

Humidistat I/O Installation & User Guide



For Products: -

**PR0444
PR0445 (Display)**



Authorised User No. 00181



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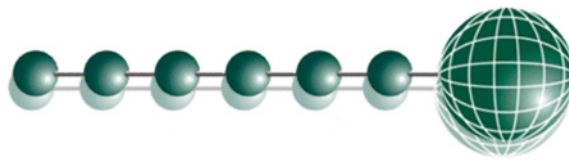


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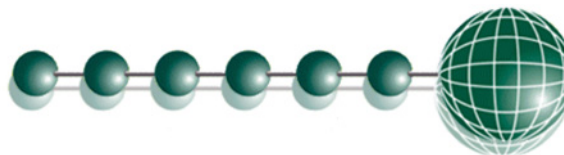
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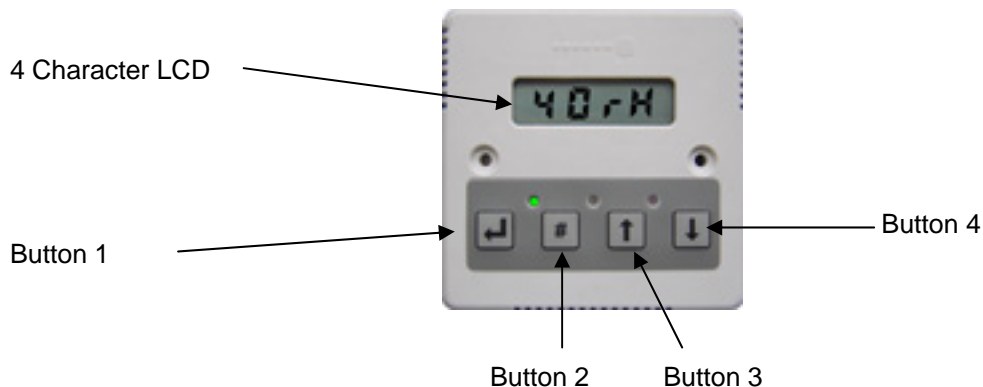
Humidistat I/O

From Resource Data Management

Types

This controller is pre-configured as a Remote I/O unit. It has no intrinsic function, its inputs and outputs are available to be used by the Data Builder program in a Data Manager or Data Director.

Front Panel Features



Display:

The display fits a standard UK single socket patress. The display values can be selected by changing the "display" parameter.

Buttons:

Button 1 , 2 ,3 and 4 are available for use.

Network LED:

Green LED used to indicate network Status:

- Off No network attached
- Flashing Attempting to Log on to network
- Steady On-line

LEDs:

The amber and red LED's are available for use.

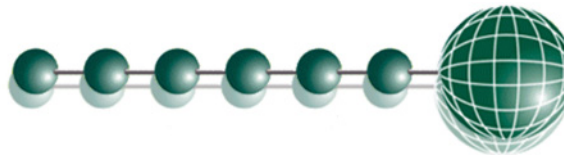
Inputs

There are 4 input channels: -

1. Probe, Humidity, 4-20mA or Voltage CT
2. Probe, Humidity, 4-20mA or Voltage CT
3. Probe or Voltage CT
4. Probe or Voltage CT



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Humidistat Installation & User Guide

Connections

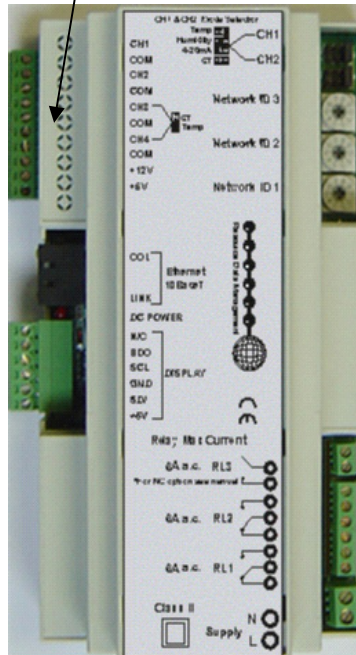
Analogue Inputs

- Channel 1 Input
- Channel 1 Ground
- Channel 2 Input
- Channel 2 Ground
- Channel 3 Input
- Channel 3 Ground
- Channel 4 Input
- Channel 4 Ground

Display Connector

- Not Connected
- SDO (Data Out)
- SCL (Clock)
- GND
- SDI (Data In)
- +5V (Vcc)

Remove plastic cover for CH 3 and CH4 Jumpers



- CH1 Jumper
- CH2 Jumper
- Network ID Switch 3
- Network ID Switch 2
- Network ID Switch 1

Relays

- Relay 3 Normally Open
- Relay 3 Common
- Relay 2 Normally Open
- Relay 2 Common
- Relay 2 Normally Closed
- Relay 1 Normally Open
- Relay 1 Common
- Relay 1 Normally Closed

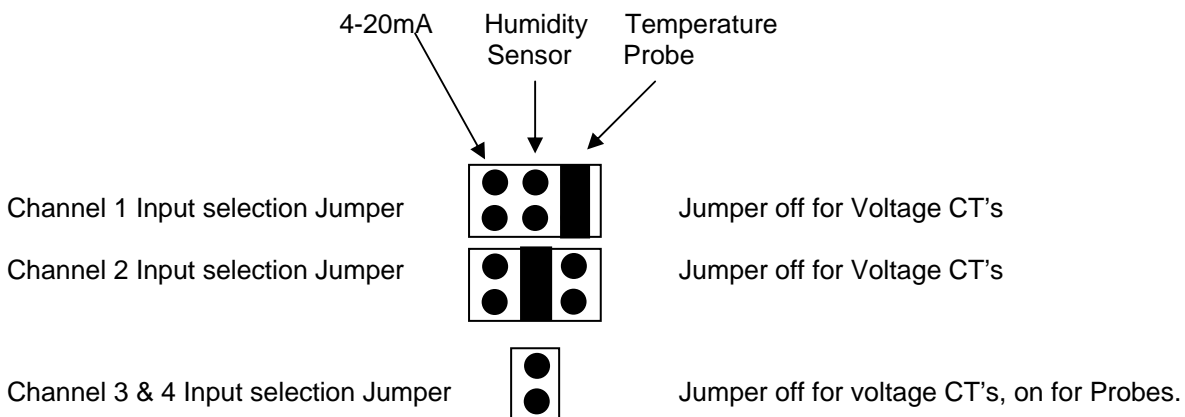
Mains Neutral
Mains Live

Do not connect an earth.

Display Connection:

Controller	Display
SDO (Serial Data Out)	Data In
SCL (Serial Clock)	Clock
GND	GND
SDI (Serial Data In)	Data Out
+5V (Vcc)	Vcc

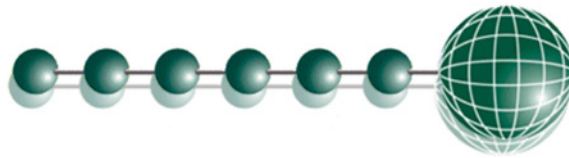
Inputs Jumper Settings:



Note: It is very important for the normal operation of the Humidistat controller that these jumpers are set to the correct position for the inputs being used.



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Setting up the controller

Access to the controller can be achieved by 2 ways

- Through the front mounted buttons on the display
- Through the RDM Data Director or Data Manager

Setup Mode

Setup through front buttons



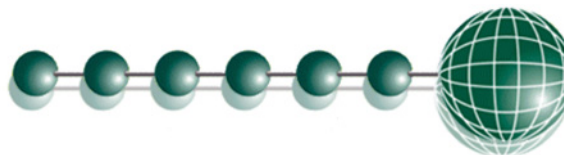
To enter the setup mode, hold the **Enter** and **Down** buttons together for approximately 3 seconds until the message “Ent” appears on the display. Now press the Enter button again to enter the function menu. IO will be displayed. Scroll up or down to go through the menu items.

Setup Function Menu

Display	Option	Explained in Paragraph
IO	View Input and Output States	IO
Unit	View or change Units and Probe types	Unit
tyPE	View controller type	type
rtc	View or change the Real Time Clock	RTC
nEt	View or change the network settings	Net
SoFt	View the Software version	
ESC	Escape the menu	



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Recommended set-up method

type.View controller type

- a. From the function menu scroll to select type, press enter

This controller has 1 type only and it cannot be changed.

Unit. Set/view temperature unit and Probe type

From the function menu scroll to select Unit

Press enter and the value will be displayed: -

Probe Types

- 0 = PT1000 °C
- 1 = PT1000 °F
- 2 = NTC2K °C
- 3 = NTC2K °F
- 4 = NTC2K25°C
- 5 = NTC2K25°F

Use the up or down keys to select the units and press enter.

Not that the Display temperature sensor is fixed as a PT1000 type.

Probe type and units are now set

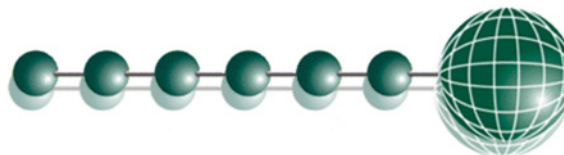
rtc. Real time clock (This will automatically synchronise on network systems)

- a. Use the up or down buttons to scroll through the display until the display reads "rtc"
- b. Press enter. The display will show "t-1". press enter again
- c. Scroll hours up or down (0 – 23) press enter
- d. Use up button to select "t-2", press enter
- e. Scroll minutes up or down (0 – 59) press enter
- f. Repeat for t-3 (seconds 0 – 59)
- g. Repeat for t -4 (Days up to 31)
- h. Repeat for t -5 (months up to 12)
- i. Repeat for t -6 (Year up to 99)
- j. Use up button to display "ESC", press enter to display "rtc"

Time clock is now set



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Network Configuration

The final section to setup is the network ID. In all instances, this must be done before the controller is connected to the site network. Set the 3 rotary network switches to an appropriate setting, the controllers have an auto-initialise function, which will automatically log the device onto the site network. If the wrong ID has been entered onto the network, you will have to reset the controller ID by setting the ID to 0-0-0, power cycle and then re-enter the correct ID.

This controller does not require an external communications module.

IP-L (Local IP Address)

To configure the controller for IP-L, set all three rotary switches to zero.

1. nEt. From the function menu you can now select nEt
 - Press enter and the display will show "IP-L", press enter
 - You can now set the address using the table below

Display	Option
IP-1	IP Address byte 1
IP-2	IP Address byte 2
IP-3	IP Address byte 3
IP-4	IP Address byte 4
nL	Network Mask Length
gt-1	Gateway Address byte 1
gt-2	Gateway Address byte 2
gt-3	Gateway Address byte 3
gt-4	Gateway Address byte 4
ESC	Exit network menu. N.B. this option must be selected to save any changes made in this menu

IP-r (IP Address issued by the DHCP server)

To configure the controller for IP-r, set the three rotary switches to give each controller a unique identifier. The controller should then be connected to the network.

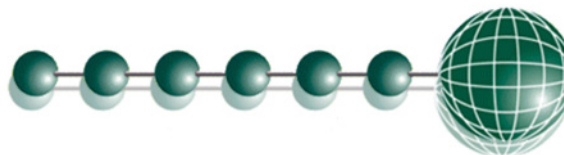
2. nEt. From the function menu you can now select nEt
 - Press enter and the display will show "IP-r", press enter
 - You can now view only the address given by the DHCP server

To ease setup, a single network mask length value is used. If the address has been specified with a network mask value in dotted IP format e.g. 255.255.255.0 then the table below gives the conversion:

Mask	Length	Mask	Length	Mask	Length
		255.255.254.0	23	255.254.0.0	15
255.255.255.252	30	255.255.252.0	22	255.252.0.0	14
255.255.255.248	29	255.255.248.0	21	255.248.0.0	13
255.255.255.240	28	255.255.240.0	20	255.240.0.0	12
255.255.255.224	27	255.255.224.0	19	255.224.0.0	11
255.255.255.192	26	255.255.192.0	18	255.192.0.0	10
255.255.255.128	25	255.255.128.0	17	255.128.0.0	09
255.255.255.0	24	255.255.0.0	16	255.0.0.0	08



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Operation:

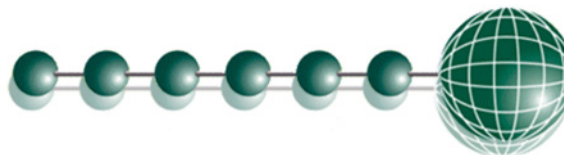
There is no intrinsic function in this controller.

Below is a list of the relevant Input and Output commands for use with the Data Builder

Values for analogue input block values:	Temperature	<i>returns display temperature sensor value</i>
	Humidity	<i>returns display humidity sensor value</i>
	Temperature 1	<i>returns Channel 1 probe value</i>
	Temperature 2	<i>returns Channel 2 probe value</i>
	Temperature 3	<i>returns Channel 3 probe value</i>
	Temperature 4	<i>returns Channel 4 probe value</i>
	Channel 1 CT	<i>returns Channel 1 CT value</i>
	Channel 2 CT	<i>returns Channel 2 CT value</i>
	Channel 3 CT	<i>returns Channel 3 CT value</i>
	Channel 4 CT	<i>returns Channel 4 CT value</i>
	Humidity 1	<i>returns Channel 1 humidity value</i>
	Humidity 2	<i>returns Channel 2 humidity value</i>
	Chan 1 (4-20)	<i>returns Channel 1 4-20mA % value</i>
	Chan 12 (4-20)	<i>returns Channel 2 4-20mA % value</i>
	Button 1	<i>returns Button 1 value 0=off, 1=on</i>
	Button 2	<i>returns Button 2 value 0=off, 1=on</i>
	Button 3	<i>returns Button 3 value 0=off, 1=on</i>
	Button 4	<i>returns Button 4 value 0=off, 1=on</i>
Values for Digital Input block values:	Plant 1	<i>returns Plant 1 status (0V return = on)</i>
	Plant 2	<i>returns Plant 2 status (0V return = on)</i>
	Plant 3	<i>returns Plant 3 status (0V return = on)</i>
	Plant 4	<i>returns Plant 4 status (0V return = on)</i>
Values for Digital Output block values	Relay 1	<i>controls relay 1</i>
	Relay 2	<i>controls relay 2</i>
	Relay 3	<i>controls relay 3</i>
Values for Analogue Out block values	Display 1	<i>Sends value to display 1</i>
	Display 2	<i>Sends value to display 2</i>
	Display 3	<i>Sends value to display 3</i>
	Led State	<i>0 = Red and Amber Led's off</i>
	Led State	<i>1 = Red LED on</i>
	Led State	<i>2 = Amber LED on</i>
	Led State	<i>3 = Amber and Red LED's on</i>
	Button 1	<i>0 = Falied to read button 1</i>
		<i>2 = Read button 1 ok</i>
	Button 2	<i>0 = Falied to read button 2</i>
		<i>2 = Read button 2 ok</i>
	Button 3	<i>0 = Falied to read button 3</i>
		<i>2 = Read button 3 ok</i>
	Button 4	<i>0 = Falied to read button 4</i>
		<i>2 = Read button 4 ok</i>



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Viewing

Apart from setting up the controller, you can also view the status of the inputs and outputs.

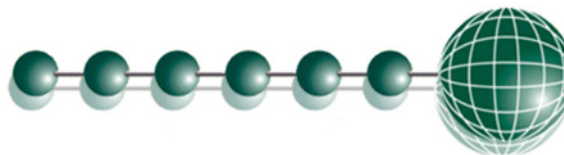
1. IO. View Inputs / Outputs and States
 - a. From the function menu, select "IO", press enter
 - b. You can now scroll through the IO tables as set out below. The tables you view will depend on the controller type configuration.

Input/Output

Number	IO	Range (dependant on probe type) °C (°F)	Step	Units
I-10	Temperature (Display)	-59 - 120 (-74 - 248)	1	Deg
I-11	Humidity (Display)	0 - 99	1	%rH
I-30	CH 1 Temperature	-40 - 120 (-40 - 248)	1	
I-31	CH 2 Temperature	-40 - 120 (-40 - 248)	1	
I-32	CH 3 Temperature	-40 - 120 (-40 - 248)	1	
I-33	CH 4 Temperature	-40 - 120 (-40 - 248)	1	
I-41	CH 1 CT	0 - 100	1	
I-42	CH 2 CT	0 - 100	1	
I-43	CH 3 CT	0 - 100	1	
I-44	CH 4 CT	0 - 100	1	
I-50	CH 1 Humidity	0 - 100	1	
I-51	CH 2 Humidity	0 - 100	1	
I-60	CH 1 4-20mA	0 - 100	1	
I-61	CH 1 4-20mA	0 - 100	1	
O-01	Relay 1	0 = off, 1 = on	1	-
O-02	Relay 2	0 = off, 1 = on	1	-
O-03	Relay 3	0 = off, 1 = on	1	-
S-01	Control State	0 = off 1 = Stablise 2 = Normal	-	-



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Specification

Power requirements:

Supply Voltage Range:	100 - 240 Vac \pm 10%
Supply Frequency:	50 - 60 Hz
Maximum supply current:	0.2 Amp (Not including Relay current)
Typical supply current:	<0.1 Amp (Not including Relay current)
Operating temperature range:	+5°C to +50°C
Operating Humidity:	80% maximum
Storage temperature range:	-20°C to +65°C
Environmental:	Indoor use at altitudes up to 2000m, Pollution Degree 1, Installation Category II. Voltage fluctuations not to exceed \pm 10% of nominal voltage
Size:	
Weight:	
Safety:	EN61010
EMC:	EN61326; 1997 +Amdt. A1; 1998
Ventilation:	There is no requirement for forced cooling ventilation
Class 2 Insulation:	No protective Earth is required and none should be fitted.

The host equipment must provide a suitable external over-current protection device such as: -

Fuse:	3A 240 Vac Antisurge (T) HRC conforming to IEC 60127
Or MCB:	3A, 240 VAC Type C conforming to BS EN 60898

The host equipment must provide adequate protection against contact to hazardous live parts.

Relays

Relay 1: contacts: - N/C, N/O and Common

Max current relay 1:	6A (non inductive)
Max Voltage relay 1:	260Vac (external supply)

Relay 2: contacts: - N/C, N/O and Common

Max current relay 2:	6A (non inductive)
Max Voltage relay 2:	260Vac (external supply)

Relay 3: contacts: - N/O and Common

Max current relay 3:	6A (non inductive)
Max Voltage relay 3:	260Vac (external supply)

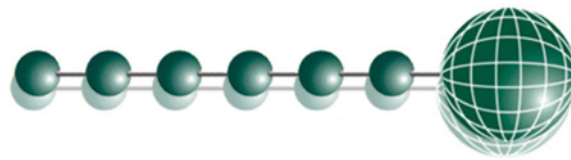
For compliance with the LVD, supplies to all three relays must be the same voltage.

Inputs:

CH1:	Selectable, PT1000 (also used for Digital), 4-20mA, Humidity Sensor or CT
CH2:	Selectable, PT1000 (also used for Digital), 4-20mA, Humidity Sensor or CT
CH3:	Selectable, PT1000 (also used for Digital) or CT
CH4:	Selectable, PT1000 (also used for Digital) or CT

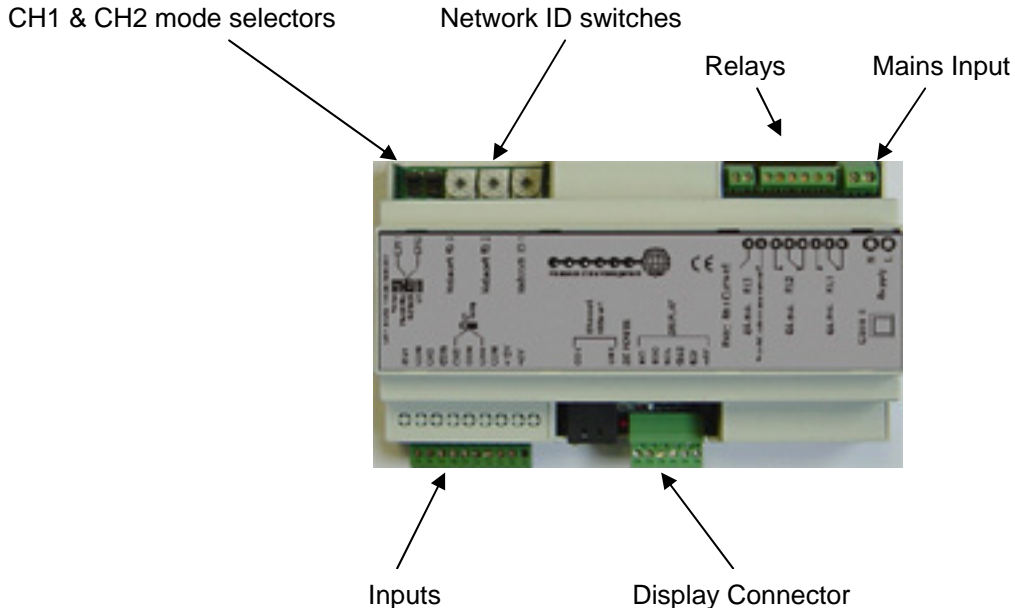


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Installation:

Wiring:



Fixing:

The Humidistat Display is designed to fix on to a single socket patress, either wall or flush mount.

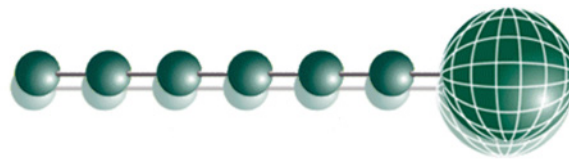
The Humidistat Controller fits a standard DIN rail, or the clips can be extended to allow for a surface screw fixing.

Clearances:

There are no clearance rules associated with this controller.



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Fuse:

The host equipment must provide a suitable external over-current protection device such as: -

Fuse: 1A 110Vac or 240 Vac Antisurge (T) HRC conforming to IEC 60127
Or MCB: 1A, 110Vac or 240 Vac Type C conforming to BS EN 60898

Cleaning:

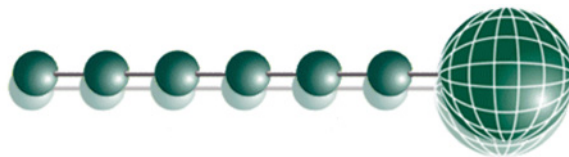
Do not wet the controller when cleaning. Clean the top by wiping with slightly dampened lint free cloth.

Disclaimer:

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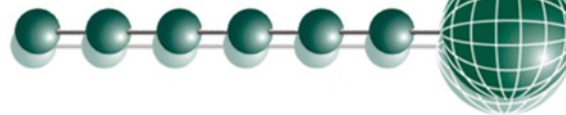
Appendix 1

Apparent Temperature for Values of Room Temperature and Relative Humidity

	0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%
115	103	107	111	115	120	127	135	143	151								
110	99	102	105	108	112	117	123	130	137	143	151						
105	95	97	100	102	105	109	113	118	123	129	135	142	149				
100	91	93	95	97	99	101	104	107	110	115	120	126	132	136	144		
95	87	88	90	91	93	94	96	98	101	104	107	110	114	119	124	130	136
90	83	84	85	86	87	88	90	91	93	95	96	98	100	102	106	109	113
85	78	79	80	81	82	83	84	85	86	87	88	89	90	91	93	95	97
80	73	74	75	76	77	77	78	79	79	80	81	81	82	83	85	86	86
75	69	69	70	71	72	72	73	73	74	74	75	75	76	76	77	77	78
70	64	64	65	65	66	66	67	67	68	68	69	69	70	70	70	70	71

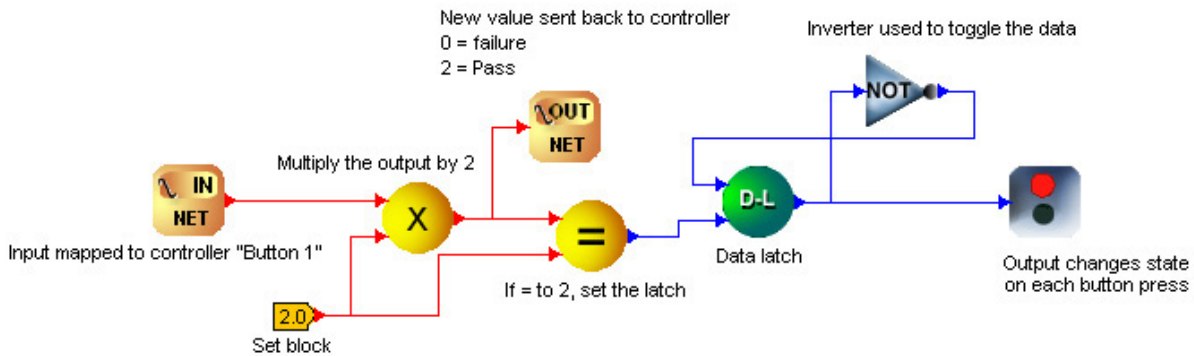


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Appendix 2 Data Builder Examples

Example of button use in the Data Builder: -



An "Analogue In" block is used to obtain the button value from the controller. The button value is 0 when the button is not pressed. When the button is pressed, the Humidistat display will indicate "tdb1" (for button 1). A value of 1 is now sent to the Data Builder. The Data Builder program multiplies this value by 2 and sends the result (2 if it reads successfully) back to the controller via the "Analogue Out" block. When the controller receives this value, it indicates Pass (or fail if it doesn't get a 2 back). The output of the multiply block is connected to an equals block, and when the output is 2, the equals block outputs a true condition. This true condition (Logic 1) is used to clock the "D Latch". The "D Latch" and the "Not gate" are arranged as a toggle function hence at each button press, the output of the "D Latch" changes state.



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