

# Data sheet Blackline







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### F10-U Blackline 9W Solar Roof Tile

The F10-U Blackline 9W Solar Roof Tile is based on the existing roof tile model Nibra F10Ü Flachdachziegel. Actual documentation of the Nibra F10Ü Flachdachziegel is available at [Nelskamp.de](http://Nelskamp.de). The F10-Ü Blackline 9W Solar Roof Tile is currently available in two colours: Black Engobe (colour code 232) and Black Noble Engobe (colour code 218).

### Technical specifications

|                                 |                   |
|---------------------------------|-------------------|
| Maximum power                   | 9W                |
| Output tolerance                | + 0/5%            |
| Optimum operating voltage       | 1.06V             |
| Optimum operating current       | 8.51A             |
| Open circuit voltage            | 1.28V             |
| Short Circuit Current (Isc)     | 8.99A             |
| Maximum system voltage          | 1000VDC           |
| Temperature coefficient voltage | - 0.34±0.02%/° C  |
| Temperature coefficient current | + 0.06 ± 0.01%/°C |
| Temperature coefficient power   | - 0.5 ± 0.05 %/°C |

### Maximum values

|                                    |                      |
|------------------------------------|----------------------|
| Temperature resistance             | -40 °C ~ +80° C      |
| Storage temperature                | -40 °C ~ +80° C      |
| Maximum allowed voltage insulation | 1000VDC              |
| Maximum wind resistance            | 60 m/s               |
| Maximum surface load               | 200kg/m <sup>2</sup> |
| Maximum hail load                  | 25 mm / 80 km        |

### Mechanical specifications

|                           |                |
|---------------------------|----------------|
| Dimensions roof tile      | 487 x 296 mm   |
| Covering width roof tile  | 242 mm +/- 1mm |
| Tile lath distance        | 419-428 mm     |
| Weight                    | 4.8 kg         |
| Weight per m <sup>2</sup> | 48 kg          |
| Number per m <sup>2</sup> | 10 stuks       |
| Minimum roof pitch        | 15°/22°        |

### General data

|                    |                          |
|--------------------|--------------------------|
| Solar cell type    | mono-crystalline silicon |
| Dimensions cell    | 156x156 mm               |
| Shape of cell      | square                   |
| 5 bush bars        | black                    |
| Number of cells    | 2 series                 |
| Efficiency of cell | 20,22%                   |

### Laminate data

|  |                      |
|--|----------------------|
| Dimensions l <sup>x</sup> w <sup>x</sup> d | 340x172x4,5          |
| Material frame                             | none                 |
| Surface glass                              | hardened solar glass |
| Glass thickness                            | 3.2 mm               |
| Material                                   | EVA                  |
| Material backsheet                         | TPT                  |

### STC data

|                 |                       |
|-----------------|-----------------------|
| AM-condition AM | 1.5                   |
| Light intensity | 1000 W/m <sup>2</sup> |
| Temperature     | 25° C                 |

### Packaging

|                        |         |
|------------------------|---------|
| Number per pallet      | 180     |
| Dimensions full pallet | 100x120 |
| Weight full pallet     | 850kg   |