

# Trusted Power Distribution Unit MCB 24 Vdc

## Product Overview

The dual 5-channel Trusted® Power Distribution Unit Miniature Circuit Breaker (MCB) 24 V is designed for N+1 or 100 % redundant 24 Vdc power distribution applications. The unit is designed to be mounted on a standard DIN rail. Monitoring circuits provide local LED indication of individual MCB 'trip' status and a relay contact provides a common alarm signal output.

## Features:

- Four 'dual' 24 Vdc, 20 A MCB protected outputs - suitable for direct connection to a Trusted Controller/Expander Chassis or upstream protection for the Trusted 15-way Fused Distribution Unit (T8293).
- One 'dual' 24 Vdc, 3 A MCB protected output - suitable for direct connection to Trusted Fan Trays or other low power devices.
- Visual indication of MCB status.
- Common alarm output of MCB status via a volt-free contact.
- Option link for N+1 or 100 % redundant distribution.

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## PREFACE

In no event will Rockwell Automation be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment. The examples given in this manual are included solely for illustrative purposes. Because of the many variables and requirements related to any particular installation, Rockwell Automation does not assume responsibility or reliability for actual use based on the examples and diagrams.

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### DISCLAIMER

It is not intended that the information in this publication covers every possible detail about the construction, operation, or maintenance of a control system installation. You should also refer to your own local (or supplied) system safety manual, installation and operator/maintenance manuals.

### REVISION AND UPDATING POLICY

This document is based on information available at the time of its publication. The document contents are subject to change from time to time. The latest versions of the manuals are available at the Rockwell Automation Literature Library under "Product Information" information "Critical Process Control & Safety Systems".

### TRUSTED RELEASE

This technical manual applies to **Trusted Release: 3.6.1**.

### LATEST PRODUCT INFORMATION

For the latest information about this product review the Product Notifications and Technical Notes issued by technical support. Product Notifications and product support are available at the Rockwell Automation Support Centre at

<http://rockwellautomation.custhelp.com>

At the Search Knowledgebase tab select the option "By Product" then scroll down and select the Trusted product.

Some of the Answer ID's in the Knowledge Base require a TechConnect Support Contract. For more information about TechConnect Support Contract Access Level and Features please click on the following link:

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This will get you to the login page where you must enter your login details.

**IMPORTANT** A login is required to access the link. If you do not have an account then you can create one using the "Sign Up" link at the top right of the web page.

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### DOCUMENTATION FEEDBACK

Your comments help us to write better user documentation. If you discover an error, or have a suggestion on how to make this publication better, send your comment to our technical support group at <http://rockwellautomation.custhelp.com>

## SCOPE

This manual specifies the maintenance requirements and describes the procedures to assist troubleshooting and maintenance of a Trusted system.

## WHO SHOULD USE THIS MANUAL

This manual is for plant maintenance personnel who are experienced in the operation and maintenance of electronic equipment and are trained to work with safety systems.

## SYMBOLS

In this manual we will use these notices to tell you about safety considerations.



**SHOCK HAZARD:** Identifies an electrical shock hazard. If a warning label is fitted, it can be on or inside the equipment.



**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which can cause injury or death, property damage or economic loss.



**ATTENTION:** Identifies information about practices or circumstances that can cause injury or death.



**CAUTION:** Identifies information about practices or circumstances that can cause property damage or economic loss.



**BURN HAZARD:** Identifies where a surface can reach dangerous temperatures. If a warning label is fitted, it can be on or inside the equipment.



This symbol identifies items which must be thought about and put in place when designing and assembling a Trusted controller for use in a Safety Instrumented Function (SIF). It appears extensively in the Trusted Safety Manual.

### IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

### NOTE

Provides key information about the product or service.

### TIP

Tips give helpful information about using or setting up the equipment.

**WARNINGS AND CAUTIONS**

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**WARNING: EXPLOSION RISK**

Do not connect or disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations or equivalent

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**AVERTISSEMENT - RISQUE D'EXPLOSION**

Ne pas connecter ou déconnecter l'équipement alors qu'il est sous tension, sauf si l'environnement est exempt de concentrations inflammables ou équivalente

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**MAINTENANCE**

Maintenance must be carried out only by qualified personnel. Failure to follow these instructions may result in personal injury.

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**CAUTION: RADIO FREQUENCY INTERFERENCE**

Most electronic equipment is influenced by Radio Frequency Interference. Caution should be exercised with regard to the use of portable communications equipment around such equipment. Signs should be posted in the vicinity of the equipment cautioning against the use of portable communications equipment.

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**CAUTION:**

The module PCBs contains static sensitive components. Static handling precautions must be observed. DO NOT touch exposed connector pins or attempt to dismantle a module.

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## ISSUE RECORD

Issue	Date	Comments
7	Sep 05	Format
8	Nov 08	Clarified distribution
9	Apr 10	Option 4 change
10	Jun 16	Rebranded and updated to incorporate IEEE standards with correction of typographical errors and also standardise the Relative Humidity Range and Operating Temperature Statements in the Specification Section.

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# 1. Description

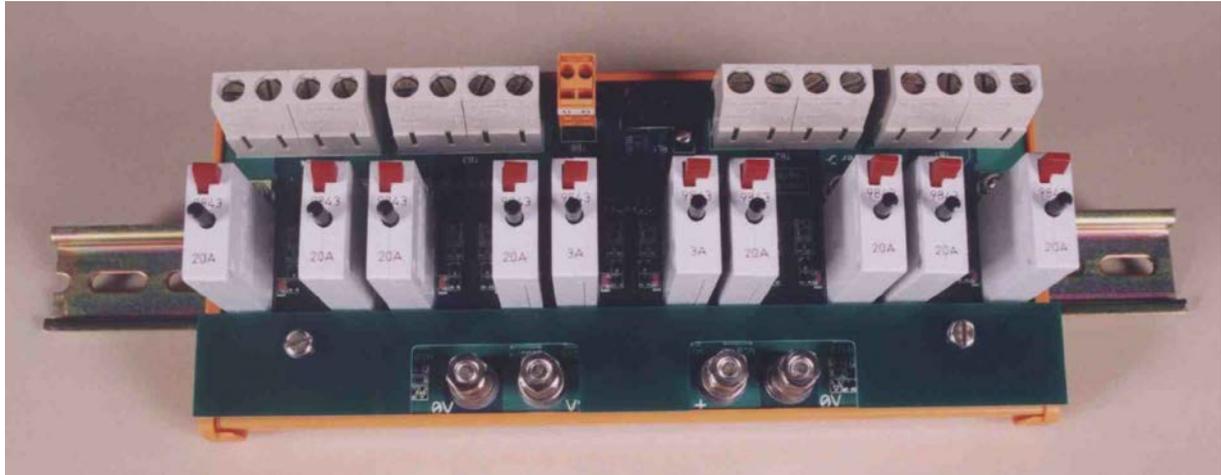


Figure 1 T8292 Photo

The schematic diagram for the Trusted Power Distribution Unit MCB 24 Vdc is shown in Figure 2 below.

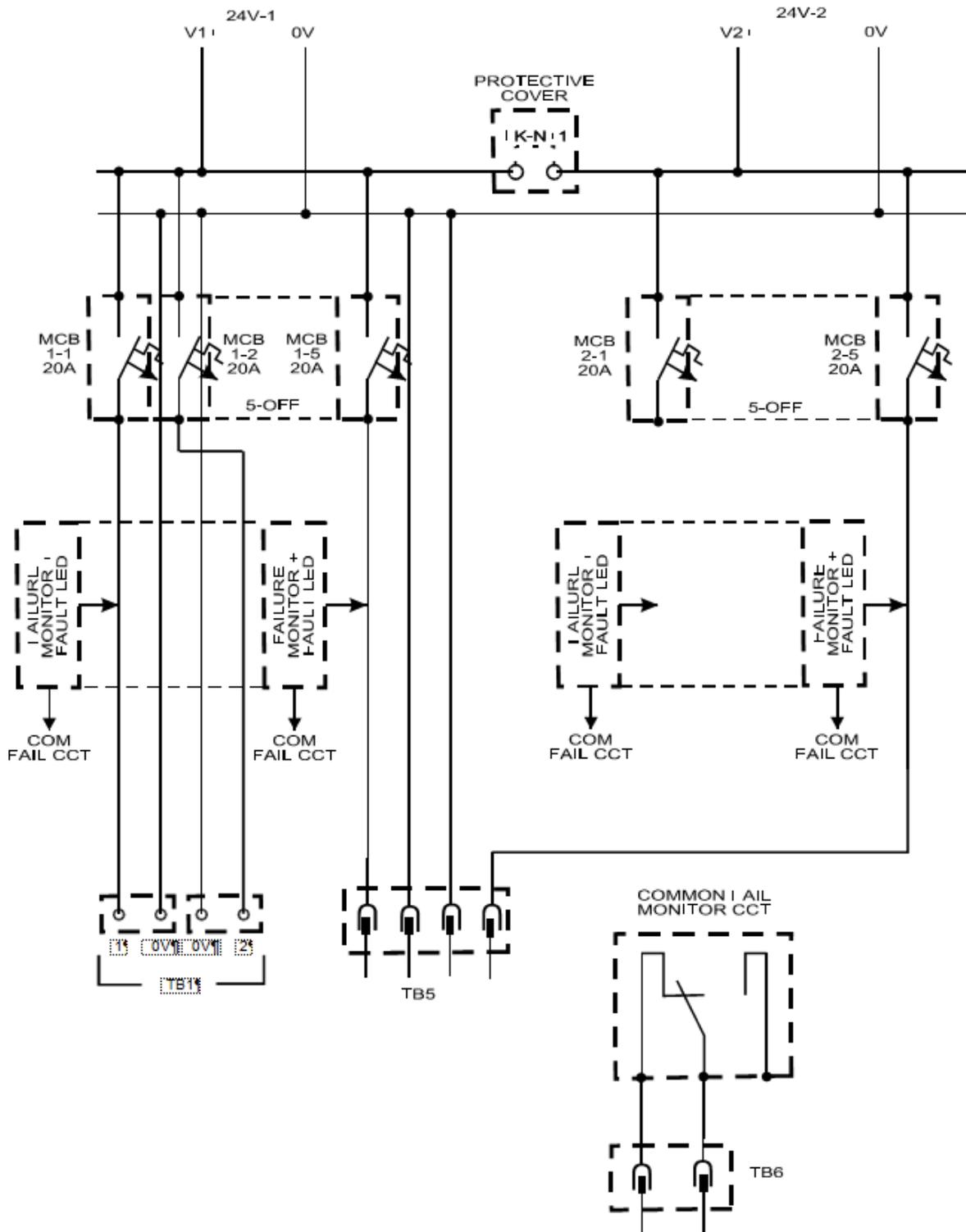
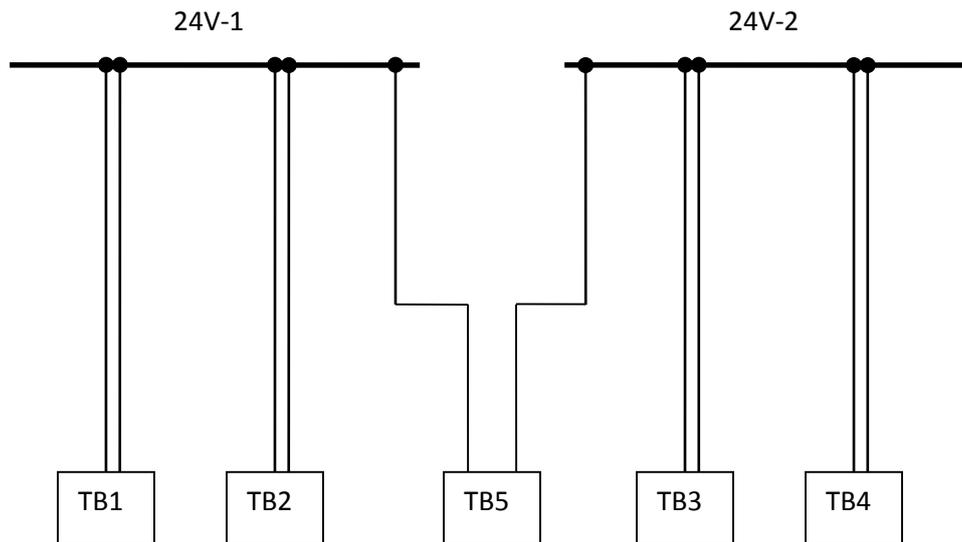


Figure 2 Trusted Power Distribution Unit MCB 24 Vdc Schematic Diagram

Only one 20 A output TB1 is shown for clarity. Note that both 24 V supplies on TB1 are connected to feeder 24V-1. TB2 is also wired to 24V-1. TB3 and TB-4 are powered from 24V-2. This means that if a separated dual redundant supply is required, each output must

be wired to one supply on 24V-1 and one supply on 24V-2. Figure 3 shows a simplified diagram of the connections.



**Figure 3 Single line power diagram**

Power fed to the Trusted Power Distribution Unit MCB 24 V is sub-distributed via the dual MCBs either as an N+1 or 100 % redundant configuration, via the fitting (for N+1) or removal of the board mounted link, LK-N+1.

The standard factory-fitted configuration is N+1.

Each MCB is monitored for open circuit condition and provides a local on-board LED indication of individual 'trip' status (red LED displayed for tripped).

A volt-free relay contact provides the common alarm output signal (contact open for tripped) for connection to external alarm monitoring circuits.

For modules up to issue 5 the maximum difference between supply feeds must not exceed 1 V.

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## 2. Status Indicators

- |                  |  |
|------------------|--|
| 2-off green LEDs | On to indicate that each power supply feeder is healthy. |
| 10-off red LED   | On to indicate that the adjacent MCB has tripped.        |

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## 3. Configuration

The Trusted Power Distribution Unit MCB 24 V may be configured and connected to operate in several different modes using the options detailed below.

Link N+1 is factory fitted for N+1 configuration. The link must be removed for dual redundant operation.

### 3.1. Option 1

#### N+1 Operation - Single Configuration

Link N+1 is fitted for this option as shown in Figure 4. The Trusted Power Supply Unit (T820x) will supply up to four system chassis providing the total load does not exceed 1.25 kW.

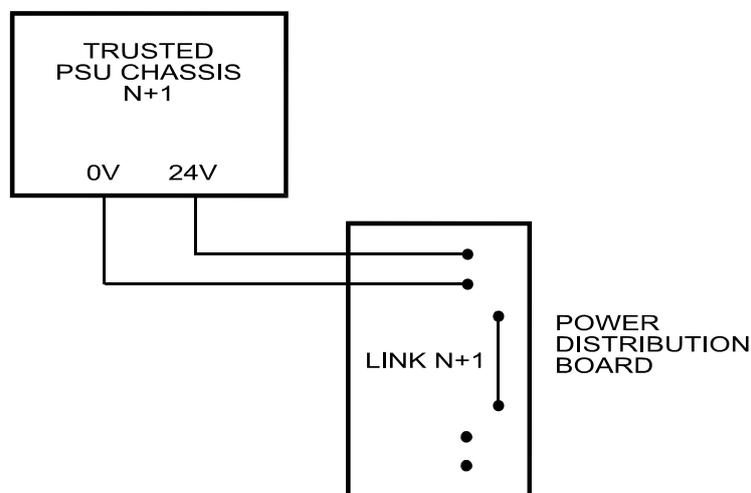


Figure 4 Configuration Option 1

## 3.2. Option 2

### N+1 Operation - Multiple Configuration

Link N+1 is fitted for this option as shown in Figure 5. The Trusted Power Supply Unit (T820x) will supply up to eight system chassis providing the total load does not exceed 1.25 kW.

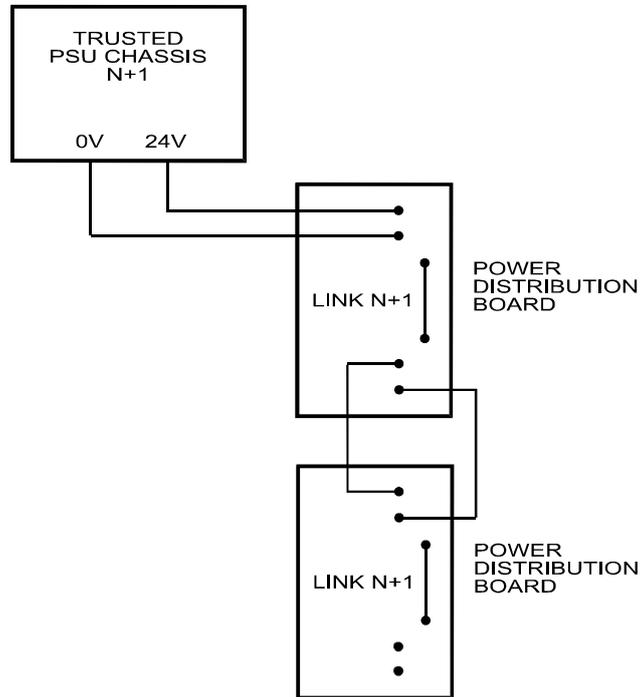


Figure 5 Configuration Option 2

### 3.3. Option 3

#### 2N Operation (100 % Redundant) - Single Configuration

Link N+1 is not fitted (2N) for this option as shown in Figure 6. The Trusted Power Supply Unit (T820x) will supply up to four system chassis providing the total load does not exceed 750 kW.

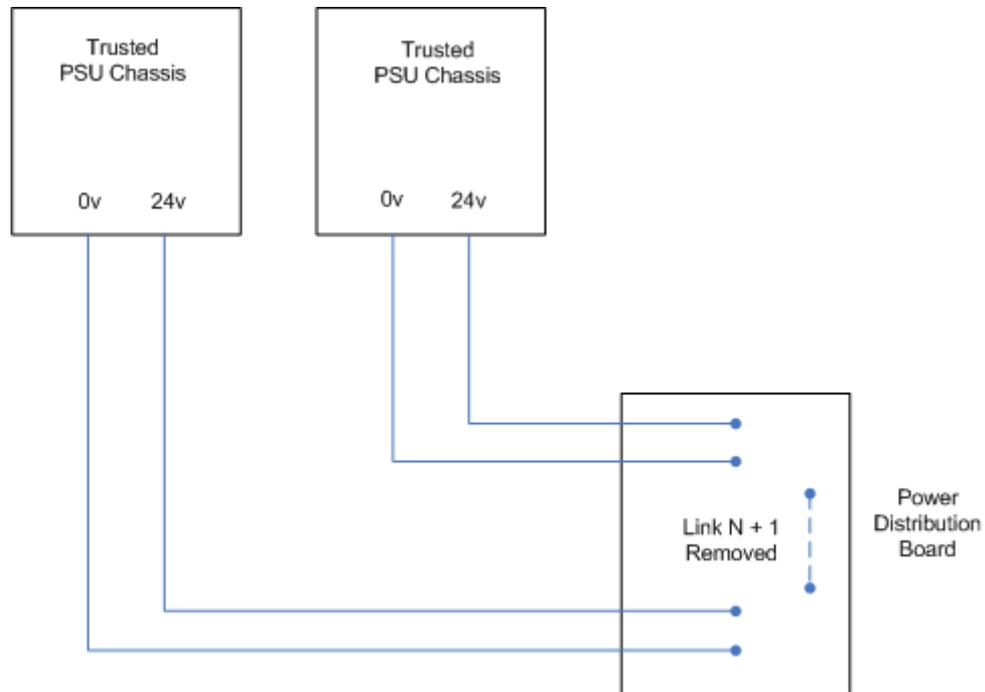


Figure 6 Configuration Option 3

### 3.4. Option 4

#### 2N Operation (100 % Redundant) - Multiple Configuration

Link N+1 is not fitted (2N) for this option as shown in Figure 7. The Trusted Power Supply Unit (T820x) will supply up to eight system chassis providing the total load does not exceed 750 kW.

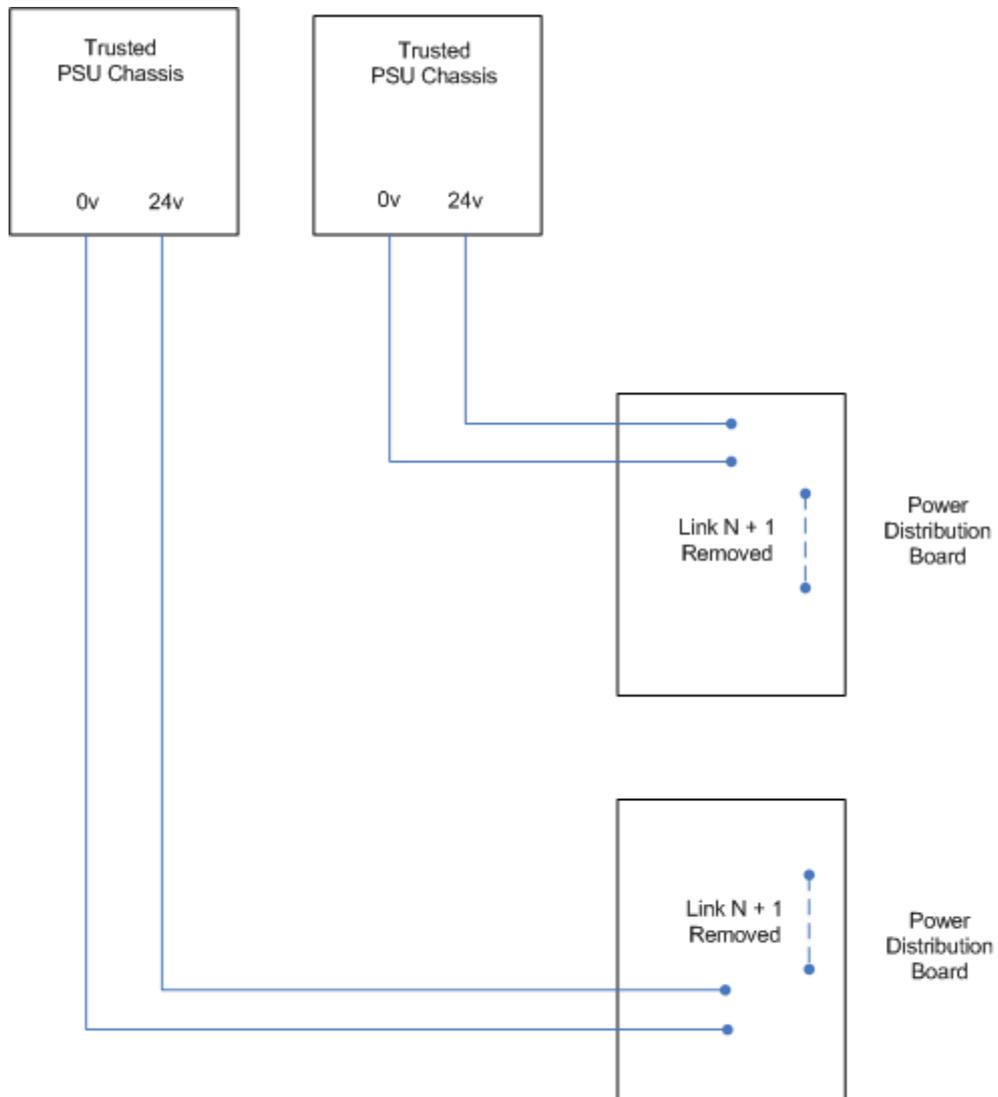


Figure 7 Configuration Option 4

## 4. Installation

The Trusted Power Distribution Unit MCB 24 V is designed to be mounted on either of the TS32 or TS35 DIN rails in the horizontal or vertical positions as required.

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## 5. Associated Cable Selection

Cable Type	Description
TC-001-01	Chassis Power Cable Assembly
TC-002-01	Inter-connection Cable MCB Distribution Unit (T8292) to Fuse Distribution Unit (T8293)
TC-011-01	Fan Power Cable Assembly

**Table 1 Associated Cable Selection**

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## 6. Terminal Connections

The terminal connections for the Trusted Power Distribution Unit MCB 24 V are shown below.

Terminal	Description
0V1	0 V - Incoming Supply 1
V1+	24 Vdc - Incoming Supply 1
0V2	0 V - Incoming Supply 2
V2+	24 Vdc - Incoming Supply 2
TB1-1	24 Vdc from MCB 1-1
TB1-2	24 Vdc from MCB 1-2
TB1-0V (2-off)	0 V associated with MCBs 1-1 and 1-2
TB2-3	24 Vdc from MCB 1-3
TB2-4	24 Vdc from MCB 1-4
TB2-0V (2-off)	0 V associated with MCBs 1-3 and 1-4
TB3-5	24 Vdc from MCB 2-4
TB3-6	24 Vdc from MCB 2-3
TB3-0V (2-off)	0 V associated with MCBs 2-4 and 2-3
TB4-7	24 Vdc from MCB 2-2
TB4-8	24 Vdc from MCB 2-1
TB4-0V (2-off)	0 V associated with MCBs 2-2 and 2-1
TB5-1	24 Vdc from MCB 1-5
TB5-2	0 V associated with MCB 1-5
TB5-3	0 V associated with MCB 2-5
TB5-4	24 Vdc from MCB 2-5

**Table 2 Terminal Connections**

## 7. Specifications

Voltage Range	22 Vdc to 28 Vdc
Input Current	60 A max
MCB Outputs	4-off, 2x24 V and 2x0 V at 20 A 1-off, 1x24 V and 1x0 V at 3 A
Common Alarm Output	1-off N/O volt-free contact - closed in the healthy state
Connectors	LU10.16 screw clamp terminal FCI Qikmate SMS series connector
Conductor Clamping Range (LU10.16)	0.5 mm <sup>2</sup> to 16 mm <sup>2</sup>
Max Switching Voltage	60 Vdc or 125 Vac
Operating Temperature	0 °C to +60 °C (+32 °F to +140 °F)
Non-operating Temperature	-25 °C to +70 °C (-13 °F to +158 °F)
Relative Humidity range (operating, storage and transport)	10 % – 95 %, non-condensing
Environmental Specifications	<a href="#">Refer to Document 552517</a>
<b>Dimensions</b>	
Height	108 mm (4.2 in)
Width	240 mm (9.4 in)
Depth	109 mm (4.3 in)
Weight	823 g (1.8 lb)