



## LNK-AO

# Analog Output Peripheral Device Operation Manual

Rev B | 2017.03

[www.critical-environment.com](http://www.critical-environment.com)



Weight	400 g (14 oz)
Size	5.0" x 5.0" x 2.8" (127 mm x 127 mm x 71 mm)

### USER INTERFACE

Indicator	LED green indicator for power
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### ELECTRICAL

Power Requirements	24 VDC (from daisy-chain wire run from controller)
Power Consumption	2.6 Watts (power consumption of LNK-AO only)
Circuit	Configurable microprocessor
Fuse	Automatic resetting thermal

### INPUT / OUTPUT

Outputs	Four 4 - 20 mA Modbus® RS-485
Communication	Modbus ID: 75 (default, configurable) Baud Rate: 19,200 (default, configurable)

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### INTRODUCTION

The LNK-AO Analog Output Peripheral Device adds four channels of 4 - 20 mA analog outputs to a Modbus® RS-485 network configured with a QCC Quad Channel Controller or an FCS Flexible Control System Controller.

The LNK-AO is designed to send a 4 - 20 mA signal to up to four devices such as a trend / logging system, a BAS, DDC or VFDs.

The four 4-20 mA output signals are current sourced and can be independently scaled using the code menu system on the controller. Each output can be assigned to an individual sensor or to a group of sensors through zoning configured within the controller.

Communication between the networked devices is monitored by the controller and if interrupted a pre-configured default state will be implemented until communications are restored.

### Key Features

- » Four 4-20 mA output channels
- » Power LED indicator
- » Standard Modbus® RS-485 RTU

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### ENVIRONMENTAL

Operating Temperature	-20°C to 40°C (-4°F to 104°F)
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### CERTIFICATION

Model: LNK-AO  
S/N: LNKAO1603B00001  
Rating: 24 VDC, 3W, Class 2  
Max Temp: -20°C to 40°C (-4°F to 104°F)



CERTIFIED FOR ELECTRIC SHOCK & ELECTRICAL FIRE HAZARD ONLY. LA CERTIFICATION ACNOR COUVRE UNIQUEMENT LES RISQUES DE CHOC ELECTRIQUE ET D'INCENDIE D'ORIGINE ELECTRIQUE.

Conforms to: CSA-C22.2 No. 205-12, CSA-C22.2 No. 61010-1-12  
UL508 (Edition 17):2007, UL 61010-1 (Edition 3)

Conforms to: EMC Directive 2004/108/EC  
EN 61010-1:2010

Conforms to: FCC. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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- » Scaling and zoning capabilities supported by the FCS
- » Configurable default settings for any interruption in communication
- » Standard water / dust tight, corrosion resistant enclosure (drip proof)

The maximum number of LNK-AO devices that can be attached to the QCC Quad Channel Controller is one.

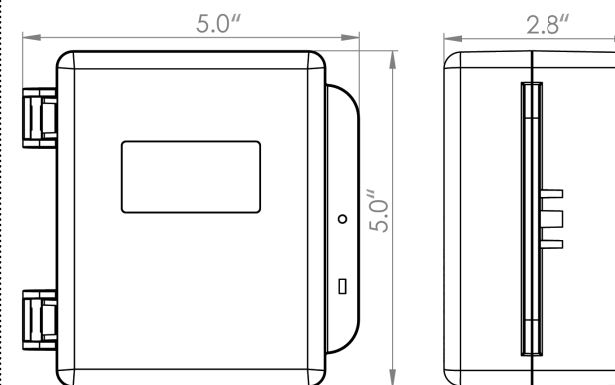
The FCS Flexible Control System can accommodate up to a maximum of 60 analog outputs made up of different combinations of LNK-AO peripheral devices and internal -AO options. The maximum number of LNK-AO devices that can be attached to the FCS is fifteen. However, that maximum will change depending on whether one or two of the internal -AO options are installed.

Analog Output Options	Maximum # of LNK-AO's
No internal -AO option (0 internal analog outputs)	15 (60 remote analog outputs)
One internal -AO option (4 internal analog outputs)	14 (56 remote analog outputs)
Two internal -AO options (8 internal analog outputs)	13 (52 remote analog outputs)

**NOTE:** Depending on the number of devices attached to the gas detection

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### Standard Enclosure Dimensions



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system, additional power supplies (RPS-24VDC) and/or network extenders (LNK-XT) may be required. If after reading through this manual, you have any questions, please do not hesitate to contact our service department for technical support.

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This product must be installed and inspected by a qualified electrician or factory trained technician. This instrument has not been designed to be intrinsically safe. For your safety, **do not** use it in classified hazardous areas (explosion-rated environments).

### INSTRUMENT SPECIFICATIONS

#### Technical Specifications

MECHANICAL	
Enclosure	ABS / Polycarbonate, corrosion resistant, drip proof; Copper coated interior to reduce RF interference.
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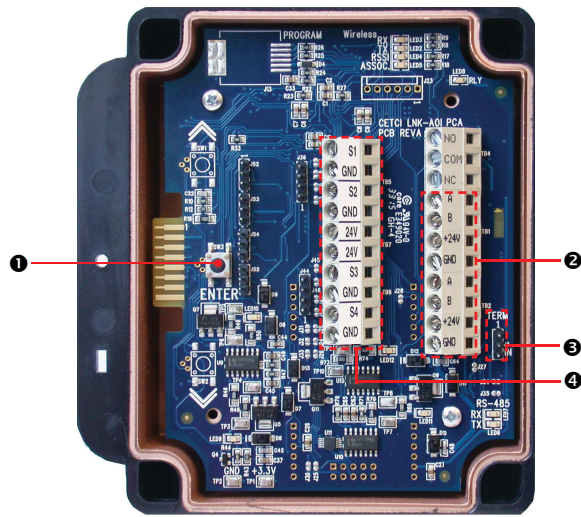
### Exterior Enclosure - Front



NUMBER	FEATURE	FUNCTION
1	Door Hinge	Secures door
2	Window for LED	Indicates device is powered on.
3	Door Screw	Secures door
4	Padlock Opening	For security padlock

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## Interior System Layout



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NUMBER	FEATURE	FUNCTION
1	Push Button	Used for changing the Modbus ID
2	Modbus® Connector (TB1 and TB2)	Terminals used to connect other devices in the Modbus® network
3	Jumper Bank 5 (J5)	Termination resistor. If this device is the last one in the network chain, a termination resistor should be connected by placing a jumper in the EN position
4	Analog Output Terminal Block (TB5, TB6 and TB7)	Terminals used to connect one to four 4-20 mA analog output devices

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## WIRING CONNECTIONS

All wiring should be run within properly grounded (earth or safety) conduit. Signal output and supply should be in shielded cable. The cable shield should be connected to earth ground at the controller/power supply that is providing power for the LNK-AO.

### Wiring Power Connections

The LNK-AO is a low voltage powered device. Any application of operating voltages higher than indicated in the specification may result in damage.

Double check wiring connections prior to powering the transmitter. Damage from incorrect wiring connections or from too much voltage applied is not covered under warranty.

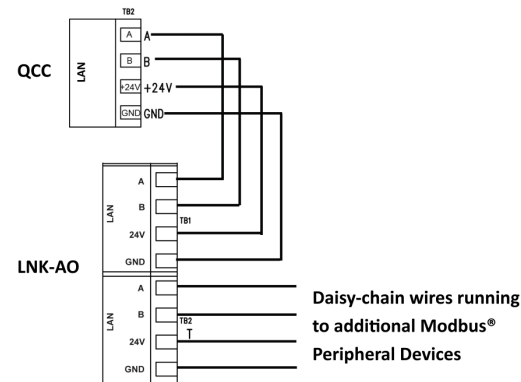
External power to the LNK-AO must be supplied by a 24 VDC power supply or a Class 2 (or better) transformer and connected to the Modbus wiring terminal. The wiring should be 4-conductor shielded 16 awg stranded within conduit in a network wiring (daisy-chain) configuration.

**NOTE: WARRANTY VOID IF SOLID-CORE WIRE IS USED AT THE WIRING TERMINAL STRIP.** When using solid core wiring for distribution (in the conduit), use stranded wire pigtails 18 AWG within the enclosure to connect

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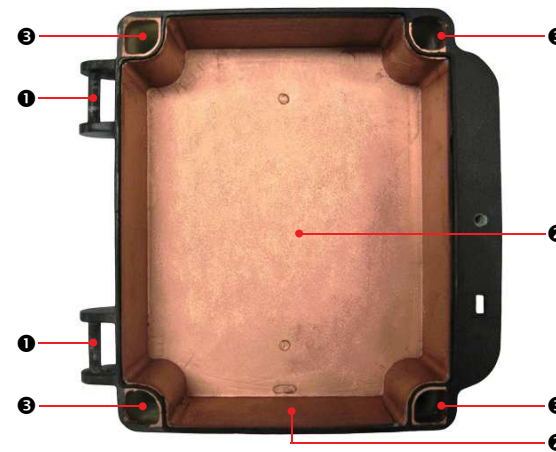
to the circuit board. The rigidity of solid-core wire can pull a soldered terminal strip completely off a circuit board and this will not be covered under warranty.

### Wiring Example: 4-Wire VDC to QCC Controller



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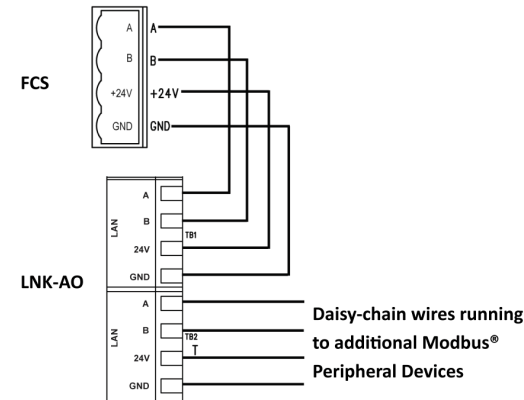
## Interior Enclosure - Base



NUMBER	FEATURE
1	Door Hinge
2	1/2" Conduit Entry Knockout
3	Mounting Holes

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### Wiring Example: 4-Wire VDC to FCS Controller



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## INSTALLATION

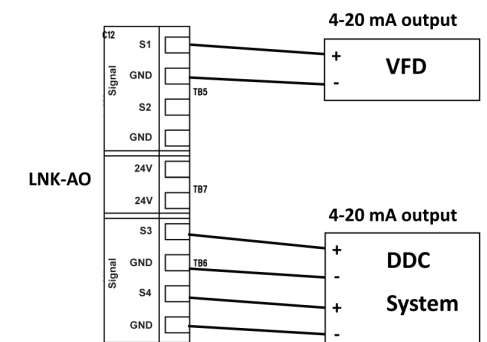
The LNK-AO should be installed on a flat vertical surface using the four 4.4 mm (0.175") diameter mounting holes provided to maintain water tight status. Two 12.7 mm (1/2 in) conduit entry points are provided in the enclosure. Both are located in the enclosure base. One in the rear of the base and one on the bottom edge of the base. The clearance from the PCA to the base enclosure is 12.7 mm (1/2 in). **Do not use a conduit connector that has more than 12.7 mm (1/2 in) of thread length.**

**NOTE:** When mounting the enclosure, allow enough room to allow the end user to open the door fully to access the wiring terminal.

The LNK-AO is intended for indoor use and should be protected from extreme weather conditions. The LNK-AO requires no assembly and virtually no maintenance other than ensuring that excess water or dust is not somehow entering the enclosure and physically damaging the circuit board or internal components. There are no serviceable or replaceable elements or components in this device.

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### Analog Output Wiring Connection



**NOTE:** Wiring connections shown are for illustration purposes. Analog output sources may be something other than a VFD or DDC.

**NOTE:** 2-10 volt output is attainable using a 500 ohm resistor.

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