1. Product Range

Catalogue No.	Product name	Description
T8230	Power Shelf	19 inch x 1U chassis for up to 3 Power Packs. Includes 4U fixing kit, Power Port (with push fit BLZF 3.5/10 connector), 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.
T8233	Power Port	Plug in diagnostic interface.
T8234	Power Controller	For live adjustment of output voltage. 19 inch x 1U.
T8235	Power Shield	Covers unused Power Pack positions.
TC-323	Power Shelf Interconnect	For connection to a Power Controller or for current sharing.

Table 1 T823X Power System Product Range

The graph shows the response of a single Power Module to severe overloads. As the load is increased the power supply protection mechanism operates and shuts down the output. It can be seen that for a period of just in excess of 200 ms the Power Module can provide currents up to 115 A or 380 % of its stated maximum(115/31 = 3.8). This 200 ms/380 % can be extrapolated for additional power supplies in order to perform MCB discrimination studies.

4.2. Input Specification

Parameter	Min	Type	Max	Unit	Condition
Input Voltage	90		264	Vac	
Input Frequency	47		63	Hz	
Inrush Current (peak) per Pack			50 <25	A A	Full load No load
Input current			0.2	A	No load
Power Factor	0.95	0.99			> 50 % of full load
Input Leakage Current			1.7	mA	264 Vac, 50Hz
Lighting Surge and Transients (damage free operation)					IEC 61000-4-5 Level 3 IEC 61000-4-4 Level 3
Hold Up Time	20			ms	At 600 W
EMC (conducted)					CISPR22 Class B, EN 55022 Class B, with 3dB margin

Table 3 Input Specification

4.3. Line Harmonics

Active power factor correction circuitry ensures that this Power Pack meets the requirements of IEC 61000-3-2.

4.4. Efficiency and Power Factor vs. Input Voltage at Full Load

Input voltage	Efficiency (Typical)	Power Factor (Typical)
90 Vac	78 %	0.99
100 Vac	79 %	0.99
110 Vac	80 %	0.99
120 Vac	81 %	0.98
180 Vac	82 %	0.98
220 Vac	83 %	0.98
240 Vac	83 %	0.98
264 Vac	84 %	0.98

Table 4 Efficiency and Power Factor vs. Input Voltage at Full Load

When using this table to calculate cable feed requirements, allow, at a minimum, an extra 3 % for variations between units. Actual measured results will depend upon the harmonic content of the input voltage waveform.

4.5. Output Specification

Parameter	Min	Type	Max	Unit	Note
V_{OUT} Set Point:					
T8231		24		Vdc	
T8232		28		Vdc	
Regulation (line, load, temperature and set point)	-2		2	%	Measured at remote sense
Remote-sense Drop			0.5	Vdc	
I_{OUT} (rated):					
T8231 (24 V_{OUT})	0		31.25	Adc	750 W maximum
T8232 (28 V_{OUT})	0		26.78		
Ripple (20 MHz bandwidth)			150	mVp-p	

Parameter	Min	Type	Max	Unit	Note
Noise (20 MHz bandwidth)			300	mVp-p	Under any load conditions
Transmission Noise (C message)			45	dBmc	
Output Rise Time	10		100	ms	Rise from 10 % to 90 % of final output level (resistive load)
Over-voltage Protection	29		32	Vdc	Reset by cycling AC input, on/off, or reinsertion
Output Current Limit (steady state)			40A	Adc	
Transient Response Voltage Range	-2		2	%	25 % step load transient with slew rate 0.1 A/us within the range from 25 % to 75 % of full load
Active Current Sharing Differential			±3.2	A	Single wire current share at full load
Efficiency					
At full load, 120 Vac with ORing diode	80	81		%	
At full load, 264 Vac with ORing diode	83.5	84		%	
Reserve Output Current Protection					ORing diode
Start-up Delay		1.3	2	S	Measured from application of valid AC voltage
Turn-on Delay			250	ms	Measured from DC on/off

Table 5 Output Specification

4.6. Environmental Characteristics

Parameter	Min	Type	Max	Unit	Note
Storage Temperature	-40		-85	°C	
Operating Temperature (note 1)	0	-	60	°C	1. Derate at 1.333 %/°C, 45 °C to 50 °C 2. Derate at 4.667 %/°C, 50 °C to 60 °C
Acoustics		47	52	dBa	Sound Pressure Level at 1 m
Relative Humidity (non-condensing)	10		95	%	
Altitude	-60		3962	m	Derated at 2 °C/304 m above 2438 m
Electro Static Discharge					IEC 61000-4-2 Level 3 stand-alone
Electromagnetic Immunity (error free)					IEC 61000-4-3 Level 2 stand-alone
Isolation Voltage	3000 1500 1500			Vac Vac Vac	Primary to Secondary Primary to chassis GND, Secondary to chassis GND
MTBF	4×10^5			hours	@110 Vinput 80 % load, $T_A = 30^oC$
Vibration					Meet IEC 60068-2-6
Shock					Meet IEC 60068-2-27
Weight			2.3	kg	

Table 6 Environmental Characteristics

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 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
UL Approvals	
Power Supplies, Information Technology Equipment Including Electrical Business Equipment - Component	E223750
Power Supplies, Medical and Dental - Component	E223749