# Tigo®

## ONE SMART PLATFORM, FOR ANY SMART MODULE CHOICE

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, and upgradeable, accompanied by a powerful PV 2.0 communication backend.
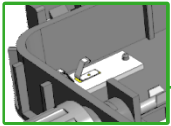


SAFETY

MONITORING

DIODES

LONG STRINGS

OPTIMIZATION

PV 2.0
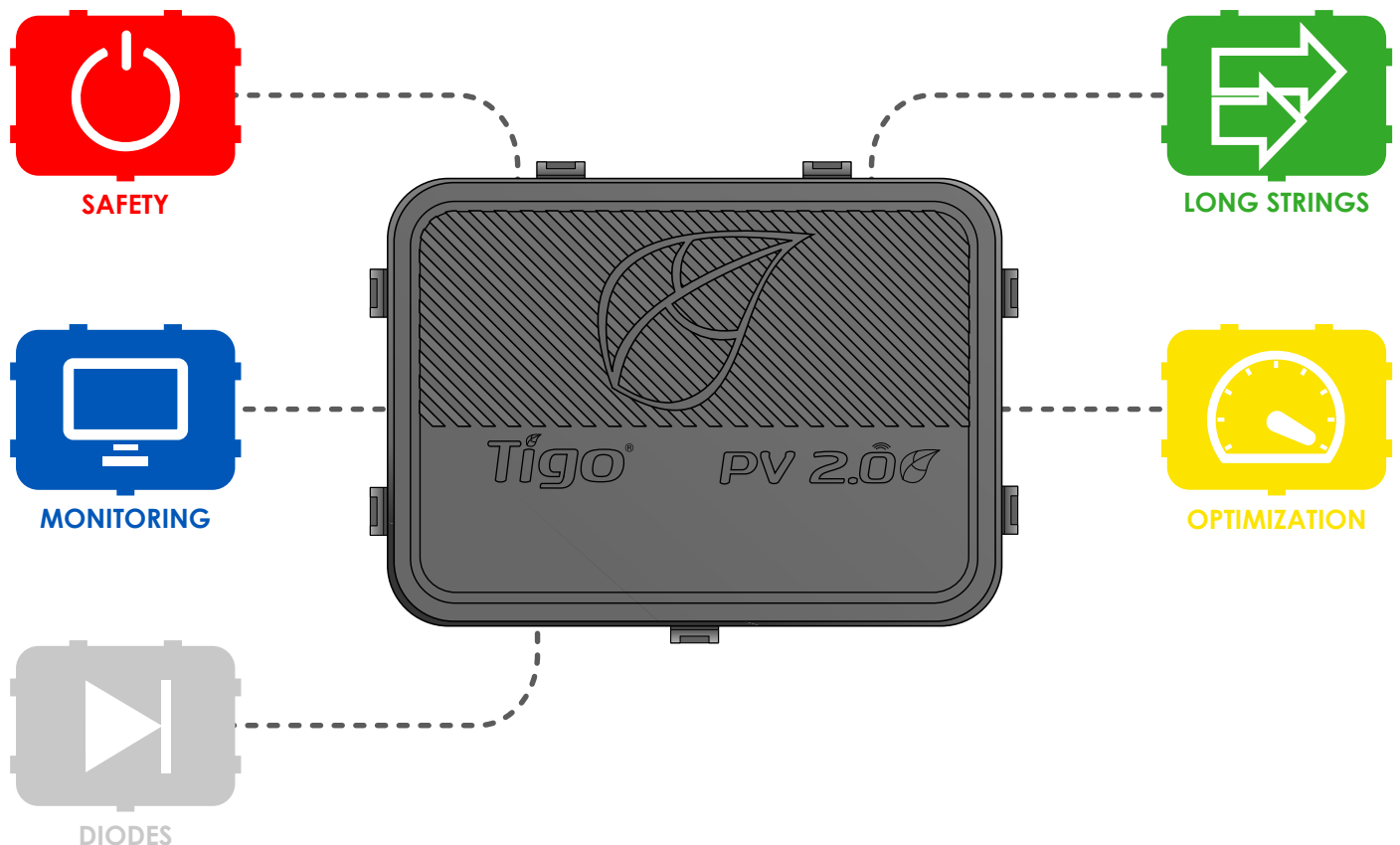
# A MODULAR PLATFORM

**Choice of Electronic Covers**
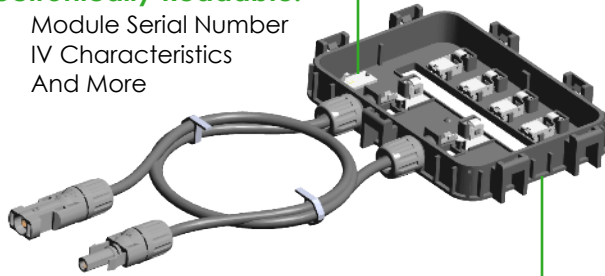Removable Covers with Different Levels of Functionality
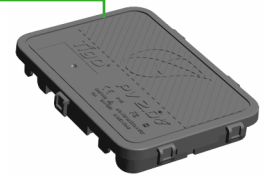
## TS4-B
### JUNCTION BOX BASE

**Electronically Readable:**
- Module Serial Number
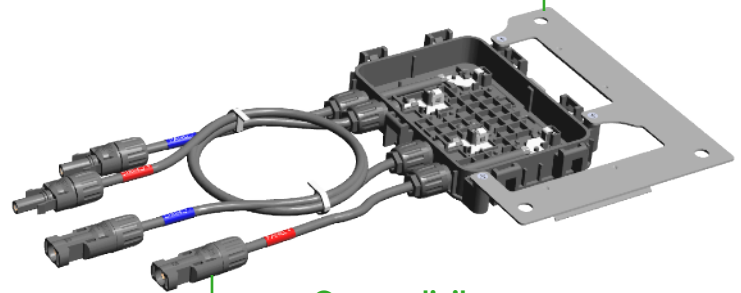- IV Characteristics
- And More

**PV Module Integrated**
Factory-installed for Smart Ready Solar

## TS4-R
### RETROFIT ADD-ON BASE

**Mounting Bracket**
Clips to Standard Module Frame

**Connectivity**
Add Smart Functionality to a Standard Module

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# MECHANICAL SPECIFICATIONS

| Mechanical | |
| --- | --- |
| Operating Temperature Range | -40°C to +75°C (-40°F to +167°F) |
| Storage Temperature Range | -40°C to +75°C (-40°F to +167°F) |
| Cooling Method | Natural Convection |
| Dimensions (with cover) | TS4-B: 152.5mm x 108mm x 25mm, TS4-R: 195.5mm x 158mm x 23mm |
| Weight (without cover) | TS4-B: 270g, TS4-R: 470g |
| Environmental Rating | IP65/67, NEMA 3R |
| **Cabling** | |
| Cabling Type | PV1-F |
| Output Cable Length | 1.0m, other lengths on request |
| Connector | MC4, MC4 compatible |
| UV Resistance | 500hr with UBV light between 300-400nm @ 65°C |
| Maximum String Voltage | 600V UL/1000V IEC or 1000V UL/IEC |
| Outer Cable Diameter | 6.25±0.25mm (600V UL) 7.15±0.25mm (1000V UL) |
| Wire Cross-Section | 4.0mm$^2$ (12AWG) |

*All dimensions are in mm

Dimensions (TS4-B): 25, 25, 25, 22.14, 101.1 ±0.2, 106, 13.45, 49, 138.5 ±0.2

Dimensions (TS4-R): 195.50, 169.75, 13.74, 15.82, 30.39, 57.35, 157.81, 129.90, 29.90, 57.11
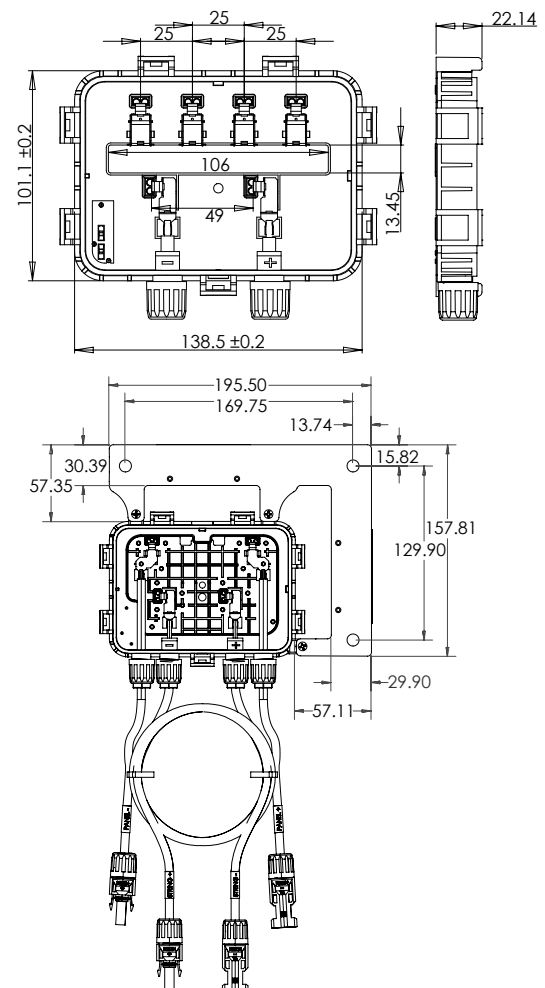
# MEET ANY PROJECT NEED WITH TS4

Tigo has expanded its smart module platform to provide five levels of customization. With a universal base and a range of covers containing the power electronics, 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.
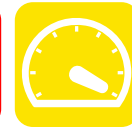
## LONG STRINGS
### TS4-L

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

## OPTIMIZATION
### TS4-O

Diodes  Monitoring  Safety  Optimization

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

## SAFETY
### TS4-S

Diodes  Monitoring  Safety

- NEC 2014 690.12 rapid shutdown compliant
- Module-level deactivation
- Automatic or manual shutdown
- Over-temperature protection
- Plus all the benefits of Monitoring

## 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
- Applicable to conventional and smart modules
- Field replaceable and upgradeable
- Heat dissipation away from the module

# TS4 COVERS

|  | DIODES<br>TS4-D | MONITORING<br>TS4-M | SAFETY<br>TS4-S | OPTIMIZATION<br>TS4-O | LONG STRINGS<br>TS4-L |
|---|---|---|---|---|---|
| **ELECTRICAL RATINGS** | | | | | |
| **INPUT** @ STC | | | | | |
| Rated DC Input Power | 375W | 375W | 375W | 375W | 375W |
| Maximum DC Input Voltage ($V_{OC}$) | 90V | 52V | 52V | 52V | 52V |
| Maximum Short Circuit Current ($I_{SC}$) | 12A | 12A | 12A | 10A | 10A |
| Operating Voltage | 0-80V | 16-48V | 16-48V | 16-48V | 16-48V |
| **OUTPUT** | | | | | |
| Output Power Range | 0-375W | 0-375W | 0-375W | 0-375W | 0-375W |
| Output Voltage Range | 0-$V_{OC}$ | 0-$V_{OC}$ | 0-$V_{OC}$ | 0-$V_{OC}$ | 0-$V_{OC}$ |
| Communication Type | n/a | 802.15.4 2.4GHz | 802.15.4 2.4GHz | 802.15.4 2.4GHz | 802.15.4 2.4GHz |
| Rapid Shutdown Verified (NEC 2014 690.12) | Need additional RS device | Need additional RS device | Yes | Yes | Yes |
| Impedance Matching Capability | No | No | No | Yes | Yes |
| Output Voltage Limit | No | No | No | No | Yes |
| Maximum System Voltage | 1000V | 1000V | 1000V | 1000V | 1000V |
| Maximum Series Fuse Rating | 15A | 15A | 15A | 15A | 15A |

# ORDERING INFORMATION

|  | Base | Covers | Pre-Assembled |
|---|---|---|---|
| **PV INTEGRATED** | TS4-B | | |
| Diodes | | TS4-D | |
| Monitoring | | TS4-M | |
| Safety | | TS4-S | |
| Optimization | | TS4-O | |
| Long Strings | | TS4-L | |
| **PV ADD-ON/RETROFIT** | TS4-R | | |
| Monitoring | | | TS4-R-M |
| Safety | | | TS4-R-S |
| Optimization | | | TS4-R-O |

For PV integrated (TS4-B), ask for TS4-based modules.
Retrofit (TS4-R) is available pre-assembled with TS4-M, TS4-S, or TS4-O covers.
Covers are available separately. Specify TS4-D, TS4-M, TS4-S, TS4-O, or TS4-L.

**For sales info:**
sales@tigoenergy.com or 1.408.402.0802

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

**For TS4-R retrofit units:**
Contact your local distributor or sales@tigoenergy.com

**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