

RTK RT-AD range

Dual redundant power supply



DECLARATION OF CONFORMITY

A printed version of the Declaration of Conformity has been provided separately within the original shipment of goods. However, you can find a copy of the latest version at <http://www.mtl-inst.com/certificates>

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GENERAL SAFETY INFORMATION

The following methods are used in this manual to alert the user to important information:-



WARNING!

Warnings are provided to ensure operator safety and **MUST** be followed.

CAUTION

Cautions are provided to prevent damage to the instrument.

NOTE

These are used to give general information to ensure correct operation.

1. INTRODUCTION

1.1 General

The RT-A/D range of power supplies provides a single enclosure containing 2 x independent power supplies each complete with a power-on LED and a supply monitor relay with change over contact for use with 3rd party devices.

The DC output of each power supply is combined using "OR" diodes to ensure the output remains available if either the Supply 1 or Supply 2 is available.

The redundant power supply is available in a range of wattages, (25, 40, 60, 100, 150, 200, 320 watts), using combinations of AC/DC and DC/DC switched mode power supplies as required for each application.

1.2 Model Code Definition

RT-AD-AB-PWR-24

Where:

RT-AD	Model range
A	Power supply 1 input range (L, M or H)
B	Power supply 2 input range (L, M or H)
PWR	Output power in Watts (25, 40, 60, 100, 150, 200 or 320)
24	DC output voltage

Power supply input options are:

- L 48V DC nominal (32-72V DC)
- M 110V DC nominal (72-144V DC)
- H 88-264V AC 47-63Hz (120-270V DC)

1.3 Available Models

Only those combinations listed in the table below are available.

Model	Input Range Supply 1	Input Range Supply 2
RT-AD-LH-25-24	36-72VDC	88-264VAC or 125-270V DC
RT-AD-MH-25-24	72-144VDC	88-264VAC or 125-270V DC
RT-AD-HH-25-24	88-264VAC or 125-270V DC	88-264VAC or 125-270V DC
RT-AD-LH-40-24	36-72VDC	88-264VAC or 125-270V DC
RT-AD-MH-40-24	72-144VDC	88-264VAC or 125-270V DC
RT-AD-HH-40-24	88-264VAC or 125-270V DC	88-264VAC or 125-270V DC
RT-AD-LH-60-24	36-72VDC	88-264VAC or 125-270V DC
RT-AD-MH-60-24	72-144VDC	88-264VAC or 125-270V DC
RT-AD-HH-60-24	88-264VAC or 125-270V DC	88-264VAC or 125-270V DC
RT-AD-LL-100-24	36-72VDC	36-72VDC
RT-AD-LH-100-24	36-72VDC	88-264VAC or 125-270V DC
RT-AD-MM-100-24	72-144VDC	72-144VDC
RT-AD-MH-100-24	72-144VDC	88-264VAC or 125-270V DC
RT-AD-HH-100-24	88-264VAC or 125-270V DC	88-264VAC or 125-270V DC
RT-AD-LH-150-24	36-72VDC	88-264VAC or 125-270V DC
RT-AD-MM-150-24	72-144VDC	72-144VDC
RT-AD-MH-150-24	72-144VDC	88-264VAC or 125-270V DC
RT-AD-HH-150-24	88-264VAC or 125-270V DC	88-264VAC or 125-270V DC

continued on next page

Model	Input Range Supply 1	Input Range Supply 2
RT-AD-MH-200-24	72-144VDC	88-264VAC or 125-270V DC
RT-AD-HH-200-24	88-264VAC or 125-270V DC	88-264VAC or 125-270V DC
RT-AD-MM-320-24	72-144VDC	72-144VDC
RT-AD-MH-320-24	72-144VDC	88-264VAC or 125-270V DC
RT-AD-HH-320-24	88-264VAC or 125-270V DC	88-264VAC or 125-270V DC

2. INSTALLATION

2.1 Mounting Details

There are two sizes of enclosure used for the RT-AD range of power supply.

The smaller of the two sizes houses all supplies up to and including 150 Watt output power whilst the larger is used for 200 and 320 Watt supplies. Mounting details are shown below.



WARNING !

The unit should be mounted using all four mounting holes to a panel or cabinet wall.



WARNING !

The unit should be mounted in a vertical orientation only with the connections at the lower end of the unit.

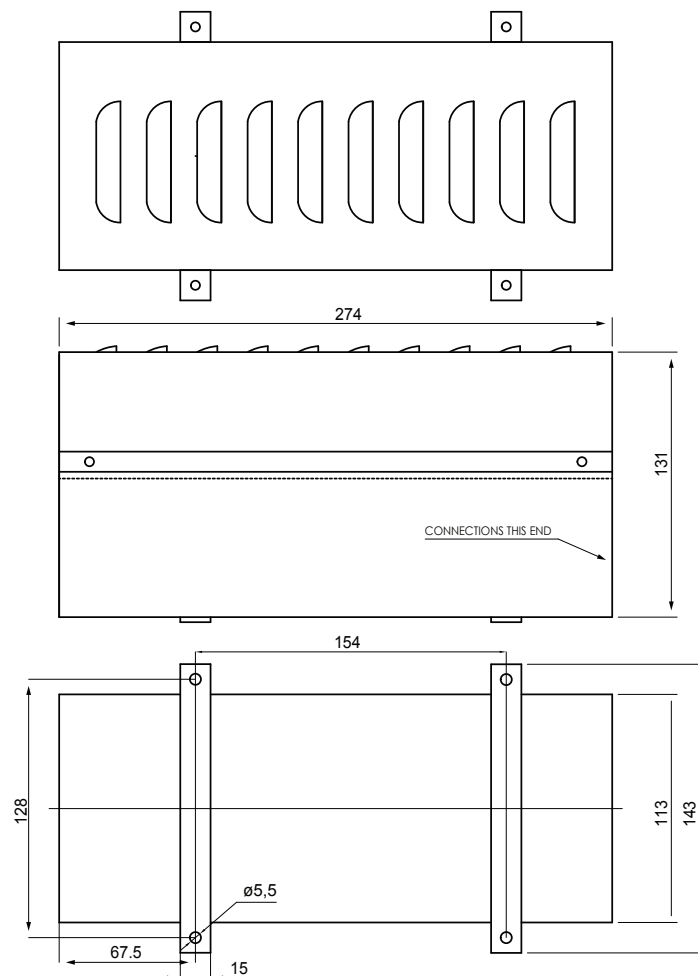
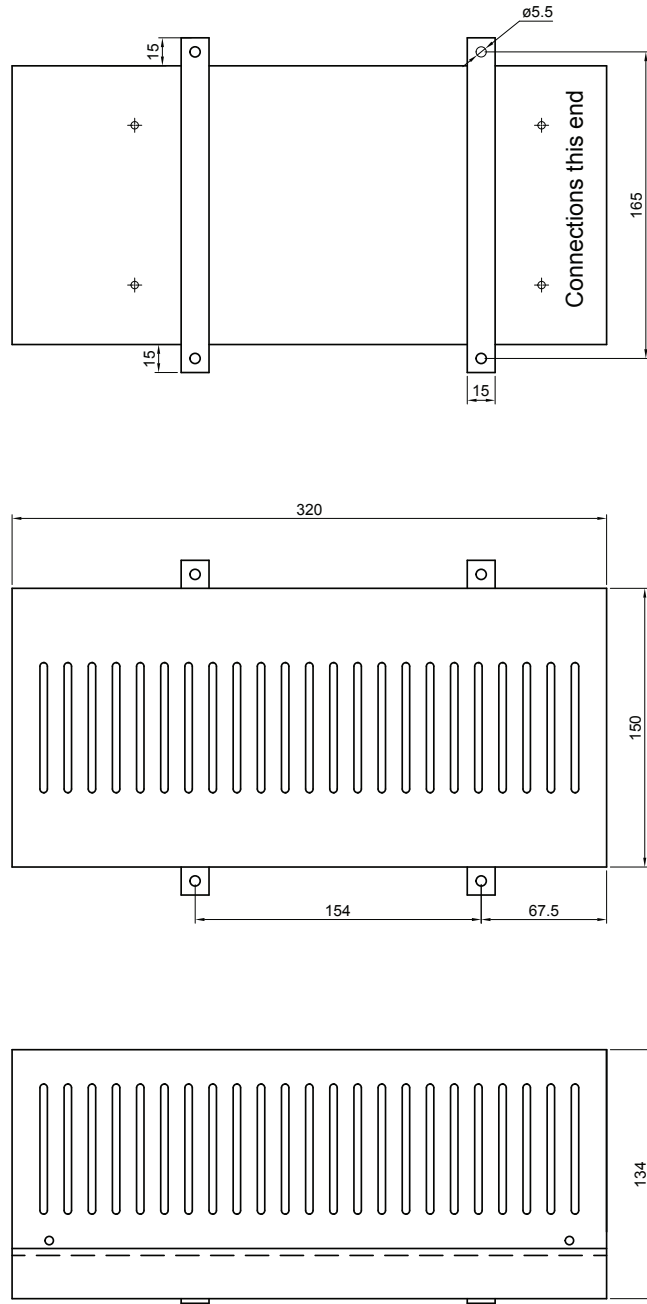


Figure 1- Dimensions for 25-150W Supplies

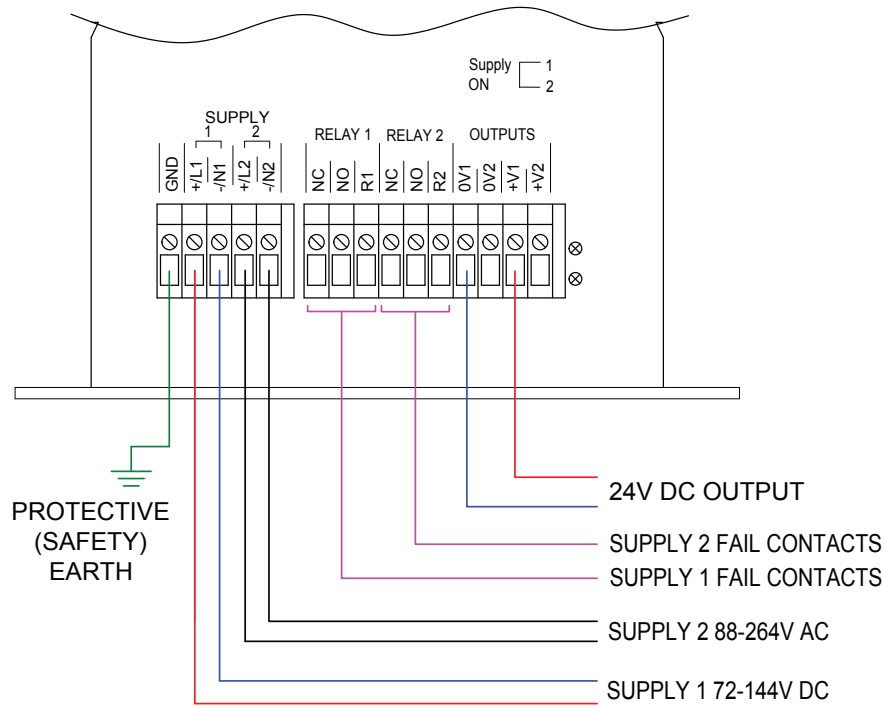
Figure 2- Dimensions for 200/320W Supplies



2.2 Connections

The following connection details are provided for a typical power supply.

- Model RT-AD-MH-100-24
- Supply 1 72-144V DC
- Supply 2 88-264V AC (120-270V DC)
- Monitor Relays Outputs 2 off
- 24V DC Output Dual terminals



2.2.1 GND



WARNING !

The RT_AD power supply must have a protective (safety) earth connection to the GND terminal.

2.2.2 SUPPLY

Connect the correct supply inputs to SUPPLY 1 and SUPPLY 2 as defined on the product label which is located on the opposite end of the supply to the connections.

CAUTION

Ensure correct polarity for DC inputs.

2.2.3 Outputs

Either or both of the 0V and +V terminals may be used. Internally they are connected together.

2.2.4 Relay 1 and 2

The RELAY 1 and RELAY 2 contacts provide status information for each of the internal power supplies.

When the supply input is present and the internal power supply is working correctly the contacts are in the energised state. i.e. the NO contact will be closed and the NC contact open. When the supply input or the internal supply fail the contacts become de-energised with the NO contact open and the NC contact closed.

2.2.5 Allowable wires

The connections can be made using the following wire sizes and terminations.

Conductor cross section solid max.	2.5 mm
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve max.	1.5 mm ²
Conductor cross section flexible, with ferrule with plastic sleeve max.	1.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14



WARNING !

Use wire sizes capable of handling the maximum power available from the power supply.

3. TECHNICAL SPECIFICATION

3.1 Power Inputs

AC supply versions

88-264V AC 47-63Hz (125-270V DC)

DC supply versions

48V DC nominal (32-72V DC)

110V DC nominal (72-144V DC)

3.2 Power Outputs

Output Voltage

24V DC $\pm 0.1V$

Regulation

-1% to +5% of output voltage dependent on load

Ripple and Noise

Typically 100mV

Over-voltage protection

115-135% of output voltage

Hold up time

Typically 20ms at 240V AC

Output isolation

500V AC Withstand voltage output to Earth (GND) or relay contacts

Output Derating

Some models need to be derated for operating temperature and/or input voltage.

For more details see the Derating section.

3.3 Relay Outputs

Functions

Two relays monitor each internal power supply – contacts operate when the power supply fails.

Normally open or normally closed contact available for each relay.

Max switch voltage

30V DC or 250V AC

Max switched current

7A at 30V DC

5A at 250V AC

3.4 General

Compliance

Each internal power supply meets compliance standards as below:

Conduction & Radiation

All variants: EN55022 (CISPR22) Class B

Harmonic Current

All AC input variants: EN61000-3-2,-3

Immunity

All variants: EN61000-4-2, 3, 4, 5, 6, 8

All AC input variants: EN61000-4-11

25W 110V DC and AC input, 40W 110V DC input, 60W 48V and 110V DC input, all 100W through 320W input variants:

ENV50204, EN55024, light industry level, criteria A

25W and 40W 48V DC input: ENV50204, EN55024, heavy industry level, criteria A

40W and 60W AC input: EN61000-6-2 (EN50082-2), heavy industrial level, criteria A

LVD

All variants: EN61010-1:2010 and IEC61010-2-201

Environment

Operating temperature: -10 to 60°C

(Note- Some models need to be derated for operating temperature. For more details see the derating section.)

Operating humidity: 20-90% RH non condensing

Storage temperature/humidity: -20 to 85°C

Connections

All connections are terminal blocks for conductors up to 2.5mm².

See connections section for further details.

Dimensions

Small case (power range 25-150W): 274 x 113 x 134mm (L,W,H)
plus mounting brackets

Large case (power range 200-320W): 320 x 150 x 134mm (L,W,H)
plus mounting brackets

Weight

Small case (power range 25-150W) max 3.5kg.

Large case (power range 200-320W) max 4.4kg.

(Actual weights dependent on variant – lower powers are lower in weight)

3.4 Derating

Some of the internal power supplies are subject to derating dependent on output power rating, ambient temperature of the RT-AD unit and/or the supply input voltage. The table below gives details.

Output Power Rating	Supply Voltage Range	Thermal Derating	Input Voltage Derating
25	L	100% full power 0-50°C Reducing to 0% at 60°C	
25	M	100% full power 0-50°C Reducing to 0% at 60°C	
25	H	100% full power 0-40°C Reducing to 60% full power at 60°C	
40	L	100% full power 0-50°C Reducing to 0% at 60°C	
40	M	100% full power 0-50°C Reducing to 0% at 60°C	
40	H	100% full power 0-40°C Reducing to 62% full power at 60°C	
60	L	100% full power 0-50°C Reducing to 0% at 60°C	
60	M	100% full power 0-50°C Reducing to 0% at 60°C	
60	H	100% full power 0-40°C Reducing to 75% full power at 60°C	
100	L	100% full power 0-35°C Reducing to 80% full power at 45°C and 0% at 60°C	
100	M	100% full power 0-35°C Reducing to 80% full power at 45°C and 0% at 60°C	
100	H	100% full power 0-40°C Reducing to 60% full power at 55°C and 0% at 60°C	80% Full power at 88V AC 100% Full power from 100V AC
150	L	100% full power 0-25°C Reducing to 60% full power at 45°C and 0% at 60°C	
150	M	100% full power 0-25°C Reducing to 60% full power at 45°C and 0% at 60°C	
150	H	100% full power 0-30°C Reducing to 60% full power at 35°C and 0% at 60°C	80% Full power at 88V AC 100% Full power from 115V AC
200	M	100% full power 0-35°C Reducing to 60% full power at 45°C and 0% at 60°C	90% Full power at 72V DC 100% Full power from 96V DC
200	H	100% full power 0-35°C Reducing to 60% full power at 45°C and 0% at 60°C	80% Full power at 88V AC 100% Full power from 100V AC
320	M	100% full power 0-35°C Reducing to 65% full power at 45°C and 0% at 60°C	98% Full power at 72V DC 100% Full power from 96V DC
320	H	100% full power 0-35°C Reducing to 50% full power at 45°C and 0% at 60°C	75% Full power at 88V AC 100% Full power from 135V AC

4. MAINTENANCE

There is no operator maintenance of the RT-AD range of power supplies.



WARNING !

Installation and maintenance of this power supply must only be performed by competent service personnel.



WARNING !

Hazardous voltages may exist on the connections of the power supply.
Remove all power before removing any cover or connection.
Ensure all covers and connections are fully secured before restoring power.

5. CONTACT / RETURNS

Our contact details can be found on the back page of this manual.

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