

PRC-001

ClearNet Proximity Reader Controller

INSTALLATION AND OPERATION MANUAL



ISONAS

...The integrated solution for access control...

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ClearNet Proximity Reader Controller PRC-001 Installation Manual

The purpose of this manual is to provide the information required to install, operate and maintain the ClearNet proximity reader controller, PRC-001, from ISONAS.

This manual is intended for those individuals (end user or dealer) who will be installing, configuring and placing the ClearNet proximity reader controller, PRC-001, in operation at a given installation site. The information provided in this manual is not intended to either conflict with or supplement the specific building, electrical, fire, or safety codes required by law for any given installation.

The following are the general specifications of the ClearNet proximity reader controller, PRC-001.

Table 1 - PRC103 Specifications

Input Voltage	6.5 to 16 Volts DC
Current Draw	less than 150 mA
Read Range	0 to 4 inches typical @ 12VDC
Read Speed	<250 msec
Exciter Field Frequency	125 kHz
Modulation	FSK/ASK
Communication Interface	RS485 synchronous polling protocol
Relay Rating	2A/30VDC
Inputs/Outputs	3 monitor inputs/2 TTL logic outputs
Standalone Memory	500 cardholders/250 events
Visual Indicators	2 LEDs, for normal operation and program mode
Operating Temperature	-4° to 140°F (-20° to 60°C)
Weight	approximately 6 ounces
Size	6.625 x 1.625 x 0.80 inches (16.8 x 4.1 x 2.0 cm)
Mounting Dimensions	6.00 inches centered (15.2 cm)

The proximity reader controller, PRC-001, consists of a rectangular sealed, all-weather housing that can easily fit on a door mullion or in any location near a door. The dark charcoal-blue housing is made of a UV stabilized polycarbonate blended material that is both durable and resistant to weather. Mounting holes are located exactly six (6) inches apart on the centerline of the short dimension of the housing.

The terminations are located externally in the rear of the housing for easy access and wiring of the reader. There is a total of twelve (12) terminals. Two for power (+/-), two for RS485 interface (Data A/B), two TTL outputs, three monitor inputs, three terminations for the relay (NC, NO, Common).

The reader as received is sealed by a backplate and gasket that should not be disturbed when mounting and installing the reader. The two mounting screws provided is tamperproof and will insure the all-weather protection of the reader when installed on a wall or door mullion.

Below is a drawing depicting the location of the mounting holes, terminals and general description of the housing enclosure of the reader.

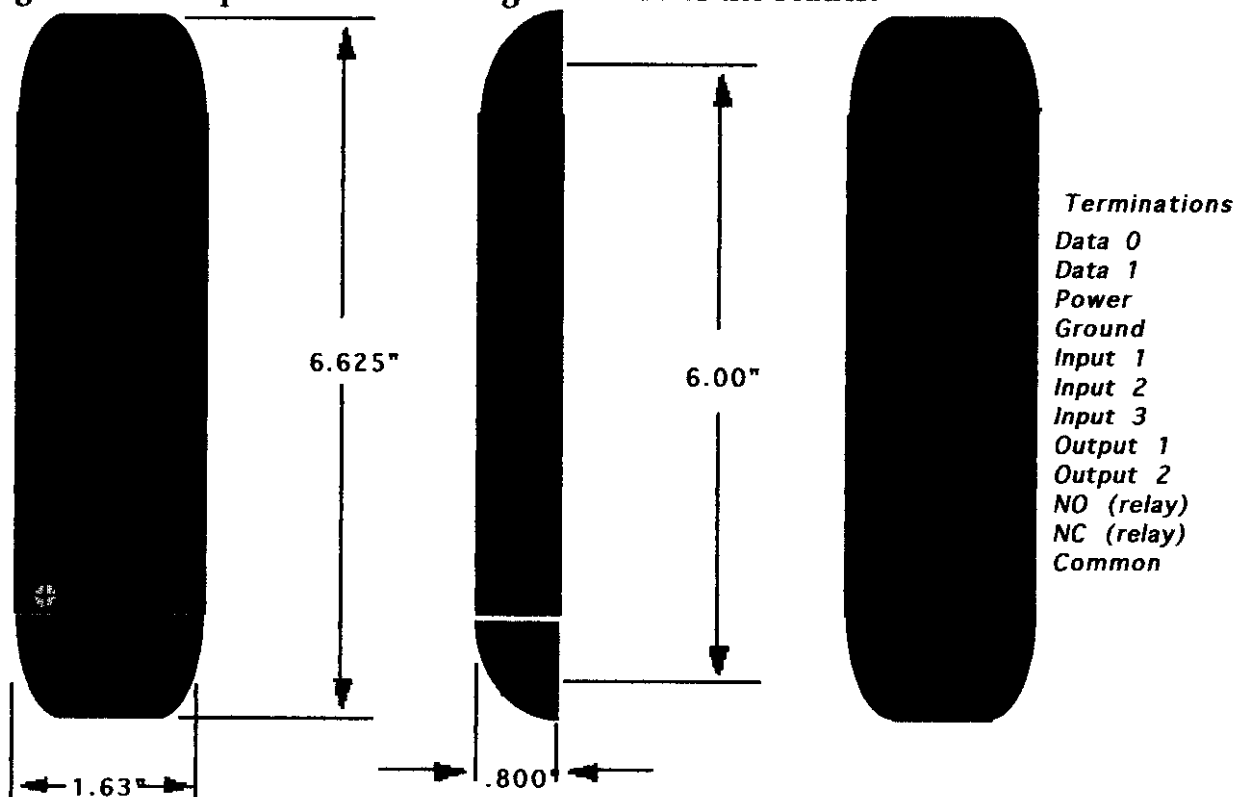


Figure 1 - ClearNet Proximity Reader Controller PRC-001 Enclosure

Some care should be taken when choosing a location to install the ClearNet proximity reader controller. The failure to locate the reader away from any radio frequency interference sources could cause reduced performance in read range and read speed. Do not locate the PRC-001 near broad spectrum EMI noises such as those generated by motors, pumps, generators, DC-AC converters, AC switching relays, light dimmers and CRTs.

The ClearNet proximity reader controller, is designed to be mounted directly onto metal, due to its metal compensated design. However, it is not recommended to frame the reader by any metal since this will degrade its read range performance. In general, metal in close proximity to the reader (on the sides) will adversely affect its read range/speed performance. You should never cover the reader with any type of metal.

Enclosed in the packaging should be two mounting screws; one proximity reader controller, PRC-001; this installation manual; and a packing list.

The ClearNet proximity reader controller, is a simple, self-contained reader designed and built for installation simplicity. There is no need to set any address switches, or remove the backplate to access terminals for any reason. All terminations are accessible from the outside of the reader, and the address number is imprinted on the label located on the backplate.

Make sure to install any input devices like a 'request for exit' (REX) and door sensor; the power supply; magnetic locking device; and any other output devices before installing the PRC-001. Pull all wiring terminations from these input/output devices to the door before you proceed with the wiring of the PRC-001.

Procedure

1. Recommend to remove about three inches of plastic insulation and shielding foil from one end of a dual, twisted pair cable (RS-485 wiring). Strip this wire back about a 1/4 inch and terminate them to the proper Data A and Data B terminals on the back of the reader.
2. Make sure all input/output/power device wiring are prepped and stripped for termination to the reader, and the power source is off before installing wires.
3. Terminate these devices to the reader at the proper terminals based on the type of configuration you have chosen to operate the reader. It is recommended that when power is applied to the reader that the reader relay is in a normally closed position. (Note: It is best to terminate all ground wire to one common wire and terminate this wire to the terminal marked ground)
4. Use a water-resistant sealant compound (like RTV) to seal the termination wiring around the terminals.
5. Mount the reader on the wall or mullion using the two anti-tamper mounting screws provided in the packaging kit.
6. Provide power to the reader and view the power up sequence.

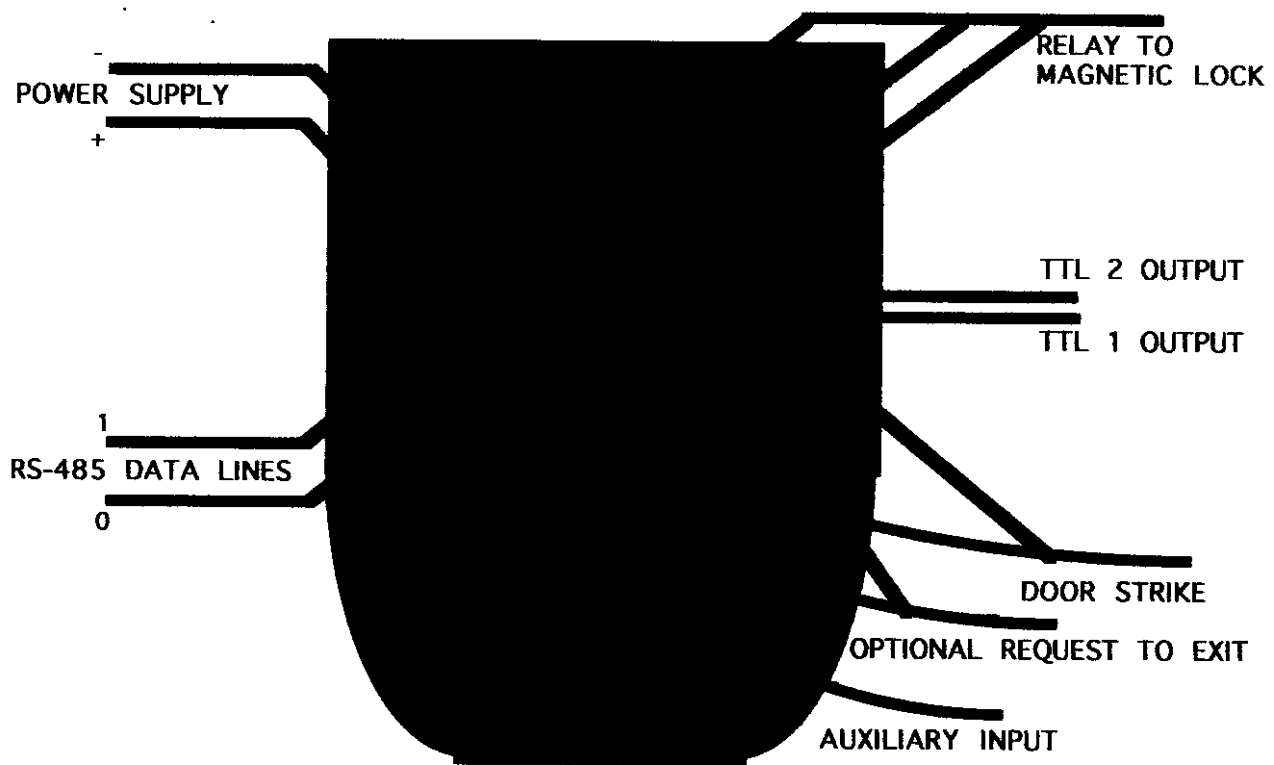


Figure 2 - ClearNet Proximity Reader Controller PRC-001 Connection Diagram

When powering up the reader, the reader will go through a diagnostic routine that takes about 10 - 15 seconds. The reader will initiate an audible tone within the first 5 to 10 seconds and the top red LED will turn on.

If the red LED is not turned on after about 30 seconds under power, please check the power. If the power is available, then return the reader to ISONAS for a replacement reader.

Note: Make sure the terminations to the power are secure, and if the relay is connected to the magnetic lock, you should immediately hear the relay trip the lock when power is applied. If the relay works and the top red LED is not on, then the reader is not functioning properly.

Standalone Operations:

There are two methods to program the reader for standalone operations. The first method is through three different cards that can be programmed for "adding" cards, "deleting" cards, and "locking" down the door reader. The second method is to program the reader through the PC directly connected to the reader through the RS-232 serial port. (**Note:** You will need an RS-485 to RS-232 converter plug to achieve this connection from the reader to the PC).

First Method-


In the first method, the installer can provide programmed cards for the three options of "adding", "deleting", and "locking " out cardholders. Once you possess the three master cards, you can add and delete cardholders by using either card to put the reader in a state of being programmed. The lock card is used to lock down the door during off hours.

When you use any of these three cards, the bottom LED will light up amber. The three master cards work like a toggle switch, they will switch the reader in one of three states (add, delete or lock). When you add cards, you present the "add" master card to the reader to put the reader in program mode (bottom LED turns amber) and you then sequentially present cards to the reader that you want to add (the top LED will blink green every time you present a card). In order to delete cards, you present the "delete" master card to the reader (bottom LED turns amber), and subsequent cards presented will be deleted from memory (the top LED will blink red every time you present a card). In order to lock the door down, you present the "lock" master card and both LEDs will turn red to denote the door is locked down.

Second Method-

The second method to program the reader allows more flexibility. You will need our programming software package which allows you to download programming, print reports of captured events from the reader, and view them on the PC. This program also provides you flexibility to choose options for the beeper, your inputs and outputs on the reader. This program also gives the user the flexibility to set the "add", "delete", and "lock" master cards. This ability will allow an end user to replace a lost master card with a new programmed card, or you can designate a master card to a specific employee.

This program is very user friendly and is Windows 95/98/NT compatible with a familiar Windows GUI interface.



The ClearNet Proximity Reader Controller is a highly reliable reader with no moving parts. It operates at a low voltage (+9 to +15 volts) and draws very little current during operation. However, there are environmental issues to be aware of when operating RF/ID proximity readers.

1. Make sure that you have located the reader in an area that is fairly low in radio frequency interference, since the harmonics of external radio frequency sources could affect read range and read speed of the reader.
2. Although the PRC-001 reader is designed to be mounted on metal surfaces without any effect in read range and speed, make sure that metal does not shield the sides of the reader, since this could adversely affect read range and read speed.
3. If power is evident to the reader by the indication of the top LED turning red, and there is no response after presenting a card or tag, get an alternative card or tag since most likely the card or tag is non-functional.
4. If power is evident to the reader by the indication of the top LED turning red, but other inputs are not functioning, make sure you have programmed these input activities from the programming software, and check the relay terminations.

If all the connections on the reader are correct, and power is evident by the indication of the top LED being red, and there is a non-functioning feature, call ISONAS at either 303-440-5155 or 949-713-2742 and ask for field service.

The PRC-001 "ClearNet" Proximity Reader Controller is a new type of access control reader product. This device is unique because it has the ability to make access control decisions on a standalone basis due to its onboard relay and monitor inputs and outputs, and it can be seamlessly connected together controlled by a PC host system to make the access control decisions in a network mode. An individual with a valid RF/ID transponder in a card or tag has the ability to enter through a door fitted with the PRC-001 door access reader.

The PRC-001 is powered by a 12 volt DC power source and can communicate directly to a PC host system through its RS-485 serial communication interface using a proprietary communication protocol. The communication between an RF/ID card or tag transponder, and a reader controller is accomplished via magnetic coupling between the antennae on both the transponder and reader using FSK (frequency shift keying) modulation.

The PRC-001 can be connected directly to a PC host through an industrial RS-485 interface connection using twisted pair wire. Up to 255 readers could be connected in a daisy chain or star configuration directly to the PC host. (Even though this is the physical limit, it is not necessarily practical in most installation cases).

In Figure 3 below, is an example of a daisy chain wiring topology that is recommended if networking the readers together to a PC host with our Crystal Access networking software (Crystal Matrix or Crystal Prism).

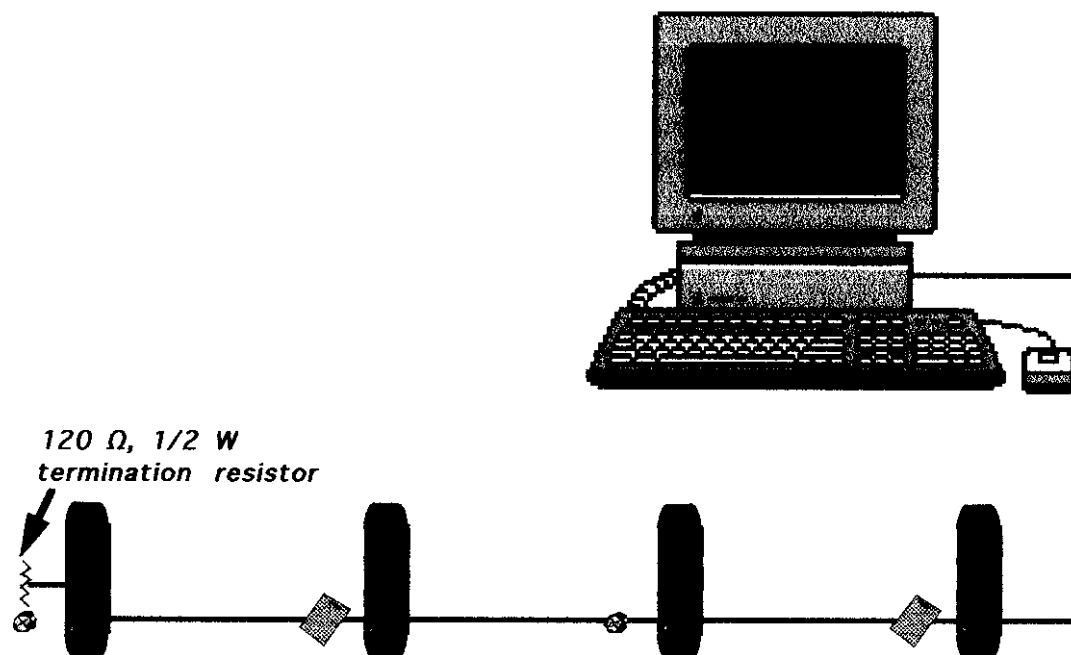


Figure 3 - Typical Daisy Chain RS-485 Topology of Networking PRC-001's

It is very important to terminate all RS-485 connections with a 120 ohm termination resistor identified in the figure above when using a daisy chain wiring configuration. When connecting to the PC, you will need to use an RS-485 to RS-232 converter plug. Other wiring configurations using off-the-shelf RS-485 hubs and repeaters will work seamlessly with the PRC-001 readers.
