# SMART MODULE PLATFORM

The TS4 universal platform enables plug-and-play functionality for any solar module. The base provides a single interface that can be matched with one of several electronic covers to address a range of functions and budgets. Together they form a new generation of module-level power electronics: flexible, replaceable, upgradeable, and accompanied by a powerful PV 2.0 communication backend.
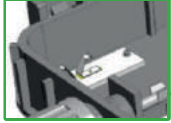
**FIRE SAFETY**

**SAFETY**

**MONITORING**

**OPTIMIZATION**

**DIODES**

**LONG STRINGS**
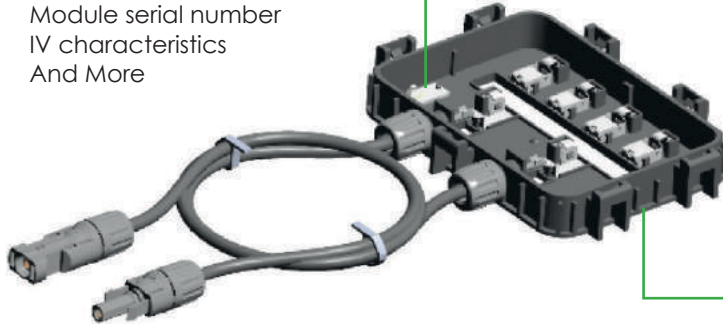
**PV 2.0**

# INTEGRATED MODULAR PLATFORM

## TS4-B

Type: TS4-B (base up to 1500V)

### INTEGRATED JUNCTION BOX BASE

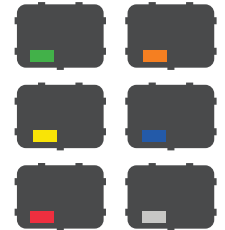**Electronically Readable:**
- Module serial number
- IV characteristics
- And More

**Choice of Electronic Covers**
Removable TS4 covers with different levels of functionality

**PV Module Integrated Jbox Base**
Factory-installed for smart-ready solar

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# MECHANICAL SPECIFICATIONS

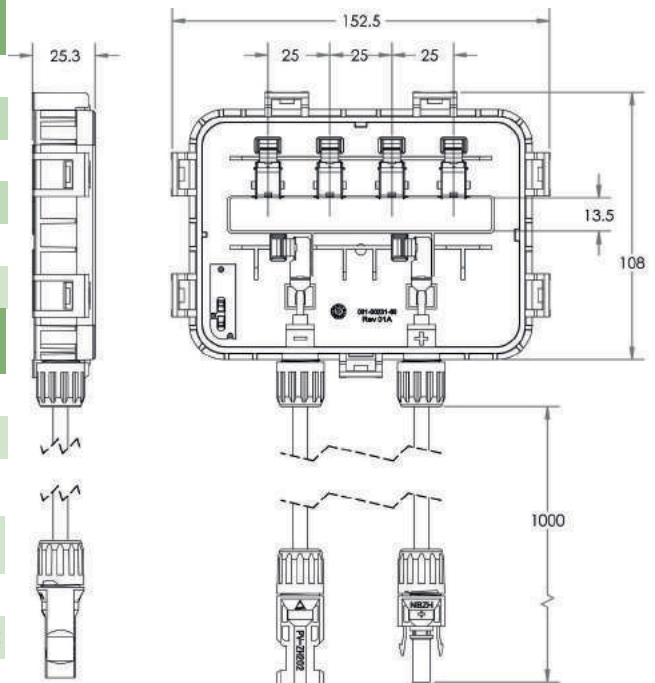| Mechanical | |
|---|---|
| Operating Temperature Range | -40°C to +85°C (-40°F to +185°F) |
| Storage Temperature Range | -40°C to +85°C (-40°F to +185°F) |
| Cooling Method | Natural Convection |
| Dimensions (with cover) | 152.5mm x 108mm x 25.3mm |
| Weight (base without cover) | 270g |
| Outdoor Rating | IP67, NEMA 3R |
| **Cabling** | |
| Type | H1Z2Z2-K |
| Output Length | Standard 1.0m, other lengths on request |
| Cable Options | 1000V rated<br>1500V rated |
| Cable Cross-Section | 7.15 ± 0.25 mm (1000V)<br>6.4 ± 0.2mm, 7.05 ± 0.2mm (1500V) |
| Connectors | MC4, MC4 compatible, Amphenol, EVO2 |
| UV Resistance | 500hr with UV light between 300-400nm @65°C |
| Maximum String Voltage | 1500V UL/IEC[1] |

[1] All TS4 covers are 1500V compatible. Specify max system voltage when ordering modules with TS4 bases for appropriate cables & connectors.

*All dimensions are in mm

# MEET YOUR PROJECTS' NEEDS WITH TS4

Tigo has expanded its smart module platform to provide multiple levels of customization. With a universal base and a range of covers containing the Flex MLPE, TS4 increases your freedom of choice when selecting features for a particular project and budget. TS4 cover options range from standard diodes all the way to fully optimized performance and safety features.

## LONG STRINGS
### TS4-L

Diodes    Monitoring    Safety    Optimization    Long Strings

- String length increased by up to 30%
- Fewer BOS components
- Faster installation
- Inverter optimization
- Lower wire-losses
- Plus all the benefits of Optimization, Safety, and Monitoring

## OPTIMIZATION
### TS4-O

Diodes    Monitoring    Safety    Optimization

- Shade and mismatch tolerance
- Enhanced energy yield
- Greater design flexibility
- Maximized roof usage
- Plus all the benefits of Safety and Monitoring

## SAFETY
### TS4-S

Diodes    Monitoring    Safety

- NEC 2014 & 2017 690.12 rapid shutdown compliant
- Module-level deactivation
- Automatic or manual shutdown
- Plus all the benefits of Monitoring

## FIRE SAFETY
### TS4-F

Diodes    Fire Safety

- NEC 2014 & 2017 690.12 rapid shutdown compliant
- Module-level deactivation
- Automatic or manual shutdown
- SunSpec signaling

## MONITORING
### TS4-M

Diodes    Monitoring

- Reduced O&M costs
- PV-2.0 data synchronization
- Module bar code tracking
- CRM integration
- Warranty tracking
- Fleet management

## DIODES
### TS4-D

Diodes

- Similar to a standard junction box
- Standardization on basic TS4 baseplate
- Field replaceable and upgradeable
- Heat dissipation away from the module

# TS4 COVERS

| ELECTRICAL RATINGS | DIODES<br>TS4-D | MONITORING<br>TS4-M | FIRE SAFETY<br>TS4-F | SAFETY<br>TS4-S | OPTIMIZATION<br>TS4-O | LONG STRINGS<br>TS4-L |
|---|---|---|---|---|---|---|
| **INPUT** | | | | | | |
| Rated DC Input Power | - | 475W | 475W | 475W | 475W | 475W |
| Maximum Input Voltage | | 90V | 90V | 90V | 90V | 90V |
| Maximum Continuous Input Current ($I_{MAX}$) | 12A | 12A | 12A | 12A | 12A | 12A |
| Maximum $V_{OC}$ @ STC | - | 75V | 75V | 75V | 75V | 75V |
| Minimum $V_{MP}$ | N/A | 16V | 16V | 16V | 16V | 16V |
| **OUTPUT** | | | | | | |
| Output Power Range | 0 - 375W | 0 - 475W | 0 - 475W | 0 - 475W | 0 - 475W | 0 - 475W |
| Output Voltage Range | 0 - $V_{OC}$ | 0 - $V_{OC}$ | 0 - $V_{OC}$ | 0 - $V_{OC}$ | 0 - $V_{OC}$ | 0 - $V_{MAX}$[1] |
| Communication Type | n/a | 802.15.4  2.4GHz | SunSpec | 802.15.4  2.4GHz | 802.15.4  2.4GHz | 802.15.4  2.4GHz |
| Rapid Shutdown UL Listed[2]<br>(NEC 2014 & 2017 690.12) | Need additional RS device | Need additional RS device | Yes | Yes | Yes | Yes |
| Impedance Matching | No | No | No | No | Yes | Yes |
| Output Voltage Limit | No | No | No | No | No | Yes |
| Maximum System Voltage | 1500V | 1500V | 1500V | 1500V | 1500V | 1500V |
| Recommended Fuse Rating | 15A | 15A | 15A | 15A | 15A | 15A |

[1] Output voltage limit of TS4-L is factory-set.
[2] Cloud Connect and Gateway required for rapid shutdown compliance.

# ORDERING INFORMATION

| Integrated Smart Module | |
|---|---|
| TS4-B | 1000V TÜV / UL, MC4 compatible, 1m cable |
| **Options** | |
| ☐ | Connectors (1000V TÜV / UL): MC4, Amphenol, EVO2 |
| ☐ | 1.2M Cable |
| ☐ | 1500V TÜV / UL, EVO2 or MC compatible |
| **Covers** | **Features** |
| TS4-D | Diodes |
| TS4-M | Monitoring |
| TS4-F | Fire Safety |
| TS4-S | Safety |
| TS4-O | Optimization |
| TS4-L | Long Strings |

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**For product info:**
Visit www.tigoenergy.com/products

**For technical info:**
http://support.tigoenergy.com

For additional info and product selection assistance, use Tigo's online design tool at www.tigoenergy.com/design

All TS4 covers are 1500V compatible. Specify max system voltage when ordering modules with TS4 bases for appropriate cables & connectors.

CE  FC  IC  VCI  CSA  TÜVRheinland  c UL us

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PV 2.0