INSTALLATION INSTRUCTIONS

MicroComm DXI

Rack Mount Dual CRI-200 Card Reader Interface

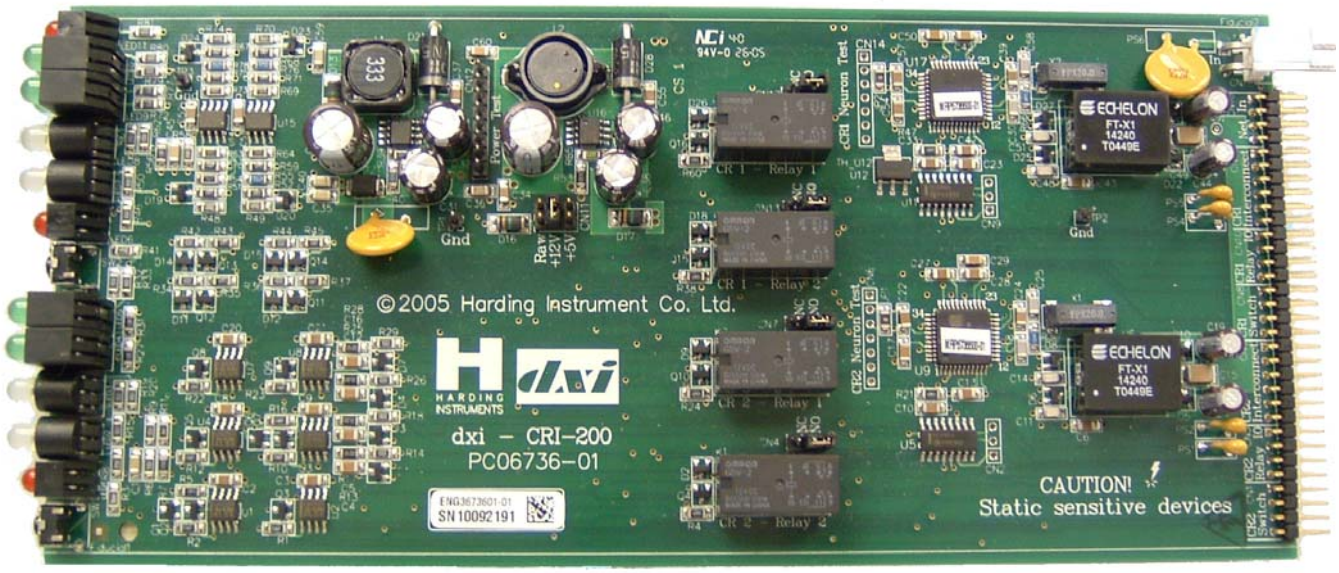
1 Intent and Scope

This document describes the installation procedures for the CRI-200 Rack Mount Dual Card Reader Interface.

2 Description

The CRI-200 Rack Mount Dual Card Reader Interface allows up to two independent card readers with standard Wiegand interfaces to be connected to a free topology LonWorks network. Card data received on the Wiegand interface is processed and made available to the LonWorks network. LonWorks devices can also send commands to the CRI that control the state of LED and buzzer outputs that are connected to the card reader. The CRI has two relay outputs (the outputs can be selected to be either normally open or normally closed) and two supervised switch inputs. These I/O points can be monitored and controlled from the LonWorks network. The PCB card is modeled on 4HP spacing and is designed to mount vertically into a 3U Europac subrack with up to twenty-one cards fitting in to a standard 84HP rack. The subrack in turn mounts into a standard 19" equipment rack.

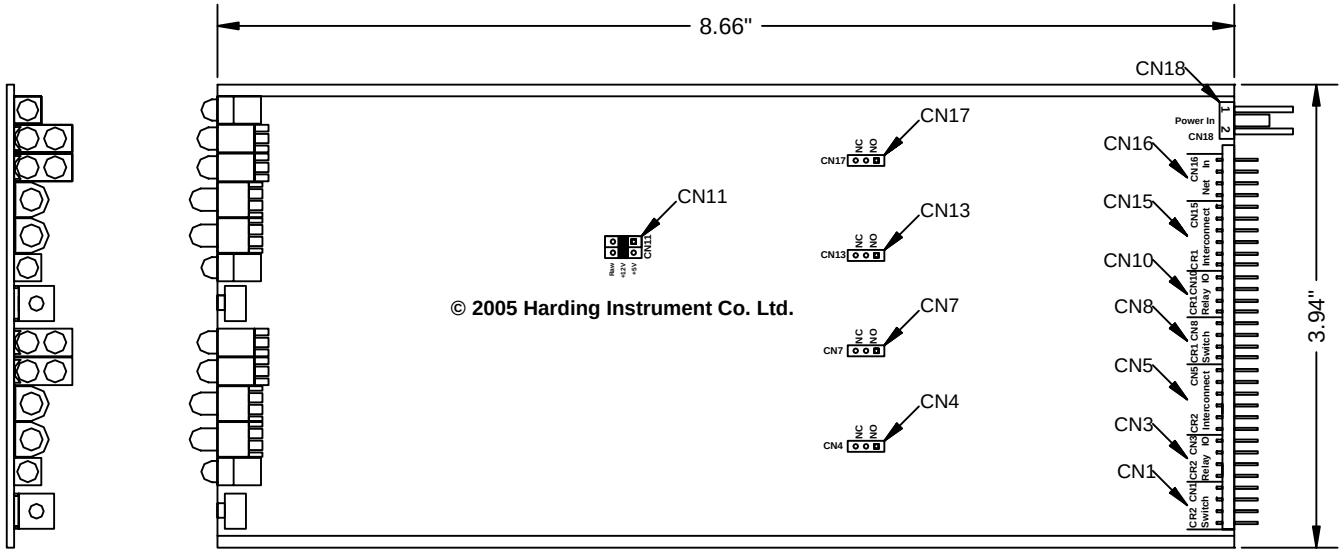
Power is made available via a single feed through style MTA-156 connector. Card reader, switch input, and relay output connections are available through separate MTA-100 style connectors. Network connections are made with a four-pin feed through style MTA-100 connector.



CRI-200 Rack Mount Dual Card Reader Interface

3 Electrical Connections to the CRI-200

A simplified printed circuit diagram of the CRI-200 is shown below. It has an MTA-156 connector to supply power to the unit. Two sets of MTA-100 style connectors are used to provide connections to the card readers, external switches and relay outputs for each CRI. An MTA-100 connector is used to provide connections to the LonWorks network. Each CRI has seven LEDs that indicate the status of the CRI.



CRI-200 Interface Board showing Terminal Blocks

To make these connections to the MTA-100 connectors you should use an AMP Handle Assy 58074-1 tool with a 58246-1 head. The cable should be cut to length and the shield and outer jacket should be trimmed back about 1/2 inch. Ensure that the shield is not exposed or it may short out exposed contacts on the intercom PCB when it is installed.

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 intercom station.

Placing a jumper on CN11 in one of three positions allows you to select a card reader voltage of 24Vdc, 12Vdc or 5Vdc. The position of jumpers on CN17 and CN13 allows you to select relay outputs for card reader 1 that are either normally open (NO) or normally closed (NC). CN7 and CN4 provide the same option for card reader 2.

3.1 Electrical Connections

3.1.1 Power Connections

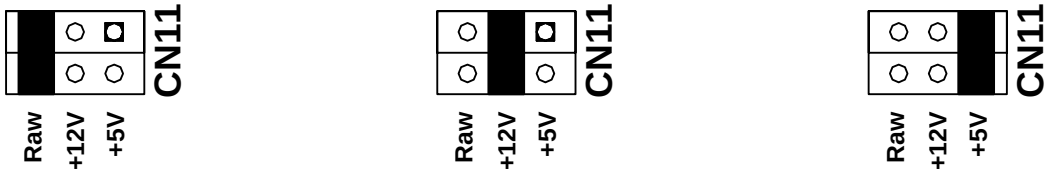
Power is supplied through an MTA-156 connector.

CN18	Function
1	15 Vdc – 28 Vdc, 650 mA max
2	DC Common in

MTA-156 Power Interconnect (18 AWG Two Wire Daisy chain)

Note: By moving a jumper the CRI-200 can supply either 24Vdc, +12 Vdc or +5 Vdc for the card reader. If the card reader requires +24 Vdc then the input power is supplied directly to the card reader. For example if a card reader requires a voltage of 24 Vdc ± 10% (21.6 Vdc to 26.4 Vdc) then the tolerance on the input voltage should be within these more restrictive limits.

The CRI-200 can supply +24 Vdc, +12 Vdc or +5 Vdc to the card readers (both card readers connected to the CRI must use the same voltage). Positioning a jumper on header CN11 makes the power selection. If the jumper is in position Raw the power supplied to the card reader is the same as the input power to the CRI (nominally +24 Vdc). If the jumper is in position +12V the output power to the card reader is from a regulated +12 Vdc supply, and if the jumper is in position +5V the output power to the card reader is from a regulated +5 Vdc supply. When shipped from the factory the jumper is positioned to supply +12 Vdc to the card reader. You should place the jumper in the correct position for your card reader before powering up the CRI-200; otherwise you could damage the card reader.



Jumper Position on CN11 for 24 Vdc, 12 Vdc or 5 Vdc Supply to Card Reader

3.1.1.1 Wiegand Interface

The power supplied by the CRI to the Wiegand Interface has the following specifications,

Jumper Position	Voltage tolerance	Current limitations
5 Vdc	5 Vdc +/- 10%	0.100A max per interface
12 Vdc	12 Vdc +/- 10%	0.250A max per interface
Raw*	24 Vdc +/- 10%	0.250A max per interface

* In this case the input voltage must be limited to 24Vdc +/- 10%, a Wiegand standard.

3.1.2 Network Connections

The LonWorks connections are made to CN16 through a four pin MTA-100-4 connector. The pinouts are as follows,

CN16	Function
1	Network Connect A
2	Network Connect B
3	Earth Ground (Internally connected to pin 4)
4	Earth Ground

MTA-100 Network Connect (22 AWG Two Wire Daisy chain)

The two terminals labeled NET are used for LonWorks connections. Terminal 1 is for the NETA connection while terminal 2 is for the NETB connection.

Pin 3 or 4 should be externally connected to Earth Ground to provide a discharge path for lightening and ESD strikes.

3.1.3 Card Reader 1 and Card Reader 2 Connections

Each card reader interfaces the CRI-200 via three MTA-100 connectors. The connectors for Card Reader 2 are given in brackets. The pinouts for CN15 (CN5), a six pin MTA-100 connector, are as follows,

CN15 (CN5)	Function	Comments
1	Vreader	Jumper selectable Wiegand voltage, either +24Vdc, +12Vdc or +5Vdc.
2*	DC Common Out 1	Power supply common and card reader shield wire
3	CR1 Data0	Wiegand card reader 1 data 0 input
4	CR1Data1	Wiegand card reader 1 data 1 input
5	CR1 LED Out	Wiegand card reader 1 LED control output
6	CR1Buzzer Out	Wiegand card reader 1 Buzzer output

MTA-100 CR1 External Card Read Interconnect (22 AWG)

*Two wires need to be connected to pin 2. Place the bare shield wire under the insulated ground wire before pressing the tool to insert both the wires.

The connections from the Card Reader to the CRI are made by means of terminal block CN15 (CN5). The connection for power to the card reader is made to terminals 1 and 2 of CN15 (CN5). The data outputs from the card reader are made to terminal 3 (D0) and terminal 4 (D1). LED and Buzzer outputs from the CRI to the card reader are available on terminals 5 and 6 of CN15. The wire colors for a Wiengard standard interface are specified as follows:

Signal Name	Wire Color	CN15 terminal number
PWR	Red	1
GND	Black	2
D0	Green	3
D1	White	4
LED	Brown	5

Buzzer	Blue	6

Two relay outputs can be controlled through the LonWorks network. By setting a jumper on the PC board the relay outputs can be either normally open or normally closed. The four pin MTA-100 connector has the following pinouts.

CN10 (CN3)	Function
1	CR1 (CR2) Relay Out 1
2	CR1 (CR2) Relay Common 1
4	CR1 (CR2) Relay Out 2
5	CR1 (CR2) Relay Common 2

MTA-100 CR1 (CR2) Relay Interconnect (22 AWG)

The position of a jumper on CN17 (CN7) determines whether the Relay 1 output of Card Reader 1 (2) is NO or NC. The jumper position on CN 13 (CN4) determines if the Relay 2 output of Card Reader 1 (2) is NO or NC.

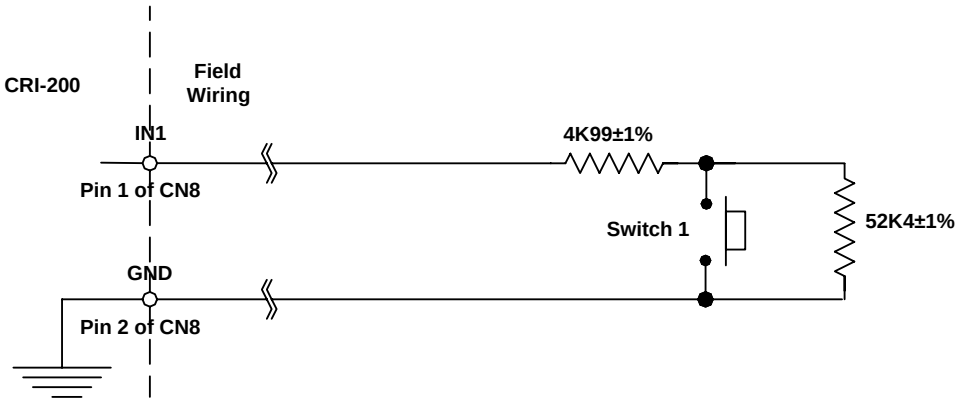
Jumper Position on CN17 for NC or NO relay operation on Card Reader 1 Relay 1

The maximum ratings for each relay output is 30 Vdc and 1 A.
Two switch inputs can be connected to the card reader interface.

CN8 (CN1)	Function
1	CR1 (CN2) Switch Input 1
2	DC Common
3	CR1 (CN2) Switch Input 2
4	DC Common

MTA-100 CR1 Switch Input Interconnect (22 AWG)

Switch inputs can be connected to CR1 (CR2) Switch Input 1 pin 1 and DC common pin 2 of CN8 (CN1), CR1 (CR2) Switch Input 2 pin 3 and DC common pin 4 of CN8 (CN1). Supervised switches require terminating resistors that allow the CRI to detect open or shorted switch lines. For supervised switches the following resistor network is required (shown for Switch 1).



Terminating Resistors for Supervised Switches

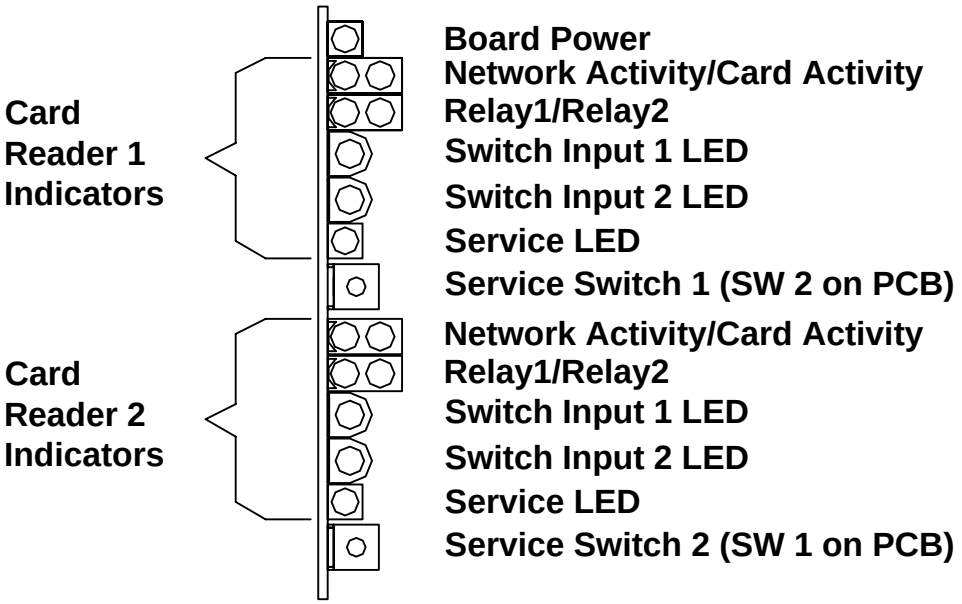
The input terminal voltages on Pin 1 of CN8 (CN1) will appear as follows,

Input State	Wiring	Switch 1	Voltage
Open Fault	Open Circuit	N/A	5.0
Idle	Normal	Not Pushed	3.56
Switch 1 Pressed	Normal	Pushed	.89
Short Fault	Short Circuit	N/A	0

3.2 Status LEDs

The Card LED will flash whenever a card is passed by the reader. The Network Activity LED will flash whenever there is activity on the LonWorks network. The Service LED and Service Switch are used to identify problems and trouble shoot the CRI-200. The Relay LEDs will light when the relays are on, regardless of whether or not normally open or normally closed contacts are selected. The switch LEDs light up green when the monitored switches are closed and will remain off if the monitored switches are open. In the event of a fault the switch LEDs will light up as red for an open circuit and orange for a short circuit.

The CRI-200 LEDs and functions are shown on the following diagram.



The Service Switch and Service LED interface to a standard LonWorks node and are connected directly to the onboard Neuron.

4. Mounting the CRI-200

The CRI-200 is a single 100mm x 220mm printed circuit board designed to fit into a standard 3U Eoropac subrack.