INSTALLATION INSTRUCTIONS

MicroComm DXI

COD-210 Call Operating Device

1. Intent & Scope

This document describes the installation procedure for the COD-210 Call Operating Device.

2. Description

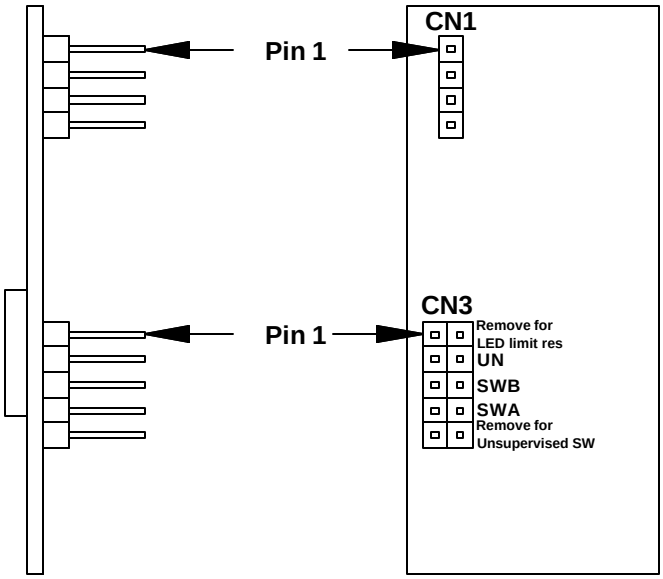
The COD-210 Call Operating Device consists of a vandal resistant switch mounted on a heavy-duty single gang stainless steel faceplate. The unit is designed to mount on a standard electrical box. The COD-210 can be ordered with either a standard or a piezo-electric switch, with or without an LED and with or without terminations for line supervision.

An optional choice for the COD-210 allows for jumper selectable line terminations. Positioning jumpers on a printed circuit board header allows the switch to act as switch type A or switch type B for DIO inputs, or as an unsupervised switch. By inserting a jumper in the appropriate position the LED can operate with or without a current limiting resistor. As shipped from the factory the jumpers are positioned so that the switch acts as switch type A and the current limiting resistor protects the LED.

The COD-210 without the optional jumper selectable terminations comes with pigtail leads that can be connected to the field wiring with standard twist connectors. Section 3 discusses the installation procedures for the COD-210 with jumper selectable terminations, while Section 4 discusses the installation procedures for COD-210 with pigtail terminations.

3. Installation of COD with Jumper Selectable Terminations

A simplified diagram of the COD-210 with jumper selectable terminations on the printed circuit board is shown in the following figure. The printed circuit board has two headers labeled CN1 and CN3. Field connections are made to CN1 with a four pin MTA-100-04 connector. The LED connections are made to pins 1 and 2 while the switch connections are made to pins 3 and 4.



Printed Circuit Board Showing Location of CN1 and CN3

The connections to the COD are made with an AMP MTA-100 series connector. The LED pair should connect to pins 1 and 2 and the switch pair to pins 3 and 4 on a female 4-pin AMP MTA-100 series connector that plugs onto the header labeled CN1. To make these connections you should use an AMP Handle Assy 58074-1 tool with a 58246-1 head. The cable should be cut to length and the outer jacket should be trimmed back about 1/2 inch. The pin configuration of the COD connector is:

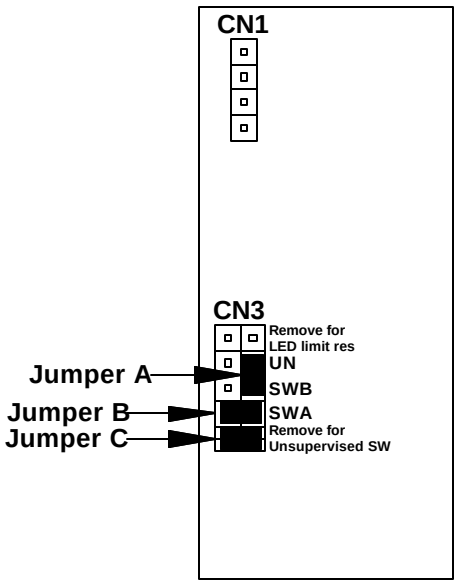
MTA Pin	Signal
1	LED +
2	LED -
3	Switch input +
4	Switch input –

MTA Pin Signals

To insert the signal wires into the connector you remove the white cover from the connector, insert the connector into the tool from the left side (it will travel through the tool in the direction indicated by the arrow), pull the trigger once to load the connector. Then insert the signal wire for pin 1 (do not strip the wire) into the hole on the top of the tool and pull the trigger to insert the wire into the connector. Then repeat to install the other signal wire. Finally, remove the connector from the tool, replace the cover, and then slide the connector onto the pins on the COD.

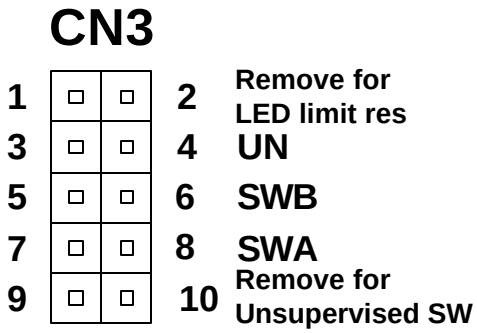
3.1 Switch Configuration

The header CN3 is shipped with three jumpers. The position of the jumpers, when shipped from the factory, is shown in the following figure. The initial position of jumpers B and C configure the switch to act to as a type A switch. Jumper A is 'parked' and is included to short out the LED current limiting resistor if necessary.



Initial Position of Jumpers A, B and C

The switch is connected to the DXI system through pins 3 and 4 of header CN1. Positioning two jumpers on CN3 can configure the switch to operate in three different modes. The jumper locations for the three configurations are summarized in the following table.



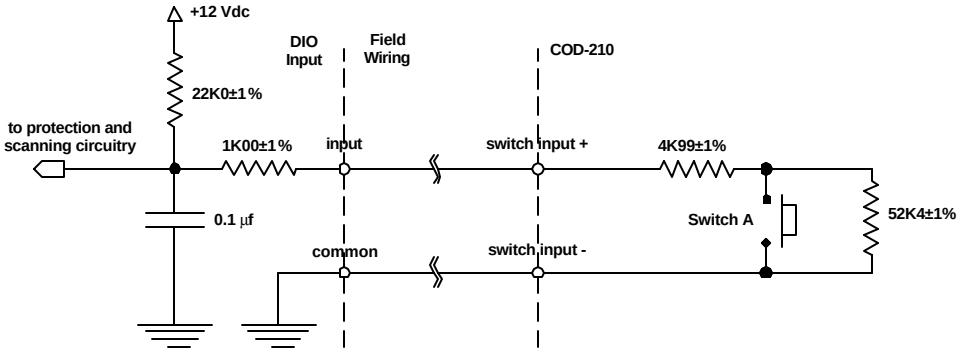
Pin Numbering for CN3

Switch Type	Jumper B	Jumper C
SWA	7-8	9-10
SWB	5-6	9-10
Unsupervised	3-4	Removed

Jumper Positions to Configure the Switch

The three switch configurations and the DIO connection are given in the following diagrams.

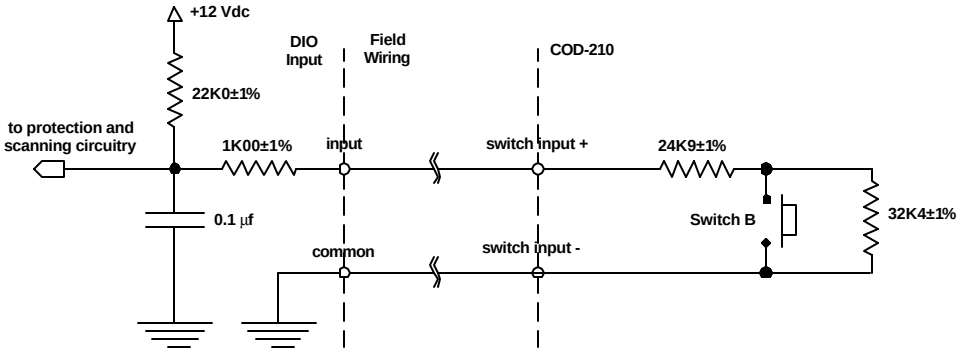
Switch A



Equivalent Circuit when configured as SWA

When configured as switch A the voltage at the DIO inputs should be 8.6 volts normally and change to 2.1 volts when the switch is pressed.

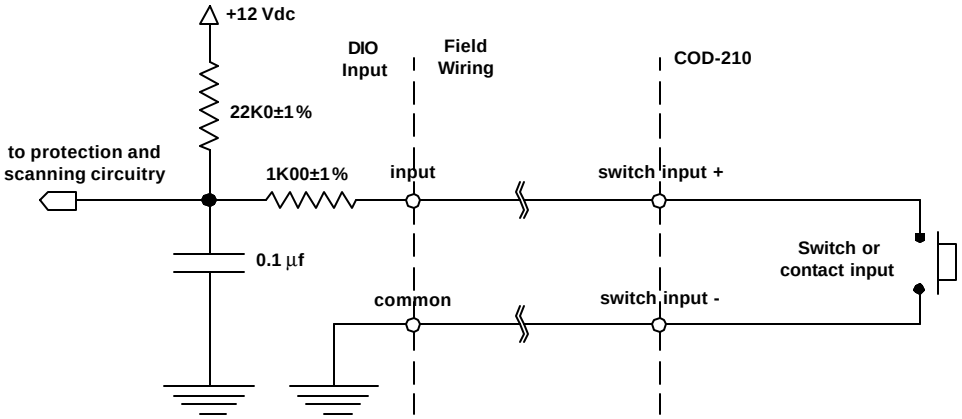
Switch B



Equivalent Circuit when Configured as SWB

When configured as switch B the voltage at the DIO inputs should be 8.6 volts normally and change to 6.3 volts when the switch is pressed.

Unsupervised



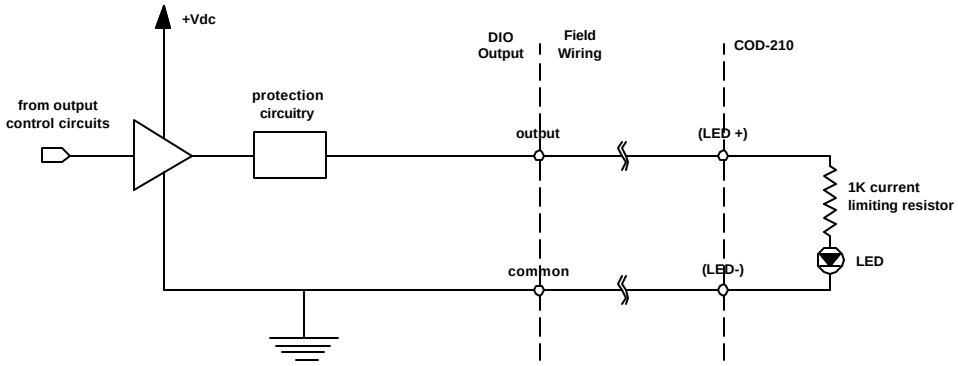
Equivalent Circuit when configured as Unsupervised Switch

When configured as an unsupervised switch the voltage at the DIO terminals should normally be 12 volts and change to 0 volts when the switch is pressed.

3.2 LED configuration

By inserting a jumper on header CN3 the LED current limiting resistor can be bypassed. This would be used if the DIO already has a current limiting resistor. To bypass the resistor jumper A should be moved to short out pins 1-2 on CN3. Use of the LED with the three possible DIO outputs is given in the following diagrams.

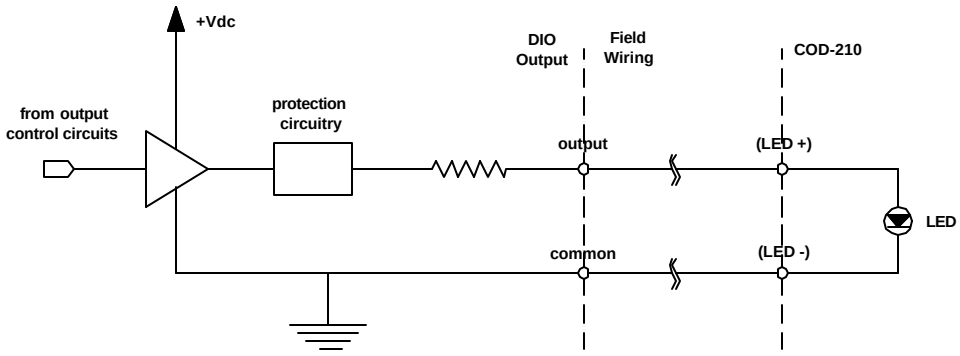
Source Output



Equivalent Circuit with DIO Source Output

If the DIO has a source output the current limiting diode should be used.

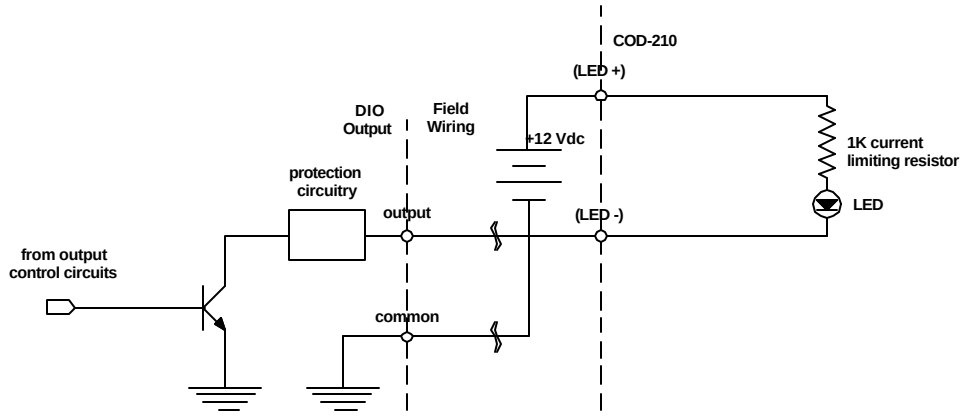
LED Driver Output



DIO with LED Driver Output

If the DIO is has an LED Driver Output then the current limiting resistor can be bypassed.

Sink Outputs



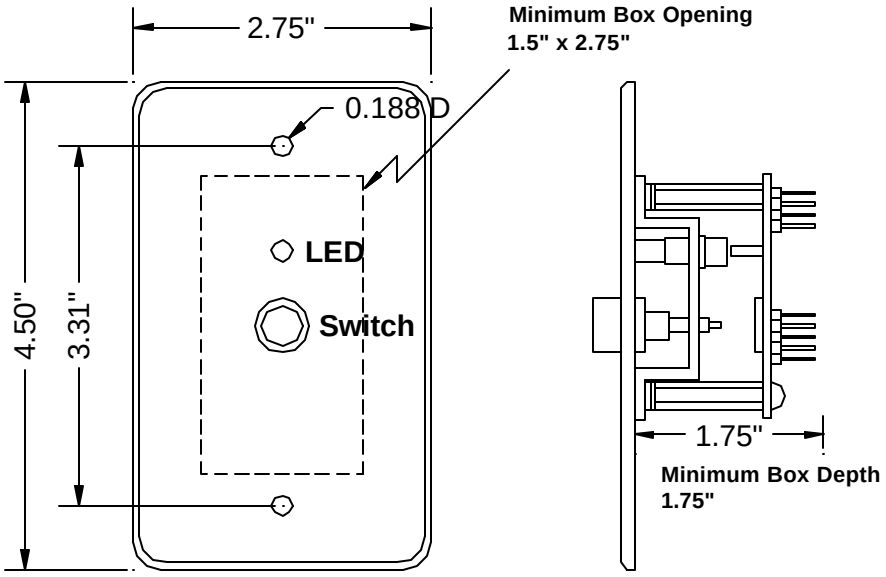
DIO with Current Sinking Output

If the DIO has an open collector transistor output the COD LED can be wired to indicate an output. In this case the current limiting resistor should be used. A +12 Vdc supply must be wired back to the LED + input on the COD.

If the available power supply is different than +12 Vdc the resistor on the PC board, labeled R4, can be replaced with another resistor The resistor value should be selected that so that the LED current will be limited to approximately 10 mA.

3.3 Mounting the COD

The COD-210 Call Operating Device is designed to mount in a standard single gang electrical box. (It is compatible with standard #6-32 mounting hardware). The box for the COD-210 with jumper selectable terminations must have a minimum depth of 1.75 inches.



COD 210 with Jumper Selectable Terminations

4. Installation of COD with Pigtail Leads

The COD-210 without jumper selectable terminations will have 9" pigtail wires available with ½" tinned leads for connection to the field wiring. A twist type connector should be used to make the connection. A supervised COD switch with termination resistors will act as a type A switch for DIO inputs. If the switch has a LED included then a 1K-ohm current limiting resistor is included to protect the LED. The following table gives the wire colors for the various configurations for a COD.

Wire function	Unsupervised switch – No LED	Unsupervised Switch – With LED	Supervised Switch - No LED	Supervised Switch - With LED
Switch Input +	red	red	red	red
Switch Input -	red	red	green	green[1]
LED +		yellow		yellow
LED -		blue		green[1]

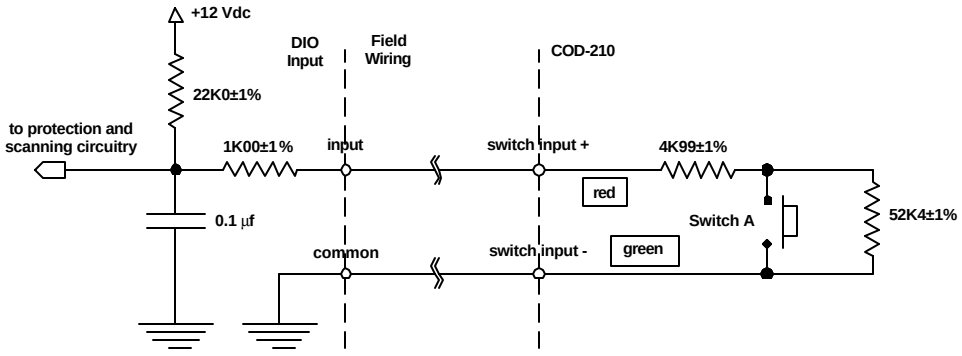
[1]LED – and Switch input – are connected together and brought out on a single green pigtail

Wire colors for COD-210 with pigtail terminations

4.1 Switch Configurations

The two possible switch configurations for the COD-210 with pigtail terminations are either as a supervised switch (acts as a DIO type A switch) or as an unsupervised switch. The two switch configurations when connected to a DIO are given in the following diagrams.

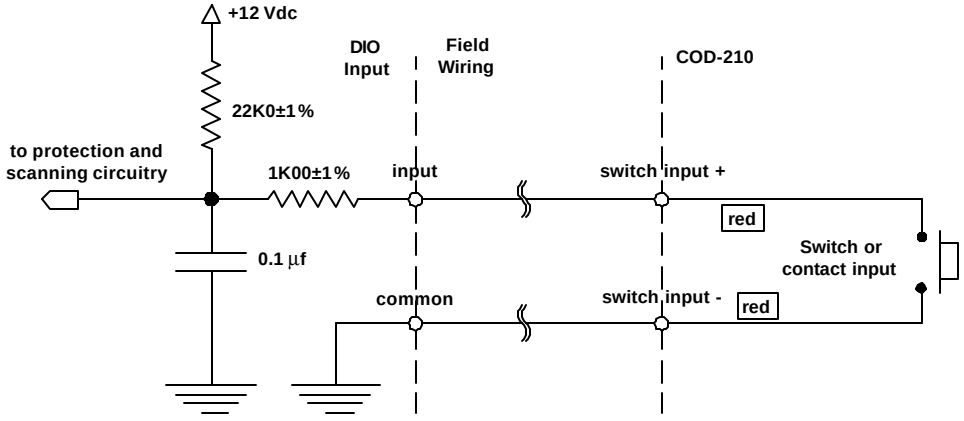
Switch A



Equivalent Circuit with Supervised Switch

With the supervised switch the voltage at the DIO inputs should normally be 8.6 volts and change to 2.1volts when the switch is pressed

Unsupervised Switch

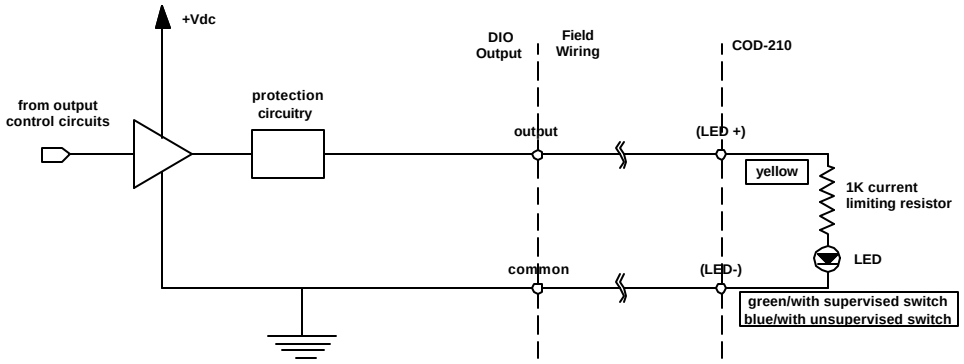


Equivalent Circuit with Unsupervised Switch

With an unsupervised switch the DIO inputs should be 12 volts normally and change to 0 volts when the switch is pressed

4.2 LED Configuration

A 1 K ohm resistor is wired into the circuit to limit the current through the LED. With the current limiting resistor a DIO source output can be used to drive the LED.

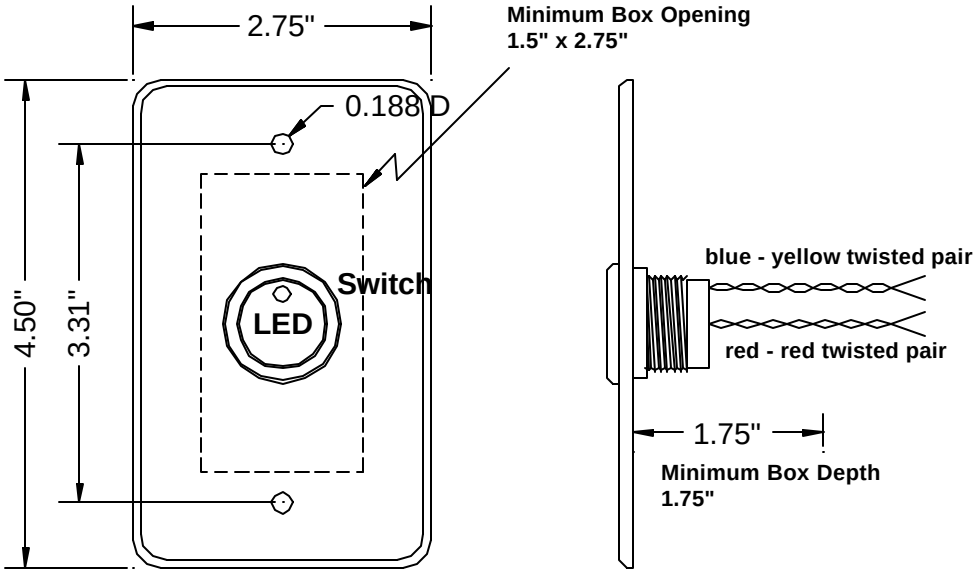


DIO with Source Output

Note: If the DIO you are using has an LED driver output or a current sinking output you should contact Harding Instruments and either special order the COD-210 or make field modifications to the termination network

4.3 Mounting the COD

The COD-210 Call Operating Device is designed to mount in a standard single gang electrical box. (It is compatible with standard #6-32 mounting hardware). The box for the COD-210 with pigtail terminations must have a minimum depth of 1.75 inches.



COD 210 with Everswitch

A COD with a either a piezo-electric switch or mechanical switch that has pigtail type terminations must have a box opening of 1.5” x 275” and a minimum depth of 1.75”.