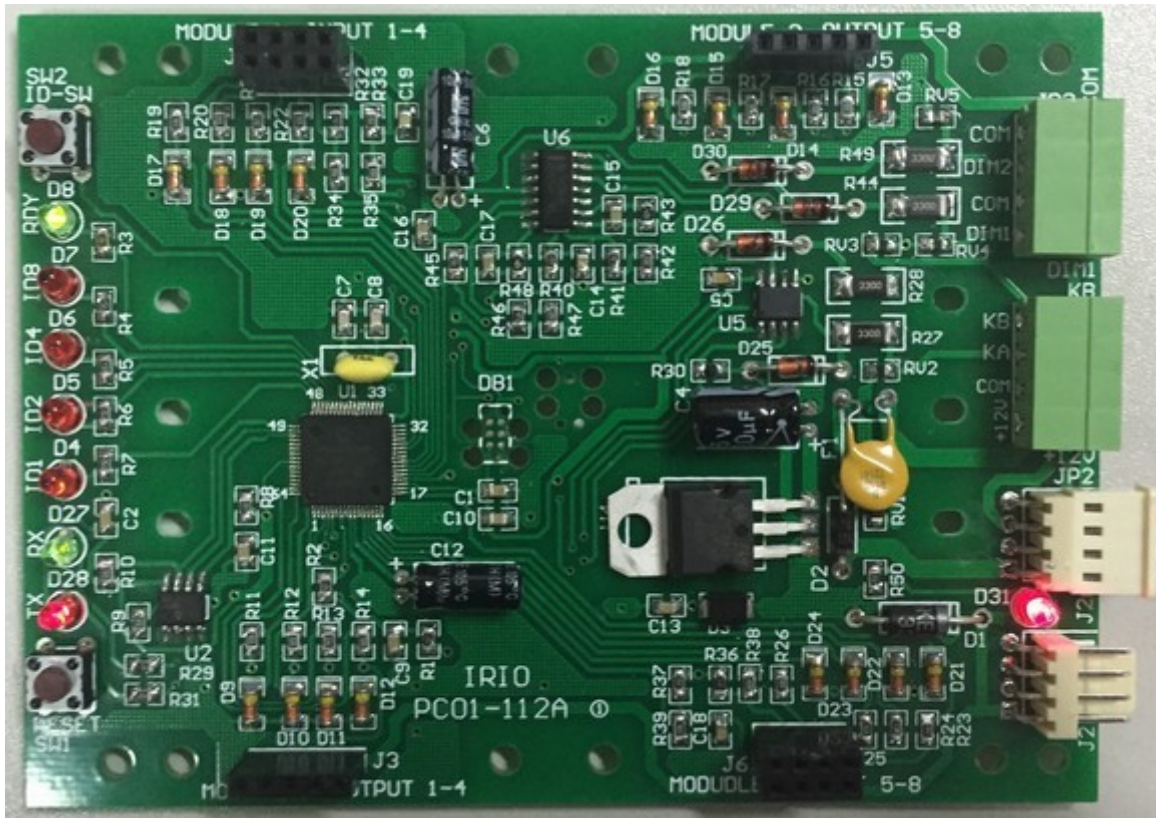


Introduction

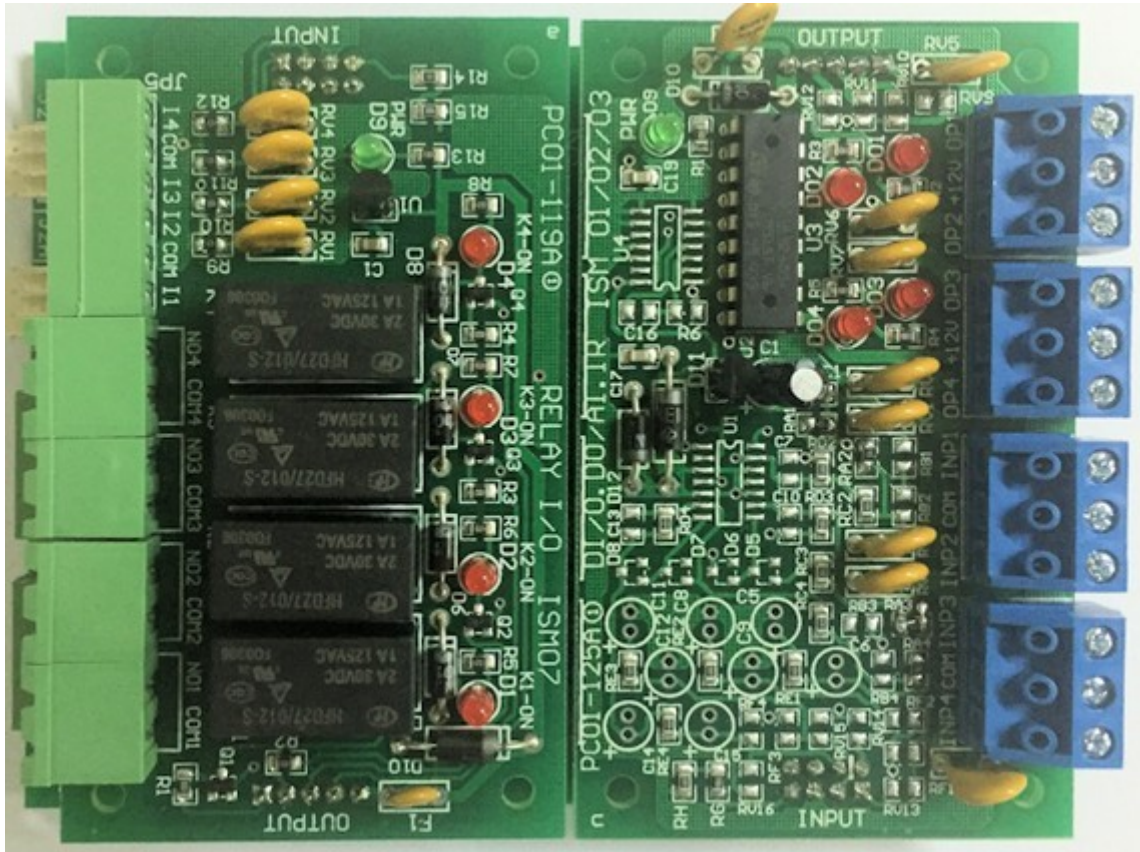


IRIO without submodules

The IRIO01 or Intelligent Remote Input/Output Module is a general purpose automation module capable of digital I/O, Analog I/O (0-10V), temperature sensing, control of HVAC with different fan speeds, Blinds, Infrared, and two way switch lighting control. An IRIO has the flexibility to be configured for a variety of automation functions by plugging in a selection of submodules into 2 slots. The IRIO base board includes 2 Analog 0-10V outputs m(IRIO02 has 4 Analog Outputs)

The IRIO handles automation functions in way that is easy to program and reduces wiring. Up to 15 IRIOs can be installed in a system which can be controlled by Comfort, Logic Engine or the UCM/Logic Controller. The IRIO can be used in stand-alone mode when no control from other systems or other IRIOs is required.

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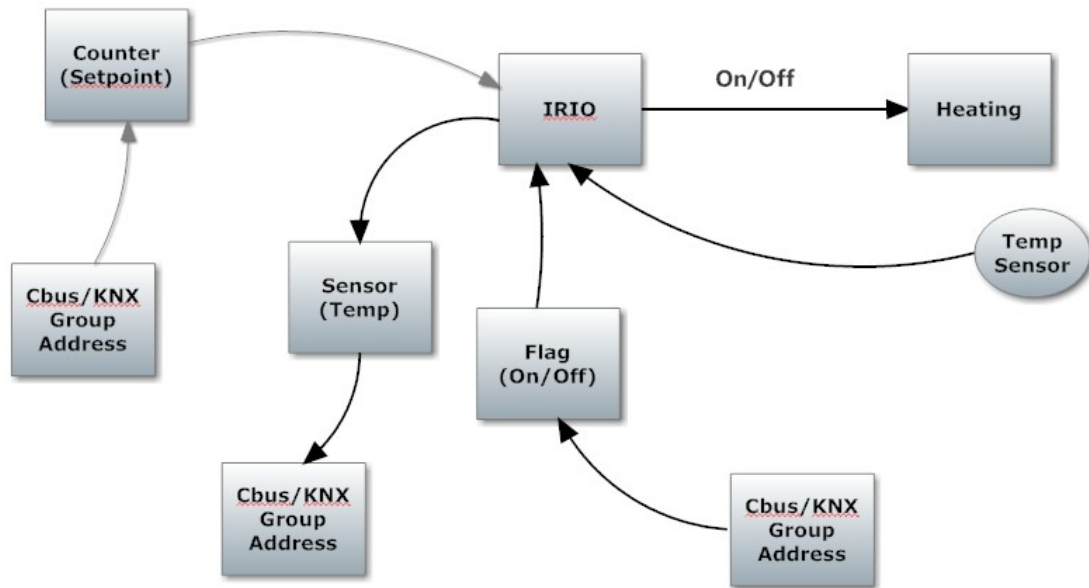
IRIO with ISM01 and ISM07 Submodules

Mapping to Counters, Flags and Sensors

Instead of programming Responses and Actions, Functions are selected, and mapped to Comfort registers like Flags, Counters and Sensors. For example, the Heating or Cooling function works by assigning the setpoint to a Counter and temperature to a Sensor Register. Setting a value into a Counter changes the setpoint, and comparing the temperature in the sensor register allows the IRIO to decide whether to turn on the heating/cooling relay.

The function is mapped to a Comfort Flag, so that setting the flag will start the function and clearing the flag disables it. The temperature is obtained from the thermistor in the Temp Sensor Input function, the TSM (Temperature Sensor Module) or other means, e.g. via KNX, Cbus.

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The IRIO-TWS for control of lighting by two way switch reduces wiring as it is not necessary to connect Inputs and outputs to Comfort. This submodule allows the current threshold to be adjusted so that it is able to handle all different lighting loads even low current LED lighting.

The Blinds submodule controls a Blinds motor without needing a separate Blinds controller. It is able to move the blinds up and down as well as position the blinds anywhere with the help of a built-in current sensor. In some circumstances, the IRIO can operate stand-alone without the Comfort controller, if the IRIO input and output is mapped to the same Flag or Counter.

Submodules

Each IRIO can accept two plug-in submodules from the list below;

- ISM01 Digital I/O Submodule
- ISM02 Digital Outputs/Analog Inputs Submodule
- ISM03 IR (Infrared) Submodule with current sensor
- ISM06 NO/NC relay Submodule
- ISM07 Relay I/O Submodule
- ISM08 General I/O Submodule (IRIO-IO)
- ISM09 PT100 Submodule
- Note that the submodules are not included in IRIO. They are ordered separately as required. The IRIO can work with 1 or no submodules (2x 0-10V outputs on the IRIO). The IRIO will detect what submodule is plugged in.

The IRIO baseboard has 2 programmable analog outputs (0-10V) for dimming and control which are always available.

Functions

Each Submodule may support Output and Input functions depending on which are supported by the submodule. Not all functions are supported by each submodule.

Output functions include;

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- On/Off
- Heating/Cooling
- 2 speed/3 speed fan
- Air-con Relay Interface
- IR signal
- IR with Feedback
- TWS (Two way switch)
- Blinds AC
- Blinds DC
- Analog Output 0-10V (on IRIO baseboard)

Each Submodule has 2 to 4 Outputs (according to table below)

Input functions include;

- Digital
- Pulse count
- Current sensing
- Analog Input 0-10V
- Temp Sensor TH01
- Resistive Sensor
- PT1000 Temperature Sensor

Submodules can have 0, 2, or 4 Inputs.

Each submodule can only select the appropriate Output and Input function that is applicable for the hardware. Only the applicable functions for each submodule can be selected by Comfigurator. The table below shows the Output and Input functions available for each submodule.

SubModule	Output Functions	O/Ps *	Used I/Ps *	Available Input Functions	I/Ps *	Terminal Blocks
ISM01 Digital I/O 4 O/C Outputs + 4 Inputs	On/Off	1	0	Digital Input, Pulse Counter, Dimmer switch (0-10V), Temp Sensor, Resistive Sensor	1	4 x 3 way
ISM02 Digital OP/ Analog IP 4 O/C Outputs + 4 Inputs	On/Off	1	0	0-10V Analog Input	1	4 x 3 way
ISM03 IR 4 O/C Outputs + 4 Inputs	IR Signal	1	0	Current Sensor	1	4 x 3 way
	IR with Feedback	1	1	Input used by Current sensor	0	
ISM04 TWS (Two Way Switch) 2 Outputs (Latched Relay) + 2 Current Sensors. No external Inputs	TWS	1	1	Current Sensor (fixed)	0	2 x 3 way
	On/Off	1	0			
	Heating	1	0			
	Cooling	1	0			
	Heating/ Cooling	2	0			
	Summer/ Winter 2 speed fan	2	0			
ISM05 Blinds 2 Outputs (Relays), 2	Blinds AC	2	3	Internal Current Sensor + 2 Digital	0	1 x 3 way blue 1 x 3 way

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SubModule	Output Functions	O/Ps *	Used I/Ps *	Available Input Functions	I/Ps *	Terminal Blocks
Current sensors, 0 external Inputs				Inputs		green
ISM06 NO/NC Relays 4 Outputs (Relays) + 0 Inputs	On/Off	1	0	None	0	4 x 3 way
	Heating	1				
	Cooling	1				
	Heating/Cooling	1				
	Summer/Winter 2 speed fan	2				
	Summer/Winter 3 speed fan	3				
ISM07 Relay I/O 4 Outputs (Relays) + 4 Inputs	Aircon Interface Relay	1	1	Digital Aircon feedback	0	4 x 2 way + 1 x 6 way (green)
	On/Off	1	0	Digital Input, Pulse Counter, Dimmer switch (0-10V), Temp Sensor, Resistive Sensor	1	
	Heating	1	0		1	
	Cooling	1	0		1	
	Heating/Cooling	2	0		2	
	Summer/Winter 2 speed fan	2	0		2	
	Summer/Winter 3 speed fan	3	0		3	
	Blinds DC	2	2	0 (Inputs are Up/down buttons)	0	
ISM08 General I/O (8) 4 Outputs + 4 Inputs	Aircon Relay I/F	1	1	Not Available, used for Aircon feedback	0	4 x 2w + 1 x 6w
	On/Off	1	0	Digital, Pulse count, Dimmer switch 0-10V, 0-10V Analog Input	1	
	Heating	1	0		1	
	Cooling	1	0		1	
	Heat/Cooling	2	0		2	
	2 speed Fan	2	0		2	
	3 speed fan	3	0		3	
	Blinds DC	2	2	Inputs are used by Blinds DC function as pushbutton	0	
ISM09 PT1000 (9) 4 O/C Outputs + 4 PT1000 Inputs	On/Off	1	0	Digital, PT1000	1	2 x 6 way green

O/Ps * column is the number of outputs required by the function, eg 2 speed fan requires 2 outputs, On/Off requires 1 output.

Used I/Ps* column is the number of Inputs used by the function. If the input(s) is used by the function, it means that the input(s) is not available to be assigned to an independent Input function.

I/Ps * column is the number of Inputs available for Input Functions when the Output function on the same line is chosen. These Inputs can only be assigned to

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the Available Input Functions.

Available Inputs Function Column is the applicable Input functions for that module.

Specifications

- Size 120×88 mm IRIO baseboard. Mounting holes 98×78 mm (same hole locations as UCM).
- Sockets to accept 2 IRIO submodules
- 2 Analog Outputs 0-10 Volts on baseboard. This is suitable for driving loads with minimum 5K input impedance.
- Power Supply: 12 Volts from Comfort or external 12V power supply. IRIO current is 30 ma without any submodules. The current required by the submodules depends on the submodule used. Please refer to the relevant submodule manual for details. Note that the Maximum current supplied by each Comfort controller or Slave to all connected modules and devices is 1 Amp from the 12V output.

Contents

The package includes

- IRI001 firmware version 7.xxx.
- 4 way RS485 Cable
- Submodules are ordered separately

System Requirements

- CM9001, LGX01 or UCM/Logic firmware 7.1XX and above
- Configurator Version 3.13.7 and above
- IRIO Firmware 7.018 and above

ID Settings

The ID of the IRIO can be seen via the state of LEDs ID1, ID2, ID4, ID8 according to the table below. For Default ID=1, ID1 is on, others are off. To change the ID, press and Hold the ID button for 4 seconds. Press and release to increment the ID to the next value 1 to 15. Release the button to end. The ID LEDs shows the ID according to the table below. The factory default is ID=1. If there are more than 1 **IRIO or SCS** in the system, the Ids must be unique and consecutive, eg 1,2,3, etc. Otherwise the Keypad will report "Communications Failure" and the RDY green led will flash.

ID #	ID8	ID4	ID2	ID1	ID#	ID8	ID4	ID2	ID1
1	Off	Off	Off	On	9	On	Off	Off	On
2	Off	Off	On	Off	10	On	Off	On	Off
3	Off	Off	On	On	11	On	Off	On	On
4	Off	On	Off	Off	12	On	On	Off	Off
5	Off	On	Off	On	13	On	On	Off	On
6	Off	On	On	Off	14	On	On	On	Off
7	Off	On	On	On	15	On	On	On	On
8	On	Off	Off	Off					

Buttons

- RESET. This button resets the IRIO. It does not change any other setting in IRIO.

Connections

- J2/J2A – Header for 4 way cable from Comfort. 12V/COM/KA/KB
- 12V/COM/KA/KB – Green removable terminal block. **Note that 12V /COM cannot be used for supplying 12V to other modules. It can only be used to supply 12V INTO the IRIO**
- J3 – 5 way header for “Module 1 Output 1 to 4”
- J4 – 2x4 way header for “Module 1 Input 1 to 4”
- J5 – 5 way header for “Module 2 Output 5 to 8”
- J6 – 2x4 way header for “Module 2 Input 5 to 8”
- DIM1/COM – Analog 0-10V output 1
- DIM2/COM – Analog 0-10V output 2

LED Indicators

- “RDY” (Green) should be on at all times, flashes when IRIO is not polled.
- “Tx” (Red) RS485 send message to Comfort
- “Rx” (Green) RS485 Receive message from Comfort
- ID1, ID2, ID4, ID8: ID of IRIO (See ID Setting table)
- D31 (Red) – Power LED indicates that 12V is supplied to IRIO

Connection Procedure

- Plug in 1 or 2 of the submodules on top of the IRIO. Connectors for the 1st submodule are marked “Module 1 Output 1-4” (J3) and “Module Input 1-4 (J4)”. Connectors for the 2nd submodule are marked “Module 2 Output 5-8” (J5) and “Module 2 Input 5-8” (J6). Each Submodule is plugged into a 2x4 pin socket and a 1 x 5 pin socket. Take care to align the headers on the bottom of each submodule with the correct socket on the IRIO. Remove power to IRIO (by disconnecting the 4 way cable at J2/or 2A before connecting or disconnecting the submodules to avoid damage to the submodules.)
- The IRIO is connected to Comfort via the supplied 4-way white cable from 4-pin header J2 or J2A to Comfort’s header J15, or from any UCM JP2 or JP2A connector. This supplies power and RS485 communications to the IRIO. The green terminal removable block with 12V, COM, KA, KB can be used instead of J2/J2A when the IRIO is installed far from Comfort. Use CAT 5 data cable between Comfort (12V, COM, KA, KB) and the green terminal block. It is not necessary to switch off the power to Comfort before plugging in this connection.
- Once the 4 way cable is connected, the Green RDY led on the IRIO should light up and remain on.
- Check the ID on ID1, ID2, ID4, ID8 LEDs (default ID=1), and if necessary change the ID according to ID Settings above so it does not conflict with another IRIO ID.
- The LEDs TX (red) and RX (green) should blink rapidly showing that RS485 communications has been established between Comfort and the IRIO. RX (green) flashing shows that it is receiving communications from Comfort

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(poll). TX (red) blinks when the UCM responds to a poll from Comfort. If TX does not blink it means that Comfort is not polling the IRIO. Do a Scan for IRIO Modules and write the Modules to Comfort.

Programming IRIO by Configurator

Please download the IRIO Programming Manual from
http://www.cytech.biz/product_details.php?item_id=438

ISM Manual

Please download the ISM from http://www.cytech.biz/product_details.php?item_id=438

Please download the latest version of the IRIO Quick Start, Programming Manual and ISM manual from http://www.cytech.biz/product_details.php?item_id=438

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