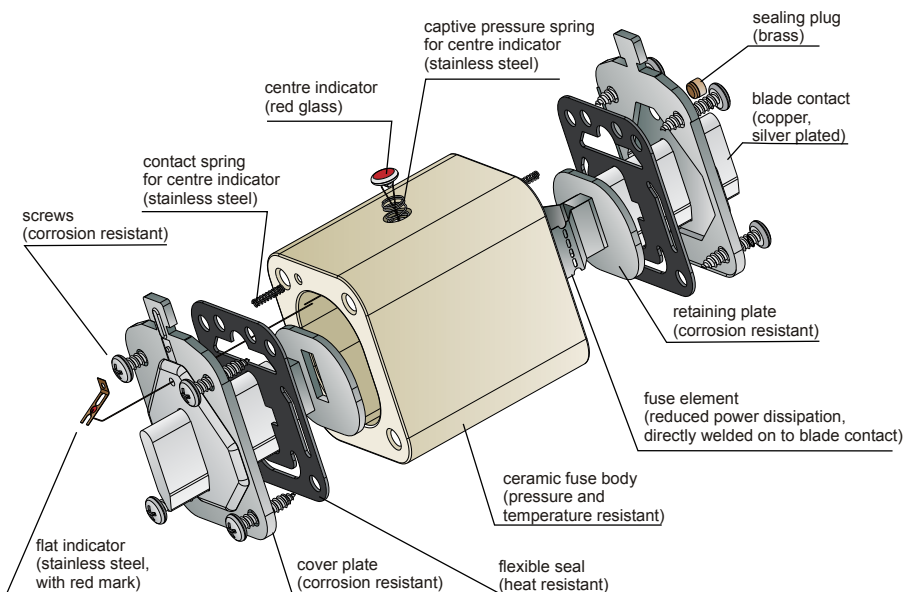
### Cover

The switch operating cover consists of re-inforced fiber glass and self extinguishing thermoplastic halogen free material. Supplied with large windows which enable fuse link indicator to be clearly seen. Ergonomic handle for easy operation.

| Part No. | Size | Max. Current Rating |
|----------|------|---------------------|
| 713      | NH00 | 160A                |
| 733      | NH1  | 250A                |
| 743      | NH2  | 400A                |
| 753      | NH3  | 630A                |

## NH Fuses

Industrial fuses are designed to protect installations and equipment against overload and short-circuit currents on low voltage electrical circuits. Gawe gG NH fuses are rated at 500V AC and 440V DC.



| Part No. | Size | Current Rating |
|----------|------|----------------|
| 66920080 | NH00 | 80             |
| 66920100 | NH00 | 100            |
| 66920125 | NH00 | 125            |
| 66920160 | NH00 | 160            |
| 67120200 | NH1  | 200            |
| 67120250 | NH1  | 250            |
| 67220315 | NH2  | 315            |
| 67220355 | NH2  | 355            |
| 67220400 | NH2  | 400            |
| 67320500 | NH3  | 500            |
| 67320630 | NH3  | 630            |

## IP65 Consumer Units

UV-resistant

### Description

The PV Power IP65 enclosures are manufactured in Europe from ASA (Acrylonitrile Styrene Acrylate). ASA material is extremely tough with good chemical resistance and thermal stability, UV stabilized, and outstanding resistance to weather and aging.

Available from 4 pole to 36 pole with blanking plates included for unused pole spaces. These enclosures are fitted with a small handle for locking the door and can be retrofitted with a key lock assembly.

Each enclosure is equipped with multiple metric knockouts in numerous sizes, in top, bottom and sides for extra versatility.

### Technical characteristics

- Material: Acrylonitrile Styrene Acrylate (ASA)
- Complies with: IEC 60670-1:2002  
IEC 60670-24:2005
- Rated voltage: 1000VDC
- Resistance of insulating material to fire (glow wire test): 650°C
- Tamper evident security seal provisions
- Protection degree IP65
- Insulation class II
- Optional key lock available
- Made in Europe
- UV stabilised



| Description      | 4 Pole          | 8 Pole          | 12 Pole         | 24 Pole         | 36 Pole         |
|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Dimensions (mm)  | 127 x 200 x 120 | 200 x 200 x 120 | 318 x 258 x 142 | 318 x 383 x 142 | 318 x 507 x 142 |
| No. of poles     | 4               | 8               | 12              | 24              | 36              |
| Part No.         | N4D             | N8D             | N12D            | N24D            | N36D            |
| Key lock to suit | LOCKDP          | LOCKDP          | LOCKDP          | LOCKDP          | LOCKDP          |
| ENB to suit      | -               | -               | 103547          | 103547          | 103547          |

## IP40 Consumer Units

### Modern Design

#### Description

The modern European styling of these IP40 consumer units from Noark will satisfy the most discerning home owner.

They are made in Europe and manufactured from high quality ABS materials. The IP40 consumer units are supplied complete with fork bars for fast and easy termination of circuit breakers and are available in both surface and recessed mounting styles.



## IP40 Consumer Units

### Surface mounting

#### Technical characteristics

- Material: Acrylonitrile Butadiene Styrene (ABS)
- According to: IEC 60670 -1: 2002 (1st edition), IEC 60670-24:2005 (1st edition)
- Temperature range: -25°C to +60°C
- Rated voltage: AC 400V
- Resistance of insulating material to fire (glow wire test): 650°C
- Earth neutral bars included
- Made in Europe.



| Description      | 12 Pole         | 18 Pole         | 24 Pole         | 36 Pole         |
|------------------|-----------------|-----------------|-----------------|-----------------|
| Dimensions (mm)  | 287 x 236 x 112 | 396 x 236 x 112 | 287 x 361 x 112 | 296 x 361 x 112 |
| No. of poles     | 12              | 18              | 24              | 36              |
| Part number      | 103522          | 103523          | 103524          | 103525          |
| Key lock to suit | LOCKDP          | LOCKDP          | LOCKDP          | LOCKDP          |

## IP40 Consumer Units

### Recessed mounting

#### Technical characteristics

- Material: Acrylonitrile Butadiene Styrene (ABS)
- According to: IEC 60670 -1: 2002 (1st edition), IEC 60670-24:2005 (1st edition)
- Temperature range: -25°C to +60°C
- Rated voltage: AC 400V
- Resistance of insulating material to fire (glow wire test): 650°C
- Earth neutral bars included
- Made in Europe.



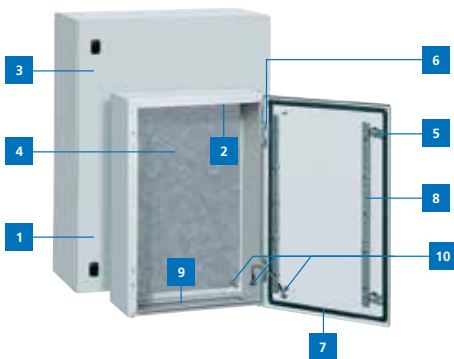
| Description      | 12 Pole        | 18 Pole        | 24 Pole        | 36 Pole        |
|------------------|----------------|----------------|----------------|----------------|
| Dimensions (mm)  | 283 x 232 x 70 | 396 x 232 x 70 | 283 x 357 x 70 | 396 x 357 x 70 |
| No. of poles     | 12             | 18             | 24             | 36             |
| Part number      | 103536         | 103537         | 103538         | 103539         |
| Key lock to suit | LOCKDP         | LOCKDP         | LOCKDP         | LOCKDP         |

## Wall mount - A series

Single door IP65

- Robust construction in sheet steel, powder-coated (RAL7035).
- Mounting plate and base mounted gland plate included.
- Direct earth contact via copper plated mounting studs.
- Door opens to approximately 140° and easily changed right/left hand mounting.
- Stainless steel also available, upon request

| Part No. | Size<br>W x H x D (mm) | Internal<br>depth | Mounting plate<br>W x H (mm) | Weight<br>(kg) |
|----------|------------------------|-------------------|------------------------------|----------------|
| A1000    | 400 x 400 x 210        | 195               | 370 x 350                    | 13.5           |
| A1020    | 400 x 600 x 210        | 195               | 370 x 550                    | 17.5           |
| A2145    | 400 x 500 x 210        | 195               | 370 x 450                    | 17.0           |
| A1021    | 600 x 400 x 210        | 195               | 570 x 350                    | 17.5           |
| A1027    | 500 x 700 x 210        | 195               | 470 x 650                    | 24.9           |
| A1030    | 600 x 600 x 210        | 195               | 570 x 550                    | 24.9           |
| A1040    | 600 x 800 x 210        | 195               | 570 x 750                    | 31.7           |
| AE1020   | 400 x 600 x 250        | 235               | 370 x 550                    | 17.8           |
| AE1027   | 500 x 700 x 250        | 235               | 470 x 650                    | 24.9           |
| AE1030   | 600 x 600 x 250        | 235               | 570 x 550                    | 24.3           |
| AE1040   | 600 x 800 x 250        | 235               | 570 x 750                    | 31.2           |
| AT1020   | 400 x 600 x 300        | 285               | 370 x 550                    | 19.1           |
| AT1021   | 600 x 400 x 300        | 285               | 570 x 350                    | 19.1           |
| AT1025   | 500 x 500 x 300        | 285               | 470 x 450                    | 22.1           |
| AT1030   | 600 x 600 x 300        | 285               | 570 x 550                    | 27.6           |



### Product features

- 1 Construction in 1.5 mm sheet steel. Powder-coated RAL 7035, textured.
- 2 Box with narrow bevelled edge.
- 3 One piece. Machine-welded corners.
- 4 Galvanised mounting plate (2.5 mm) included in all model ranges.
- 5 Standard lock systems with 3 mm-double bolt inserts.
- 6 Hinged door versions with concealed hinges approx. 140° opening.
- 7 Door featuring integral rubber sealing gasket (foamed)/high protection rating IP 65-EN60529. 2-door version IP 55.
- 8 Perforated galvanised door rails guarantee optimal mounting possibilities.
- 9 Includes gland plates in the base.
- 10 Earthing studs for door, enclosure and mounting plate.

## Ventilation plugs

IP68 Plugs to Reduce Condensation

### Pressure equaliser to prevent condensation within IP rated enclosures.

Waterproof enclosures with an IP rating greater than IP67 can form condensation when air pressure changes with weather conditions. To compensate for this, a ventilation plug should be fitted which compensates for changes in air pressure through a waterproof membrane.

The high quality, breathable and watertight PES membrane provides continuous pressure exchange between the enclosure and its surrounding environment, and ensures protection against humidity. The high water resistance of the membrane enables a protection rating of IP66, IP67 and IP69K.

| Part No. | Thread size |
|----------|-------------|
| ZB5054   | M12         |

SW1 17 H 17,8 L 10 A M12x1,5





# A comprehensive range of products from the world's leading manufacturers



- AC Circuit Breakers
- Conduit
- Fusing
- Enclosures

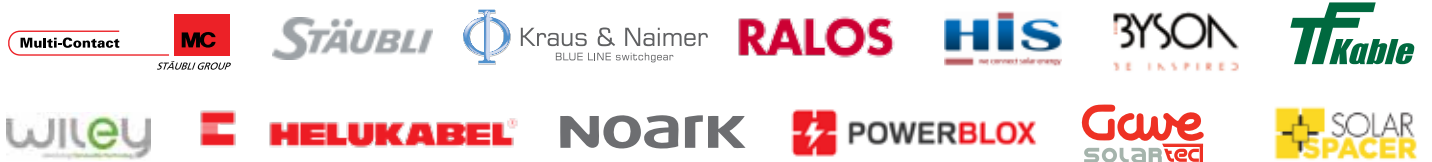
- Connectors
- Cable
- Conduit
- Leads

- DC Circuit Breakers
- DC Fusing
- DC Isolators
- Cable
- Connectors
- Conduit
- Leads

- Cable
- Earthing
- Connectors
- Cable Clips
- Conduit
- Cable Ties
- Leads

High safety levels in PV installations should never be compromised – you never know what is really at risk.

DKSH's range of exclusive brands from the world's leading manufacturers provide the highest quality, reliability, performance and safety levels available in the world today.



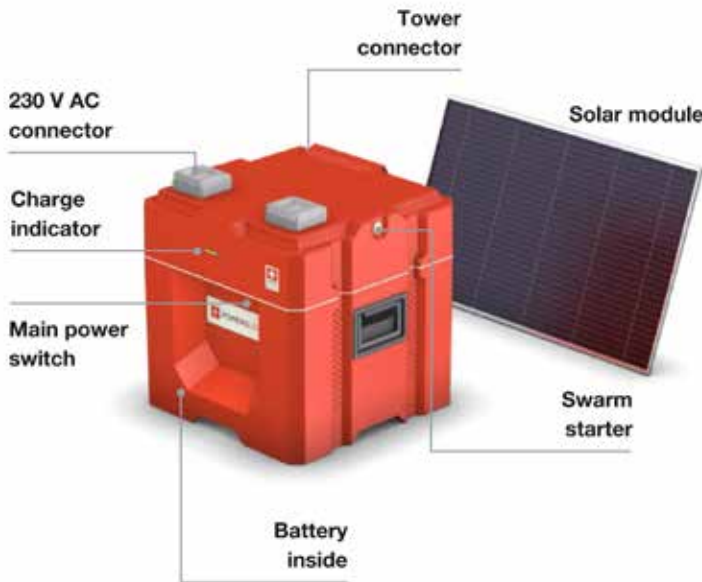
## Power wherever you are

The Power-Blox PBX200, the first product that was developed based on our swarm technology, is a revolutionary modular energy system producing alternating current from 200 W up to the Kilowatt range, which serves as a “portable socket” to off-grid energy demands. Its modularity allows it to produce and easily scale electricity.

The system is Plug & Power and requires no configuration, specific know-how or maintenance. It consists of intelligent energy cubes with an integrated battery (available as lead or lithium-ion version). Each cube provides 200 Watt of alternating current and can be powered by a solar unit or from any external source (such as solar,

wind, hydrothermal, biomass, or a generator etc.) to supply a household or small commercial business with electricity. Power-Blox acts as universal energy interface and can be combined with various external energy sources or storage devices.

## The Power-Blox PBX200



- 230 V AC/200 W true sinus inverter
- 100 Ah solar battery
- MPP solar charger
- Swarm-/mini-grid enabled
- 4 x stacking sockets
- Integrated stacking cable
- Grid/generator connector
- 12 V DC/3 A (cigarette lighter socket)
- 2 x USB output

| Part No.      | Model/Description         | Battery (included)     | Type        | Cycle | Expected lifetime |
|---------------|---------------------------|------------------------|-------------|-------|-------------------|
| 32.0200-50015 | Power-Blox PBX-200 Pb     | 2 x Hoppecke 12V 58 AH | Lead Acid   | 2500  | 3-5 yrs           |
| 32.0200-50025 | Power-Blox PBX-200 Li     | 2 x Li-Ion 12V 50 AH   | Lithium-Ion | 5000  | >10 years         |
| 32.0200-50400 | 10M, MC4 solar cable lead | -                      | -           | -     | -                 |

## Nearly unlimited scalability

The nearly endless scalability of the Power-Blox system represents a breakthrough in energy technology. It allows scalable growth based on increasing energy requirements, without the need of modifying/replacing existing installations.

### Technical Data

| Inverter                    | PBX200 Pb                                  | PBX200 Li                                    |
|-----------------------------|--|--|
| Rated grid voltage          | 230 V                                      |  |
| Rated frequency             | 50 Hz                                      |  |
| Harmonic distortion         | < 4%                                       |  |
| Continuous power at 25      | 200 W                                      |  |
| Power for 5 sec. at 25      | 230 W                                      |  |
| Power for 3 sec. at 25      | 370 W                                      |  |
| Maximum load                | Up to short-circuit                        |  |
| Cos Ø                       | 0.1 to 1                                   |  |
| <b>Grid/generator input</b> |  |  |
| Input voltage               | 230 V ± 15%                                |  |
| Frequency range             | 47-64 Hz                                   |  |
| Grid charger current        | 5 A  |  |
| Charging characteristics    | IUoU <sup>1)</sup>                         | Li BMS <sup>1)</sup>                         |
| Resettable fuse             | 10 A                                       |  |
| <b>Transfer connectors</b>  |  |  |
| Transfer voltage            | 230 V ± 15%                                |  |
| Frequency range             | 47-64 Hz                                   |  |
| Resettable fuse             | 10 A                                       |  |
| <b>Solar input</b>          |  |  |
| Solar charger type          | MPP <sup>2)</sup>                          |  |
| Input voltage range         | 30-45 V                                    |  |
| PV current                  | 8 A  |  |
| Maximum PV power            | 250 W                                      |  |
| Recommended PV power        | 200 W                                      |  |
| Charging characteristics    | IUoU <sup>1)</sup> , temperature regulated | Li BMS <sup>1)</sup> , temperature regulated |
| <b>Battery</b>              |  |  |
| Included batteries          | 2 x Hoppecke sun power VR M 12 V 58        | 2 x Li-Ion batteries 12 V 50 AH              |
| Battery technology          | Lead acid/AGM <sup>3)</sup>                | Lithium/LiFePo4 <sup>4)</sup>                |
| Internal battery voltage    | 24 V                                       |  |
| Cycle stability             | 2500 cycles                                | 5000 cycles                                  |
| Expected lifetime           | 3-5 years                                  | > 10 years                                   |
| <b>DC output</b>            |  |  |
| Cigarette lighter socket    | 12 V, 3 A                                  |  |
| USB socket                  | 2 x 5 V, 2 A                               |  |
| <b>Connectors</b>           |  |  |
| Solar                       | powerCON TRUE1 inlet/clamps                |  |
| Transfer/stacking           | powerCON inlet/clamps                      |  |
| Transfer cable              | 1.3 m cable with powerCON plug             |  |
| Grid/generator              | Grid socket C 14, 10 A/clamps              |  |
| Clamps                      | Tool-less Phoenix clamps, 0.2-6 mm2        |  |



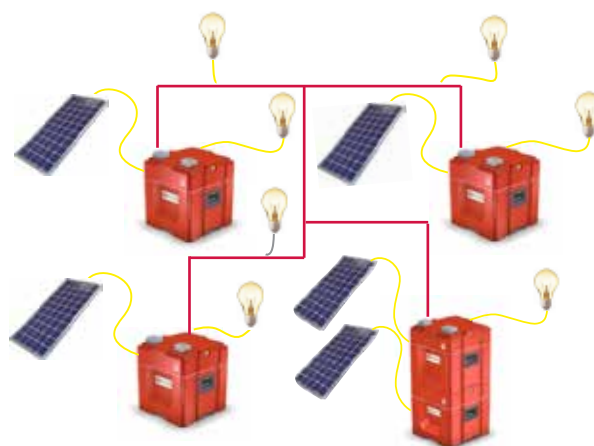
### Standalone Power-Blox

Instant plug & power  
Directly supplies 230 V AC



### Stacking Power-Blox

Get more energy and power.  
Expand by stacking units.



### Build a swarm grid

More units increase the stability and power of the grid. Every consumer in the system can use the full power of all units.

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