Models:
IMF4000: Controller Only
IMF420x: Controller with ISR4002 or 4
IMF430x: Controller with IPR4001, 2, 3, 4 or 5

IMF4x0x
Multifunction Controller

Specifications

Power Supply
Voltage: 24VAC ±10% @ 50/60Hz
Power Consumption: 6VA Max

Input
Pulsed Input: Two voltage free contacts.
Proportional: One 0-10VDC control signal.
Proportional: One 0-10VDC offset signal.

Outputs
- One 1V or 10VDC 10mA supply
- Two 0-10VDC control outputs
- One to five relay stages
- One N/O voltage free contact per stage (2 amps max)

Terminal Identification
1 Not used
2 Pulsed input UP contact.
3 Pulsed input DOWN contact.
4 External offset input for Proportional controller.
5 1V OR 10VDC (10mA supply).
6 Proportional controller 0-10VDC control input.
7 Proportional control 0-10VDC control output.
8 Pulsed input control 0-10VDC control output.
9 Common and 0VAC supply.
10 24VAC supply.

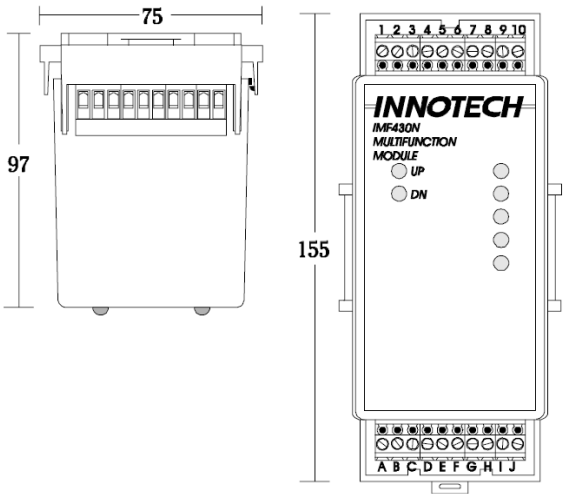
Relay Terminal Identification
A to J = One N/O voltage free contact per stage.

Temperature Ratings
- Storage: 0 to 50°C non condensing
- Operating: 0 to 40°C non condensing

Enclosure
Manufactured from an ignition resistant grade of ABS which meets the requirements of AS2420.
Colour: Grey.
Mounting: DIN rail mounted.

Installation
1. Mount controller in a dry and reasonably clean location free of excessive vibration.
2. Fit to DIN rail.
3. Wire in accordance with INNOTECH connection diagrams and local bylaws or refer to your local distributor.

Wiring
1. Earth one side of the 24VAC at the transformer.
2. Connect the EARTHED side of 24VAC to terminal 9.
3. DO NOT connect 24VAC to terminals 1 through 8.



Application
The INNOTECH range of multifunction controllers are designed for applications requiring interfacing between systems using different input and output signals. They are available as a pulse input and proportional controller only or with any of the INNOTECH IPR or ISR relay cards fitted in the same enclosure.

The pulse input section provides a 0-10V DC control signal output that can be caused to increase or decrease by closing the floating contacts on units such as head pressure and suction pressure controls.

The proportional controller section provides a 0-10V DC time integrated control output from a variable DC voltage input. An offset voltage can be applied from either the fixed internal or a variable external source to add to or subtract from the input signal. The IMF is ideally suited for interfacing between systems with different starting and control span voltages:

e.g. 6-9V DC in = 0-10VDC out.
0-10VDC in = 6-9VDC out.
0-10VDC in = 10-0VDC out.

Features
Pulsed Input Section
- Separate inputs for step up and step down
- Adjustable DELAY RATE to ensure that the controller does not respond to transient changes

Proportional Controller
- PB adjustable over two ranges of 0.2-2.0VDC and 1-10VDC
- Can be configured for DIRect or REVerse operation
- OFFSET adjustment of 0-10VDC can either add to or subtract from the input
- Offset source can be set to either INTernal or EXTernal
- Ramp Up and Ramp Down times separately adjustable
- Interface to a wide range of devices that use a DC voltage Control Signal
- The INNOTECH enclosure saves space and reduces installation time

Approved
The IMF4x0x conforms to the requirements for RCM labelling.

Because the IMF range of controllers can be produced in a number of configurations, it is necessary to order the specific model from the factory.

Proportional Controller Operation

The input to the proportional controller is 0-10V DC. It may be either positive or negative with respect to terminal 9.
The “DIR” and “REV” links, select Direct Acting (positive in - positive out) or Reverse Acting (negative in - positive out).

Proportional Band

The PB setting is adjustable over two ranges selected by the PB WIDE link adjacent to the PB pot:

- narrow 0.2 to 2.0V DC PB WIDE Link Open
- wide 1.0 to 11V DC PB WIDE Link Closed

This is the change in input voltage required to cause a 10 V change in output voltage at terminal 7.
The PB is set by adjusting the PB pot. The setting on the pot is linear so the PB setting can be estimated from the markings on the pot as each division on the pot is approximately 1VDC in WIDE PB and 0.2VDC in NARROW PB.

Offset

The source of the offset voltage is link selectable to either an internal +10V DC or an external variable DC voltage input to terminal 4. The OFFSET adjustment sets the proportion of the offset signal source that is added to or subtracted from the Control Signal input.

The internal or external offset is adjustable via the “OFFSET” potentiometer. The amount of offset can be estimated from the markings on the pot as each division on the pot is 10% of the offset voltage.

The polarity of the offset voltage can be reversed so that it is subtracted from the input signal by opening the “NEG” link.

Pulsed Input Controller Operation

The pulsed input controller uses closure of separate normally open contacts to control the up or down ramping of the output control voltage on terminal 8.

While both contacts are open, the voltage at terminal 8 hold sits value. The output may drift slightly if more than 5 minutes elapses between contact closures, but in normal operation any drift will be corrected by the control action of the system.
When the contact connected to terminal 2 closes, it causes the voltage at terminal 8 to ramp UP. When the contact connected to terminal 3 closes, it causes the voltage at terminal 8 to ramp DOWN.

Pulsed Input Delay Rate

The delay rate is adjustable over a range from 24 to 240 seconds by the DELAY RATE pot. This is the time for the output to change the full 10V when ramping up or down. The delay is increased by rotating the pot clockwise.

Relay On/Off Voltages

The IMF4202 and IMF4204 models use the field adjustable INNOTECH ISR relay cards.

The on and off voltages for each relay are separately adjustable via the ON and OFF potentiometers on the ISR4002 or ISR4004 relay card. For further information see DS 3.21.

The IMF4301 through IMF4305 models use the preset INNOTECH IPR relay cards which require no field adjustment. For further information see DS 3.11.

The ON/OFF voltages for the relays are spread evenly across a 0-10V DC span.

Relay Indication

The status of each relay is indicated by a red LED. The relay is energized and its contact is closed when the LED is lit. The relay contacts are electrically isolated from the driver circuit.

Din Rail Mounted Enclosure

The INNOTECH enclosure was designed to provide tight positive locking to varying thicknesses of DIN rail. When fitting to thick DIN rail, it may be necessary to remove the packing tabs on the back of the base.
Lugs on each side of the base ensure that correct spacing is maintained between units on the same DIN rail.

Relay Terminal Allocation

Model	Terminal Identification					
	Stage 1	Stage 2	Stage 3		Stage 4	
	N/O	N/O	N/O	N/C	N/O	N/C
4202	A-B	C-D				
4204	A-B	C-D	E-F	F-I	G-H	H-J

Terminal I is N/C contact of Stage 3, with F as common.
Terminal J is N/C contact of Stage 4, with H as common.

Relay Terminal Allocation

Model	Terminal Identification				
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
4301	A-B				
4302	A-B	C-D			
4303	A-B	C-D	E-F		
4304	A-B	C-D	E-F	G-H	
4305	A-B	C-D	E-F	G-H	I-J

Please Photocopy This Sheet And Record Your Requirements On It.

Options Sheet for Ordering IMF Controllers

Model — **Office Use Only**

- ☐ IMF4000 = ISP4001 Signal Processor Controller card only. ☐
- ☐ IMF4202 = ISP4001 Signal Processor card with an ISR4002 Relay card. ☐
- ☐ IMF4204 = ISP4001 Signal Processor card with an ISR4004 Relay card. ☐
- ☐ IMF4301 = ISP4001 Signal Processor card with an IPR4001 Relay card. ☐
- ☐ IMF4302 = ISP4001 Signal Processor card with an IPR4002 Relay card. ☐
- ☐ IMF4303 = ISP4001 Signal Processor card with an IPR4003 Relay card. ☐
- ☐ IMF4304 = ISP4001 Signal Processor card with an IPR4004 Relay card. ☐
- ☐ IMF4305 = ISP4001 Signal Processor card with an IPR4005 Relay card. ☐

Relay Signal Source

- ☐ Pulsed Input Controller on ISP4001 card (terminal 8). ☐
- ☐ Proportional Controller on ISP4001 card (terminal 7). ☐

Proportional Controller Options

Input - Output action ☐DIRect ☐REVerse ☐

PB WIDE (1-10VDC in = 10VDC out) (0.2-2VDC in = 10VDC out) ☐Link ☐No Link ☐

Input Voltage Range from ____VDC to ____ VDC for an ☐
Output Voltage Range from ____VDC to ____ VDC. ☐

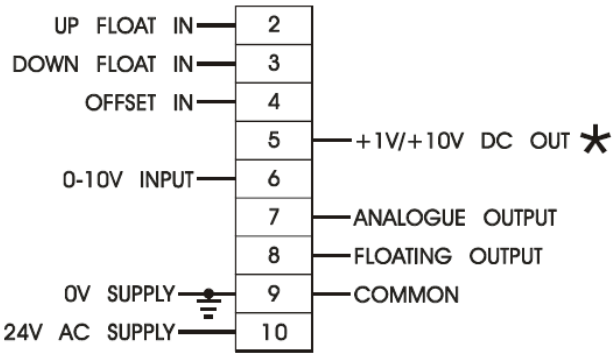
OFFSET source ☐INTernal ☐EXTernal ☐
voltage _____V ☐

NEG Polarity (+ in = + out) (+ in = - out) ☐Link ☐No Link ☐

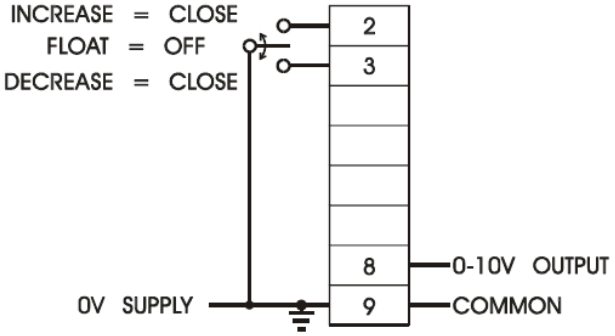
Voltage Source (terminal 5) ☐1VDC (link) ☐10VDC (no link) ☐

STANDARD CONNECTION

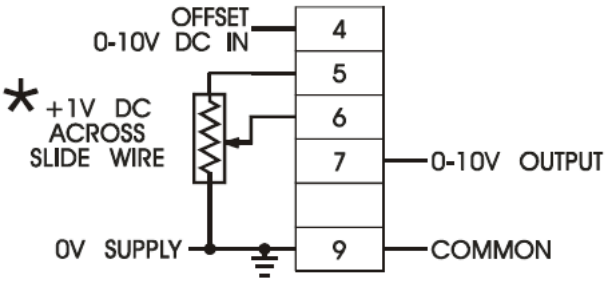
IMF40xx



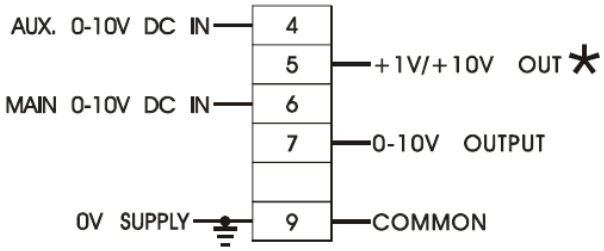
FLOATING CONTROL



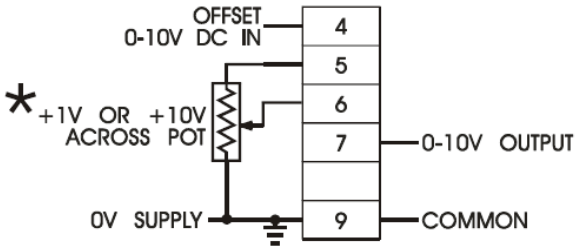
135 OHM SLIDE WIRE



DIFFERENCE AND SUMMING CONTROL



1000 OHM POTENTIOMETER



* Requires internal jumper changes for 1V or 10V

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