

CABLE SPECIFICATIONS

Application	NCI Part No.	AWG	Description	Max. Dist.	Imp.	Cap.
N-485 connections	NC2442-TN	N/A	Belden 9842 or equivalent	4000' (1200 m)	120W	12.8pF/ft
Readers/Keypads with Wiegand style INTERFACE	NC1861-BL	18	6 conductor shielded	500' (152 m)		
Alarm input points	NC 2221-BR	22	2000' (610 m)			
Relay outputs	NC 1821-OR	18	twisted pair, shielded	2000' (610 m)		

Note: For plenum rated cable just add a "P" to Engineered Systems' NC part number prefix; for example NC1861-BL becomes NCP1861-BL.

NCI CABLE PART NUMBERS

Part Number	Description	Application	Length
NC1841-GY	18 AWG/4 conductor	reader cable	1,000' (304.8m)
NC1861-BL-500	18 AWG/6 conductor	reader cable	500' (152m)
NC1861-BL	18 AWG/6 conductor	reader cable	1,000' (304.8m)
NC18121-YL-500	18 AWG/12 conductor	keypad cable	500' (152m)
NC18121-YL	18 AWG/12 conductor	keypad cable	1,000' (304.8m)
NCNET-1	50	network cable	1,000' (304.8m)
NC2221-BR	22 AWG/2 conductor	alarm cable	1,000' (304.8m)
NC1821-OR	18 AWG/2 conductor	power/door cable	1,000' (304.8m)
NCC59206-BK	RG-59	video cable	1,000' (304.8m)
NCP1841-GY	18 AWG/4 conductor Plenum	reader cable	1,000' (304.8m)
NCP1861-BL-500	18 AWG/6 conductor Plenum	reader cable	500' (152m)
NCP1861-BL	18AWG/6 conductor Plenum	reader cable	1,000' (304.8m)
NCP18121-YL	18 AWG/12 conductor Plenum	keypad cable	1,000' (304.8m)
NCP18121-YL-500	18 AWG/12 conductor Plenum	keypad cable	500' (152m)
NCPNET-1	50 Plenum	network cable	1,000' (304.8m)
NCP2221-BR	22 AWG/2 conductor Plenum	alarm point cable	1,000' (304.8m)
NCP1821-OR	8 AWG/2 conductor Plenum	power/door cable	1,000' (304.8m)
NC2442-TN	24 AWG/120 12.8pF RS485 wire	communication cable	1,000' (304.8m)
NCP2442-TN	24 AWG/120 12.8pF Plenum	communication cable	1,000' (304.8m)

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PRO-2200 Single Reader Enclosure Installation Guide

Part Number: PRO22ENC4

WARNINGS AND CAUTIONS**WARNING**

Before installation, turn off the external circuit breaker which supplies power to the system.

Before connecting the device to the power supply, verify that the output voltage is within specifications of the power supply.

Do not apply power to the system until after the installation has been completed. Personal injury or death could occur, and the equipment could be damaged beyond repair if these WARNINGS are not observed!

Fire Safety and Liability Notice

Never connect card readers to any critical entry, exit door, barrier, elevator or gate without providing **an alternative exit** in accordance with all fire and life safety codes pertinent to the installation. These fire and safety codes vary from city to city and you must get approval from local fire officials whenever using an electronic product to control a door or other barrier. Use of egress buttons, for example, may be illegal in some cities. In most applications, single action exit without prior knowledge of what to do is a life safety requirement. Always make certain that any required approvals are obtained in writing. **DO NOT ACCEPT VERBAL APPROVALS. THEY ARE NOT VALID.**

Engineered Systems never recommends using the PRO-2200 Series or related products for use as a primary warning or monitoring system. Primary warning or monitoring systems should always meet local fire and safety code requirements. The installer must also test the system on a regular basis and instruct the end user in appropriate daily testing procedures. Failure to test a system regularly could make installer liable to the end user for damages if a problem occurs.

WARNING

EARTH ground all enclosures, for proper installation.

WARNING

Use suppressors on all door strikes. Use S-4 suppressors for installation. Engineered Systems recommends only DC strikes.

**CAUTION**

IF ANY DAMAGE TO THE SHIPMENT IS NOTICED, A CLAIM MUST BE FILED WITH THE COMMERCIAL CARRIER RESPONSIBLE.

CAUTION

Electro-static discharge can damage CMOS integrated circuits and modules.

To prevent damage always follow these procedures:

Use static shield packaging and containers to transport all electronic components, including completed reader assemblies.

Handle all ESD sensitive components at an approved static controlled workstation. These workstations consist of a desk mat, floor mat and an ESD wrist strap. Workstations are available from various vendors.

NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules when wired using metal conduit for the cabling external to the enclosure. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference that will require correcting at the user's expense.

NOTICE

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NOTICE

Any use of this product is subject to the terms and acceptance of the Engineered Systems Software Agreement. Please request a copy from Engineered Systems, and review the agreement carefully.

DISCLAIMER

PRODUCT LIABILITY; MUTUAL INDEMNIFICATION

In the event that a Customer receives a claim that a Product or any component thereof has caused personal injury or damage to property of others, Customer shall immediately notify Engineered Systems in writing of all such claims. Engineered Systems shall defend or settle such claims and shall indemnify and hold Customer harmless for any costs or damages including reasonable attorneys' fees which Customer may be required to pay as a result of the defective Product or the negligence of Engineered Systems, its agents, or its employees.

Customer shall hold harmless and indemnify Engineered Systems from and against all claims, demands, losses and liability arising out of damage to property or injury to persons occasioned by or in connection with the acts or omissions of Customer and its agents and employees, and from and against all claims, demands, losses and liability for costs of fees, including reasonable attorneys' fees, in connection therewith.

UNPACKING PROCEDURE

CAUTION

If any damage to the shipment is noticed before unpacking, a claim must be filed with the commercial carrier.

All containers should be opened and unpacked carefully in order to prevent damage to the contents.

The following steps are used to unpack equipment in preparation for installation:

1. Open the container and remove the unit(s) and all packing material. Retain the container and all packing materials. They may be used again for reshipment of the equipment, if needed.
2. Inspect the contents for shortage. If items are missing, contact the order entry department at 800-323-4576.
3. Visually check contents. If damage is discovered, perform the following:
 - If shipping caused damage to the unit, a claim must be filed with the commercial carrier.

- If any other defect is apparent, call 800-323-4576 for a return authorization.

SHIPPING INSTRUCTIONS

To ship equipment back to Engineered Systems:

1. Contact the customer service department at 800-323-4576 before returning equipment. When calling, please have available:
 - A description of the problem or reason for returning the equipment.
 - Original purchase order number, invoice number and whether or not the unit is still under warranty.
 - A new purchase order number if the unit is not under warranty.
2. Obtain the Return Authorization Number (RMA) from the customer service department at 800-323-4576.
3. Show the RMA number on all packages shipped. Packages not marked with an RMA number will be refused at the factory and returned COD.
4. Carefully pack the equipment for shipment. Use the original packing material whenever possible.

LIMITED WARRANTY

All Products sold or licensed by Engineered Systems include a warranty registration card which must be completed and returned to Engineered Systems by or on behalf of the end user in order for Engineered Systems to provide warranty service, repair, credit or exchange. All warranty work shall be handled through the Customer which shall notify Engineered Systems and apply for a Return Merchandise Authorization (RMA) number prior to returning any Product for service, repair, credit or exchange. Engineered Systems warrants that its Products shall be free from defects in materials and workmanship for a period of two years from date of shipment of the Product to Customer. The warranty on Terminals, Printers, Communications Products and Upgrade kits is 90 days from date of shipment. Satisfaction of this warranty shall be limited to repair or replacement of Products which are defective or defective under normal use. Engineered Systems' warranty shall not extend to any product which, upon examination, is determined to be defective as a result of misuse, improper storage, incorrect installation, operation or maintenance, alteration, modification, accident or unusual deterioration of the Product due to physical environments in excess of the limits set forth in Product manuals. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THIS PROVISION. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. NO REPRESENTATION OR WARRANTY OF THE DISTRIBUTOR SHALL EXTEND THE LIABILITY OR RESPONSIBILITY OF THE MANUFACTURER BEYOND THE TERMS OF THIS PROVISION. IN NO EVENT SHALL ENGINEERED SYSTEMS BE LIABLE FOR ANY RE-PROCUREMENT COSTS, LOSS OF PROFITS, LOSS OF USE, INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES TO ANY PERSON RESULTING FROM THE USE OF ENGINEERED SYSTEMS' PRODUCTS.

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DIMENSIONS

Height: 8.375" (21.275cm) Width: 7.625" (19.4cm) Color: Grey

Depth: 7.625" (19.4cm) Metal thickness: .05" (.127cm)

Installation holes: Single ended hanging slots for mounting the cabinet in the upright position. The 3 hangers are in a triangular pattern. The top two are located .75" (1.9cm) from the top and spaced 6.125" (15.5cm) apart. The lower hanger is located .930" (2.36cm) from the bottom and 7.85" (19.9cm) from each edge. See Enclosure Drawing.

Dual Conduit Knockouts: ½" & 1" (1.27cm x 2.54cm)

Top Side:	1
Bottom Side:	0
Right Side:	1
Left Side:	2
Rear Side:	1

POWER SUPPLY

DO NOT USE POWER SUPPLY TO POWER LOCKS.

PRO22E4PS:12 VDC 1.2 amp continuous power limited output with backup battery charging. 16.5 VAC 20va wall transformer provided.

Requires 115 VAC/60hz, Maximum battery charge current .5amp AC on LED

Short circuit and thermal overload protection

All power connection should be made with 18ga or larger wiring

LED DIAGNOSTICS

AC LED	DC LED	
ON	ON	Normal operating conditions
OFF	ON	Loss of AC, standby battery supplying power
ON	OFF	No DC output
OFF	OFF	Loss of AC, Discharged or no Stand-by battery. No DC output.

BACKUP POWER SUPPLY

Automatic Switch over to stand-by battery when AC fails (zero voltage drop)

4.0 AH sealed rechargeable battery

Backup time: 2.5 to 4 hour depending on configuration

CABLES SUPPLIED

Power On Light assembly

Tamper Switch assembly

MAINTENANCE

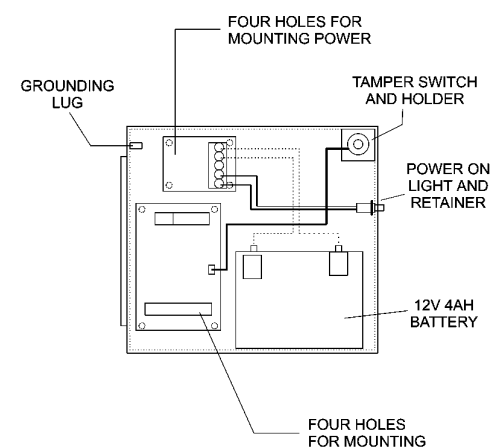
Replace the 12V 4AH battery every 2 to 2.5 years

Oil the hinges on the door every 12 months

OPERATING PARAMETERS

Temperature: 35 to 110 C (2 to 43 C)

Operating Humidity: Up to 85% non-condensing



INSTALLATION INSTRUCTIONS

1. Remove the 16.5V 20VA wall transformer, battery and parts bag from the enclosure.
2. Add all eight plastic standoffs into the mounting holes forming an upper and lower square.
3. Measure and install the top two mounting screws with heads smaller than .4" using proper mounting techniques for the material being used to hold the PRO22ENC4. Space the screws 6 1/8" apart. Leave the screws exposed approximately 1/2".
4. Open the door of the enclosure and place the hanging slots over the mounting screws. Push the enclosure over the mounting screws and allow the screws to slide into the slots. Finish tightening the mounting screws to securely hold the enclosure. Screw in the lower hanger to secure the enclosure against the wall.
5. Install the tamper switch cable to the bottom two screws on the tamper switch. Slide the tamper switch holder onto the upper right corner of the enclosure. Push the tamper switch cable and the tamper switch through the center hole of the tamper switch holder.
6. Mount the Power on Light assembly to the enclosure by passing the wire ends from the outside to the inside of the enclosure through the ¼" hole located on the upper right side of the enclosure. Secure the Power on Light by sliding the retaining ring over the wires and onto the light holding it snug to the wall of the enclosure.
7. Run all appropriate wiring to the case. Mark each wire as to the panel, location and input type. All cable shields should tie to the grounding stud found on the upper left side of the enclosure.
8. Install the single reader panel onto the 4 standoffs in the bottom left of the enclosure, placing the power and communications to the top.
9. Wire the readers, input and output connections by removing the terminals for ease of wiring. Wire according to installation guide supplied with the single reader panel.
10. CHECK ALL CONNECTIONS PRIOR TO POWERING UP THE ENCLOSURE AND PANELS.
11. Mount the PRO22E4PS power supply to the 4 standoffs at the upper right of the enclosure. Place the terminal strip to the right. Connect the two supplied battery cables: RED to Batt+, BLACK to Batt-. Wire the PRO22E4PS power supply through the wall transformer provided. Connect to the AC terminals. Wire the Power on Light to the AC in connections on the power supply. Plug in the Wall transformer. The Power on Light should light. Check the voltage at ±DC. The voltage should be approximately 13.8 VDC.
12. Disconnect the power.
13. Connect the DC power to the panel. Insure that the connection has the correct polarity. Follow the wiring diagram supplied with the panels.
14. Connect the Tamper Switch cable to the two pin connector "9" located on the mid right of the panel. See individual panel wiring diagrams supplied with the panel.
15. Connect Communications wiring per the wiring diagram supplied with the panel.
16. Place the 12V 4AH battery in the cabinet on the bottom right hand side. Attach the red battery charging connection to the positive terminal of the battery and the black battery charging connection to the negative connection of the battery.
17. CHECK ALL CONNECTIONS PRIOR TO POWERING UP THE ENCLOSURE AND PANELS.

