

BATTERY CONTROLLER MODULE

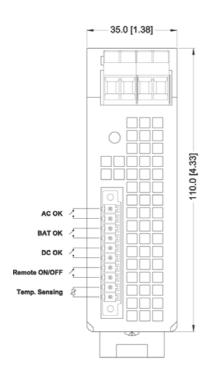
TSP-BCM24, TSP-BCM24A, TSP-BCM48 AND TSP-BCM48A

## **Operating Instruction Manual**



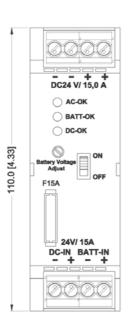
## Dimensions drawings: TSP-BCM24 & TSP-BCM48

**Bottom view** 

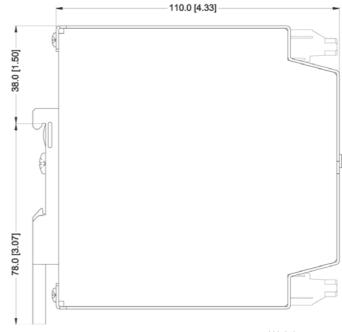


Top view 5.0 [0.20] **-** 25.0 [0.98] **-⊸**− 5.0 [0.20]

Front view

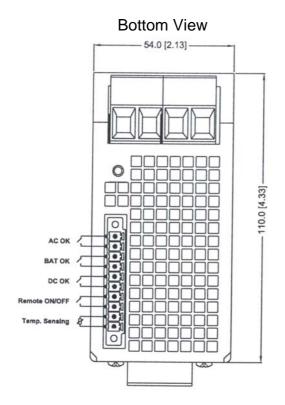


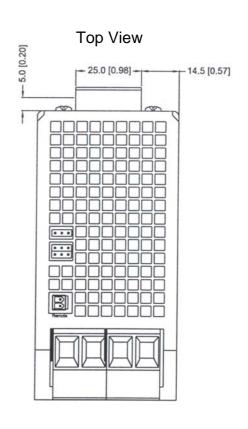
Side view

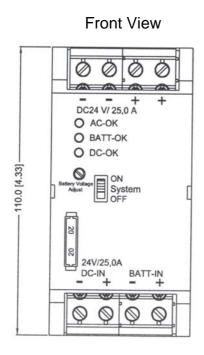


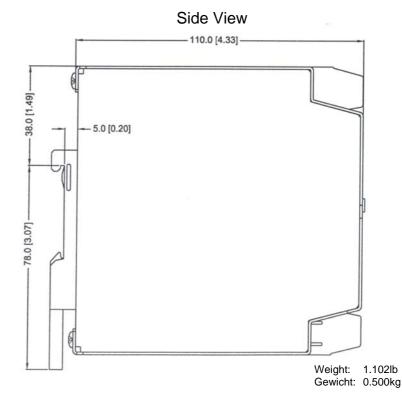
Weight: 0.816lb Gewicht: 0.370kg

## Dimensions drawings: TSP-BCM24A & TSP-BCM48A









#### Note:

This instruction cannot claim all details of possible equipment variations, nor in particular can they provide for every possible example of installation, operation or maintenance. Further information is available from your local distributor office or from the TSP industrial power supply data sheet. Subject to change without prior notice.

In order to guarantee safe operation of the TSP-BCM24, TSP-BCM24A, TSP-BCM48 or TSP-BCM48A in combination with the TSP power supplies and to be able to make use of all the functions, please read these instructions thoroughly!

#### Warning:

The TSP-BCM24, TSP-BCM24A, TSP-BCM48 and TSP-BCM48A is designed and constructed in accordance with the safety requirements of IEC 60950-1, EN 60950-1, UL 60950-1, CSA 22.2 No. 60950-1-07, EN 60204, EN 50178, UL508 and CSA 22.2 No. 107.

The TSP-BCM24 as well as TSP-BCM24A, TSP-BCM48 and TSP-BCM48A built-in module are designed especially for use in process automation and other industrial applications.

Components with dangerously high voltage and high stored energy are located in the device. However, these are inaccessible. Failure to properly maintain the TSP-BCM24, TSP-BCM24A, TSP-BCM48 or TSP-BCM48A can result in death, severe personal injury or substantial property damage. **The TSP-BCM24, TSP-BCM24A, TSP-BCM48 or TSP-BCM48A may only be installed and put into operation by qualified personnel.** The corresponding national regulations (e.g. UL, ANSI, VDE, DIN) must be observed. The successful and safe operation of this module is dependent on proper storage, handling, installation and operation.



The potentiometer to adjust the output voltage is only allowed to be actuated using an insulated screwdriver, because accidental contact may be made with parts inside the power supply carrying dangerous voltages.

#### Please observe following points before putting the device into operation:

- Read operating instructions thoroughly.
- That the input wiring is sufficiently dimensioned!
- That the output wiring is dimensioned according to the maximum output current or separately protected!
- Sufficient cooling is guaranteed!
- The temperature of the housing can become very high, depending on the ambient temperature and load.

#### Caution:

Risk of electrical shock and electrical discharge. Neither TSP-BCMxx nor TSP-BCMxxA nor the TSP power supply must not be opened until at least 5 minutes after complete disconnection of the mains and battery.

Electrostatic sensitive device. Qualified and trained personnel only may open the TSP-BCM24, TSP-BCM24A, TSP-BCM48A or the TSP power supply.

Attention:

In case of non-observance or exceeding the mentioned limiting value of the data sheet, the function and electrical safety can be impaired and can destroy the TSP-BCM24 and/or the power supply.



Before installation ensure that the main switch is switched off and prevented from being switched on again. In case of non-observance, touching of any live components or improper dealing with this TSP-BCM24, TSP-BCM24A, TSP-BCM48, TSP-BCM48A or power supply can result in death or fatal injury.





Danger: Never work on the TSP-BCM24, TSP-BCM24A, TSP-BCM48,TSP-BCM48A or power supplies if power is applied or if the battery is still connected!



## 1. Description and construction

The TSP-BCM24, TSP-BCM24A, TSP-BCM48 or TSP-BCM48A together with a power supply of the TSP series (TSP 090-124, TSP 090-148, TSP 180-124, TSP 180-124, TSP 360-124, TSP 360-124, TSP 360-124 and TSP 600-124 and TSP 600-148) form an uninterruptible DC power supply (UPS) with a professional battery management for a connected acid battery. The battery delivers the energy to the output load when the mains input voltage has failed. The bridging time is depending on the size of the battery and the load current. The UPS system is a "Standby Parallel Operated" UPS system, where the battery is directly connected to the output of the applied load. This UPS configuration is well known in tele-communication systems and highly regarded for its high reliability and the absence of voltage dips on the DC output during a mains power failure. It has to be considered that the battery is not charged by a separate charge converter but directly by the feeding TSP power supply. The power supply will supply the output load and the battery! The maximum current available for the load and battery must be set by a jumper on the BCM module. A deeply discharged battery will reduce the output voltage, however the output current is maintained. With a fully charged battery, the battery is trickle charged only, this keeps the battery fully charged without overcharging. The resistance of the battery is tested regularly. During the test, the input voltage from the power supply is slightly reduced, and the output operates from the battery to simulate the AC fault condition.

The battery voltage is temperature compensated. The battery temperature is measured with a temperature sensor provided. The battery is protected by an under voltage lockout relay against deep discharge. For monitoring purposes the TSP-BCM battery controller provides relay contact outputs, which report the operational status of the USV and the battery.

## 2. Installation

## 2.1 Mechanical Mounting

The TSP-BCM24 as well as the TSP-BCM24A, TSP-BCM48 and TSP-BCM48A are "**Built in Devices**", and must be mounted into an electrical rack which must provide protection against access to dangerous voltages, hot devices and be resistant to flammability and causing fire hazards. The enclosure and mounting of the power supply must be compliant with the relevant national rules and regulations applicable for the mounting of automation appliances and devices or other relevant application regulations.

The TSP-BCM24 as well as the TSP-BCM24A, TSP-BCM48 and TSP-BCM48A are designed for mounting on a DIN rail TS35 (DIN EN 50022-35x15/7.5) or for rack wall or chassis mounting using the wall mounting devices supplied on request.

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#### 2.1.1 DIN Rail Mounting

A sufficiently strong DIN-rail has to be provided for mounting the TSP power supply and the TSP-BCMxx(A) modules. The correct mounting position for optimal cooling performance must be observed. Above and below the TSP-BCM24(A) and TSP-BCM48(A) a minimum free space of 80mm [3.15in] is required and on each side of the TSP-BCM24(A) and TSP-BCM48(A) a minimum space of 25mm [1.0in] is required which allows air convection. The air temperature measured 10mm [0.39in] below the device must not exceed the specified values in the data sheet. Observe same power de-rating above ambient temperatures of 40°C as specified for the TSP power supplies.

To fix device on the DIN-rail, hook top part of clip on DIN-rail, push down and inward until you hear a clipping sound. To remove the device, pull the latch of the clip with the aid of an insulated flat head screwdriver. When clip has cleared bottom DIN rail remove the screwdriver from recess. Lift the device off DIN-rail.

## 2.1.2 Wall and Chassis Mounting

For mounting without DIN rails, a wall mounting bracket TSP-WMK01 (1 bracket, see Fig. 4.1) can be supplied on request. With these brackets the TSP power supply and the TSP module can be mounted directly to the wall. The correct mounting position for optimal cooling performance must be observed. Above and below the TSP-BCM24(A) a minimum free space of 80mm [3.15in] is required and on each side of the TSP-BCM24(A) a minimum space of 25mm [1.0in] is required which allows air convection. The air temperature measured 10mm [0.39in] below the device must not exceed the specified values according the data sheet. Observe same power de-rating above ambient temperatures of 40°C as specified for the TSP power supplies.

For wall mounting or chassis mounting remove the DIN-clips by removing the screw and place the mounting brackets in the same place as the DIN-clips. Use the countersink screws, which are included with the wall mounting kit (1 countersink screw with TSP-WMK01) to fix the mounting brackets on the TSP-BCM24(A) or TSP-BCM48(A) (tightening torque 0.8-0.9Nm).

### 2.2 Electrical Connections

## 2.2.1 Step by Step Wiring Instructions

Only qualified personnel should carry out the installation. The device is equipped with COMBICON connectors. This reliable and easy-to-assemble connection method enables a fast connection to the device.

Following correct mounting of both the TSP Power Supply and the Battery Connector Module (BCM), the following steps should be followed to ensure correct connection and commissioning of the system. (Refer to Fig. 2.1, Fig 3.1; J2 and J3)

- 1. Make sure the mains power is switched off, secured against switch on and not yet connected to the power supply!
- 2. Next connect the TSP Power Supply output to J1 of the BCM (DC-IN).
- 3. Connect the Remote Link wire between the TSP Power Supply and J3 of the BCM.
- The potentiometer of the TSP power supply (not the TSP-BCM) should now be adjusted fully conter-clockwise (Vout min).
- Next ensure the blade fuse is correctly inserted into the BCM.
- 6. The System ON/OFF switch on the BCM should now be set to the ON position.
- Configure the BCM module to your actual configuration of power supply TSP 090-124, TSP 090-148, TSP 180-124, TSP 180-148, TSP 360-124, TSP 360-148, TSP 600-124 or TSP 600-148 in combination with TSP-BCM24(A) or BCM48(A) by choosing the jumper position J6 as described in paragraph 3.4.
- 8. Exercising caution, the AC power wires should now be connected, AC power still being disabled by external isolation switch or circuit breaker.
- 9. When mains supply connection wires are connected and safe isolation is verified, mains power can now be switched on.
- 10. Now the TSP Power Supply will switch on the BCM and the UPS system is operational.
- 11. The potentiometer on the BCM is set by the factory to suit Valve Regulated Lead Acid Battery from Panasonic and equivalent types and should not be interfered by the user, unless other Lead Acid Batteries of different voltage temperature characteristics are connected.
- 12. If a non recommended battery is applied to the circuit, the output voltage of the TSP-BCM module needs to be adjusted to a different "End of Charge Voltage" (Fig. 3.1.). This voltage value can be obtained from battery manufacturer's datasheets.
- 13. The Temperature sensor should now be fixed to the battery and connected to J5 on the TSP-BCM (Refer to paragraph 6.3)
- 14. Next the battery wires should be connected on the TSP-BCM module, DO NOT connect to the battery first! (Refer to paragraph 6.3)
- 15. Then connect the battery wires on the battery. (Refer to paragraph 6.3)
- 16. Next the Load can be connected to J2 of the BCM. (Refer to paragraph 6.3)
- 17. For verification of proper functionality, switch off the input mains power at the external circuit breaker and output power should be supplied from the battery, if a fully charged battery has been applied.
- 18. For proper operation, a new system should always start up with a fully charged battery. If a non fully charged battery is applied, the battery should be charged in full over night before any load is applied to the output of the TSP-BCM module.
- 19. The system is now fully operational and the output load can be applied.



## 2.2 Wire and Cable Requirements

## **2.2.1 DC- Input** (Fig. 3.1 → Connector J1, pin 1 & pin 2):

The 24Vdc or 48Vdc connection is made by using the -Vin (-DC In) and +Vin (+DC In) connections and has to be carried out in accordance with the local regulations. Sufficiently dimensioned wiring has to be ensured (see 2.2.1.1).

To achieve a reliable and shockproof connection strip the connecting ends according 2.2.1.1. If flexible wires are used the wires have to be terminated. (e.g. by using ferrules).

#### 2.2.1.1 Connections and terminal assignment

Device	Terminals	Function	Solid or stra	anded wires	Torque	Stripping length
Device	Terminais	runction	[mm <sup>2</sup> ]	[AWG]	[Nm]	[mm]
TSP 090-124	+Vin & -Vin	Input Voltage (24Vdc)	0.5 2.5	24 12	0.5 - 0.6	7.0
TSP 090-148	+Bat & -Bat	Battery Voltage (24Vdc)	0.5 2.5	24 12	0.5 - 0.6	7.0
TSP 180-124	+Vout & -Vout	Output Voltage (24Vdc)	0.5 2.5	24 12	0.5 - 0.6	7.0
TSP 180-148	Signal	Relay inputs and relay outputs	0.2 2.5	32 12	0.5 - 0.6	7.0
	+Vin & -Vin	Input Voltage (24Vdc)	1.0 2.5	18 12	0.5 - 0.6	7.0
TSP 360-124	+Bat & -Bat	Battery Voltage (24Vdc)	1.0 2.5	18 12	0.5 - 0.6	7.0
TSP 360-148	+Vout & -Vout	Output Voltage (24Vdc)	1.0 2.5	18 12	0.5 - 0.6	7.0
	Signal	Relay inputs and relay outputs	0.2 2.5	32 12	0.5 - 0.6	7.0
	+Vin & -Vin	Input Voltage (24Vdc)	2.0 10.0	12 7	0.6 - 0.8	7.0
TSP 600-124	+Bat & -Bat	Battery Voltage (24Vdc)	2.0 10.0	12 7	0.6 - 0.8	7.0
		2.0 10.0	12 7	0.6 - 0.8	7.0	
	Signal	Relay inputs and relay outputs	0.2 2.5	32 12	0.5 - 0.6	7.0

The output voltage of the TSP-BCM24 as well as the output voltage of the TSP-BCM24A is protected against short circuit and open circuit conditions.

Model	Ratings	Marking
TSP-BCM24	15.0 A / 60V	F1 → 15A
TSP-BCM24A	30.0 A / 60V	F1 → 30A
TSP-BCM48	7.5 A / 60V	F1 → 7.5A
TSP-BCM48A	15.0 A / 60V	F1 → 15A

**CAUTION:** For continued protection against risk of fire replace with same type and rating of fuse! Only authorized and trained personnel should change this fuse.

## **2.2.3 Output** (Fig. 3.1 → Connector J2, pin 1, pin 2, pin 3 & pin 4):

The 24Vdc or 48Vdc connection is made using the "+Vout" and "-Vout" connections. All output terminals should be connected to the load. Make sure that all output lines are dimensioned according to the maximum output current (see 2.2.1.1) or are separately protected! The wires on the secondary side should have large cross sections in order to keep the voltage drops on these lines as low as possible.

To achieve a reliable and shockproof connection strip the connecting ends according 2.2.1.1. If flexible wires are used the wires have to be terminated. (e.g. by using ferrules)

The device is protected against overload and short circuit.

#### **2.2.4 Signalling** (Fig. 3.1 → Connector J5, pin 1, pin 2, pin 3, pin 4, pin 5 & pin 6):

The AC-OK, Bat-OK and DC-OK outputs are for enabling monitoring of the functions of the TSP-BCM24(A) or TSP-BCM48(A), mains and battery. The floating AC OK signal contacts (see Fig. 3.1 → Connector J5, pin 1 & pin 2) are monitoring if the mains is present. If mains is present the relay contact is closed. It is detected by measuring the input voltage at DC In.

The floating Bat OK signal contacts (see Fig. 3.1 → Connector J5, pin 3 & pin 4) is monitoring if the battery can supply enough current for a given time.

The floating DC-OK (see Fig. 3.1 → Connector J5, pin 5 & pin 6) is available to monitor if the TSP-BCM24(A) or TSP-BCM48(A) provides an output voltage. If the output voltage on the TSP-BCM24 or TSP-BCM24A is present the relay contact (30Vdc / 0.6A or 60Vdc / 0.3A is closed. It is detected by measuring the TSP-BCM24(A) output voltage or TSP-BCM48(A) output voltage.

Three LED's also enables a visual evaluation of the functions of TSP-BCM24(A) and TSP-BCM48(A), mains and battery directly on site and are in parallel to the signal relay contact.

#### 2.2.4.1 AC-OK LED:

The AC-OK LED is a green colour LED that indicates the status of the TSP-BCM24(A) or TSP-BCM48(A) input and enables visual evaluation of the function locally in the control cabinet. AC-OK LED green on → DC input present. DC-OK LED green off → DC input failure.

#### 2.2.4.2 Bat-OK LED:

The DC-OK LED is a green colour LED that indicates the status of the battery and enables visual evaluation of the function locally in the control cabinet. DC-OK LED green → battery can supply enough current. DC-OK LED green off → battery failure and should be changed to ensure a proper and reliable operation of the battery in the event of mains fail.

In the event of AC mains failure, the Bat -OK signal can be used as an early warning. If the Battery voltage is nearly reaching the disconnection voltage (2-3V higher), then the Bat-OK contacts are open and corresponding LED is OFF.

#### 2.2.4.3 DC-OK LED:

The DC-OK LED is a green colour LED that indicates the status of the output and enables visual evaluation of the function locally in the control cabinet. DC-OK LED green on → normal operation. DC-OK LED green off → output failure.

### 3. Function

#### 3.1 Remote ON/OFF:

The TSP-BCM24(A) as well as TSP-BCM48(A) provides an external remote on/off function by use of pin 7 and pin 8 at connector J5 (see Fig. 3.1). To switch off the power supply and TSP-BCM24(A) or the power supply and TSP-BCM48(A) a connection between Connector J5 pin 7 and Connector J5, pin 8 by use of a switch has to be made. At open connection between J5 pin 7 and J5 pin 8 the device is providing the adjusted output voltage.

On the TSP-BCM24(A) as well as the TSP-BCM48(A) a switch is available to switch off the system on site (in the control cabinet).

Turning the system to OFF state (by switch or remote on/off function) during the battery discharge operation will fully switch off the system and disconnect the battery. In this condition the system cannot be switched on again. If mains returns and the system is still in OFF state, the battery will remain disconnected but a very low output voltage may appear (typically 2Vdc. pulsing). Turning the system to ON state (by switch or remote on/off function) will bring the system back to full function including battery charging and battery condition test.

## 3.2 Battery test (Jumper J4):

The TSP-BCM24(A) as well as the TSP-BCM48(A) is designed to monitor the batteries condition. The battery is loaded with a certain current pulse (the actual load) to monitor the batteries condition. The battery test pulse is only present as long as the mains is present. The time between the current pulses can be set either to 15 seconds (see Fig. 3.1, J4, Pin 1 & 2) or to 10 minutes (factory set) (see Fig. 3.1, J4, Pin 2 & 3)

## 3.3 Temperature sensing:

The TSP-BCM24(A) as well as the TSP-BCM48(A) are designed to operate with temperature compensation required for proper operation of the battery. The temperature is detected using an external NTC sensor ( $10k\Omega$ ) connected to the signal connector (J5 pin 9 & pin 10). If the sensor is not connected the device automatically switches to +25°C constant temperature operation mode.

The factory setting for the battery voltage at +25°C ambient is: 2,28Vdc x 12 cells = 27.4 Vdc or 2.28Vdc x 24 cells = 54.8Vdc. No adjustment is required for the recommended battery. If different batteries are used, the output voltage must be set accordingly by potentiometer as recommended for +25°C. The initial voltage should be adjusted only when the battery and temperature sensor are disconnected. (Fig. 3,1).

The set voltage should be measured on J1 of the BCM (BATT-IN).

#### 3.4 Setting the Maximum Power Input on the TSP-BCM24(A) or TSP-BCM48(A)

In order to adapt the TSP-BCM24(A) or TSP-BCM48(A) module to the feeding TSP power supply the maximum input power must be set in accordance with the maximum output power of the TSP Power supply. As the output voltage of the power supply is approximately 28 Volts (TSP-BCM24(A)) or 56Vdc (TSP-BCM48(A)), the maximum allowed output current of the TSP power supply will be limited by the TSP-BCM module as per jumper settings shown in the table below.

To ensure that the TSP Power Supply is not overloaded when used with the BCM modules, the jumper J6 needs to be correctly set before commissioning the system. Incorrect settings for too high currents might damage the power feeding supply.

Please refer to Fig. 3.1 & paragraph 6.3 for details.

#### TSP-BCM24

Power Supply Type	TSP power supply [I <sub>out Nom</sub> ]	Jumper position J6	BCM Module Input Current Limitation [I <sub>in Limit</sub> ]
TSP 360-124	15,00A	1	12.80A
TSP 180-124	7.50A	2	6.40A (factory setting)
TSP 090-124	3.75A	3	3.20A

## TSP-BCM24A

Bower Supply Type	TSP power supply	Jumper position	BCM Module Input Current Limitation
Power Supply Type	[lout Nom]	J6	[I <sub>in Limit</sub> ]
		1	21.40A
TSP 600-124	25.00A	2	10.70A (factory setting)
		3	5.40A

#### TSP-BCM48

Power Supply Type	TSP power supply [I <sub>out Nom</sub> ]	Jumper position J6	BCM Module Input Current Limitation [I <sub>in Limit</sub> ]
TSP 360-148	7.5A	1	6.4 A
TSP 180-148	4.0A	2	3.2 A (factory setting)
TSP 090-148	2.0A	3	1.6 A

#### TSP-BCM48A

Power Supply Type	TSP power supply	Jumper position	BCM Module Input Current Limitation
Fower Supply Type	[l <sub>out Nom</sub> ]	J6	[I <sub>in Limit</sub> ]
		1	11.0A
TSP 600-148	12.5A	2	6.4A (factory setting)
		3	3.2A

Please note: Total maximum input current is shared by load and battery!

## 4. Compliance to UL508C

The TSP-BCM24(A) as well as the TSP-BCM48(A) are built-in devices and to comply with UL508C the device must be installed in a cabinet with minimum dimensions of: 400mm (Width) x 500mm (Height) x 200mm (Depth)

## 4.1 Operating Temperature Ranges and load de-rating:

Depends on the TSP supplying the TSP-BCM24, TSP-BCM24A, TSP-BCM48 or TSP-BCM48A. Please see operating temperature range and load de-rating at the TSP power supply datasheet or TSP operating instructions.

## 5. Technical Specifications

## 5.1 Input Specifications

Order code Model	Input voltage	Max. Input Power	* Output Voltage	**max. Output Power
TSP-BCM24	24Vdc power supply and	360 Watt	24 Vdc	360 Watt
TSP-BCM24A	24Vdc battery	600 Watt	24 Vdc	600 Watt
TSP-BCM48	48Vdc power supply and	360 Watt	48 Vdc	360 Watt
TSP-BCM48A	48Vdc battery	600 Watt	48 Vdc	600 Watt

<sup>\*</sup> Output voltage adjustable

## 5.2 Output Specifications

Output Voltage adjustable Range with Potentiometer	TSP-BCM24 & TSP-BCM24A	24 – 28Vdc
	TSP-BCM24 & TSP-BCM24A	48 – 56Vdc
Ripple and Noise (20MHz Bandwidth)	at V <sub>in nom</sub> und I <sub>out max</sub>	200mV pk-pk max
Max. Capacitive Load		Unlimited

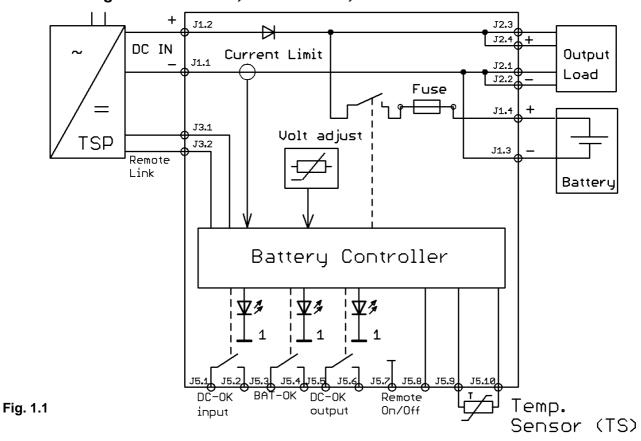
<sup>\*\*</sup> Maximum current at Vout nom.

## 5.3 General Specifications

<u>'</u>	
Operating Temperature	-25°C +70°C
Range	-13°F +158°F
Cooling	Convection cooling; no internal fan
Storage Temperature	-25°C +85°C
Range	-13°F +185°F
Load Derating above TSP-BCM24 & TSP-BCM24A	1.5%/K
+40°C (104°F) TSP-BCM48 & TSP-BCM48A	
Battery protection	Over voltage, deep discharge, short circuit and reverse
	connection (built-in fuse)
Status signal	DC-OK input, DC-OK output, BAT OK
	All relay contact closed at status OK
Humidity	95% rel H max.
(non condensing)	
Pollution Degree	2
Temperature Coefficient	0.02%/K
Reliability, calculated in accordance to IEC 61709	>350'000 hours
MIBE	
Remote ON/OFF see Fig. 3.1	2 pin connector (see Fig. 3.1; J5 pin 7 and pin 8)
	connect via a switch → Contact closed = Device off
Signal Relay Contacts	30Vdc / 0.6A or 60Vdc / 0.3A
Remote link cable	1 cable included with TSP-BCM24 as well as TSP-BCM24A,
(0.5m)	TSP-BCM48 and TSP-BCM48A
Case protection in accordance to IEC 529	IP20
Isolation	See Safety Standards
Safety Standards - Information Technology Equipment	IEC / EN / UL 60950-1
according to - Industrial Control Equipment	UL 508C
Electromagnetic compatibility	in correspondence to connected units (no internal
(EMC) Emissions	switching device)
Electromagnetic compatibility	in correspondence to connected units (no internal
(EMC) Immunity	switching device)
Environment Vibration	IEC 60068-2-6 3 axis, sine sweep, 10 55Hz, 1g, 1oct/min.
Shock	IEC 60068-2-27 3 axis, 15g, half sine, 11ms
Enclosure Material	Aluminium (Chassis) / Zinc plated Steel (Cover)
Mounting DIN-Rail mounting	For DIN-Rails as per EN 50022-35 x 15 / 7.5
	(snap-on self-locking spring)
Wall mounting	With wall mounting bracket option TSP-WMK01
Tan meaning	(see datasheet page 9)
Connection	Screw terminals
0000.011	1 Co. Cit Communication

## 6. Wiring and Connections

## 6.1 Block diagram TSP-BCM24, TSP-BCM24A, TSP-BCM48 & TSP-BCM48A

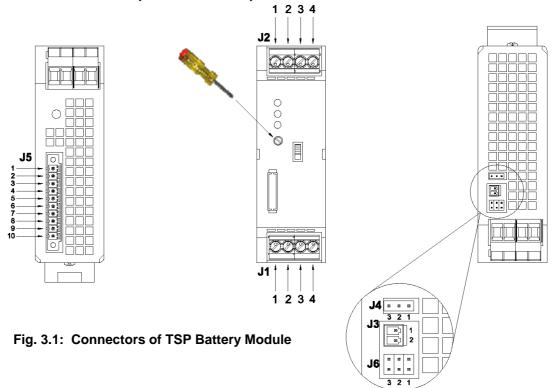


## 6.2 Connection of TSP-BCM24, TSP-BCM24A, TSP-BCM48 & TSP-BCM48A



Fig. 2.1: Connection of remote links

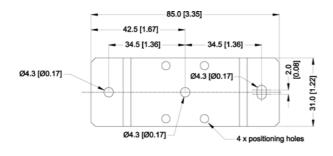
## 6.3 Connectors of TSP-BCM24, TSP-BCM24A, TSP-BCM48 & TSP-BCM48A

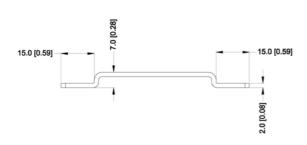


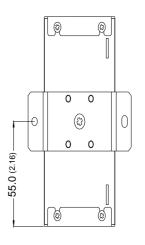
TSP-BCM24 & TSP-BCM48								
Pin No.	J1	J2	J3	J4	J5	J6		
Pin 1	-Vin (DC In)	GND (-)	S+	15 sec test	AC-OK Signal	Pos 2 (factory setting) (other settings see chapter 3.4)		
Pin 2	+Vin (DC In)	GND (-)	S-	Com	AC-OK Relay contact			
Pin 3	-Bat in	Vout (+)	-	10 min test	Bat-OK Signal			
Pin 4	+Bat in	Vout (+)	-	-	Bat-OK Relay contact			
Pin 5	-	-	-	-	DC-OK Signal			
Pin 6	-	-	-	-	DC-OK Relay contact			
Pin 7	-	-	-	-	Remote ON/OFF			
Pin 8	-	-	-	-	Remote ON/OFF			
Pin 9	-	-	-	-	Temperature Sensing			
Pin 10	-	-	-	-	Temperature Sensing			

TSP-B	TSP-BCM24A & TSP-BCM48A									
Pin No.	J1	J2	J3	J4	J5	J6				
Pin 1	-Vin (DC In)	GND (-)	S+	15 sec test	AC-OK Signal	Pos 2 (factory setting) (other setting see chapter 3.4)				
Pin 2	+Vin (DC In)	GND (-)	S-	Com	AC-OK Relay contact					
Pin 3	-Bat in	Vout (+)	-	10 min test	Bat-OK Signal					
Pin 4	+Bat in	Vout (+)	-	-	Bat-OK Relay contact					
Pin 5	-	-	-	-	DC-OK Signal					
Pin 6	-	-	-	-	DC-OK Relay contact					
Pin 7	-	-	-	-	Remote ON/OFF					
Pin 8	-	-	-	-	Remote ON/OFF					
Pin 9	-	-	-	-	Temperature Sensing					
Pin 10	-	-	-	-	Temperature Sensing					

# 6.4 Wall mounting brackets (TSP-WMK01) for TSP-BCM24, TSP-BCM24A, TSP-BCM48 & TSP-BCM48A







## 7. TSP-BAT Battery Pack

## 7.1 Description

The battery packs are designed to built, in connection with the TSP-BCM24(A) or TSP-BCM48(A) battery controller module, a complete DC-UPS system. The entire range utilizes 12V maintenance free VRLA (valve regulated lead acid) batteries made by Panasonic. These are not spillable lead gel type batteries. Two 12V batteries are connected in series and assembled into a stainless steel enclosure, with integrated connector and connection cable. For the TSP-BCM48(A) you have to use two battery packs where the outputs are connected in series to get the 48V battery pack.



## 8. Technical Specifications

## 8.1 Input Specifications

Order code Model (includes mating connector)	Nominal voltage	Charge current recommended	Nominal capacity (at +25°C, 77°F)
TSP-BAT24-034		0.80 A	3.4 Ah
TSP-BAT24-072	24Vdc	1.75 A	7.2 Ah
TSP-BAT24-120		3.00 A	12.0 Ah

## 8.2 General Specifications

Temperature range (max)	<ul><li>during discharge</li><li>when charging / charged</li><li>storage</li></ul>	-15°C - +50°C max (+5°F - +122°F) 0°C - +40°C max (+32°F - +104°F) -15°C - +40°C max. (+5°F - +104°F)
Battery lifetime		3 - 5 years
Remote link cable		1 cable (0.5m) included
	TSP-BAT24-034	3.2kg (7.10lb.)
Weight	TSP-BAT24-072	5.8kg (12.8lb.)
	TSP-BAT24-120	9.0kg (19.8lb.)

Further information with regards to the proposed batteries can be found in the Panasonic general datasheet for lead acid batteries.

http://www.panasonic.com/industrial/includes/pdf/Panasonic\_VRLA\_Overview.pdf

TRACO

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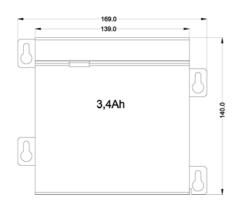
Tel: +41 43 311 4511 techsupport@traco.ch Date: 08 June 2012

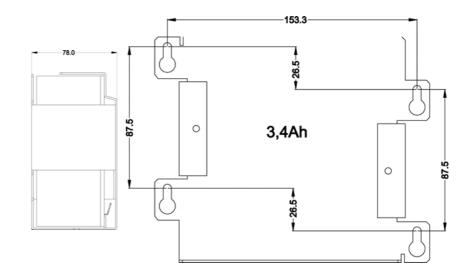
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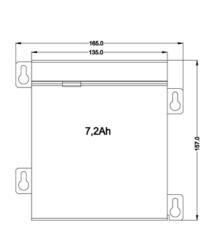
## 8.3 Dimensions

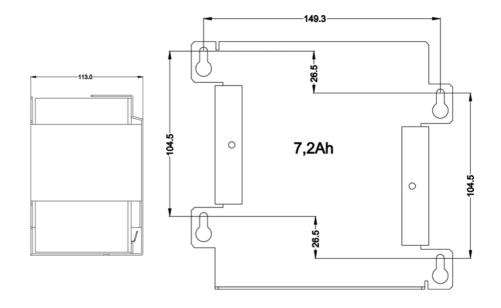
## 8.3.1 TSP-BAT24-034





## 8.3.2 TSP-BAT24-072





### 8.3.2 TSP-BAT24-120

