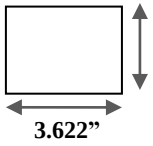
i^3 User Start-up Guide

Getting Started:

1. Connect the 24VDC power as shown on the connector below.
2. Install i^3 Configurator (V9.30 or later) onto your PC.
3. Connect serial programming cable into port MJ1 or USB cable to mini USB port.
4. If using the mini USB port, or a USB to serial convertor, please check in Window Device Manager which com port has been assigned. Then enter menu Tools->Editor Options->Communications port->Configure, and set accordingly.
5. Press the 'SYS' function key on the front of the unit and check Network ID. Then press the target sign in the Configurator and make the Target ID match that of the i^3

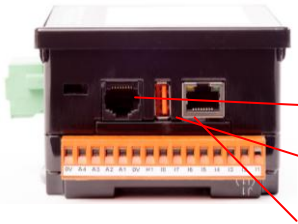
WARNING: Please ensure power is ON and i^3 is in Idle mode before inserting SanDisk™ MicroSD.

Panel Cut-out

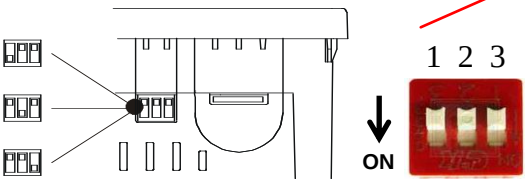


i 3 CM 1 2 Y /	320x240 Colour Touch Display, 4 programmable keys
1 0	12 Digital Inputs
D	4 Analogue Inputs (12-bit)
0	0 Analogue Outputs
3	6 Relay outputs
- S H	1 Serial Ports, iCAN Protocol
E	1 CAN Port + In-Built Ethernet
F	MicroSD Card

Back cover screws. Remove the 4 screws and back plate to access the Internal jumpers.
WARNING: Do not Over-tighten screws.



External Switch Configuration



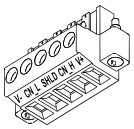
Pin	Name	Function	Default
1	RS-485 Termination	ON = Terminated	OFF
2	Spare	Always Off	OFF
3	Factory Use	Always Off	OFF

Power Connector

Power Up:
Connect to Earth Ground.
Apply 10 - 30 VDC.
Screen lights up.

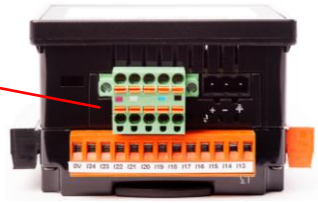
1 - Positive
2 - Negative
3 - Ground

CAN Connector



1 – V+
2 – CN_H
3 – SHIELD
4 – CN_L
5 – V-

WARNING: After installing CANopen firmware, part number suffix becomes SEHF. See CANopen Application Note for more details.



Serial Ports

MJ1

MJ1 Serial Port Pin Assignments

Pin	Signal	Signal Description	Direction
8	TD[1]	RS-232 Transmit Data	Out
7	RD[1]	RS-232 Receive Data	In
6	0V	Ground	-
5	+5	+5 VDC 60mA max	Out
4	RTS[1]	RS-232 Request to Send	In
3	CTS[1]	RS-232 Clear to Send	Out
2	RX/TX–	Receive/Transmit Negative	In/Out
1	RX/TX+	RS-485 Receive/Transmit Positive	In/Out

[1]Signals are labeled for connection to a DTE device

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or Non-hazardous locations only

WARNING: EXPLOSION HAZARD – Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
AVERTISSEMENT - RISQUE D'EXPLOSION - AVANT DE DECONNECTOR L'EQUIPMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DESIGNE NON DANGEREUX.

WARNING: To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.

WARNING: To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse the voltage measurement inputs. Be sure to locate fuses as close to the source as possible.

WARNING: Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.

WARNING: In the event of repeated failure, do not replace the fuse again as a repeated failure indicates a defective condition that will not clear by replacing the fuse.

WARNING: EXPLOSION HAZARD – Substitution of components may impair suitability for Class I, Division 2
AVERTISSEMENT - RISQUE D'EXPLOSION - LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIAL INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE 1, DIVISION 2

WARNING: The USB parts are for operational maintenance only. Do not leave permanently connected unless area is known to be non-hazardous.

WARNING: EXPLOSION HAZARD - BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NON-HAZARDOUS
AVERTISSEMENT - RISQUE D'EXPLOSION - AFIN D'EVITER TOUT RISQUE D'EXPLOSION, S'ASSURER QUE L'EMPLACEMENT EST DESIGNE NON DANGEREUX AVANT DE CHANGER LA BATTERIE

WARNING: Battery May Explode If Mistreated. Do Not Recharge, Disassemble or Dispose Of In Fire

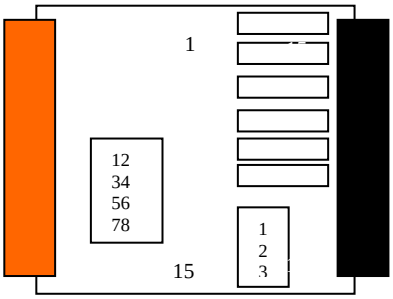
WARNING: Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

Analogue I/O and Digital I/O

Wiring Specifications

- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG (0.8 mm^2) or larger.
- For shielded Analogue I/O wiring, use the following wire type or equivalent: Belden 8441, 18 AWG (0.8 mm^2) or larger.
- For CAN wiring, use the following wire type or equivalent: Belden 3084, 24 AWG (0.2 mm^2) or larger.

1 - IN1
2 - IN2
3 - IN3
4 - IN4
5 - IN5
6 - IN6
7 - IN7
8 - IN8
9 - HSC1 /IN9
10 - 0V
11 - Ai1
12 – Ai2
13 – Ai3
14 – Ai4
15 - 0V



15 - COMMON 6
14 - RELAY 6
13 - COMMON 5
12 - RELAY 5
11 - COMMON 4
10 - RELAY 4
9 - COMMON 3
8 - RELAY 3
7 - COMMON 2
6 - RELAY 2
5 - COMMON 1
4 - RELAY 1
3 - HSC4 / IN12
2 - HSC3 / IN11
1 - HSC2 / IN10

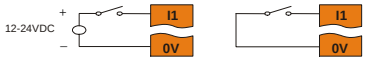
Internal Jumper Configuration

I/O Jumper settings are located internally. Remove the 4 screws on the back and lift casing off to access. **Only access when power is removed from the *i*^{3}**. Care must be taken to avoid over tightening the case screws.

Digital Input

Positive Logic vs. Negative Logic Wiring

The ***i*^{3}** can be wired for Positive Logic inputs or Negative Logic inputs depending on the position of JP1.

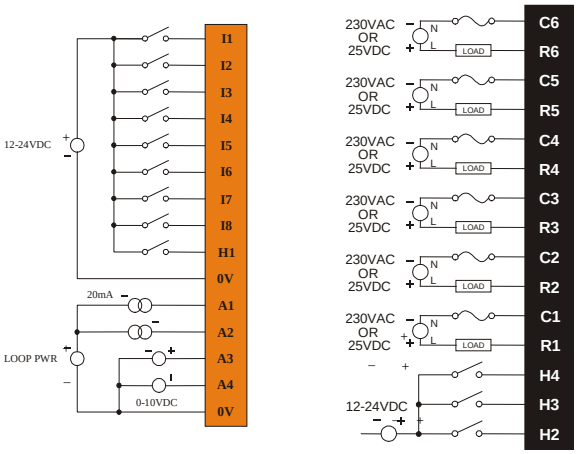


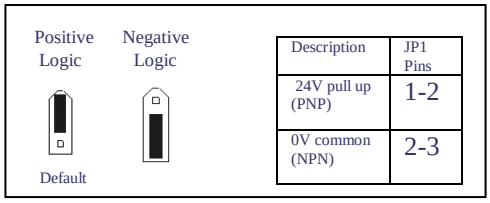
Positive Logic In Negative Logic In

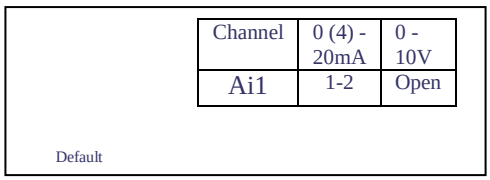
For more details on the i3C Mini, See i3C Mini Manual 0812R0

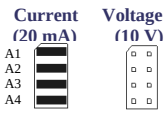
Wiring Example: Positive Logic

Digital In / Relay Out

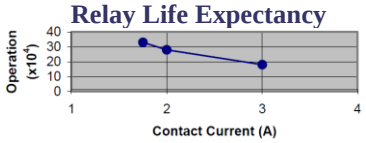




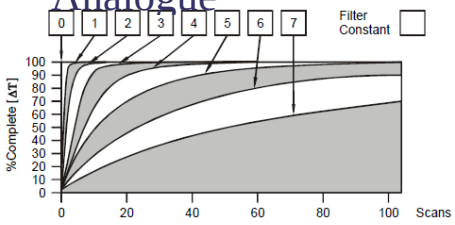




Relay Life Expectancy



Analogue



All ***i*^{3}** controllers can have extra analogue and digital I/O added by connecting expansion modules to either MJ1 port or Modbus TCP modules to Ethernet port. . Please inquire at IMO technical support. automation@imopc.com

iCAN based expansion I/O is also available on special request. Please inquire at IMO technical support. automation@imopc.com

Expansion I/O Modules

Basic Options

Input - 4 Channel RTD (0-2000ohm, 0-500ohm, PT100, Ni100, PT1000, Ni1000)	iOS / M 04 I P X - D1
Input - 8 Channel DC Current (-20mA to +20mA)	iOS / M 08 I C X - D1
Input - 8 Channel DC Voltage (-10V to +10V)	iOS / M 08 I V X - D1
Input - 8 Channel Thermocouple (J, K, R, S, B, E, T, N, -/+ 50mV, -/+100mV)	iOS / M 08 I T X - D1
Output - 4 Channel DC Voltage / Current (0-20mA, 0-10V)	iOS / M 04 O X A - D1
16 Digital Input, 16 Transistor output (0.1A / Channel, 2A / Common)	GSL - D T 4 A
16 Relay Output (2A / Channel, 5A / Common)	GSL - R Y 2 A
32 Digital Input	GSL - D 2 4 A

Note: Other I/O configurations and Fieldbus options are available. Please inquire at IMO. automation@imopc.com

For further information on Remote I/O please consult the Remote I/O datasheet, and the i3 Remote I/O tutorial in the downloads section of the IMO website. www.imopc.com/manuals

Technical Specifications

Digital DC Inputs

Inputs per Module	12 including 4 configurable HSC inputs	
Commons per Module	1	
Input Voltage Range	12 VDC / 24 VDC	
Absolute Max. Voltage	35 VDC Max.	
Input Impedance	10 kW	
Input Current	Positive Logic	Negative Logic
Upper Threshold	0.8 mA	-1.6 mA
Lower Threshold	0.3 mA	-2.1 mA
Max Upper Threshold	8 VDC	
Min Lower Threshold	3 VDC	
OFF to ON Response	1 ms	
ON to OFF Response	1 ms	
HSC Max. Switching Rate	500 KHz	

Digital Relay Outputs

Outputs per Module	6 relay	
Commons per Module	6	
Max. Output Current per Relay	3 A at 250 VAC, resistive	
Max. Total Output Current	5 A continuous	
Max. Output Voltage	275 VAC , 30 VDC	
Max. Switched Power	1250 VA, 150 W	
Contact Isolation to i3 ground	1000 VAC	
Max. Voltage Drop at Rated Current	0.5 V	
Expected Life	No load: 5,000,000	
(See Derating section for chart.)	Rated load: 100,000	
Max. Switching Rate	300 CPM at no load 20 CPM at rated load	
Type	Mechanical Contact	
Response Time	One update per ladder scan plus 10 ms	

Analogue Inputs Medium Resolution

Number of Channels	4	
Input Ranges	0 - 10 VDC 0 – 20 mA 4 – 20 mA	
Safe input voltage range	-0.5 V to +12V	
Input Impedance	Current Mode:	Voltage Mode:
(Clamped @ -0.5 VDC to 12 VDC)	100 W	500 k W
Nominal Resolution	12 Bits	
%AI full scale	32,000 counts	
Max. Over-Current	35 mA	
Conversion Speed	All channels converted once per ladder scan	
Max. Error at 25°C	4-20 mA 1.00%	
(excluding zero)	0-20 mA 1.00%	
***can be made tighter (~0.25%) by adjusting the digital filter setting to 3.**	0-10 VDC 1.50%*	
Additional error for temperatures other than 25°C	TBD	
Filtering	160 Hz hash (noise) filter 1-128 scan digital running average filter	

General Specifications

Required Power (Steady State)	95 mA @ 24 VDC, 190mA @12VDC
Required Power (Inrush)	2A for <1ms @ 24VDC - DC switched
Primary Power Range	10 – 30 VDC
Operating Temperature	-10°C to +60°C
Storage Temperature	-30 to 70°C
Relative Humidity	5 to 95% Non-condensing
Display Type **Screen Resolution**	3.5" QVGA TFT 320 X 240
Display Memory	64MB
Scan Rate	Controller 0.013 mS/K
Display Life	Minimum 50000 hours (50% brightness , 25°C)
User Keys	4 User Defined Function Keys and a System Key
Screens and Colours Supported	1023 screens and 65535 Colours
Weight	12 oz. (340 g)
CE **UL**	Approved

IMO Precision Controls Ltd
1000 North Circular Rd, Staples Corner, London. NW2 7JP
Tel: +44 (0) 208 452 6444,
Fax: +44 (0) 208 450 2274,
Web: www.imopc.com

For further technical information and a full specification, please consult the Hardware Manual

Small Extras:

RS232 Serial Programming Cable
For programming any i^3 Model.

PART No: i3PC45

IP65 RJ45 Panel-Mounted Socket
Bring either MJ1 ports to the outside world by installing this into a 22.5mm cut-out.

PART No: i3PAD

USB to RS232 Convertor
For PCs without a serial Com Port. Add one with this device.

PART No: PC501

Communication:

Ethernet Expansion card
Part No. i3-E
Link an i3 to an Ethernet network. Program monitor and debug remotely, or run i3 as a Modbus TCP server.

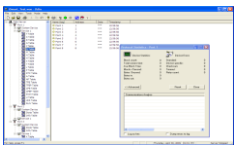
GSM Modem Expansion Card
Part No. i3-MA
Send and Receive SMS messages via the i3, dial-up connection over GSM data link for remote programming, debugging etc. Or, use a GPRS always-on data connection ideal for programming, debugging, monitoring and connection to a SCADA package for constant data logging and remote control.

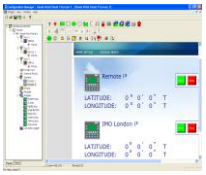
ODIN OPC Server (LOKI Datalogger)
Part No. IMO-OPC-SERVER
With no tag limits and 30 + protocols to select from (including IMO, Siemens, Allen Bradley, Mitsubishi), ODIN can be used with LOKI to log data either to an excel spreadsheet or access database.

Panel Point SCADA*lite*
Part No. PANELPOINT (Developer)
Part No. PANELPOINTRT (Runtime)
With no tag limit and 30+ Protocols to choose from (including IMO products, Mitsubishi, Allen Bradley, Siemens), a powerful graphical editor, and a VB-based scripting language, Panel-Point allows a PC to become the central data hub of an application.

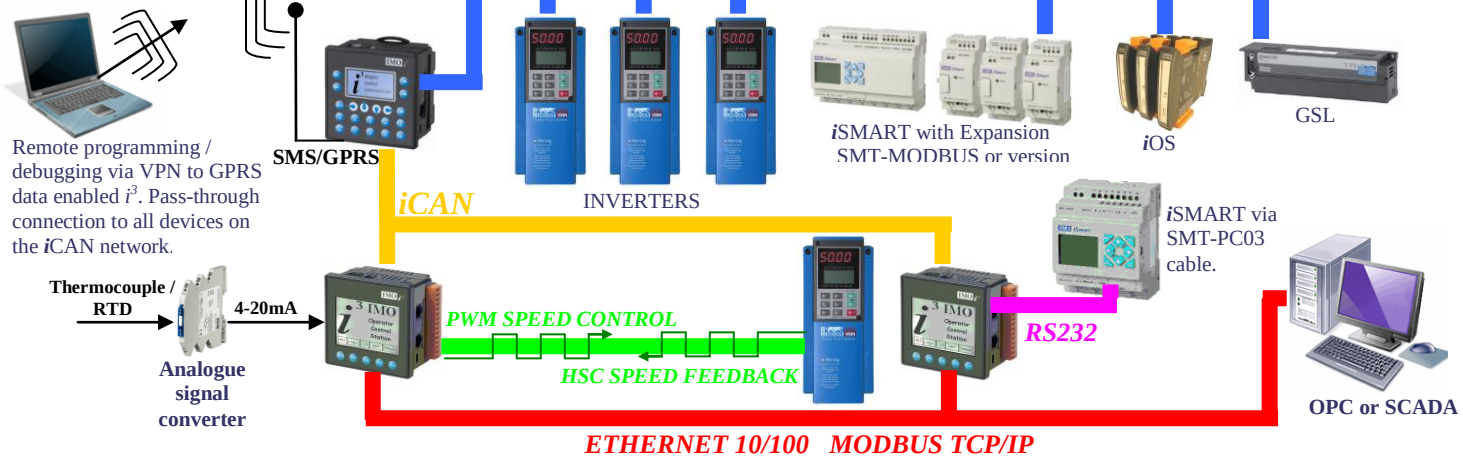
*i*3Portal Part No. *i*3Portal
***i*3Portal is a low-cost, powerful Windows® based software application that will allow you to view and access remote IMO i3 controllers via PC.**

i3Transfer Part No. i3-Transfer
i3Transfer is a low-cost, Windows ® based software application that allows you to easily transfer files between your PC and the IMO i3 Controllers via PC.





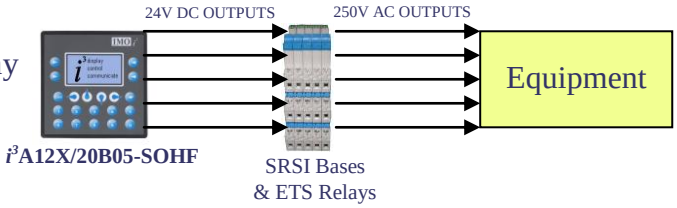
Options:



Miscellaneous:

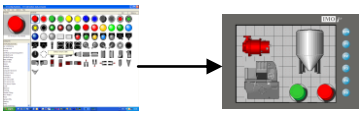
DIN rail mounted SRSI Base and ETS Relay
Use the Transistor outputs of the i^3 to operate the relay coils to switch up to 6A @ 250VAC.

Part Numbers: SRSI-24AC/DC, ETS-1AN-SL-24VDC



i^3 Configurator with Symbol Library
Obtain a copy of the i^3 Software with a library of colour buttons, pipes, vessels, motors, pumps, fans etc. To enhance the look and feel of applications on the i^3C, i^3C Mini, i^3D, i^3H.

Part Numbers: IMO-CDSUITE



Custom screen overlays
Ask at IMO for custom overlays. Overlays are tooled to a customer's design.

GPS Receiver
Locate your i^3 Controller anywhere in the world by connecting this device to MJ2 of a unit equipped with a GPRS enabled modem.

Part Number: i^3-GPS