


VEROTEC

Electronics Packaging

- 
- Standard Products
 - System Integration
 - Contract Manufacture



Thermal Solutions

INTEGRAL 19" FAN TRAYS

Integral 19" fan trays are designed as a cost effective solution providing cooling as an integral part of the rack equipment. Designed to operate at fixed speeds the fans offer good reliability and performance in high density applications.

Two versions for the tray are available, one a simple tray containing 3 or 6 fans with a front panel mounted power indicator and the other of similar construction with a removable, washable filter which will lessen dust build up in the equipment being cooled.

Both versions are available with either a silver anodised front panel with blue text or a black smooth semi-gloss powder coated front panel with white text.

STANDARD 19" FAN TRAYS

Features:

- 1U integral height (to IEC 297-1)
- Designed for high airflow performance
- Available in 3 or 6 fan sizes
- Available with 115V & 230V AC input
- Available with 12, 24 & 48V DC input
- Available with Silver (anodised) or Black front panel

FILTERED 19" FAN TRAYS

Features:

- 1U integral height (to IEC 297-1)
- Designed for low noise/high performance
- Available in 3 or 6 fan sizes
- Available with 115V & 230V AC input
- Available with 12, 24 & 48V DC input
- Filter contained within the 1U height
- Available with Silver (anodised) or Black front panel

Both versions are suitable for use with the air ducting accessories shown on page 6 and are designed to provide an even airflow across the full cabinet width.

In addition to the fully assembled and tested fan trays, kits of empty trays are available in both versions and for AC & DC input.

The fan trays are supplied with a rack fixing kit containing screws, washers and cage nuts & operating instructions.

SPECIFICATION:

Standard Fan tray

- 3 fan trays are 250mm Deep & 6 fan tray are 350mm deep
- Tray is 1mm thick galvanised steel
- Silver front panel is 3mm thick Aluminium alloy anodized
- Black front panel is 3mm thick steel, black powder coated

Voltage V	Air Flow (in free air)		Max static pressure		Power W	Power Connector	Indicator
	cfm	m3/hr	inH2O	Pa			
115 AC	110	186	0.37	92	24	IEC60320 C14	115V Neon
230AC	110	186	0.37	92	24	IEC60320 C14	230V Neon
12 DC	120	203	0.42	104	7	Molex Mini fit Jr	10mA LED*
24 DC	120	203	0.42	104	7	Molex Mini fit Jr	10mA LED*
48 DC	120	203	0.42	104	7	Molex Mini fit Jr	10mA LED*

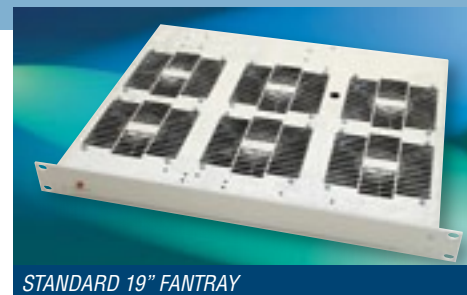
Note: ratings are per fan * Current limiting resistor is fitted

Filtered Fan tray

- 3 fan trays are 250mm Deep & 6 fan tray are 350mm deep
- Tray is 1mm thick galvanised steel
- Silver front panel is 3mm thick Aluminium alloy anodized
- Black front panel is 3mm thick steel, black powder coated
- Filter is a 30 pore polyurethane foam filter element (rated UL94-HF1) fitted with an extruded aluminium handle/trim.

Voltage V	Air Flow (in free air)		Max static pressure		Power W	Power Connector	Indicator
	cfm	m3/hr	inH2O	Pa			
115 AC	81	137	0.23	69	13	IEC60320 C14	115V Neon
230AC	81	137	0.23	69	13	IEC60320 C14	230V Neon
12 DC	120	203	0.42	104	7	Molex Mini fit Jr	10mA LED*
24 DC	120	203	0.42	104	7	Molex Mini fit Jr	10mA LED*
48 DC	120	203	0.42	104	7	Molex Mini fit Jr	10mA LED*

Note: ratings are per fan * Current limiting resistor is fitted



STANDARD 19" FANTRAY

STANDARD 19" FAN TRAYS

Description	Voltage	Order Code Silver	Order Code Black
Fan Tray 3 fan	115V AC	28-138204	28-4000797
Fan Tray 6 fan	115V AC	28-138216	28-4000798
Fan Tray 3 fan	230V AC	28-238120	28-4000799
Fan Tray 6 fan	230V AC	28-238121	28-4000800
Fan Tray 3 fan	12V DC	28-138201	28-4000801
Fan Tray 6 fan	12V DC	28-138205	28-4000802
Fan Tray 3 fan	24V DC	28-138202	28-4000803
Fan Tray 6 fan	24V DC	28-138206	28-4000804
Fan Tray 3 fan	48V DC	28-138203	28-4000805
Fan Tray 6 fan	48V DC	28-138207	28-4000806



FILTERED 19" FANTRAY

FILTERED 19" FAN TRAYS

Description	Voltage	Order Code Silver	Order Code Black
Fan Tray Filtered 3 fan	115V AC	28-138220	28-4000807
Fan Tray Filtered 6 fan	115V AC	28-138211	28-4000808
Fan Tray Filtered 3 fan	230V AC	28-238147	28-4000809
Fan Tray Filtered 6 fan	230V AC	28-238148	28-4000810
Fan Tray Filtered 3 fan	12V DC	28-138217	28-4000811
Fan Tray Filtered 6 fan	12V DC	28-138208	28-4000812
Fan Tray Filtered 3 fan	24V DC	28-138218	28-4000813
Fan Tray Filtered 6 fan	24V DC	28-138209	28-4000814
Fan Tray Filtered 3 fan	48V DC	28-138219	28-4000815
Fan Tray Filtered 6 fan	48V DC	28-138210	28-4000816

Standard/Filtered Fan Trays

FAN TRAYS WITHOUT FANS

The fan trays are offered without fans fitted to allow different configurations of fans to be fitted. These are offered as AC versions comprising the tray & front panel with IEC inlet & Neon fitted and as DC versions with the Molex Mini fit Jr. and 10mA LED fitted.

The fan trays are supplied with a rack fixing kit containing screws washers and cage nuts & an assembly leaflet

Standard fan trays are designed to accept 119 x 119mm fans with a maximum height of 38mm whilst filtered fans trays are designed to accept fans of 119 x 119 with a maximum height of 32mm.

19" FAN TRAYS WITH NO FANS FITTED

Description	Voltage	Order Code Silver	Order Code Black
Fan Tray 3 fan	115V AC	28-4000378	28-4000817
Fan Tray 6 fan	115V AC	28-4000379	28-4000818
Fan Tray 3 fan	230V AC	28-239249	28-4000819
Fan Tray 6 fan	230V AC	28-239250	28-4000820
Fan Tray Filtered 3 fan	115V AC	28-4000380	28-4000821
Fan Tray Filtered 6 fan	115V AC	28-4000381	28-4000822
Fan Tray Filtered 3 fan	230V AC	28-239251	28-4000823
Fan Tray Filtered 6 fan	230V AC	28-239252	28-4000824
Fan Tray 3 fan	DC	28-138212	28-4000825
Fan Tray 6 fan	DC	28-138213	28-4000826
Fan Tray Filtered 3 fan	DC	28-138214	28-4000827
Fan Tray Filtered 6 fan	DC	28-138215	28-4000828



FAN TRAYS WITHOUT FANS

REPLACEMENT FANS AC (119 X 119MM)

Voltage V	Freq. Hz	Air Flow in free air m3/hr	Power W	USED ON	Order Code
115 AC	60	180	18	Standard Fan trays	28-4000382
230AC	50	160	16	Standard Fan trays	28-4000383
115 AC	60	180	18	Filtered Fan Trays	28-4000384
230AC	50	160	16	Filtered Fan Trays	28-4000385



REPLACEMENT FANS

REPLACEMENT FANS DC (119 X 119 X 32MM)

Voltage V	Freq. Hz	Air Flow in free air m3/hr	Power W	USED ON	Order Code
12 VDC	-	170	5	Standard & Filtered Fan trays	28-4000386
24 VDC	-	170	5	Standard & Filtered Fan trays	28-4000387
48 VDC	-	170	4	Standard & Filtered Fan trays	28-4000388



DAISY CHAIN

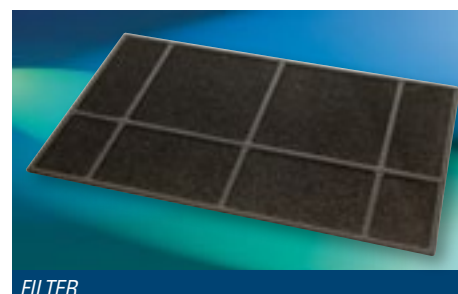
FAN INTER-CONNECTING CABLE (DAISY CHAIN) FOR AC FANS ONLY

Description	Order Code
3 Fan daisy chain cable	28-555230

REPLACEMENT FILTERS.

Replacement filter elements for filtered fan trays & fan module (supplied as replacement elements only)

Description	Order Code
Filter element for 250mm deep fan tray	28-238257
Filter element for 350mm deep fan tray	28-238258



FILTER

IO Thermal Solutions

Intelligent Fan Trays

The fan trays are designed to form part of a rack management system which will provide cooling in response to the thermal requirement of the rack whilst monitoring its component parts and providing a response to failure of either a fan or thermal sensor and providing a local and remote alarm. Designed as a 1U high (IEC 297-1) component for insertion adjacent to the equipment requiring cooling, positioning is normally below the item(s) to be cooled

Features:

- 1U integral height (to IEC 297-1).
- Forms part of a complete rack management system.
- Fan speed responsive to temperature.
- Monitoring of fans, thermal control, & power supply
- Status indication locally by LED and audible alarm
- Remote alarm indication by volt free changeover contact
- Available in 3 fan & 6 fan versions
- Available in auto ranging AC input
- Available in -48v DC input versions (to ETS 300 132-2)

The Intelligent Fan Tray features a design which uses proven control solution for each group of 3 fans within a tray. On 6 fan versions this allows for separate monitoring for each group for both control and alarm functions allowing for redundancy if required with a further option of Dual Power Input on some styles.

Function of each group of 3 fans is regulated by programmed controller that operates the fans at half speed up to 35°C and increases the speed linearly to full speed at 55°C.

Thermal control is via a pluggable thermistor sensor for each group of 3 fans that is available in various lengths to suit its positioning within the rack. These must be ordered separately

Monitoring of the various functions of each group of 3 fans is also carried out by the programmed controller as follows:

- In the event of a fan failure the speed of the remaining fans in the group increases to full speed and an alarm condition is created.
- In the event of a failure of the thermistor sensor, either short circuit or open circuit, the speed of the fans in the group will increase to full speed and an alarm condition is created.
- When the thermistor sensor for the group reaches a temperature of 65°C an alarm condition is created, this will reset at 62°C.

The fan tray presents the following:

- A Power On LED illuminated yellow when power is being supplied to the fan controller. On dual input units two Power On LEDs are present)
- And for each group of 3 fans:
 - A Status LED illuminated green under normal operating conditions and red under alarm conditions.
 - An Audible alarm will sound under alarm conditions until the fault is cleared.
 - A Remote alarm via a set of volt free changeover contacts which will change over under any of the above alarm conditions. This remote alarm is designed to "fail safe" and is energised under normal conditions and will therefore also assume an alarm status on power failure.

Fan Tray Specification:

- Input voltage (AC) 100-240V +/- 10% 47-63Hz
- Input Voltage (DC) -48V Nom (-40.5 to -57.0V to ETS 300 132-2)
- Airflow is 170m³/h (100cfm) each fan (in free air)
- Operating temperature – fan tray 60°C maximum
- AC input units - Input connector(s) IEC 60320 C14
- DC input units - Input connector(s) Molex Min Fit Jr 4 way (mating part supplied)
- On 3 fan units -Alarm connector Molex Min Fit Jr 3 way (mating part supplied)
- On 6 fan units- Alarm connectors 2 off Molex mini fit Jr 3 way (mating parts supplied) to allow various combinations of alarm interconnection to be achieved.

The Intelligent fan tray will not operate without the Thermal Sensor(s) which are available in different lengths to suit the required position(s) within the rack.



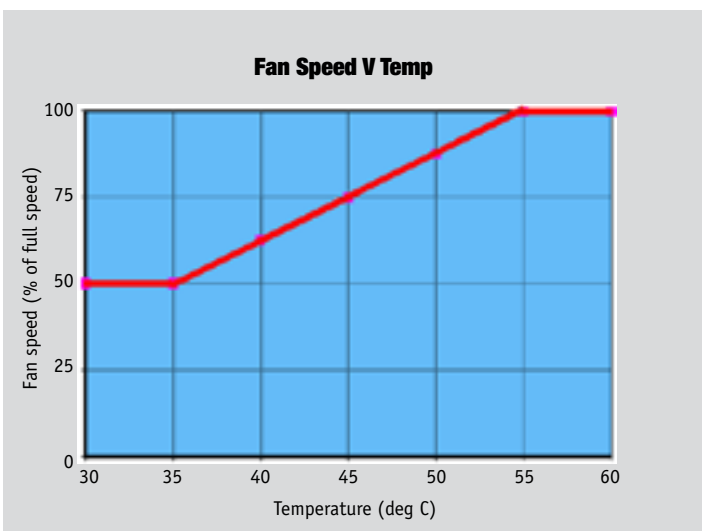
INTELLIGENT 19" FANTRAY

Description	Power Input	Order Code Sliver	Order Code Black	Thermal Sensors Required
3 Fan Intelligent Fan Tray	Single Auto-ranging AC	28-4000193	28-4000610	1
3 Fan Intelligent Fan Tray	Single -48V DC	28-4000390	28-4000611	1
3 Fan Intelligent Fan Tray	Dual -48V DC	28-4000391	28-4000612	1
6 Fan Intelligent Fan Tray	Single Auto-ranging AC	28-4000392	28-4000613	2
6 Fan Intelligent Fan Tray	Dual Auto-ranging AC	28-4000393	28-4000614	2
6 Fan Intelligent Fan Tray	Single -48V DC	28-4000394	28-4000615	2
6 Fan Intelligent Fan Tray	Dual -48V DC	28-4000395	28-4000616	2

THERMAL SENSORS FOR INTELLIGENT FAN TRAYS

Description & Length	Order Code
Thermistor Assembly -0.5Metre	919-4000232
Thermistor Assembly -1.0Metre	919-4000233
Thermistor Assembly -1.5Metre	919-4000234
Thermistor Assembly -2.0Metre	919-4000235
Thermistor Assembly -2.5Metre	919-4000236
Thermistor Assembly -3.0Metre	919-4000237

THERMAL PROFILE OF STANDARD INTELLIGENT FAN TRAY



Monitored Fan Trays & Plug-in Modules



MONITORED FAN TRAY

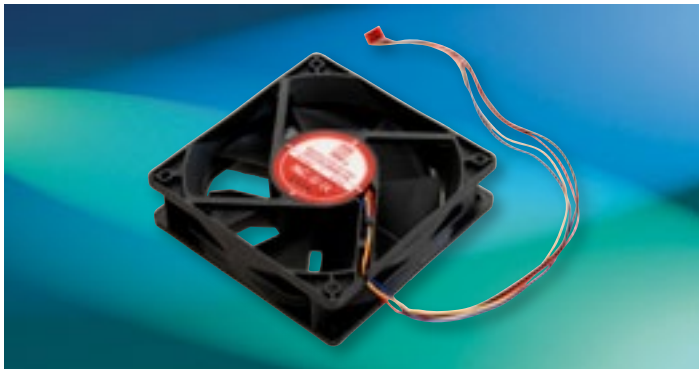
MONITORED FAN TRAYS

Some applications may only require the fans to run at full speed but have the facility to present an alarm on fan failure or power failure. This may be achieved by the use of an Intelligent Fan Tray fitted with a Dummy sensor for each group of 3 fans in place of the Thermal sensor. The Intelligent Fan Tray will not operate correctly without the required sensor(s) fitted.

DUMMY SENSOR FOR MONITORED FAN TRAY

Description	Order Code
Dummy Sensor	919-4000396

Qty 1 required for a 3 fan tray & qty 2 for 6 fan trays



REPLACEMENT FAN

REPLACEMENT FAN DC FOR INTELLIGENT/MONITORED FAN TRAY

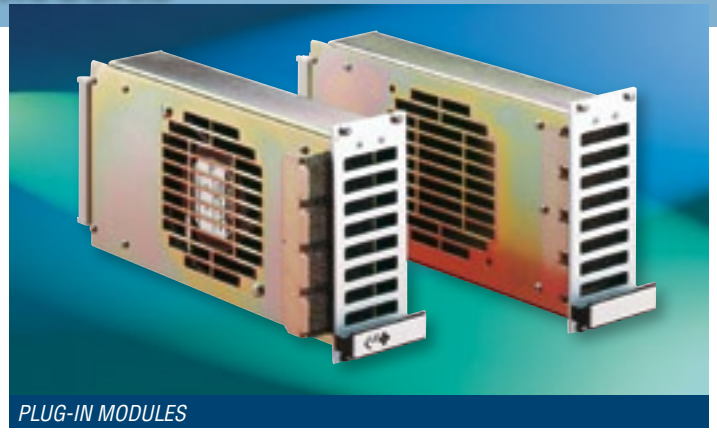
Voltage V	Freq. Hz	Air Flow in free air m3/hr	Power W	USED ON	Order Code
48VDC	-	170	4	Intelligent Fan Trays	28-4000389

REPLACEMENT FANS AC (119 X 119MM)

Voltage V	Air Flow (in free air)		Max static pressure		Power W	Used On	Order Code
	cfm	m3/hr	inH2O	Pa			
115 AC	110	186	0.37	92	24	38mm for Standard Fan Trays	28-4000382
230AC	110	186	0.37	92	24	38mm for Standard Fan Trays	28-4000383
115 AC	81	137	0.23	69	13	25mm for Filtered Fan Trays	28-4000384
230AC	81	137	0.23	69	13	25mm for Filtered Fan Trays	28-4000385

REPLACEMENT FANS DC (119 X 119 X 32MM)

Voltage V	Air Flow (in free air)		Max static pressure		Power W	Used On	Order Code
	cfm	m3/hr	inH2O	Pa			
12 DC	120	203	0.42	104	7	Standard & Filtered	28-4000386
24 DC	120	203	0.42	104	7		28-4000387
48 DC	120	203	0.42	104	7		28-4000388



PLUG-IN MODULES

PLUG-IN FAN MODULE

The plug in Fan module is designed to provide cooling as an integral part of an IEC 297-3 sub-rack system. The unit occupies a 3U 10HP space at 160mm or 220mm card depth.

The Fan module draws air through the front panel and blows to the left for cooling horizontally mounted PCBs or "hot units such as power supplies.

The module is fitted with a removable, washable filter behind the front panel and can be operated with or without the filter in place.

Unit is supplied as a 230V 50Hz unit. Connections are via a male DIN41612 H15 connector with the connections (on AC input units assembled with fans) L to Z24, N to Z28 and Earth to Z32.

PLUG-IN FAN MODULE

Features:

- Forms integral part of 3U IEC 297-3 Sub-rack system
- Only occupies 10HP space.
- Available in 160 & 220 card depths.
- Supplied as 230V 50Hz unit.
- Input power 13 watts
- Supplied as filtered unit.
- Air output, with filter, 10.1cfm 4.11m3/hr.
- Air output, without filter 14.4 cfm 5.87 m3/hr.
- Connection via industry standard connector.
- Also available without fans for configuration to other voltages and fan types
- Mating connector kit available.

Module is 1.5 & 1mm thick galvanised steel

Front panel is 2.5mm thick Aluminium alloy anodised

Filter is a 30pore polyurethane foam filter element (rated UL94-HF1) fitted in a galvanised steel frame:

FAN MODULE

Description	Order code
3U x 10HP x 160 Fan Module 230V AC	173-202514
3U x 10HP x 220 Fan Module 230V AC	173-202515
3U x 10HP x 160 Fan Module (NO FAN)	173-202956
3U x 10HP x 220 Fan Module (NO FAN)	173-202957

FAN MODULE CONNECTION KIT

Comprising mating connector (H15 Female with 6.3 Faston terminals), 6HP DIN 41612 adaptors and all fixings

Description	Order code
Fan Module Connection Kit	173-4000397

REPLACEMENT FAN FOR FAN MODULES (92 X 92 X 25MM)

Voltage V	Freq. Hz	Air Flow in free air m3/hr	Power W	USED ON	Order Code
230VAC	50	59	13	Fan module	28-4000398

REPLACEMENT FILTERS.

Replacement filter elements for filtered fan trays & fan module (supplied as replacement elements only)

Description	Order Code
Filter element for 3U 10HP fan Module	173-202508

AIR DUCTING TRAYS

These useful accessories, each occupying 1U of rack height, can be used to isolate a hot spot within an equipment rack, ducting cool air into the rack and/or hot air from the rack without affecting the other mounted equipment. Alternative fixings are supplied to allow for different applications.

Description	Order Code
Ducting tray for 250mm deep fan tray	28-238891
Ducting tray for 350mm deep fan tray	28-238892



MAINS LEAD

MAINS LEAD

A 10A rated mains lead comprising 2 metres of cable with a moulded IEC 60320 C13 appliance connector at one end and a moulded BS1363A plug, with a 10A fuse fitted, at the other end.

For use with the fans trays shown here we recommend that the fuse be changed to a 3A fuse (BS1362 type) to ensure continued protection of the fan tray wiring & components.

Description	Order Code
2.0m 10A mains lead with UK plug	28-261791



THERMOSTAT

THERMOSTAT

The noise from continuously running fans can be obtrusive and annoying, particularly where equipment is installed in an office environment, as well as consuming power that may not be required.

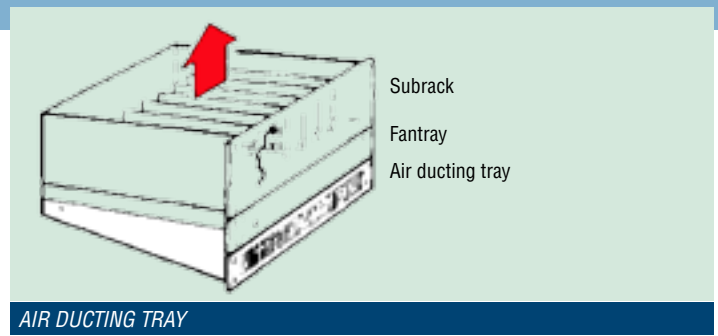
Using a rack mounted thermostat to switch on the fans when a predetermined temperature is reached will reduce this to the occasions when the worst case requirements are being met.

The thermostat is suitable for installation as part rack wiring and will operate, via the changeover contacts both heaters and cooling fans.

Specification:

- 0-60°C operating range
- Rated 250VAC
- Contacts rated : 5A (2) contact closes as temperature rises
10A (4) contact opens as temperature rises

Description	Order Code
Thermostat FZK 01170.0-00	608-555724



AIR DUCTING TRAY

TYPICAL APPLICATIONS OF AIR DUCTING TRAY

