I/A Series® Remote Terminal Unit (RTU)
RTU50 Power Supply Module

FEATURES

- Wide range input supply: 18 to 164 V dc positive or negative earthed
- 100 W output capacity
- Supports a fully populated RTU50 file with 50% of 10 A relays operated simultaneously
- High conversion efficiency
- Withstands 4 ms dead shorted supply input
- Built-in over-current and over/under voltage protection
- RTU system failure alarm LED and contact
- Control supply isolation input
- Loop power distribution terminals
- Power supply OK and Fail LEDs

INTRODUCTION

Each I/A Series RTU50 card file has a removable Power Supply Module sized to support a fully populated file.

The Power Supply Module is located in the first slot of each RTU50 file. This slot may be shared with the Master Processor Module and/or a Communications Module or OPTOnet Module.

The RTU50 Power Supply Module operates over a wide input voltage 18 to 164 V dc, negative or positive earth, to accommodate the vast majority of site battery backed supplies.

This module replaces the 24, 48 or 129 V dc nominal power supplies (Part Numbers SY-0702041, SY-0702042, and SY-0702054).

FUNCTIONAL DESCRIPTION

The Wide Range 100 W Power Supply module provides the regulated +5 V dc, +15 V dc, and -15 V dc operating supplies for an RTU50 file. A 1.000 V dc supply is provided as an internal reference for automatic calibration of analog input modules.

The module's switched mode design provides operation over a wide dc input range from 18 to 164 V, provides high input to output isolation, controls switch-on inrush current, and minimizes size-to-weight ratio, while offering high power conversion efficiency and high reliability.

Internal monitoring provides a system reset to the RTU50 modules should the +5 V supply be abnormal. A front panel INPUT OK LED indicates the supply is normal.

Monitoring of the ±15 V rails is indicated by ±15 V OK LED on the front panel.

A relay contact (normal open and normal closed) controlled by the system fail and ±15 V rail fault, is available on the front panel terminals.

Module Description

Each I/A Series RTU50 card file has a removable Power Supply Module (see Figure 2). Because each card file has a dedicated power supply sized to accommodate a fully equipped file, future expansion within a file does not require any power supply changes, while distributed power supplies enhance availability. Regardless of the I/O in an RTU, the power supply is always correctly sized.

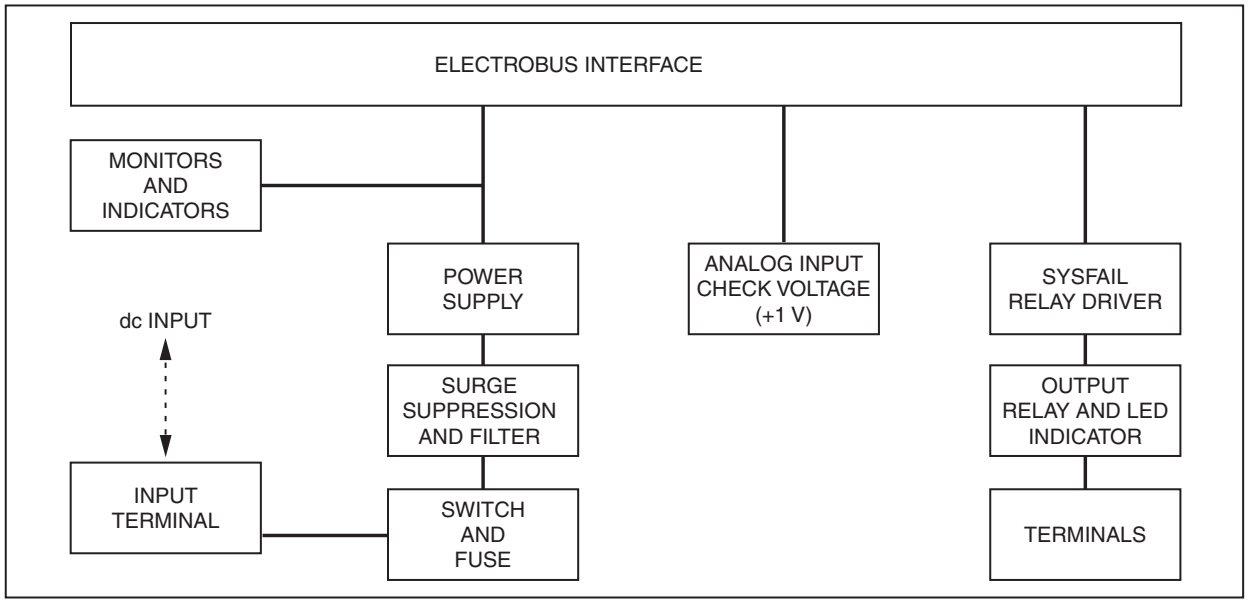

Figure 1. I/A Series RTU50 Power Supply Module Functional Block Diagram

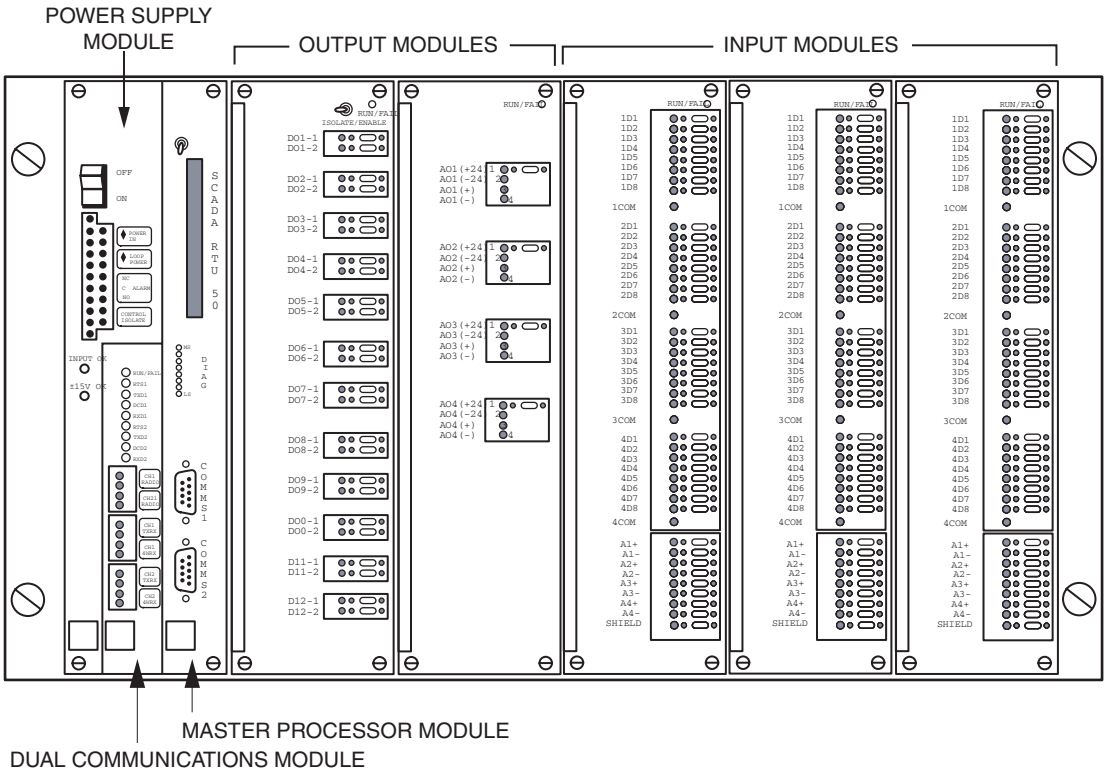

Figure 2. I/A Series RTU50 Power Supply System, Example Implementation

Front Panel

The I/A Series RTU50 Power Supply Module is always located in the first slot of each file and may be shared with the Master Processor Module and/or a communications module (see Figure 3).

The module plugs into a backplane (Electrobus) via a DIN 41612 connector and is double Eurocard size.

Front panel cutout allows a Dual Communication Module or OPTOnet Module to be fitted to Slot 1 of the file (see Figure 2).

The Power Supply Modules can be supplied using a 24, 48, or 129 V dc power source.

The Power Supply Module provides contacts for an external warning lamp or audible alarm to indicate an RTU or ±15 V fault.

Provision is also made for control supply isolation by affixing an external switch or relay.

A pair of terminals provides connection of a remote facility to isolate supply to control outputs.

A front panel power switch is provided.

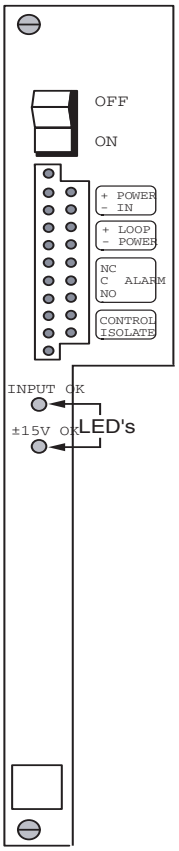

Figure 3. Front Panel

FUNCTIONAL SPECIFICATIONS

Power Requirements
130 W maximum input

Input Voltage
Wide range input voltage 18 to 164 V dc
Suitable for use on 24 V dc, 48 V dc, and 129 V dc nominal source supplies

Output Capability
+5 V at 10 A
+15 V at 3 A
–15 V at 0.45 A
Maximum output of 100 watts total permitted

Input Current
7.2 A maximum at 18 V
0.75 A maximum at 164 V

Efficiency
>75% at full load over full input voltage range

Current Limit
Shutdown at maximum power with auto-recovery

Over-Voltage Protection
Crowbar protection set at 6.25 V

Under-Voltage Protection
Shutdown at low input voltage

Hold-up Time
Withstands 4 ms dead shorted power supply input

Ripple and Noise
50 mV peak-peak (+5 V)
100 mV peak-peak (±15 V)

Isolation
2000 V ac RMS for 1 minute
Primary-to-Chassis and Primary-to-Secondary isolation

Transient Protection
IEC 255-4 class 3 (5 kV impulse, 2.5 kV HFD)
ANSI IEEE C37.90.1
IEC 61000-4-4 Level 3 (2 kV)
IEC 61000-4-5 Level 3 (2 kV)

EMC Conducted Noise
EN50011 Class A

Fail Alarm Output
Relay output contact (normal open and normal closed) controlled by Electrobus SYSFAIL signal and ±15 V rail fault

LED Indications
Input voltage OK, ±15 V within limits

On Board Fuse
10 A/250 V Type T, 20 x 5 mm

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature

STANDARD
0°C to 60°C (32°F to 140°F)

EXTENDED(1)
-20°C to +70°C (-4°F to 158°F)

Humidity
10% to 95% (noncondensing)

Cooling
Natural convection, no forced cooling required

PHYSICAL SPECIFICATIONS

Physical Size
The module requires frame space of 40 mm
190 x 262 x 40 mm assembly

(1) Extended temperature range modules are available on request.

ORDERING INFORMATION

Part Number	Description
SY-0702076	RTU50 100 W Wide Input Range Power Supply Module

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