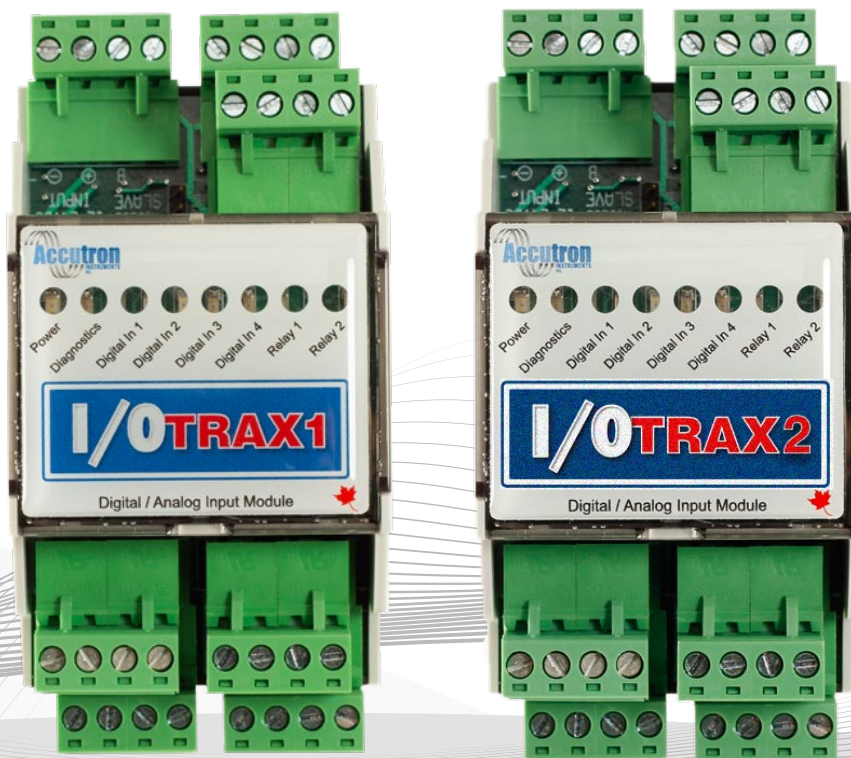


# I/O Trax 1 & 2

Technical Operations Manual



**REV 2023.06.12**

For I/O Trax 1 &  
I/O Trax 2

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The documentation found within this manual is to provide users of our products with technical information pertaining to the installation, maintenance and setup of the I/OTrax converter.

It is forbidden to use any Accutron documentation for any other purpose which may be detrimental to the interests of Accutron Instruments INC.

## The Manual

Refer to this manual for proper installation, operation, setup and maintenance of the Accutron I/OTrax.

Special attention must be followed to warnings and notices highlighted from the rest of the text to ensure it will stand out.

**Warning:** Failure to oblige with the necessary precautions can result in death, serious injury, and/or considerable damage to the product.

**Note:** Important information about the product or that part of the manual, helpful hints, and or troubleshooting advice.

- These instructions do not claim to cover all details or variations in equipment, or to provide for every possible contingency that may arise during installation, operation, setup and maintenance.
- For further information or to resolve issues not covered in the manual, consult the Accutron Technical Service Team.
- The contents of the manual shall not become part of or modify any prior or existing agreement, commitment or relationship.
- The warranty contained in the contract between parties is the sole warranty of Accutron Instruments INC.

**IMPORTANT:** All specifications are subject to change without notice. Ensure your manual is up to date, the version number can be found on the front page of the manual. If you are unsure please consult the Accutron Technical Service Team.

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## Section 1: General Information

### Safety Guidelines

This device should only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

### I/OTrax1 Specifications

Connections:	Pluggable Screw terminal block
Input Power:	7-30VDC, 50mA at 24V (1.2W)
Communication Type:	Modbus RTU RS-485
Relay Ratings:	Max Switching Voltage: 50VDC, 50VAC Rated Current: 5A Switching Power: 60W, 62.5VA
Digital Inputs:	Range: 0VDC to 27VDC, Absolute maximum: 30VDC Input on (0) = $\geq 3$ VDC Input off (1) = $\leq 2$ VDC
Current Inputs:	Range: 0mA to 20.1mA, Absolute maximum: 40mA
Enclosure:	Vented
Mounting:	Din rail mounted (35mm x 7.5mm)
Temperature Range:	-40°C to + 80°C

## I/OTrax2 Specifications

Connections:	Pluggable Screw terminal block
Input Power:	10-33VDC, 100mA at 24V (2.4W)
Communication Type:	Modbus RTU RS-485
Digital Outputs:	Max Switching Voltage: 40V Max Switching Current: 0.5A
Digital Inputs:	Range: 0VDC to 27VDC, Absolute maximum: 30VDC Input on (1) = $\geq 3$ VDC Input off (0) = $\leq 2$ VDC
Current Outputs:	Self Powered Range: 0mA to 24mA
Enclosure:	Vented
Mounting:	Din rail mounted (35mm x 7.5mm)
Temperature Range:	-40°C to + 80°C

## Basic Uses

The **I/OTrax1 & 2** are Modbus Slave devices that convert analog 4mA to 20mA signals to Modbus RTU over RS485. The **I/OTrax1** has four 4-20mA signal **inputs**, four digital inputs, and two contact outputs. The **I/OTrax2** has four 4-20mA signal **outputs**, four digital inputs, and four digital outputs.

An example of a typical setup can be seen in figure 1 and figure 2.

Scada/PC/PLC/HMI System  
Modbus Master

IOTrax1  
Modbus Slave

4-20mA devices

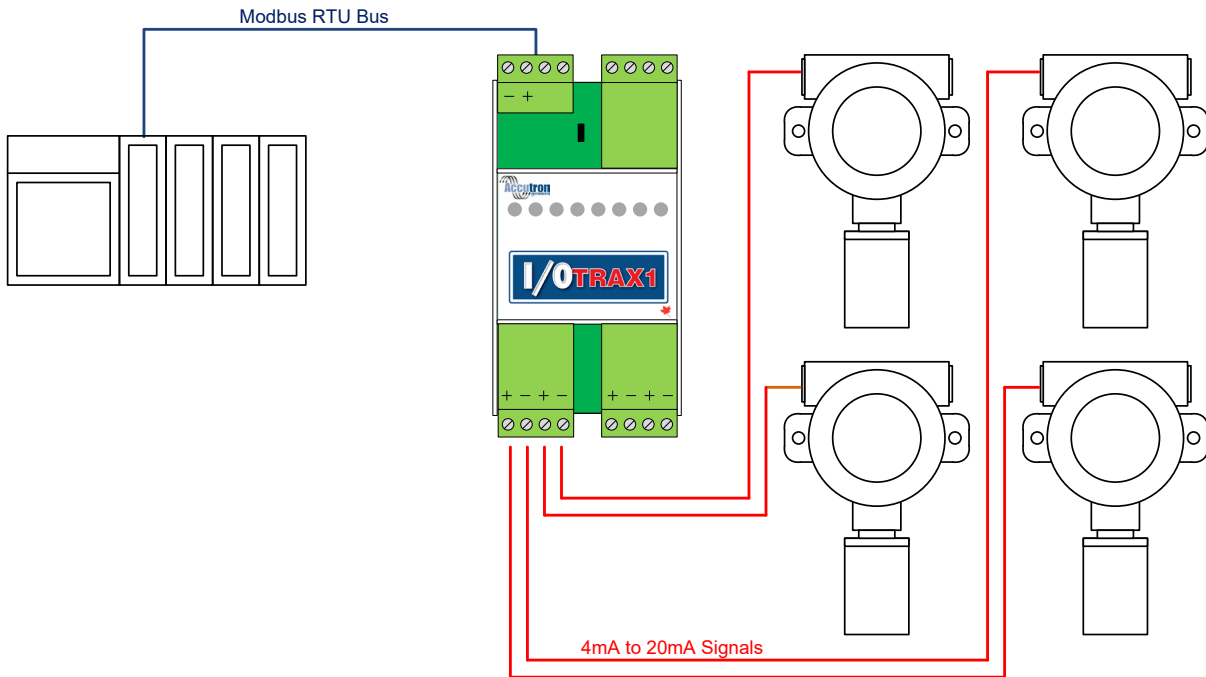


Figure 1

Scada/PC/PLC/HMI System  
Modbus Master

IOTrax2  
Modbus Slave

4-20mA Control devices

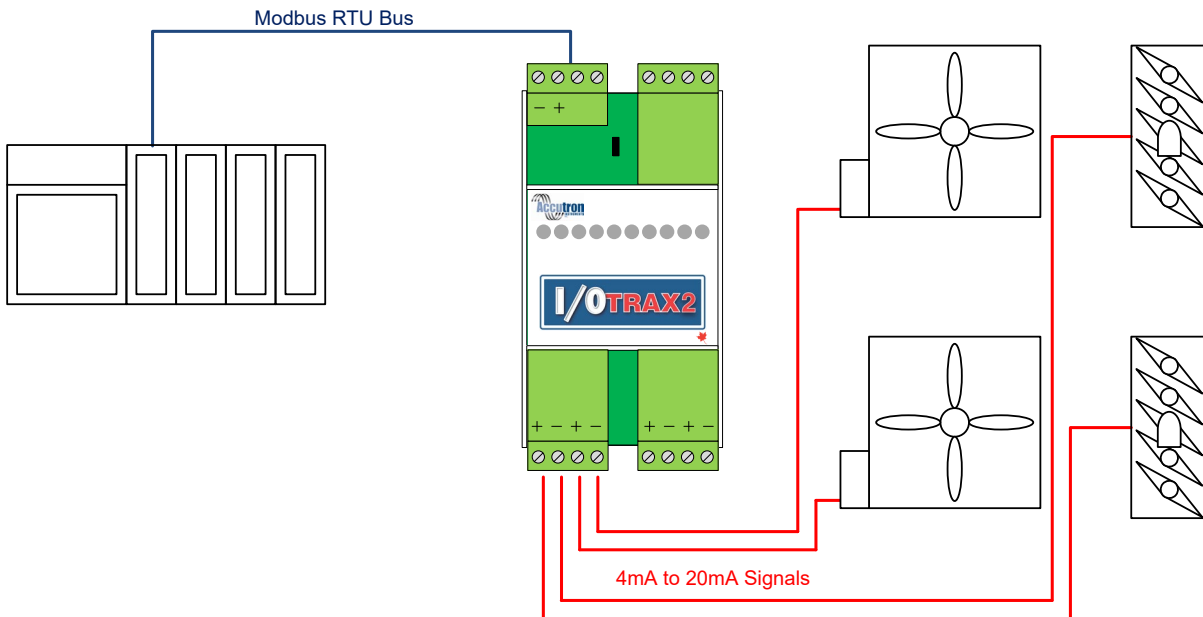


Figure 2

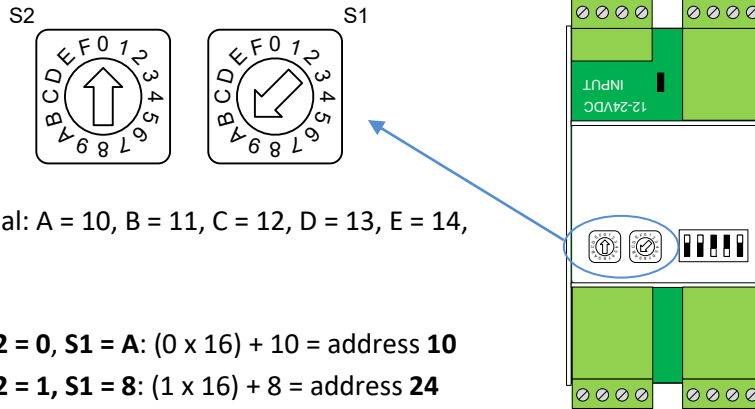


## Section 2: Modbus

### Setting the Modbus Address

The Modbus address is set by using the hexadecimal switches found under the front cover.

To determine the address chosen, use the formula (**S2 position** x 16) + **S1 position** = Modbus Address



In hexadecimal: A = 10, B = 11, C = 12, D = 13, E = 14, F = 15.

Example 1: **S2 = 0, S1 = A:** (0 x 16) + 10 = address **10**

Example 2: **S2 = 1, S1 = 8:** (1 x 16) + 8 = address **24**

### Setting the Baud Rate and Parity

The Modbus baud rate is set by using the 5 dip switches found under the front cover.

#### Switch 1 (Modbus ASCII or RTU)

0 = Modbus ASCII (7 data bits)

1 = Modbus RTU (8 data bits)

#### Switch 2, 3 (Parity)

00 = Odd Parity

01 = Even Parity

10 = No Parity, 1 Stop bits (ASCII 2 stop bits)

11 = No Parity, 2 Stop bits

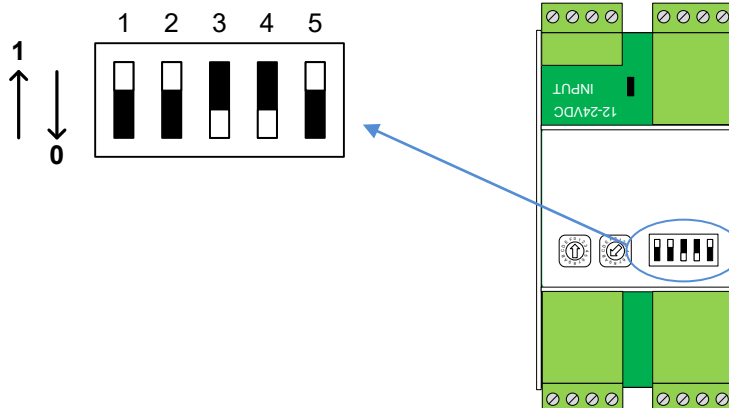
#### Switch 4, 5 (Baud Rate)

00 = 4800

01 = 9600

10 = 19200

11 = 38400



**Note:** Press the reset button found under the front cover, or power cycle the device after changing any setting for the changes to take effect.

## I/OTrax1 – Register Map

Address	Function	Type	Access	Notes
40001	Relay #1 (xxxxxxx#)	Integer 16	Read/Write	Relay On = (xxxxxxx1) Relay Off = (xxxxxxx0)
40002	Relay #2 (xxxxxxx#)	Integer 16	Read/Write	Relay On = (xxxxxxx1) Relay Off = (xxxxxxx0)
40003	Digital In #1 (xxxxxxx#)	Integer 16	Read	Digital In On = (xxxxxxx0) Digital In Off = (xxxxxxx1)
40004	Digital In #2 (xxxxxxx#)	Integer 16	Read	Digital In On = (xxxxxxx0) Digital In Off = (xxxxxxx1)
40005	Digital In #3 (xxxxxxx#)	Integer 16	Read	Digital In On = (xxxxxxx0) Digital In Off = (xxxxxxx1)
40006	Digital In #4 (xxxxxxx#)	Integer 16	Read	Digital In On = (xxxxxxx0) Digital In Off = (xxxxxxx1)
40007	Analog In #1	Integer 16	Read	Divide by 1000 for mA reading
40008	Analog In #2	Integer 16	Read	Divide by 1000 for mA reading
40009	Analog In #3	Integer 16	Read	Divide by 1000 for mA reading
40010	Analog In #4	Integer 16	Read	Divide by 1000 for mA reading
40011	Relay Bits (xxxxxx##)	Integer 16	Read/Write	Relay 1 on & 2 off = (xxxxxx01) Relay 1 off & 2 on = (xxxxxx10)
40012	Digital In Bits (xxxx####)	Integer 16	Read	Digital In 1 & 3 On = (xxxx1010) All Digital In Off = (xxxx1111)
40013 & 40014	Analog In #1 (mA)	Float 32	Read	Must read 40013 & 40014
40015 & 40016	Analog In #2 (mA)	Float 32	Read	Must read 40015 & 40016
40017 & 40018	Analog In #3 (mA)	Float 32	Read	Must read 40017 & 40018
40019 & 40020	Analog In #4 (mA)	Float 32	Read	Must read 40019 & 40020
40021	Heartbeat	Integer 16	Read	Increments every second up to 65535

x = doesn't matter

## I/OTrax2 – Register Map

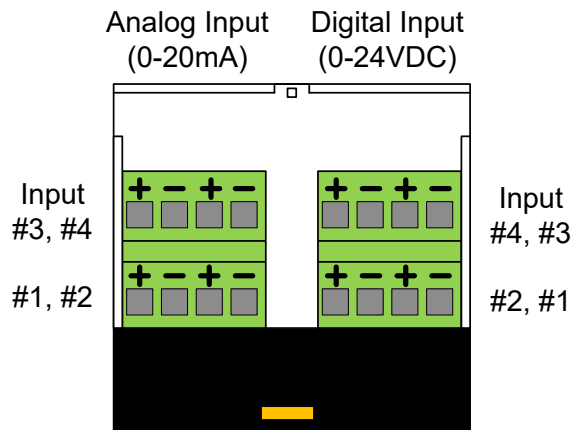
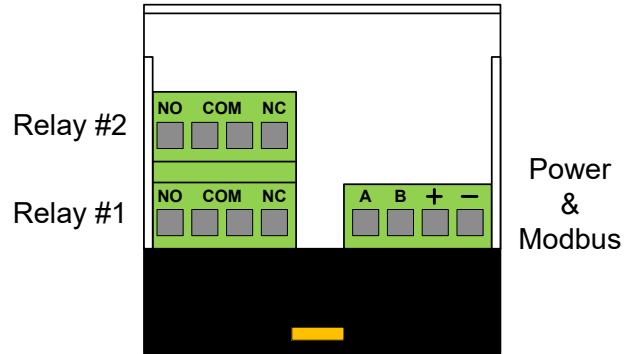
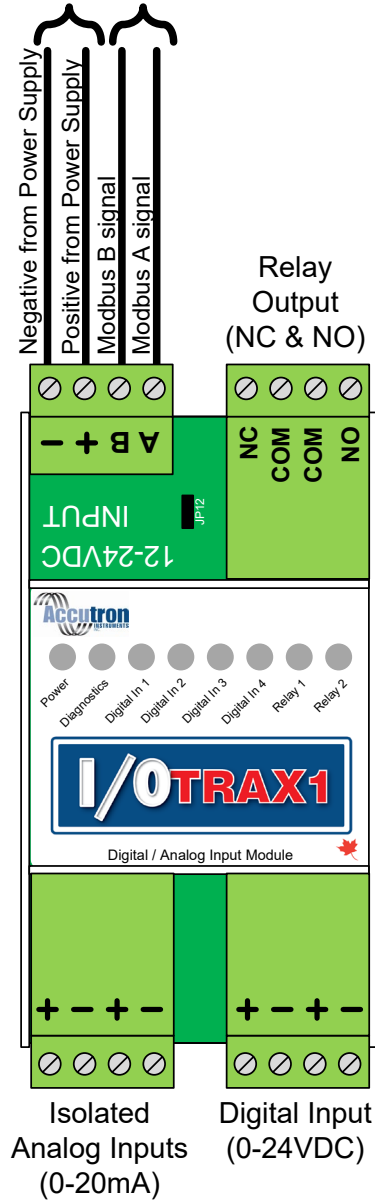
Address	Function	Type	Access	Notes
40001	Digital Out 1	Integer 16	Read/Write	Digital Out On = (xxxxxxx1) Digital Out Off = (xxxxxxx0)
40002	Digital Out 2	Integer 16	Read/Write	Digital Out On = (xxxxxxx1) Digital Out Off = (xxxxxxx0)
40003	Digital Out 3	Integer 16	Read/Write	Digital Out On = (xxxxxxx1) Digital Out Off = (xxxxxxx0)
40004	Digital Out 4	Integer 16	Read/Write	Digital Out On = (xxxxxxx1) Digital Out Off = (xxxxxxx0)
40005	Digital In 1	Integer 16	Read	Digital In On = (xxxxxxx0) Digital In Off = (xxxxxxx1)
40006	Digital In 2	Integer 16	Read	Digital In On = (xxxxxxx0) Digital In Off = (xxxxxxx1)
40007	Digital In 3	Integer 16	Read	Digital In On = (xxxxxxx0) Digital In Off = (xxxxxxx1)
40008	Digital In 4	Integer 16	Read	Digital In On = (xxxxxxx0) Digital In Off = (xxxxxxx1)
40009	Analog Out 1	Integer 16	Read/Write	Divide by 1000 for mA reading
40010	Analog Out 2	Integer 16	Read/Write	Divide by 1000 for mA reading
40011	Analog Out 3	Integer 16	Read/Write	Divide by 1000 for mA reading
40012	Analog Out 4	Integer 16	Read/Write	Divide by 1000 for mA reading
40013	All Digital Outs	Integer 16	Read/Write	Digital Out 1 on & 3 on = (xxxx0101) All Digital Out Off = (xxxx0000)
40014	All Digital Ins	Integer 16	Read	Digital In 1 & 3 On = (xxxx1010) All Digital In Off = (xxxx1111)
40015 & 40016	Analog Out #1 (mA)	Float 32	Read/Write	Must read 40017 & 40018
40017 & 40018	Analog Out #2 (mA)	Float 32	Read/Write	Must read 40019 & 40020
40019 & 40020	Analog Out #3 (mA)	Float 32	Read/Write	Must read 40021 & 40022
40021 & 40022	Analog Out #4 (mA)	Float 32	Read/Write	Must read 40023 & 40024
40023	Heartbeat	Integer 16	Read	Increments every second up to 65535

x = doesn't matter

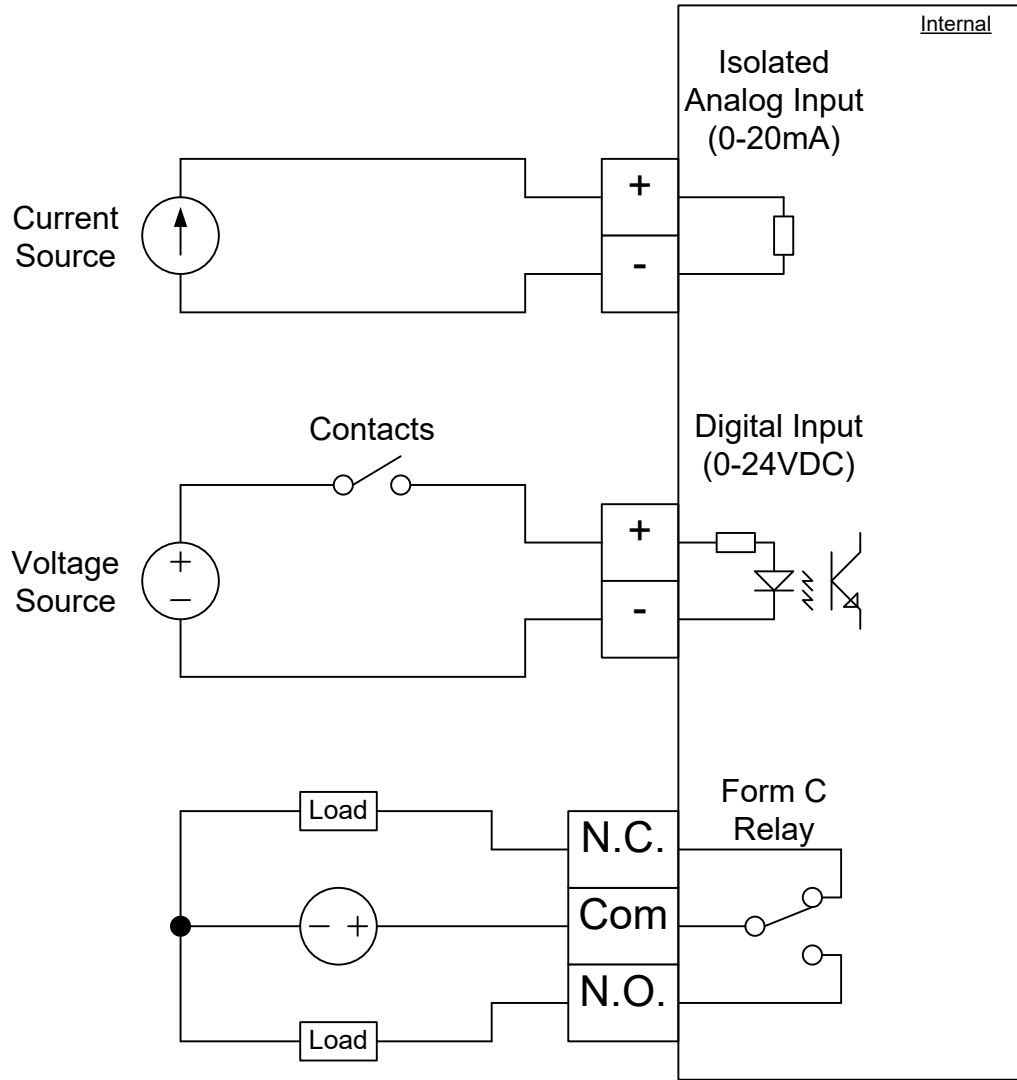
## Section 3: Wiring

### I/OTrax1 Terminals

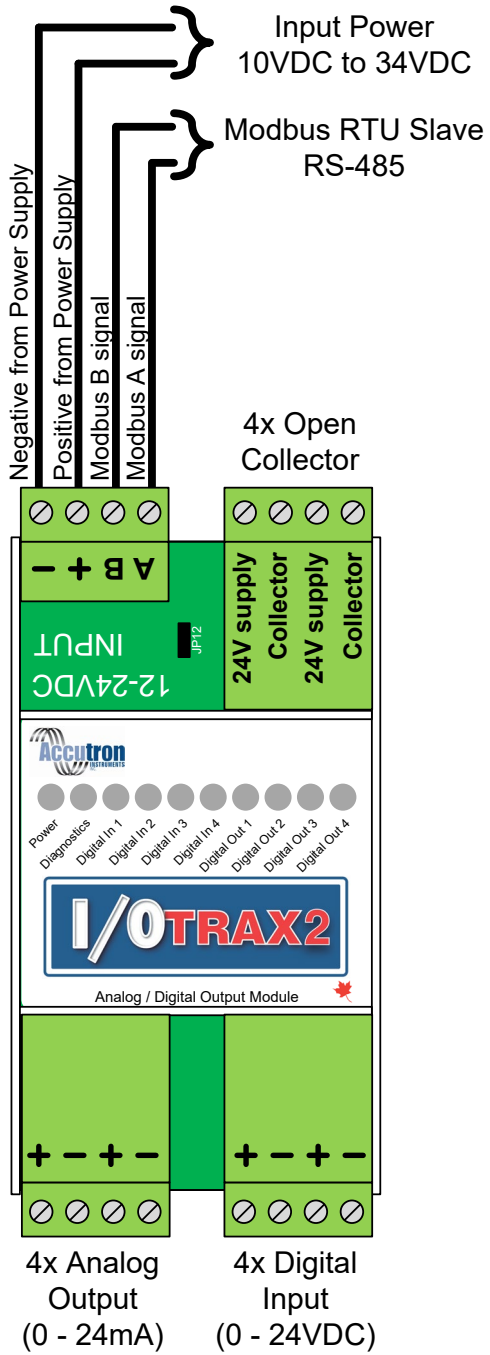
Input Power 7VDC to 30VDC      Modbus RTU Slave RS-485



## I/OTrax1 Wiring Diagram

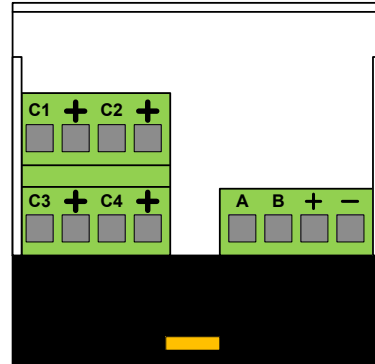


## I/OTrax2 Terminals



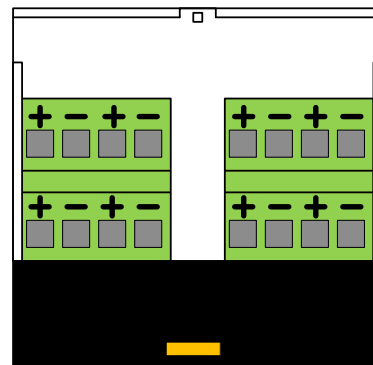
Digital Output Power & Modbus

Open Collector  
 #1, #2  
 #3, #4



Analog Output (0-24mA) Digital Input (0-24VDC)

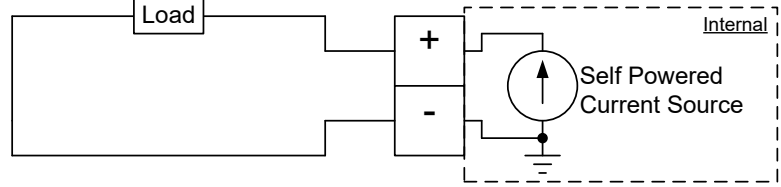
Output #1, #2  
 #3, #4



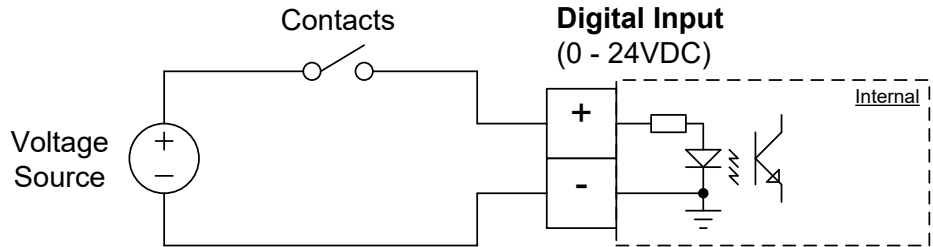
Input #1, #2  
 #3, #4

## I/OTrax2 Wiring Diagram

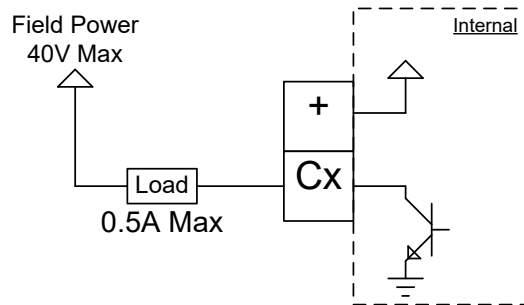
### Analog Output (0 - 24mA)



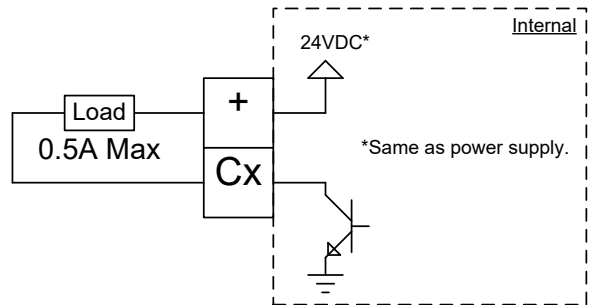
### Digital Input (0 - 24VDC)



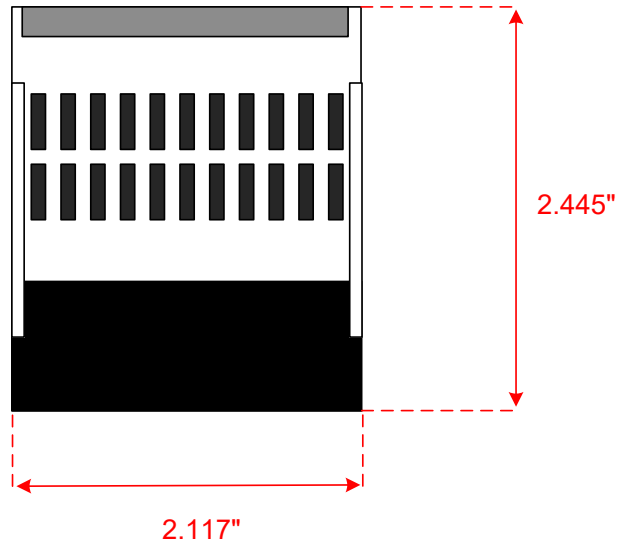
### Digital Output (Open Collector)



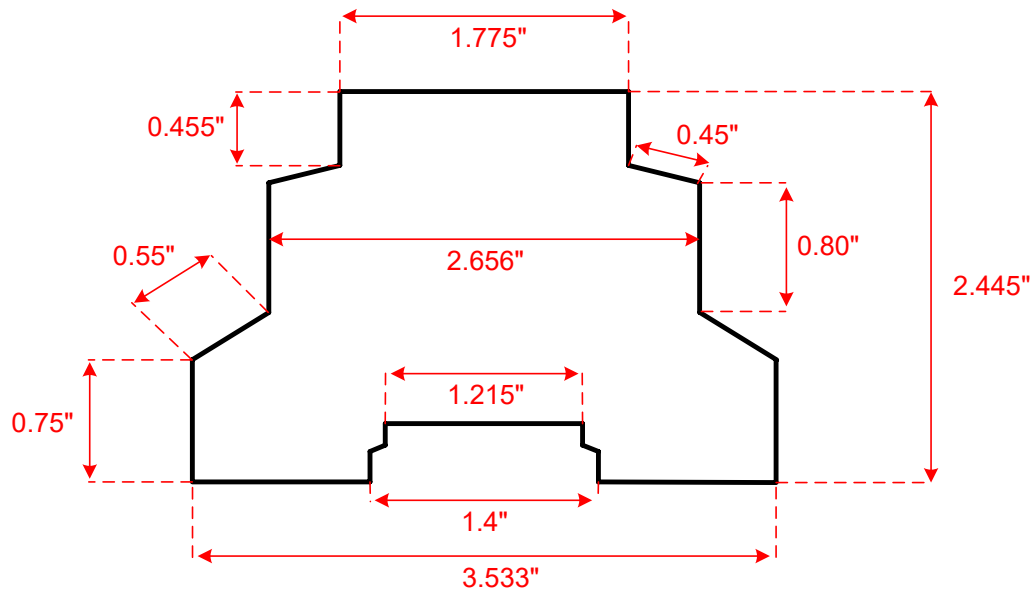
### Digital Output (Open Collector)



## Section 4: Dimensions



**Front View**



**Side View**



**REV 2023.06.12**

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I/O Trax 2

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