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## ***Overview***

The **Control-it™ 5050** is a comprehensive analogue module, able to measure temperature, voltage and current. An extra factory fitted option provides two, fully isolated, 4-20mA outputs.

The **Control-it™ 5050** can communicate using the OPTO 22 OPTOMUX protocol or the high speed TECHBUS protocol.

The **Control-it™ 5050** can read J, K, and T temperature probes. The ability to read 4-20mA and -20 to + 20mA allows the module to interface with an extensive range of sensors in order to record environmental changes.

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# General Description

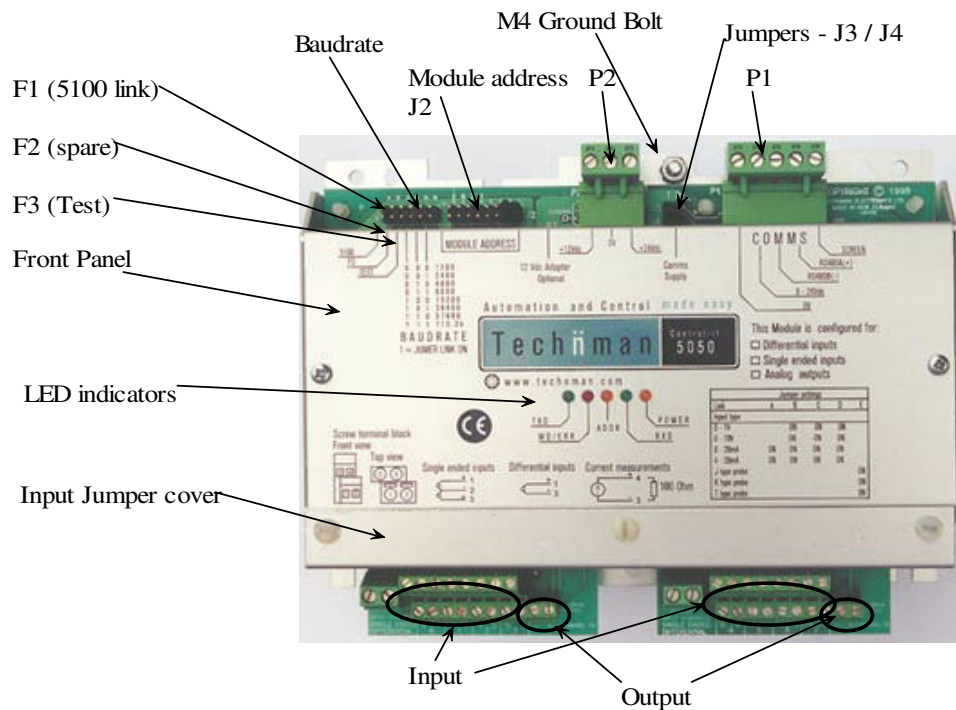


Figure 1 - The major components.

## ***The Box should contain***

- A **Control-it™ 5050** module
- Instruction manual
- Disc with demo software
- Spare jumper links
- Voltage test board

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## Quick Start

This section will allow the user to set up the **Control-it™ 5050** and make measurements using the demonstration software provided.

NB: For detailed information on each step refer to the relevant section later in the manual.

### Set up in Opto 22 Serial Port mode

1. Check that all jumpers are placed as per figure 2 below. (For more, refer to page 17.)

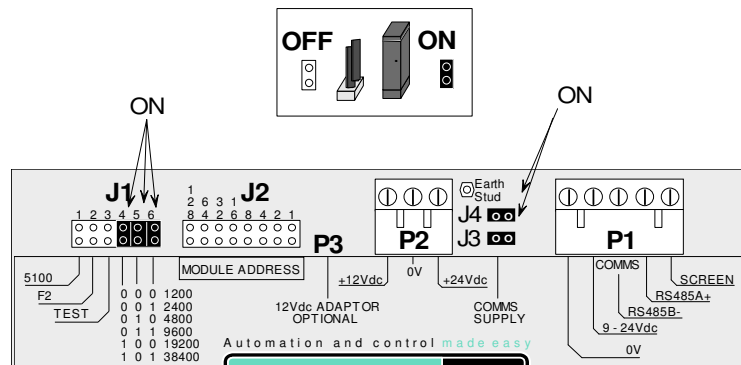


Figure 2 - Jumper settings.

2. Connect the module to a **Control-it™ RS232 - 485** converter as per figure 3. (For more, refer to page 22.) Ensure the converter is connected to one of your PC's serial COM ports.

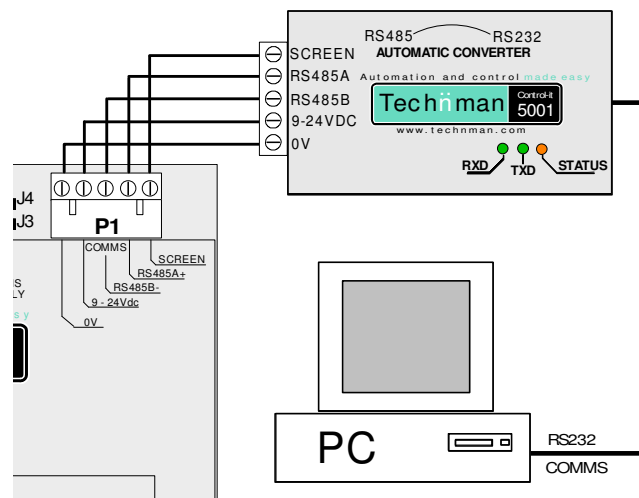


Figure 3 - RS485 connection to the 5001 converter.

3. Connect 12V or 24V power to the remote module as marked on the front panel. (For more, refer to page 22)
  - The red WD/ERR lamp (50x0) should light for 1-2 seconds and then extinguish.
  - Ensure that the orange POWER lamp on the **Control-it™ 5050** and the orange STATUS lamp on the **Control-it™** converter are lit.
  - If any other condition exists refer to the **Troubleshooting** section, page 36.

### **Set up in High Speed mode (Control-it™ 5100 & 5101)**

1. Check that all jumpers are placed as per figure 4 below. (For more, refer to page 17.)

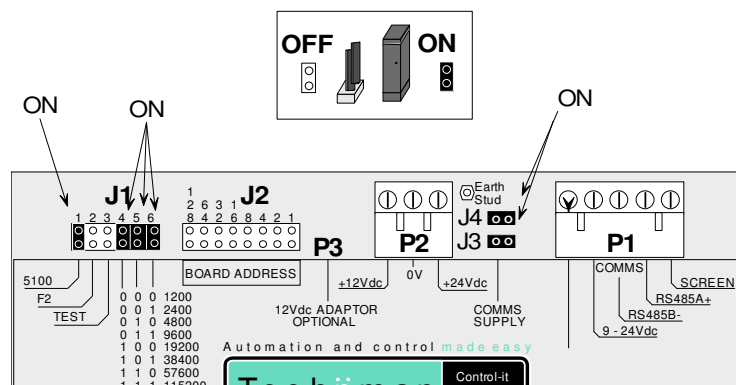


Figure 4 – Jumper settings

2. Connect the module to the RS485 interface board as per figure 5. (For more, refer to page 22.)

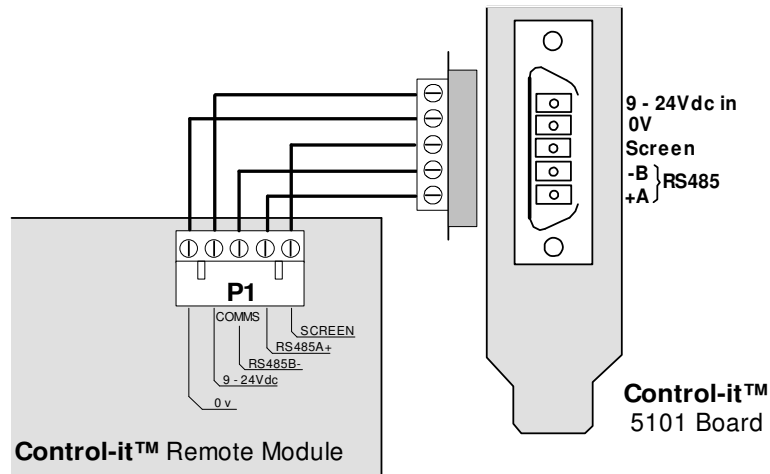


Figure 5 - RS485 connection to the 5101 PCI board.

3. Connect 12V or 24V power to the remote module as marked on the front panel. (For more, refer to page 22)
  - The red WD/ERR lamp (5050) should light for 1-2 seconds and then extinguish.
  - Ensure that the orange POWER lamp on the remote module is lit.
  - If any other condition exists refer to the **Troubleshooting** section, page 36.

### ***Measuring Voltage Using the Test Board***

The test board provided with the **Control-it™ 5050** can be used to give a quick indication of the module's functionality. The simplest result is achieved by using it to measure the module's supply voltage.

1. Check that the module is configured for Single Ended inputs or Differential inputs as ordered (refer page 10). This is marked on the front panel as per figure 6.

**This Module is configured for:**

- Differential inputs**
- Single ended inputs**
- Analog outputs**

Figure 6 - Module Configuration.

2. Connect the test board between the Power Supply source and Input 0 as per figure 7.

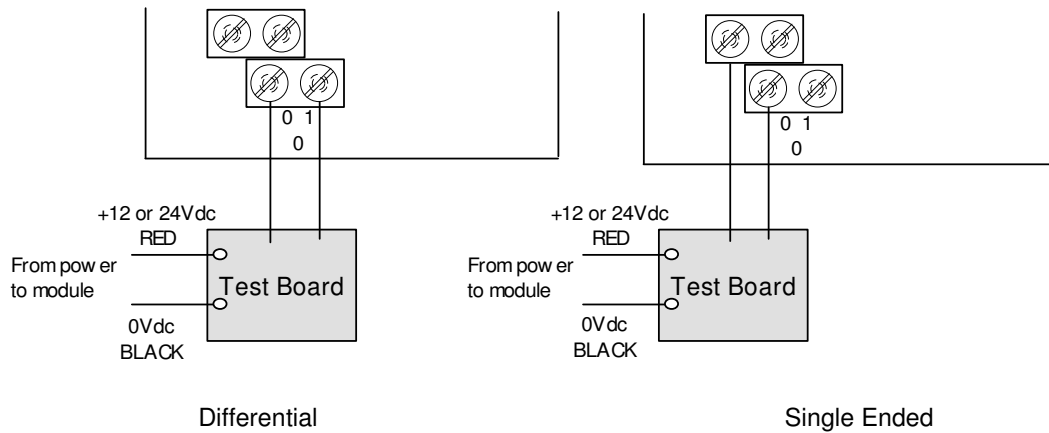


Figure 7 - Connection of Test board

3. Use the **P5000Demo** program to display the result (refer page 10).

The test board will give a Voltage figure that is approximately  $1/10^{\text{th}}$  the supply voltage and this figure is displayed in Position 0.

### ***Making Other Measurements***

1. Connect inputs to the **Control-it™ 5050** as marked on the front panel (refer page 26).



*Warning - ensure that only Differential Inputs are used on Differential modules and Single Ended Inputs are used on Single Ended modules.*

NB: Current can only be measured with Differential type modules.

2. Set input jumpers for the desired input type.
  - Remove the metal panel held by two plastic screws adjacent to input terminal blocks.
  - Set input jumpers to match input type using table marked on the front panel (refer page 20).

- 
3. Use the **P5000Demo** program to display the result (refer page 10).
  4. Select correct measurement type by double-clicking the “Position (number)” that matches the desired input and choosing from the drop down menu.

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# Using the P5000 Demonstration Program

This program provides a quick means of controlling and monitoring the remote modules.

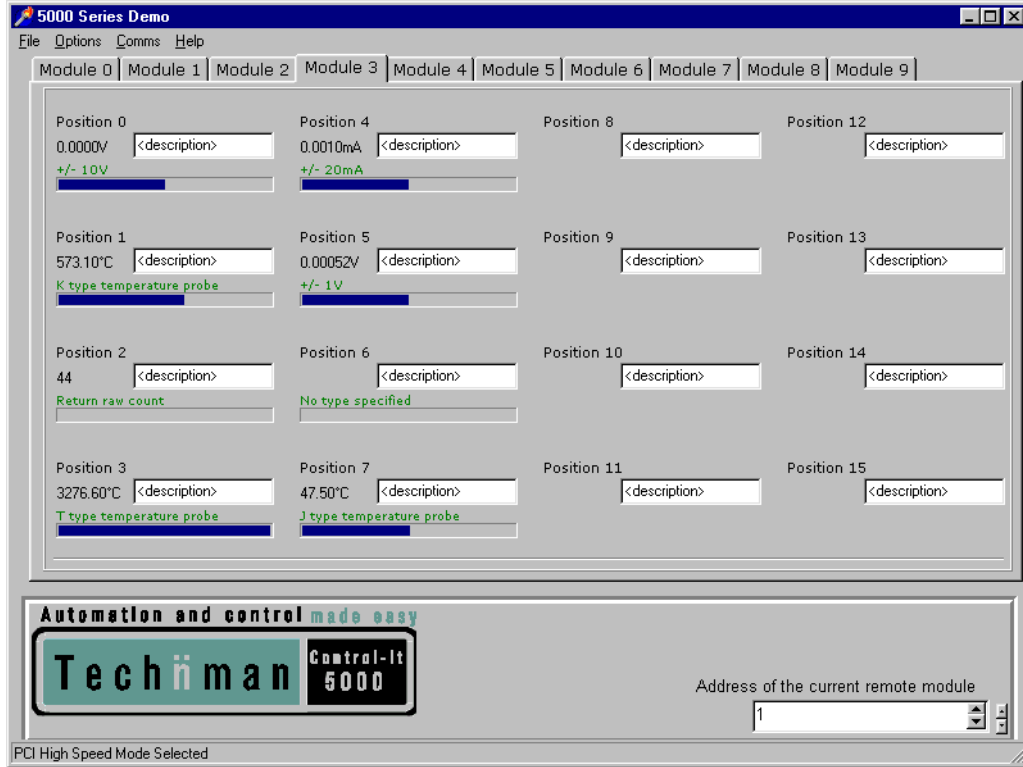


Figure 7 - P5000 Demo program

## Installation

To install the demonstration software and drivers to your hard drive:

- Insert the Technman Electronics CD-ROM in your CD-Rom drive. If the CD does not auto-run, refer to **Troubleshooting** (page 36).
- Click on “Install P5000 Demonstration Software and Drivers for 5101 cards” and follow the instructions.

**NB:** Opto22 & 5100 users may choose to run the demonstration program directly from the CD-ROM, without installing it to the hard drive, by clicking on “Opto22/5100 users, run the demo from the disk”.

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## Starting

Run the demonstration program by selecting the desktop icon.

The icon can also be found under START|PROGRAMS|TECHN-MAN ELECTRONICS or from where you chose to install it.

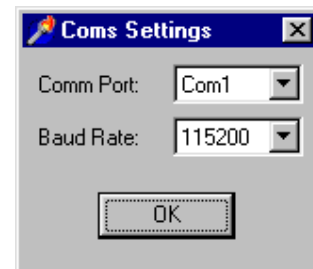
## Set Up

### Opto22 Users

1. Select Configure from the Comms menu.

- Choose the Comm Port you have the serial cable plugged into, and then set the required Baud Rate.

If you have followed the Quick Start set up, this is 115200 baud.



- Click the OK button.

2. Select Opto22 from the Comms menu and 'Yes' when prompted to open the comm port.

3. Set the 'Address of current remote module', in the bottom right hand corner, to match the module address set with the jumpers.

If you have followed the Quick Start set up, this is '0'.

4. 'Opto22 Mode Selected' is displayed in the bottom left corner.

### Control-it™ 5100 ISA HS board Users

1. Select 5100 from the Comms menu.

2. Set 'Address of 5100 Board', in the lower right corner, as selected on the board. 280hex recommended (refer 5100 Installation Manual).

3. Set the 'Address of current remote module', in the bottom right hand corner, to match the module address set with the jumpers.

- 
4. 'ISA High Speed Mode Selected' is displayed in the bottom left corner.

### Control-it™ 5101 PCI HS board Users

1. Select 5101 from the Comms menu.
2. Set the 'Address of current remote module', in the bottom right hand corner, to match the module address set with the jumpers.

If you have followed the Quick Start set up, this is '0'

3. 'PCI High Speed Mode Selected' is displayed in the bottom left corner.

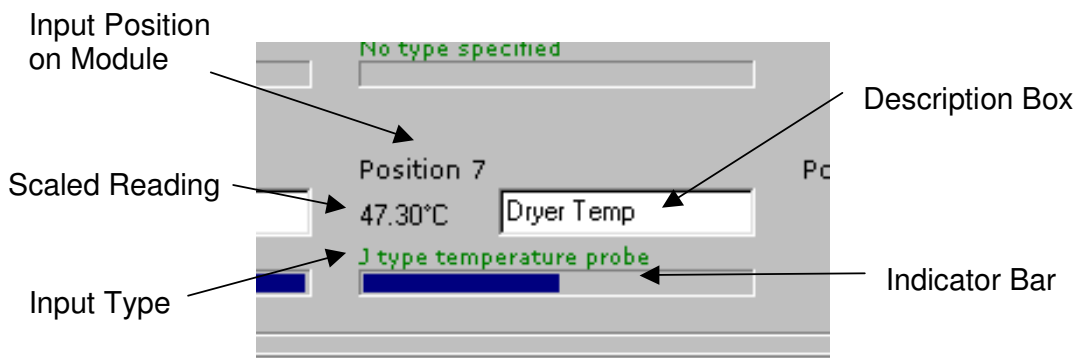
## Usage

### Main Display

The main display will now reflect the type of remote module you have connected, with either 8 or 16 positions becoming active.

As an example, figure 7 (page 10) shows a differential input **Control-it™ 5050** (8 inputs) address 1, connected to a **Control-it™ 5101**.

### Position Information



**Input Position:** The number of the input position on the module (0 to 8 or 0 to 16).

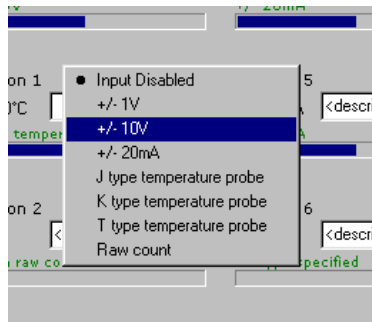
**Scaled Reading:** The measured sample with appropriate input-type scaling applied.

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Input Type:	The selected input type (as described below).
Description Box:	User editable box for entering a description of the input.
Indicator Bar:	Graphical representation of the reading.

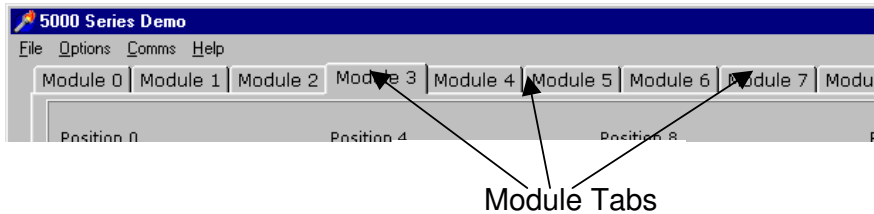
### Input Type Select

Each position must be set up for the appropriate input type, by double-clicking to the left of the white description box and selecting from the drop down menu.



### Multiple Modules

Up to 9 separate modules can be controlled and monitored simultaneously by selecting another module tab and entering the module's address in the address box.



### Monitoring

The P5000 demo can be used to monitor the state of the module positions without interfering with your application.

By selecting 'Monitor Mode' under the Options menu, the program releases control of the modules and simply indicates the state of each position. Output position switches change to yellow lights,

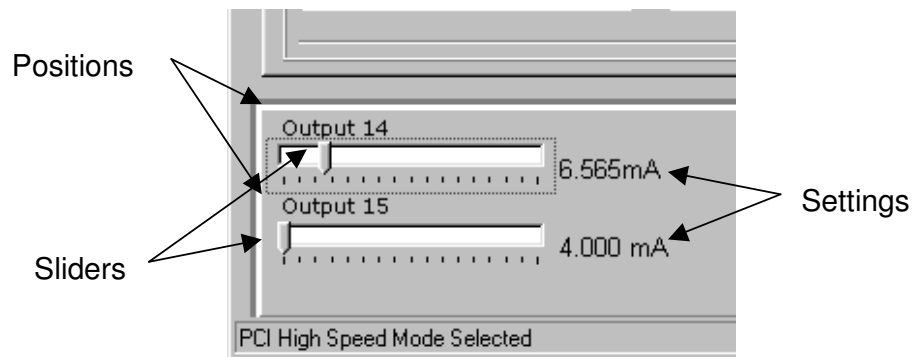
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indicating 'monitor' status, which then act the same as the Input position lights.

## Outputs

If the **Control-it™ 5050** has two optional 4-20mA outputs fitted, the main display will change to reflect this.

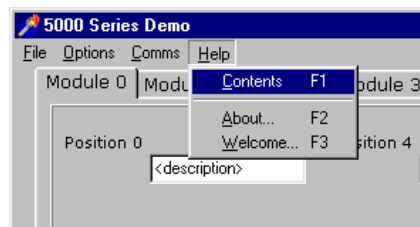
The 'Technman Control-it 5000' logo, in the bottom left corner, is replaced with two sliders that can be dragged left or right to set the output level. The output settings are shown to the right of the slider bars.



## Help

The Help file offers a more detailed description of the program's features and functions.

It can be accessed from the TECHNMAN ELECTRONICS icon group in the Windows START menu or through the Help menu in the program itself.



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## Module Configuration

The **Control-it™ 5050** is supplied in one of two configurations, Differential or Single Ended input, and is marked as such with a check in the appropriate box on the front panel.

As well as this, two different communication methods can be used:

- A subset of OPTOMUX via the serial port of the computer.
- Connection to the **Control-it™ 5100** or **5101** High Speed boards. This board looks after all the handling of the RS485 and makes the board appear in memory space in your computer via TECHBUS.

The module configuration, in conjunction with the communication protocol used, determines the number of input channels and the ranges. Table 1 sets out these ranges with respect to configuration and protocol.

In addition, a check in the 'Analogue outputs' box on the front panel indicates that the module has two optional 4-20mA outputs fitted.

Table 1 - <b>Control-it 5050 Input Ranges</b> <sup>1</sup>			
Module Type		Differential Input	Single Ended Input
Number of Input Positions		8	16
Voltage	1	-1 to +1Vdc	-1 to +1 Vdc
	2	-10 to +10Vdc	-10 to +10Vdc
Current		-20 to +20mA	<i>Not Available</i>
Temperature	J	0 to 760°C *	
	K	0 to 1000°C *	
	T	-100 to 400°C *	

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<sup>1</sup> The 5050 firmware before Version 2.07 does not support –ve voltages or current when used in the optomux mode. The earlier 5050 front panels do not show the –ve voltages or currents.

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\* Use of temperature probes with the Single Ended Input module is not recommended due to poor noise rejection in electrically noisy environments.

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## ***Jumper Configuration***

Various jumpers are positioned on the **Control-it™ 5050** module allowing the user to configure it to specific needs.

### ***5100***

[1 of J1] Located in the upper left corner, this jumper is inserted when the **Control-it™ 5050** is used in conjunction with the **Control-it™ 5100** or **5101** High Speed RS485 Interface boards.

On – communicate with **Control-it™ 5100** or **5101** (High Speed)

Off – communicate with serial com port (via **Control-it™** RS232 – 485 converter)

- The default setting is On.

### ***F2***


[2 of J1] Located in the upper left corner (adjacent to 5100 jumper), this jumper is reserved.

- The default setting is Off.

### ***Test***

[3 of J1] Located in the upper left corner (adjacent to F2 jumper), this jumper is used for testing the module and allows OPTO22 commands to be sent in short form.

- The command structure is >[command][position][data]<CR>
- For example: >0DFBA becomes >F

 *Warning – since no module address or checksum is used, only one module may have this jumper inserted at one time.*

On – Module in Test Mode

Off – Module in Normal Mode

- The default setting is Off.

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## Baud Rate

[4-6 of J1] Located in the upper left corner (adjacent to Test jumper), these jumpers are used in combination to set the module baud rate.



*Warning - All modules in the network must be set to the same baud rate.*

- To set the baud rate insert a jumper where a 1 is shown in Table 2.

Jumper (4-6 of J1)			Baud Rate
4	5	6	
0	0	0	1200
0	0	1	2400
0	1	0	4800
0	1	1	9600
1	0	0	19200
1	0	1	38400
1	1	0	57600
1	1	1	115.2k

- The default setting is 115.2k (all jumpers ON).

## Module Address

[J2] Located in upper left (adjacent to Power Supply Plug P2), this jumper allows each module in a network to have a unique address.

Link the **J2** MODULE ADDRESS jumpers that add up to the address you require. For instance to get an address of 30 insert jumper links into positions labelled **16, 8, 4** and **2**. Example in figure 8 below shows an address of 7 ( $4+2+1 = 7$ ).

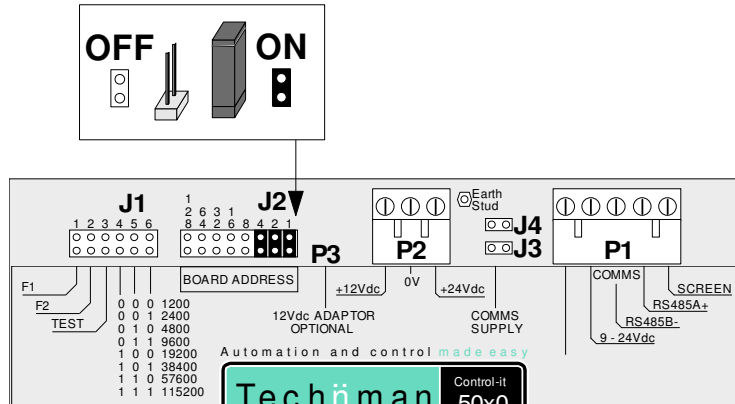


Figure 8 - showing module address set to 7

- The default setting is 7.

### Comms Supply

[J3 and J4] Located in upper centre (adjacent to Power Supply Plug P2), these are used to provide power to the communications section of the module.



**Warning** - If multiple modules are used, place jumpers on one module only (refer to **Connecting Multiple Modules** page 30).

J3 & J4 On – Communication section powered by module

J3 & J4 Off – Communication section isolated from module

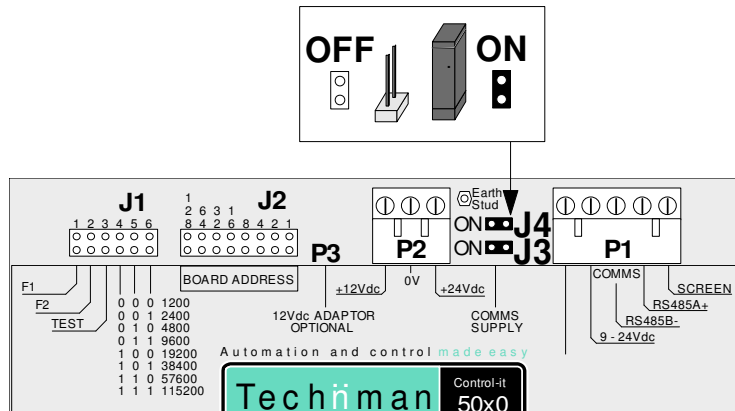


Figure 9 - Supplying power to the RS232 to RS485 converter.

- The default settings are Off (J3 & J4)

## Input Type

Located under Input Jumper Panel held by two plastic screws (adjacent to Input Terminal Blocks), these allow the input type to be configured for each channel.

The jumper configuration differs depending on whether a single-ended or differential module is used.

NB: The Input Jumper for each channel must match the Input Type stored in the **Control-it™ 5050's** non-volatile memory. For information on changing this memory setting refer to page 26.

- To change your input type, link the appropriate jumpers. (See Tables 3a & 3b below.)
- With single-ended modules, adjacent inputs use the same column of jumpers, but the I/P types may be mixed as desired.

Table 3a - Single-Ended Input Jumper Settings				
Input Range	Voltage -1V to +1V -10V to +10V		Temperature J, K, and T type	
	Even	Odd	Even	Odd (all off)
E			<b>ON</b>	
D	<b>ON</b>			
C		<b>ON</b>		
B	<b>ON</b>			
A				

Table 3b - Differential Input Jumper Settings				
Input Range	Voltage -1V to +1V -10V to +10V		Current 0 – 20mA 4 – 20mA	Temp J, K, and T type
	E			
D	<b>ON</b>		<b>ON</b>	
C	<b>ON</b>		<b>ON</b>	
B	<b>ON</b>		<b>ON</b>	
A			<b>ON</b>	

- 
- The default settings are -10V to + 10V (B, C and D On)

### **50/60Hz**

[LK7 & LK8] Located under the Front Panel (adjacent to Power lamp), LK10 is located to the left of the 44 pin IC. These links allow the rejection of mains supply noise according to the mains frequency in the user's country.

LK7, LK8 & LK10 Off – 50Hz

LK7 & LK8 & LK10 On – 60Hz

- The default setting is 50Hz (LK7, LK8 & LK10 Off).

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## RS485 Communications Connection

Data communication between **Control-it™ 5000** modules and the RS485 Interface can be made via 4 conductors and a screen connected as per fig 10 or 11.

- The comms section of each Control-it™ 5000 module is optically isolated from the processor section, to prevent ground loop problems. Therefore, the Comms Supply jumpers J3 & J4 must be set correctly (refer page 19).
- The recommended cable is shielded 4-core twisted pair, 22-24 AWG.
- A **120Ω** terminating resistor must be used across **RS485 A+** and **RS485 B-** in the last module if the communications cable exceeds 10m.

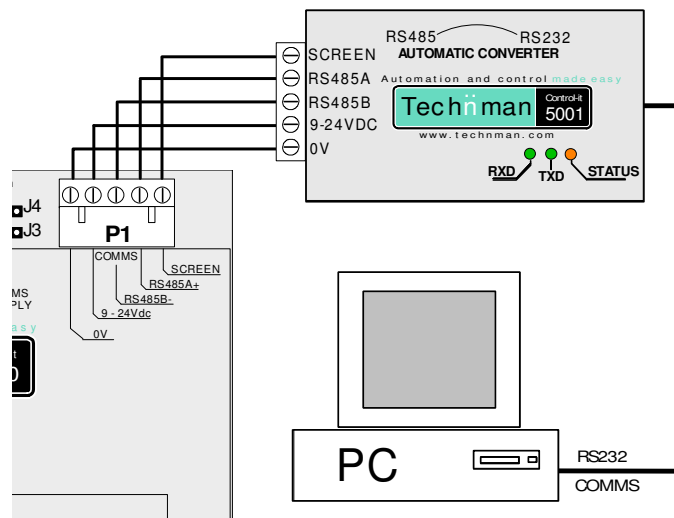


Figure 10 - RS485 connection to the 5001 converter.

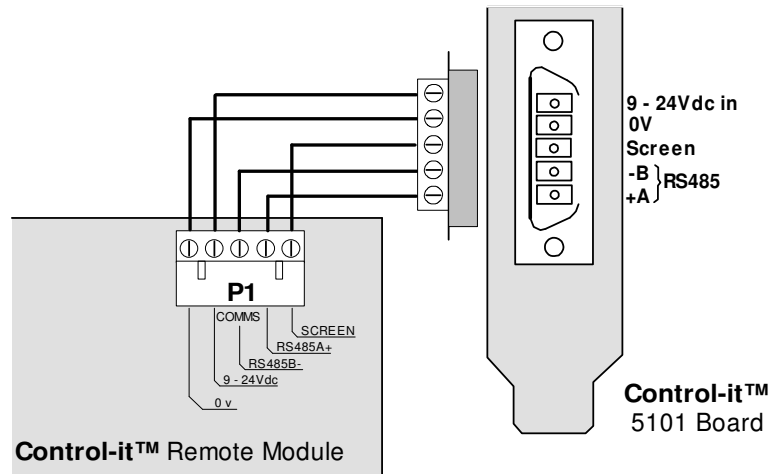


Figure 11 - RS485 connection to the 5101 PCI board.

## Conductor Descriptions

- Screen

The cable shield/screen protects the communication lines from RF interference. It should be connected to the termination plugs at both ends and connected via a jumper lead to an electrical ground at one end only

- RS485 A & B

These provide differential data transmission between modules. For best performance and to reduce RF interference these lines should always be a twisted pair.



*Warning - ensure that these conductors are correctly connected - A to A & B to B, as reversal will prevent operation.*

- 9-24Vdc

Supplies power to the **Control-it™ 5000** communication sections.

- 0V

Provides return for communication section supply power.



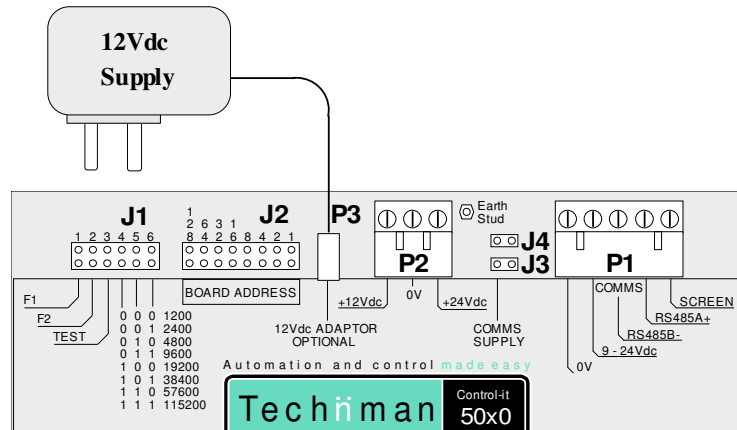


Figure 14 - 12Vdc power supply using the alternative power adapter.

- For big installations we recommend the use of two separate power supplies: one for the modules, communication sections and inputs, the other for heavy and inductive loads. This eliminates spikes to the module supply, minimising data corruption and data errors.
- Because of distance, number of modules and supply power etc. it is possible for the comms supply voltage to drop below 9Vdc at either end of the line. If this occurs we suggest you add another floating supply (not earthed) to the RS485 comms plug at the affected module.

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## Connecting Inputs & Outputs

Inputs and Outputs are connected to the **Control-it™ 5050** via the Termination Blocks along the lower edge of the module. Various input types can be connected so the user must configure the Input Type jumpers (refer page 20) and Input Type memory (refer below) to suit. In all cases ensure that the correct polarity is observed and input levels do not exceed the stated maximum levels.

### Input Type Non Volatile Memory

The input type selection is stored on the **Control-it™ 5050** in non-volatile memory and is retrieved by the module after each start-up.

To prevent incorrect operation, the input type must be set using the appropriate software command every time the Input Type Jumpers (refer page 20) are changed.

### 0-1 & 0-10 Voltage Inputs

Voltage inputs are connected in one of two ways, depending on the module configuration being used.

- Differential Inputs

Differential inputs use both input lines as signal lines (to improve noise performance), allowing a maximum of 8 separate inputs to be connected. They are connected between pins 1 & 3 of each channel as per figure 15.

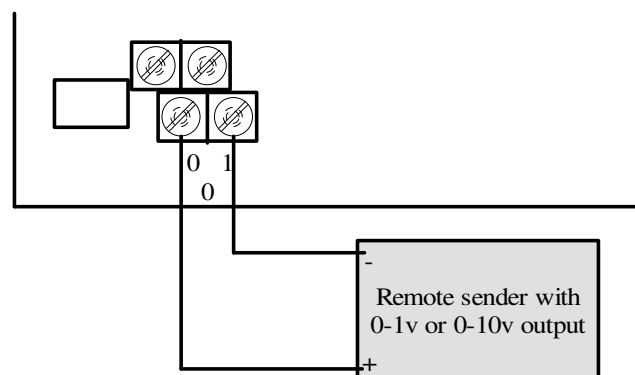
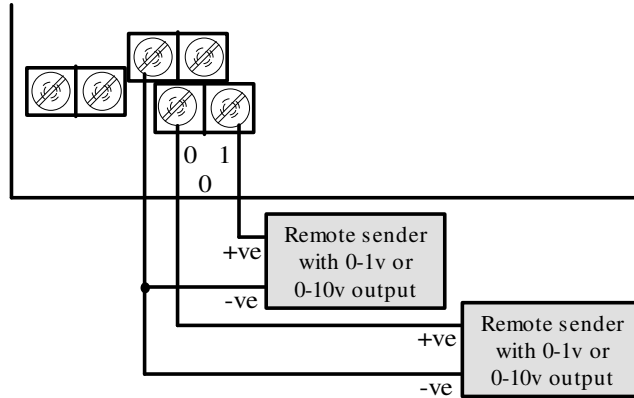


Figure 15 - Differential -1 to +1Vdc or -10V to + 10Vdc Inputs



- Single Ended Inputs

Single Ended inputs share a common ground (0V), allowing a maximum of 16 separate inputs to be connected. They are connected between pins 1 & 2 and 3 & 2 of each channel as per figure 16.

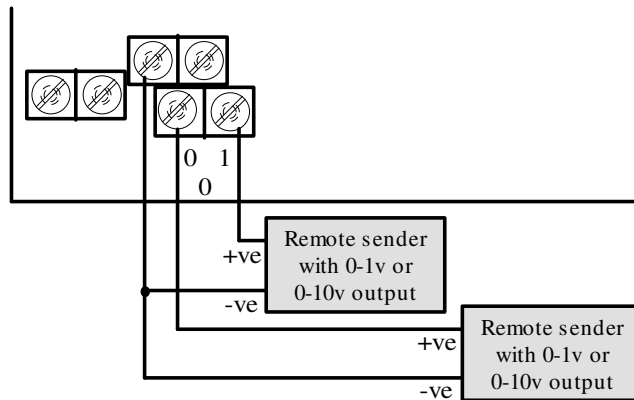


Figure 16 - Single Ended -1V to +1Vdc or -10V to +10Vdc Inputs

### ***J, K and T Temperature Inputs***

Temperature probes are connected in the same fashion as Differential Voltage inputs (refer page 26). If the probe has a screen it may be connected as per figure 17.

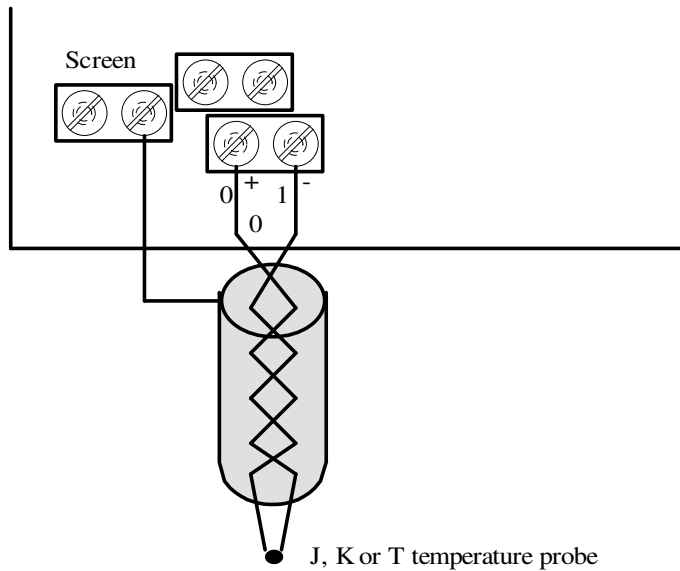


Figure 17 - Shows wiring J, K, or T temperature probe

### 0-20mA and 4-20mA Current Inputs

Current measurements may only be made with the Differential **Control-it™ 5050** module type. They are connected between pins 4 & 3 of each channel as per figure 18.

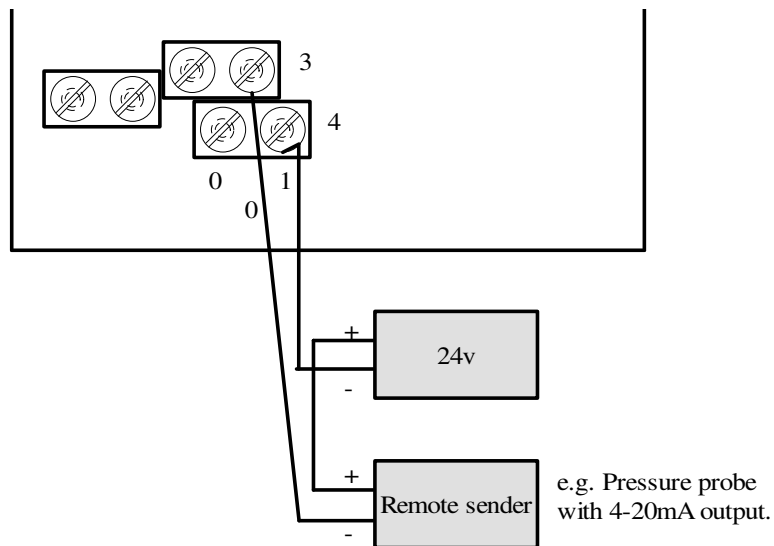


Figure 18 - Shows 4-20mA input

### 4 – 20mAmps Output

On modules with the optional 4-20mAmps Output fitted, external devices can be controlled by connecting them as per figure 19.

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The outputs are electrically isolated and therefore require a 12 or 24Vdc supply for power. The output level cannot be set without it.

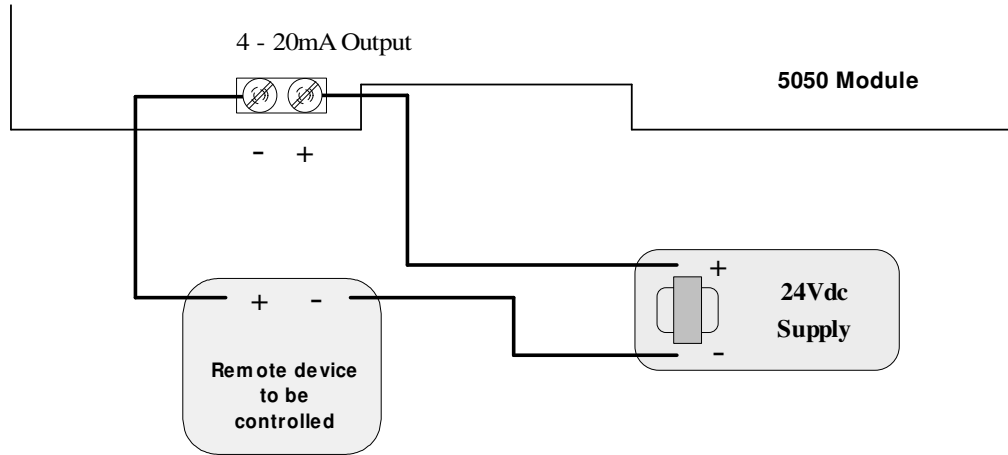


Figure 19 - Shows 4-20mA Output wiring.

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## ***Connecting Multiple Modules***

The **Control-it™ 5000 Series** allows multiple remote modules to be controlled by one computer.

- Up to 32 modules can be connected to a single serial port on your computer via the **Control-it™ 5001** converter and up to 31 modules via the **Control-it™ 5100** or **5101** high speed boards.
- The comms section of each module is connected in parallel (daisy chain) as in figure 20.
- Each module must be supplied with 12 or 24Vdc. This can be either a common supply to all modules as in figure 20, if the modules are close together, or separate supplies where the installation dictates.
- Only one module is used to supply power to the comms cable as described in ***Communication Section Supply*** (page 31).
- If power is lost on any of the modules (apart from the one that supplies the comms power) none of the other modules are affected.
- A module can also be unplugged or changed while the network is running without affecting the operation of the other modules.
- Each module must have a different address and if the Opto22 protocol is used, all baud rate settings must match.
- A **120Ω** terminating resistor must be used across **RS485 A+** and **RS485 B-** in the last module, if the communications cable exceeds 300m.

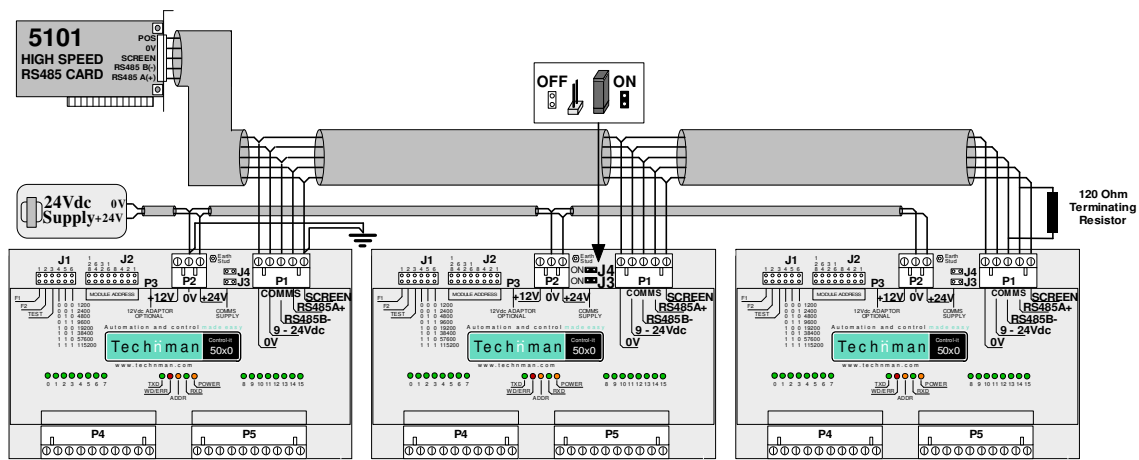


Figure 20 - Connection of multiple remote modules to a single **5101** board.

## ***Communication Section Supply***

To prevent differences in power between modules affecting data communication only one module is used to supply power to all the communication sections.

- Place jumpers J3 & J4 on the module closest to the centre of the RS485 network (by distance).
- Link 0V to Screen and Earth on this module
- Remove jumpers J3 & J4 from all other modules in the network.

---

## Installation

The modules can be installed in any of three ways:

- Screw mounted individually,
- DIN rail mounted with optional DIN rail base elements (Phoenix UM-BEFE 35),
- Stacked with optional stand-offs.

### Suggested cabinet installation

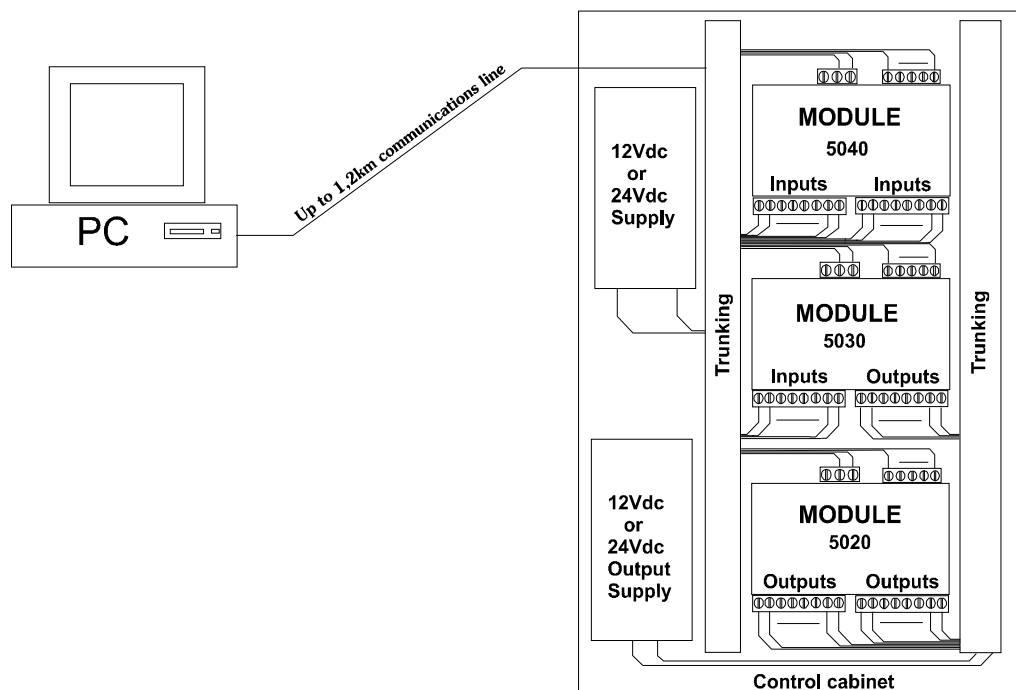


Figure 21 - Suggested cabinet installation

To eliminate any possible problems such as noise and spikes interfering with the working of the installation make sure the following suggestions are implemented:

- Wire all input, module and communication wiring to one side of the cabinet to eliminate spikes and noise from switched loads, being picked up by inputs, or possibly corrupting data.
- Wire all outputs switching inductive and heavy loads to the other side of the cabinet with a separate supply.

- 
- In wiring ducts keep sensor and communication wiring away from high current and inductive load wiring looms, which could cause false readings and communication errors.

## **Connectors**

Connections to the modules are made using Phoenix screw terminal plugs as supplied.

- All plugs used are of the **PHOENIX MSTB** range as per Table 4 and have UL, CSA, IEC and DIN VDE approval.
- The plugs are rated for:

Conductor size	24 – 12 AWG (0.2 – 2.5mm <sup>2</sup> )
Maximum Current	12A
Maximum Voltage	250V

Table 4 - <b>Phoenix Plugs</b>	
Use	Connector Type
RS485 (P1)	3 way MSTB 2,5/3ST
Power (P2)	5 way MSTB 2,5/5ST
Output (P4/P5)	10 way MSTB 2,5/10ST
Input (P4/P5)	12 way MSTB 2,5/12ST

---

## **Status LEDs and Error Codes**

5 LEDs across the centre of the module provide a quick indication of the modules' status.

Table 5 describes each LEDs' function.

<b>Table 5 - Module LED Functions</b>	
<b>LED</b>	<b>Function</b>
TXD	Green LED illuminates when module sends data to computer.
RXD	Green LED illuminates when data is received from computer.
ADDR	Orange LED flashes every time the module is addressed
POWER	Orange LED indicating if power is present
WD/ERROR	Red LED illuminates for 2 seconds every time the module resets on power up or in case of processor failure. The WD/ERROR LED also indicates communication errors, flashing the number of the error as per Table 6 - <b>Error Codes</b> .

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The communication error codes, as indicated by the WD/ERROR LED, are listed in Table 6.

The error code is dependant on the communication protocol being used.

<b>Table 6 - Error Codes</b>	
<b>Number of Flashes</b>	<b>Error</b>
<b>Opto22 mode</b>	
1	Undefined command.
2	Checksum error.
3	Buffer overrun. (Checked by interrupt routine)
4	Message time out. Not all bytes received.
5	Data Field Error.
6	Comm. Link Watchdog Timeout Error
7	Specified Limits Invalid
<b>High Speed mode</b>	
2	Checksum error.
4	Timed out – Not all bytes received.

---

## ***Troubleshooting***

### **Power light does not illuminate.**

- Check that the power supply to the module is present and not reversed.

### **Status light on Control-it™ 5001 does not come on**

- If the **Control-it™ 50x0** POWER LED is off see above.
- If **Control-it™ 50x0** POWER LED is on then check that the Comms Supply jumpers J3 and J4 are in place on one **Control-it™ 50x0** module.
- Check wiring from 5 way Comms connector to the **Control-it™ 5001**.

### **RXD light stays on**

- The RS485 A+ and B- wires are reversed.

### **CD-ROM will not auto-start**

- Double-click on My Computer.
- Right-click on your CD-ROM drive and choose 'Explore' from the drop-down menu.
- Double-click on 'Menu.exe'.

### **Windows 2000 does not install automatically.**

- Start in safe mode. Follow normal installation procedure.

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# Specifications

## **Physical Specifications**

Dimensions	172(w) x 120(h) x 30(d) (6.8"x 4.7"x 1.2"). DIN rail adaptor: add 32mm to depth (d).
Weight	316g
Operating temperature	0° to 50°C (32° to 122°F)
Storage temperature	-20° to 70°C (-4° to 158°F)
Humidity	15% to 90% relative non-condensing
Transmission Distance	1.2km

## **Electrical Specifications**

Power Supply	12V or 24Vdc. Voltage <u>must</u> not fall below 11.5V	
Maximum current draw excluding comms section	<b>12Vdc</b>	<b>24Vdc</b>
	79mA	51mA
Communication section current draw	22mA	
Comms isolation voltage	800V max transient	

## **Input Specifications**

Number of Inputs	8 differential or 16 single ended.	
Input Ranges (for more details refer page 15)	1Vdc, 10Vdc, 20mA, J, K & T Temp.	
Sampling rate	10 samples per second	
ADC type	MAX132 18bit multi-slope integrating	
ADC Resolution	Opto22	12 bit (1 in 4096)
	H/S	15 bit plus sign (1 in 32768)
Overall Accuracy	±2 bits	
Reference stability	2ppm/°C	
Total drift	20ppm of FSR/°C	
Noise rejection	Multi-slope integration with 50Hz or 60Hz (selectable).	
Input Impedance	210kΩ	

***Continued on next page.***

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Common mode rejection ratio. (Differential modules only). $V_{cm} = 10V$	1V range	0.09% of FSR typical
	10V range	0.009% of FSR typical
	20mA range	0.045% of FSR typical

### ***Output Specifications***

Number of Outputs		2 (Optional)
Output Ranges		4 – 20mA
Minimum Load		3.5mA
Minimum Operating Voltage		8Vdc
Output Settling Time		8mS
DAC Resolution	Opto22	12 Bit
	H/S	1 $\mu$ A
Offset Error		0.1%
Gain Error		0.2%

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## ***Glossary***

24AWG 50x0	24 gauge American Wire Gauge <b>Control-it™</b> 5020, 5030 or 5040
Baud Rate	Communication speed measured in bits per second
C	Common of power supply
COMMS	Abbreviation for Communication
CPU	Central Processing Unit
DTR	Data Terminal Ready
I/O	Input / Output
LED	Light Emitting Diode
NPN(Sinking)	Output switching to negative when active
PC	Personal Computer
PNP(Sourcing)	Output switching to positive when active
POS	Positive, +ve, Phase or Live of power supply
Position	A single Input or Output. Each remote module
Protocol	Communication language between units
RAM	Random Access Memory
Remote Module	<b>Control-it™</b> 5020, 5030 or 5040
RS232	Single ended serial communications port of PC
RS422	4 wire industrial communication standard
RS485	2 wire industrial communication standard
RS485 Interface	<b>Control-it™</b> 5001, 5100 or 5101 has 16 individual positions (0 to 15).
RTS	Ready To Send
RXD	Receive Data
TXD	Transmit Data

---

# Declaration of Conformity 2001

**Manufacturer's Name:** Technman Electronics Ltd  
**Manufacturer's Address:** PO Box 302 107, Auckland 1330, New Zealand

**declares that the product**

**Product name:** Control-it 5000 Series Distributed Input/ Output System  
**Model numbers:** 5001, 5005, 5006, 5007, 5020, 5030, 5040, 5050, 5100, 5101  
**Product options:** All

**conforms to the following product specifications:**

**Safety Regulations:** Low Voltage Directive 73/23/EEC 22 July 1993 and the UK Electrical Equipment Safety Regulations 1994.  
EN 60950:1992+A1+A2+A3- Primary Circuit/ Double insulation  
Model 5020- Primary circuit/ Reinforced insulation  
Except when these modules are incorporated into a larger mechanical device, in which case a responsible person must ensure that all appropriate safety regulations are met.

**EMC Regulations:** EMC Directive 89/336/EEC 3 May 1989 and 92/31/EEC 28 April 1992, article 10.1.  
EN 55022:1998 Class A device  
EN 55024:1998 I.T. Equipment  
EN 50082-2:1995 Generic Industrial Device

**The product herewith complies with the requirements of the following Directives and carries the CE marking accordingly:**

Low Voltage Directive 73/23/EEC  
EMC Directive 89/336/EEC

**The product was tested in a typical configuration with a personal computer system.**

**For compliance information contact:**

**Director**  
**Technman Electronics Ltd.**  
**PO Box 302 107**  
**Auckland 1330**  
**New Zealand**

or

**Quality Assurance Director**  
**Amplicon Liveline Ltd**  
**Centery Industrial Estate**  
**Hollingdean Road**  
**Brighton**  
**UK BN2 4AW**

**WARNING**

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Rev H