

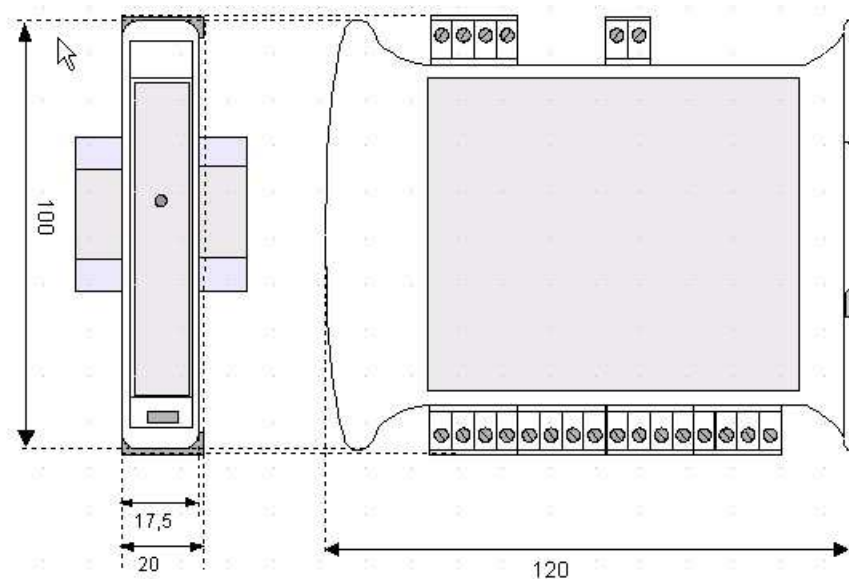
iOS - Remote I/O system

iOS/M12IDX-D1 12 Input Channel (Digital)



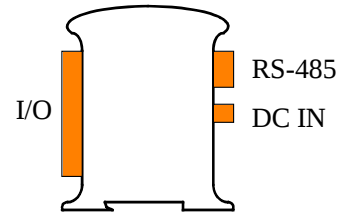
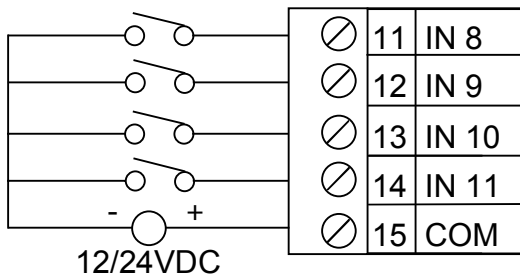
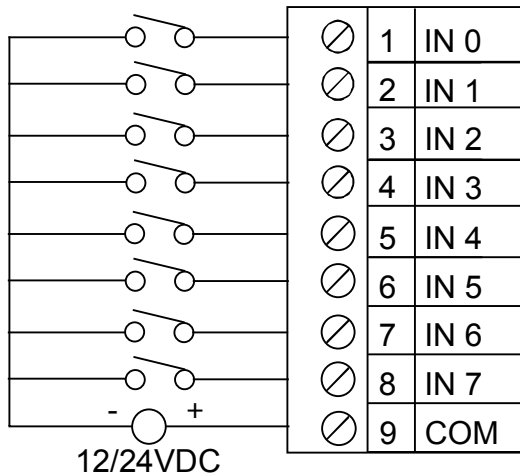
SPECIFICATIONS

	12IDX-D1		12IDX-D1
Number of Channels	12	PLC Update Rate	Determined by Configuration
Input Ranges	12/24 VDC	Terminal Type	Screw Type, Removable
OFF Point	0-3VDC	Storage Temp.	-40° to 85° Celsius
ON Point	10-30VDC	Operating Temp.	-10° to 60° Celsius
Input Impedence	4.7Kohm	Relative Humidity	5 to 95% Non-condensing
External Power Supply Voltage	10-30Vdc	Dimensions WxHxD	17.5mm x 100mm x 120mm 0.69" x 3.94" x 4.72"
Required Power (Steady State)	35mA @ 24Vdc, typical	Weight	150g (6 oz.)
Required Power (Inrush)	Negligible	Communications	Modbus/RTU (binary) RS-485 half duplex
Isolation	2000Vac for 60 seconds (Input/Power & Input/Comms)	Default Comms. Parameters	38400 baud, N, 8, 1, no h/s Default Modbus ID 1
		Supported Modbus Commands	1,2,3,4,5,6,8,15,16



Note: Number of I/O terminal connections change with model type

WIRING – I/O

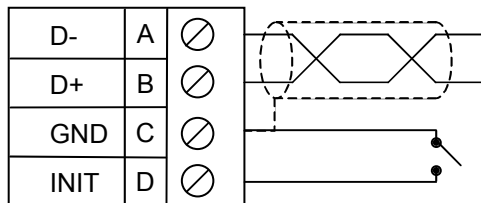


Pin #	12IDX-D1
1	INPUT 0
2	INPUT 1
3	INPUT 2
4	INPUT 3
5	INPUT 4
6	INPUT 5
7	INPUT 6
8	INPUT 7
9	INPUT COMMON 1

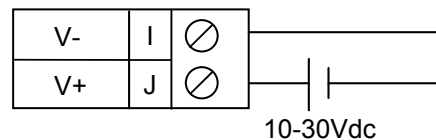
11	INPUT 8
12	INPUT 9
13	INPUT 10
14	INPUT 11
15	INPUT COMMON 2

INPUTS 0-7 & 8-11 are isolated from each other

WIRING – RS-485



WIRING – DC IN



Notes:

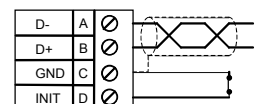
Both ends of the RS-485 network should be terminated with a 100Ω, ¼W, 1% resistor. *i³* controllers feature dipswitches or jumpers, which enable appropriate termination if the *i³* is located on a network end.

Init default setup:

1. Install jumper between INIT and GND terminals of the RS-485 port.
2. Apply power to *i³* unit.
3. Read parameter words to see current parameters.
4. Write changes if necessary.

The Init default RS485 settings are:

Modbus ID = 1
Baud rate = 9600
Parity = None
Stop Bits = 1



CONFIGURATION DATA

iOS configuration settings are mapped into Modbus register space. This configuration data may be modified with any Modbus/RTU Master device. For convenience, IMO Precision Controls have developed a variety of application files, which allow an i³ Integrated Controller to act as the iOS configurator. Initial configuration of the iOS module should be done on an individual basis, since all modules are delivered with a factory default of Modbus ID 1. Once each module on the network has its own unique Modbus ID, further configuration adjustments can be made with the entire network powered.

All configuration parameters listed below (except 40012 Channel Enable) are stored in EPROM and for this reason they should not be constantly rewritten.

Configuration Parameters – Registers 40001 through 40014				
Modbus Register	Description	Min	Max	Default
40001-40005	Reserved			
40006	Communications Parameters	See Table		38.4kbaud, N, 8, 1, RTU Mode
40007	Modbus ID	1	255	1
40008	Rx/Tx Delay (2mS steps)	0	255	0mS
40009	Watchdog Timer (0.5s steps)	0	255	10 (5s)
40010	Watchdog Data	I/O Watchdog Data – See Table Below		
40011	Input Data	I/O Data – See Table Below		
40012-40014	Reserved			

Register 40006 (Communications Parameters) Bit Definition							
Bits 7-15	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Unused	Mode	Parity		Data Bits	Baud Rate		
	0 = ASCII Mode	Value	Meaning	0 = 7 Data Bits	Value	Meaning	
		0	Mark		0	1200 baud	
		1	Even		1	2400 baud	
	1 = RTU Mode	2	Odd	1 = 8 Data Bits	2	4800 baud	
		3	Space		3	9600 baud	
					4	19200 baud	
					5-7	38400 baud	

Register 40010 (Watchdog Coils Mirror) Bit Definition				
Bit 11-15	Bit 10	Bit 9	Bit 8	Bit 0-7
Unused	Power-up Event	Watchdog Event	Watchdog Enable	Unused
	0 = No Event	0 = No Event	0 = Not Enabled	
	1 = Event Occurred	1 = Event Occurred	1 = Enabled	

Register 40011 (Input Coil Mirror) Bit Definition												
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 4-7	Bit 3	Bit 2	Bit 1	Bit 0
IN 7	IN 6	IN 5	IN 4	IN 3	IN 2	IN 1	IN 0	reserved	IN 11	IN 10	IN 9	IN 8

INPUT / OUTPUT DATA

iOS Analog I/O utilizes both Modbus Registers (40001-40030) and Coils (1-11). It is possible to access all data using Registers only - Coils can be accessed through Register 40010.

The following tables list all Modbus I/O data available.

I/O Register Data (Registers 40014-40022)			
Modbus Register	Description	Access	Notes
40010	Watchdog Coils	Read/Write	See Chart in Section 3 (Register 40010)
40011-40014	Reserved		See Chart in Section 3 (Register 40011)

Modbus Coil	Description	Access
00001	Watchdog Enabled	Read/Write
00002	Watchdog Event	Read/Write
00003	Power-up Event	Read/Write
00017	Digital Input 0	Read-only
00018	Digital Input 1	Read-only
00019	Digital Input 2	Read-only
00020	Digital Input 3	Read-only
00021	Digital Input 4	Read-only
00022	Digital Input 5	Read-only
00023	Digital Input 6	Read-only
00024	Digital Input 7	Read-only
00025	Digital Input 8	Read-only
00026	Digital Input 9	Read-only
00027	Digital Input 10	Read-only
00028	Digital Input 11	Read-only

Watchdog Event & Power-up Event Operation

If Coil 1 (Watchdog Enabled) is set, Coil 2 (Watchdog Event) will set if the Watchdog Timeout value is exceeded. The Watchdog Timeout value is set in Register 40009. When set, Coil 2 can be reset by the controller when normal communications resumes.

The Power-up Event (Coil 3) is set every time the power is applied. It can be cleared by the controller if desired.

INSTALLATION / SAFETY

Warning: Remove power from the *i*³ Controller, CAN port, and any peripheral equipment connected to this local system before adding or replacing this or any module.

- All applicable codes and standards should be followed in the installation of this product.
- Shielded, twisted-pair wiring should be used for best performance.
- Shields may be terminated at the module terminal strip.
- In severe applications, shields should be tied directly to the ground block within the panel.
- Use the following wire type or equivalent: Belden 8441.

When found on the product, the following symbols specify:



Warning: Consult user documentation.



Warning: Electrical Shock Hazard.