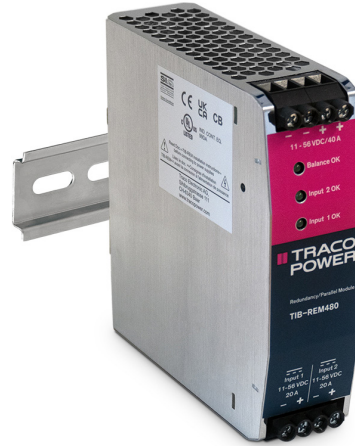


## Redundancy Module

## TIB-REM Series

- **Compact 118.6mm x 36mm x 124.2mm metal enclosure**
- **DIN-rail mounting bracket**
- **60 A boost current**
- **>99% efficiency**
- **Active current sharing**
- **«Input OK» and «Balance OK» indicators**
- **Low standby power**
- **Convection cooled**
- **UL/IEC/EN 61010-1 approvals**
- **Fits Traco Power's TIB line**



The TIB-REM480 is a compact, DIN-rail mountable redundancy module for fail-over operation of AC/DC power supplies. The redundancy function is available for nominal currents of up to 20 A over a wide input voltage range of 11-56 V. Boost currents of up to 60 A are permitted for up to 4 seconds. The TIB-REM480 uses active sharing technology to minimize the power losses during normal operation and in failover mode. The TIB-REM480 can operate at ambient temperatures between -20°C and +60°C without derating and without the need for active cooling. The TIB-REM480 is specifically designed, tested, and approved for operation with Traco Power's TIB line of DIN-rail mountable power supplies.

### Models

| Order code | Input voltage range | Output Current<br>Redundancy Operation | Output Current<br>Parallel Operation | Output Current Boost |
|------------|---------------------|----------------------------------------|--------------------------------------|----------------------|
| TIB-REM480 | 11 - 56 VDC         | 20 A                                   | 40 A                                 | 60 A / 4 s           |

## Input Specifications

|                    |                      |                   |
|--------------------|----------------------|-------------------|
| Input Voltage      | - Parallel Operation | $\pm 0.20$ V max. |
| Compensation Range |                      |                   |
| Standby Power      | 12 Vin               | 0.12 W typ.       |
|                    | 24 Vin               | 0.3 W typ.        |
|                    | 48 Vin               | 0.9 W typ.        |
|                    | 56 Vin               | 1.2 W typ.        |

## Output Specifications

|                          |                                                                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Boost Power              | Output Current boost: 60 A max.<br>Boost power time: 4 s max.<br>Off Time: 10 s typ.<br>(The off time switch off must be provided by the connected input power supplies) |
| Capacitive Load          | Infinite                                                                                                                                                                 |
| Short Circuit Protection | Specified by input power supply<br>No internal protection                                                                                                                |

## Safety Specifications

|                       |                               |                                                                                              |
|-----------------------|-------------------------------|----------------------------------------------------------------------------------------------|
| Safety Standards      | - Measurement, Control & Lab. | EN 61010-1<br>IEC 61010-1<br>UL 61010-1                                                      |
|                       | - Certification Documents     | <a href="http://www.tracopower.com/overview/tib-rem">www.tracopower.com/overview/tib-rem</a> |
| Protection Class      |                               | Class III                                                                                    |
| Pollution Degree      |                               | PD 2                                                                                         |
| Over Voltage Category |                               | OVC II                                                                                       |

## EMC Specifications

|               |                             |                                                        |
|---------------|-----------------------------|--------------------------------------------------------|
| EMI Emissions |                             | EN 61000-6-3 (Generic Residential) (ready)             |
|               | - Conducted Emissions       | EN 55032 class B (internal filter) (ready)             |
|               | - Radiated Emissions        | EN 55032 class B (internal filter) (ready)             |
| EMS Immunity  |                             | EN 61000-6-2 (Generic Industrial)                      |
|               | - Electrostatic Discharge   | Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A        |
|               |                             | Contact: EN 61000-4-2, $\pm 4$ kV, perf. criteria A    |
|               | - RF Electromagnetic Field  | 80 - 1000 MHz: EN 61000-4-3, 10 V/m, perf. criteria A  |
|               |                             | 1400 - 6000 MHz: EN 61000-4-3, 3 V/m, perf. criteria A |
|               | - EFT (Burst)               | EN 61000-4-4, $\pm 1$ kV, perf. criteria A             |
|               | - Conducted RF Disturbances | EN 61000-4-6, 10 Vrms, perf. criteria A                |
|               | - PF Magnetic Field         | Continuous: EN 61000-4-8, 30 A/m, perf. criteria A     |

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

## General Specifications

|                           |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relative Humidity         |                                                                              | 95% max. (non condensing)                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Temperature Ranges        | - Operating Temperature<br>- Storage Temperature                             | -20°C to +70°C<br>-25°C to +80°C                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Power Derating            | - High Temperature                                                           | 2 %/K above 60°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Cooling System            |                                                                              | Natural convection (20 LFM)                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Altitude During Operation |                                                                              | 2'000 m max.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Internal Voltage Drop     | - Parallel Operation                                                         | 0 to 0.2 V typ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Isolation Test Voltage    | - Input to Case, 10s<br>- Output to Case, 10s                                | 500 VDC<br>500 VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Power Loss                | - 40 A load                                                                  | 6W max.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Reliability               | - Calculated MTBF                                                            | 2'000'000 h (IEC 61709)                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Environment               | - Vibration<br><br>- Mechanical Shock                                        | IEC 60068-2-6-3<br>2 g, 3 axis, sine sweep, 10-55Hz, 11 oct/min<br>IEC 60068-2-27<br>25 g, 3 axis, half sine, 11 ms                                                                                                                                                                                                                                                                                                                                                                 |
| Housing Material          |                                                                              | Aluminium (Chassis)<br>Stainless Steel (Cover)                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Housing Type              |                                                                              | Metal Case                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Mounting Type             |                                                                              | DIN-Rail Mount<br>(EN 60715 - 35×7.5mm/35×15mm)                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Connection Type           |                                                                              | Screw Terminal                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Weight                    |                                                                              | 250 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Environmental Compliance  | - REACH Declaration<br><br>- RoHS Declaration<br><br>- SCIP Reference Number | <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a><br>REACH SVHC list compliant<br>REACH Annex XVII compliant<br><a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a><br>Exemptions: 7a<br>(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)<br>2a0637a2-2dbc-4e1c-b2fd-a88f06fdd3ea |

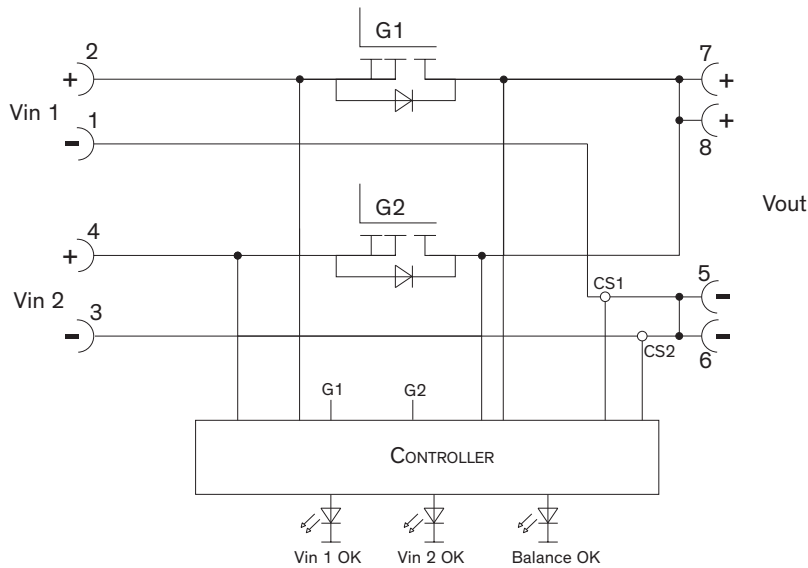
## Supporting Documents

|                                          |                                                                                              |
|------------------------------------------|----------------------------------------------------------------------------------------------|
| Overview Link (for additional Documents) | <a href="http://www.tracopower.com/overview/tib-rem">www.tracopower.com/overview/tib-rem</a> |
|------------------------------------------|----------------------------------------------------------------------------------------------|

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

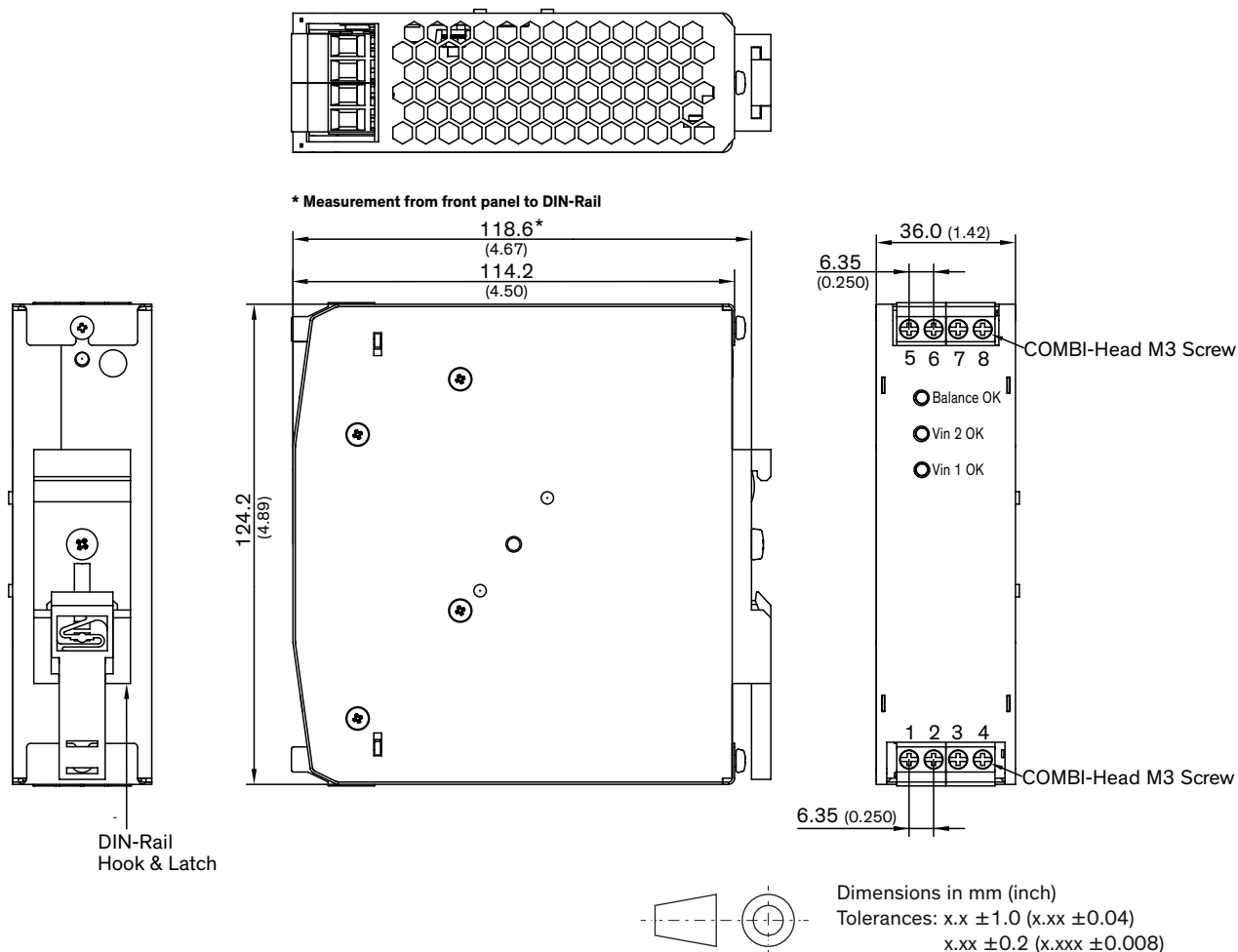
### Function Specification

#### Block Diagram:



| Balance OK LED (Green)                              |          |                                                                                                                                                                  |
|-----------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Behaviour                                           |          | Meaning                                                                                                                                                          |
| On                                                  |          | Input voltages are balanced to each other.<br>Accuracy of current sharing is very high<br>(Condition: $V_{in 1} = V_{in 2} (\pm 0.2 \text{ VDC})$ )              |
| Off                                                 |          | Input voltages are not balanced to each other.<br>Accuracy of current sharing will be inaccurate<br>(Condition: $V_{in 1} \neq V_{in 2} (\pm 0.2 \text{ VDC})$ ) |
| Input Status LEDs Vin1 OK (Green) & Vin2 OK (Green) |          |                                                                                                                                                                  |
| Behaviour                                           |          | Meaning                                                                                                                                                          |
| Vin 1 OK                                            | Vin 2 OK |                                                                                                                                                                  |
| Off                                                 | Off      | - Voltage not present or out of Input Voltage Range                                                                                                              |
| Off                                                 | On       | - Voltage on Vin 2 OK<br>- Voltage on Vin 1 not present<br>- Voltage on Vin 1 out of Input Voltage Range<br>(Condition: Voltage on Vin 1 < Vin 2 - 2 VDC)        |
| On                                                  | Off      | - Voltage on Vin 1 OK<br>- Voltage on Vin 2 not present<br>- Voltage on Vin 2 out of Input Voltage Range<br>(Condition: Voltage on Vin 2 < Vin 1 - 2 VDC)        |
| On                                                  | On       | Voltage on Vin 1 and Vin 2 OK<br>Input voltages are balanced to each other.<br>(Condition: $V_{in 1} = V_{in 2} (\pm 2.0 \text{ VDC})$ )                         |

### Outline Dimensions



| Screw Terminal |          |        |          |
|----------------|----------|--------|----------|
| Input          |          | Output |          |
| Pin            | Function | Pin    | Function |
| 1              | -Vin 1   | 5      | -Vout    |
| 2              | +Vin 1   | 6      | -Vout    |
| 3              | -Vin 2   | 7      | +Vout    |
| 4              | +Vin 2   | 8      | +Vout    |

**Input:** 4-port Screw Terminal  
Stranded & Solid  
Torque: 0.6 Nm  
Wire dimension range: 16 - 10 AWG  
1.5 - 4.0 mm<sup>2</sup>

**Output:** 4-port Screw Terminal  
Stranded & Solid  
Torque: 0.6 Nm  
Wire dimension range: 16 - 10 AWG  
1.5 - 4.0 mm<sup>2</sup>