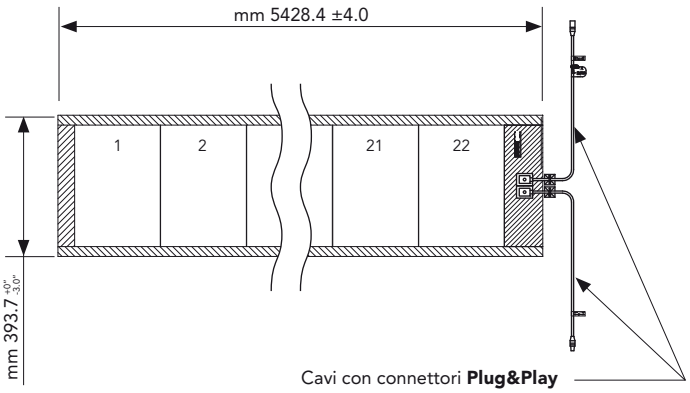
MARCEGAGLIA

Flexible photovoltaic laminates

M PVL 144 | 136 | 128

22 CELLS



General characteristics

- High temperature and low light performance
- Output cables with Multi-Contact connectors on top
- Bypass diodes for shadow tolerance
- Treadable surface due to complete absence of glass

Performance characteristics

Rated power (P_{max}): **144 W_p** or **136 W_p** or **128 W_p**
Production P_{max} tolerance: ±5%

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Dimensions:	**length: 5428 mm**, width: 394 mm thickness: 4 mm, 16 mm including potted terminal housing assembly
Weight:	7,3 kg
Output cables:	4 mm² - 560 mm length cables with MC® connectors pre-assembled on upper side of laminate
Bypass diodes:	connected across every solar cell
Encapsulation:	durable EFTE high light-transmissive polymer, UV-resistant, weather resistant
Adhesive:	ethylene propylene copolymer adhesive sealant with microbial inibitor
Cell type:	22 triple junction amorphous silicon solar cells, 356 mm x 239 mm connected in series

Electrical specifications STC

(Standard Test Conditions: 1000 W/m², AM 1.5, 25 °C cell temperature)

model	M PVL 144	M PVL 136	M PVL 128
Maximum power (P_{max}):	**144 Wp**	**136 Wp**	**128 Wp**
Voltage at P_{max} (V_{mp})	**33.0 V**	**33.0 V**	**33.0 V**
Current at P_{max} (I_{mp})	**4.36 A**	**4.13 A**	**3.88 A**
Short-circuit current (I_{sc})	**5.3 A**	**5.1 A**	**4.8 A**
Open-circuit voltage (V_{oc})	**46.2 V**	**46.2 V**	**46.2 V**
Maximum series fuse rating	**8 A**	**8 A**	**8 A**

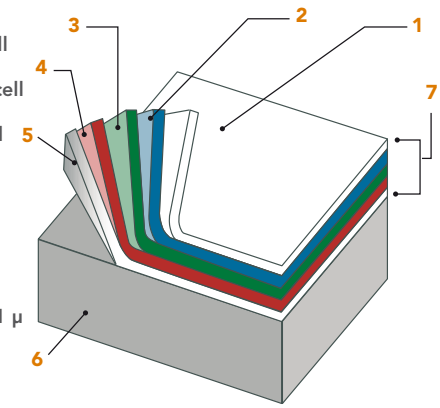
Electrical specifications NOCT

(Nominal Operating Cell Temperature: 800 W/m², AM 1.5, 1 m/sec. wind)

model	M PVL 144	M PVL 136	M PVL 128
Maximum power (P_{max}):	**111 Wp**	**105 Wp**	**100 Wp**
Voltage at P_{max} (V_{mp})	**30.8 V**	**30.8 V**	**30.8 V**
Current at P_{max} (I_{mp})	**3.60 A**	**3.42 A**	**3.24 A**
Short-circuit current (I_{sc})	**4.3 A**	**4.1 A**	**3.9 A**
Open-circuit voltage (V_{oc})	**42.2 V**	**42.2 V**	**42.2 V**
NOCT	**46 °C**	**46 °C**	**46 °C**

TRIPLE-JUNCTION SOLAR CELL SCHEME

1 - Transparent electrode
2 - Blue light absorbing cell
3 - Green light absorbing cell
4 - Red light absorbing cell
5 - Reflective metal layer
6 - Lower flexible layer (stainless steel)
7 - Thickness of a triple-junction cell ~ 1 µ



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rev. 10-2012

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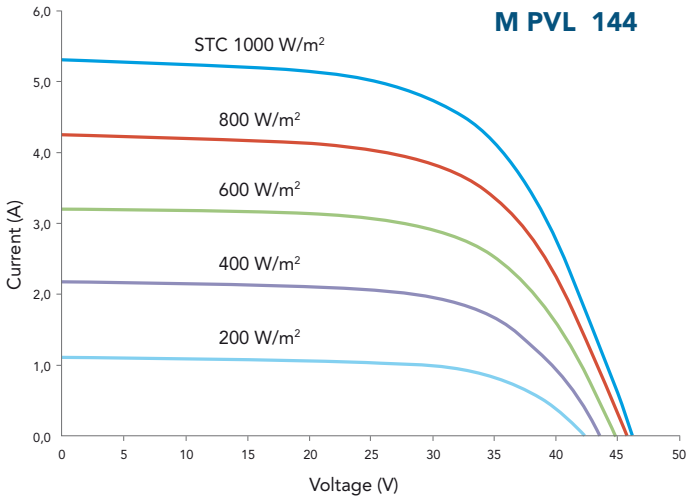
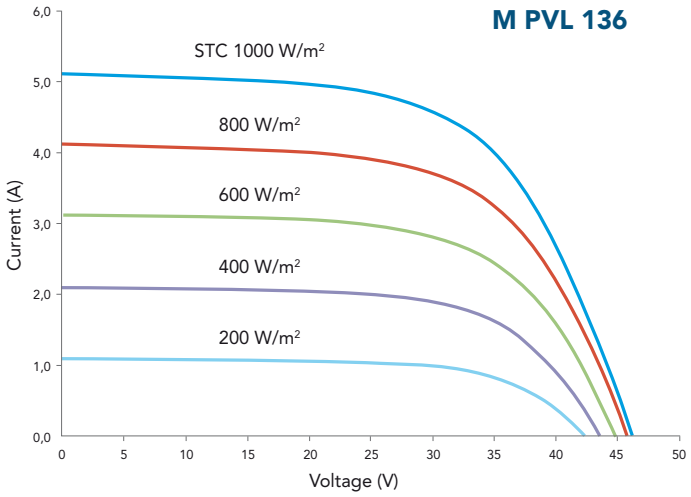
Member IFI INDUSTRIE FOTOVOLTAICHE ITALIANE

I-V curves at various levels of irradiance at AM 1.5 and 25°C cell temperature

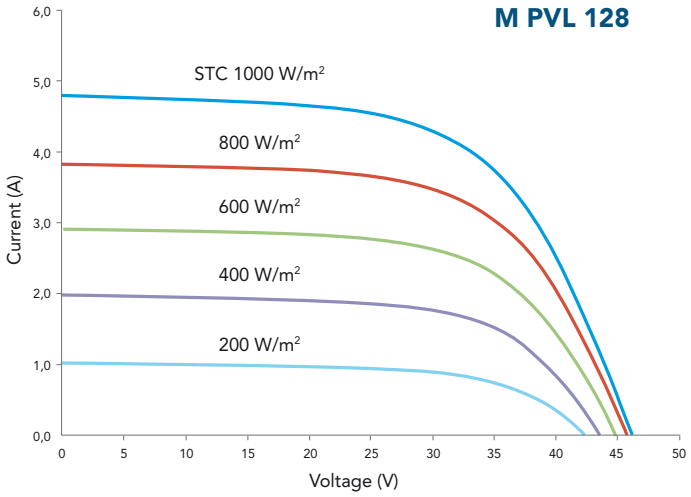
M PVL 144



M PVL 136



M PVL 128



Temperature coefficients

(at AM 1.5, 1000 W/m² irradiance)

Temperature coefficient (TC) I_{sc}:	0.001/K (0.10%/°C)
Temperature coefficient (TC) V_{oc}:	-0.0038/K (-0.38%/°C)
Temperature coefficient (TC) P_{max}:	-0.0021/K (-0.21%/°C)
Temperature coefficient (TC) I_{mp}:	0.001/K (0.10%/°C)
Temperature coefficient (TC) V_{mp}:	-0.0031/K (-0.31%/°C)

y = yreference • [1 + TC • (T- Treference)]

Certifications and Warranties

Certificates of conformity of PV products to requirements of norms IEC EN 61646 and IEC EN 61730-2 up to 1000 V_{dc} obtained by KIWA.

Certificate of factory inspection and Made in EU by KIWA.

RINA ISO 9001 · ISO 14001 BS OHSAS 18001 Sistema Gestione Integrato

Integrated Management System
ISO 9001:2008
ISO 14001:2004
BS OHSAS 18001:2007

Product warranty: 10 years
Limited power output warranty: 92% at 10 years; 84% at 20 years, 80% at 25 years (of initial nominal power)

Laminate standard configuration

Flexible photovoltaic laminates with potted terminal housing assembly with output cables and Multi-Contact (MC®) quick-connect terminals on top.

Application criteria

- **Maximum roof temperature**: 85 °C (185 °F)
- **Minimum slope**: 3° (1/2:12)
- **Maximum slope**: 60° (21:12)

Note:

1. During the first 8-10 weeks of operation, electrical output exceeds specified ratings. Power output may be higher by 15%, operating voltage may be higher by 11% and operating current may be higher by 4%.
2. Electrical specifications are based on measurements performed at standard test conditions (irradiance 1000 W/m², air mass 1.5, cell temperature 25°C) after stabilization.
3. Actual performance may vary up to 10% from rated power due to low temperature operation, spectral and other related effects. Maximum system open-circuit voltage not to exceed 1000 V_{dc} per IEC regulations, according to protection class II or IEC EN 61730-2.
4. Specifications subject to change without notice.

PV CYCLE www.pvcycle.org

cobat www.cobat.it

Marcegaglia is a member of associations which promote the collection and recycling of photovoltaic modules at the end of their life cycles, helping to protect the environment and render photovoltaic power generation ecosustainable.

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