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# IRT 1 RU Chassis Frame for Eurocards

# Type FRU-1031

# S/I 347/112

**Designed and manufactured in Australia**

**IRT can be found on the Internet at:**
**http://www.irtelectronics.com**

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# Type FRU-1031

# Instruction Book

Table of Contents



This instruction book applies to units later than S/N 9710000.

## WARNING

Operation of electronic equipment involves the use of voltages and currents that may be dangerous to human life. Maintenance personnel should observe all safety regulations. Do not change components or make adjustments inside the equipment with power **ON** unless proper precautions are observed. Note that under certain conditions dangerous potentials may exist in some circuits even though power controls are in the **OFF** position.

# IRT 1 RU Chassis Frame for Eurocards

# Type FRU-1031

## General Description

The FRU-1031 chassis with integral DC power supply provides a means of mounting either one or two IRT Eurocard modules in a single rack unit, where only a low voltage DC supply is available. This provides a convenient format for situations where only a small number of modules are required and space is at a premium.

The FRU-1031 differs from the FRU-1030 1 RU chassis only in the provision of a DC supply input in the range of 20 to 70 Volts instead of the AC mains input. The DC input may be either positive or negative earth.

The FRU-1031 is supplied with blank plates covering the right hand module position to enhance the safety and appearance of the unit when only one card is fitted.

A single power supply only is provided and so, if power supply redundancy is required, users should select one of IRT's 3 RU frames.

Variations of the FRU-1031 for use with DC input supply sources outside the 20 to 70 Volt range may be available from IRT on an indent basis. For example a 12 Vdc version is available as the FRU-1031/12.

## Technical Specifications
## IRT Eurocard frame
## Type FRU-1031

### Power requirements:

| | | |
|---|---|---|
| Voltage | | 20 to 70 Vdc positive or negative ground. |
| Power | | 1 A maximum |
| Fusing | | 500 mA anti-surge |

### Output:

±16 Vdc
10 VA maximum

### Connectors:

| | |
|---|---|
| DC power input | Klippon MK1/3 termination block |
| DC output | 2 x socket 3 Pin IDC 1300-103-426 |

### Other:

| | |
|---|---|
| Temperature range | 0 - 50° C ambient |
| Mechanical | 1 RU (482 mm x 44.5 mm) standard 19” rack frame<br>Suitable for mounting in standard 19" racks |
| Dimensions | 482 x 44.5 x 238 mm (frame empty.)<br>Clearance width 442 mm |
| Finish: | APO grey enamel front panel.<br>Bright finish passivated steel. |

# Circuit Description

Refer to wiring diagram 803423 & 803424.

The DC input power is applied via a screw terminal block on the rear of the chassis. A 1A fuse is included in the negative rail before both polarities are switched at the front panel.

The input is protected against accidental polarity reversal by diodes D 1 & D 2.
Resistor R 1 and zener diode D3 prevent the voltage at the input of the DC-DC converter rising above the 70 V specified limit.
The DC-DC converter used is a fully floating type and so may be connected with either the positive or negative supply input grounded.

The inclusion of these safety features results in complications to the earthing arrangement, but the benefits are clear. In order to make the ground reference continuous to the input of the converter it is necessary to insert 4 links conforming to the arrangement shown following in the *Configuration* section.
A further link (LK9) is provided to connect the input ground to chassis ground should this be required.

The DC-DC conversion takes place in a sealed module. The values of R 2 and R 3 are selected on test to provide ±16.5 Vdc at the output of the converter. Standard value for R 2 is 18 KΩ and starting value for R 3 is 2K2 Ω.
If the converter is replaced at any time these values may need to be adjusted to provide the correct output voltage.

A LED power indicator is provided on the front panel. This is connected in series with D 8, a BZX79C18 18 Volt zener diode, between the output positive and negative rails. As the zener voltage is higher than the supply voltage of a single rail, the LED will extinguish if either rail fails.

The remainder of the components shown on diagram 803424 provide suppression of AC noise on the DC input and outputs.

The DC outputs are distributed to the installed modules via two flying leads fitted with 3 pin IDC connectors, which connect to pins on the inside of the fitted modules rear assembly.

# Configuration

**WARNING:**

**DC supply systems are normally capable of supplying very large currents. Whilst the voltage may be low the current capability is sufficient to provide sufficient power to melt steel parts or weld screwdrivers or other tools to busbars or chassis. Serious damage and personal injury can result if extreme care is not taken.**

Before making any DC connection check whether a positive or negative ground system is required.
The following links must be set to the correct positions before DC is connected or components may be damaged.
Once the links have been set they should be checked carefully before a DC input is connected.

For negative ground systems (positive supply) install the following links:

LK 1, 4, 6 & 7.
Do not install links LK 2, 3, 5 & 8.

For positive ground systems (negative supply) install the following links: (e.g. Telecoms –48 Vdc)

LK 2, 3, 5 & 8.
Do not install links LK 1, 4, 6 & 7.

Link LK 9 provides a connection between circuit ground and chassis ground. This is provided to allow flexibility in earthing arrangements for the minimisation of noise. If in doubt this link should be installed. If it is not installed a separate earth must be provided to the chassis. This may be provided through the rack mounting of the chassis where an earth is connected to the rack provided a low Ohmic contact is made between chassis and rack.

# Installation of Modules

Before mounting, ensure that the IEC power connector is removed from the power input at the rear of the FRU-1031.

Locate flying power supply lead fitted with 3 pin IDC connector inside FRU-1031 chassis and pass through module mounting hole in rear panel.

Connect lead to the small 3 pin IDC plug provided on module side of rear assembly.

Fasten rear assembly to outside of FRU-1031 chassis with 2.5 mm x 6 mm pan head screws making sure that power connection with flying lead attached is located on the underside.

Slide the Eurocard module through the cutout in the front panel (making sure that the card is correctly located in the guide rails) with the component side uppermost and push until the 64 pin rear connector mates with the rear assembly.

Fasten the module front panel to outside of FRU-1031 chassis with the two screws from which the plastic washers were removed making sure that the assembly is properly aligned with the panel cutout.

Check that the DC polarity has been selected and that all required links are in their correct positions. See *Configuration* section.

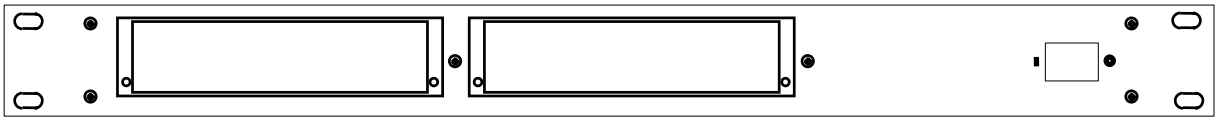
Mount the FRU-1031 in rack and connect DC input to the DC input screw terminal block.

## EMC

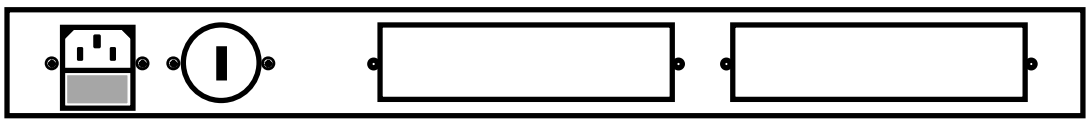
Due to EMC (electromagnetic compliance) standards, IRT recommends that all unused card positions be closed off using IRT front blanking panels, on the front, and rear blanking panels, on the rear, of the frame.

**Front & Rear panel diagrams:**
The following front and rear panel diagrams are intended to show relative positions of controls and modules and are not to scale.

Front view:

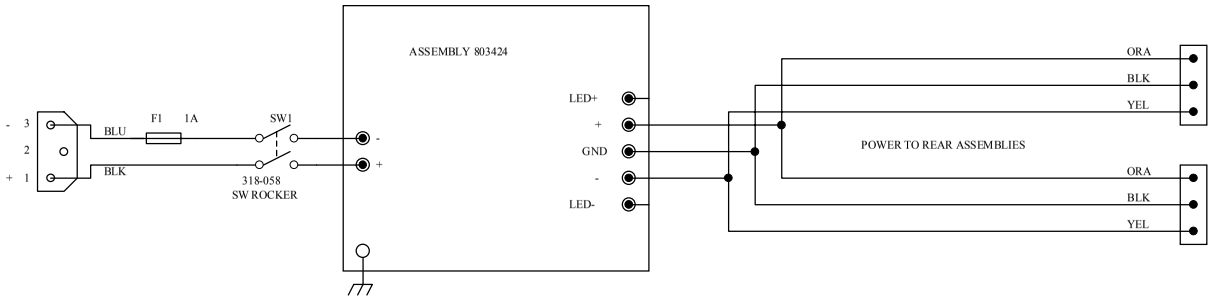


Rear view:



# Drawing List

| Drawing # | Sheet # | Description |
|---|---|---|
| 803423 | | FRU-1031 wiring diagram. |
| 803424 | | FRU-1031 DC-DC converter schematic diagram. |




1 17/9/1992 ECR905
2 18/12/97



DRAWN K.N.
CHECKED
ENG. APP.
CONTRACT No.

IRT

SIZE A4

TITLE
FRU-1031
WIRING DIAGRAM
FOR DC OPERATION

SCALE

DRAWING No. 803423

SHEET 1 OF 1

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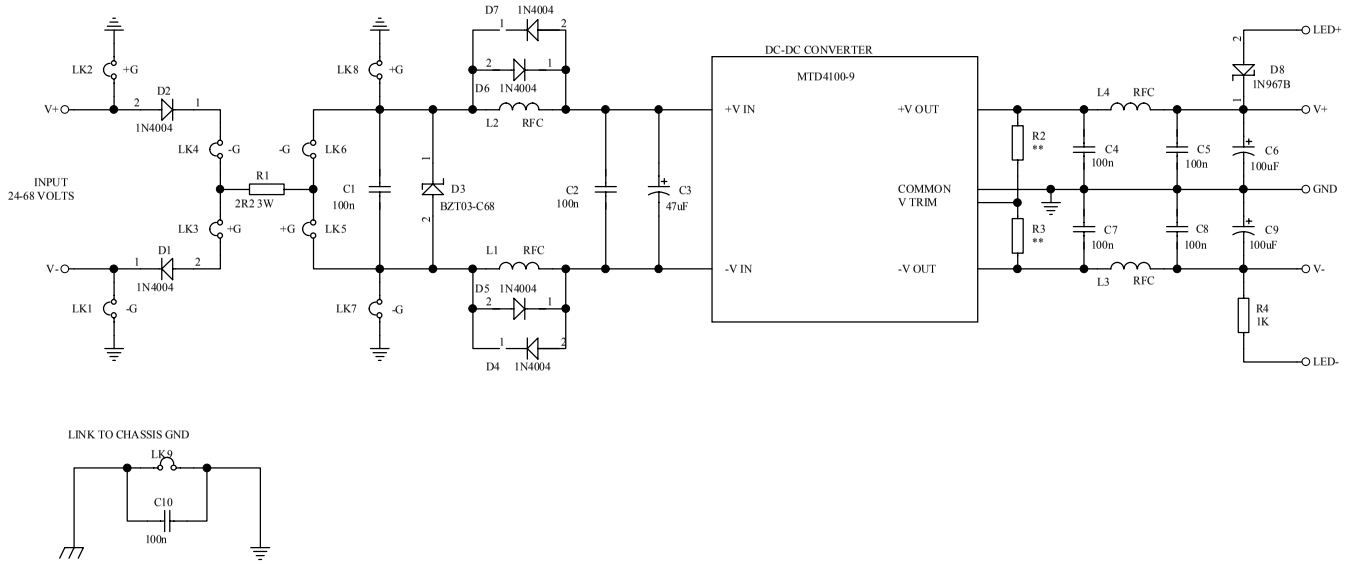





NOTES:

* FOR -VE GND SHORT LINKS 1,4,6,7 ONLY

FOR +VE GND SHORT LINKS 2,3,5,8 ONLY

** R2 AND R3 USED TO TRIM OUTPUT VOLTAGE ON MR SERIES CONVERTERS

R2 = 18K, R3 = (2K2 NOM.), IS SET TO GIVE +/- 16.5V OUTPUT

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2.11.1995



DRAWN K.N.

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ENG. APP.

CONTRACT No.

IRT

SIZE A4

TITLE FRU-1031
DC PSU PCB ASSEMBLY

SCALE

DRAWING No. 803424

SHEET 1 OF 1

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