HPT5K0 series

5kW Fan cooled

AC-DC power supplies

The HPT5K0 series delivers significant flexibility in a broad scope of industrial and scientific applications, through its sophisticated digital control and monitoring functions. High power density, class B conducted emissions and medical safety approvals up to 200VDC are highlights of the rich feature set. Constant voltage or current mode operation are readily configured via either linear voltage programming; a graphical user interface or one of the range of communication protocols included by default. The 400VDC and 800VDC models extend the series range, with specialised connectors, and a safety interlock.

This digital product series also retains conventional alarm and control features, such as active current sharing, remote On/Off and AC/DC OK signals, to deliver a highly extensible building block for scalable industrial systems.

Features

- 3 phase 180 to 528VAC input – 3 wire & earth
- High efficiency – up to 94%
- Programmable output voltage (0-105%)
- Programmable output current (0-110%)
- Active current sharing in parallel configurations
- Safety interlock
- PMBus, CANopen, Modbus & SCPI protocols
- Rich suite of configurable signals & controls
- 5VDC/2A housekeeping supply
- SEMI F47 compliant
- 3 year warranty

Applications

Healthcare

Instrumentation

Process control

Robotics

Technology

Dimensions

330.2 x 127.0 x 127.0mm (13.0 x 5.0 x 5.0")

Models & ratings

Model number	Output voltage			Output current		Max output power	Efficiency[1]
	Minimum	Nominal	Maximum	Minimum	Maximum		
HPT5K0TS048	0VDC	48VDC	50.4VDC	0.0A	104.0A	5000W	93%
HPT5K0TS060	0VDC	60VDC	63VDC	0.0A	83.3A	5000W	93%
HPT5K0TS100	0VDC	100VDC	105VDC	0.0A	50.0A	5000W	93%
HPT5K0TS200	0VDC	200VDC	210VDC	0.0A	25.0A	5000W	93%
HPT5K0TS400	0VDC	400VDC	420VDC	0.0A	12.5A	5000W	94%
HPT5K0TS800	0VDC	800VDC	840VDC	0.0A	6.5A	5000W	94%

Notes:

1. Measured with 480VAC input and full load.

HPT5K0 series

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage	180		264	VAC	Maximum power output internally de-rated to 3kW
	342		528		5kW power output
Input frequency	47		63	Hz	
Power factor		0.96			Complies with EN61000-3-2 for Class A
Input current			10/11	A	Per phase, 342VAC (5kW)/180 VAC (3kW)
Inrush current			60	A	Per phase, 528VAC (5kW)
Earth leakage current			1.0	mA	528VAC/60Hz
			3.3		528VAC/60Hz, single fault
Input protection	F16A / 500V fuse fitted in each phase				
Loss of phase	Shut down after 0.5s, auto-recovery				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	0		840	VDC	See models and ratings table
Output set tolerance		±0.1		%	Percentage of nominal voltage, irrespective of set voltage
+5V housekeeping tolerance		±3		%	5VDC/2A housekeeping
Output voltage program	0		105	%	Of nominal, slew rate <40ms 10-105% & 105-10%. Max frequency of voltage program is 0.5Hz 0-5% load, 0.67Hz 5-10% load, 1Hz 10-20% load, 3 Hz 20-100% load
Output voltage adjust	±10			%	Of set output via potentiometer 105% of nominal max
Output current program	0		110	%	Of rated output current. User programmable Setting accuracy ±0.1%
Minimum load	0			A	No minimum load required
Start up delay		1.8	2.3	s	Under all load and line conditions
Smart preload	The Smart Preload function applies a dynamically controlled load to the output, rapidly reducing the voltage to a safe level at shut down and supporting the slew rate listed for 'Output voltage program'				
Start up rise time			100	ms	
Hold up time	20	22		ms	380VAC at 5kW and 25°C
	40	44			180VAC at 3kW and 25°C
Line regulation			±0.5	%	Of nominal voltage
			±0.5		5VDC housekeeping
Load regulation			1	%	0-100% or 100-0% load
			2		5VDC housekeeping
Transient response			3	%	Deviation with a 50-75-50% load change. Output returns to within 1% in less than 500µs
Ripple & noise			1/2.5	%	Of nominal voltage/5VDC housekeeping. Measured with 20MHz bandwidth limited oscilloscope 0-50°C.
Overshoot			5	%	Turn on & turn off
Overvoltage protection	110		120	%	Of nominal voltage, latching. Cycle AC to reset. No protection for 5VDC Standby
Overtemperature protection	Auto resetting thermal protection				
Overload protection			110%, ±3%	% of max load	User programmable current limit set point. Maximum 110%. Constant current characteristic, with auto-recovery. For low line (180-342VAC), power limited to 3.0kW until current limit threshold. 5V Housekeeping: <5A max.
Temperature coefficient			0.03	%/°C	Of nominal voltage
Short circuit protection	Constant current characteristics. 5VDC housekeeping: Foldback characteristic <5A max				
Remote sense	Compensates for maximum 1% of nominal voltage per lead, 2% total. Not fitted on 200-800VDC models				

HPT5K0 series

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	93	94		%	Between 480–528VAC, full load on main and housekeeping outputs.
	91.5	92.5			At 342VAC, full load.
Isolation all models:					
Input to output	6000			VDC	Rating for complete assembly with HI-POT screw removed. Maximum electric strength test voltage is 2121VDC with screw installed.
Input to ground	4000				
48-200V models: output to ground	500			VDC	
400-800V models: output to ground	4000			VDC	
communications to ground	N/A				User connectors J1, J2, J3. ES1 classification for IEC62368-1. Circuits are referenced to Earth.
communications to output	4000				
Outputs in series	The 400VDC & 800VDC models are not safety approved for operation in series.				
Power density			15.38	W/in^3	
MTBF		450		kHrs	Telcordia SR-332, Issue 2, at 25°C
Weight		5.7 (12.5)		kg (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-20		70	°C	Derate linearly from 50°C to 50% rated power at 70°C
Storage temperature	-40		+85	°C	
Cooling					Force-cooled with intelligent fan speed control
Humidity	5		95	%RH	Non-condensing
Switching frequency	55	60	65	kHz	Fixed frequency PFC, all models
	40		250		Variable frequency main convertor, 48–200VDC
	59		230		Variable frequency main convertor, 400–800VDC
Operating altitude: 48 – 200V			3000	m	Medical
			5000		ITE
Operating altitude 400 – 800V			3000		ITE
Transport altitude			10000	m	
Shock	±3 x 30g shocks in each plane, total 18 shocks. 30g = 11ms (±0.5 ms) half sine. Conforms to EN60068-2-27 & EN60068-2-47				
Vibration	Single axis 10-500Hz at 1.5g sweep and endurance at resonance in all 3 planes. Conforms to EN60068-2-6				
Acoustic noise	<60dB L_{pa}				

Signals & controls

	Digital control & monitoring functions
PMBus, CANopen, Modbus RTU and SCPI	Operation of the product using the distributed control interfaces and associated protocols, is defined in the supporting document 'HPT5K0/HPL5K0 Communication, Control and Status Specification'. Installation and use of the XP Insight graphical user interface, is defined in the supporting document 'XP Insight User Manual. These documents are available through the XP Power website. Digital control provides the opportunity to create application specific behaviours for output voltage and current; slew rates; alarm levels and many more features. These can be permanently saved to the PSU and to a file, for batch configuration. Real-time control provides the opportunity to integrate the product into a digital control loop, create power profiles and monitor the product status. The SCPI command language is available over RS485, as an alternative to Modbus RTU, through user settings. Vout monitor/setting accuracy is ±1% of nominal. Iout monitor/setting accuracy is ±2% of full load
	Analogue hardware functions
V program	Linear, proportional control of the output voltage. To activate analogue programming, link the PMBUS_EN signal to Iso Gnd on ` 400-800VDC, or to SGND on 48-200VDC models. 0–5VDC input will program Vout from 0– 05%. Vprog accuracy: ±1% of nominal output voltage. Minimum source current: 0.5mA. In this mode, no output will result if either Vprog or Iprog are open circuit.
I program	Linear, proportional control of output current limit and changeover to constant current mode. 0–5VDC input will program the current limit from 0–110%. Iprog accuracy: ±2% of output current rating. Minimum source current 0.5mA.
AC OK	Uncommitted opto-transistor. Circuit conducting means AC input is within range. User configurable. Minimum 2ms warning before output shutdown. See typical connection diagram on page 10 & 11.
DC OK	Uncommitted opto-transistor. Logic is user configurable. The operating threshold of this signal is driven from the digital user variable VOUT_UV_FAULT, set to 95% of nominal voltage by default. See typical connection diagram on page 10 & 11.
Remote on/off	Uncommitted opto-diode. Supplied configured as Active = Inhibit. The input can be re-configured to Active = Enable and also linked to the Safety Interlock as a reset/re-start function, when integrated into a machine safety system.
Fan fail/temp warning	Provides 10s warning of Fan Fail or Over Temperature conditions. 3.3V TTL compatible signal, referenced to Iso Gnd/SGND. High = Fan Fail or Over-temp. Low = Fan and temperature OK. Auto-recovery.
Sync	Synchronise the output start-up of up to five units of identical HPT5K0 model, connected in parallel, following application of AC input. Link the Sync pins and the relevant Iso Gnd or SGND pins between the units. CAUTION: This signal is part of the DC power output circuit, classed as energy source 3 (ES3) for IEC62368-1. Appropriate safeguards must be employed in the end-equipment.
Current share	Balance output current between up to five units of identical HPT5K0 model, connected in parallel, by linking he Current Share pins between units. Sharing accuracy ±3% of a single unit current rating. CAUTION: This signal is part of the DC power output circuit, classed as energy source 3 (ES3) for IEC62368-1. Appropriate safeguards must be employed in the end-equipment.
Safety interlock input	Uncommitted opto-diode. Designed to meet ISO13849-1, performance level 'd', this input provides non-software based shutdown and prevention of unexpected start-up, when used in combination with Remote ON/OFF.

Use of the safety interlock

The HPT5K0TS400 and 800 models feature a safety interlock, designed to meet the requirements of ISO13849-1 performance level 'd' and ISO13849-2. The opto-isolated input drives two signal pathways, one of which bypasses digital processor control entirely, to disable the main energy switching FETS. The interlock input MUST be active to achieve a DC power output. For users not wanting the full functionality, a continuous input may be simply configured through use of the 5VDC Housekeeping supply.

The Interlock and Remote ON/OFF inputs may be configured to activate a reset function, such that after an AC input failure, or application of the interlock input, an OFF to ON state change must be applied at the Remote ON/OFF input. This reset function provides the prevention of unexpected start-up required by the safety standard and is identified as IL_INH_LINK. Configuration is achieved via the XP Insight application or bit 6 of PMBus command 0xD6 USER_CONFIGURATION.

The Interlock status may be monitored via XP Insight or bit 7 of PMBus command 0x7F STATUS_OTHER. Both the Remote ON/OFF (hardware) input and the PMBus command 0x01 OPERATION must be in the ON state to enable the output. Additional information, including logic truth tables for the available configurations of the interlock are provided in the HPT5K0 User Manual.

HPT5K0 series

Emissions - EMC

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032	Class B	
Radiated	EN55032	Class A	
Harmonic currents	EN61000-3-2	Pass	Class A equipment category
Voltage flicker	EN61000-3-3		

Emissions - immunity

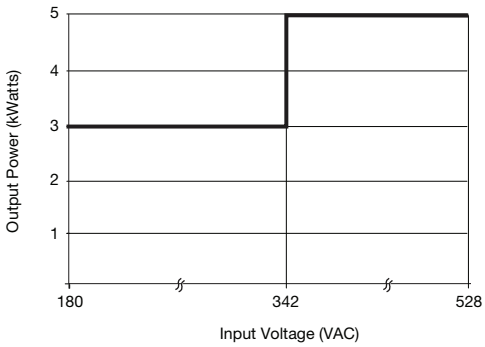
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	4	A	±8kV contact / ±15kV air discharge
Radiated immunity	EN61000-4-3	3	A	
EFT/burst	EN61000-4-4	3	A	
Surge	EN61000-4-5	Installation class 4	A	
Conducted	EN61000-4-6	3	A	
Magnetic field	EN61000-4-8	4	A	
Dips and interruptions	EN61000-4-11 (200/380 VAC)	Dip 100% (0VAC), 8.4ms	A	
		Dip 100% (0VAC), 16.7ms	A	
		Dip 60% (80/152VAC), 200ms	A	
		Dip 30% (140/266VAC), 500ms	A	
		Dip 20% (160/304VAC), 5000ms	B	
		Int 100% (0VAC), 5000ms	B	
	EN61000-4-11 (240/480 VAC)	Dip 100% (0VAC), 10ms	A	
		Dip 100% (0VAC), 20ms	A	
		Dip 60% (96/192VAC), 200ms	A	
		Dip 30% (168/336VAC), 500ms	A	
		Dip 20% (192/384VAC), 5000ms	B	
		Int 100% (0VAC), 5000ms	B	
	EN60601-1-2 (200/380 VAC)	Dip 100% (0VAC), 10ms	A	
		Dip 100% (0VAC), 20ms	A	
		Dip 60% (80/152VAC), 100ms	A	
		Dip 30% (140/266VAC), 500ms	A	
		Int 100% (0VAC), 5000ms	B	
	EN60601-1-2 (240/480 VAC)	Dip 100% (0VAC), 10ms	A	
		Dip 100% (0VAC), 20ms	A	
		Dip 60% (96/192VAC), 100ms	A	
		Dip 30% (168/336VAC), 500ms	A	
		Int 100% (0VAC), 5000ms	B	
	SEMI F47-0706	480VAC nominal	A	

Safety approvals

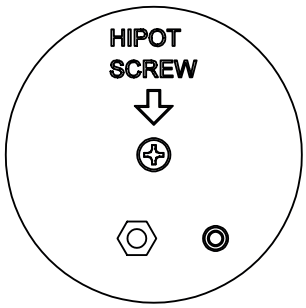
Safety agency	Safety standard	Notes & conditions
Medical safety approvals are limited to the 48–200V models		
CB report	IEC62368-1 Ed 3	Information Technology
	IEC60601-1 Ed 3 including Risk Management	Medical
UL	UL62368-1 Ed 3, CSA 62368-1:19 Ed 3	Information Technology
	ANSI/AAMI ES60601-1: A1/A2: 2012, C1:2012, CSA C22.2 No. 60601-1:14	Medical
TUV	EN62368-1 Ed 3	Information Technology
	EN60601-1:2006/A12:2014	Medical
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	
Equipment protection class	Class I	See safety agency conditions of acceptibility for details
Means of protection		
Primary to secondary	2 x MOPP (Means of Patient Protection)	IEC60601-1 Ed 3
Primary to earth	1 x MOPP	
Secondary to earth	N/A	

Application notes

Input derating



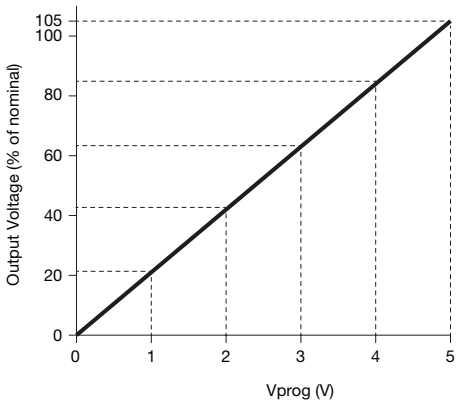
Dielectric strength testing.



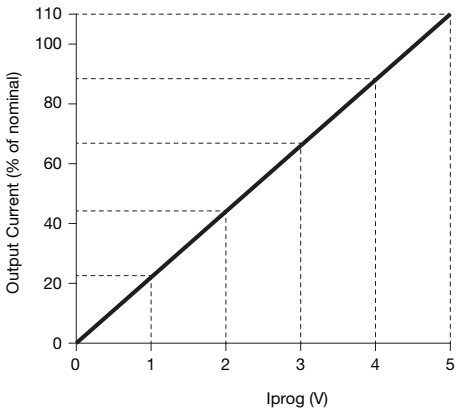
This product includes gas discharge tubes as part of the Surge Immunity counter-measures. This screw must be removed during dielectric strength testing in the end-equipment, to prevent flashover to Earth.

Maximum applied voltage:
Live and Neutral to Earth: 2121VDC
Input to Output: 2121VDC
Re-install the screw after testing.

Output voltage programming

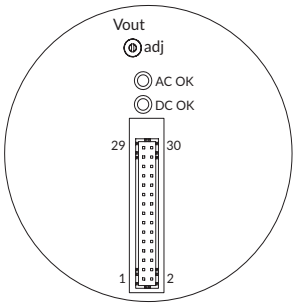


Output current programming



Signal connections for 48-200V models

Signal connections

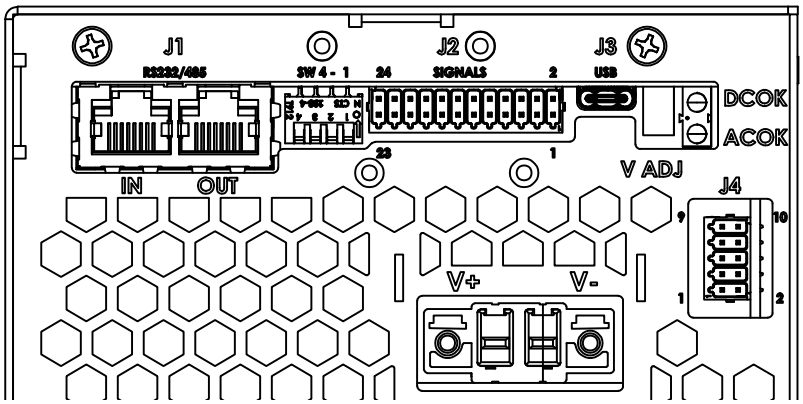


View A

Connector ID/ function	J1 control & monitoring signals	Manufacturer: JST PN: S30B PHDSS (LF) (SN) or equivalent	User side, mating part:	Housing PN: PHDR 30VS or equivalent Contact: SPHD 002T P0.5
Pin	**Function**	**Description**		
1	DCOK Collector	Uncommitted opto-transistor. Conducting = Vout is within range. User configurable. Vce max: 15VDC. Ic max: 4mA. See circuit diagram on page 11		
2	DCOK Emitter			
3	Remote on/off anode	Uncommitted opto-diode. Supplied as Active=Inhibit. User configurable. Ifwd max: 8mA. See circuit diagram on page 11		
4	Remote on/off cathode			
5	A0	I^2C Device Address Bit (Internal 10kR pull-up to 3.3VDC)		
6	A1			
7	A2			
8	CANBus H	CANBus interface using CANopen protocol		
9	RS485 Y	Half-duplex: Non-inverting driver output & non-inverting receiver input.Full-duplex: Non-inverting driver output		
10	CANBus L	CANBus interface using CANopen protocol		
11	RS485 Z	Half-duplex: Inverting driver output & Inverting receiver input. Full-duplex: Inverting driver output		
12	SGND	Signal ground, common with the DC power output 0VDC terminal		
13	RS485 A	Full-duplex non-inverting receiver input		
14	I^2C SDA	I^2C Data Line. 10kR internal pull-up to 3.3VDC		
15	RS485 B	Full-duplex inverting receiver input		
16	I^2C SCL	I^2C Clock Line. 10kR internal pull-up to 3.3VDC		
17	Fan fail/temp warning	Open Drain, referenced to SGND. Conducting = Normal operation. ID max: 30mA. Internal pull-up to 3.3VDC		
18	SYNC	Synchronises output start-up following application of AC input to units connected in parallel. Do not use with units connected in series		
19	Vprog	0–5VDC input to set Vout from 0–105% of nominal voltage. Referenced to SGND (50kΩ internal resistance between Vprog and SGND)		
20	RS+	Positive Remote Sense (48–100VDC models)		
21	RS-	Negative Remote Sense (48–100VDC models)		
22	Iprog	0 – 5VDC input to set current limit from 0 – 110% of rated current. Referenced to SGND (50.8kΩ internal resistance between Iprog and SGND)		
23	Current share	Linking the current share pins between identical voltage models, connected in parallel, will force the current to be shared. Maximum of 5 units in parallel. Sharing accuracy ±3% of a single unit current rating.		
24	PMBUS_EN	Pull down to SGND to activate Vprog and Iprog analogue programming. Internal 10kR pull-up to 3.3VDC		
25	ACOK collector	Uncommitted opto-transistor. Not conducting = AC is out of range or a phase is lost. User configurable. Vce max: 15VDC. Ic max: 4mA		
26	ACOK emitter			
27	5V/2A housekeeping	This auxiliary output is constantly available when AC input is present		
28				
29	Housekeeping 0V return	Housekeeping 0V is also referenced to SGND		
30				

Signal connections for 400-800V models

Signal connections



Connector ID/ function	DC power output	Manufacturer: Phoenix contact PN: 1708491	User side, mating part:	Connector PN: 1709157
Pin	**Function**	**Description**		
1	+V DC output	Legend moulded into mounting boss		
2	0V DC output			

Connector ID/ function	J1 isolated communications interface (RJ45)	Manufacturer: Molex PN: 432238128 Twin socket. Pins in parallel Pins numbered right to left in customer view	User side, mating part:	FCC 68 plugs designed for flat telecoms flex
Pin	**Function**	**Description**		
1	RS485 A	Full-duplex non-inverting receiver input		
2	RS485 B	Full-duplex inverting receiver input.		
3	RS232 TX	RS232 Transmit line		
4	Iso Gnd	Signal ground, isolated from DC power output		
5	Iso Gnd			
6	RS232 RX	RS232 Receive line		
7	RS485 Z	Half-duplex: Inverting driver output & Inverting receiver input, Full-duplex: Inverting driver output		
8	RS485 Y	Half-duplex: Non-inverting driver output & non-inverting receiver input, Full-duplex: Non-inverting driver output		

Connector ID/ function	J2 isolated communications interface 24 pin	Manufacturer: Phoenix contact PN: 1844824	User side, mating part:	Connector PN: 1844675, crimp-free assembly. Wire gauge: 0.14 - 0.5mm², 26-20awg
Pin	**Function**	**Description**		
1	DCOK collector	Uncommitted opto-transistor. Conducting = Vout is within range. User configurable. Vce max: 15VDC. Ic max: 4mA. See circuit diagram on page 11		
2	DCOK emitter			
3	Remote on/off anode	Uncommitted opto-diode. Supplied as Active = Inhibit. User configurable. Can be used in conjunction with the Safety Interlock. See circuit diagram on page 11.		
4	Remote on/off cathode			
5	AC OK collector	Uncommitted opto-transistor. Not conducting = AC is out of range or a phase is lost.User configurable. Vce max: 15VDC. Ic max: 4mA		
6	AC OK emitter			
7	Address A0	I^2C Device Address Bit (Internal 10kR pull-up to 3.3VDC)		
8	Address A1			
9	Address A2			
10	PMBUS_EN	Pull-down to Iso Gnd to activate Vprog and Iprog analogue programming. Internal 10kR pull-up to 3.3VDC.		
11	I^2C SDA	I^2C Data Line. 10kR internal pull-up to 3.3VDC.		
12	I^2C SCL	I^2C Clock Line. 10kR internal pull-up to 3.3VDC		
13	Fan fail/temp warning	Open Drain, referenced to Iso Gnd. Conducting = Normal operation. I_D max: 30mA. Internal pull-up to 3.3VDC		

Continues on next page

Signals, controls & connectors

Connector ID/ function	J2 isolated communications interface 24 pin	Manufacturer: Phoenix contact PN: 1844824	User side, mating part:	Connector PN: 1844675, crimp-free assembly
Pin	**Function**	**Description**		
14	Iso ground	Signal ground, isolated from DC power output		
15	Iprog	0–5VDC input to set current limit from 0–110% of rated current. Referenced to Iso Gnd.		
16	Vprog	0–5VDC input to set current limit from 0–105% of nominal voltage. Referenced to Iso Gnd.		
17	CANBus H	CANBus interface using CANopen protocol		
18	CANBus L			
19	5V/2A housekeeping	This auxiliary output is constantly available when AC input is present. Referenced to Iso Gnd.		
20	5V/2A housekeeping			
21	Iso ground	Signal ground, isolated from DC power output		
22	Iso ground			
23	Interlock input A	Uncommitted opto-diode Anode (two diodes in series). Conducting = Safe to activate output. Vin: 5-28VDC.		
24	Interlock input K	Uncommitted opto diode Cathode.		

Connector ID/ function	J3: USB-C configuration port	User side, mating part:	Standard USB-C jack
J3: USB-C configuration port			
Pin	**Function**	**Description**	
1	USB serial data interface.	Alternative port for SCPI control.	

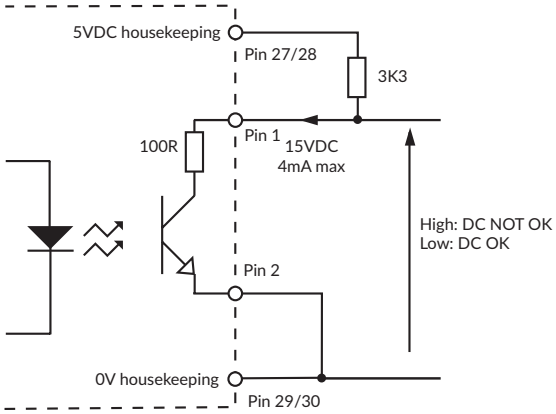
Connector ID/ function	J4: Non-isolated control interface. 10 pin	Manufacturer: Phoenix contact. PN: 1844756	User side, mating part:	Connector PN: 1844604, crimp-free assembly. Wire gauge: 0.14 - 0.5mm², 26 - 20awg
Pin	**Function**	**Description**		
1	SGND	Signal ground, common with DC power output 0V terminal		
2				
3	Not used			
4				
5	Sync	Synchronises output start-up following application of AC input to units connected in parallel. Do not use with units connected in series		
6				
7	Not used			
8				
9	Current Share	Linking the current share pins between identical voltage models, connected in parallel, will force the current to be shared. Maximum of 5 units in parallel. Sharing accuracy ±3% of a single unit current rating.		
10				

Connector ID/ function	DIP switches	Counting 1 to 4 from right to left
Pin	**Function**	**Description**
1	CANBus 120R termination resistor	Close switch to apply 120R between CAN H and CAN L.
2	Half-Duplex 120R termination resistor	Close switch to apply 120R resistor between RS485 A&B
3	Full-Duplex 120R termination resistor	Close switch to apply 120R resistor between RS485 Y&Z
4	RS485 Half-Full Duplex select	Close switch to select Full Duplex.

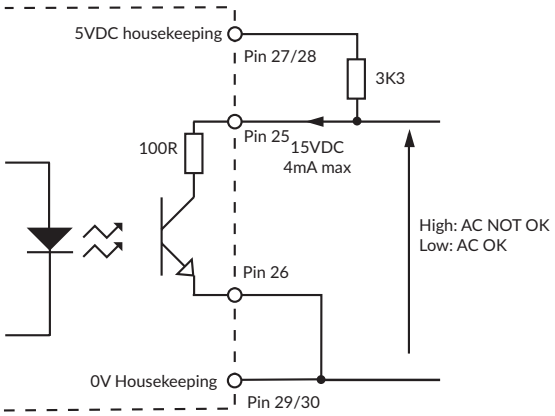
Signals, controls & connectors

Suggested Application Circuits for 48-200V models. Functions are described in their default configuration.

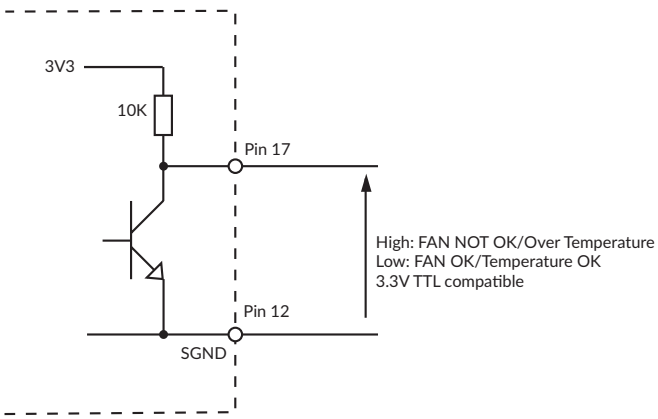
DC OK



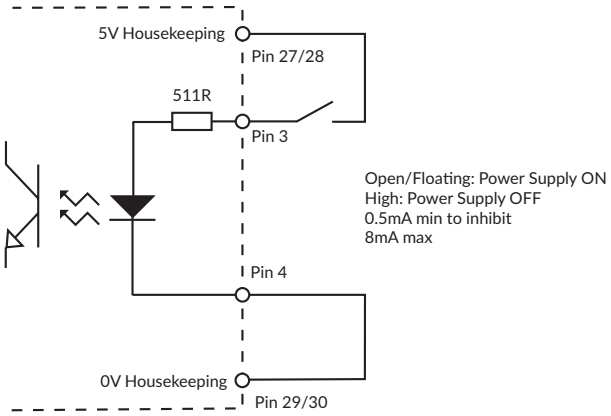
AC OK



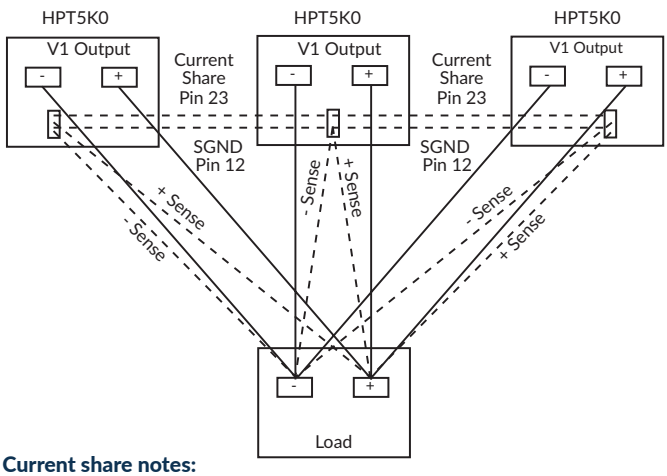
Fan fail/temperature warning



Remote on/off (inhibit)



Current share: 48 - 100V models



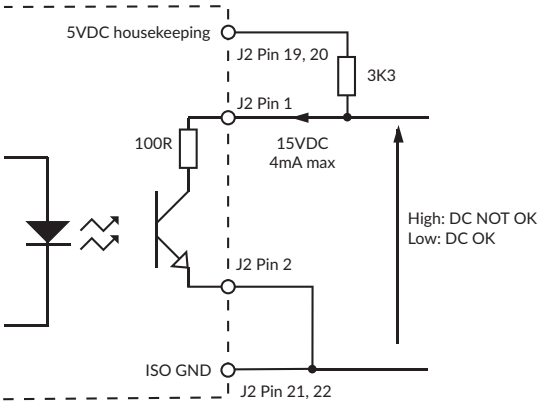
Current share notes:

1. Up to five HPT5K0 units may be connected in parallel.
2. The SYNC pins may also be linked between units. See function description.
3. Both SYNC and Current Share require SGND to be linked.
4. Remote Sense is fitted to 48-100VDC models.

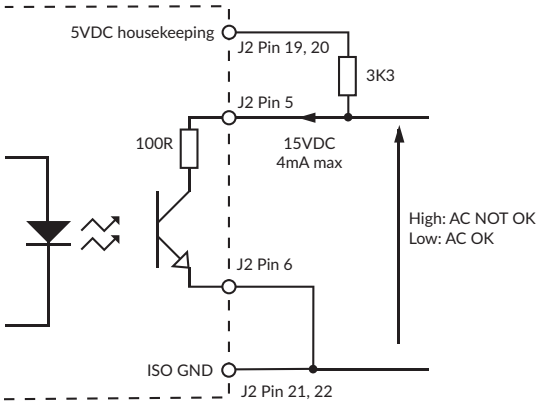
Signals, controls & connectors

Suggested application circuits for 400-800VDC models. Functions are described in their default configuration.

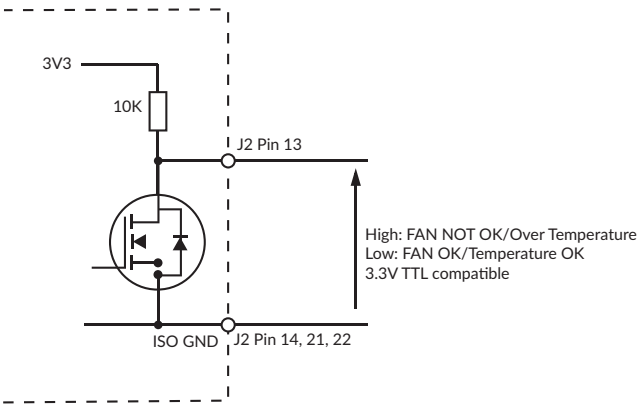
DC OK



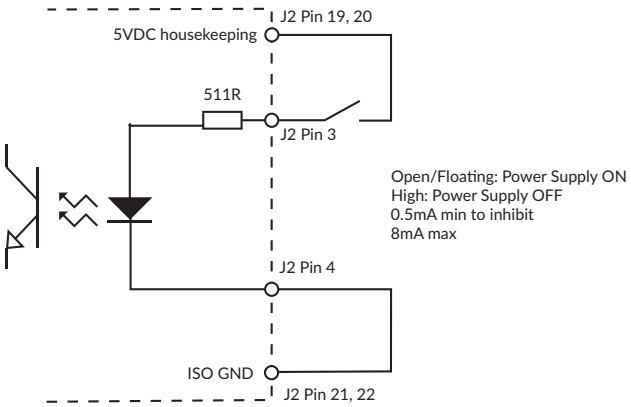
AC OK



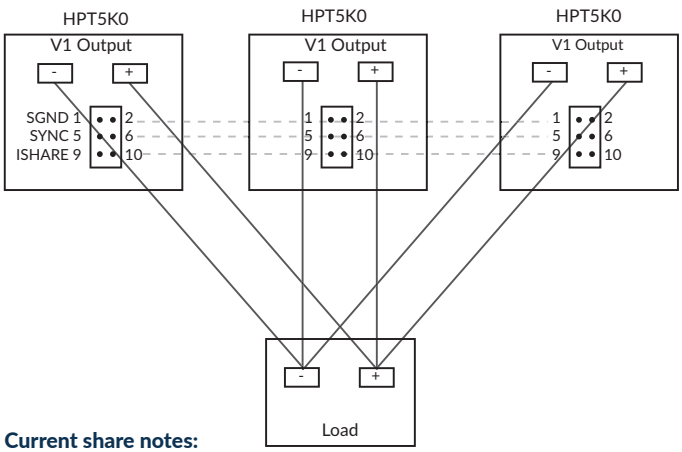
Fan fail/temperature warning



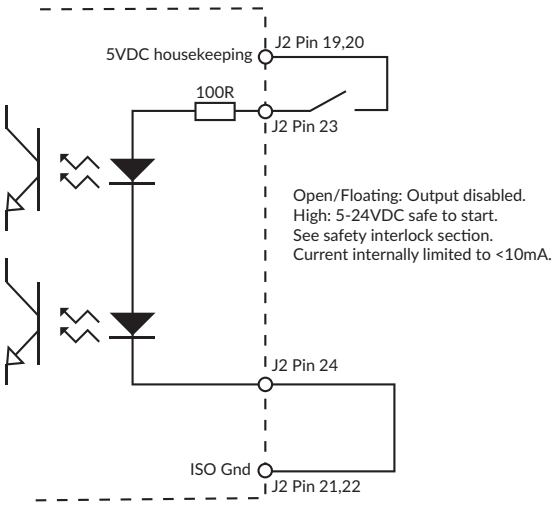
Remote on/off (inhibit)



Current share: 400 - 800VDC models



Safety interlock



Current share notes:

1. Up to five HPT5K0 units may be connected in parallel.
2. The SYNC pins may also be linked between units. See function description.
3. Both SYNC and Current Share require SGND to be linked. On 400VDC & 800VDC models, SGND must only be used for these two functions.
4. Remote Sense is fitted to 48VDC-100VDC models.

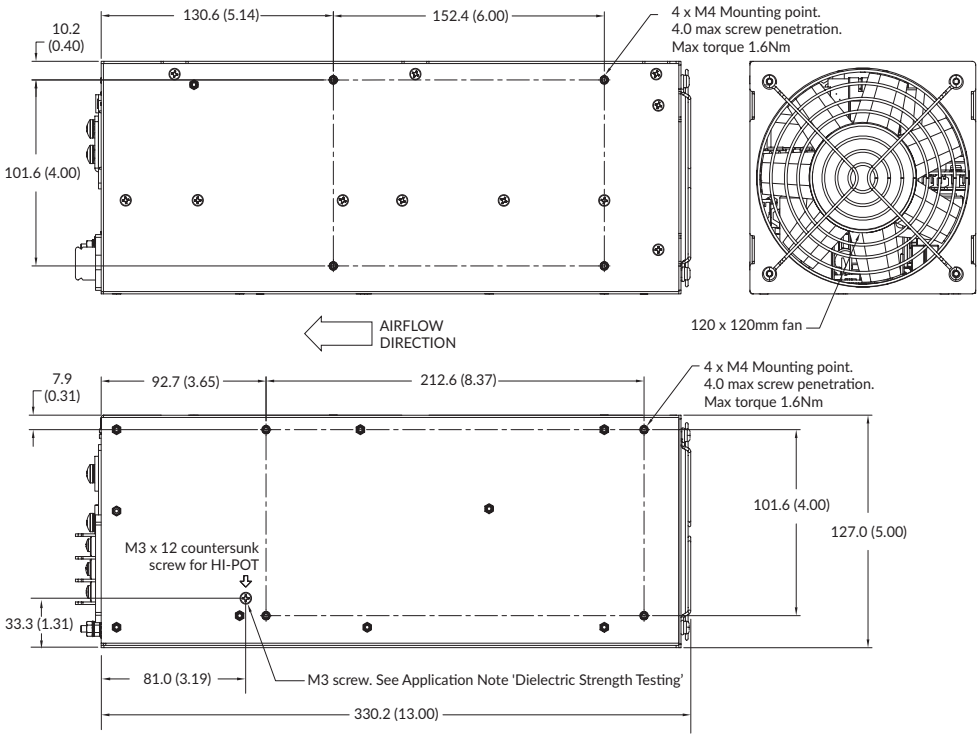
LED signals

Conditions	LED State		Signals			
	AC OK	DC OK	AC OK	DC OK	FAN _FAIL/TEMP	Remote on/off inhibit[3]
AC input OK	ON	ON[2]	Active	Active	Active Low	Inactive
AC input below control system startup voltage	OFF	OFF	Inactive	Inactive	Inactive	Don't care
AC present but out of range, PFC failure, missing phase or internal communications fault	Blink 0.2s on, 0.2s off	OFF	Inactive	Inactive	Active Low	Don't care
Output over voltage protection	ON	OFF	Active	Inactive	Active Low	Inactive
Output over current protection (constant current mode)	ON	Blink 0.2s on, 0.2s off	Active	Active or Inactive[2]	Active Low	Inactive
Fan failure/thermal shutdown	ON	OFF	Active	Inactive	Active High[1]	Inactive
Safety interlock input is open circuit[4]	ON	Double blink 0.2s on, 1.0s off	Active	Inactive	Active Low	Inactive
Remote on/off unit disabled	ON	Blink 1.0s on, 1.0s off.	Active	Inactive	Active Low	Active
Digital communications on/off unit disabled	ON	Blink 1.0s on, 1.0s off.	Active	Inactive	Active Low	Inactive
Bootloader firmware update in progress	Both LEDs blink together: 1.0s on, 1.0s off		Inactive	Inactive	Inactive	Don't care
Bootloader update complete	Blink 0.5s on, 0.5s off	Blink 1.0s on, 1.0s off	Inactive	Inactive	Inactive	Don't care

Notes:

1. In case of fan failure and/or over-temperature, FAN FAIL/TEMP warning signal will be set 10s before output shutdown.
2. DC OK LED is on if output voltage ≥ VOUT_UV_FAULT_LIMIT parameter.
3. Remote ON/OFF factory setting is: Active = Inhibit operation. User configurable.
4. Indication of Safety Interlock status takes precedence over status of ON/OFF controls.

Mechanical details

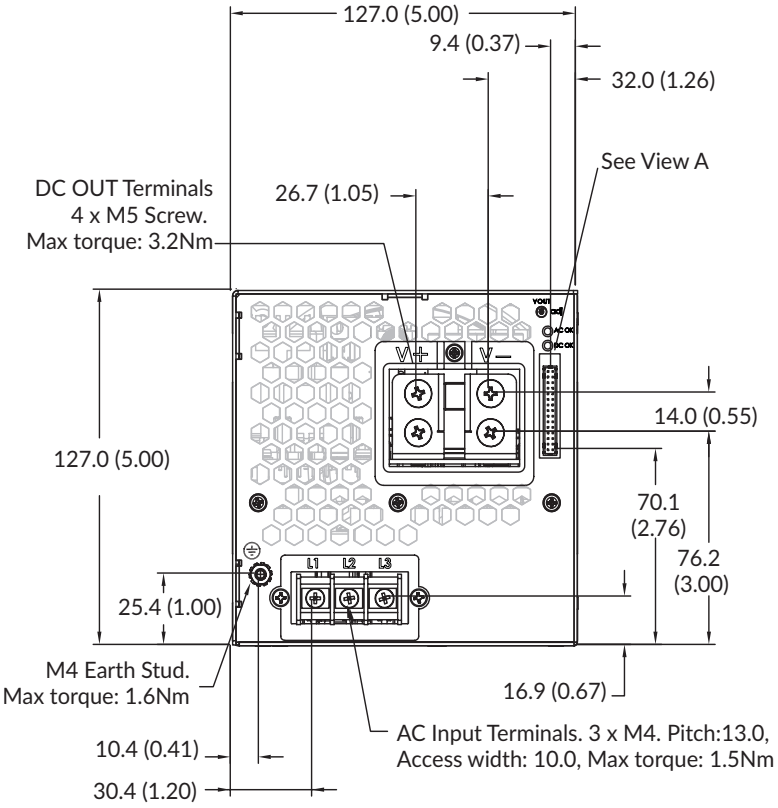


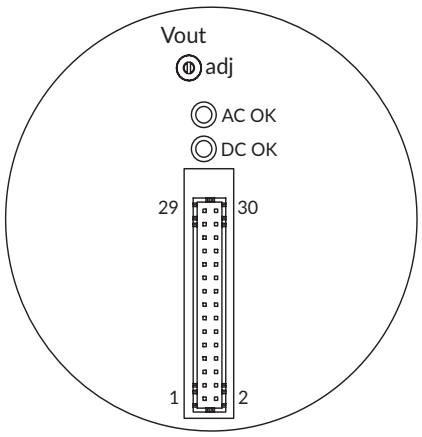
Notes:

1. All dimensions are in mm (inches).
2. Weight 5.7kg (12.5lb)

Mechanical details

48-200VDC end view

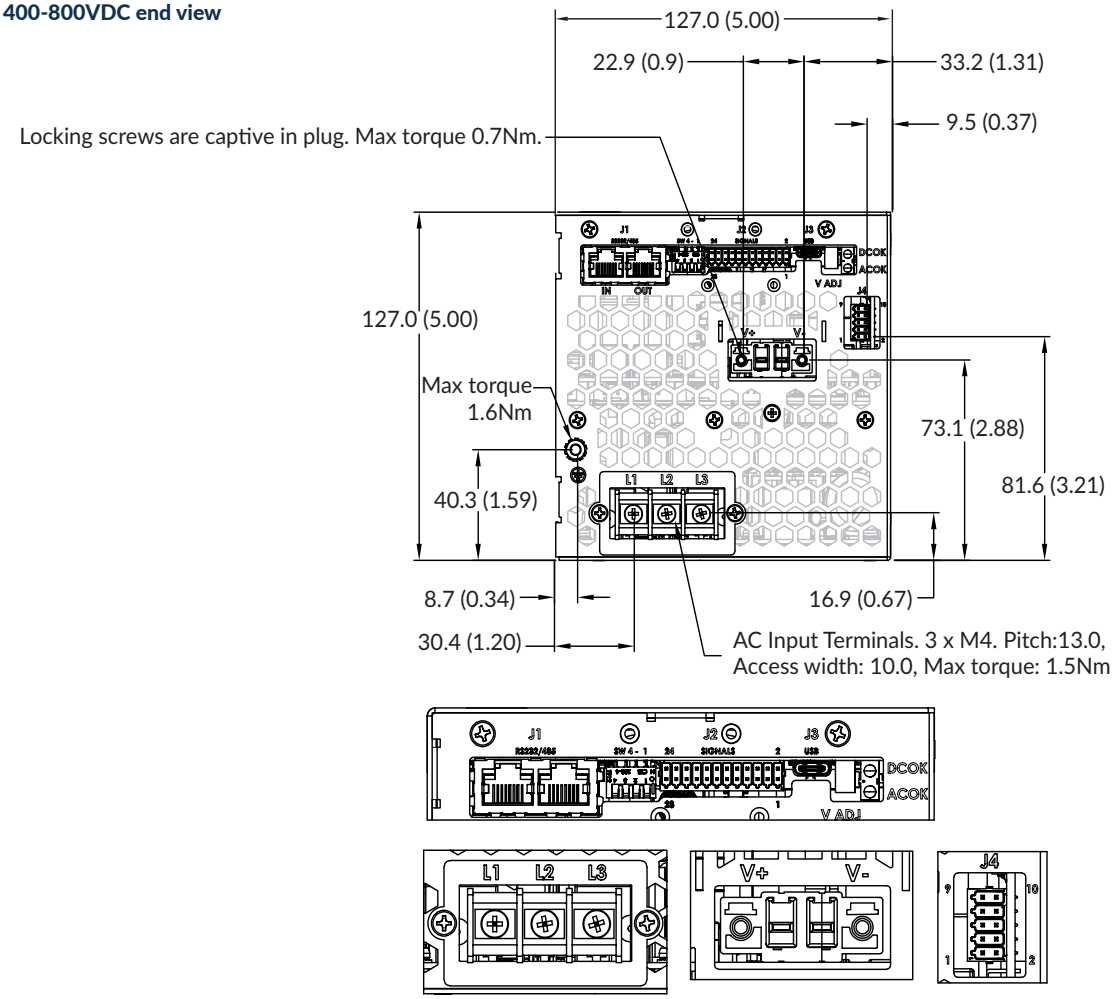




View A

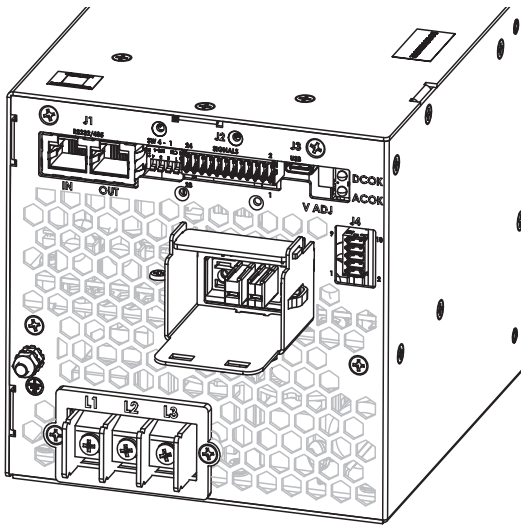
Mechanical details

400-800VDC end view



Accessory Bracket

An accessory bracket is included with the product. This provides a securing point for the J1-J4 signal looms and prevents inadvertent contact with the power output connector terminal screws.



Specifications subject to change without notice.