1. Product Range

Catalogue No.	Product name	Description
T8240	Power Shelf	19 inch x 1U chassis for up to 3 Power Packs. Includes Power Port + 10-way cable connector, 3 off mains plugs and retaining clips.
T8231	Power Pack 24 Vdc	750 W, universal input, 24 Vdc out.
T8232	Power Pack 28 Vdc	750 W, universal input, 28 Vdc out.
T8243	Power Port	Plug in diagnostic interface + 10-way cable connector.
T8234	Power Controller	For live adjustment of output voltage. 19 inch x 1U. 1 x 5 way ribbon cable.
T8235	Power Shield	Covers unused Power Pack positions.
TC-323	Power Shelf Interconnect	1 x 5 way ribbon cable for current sharing between shelves and connection to a Power Controller.
T8247	Power Shelf support brackets	A pair of brackets that can support up to 4 Power Shelves.

Table 1 T824X Power System Product Range

Figure 1 Front View - Power Shelf with Power Packs

2. Description

A pair of brackets mounted in to a 19 inch frame supports up to 4 Power Shelves.

Power Packs are slotted into the 1U Power Shelf with the first Power Pack in the right hand slot, as shown in Figure 2. Each Power Pack provides 750 W (31.25 A at 24 Vdc) to the DC output on the Power Shelf.

The standard AC input connection to the Power Shelf is through IEC 60320 type connectors rated at 10 A/250 Vac in Europe/Asia and 15 A/120 Vac in North America.

Output terminal blocks on each Power Shelf have three M4 screw connections. Ring type connectors should be used when connecting from the Power Shelf to system power distribution busbars.

The Power Port plugs into the back of the Power Shelf and requires a 24 V supply. The Power Port can provide monitoring and control via a 25 way D connector when connected to a Power Controller. A separate connector (CON3) provides DC and AC fail contacts. When more than one Power Shelf is used, Power Ports are linked using a Power Shelf Interconnect ribbon cable to enable current sharing.

Spare slots in the Power Shelf are normally covered by Power Shields and the appropriate fault relays are linked on the Power Port.

The 824X system includes an optional 1U Power Controller that is connected via the Power Port, using a TC-323 Power Shelf Interconnect cable, and allows online setting of output voltage. The Power Controller can monitor up to 12 Power Packs in 4 Power Shelves. Each Power Shelf is identified by the Power Controller by selecting addresses on the Power Port as described in paragraph 5.2.4.

Unused slots in the 4U brackets may be used for other equipment or fitted with blanking plates.

Unused connectors on the TC-323 cable should be tied back and left unused.

3. Power Shelf Specification

The Power Shelf is designed to operate as a key element in a complete distributed Power System.

This Power Shelf can house up to three Power Packs, provides physical protection and a number of alarm and control features.

The Power Shelf can supply up to 1500 W of n+1 redundant power or up to 2250 W of total power depending on configuration of Power Packs. Four stacked Power Shelves can provide up to 9000 W total power.

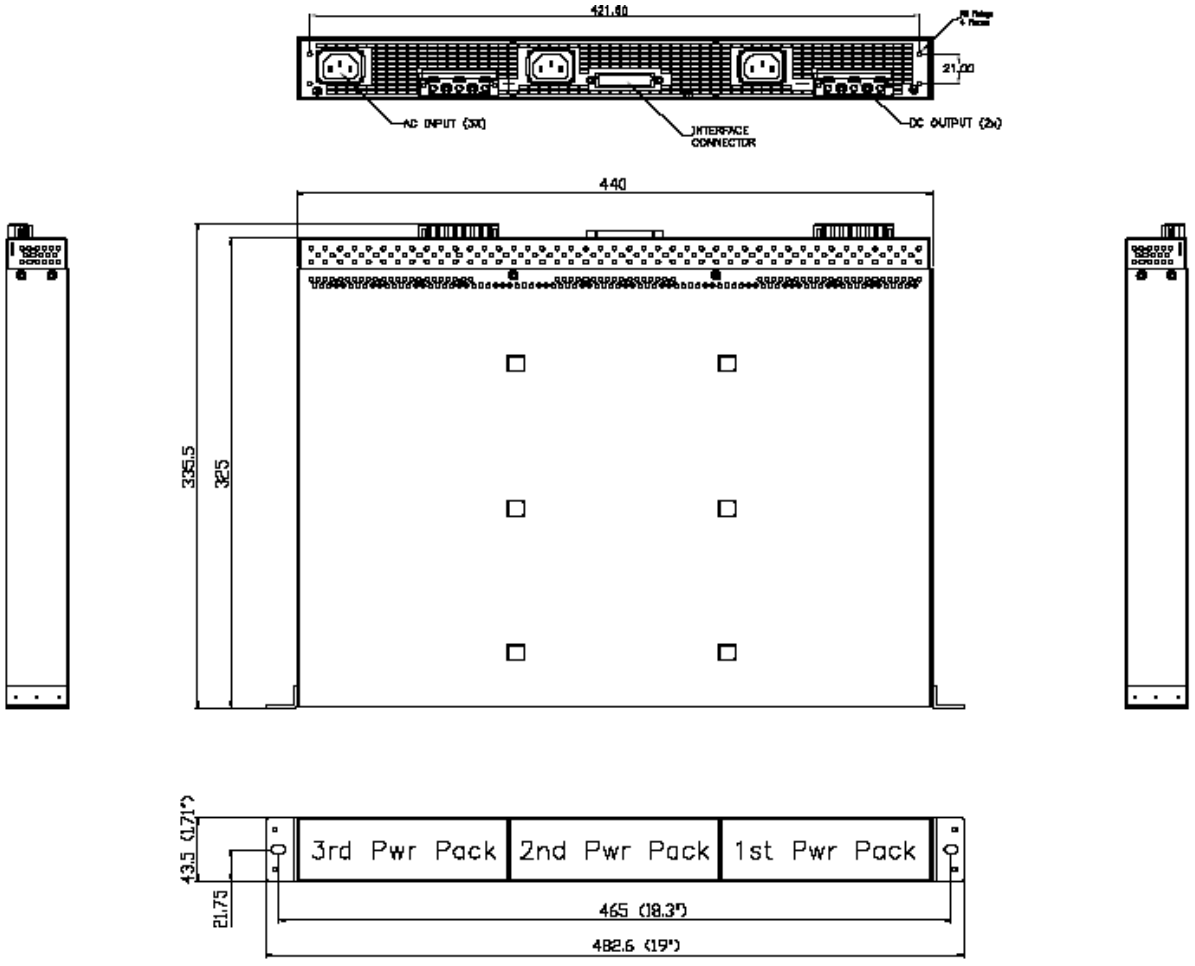

Figure 2 1U Power Shelf Mechanical Outline

3.1. Input Connector

The Power Shelf can be used with any standard global line voltages. The standard AC input connection to the Power Shelf is through three clip retained IEC 60320 type connectors rated at 10 A / 250 Vac in Europe/Asia and 15 A /120 Vac in North America.

3.2. Output Connector

The Power Shelf has two terminal blocks for DC output (each with three M4 screws). The V+ and V- are floating with respect to frame GND, either of which can be connected to GND as required.

3.3. Current Sharing

Note: If there is a low load on a Power Shelf (less than 2 A per Power Pack) then the current sharing circuit may not work correctly and 'PWR OK' LED may not illuminate on the Power Packs.

In systems where more than one Power Shelf is being used, Shelves should connect their CS terminals by using a Power Shelf Interconnect cable TC-323. This ensures that the Power Shelves current share.

Do not connect the TC-323 cable between 'A' and 'B' supplies or between two sets of Shelves which connect to separate busbars. The supplies will attempt to share current between the two busbars, which may damage the power packs and Shelves' sensing circuits.

Unused connectors on the TC-323 cable should be tied back and left unused.

3.4. Interface Connector

The Power Shelf has an optional DSB, 25-pin, female interface connector on the back. The Power System can be monitored and controlled through this interface, by a Power Controller, using a Power Shelf Interconnect. AC and DC fail alarms are available from a separate connector on the Power Port.

Pin Number	Signal Name	Description
1	DC Fail_2	DC Fail signal of the second Power Pack *
2	A2	I^2C address bit 2
3	A3	I^2C address bit 3
4	ON SYNC	Not Used
5	SDA	I^2C Serial data bus
6	SCL	I^2C Clock
7	NC	No connection
8	On/Off_1	Remote on off control for the first Power Pack - Not Used
9	OTP_1	Fan Fail or Over-Temperature signal for the first Power Pack *

Pin Number	Signal Name	Description
10	On/Off_2	Remote on off control for the second Power Pack - Not Used
11	V_{aux}	Not Used
12	DC Fail_1	DC Fail signal of the first Power Pack *
13	AC Fail_3	AC Fail signal of the third Power Pack *
14	OTP_3	Fan Fail or Over-Temperature signal of the third Power Pack *
15	DC Fail_3	DC Fail signal of the third Power Pack *
16	INT BUS	Not used *
17	AC Fail_1	AC Fail signal of the first Power Pack *
18	On/Off_3	Remote on off control for third Power Pack - Not Used
19	SRTN	Signal return and V_{aux} return
20	RS-	Remote sense for V-
21	OTP_2	Fan Fail or Over-Temperature signal of the second Power Pack *
22	RS+	Remote sense for V+
23	AC Fail_2	AC Fail signal of the second Power Pack *
24	CS	A single wire interface for current sharing
25	V-	V-

* opto-isolated, open collector

Table 2 Pin Assignment of the Interface Connector

Refer to Figure 2 1U Power Shelf Mechanical Outline for the locations of Power Pack 1, 2 and 3.

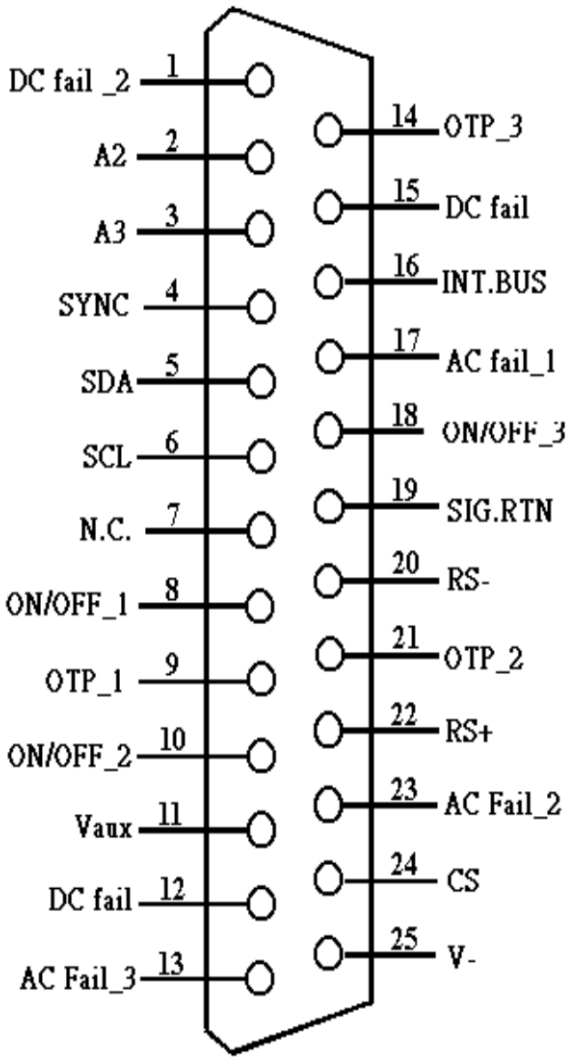

Figure 3 Interface Connector

3.5. Stacked-up Assembly

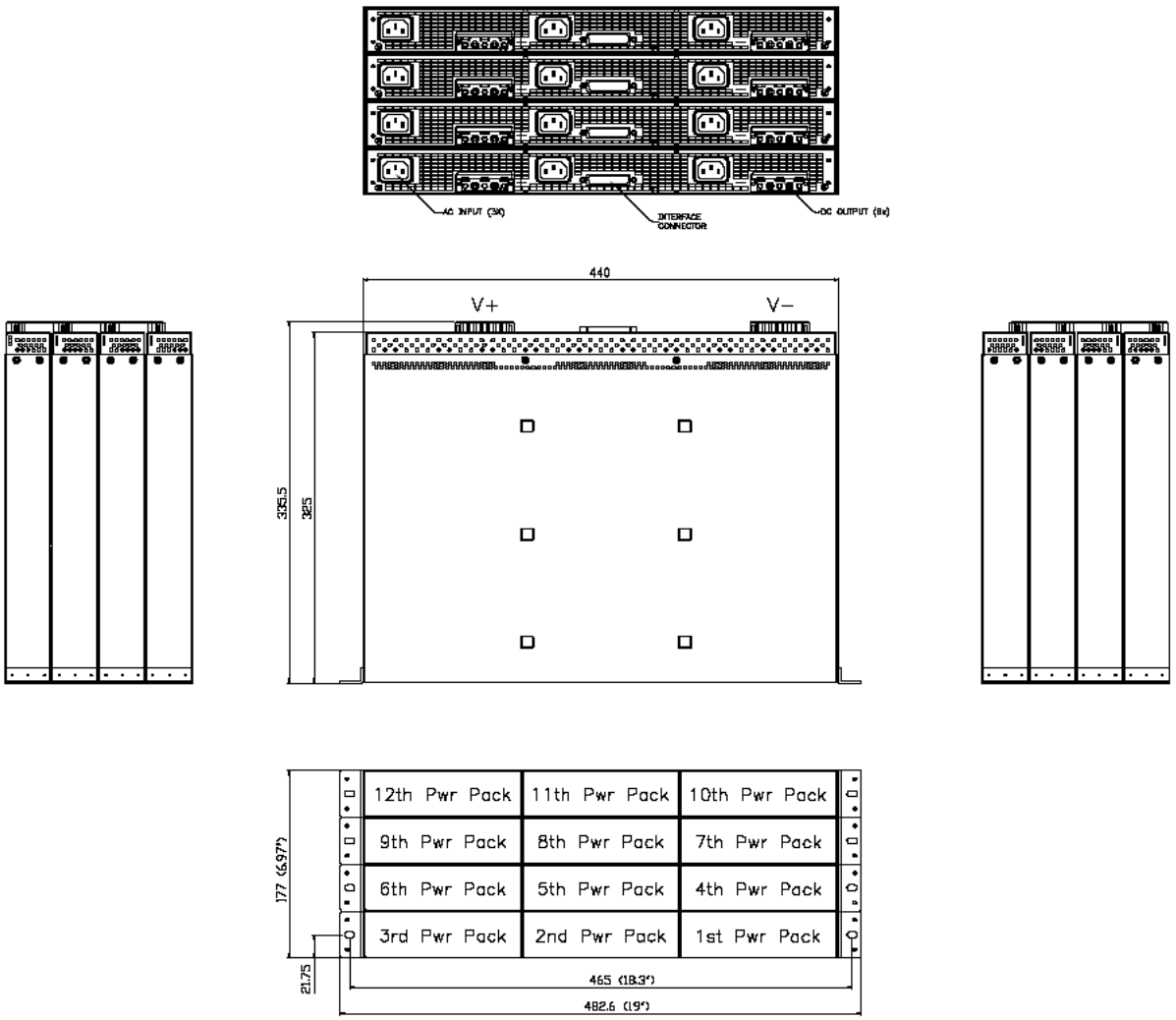

Figure 4 4U Stacked-up Assembly

7. Power Shields

If a Power Shelf is not fully populated, Power Shields may be used to cover spare slots.

8. Power Shelf Interconnect

A ribbon cable is required to connect Power Shelves together in order to current share, or to connect shelves to a Power Controller.

The supplied ribbon cable has 5 connectors, to allow the maximum of 4 Shelves and a Power Controller to be connected.

Do not connect the TC-323 cable between ‘A’ and ‘B’ supplies or between two sets of Shelves which connect to separate busbars. The supplies will attempt to share current between the two busbars, which may damage the Power Packs and Shelves’ sensing circuits.

Unused connectors on the TC-323 cable should be tied back and left unused.

9. Power System Specification

Voltage Range	
Input	90 Vac to 264 Vac
Output	24 Vdc to 28 Vdc
Frequency Range	47 Hz to 63 Hz
Inrush Current	50 A Max per Pack
Power Factor	0.95 min, 0.99 typical
Efficiency	78 % – 84 %
Output Power	750 W per Power Pack
Power Hold-up Time	20 ms
Operating Temperature	0 ˚C to +60 ˚C (+32 ˚F to +140 ˚F)
Relative Humidity range (operating, storage & transport)	10 % – 95 %, non-condensing
Environmental Specifications	Refer to Document Nº 552517
Power Shelf Dimensions	
Height	43 mm (1.71 in)
Width	483 mm (19 in)
Depth	340 mm (13.36 in)
Weight Data	
T8231,T8232 Power Pack	2.7 kg
T8230 Shelf (without supports)	4.4 kg