Setpoint Isolators

Technical Manual

HA059255 Issue 3

WARRANTY

Parker SSD Drives warrants the goods against defects in design, materials and workmanship for the period of 24 months from the date of manufacture, or 12 months from the date of delivery (whichever is the longer period), on the terms detailed in Parker SSD Drives Standard Conditions of Sale IA500504.

Parker SSD Drives reserves the right to change the content and product specification without notice.

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FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

Safety Information

Requirements

IMPORTANT: Please read this information BEFORE installing the equipment.

Intended Users

This manual is to be made available to all persons who are required to install, configure or service equipment described herein, or any other associated operation.

The information given is intended to highlight safety issues, EMC considerations, and to enable the user to obtain maximum benefit from the equipment.

Complete the following table for future reference detailing how the unit is to be installed and used.

INSTALLATION DETAILS	
Model Number *(see product label)*	
Where installed *(for your own information)*	
Unit used as a: *(refer to Certification for the Inverter)*	❑ Component ❑ Relevant Apparatus
Unit fitted:	❑ Wall-mounted ❑ Enclosure

Application Area

The equipment described is intended for industrial motor speed control utilising DC motors, AC induction or AC synchronous machines

Personnel

Installation, operation and maintenance of the equipment should be carried out by qualified personnel. A qualified person is someone who is technically competent and familiar with all safety information and established safety practices; with the installation process, operation and maintenance of this equipment; and with all the hazards involved.

Product Warnings

 **Caution** Risk of electric shock	 **Caution** Refer to documentation	 **Earth/Ground** Protective Conductor Terminal

Safety Information

Hazards

DANGER! - Ignoring the following may result in injury

1. This equipment can endanger life by exposure to rotating machinery and high voltages.
2. The equipment must be permanently earthed due to the high earth leakage current, and the drive motor must be connected to an appropriate safety earth.
3. Ensure all incoming supplies are isolated before working on the equipment. Be aware that there may be more than one supply connection to the drive.
4. There may still be dangerous voltages present at power terminals (motor output, supply input phases, DC bus and the brake, where fitted) when the motor is at standstill or is stopped.
5. For measurements use only a meter to IEC 61010 (CAT III or higher). Always begin using the highest range.
   CAT I and CAT II meters must not be used on this product.
6. Allow at least 5 minutes for the drive's capacitors to discharge to safe voltage levels (<50V). Use the specified meter capable of measuring up to 1000V dc & ac rms to confirm that less than 50V is present between all power terminals and earth.
7. Unless otherwise stated, this product must NOT be dismantled. In the event of a fault the drive must be returned. Refer to "Routine Maintenance and Repair".

WARNING! - Ignoring the following may result in injury or damage to equipment

SAFETY

Where there is conflict between EMC and Safety requirements, personnel safety shall always take precedence.

- Never perform high voltage resistance checks on the wiring without first disconnecting the drive from the circuit being tested.
- Whilst ensuring ventilation is sufficient, provide guarding and /or additional safety systems to prevent injury or damage to equipment.
- When replacing a drive in an application and before returning to use, it is essential that all user defined parameters for the product's operation are correctly installed.
- All control and signal terminals are SELV, i.e. protected by double insulation. Ensure all external wiring is rated for the highest system voltage.
- Thermal sensors contained within the motor must have at least basic insulation.
- All exposed metalwork in the Inverter is protected by basic insulation and bonded to a safety earth.
- RCDs are not recommended for use with this product but, where their use is mandatory, only Type B RCDs should be used.

EMC

- In a domestic environment this product may cause radio interference in which case supplementary mitigation measures may be required.
- This equipment contains electrostatic discharge (ESD) sensitive parts. Observe static control precautions when handling, installing and servicing this product.
- This is a product of the restricted sales distribution class according to IEC 61800-3. It is designated as "professional equipment" as defined in EN61000-3-2. Permission of the supply authority shall be obtained before connection to the low voltage supply.

CAUTION!

APPLICATION RISK

- The specifications, processes and circuitry described herein are for guidance only and may need to be adapted to the user's specific application. We can not guarantee the suitability of the equipment described in this Manual for individual applications.

RISK ASSESSMENT

Under fault conditions, power loss or unintended operating conditions, the drive may not operate as intended.
In particular:

- Stored energy might not discharge to safe levels as quickly as suggested, and can still be present even though the drive appears to be switched off
- The motor's direction of rotation might not be controlled
- The motor speed might not be controlled
- The motor might be energised

A drive is a component within a drive system that may influence its operation or effects under a fault condition.
Consideration must be given to:

- Stored energy
- Supply disconnects
- Sequencing logic
- Unintended operation

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Contents

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SETPOINT ISOLATORS

The Setpoint Isolator has been designed to provide galvanic isolation of input signals from either a voltage or current source.

Two isolation channels are provided one digital and one analogue, both rely upon opto isolators to provide galvanic isolation.

The digital channel comprises of an opto isolator with a floating output transistor. The analogue channel converts the dc signal level to a frequency proportional to the input level, the variable frequency signal is transmitted via the optoisolator to a amplified decoding circuit. The amplified circuit restores the signal to a variable dc voltage.

Functional Diagrams

Due to the limited supply voltage level applied to the output amplifier, the output signal mannot exceed ❄ 8V DC. If this proves to be insufficient then a supplementary +15 to 24 volt supply may be applied to the setpoint isolator to increase the amplifier supply and provide the full +10V output.

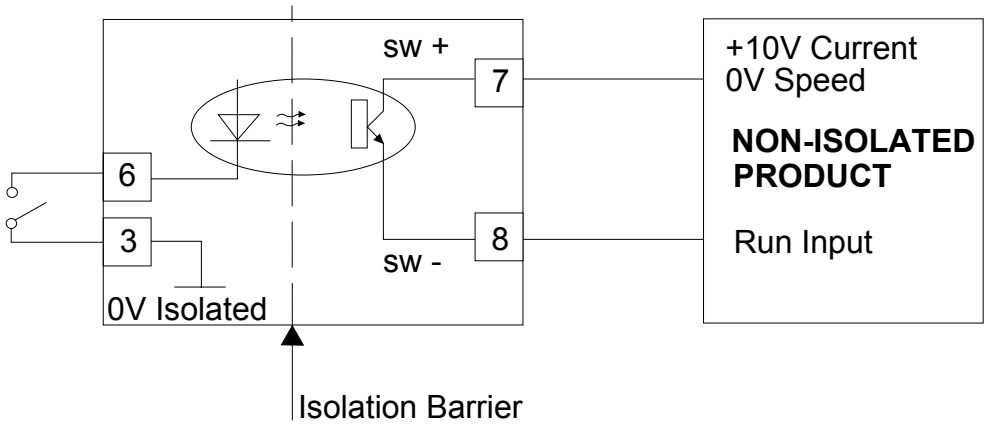

Figure 1 DC Channel

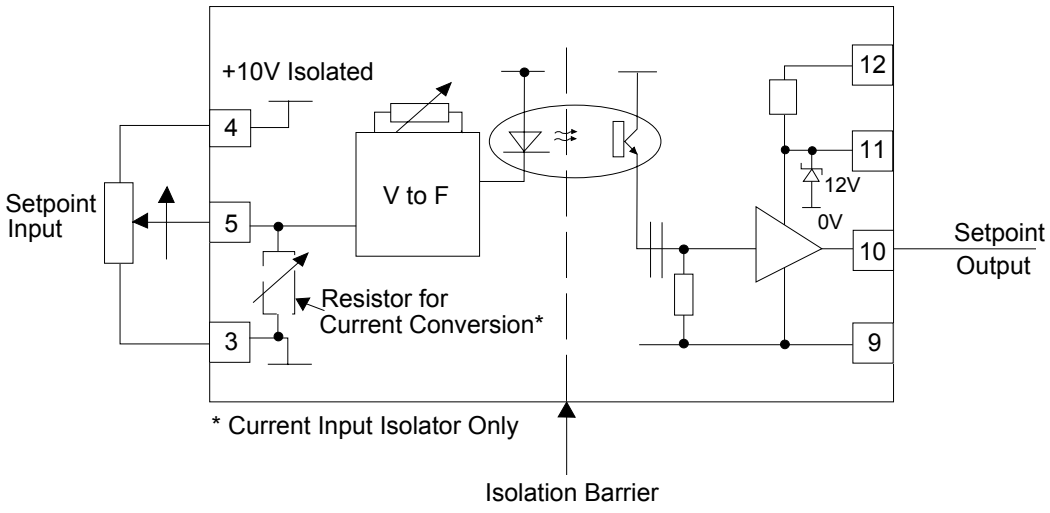

Figure 2 Analogue Channel

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Mechanical Arrangement

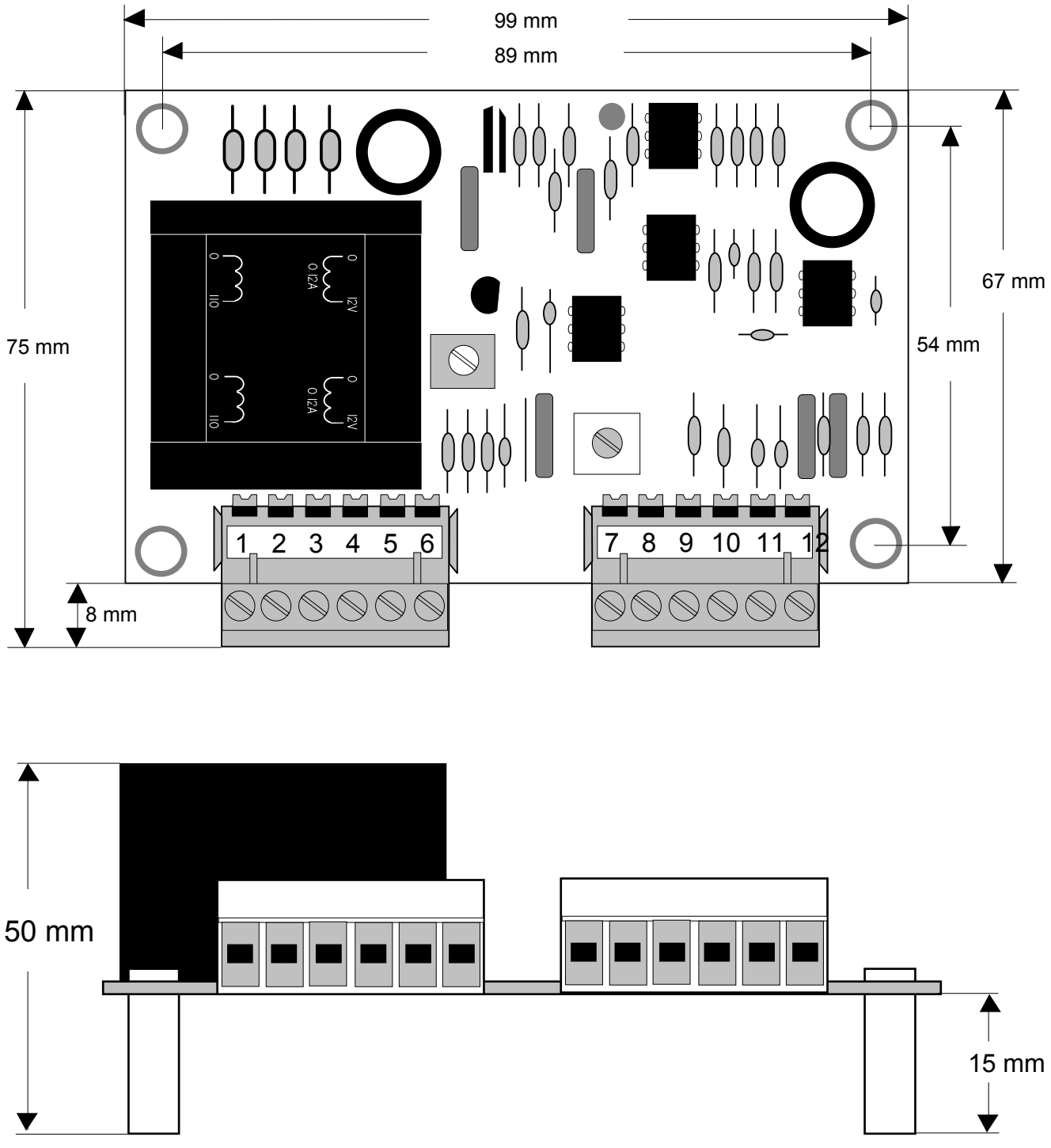

Figure 3 Mechanical Fixing

Electrical Installation

Connection Diagrams using 506/507/508 (Cube)

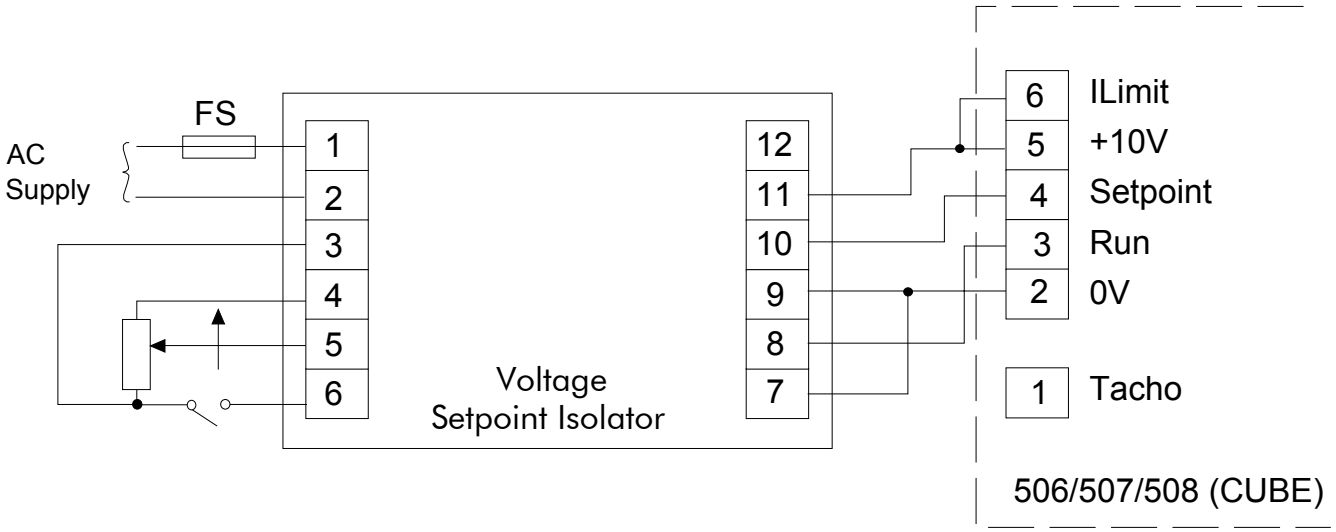

Figure 4 Speed Control

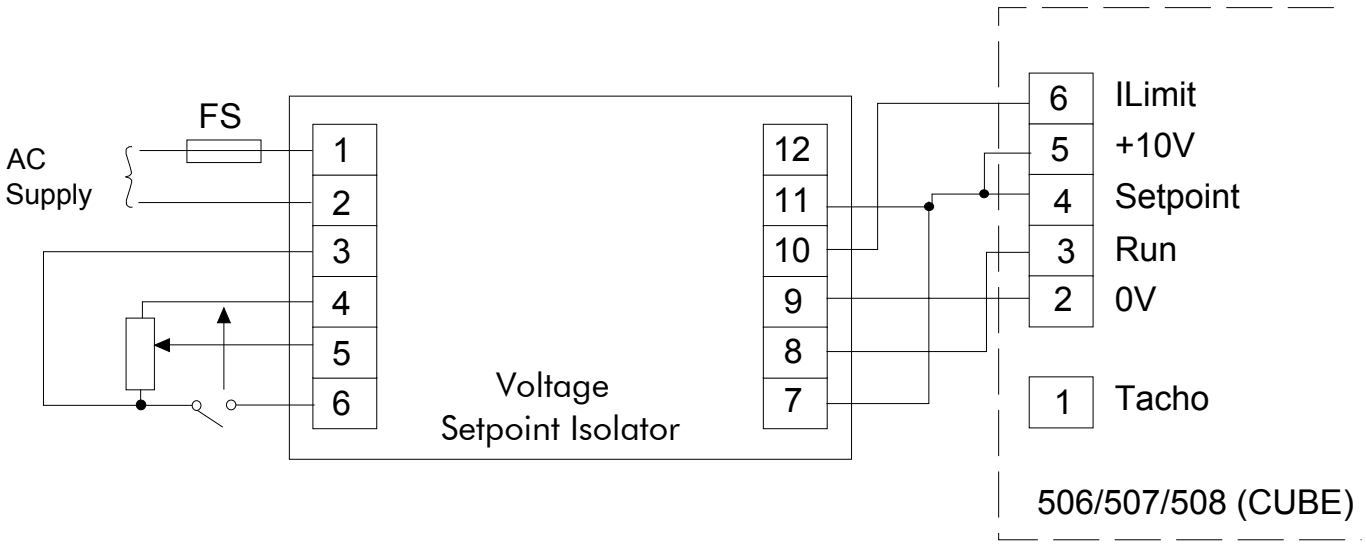

Figure 5 Current Control

Input Connections

a) 0 to +10V remote signal

Terminal 1	-	Line 110 - 240V 50/60Hz AC.
Terminal 2	-	Neutral.
Terminal 3	-	Remote isolated signal 0V.
Terminal 4	-	+10V isolated signal, to enable pot to be used in isolated function (see Figure 1).
Terminal 5	-	Remote isolated signal +10V (maximum).
Terminal 6	-	Digital run input.

b) 4 to 20mA signal

Terminal 1	-	Line 110 to 240V 50/60Hz AC.
Terminal 2	-	Neutral.
Terminal 3	}	Remote isolated signal 4 - 20mA.
Terminal 5	}	Isolated Switch/Reset (if required).
Terminals 6	-	Digital run input.

Output Connections (twisted or screened wire recommended)

Output reference signal

Terminal 9	-	0V, connected to follower drive 0V.
Terminal 11	-	+ 10V, connected to follower drive + 10V.
Terminal 12	-	Auxiliary + 15 to 24V supply signal, adjustable to provide higher output signal Volts.
Terminal 12	-	Auxiliary supply input +15 to 24V dc supply.

Control signal reference

Terminal 10	-	To follower drive speed or current input as required.

Switch Output

Terminal 7 & 8	-	Run switch.

Speed Cascade or Master/Slave Connection

By using the isolators, motors may be slaved together either with or without trim pots. Generally one isolator will be sufficient to control two CUBES.

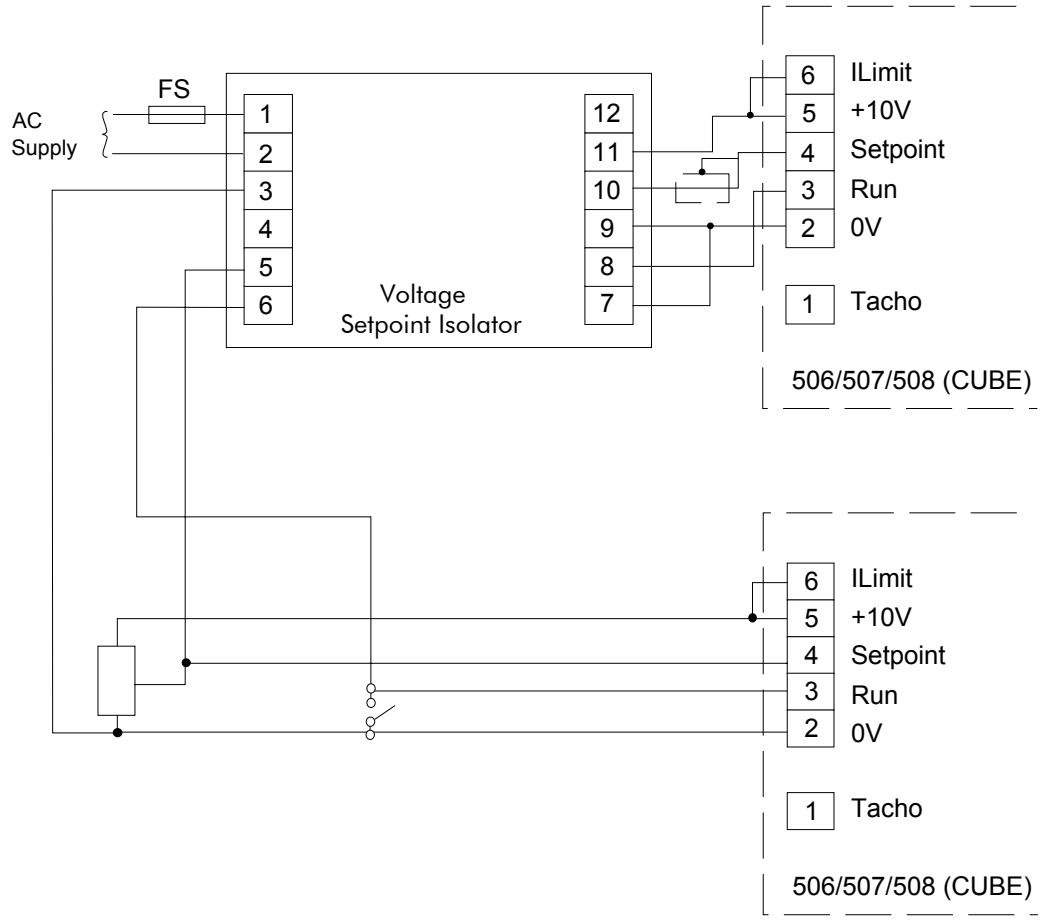

Figure 6 Speed Cascade or Master/Slave Connection

Note: *A 10%, 10K trim potentiometer may be connected as shown to trim speed on the slaved drive.*

ISS.	MODIFICATION	ECN No.	DATE	DRAWN	CHK'D
1	Initial Issue of HA059255	3283	16.1.92	FEP	GDR
2	Manual re-written in Microsoft Word VI				
3	Company name change. New Safety information.	20280	14/10/08	CM	GDR

FIRST USED ON	MODIFICATION RECORD	
Parker	DRAWING NUMBER ZZ059255	SHT. 1 OF 1