PW-5000
Enclosure
Installation Manual
Part Number: PW5K1ENC1

ENGINEERED SYSTEMS

A division of Northern Computers, Inc.

Contents

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 this precaution is not observed!

WARNING

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, AS THEY ARE NOT VALID.

Northern never recommends using the N-1000, N-800, N-500, PW-2000, EV-2000 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 by instructing the end user in appropriate daily testing procedures. Failure to test a system regularly could make installer liable for damages to the end user 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. Northern Computers recommends only DC strikes.

The information in this document is subject to change without notice.

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 PROTEC-TION 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 IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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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 Northern in writing of all such claims. Northern 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 Northern, its agents, or its employees.

Customer shall hold harmless and indemnify Northern 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 items, contact the order entry department.

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 for a return authorization.

Shipping Instructions

To ship equipment back to Northern Computers, Inc.:

1. Contact the customer service department before returning equipment. When you call please have available:

   • A description of the problem or reason you are returning the equipment.

   • Your original purchase order number, invoice number and if 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.

3. Show the RMA number on all packages shipped. Packages, which are not marked with an RMA number will be refused at the factory and returned to you **COD.**

4. Carefully pack the equipment for shipment. Use the original packing material whenever possible
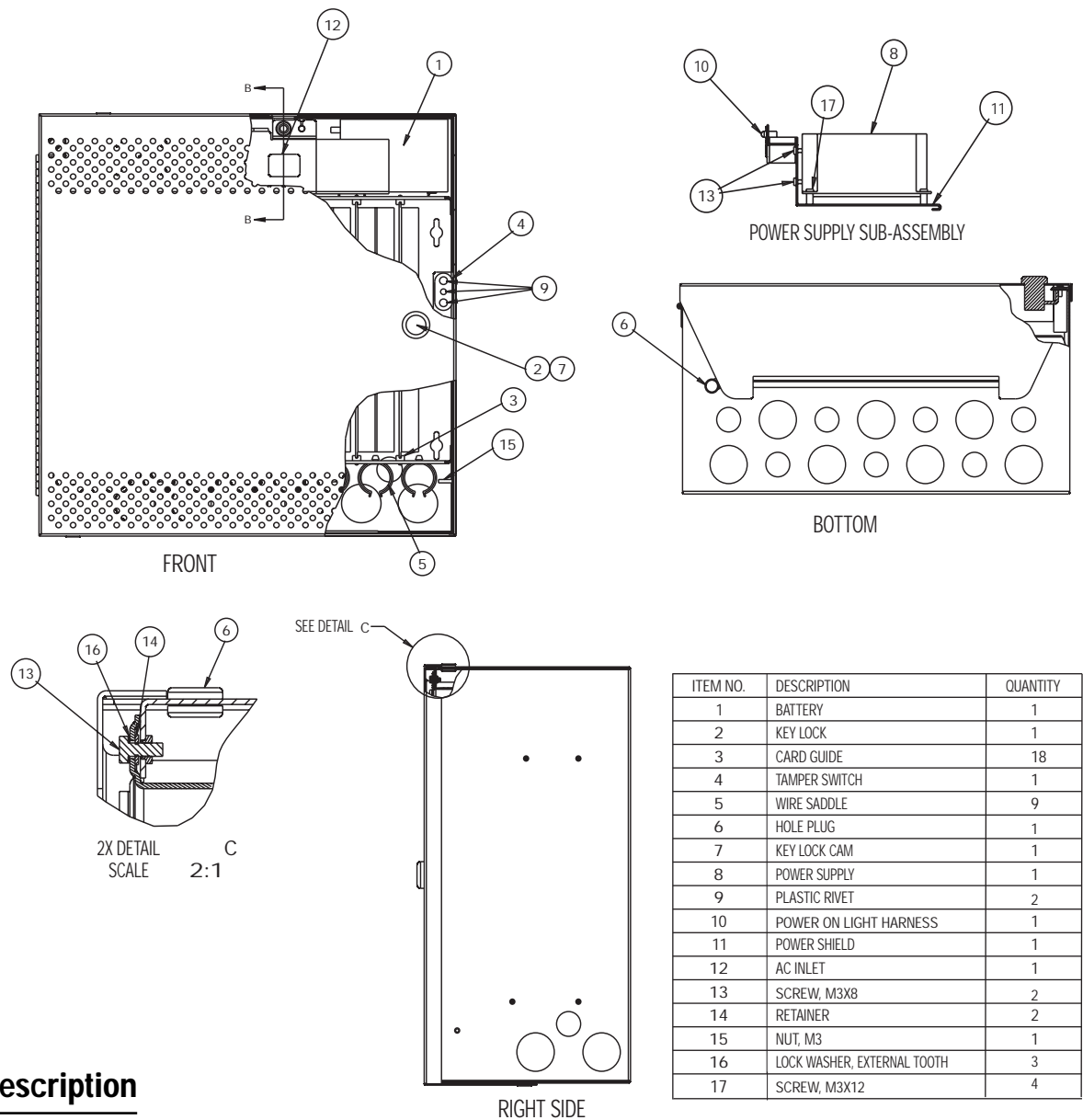
Limited Warranty

All Products sold or licensed by Northern include a warranty registration card which must be completed and returned to Northern by or on behalf of the end user in order for Northern to provide warranty service, repair, credit or exchange. All warranty work shall be handled through Customer which shall notify Northern and apply for a Return Merchandise Authorization (RMA) number prior to returning any Product for service, repair, credit or exchange. Northern 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. Northern's 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 NORTHERN 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 NORTHERN'S PRODUCTS.

Confidentiality

All software, drawings, diagrams, specifications, catalogs, literature, manuals and other materials furnished by Northern relating to the design, use and service of the Products shall remain confidential and shall constitute proprietary rights of Northern and Customer agrees to treat such information as confidential. Customer shall acquire no rights in the design of the Products or the related materials except to use such information solely for the purpose of and only during the time it sells the Products. Customer shall not copy the design of any of the Products or use or cause to be used any Product design or related materials for its own benefit or for the benefit of any other party. The covenants contained in this section shall remain effective throughout the term of this Agreement and thereafter unless specifically waived by Northern in writing.

PW-5000 Enclosure

FRONT

POWER SUPPLY SUB-ASSEMBLY

BOTTOM

2X DETAIL   C
SCALE   2:1

RIGHT SIDE

ITEM NO.	DESCRIPTION	QUANTITY
1	BATTERY	1
2	KEY LOCK	1
3	CARD GUIDE	18
4	TAMPER SWITCH	1
5	WIRE SADDLE	9
6	HOLE PLUG	1
7	KEY LOCK CAM	1
8	POWER SUPPLY	1
9	PLASTIC RIVET	2
10	POWER ON LIGHT HARNESS	1
11	POWER SHIELD	1
12	AC INLET	1
13	SCREW, M3X8	2
14	RETAINER	2
15	NUT, M3	1
16	LOCK WASHER, EXTERNAL TOOTH	3
17	SCREW, M3X12	4

Description

The PW-5000 system is designed for maximum efficient use of wall space through the use of a secure metal cabinet (PW5K1ENC1) that can hold up to 9 modules, a 4 amp power supply and a self-contained replaceable backup battery.

Typically, one of the 9 modules can be an intelligent controller (PW5KxIC). The remaining 8 slots can be used and configured in a variety of combinations of reader, supervised inputs, relay outputs and other specialized modules to customize the system for the individual site.

The 4 amp power supply provides power for the modules. The battery is a 7amp hour battery capable of providing backup from 1 to 5 hours depending on module configuration. The PW5K1IENC can be configured any combination of the PW5K1IC,PW5K1IN, PW5K1OUT, PW5K1R2. An optional daisy chain cable (PW5K1DCC) provides a 485 communication and power bus between the 9 modules.

Dimensions

Height: 15"
Width: 14.2"
Depth: 7.6"

Metal thickness: .05"
Color: Autumn White

Installation holes: Double ended hanging slots for mounting the cabinet in the upright or upside down position. Four hangers in a rectangular pattern 7.5" H x 12.125" W

Conduit Knockouts:

	½"	1"
Back:	4	7
Bottom:	7	7
Right Side:	1	2
Left Side:	1	2

Power Supply

12V DC 4 amp continuous power limited output with backup battery charging and battery supervision

Requires 115VAC/60hz, .95amp with ground

Maximum battery charge current .5amp

AC on LED

AC Fail supervision

Low Battery Supervision (form "C" contacts)

Short circuit and thermal overload protection

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

250V AGC 3.5 Amp fuse for AC protection

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)

7.0 AH sealed rechargeable battery

Backup time–1 to 2 hrs. with all 9 panels in place, longer depending on configuration

Cables supplied:

AC 3-wire grounded power supply cord

12 VDC battery cables

Rack Power Supply Harness containing:

- 12VDC panel power supply
- AC fail input cable
- Battery supervision input cable

Optional Cable

Auxiliary Card Harness used to supply power and RS485 communications between the PW5K1IC and up to eight other panels within the enclosure.

Maintenance

Replace the 12V 7AH battery every 2 to 2.5 years

Oil the hinges on the door every 12 months

Operating Parameters
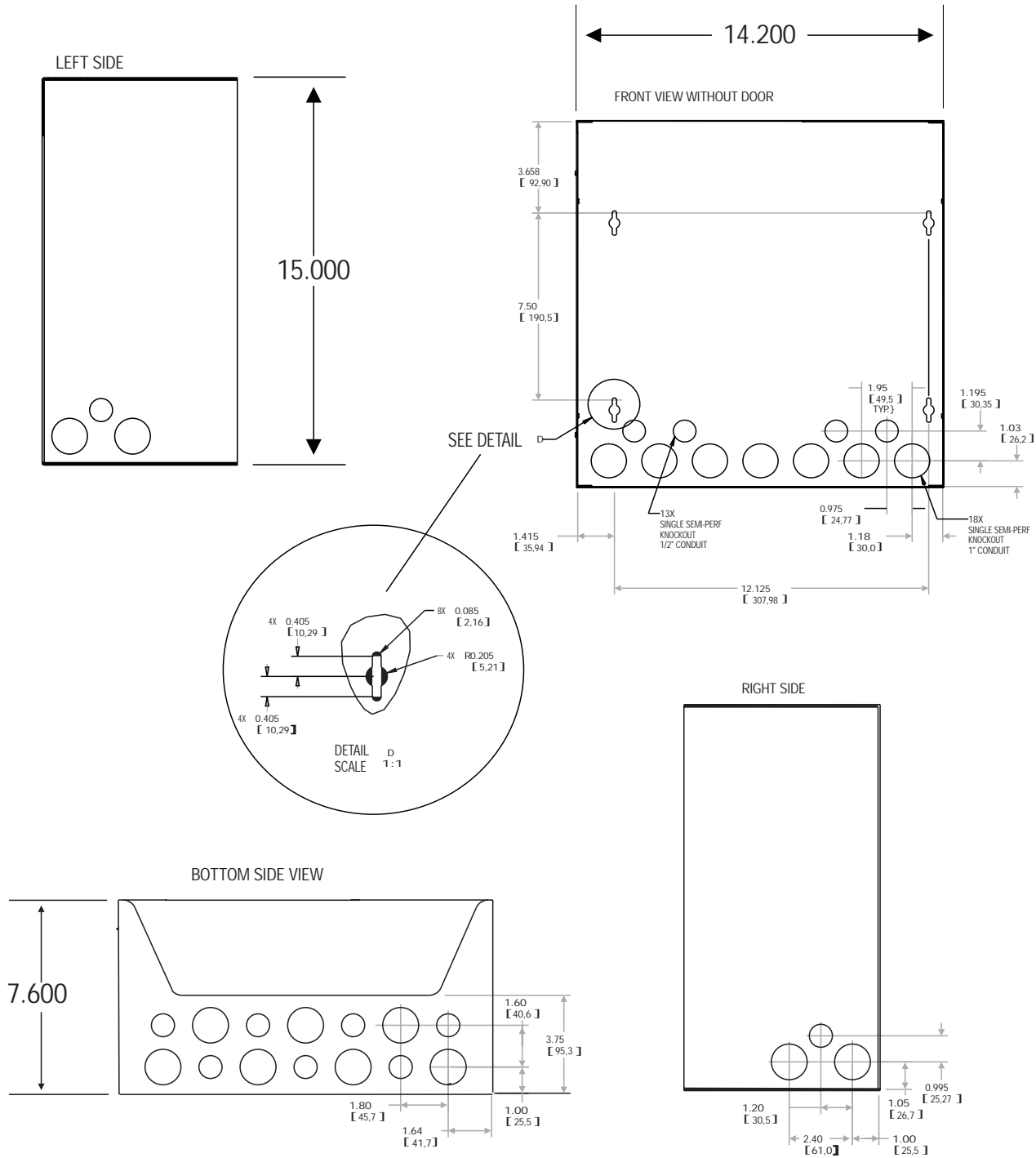
Temperature   35° to 110° F (2 to 43 C)

Operating Humidity Up to 85% non-condensing

Installation Instructions

1. Measure and install 4 mounting screws with heads smaller than .4" using proper techniques for the material on which the PW-5000 is being mounted. Use a rectangular screw pattern 7.5" H x 12.125" W. Leave the screws exposed approximately 1/2".

2. 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.

3. Run all appropriate wiring to the case through **metal conduit**. The wire retainers on the bottom shelf of the cabinet can be used to direct wire to the proposed panel location. There is one wire retainer for each of the 9 panel locations. Mark each wire as to the panel, location and input type. All cable shields should tie to the copper grounding lug found on the bottom right of the enclosure.

4. Install the required panels into the supplied plastic runners. The PW5K1IC should be placed in the left-most position with the power supply and battery at the top.

5. Wire the readers, input and output connections (see wiring guide at end of booklet)

6. CHECK ALL CONNECTIONS PRIOR TO POWERING UP THE ENCLOSURE AND PANELS.

7. Unscrew the two power shield mounting screws holding the power shield in place. Alternate the unscrewing to keep the plastic retainer washer from loosening and allowing the screws to fall. This will make reinstalling the power shield much easier.

8. Pull the power shield partially out and connect the Red Battery cable to the Positive (+) post of the battery. The wire to the Negative (–) post was installed at the factory.

9. Place the power shield back onto the top shelf making sure that the tabs at the rear of the power shield fit firmly in place.

10. Screw in the two power shield screws alternating them to ensure a tight fit.

11. Plug the AC cord into the front of the power shield. Insure that the AC On red LED is lit. Check the voltage on the power supply cable wired into the two position European-style connector with the red and black wires. Red is the positive voltage and black is ground. The voltage should read approximately 13.8VDC.

12. Unplug the AC cord and attach the Rack Power Supply Harness to the Power In of the PW5K1IC at the bottom of the panel. This is a two position connector.

13. The remainder of the panels can be manually wired for power and RS-485 communications using 18 AWG wire. The wires will be daisy-chained from one panel to the next so the power and the communications are wired in parallel.

They may also be wired using the Auxiliary Rack Harness purchased with the equipment. This will reduce wiring time in the field since the power and RS-485 communications between panels is factory-wired in a harness that plugs into the bottom two connectors on each panel. The only field wiring required is the two wiring connections of the red and black 12VDC cables connecting the Auxiliary Rack Harness and the Rack Power Supply Harness.

Installation Diagram

LEFT SIDE

15.000

14.200

FRONT VIEW WITHOUT DOOR

3.658
[92,90]

7.50
[190,5]

1.95
[49,5]
TYP.)

1.195
[30,35]

1.03
[26,2]

SEE DETAIL

13X
SINGLE SEMI-PERF
KNOCKOUT
1/2" CONDUIT

0.975
[24,77]

18X
SINGLE SEMI-PERF
KNOCKOUT
1" CONDUIT

1.415
[35,94]

1.18
[30,0]

12.125
[307,98]

4X 0.405
[10,29]

8X 0.085
[2,16]

4X R0.205
[5,21]

4X 0.405
[10,29]

DETAIL   D
SCALE   1:1

RIGHT SIDE

BOTTOM SIDE VIEW

7.600

1.60
[40,6]

3.75
[95,3]

1.80
[45,7]

1.64
[41,7]

1.00
[25,5]

1.20
[30,5]

1.05
[26,7]

0.995
[25,27]

2.40
[61,0]

1.00
[25,5]

Cable Specifications

Application	NCI Part No.	AWG	Description	Max. Dist.	Imp.	Cap.
N-485 connections*	NC2442-TN	N/A N/A	Belden 9842 or equivalent	4000' (1200 m)	120Ω	12.8pf/ft
CR-1, TR-1, CI-1, KR-1 Wiegand card readers	NC1861-BL	18	6 conductor shielded	500' (152 m)		
NR-1 magstripe reader	NC1861-BL	18	6 conductor shielded	500' (152 m)		
PR-1-280 Cotag reader: 280 read head to SZC SZC to N-1000-II	 NC1861-BL NC1861-BL	 18 18	 6 conductor shielded 6 conductor shielded	 300' (91 m) 500' (152 m)		
PR-2 Hughes reader: scanner to reader reader to N-1000-II	 NC1861-BL NC1861-BL	 18 18	 6 conductor shielded 6 conductor shielded	 30' (9 m) 500' (152 m)		
PR-3, PR-5 Indala readers: A-3/A-5 read head to RE-2 RE-2 to N-1000-II	 NC18121-YL NC1861-BL	 18 18	 12 conductor shielded 6 conductor shielded	 75' (23 m) 500' (152 m)		
PR-20 , PR-22 Indala readers: A-20/A-22 read head to RE-2 RE-2 to N-1000-II	 NC18121-YL NC1861-BL	 18 18	 12 conductor shielded 6 conductor shielded	 75' (23 m) 500' (152 m)		
PR-10, PR-12 Indala readers:	NC1861-BL	18	6 conductor shielded	500' (152 m)		
HG-3 hand geometry reader:	NC1861-BL	18	6 conductor shielded	500' (152 m)		
5 conductor keypad	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 NORTHERN'S PART NUMBER PREFIX; FOR EXAMPLE NC1861-BL BECOMES PNC1861-BL

NCI Cable Part Numbers

Part Number	Description	Application	Length
NC1841-GY	18 AWG/4 conductor	reader cable	1,000'
NC1861-BL-500	18 AWG/6 conductor	reader cable	500'
NC1861-BL	18 AWG/6 conductor	reader cable	1,000'
NC18121-YL-500	18 AWG/12 conductor	keypad cable	500'
NC18121-YL	18 AWG/12 conductor	keypad cable	1,000'
NCNET-1	50 ohm	network cable	1,000'
NC2221-BR	22 AWG/2 conductor	alarm cable	1,000'
NC1821-OR	18 AWG/2 conductor	power/door cable	1,000'
NCC59206-BK	RG-59	video cable	1,000'
NCP1841-GY	18 AWG/4 conductor Plenum	reader cable	1,000'
NCP1861-BL-500	18 AWG/6 conductor Plenum	reader cable	500'
NCP1861-BL	18AWG/6 conductor Plenum	reader cable	1,000'
NCP18121-YL	18 AWG/12 conductor Plenum	keypad cable	1,000'
NCP18121-YL-500	18 AWG/12 conductor Plenum	keypad cable	500'
NCPNET-1	50 ohm Plenum	network cable	1,000'
NCP2221-BR	22 AWG/2 conductor Plenum	alarm point cable	1,000'
NCP1821-OR	8 AWG/2 conductor Plenum	power/door cable	1,000'
NC2442-TN	24 AWG/120Ω12.8pf RS485 wire	communication cable	1,000'
NCP2442-TN	24 AWG/120Ω12.8pf RS485 wire	communication cable	1,000'

ENGINEERED SYSTEMS

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