Engineered Systems
Configuration Guide

Designed for Microsoft® BackOffice®

ENGINEERED SYSTEMS
A Division of Northern Computers, Inc.

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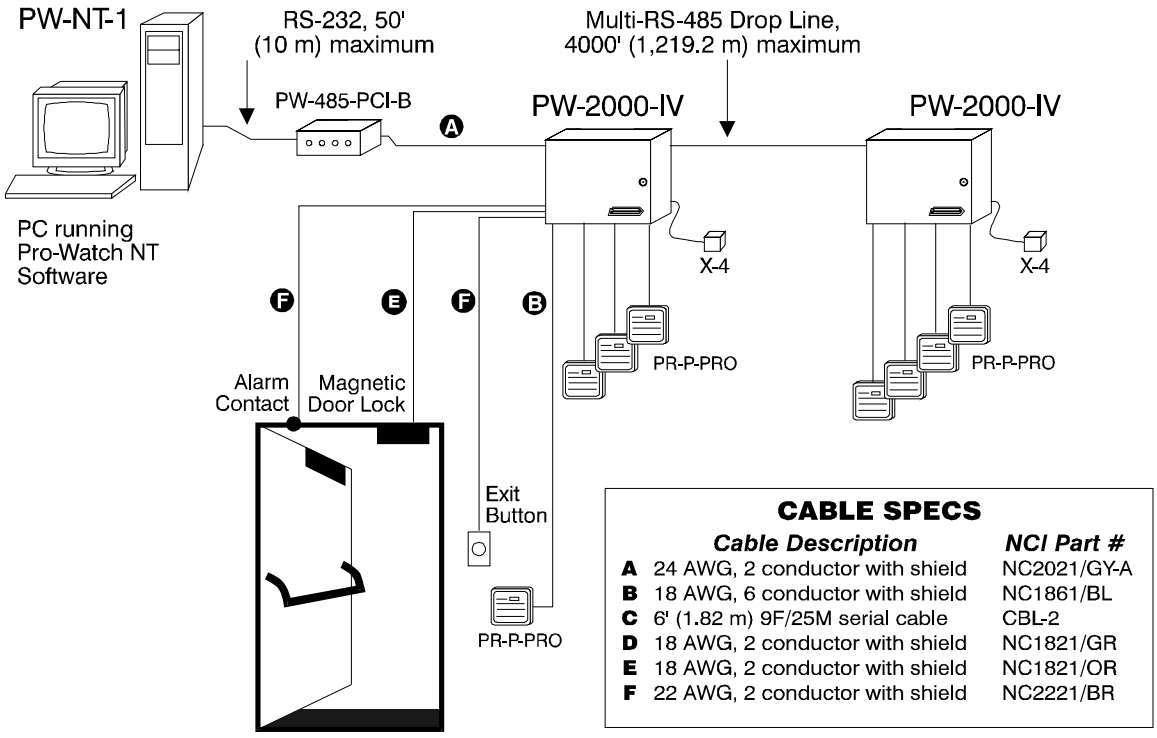
Pro-Watch NT Single-User System



CABLE SPECS

	Cable Description	*NCI Part #*
A	24 AWG, 2 conductor with shield	NC2021/GY-A
B	18 AWG, 6 conductor with shield	NC1861/BL
C	6' (1.82 m) 9F/25M serial cable	CBL-2
D	18 AWG, 2 conductor with shield	NC1821/GR
E	18 AWG, 2 conductor with shield	NC1821/OR
F	22 AWG, 2 conductor with shield	NC2221/BR

PARTS LIST FOR PRO-WATCH NT SINGLE-USER, TWO DOOR ACCESS CONTROL SYSTEM

Quantity	Part #	Description
1	PW-NT-1	Computer, monitor, keyboard, and software
1	PW-485-PCI-B	RS-232 to RS-485 communications converter
*** 1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
** 1	X-4	16.5 VAC 50 VA transformer
* 1	S-4	Noise suppressor for door lock
* 1	ML8011-LC	1200 lb (544.3 kg) magnetic door lock
* 1	EXB-1	Request to exit button
* 1	PR-P-PRO	Proximity card reader
* 1	PS-1-12	Power supply for magnetic lock

Note: This configuration provides access control from a single operator.

COMPUTER HARDWARE/SOFTWARE SPECIFICATIONS

Operating System: Microsoft Windows NT Workstation 4.0

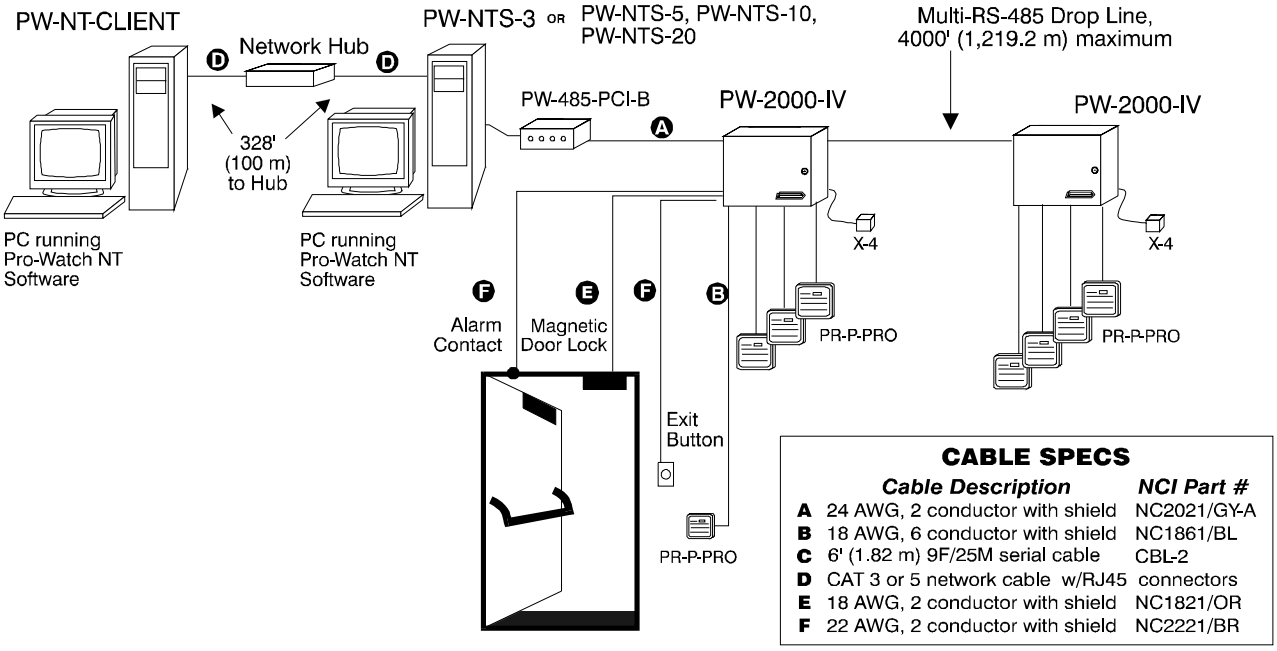
Interface: Graphical User Interface (mouse driven)

Computer Requirements:

1	Pentium II 300-based PC
1	4.3 GB SCSI drive
1	128 megabytes RAM
2	Serial communications ports
1	CD-ROM drive
1	Back-up drive
1	Ethernet network adapter•
1	Parallel printer ports
1	3.5" floppy drive (1.44 MB)
1	17" (13.18 cm) SVGA Color Monitor
1	Keyboard

* *Required for each door*
** *Required for each control panel*
*** *Required for every four readers*

Pro-Watch NT Multi-User Hardwired System



CABLE SPECS

	Cable Description	NCI Part #
A	24 AWG, 2 conductor with shield	NC2021/GY-A
B	18 AWG, 6 conductor with shield	NC1861/BL
C	6' (1.82 m) 9F/25M serial cable	CBL-2
D	CAT 3 or 5 network cable w/RJ45	connectors
E	18 AWG, 2 conductor with shield	NC1821/OR
F	22 AWG, 2 conductor with shield	NC2221/BR

PARTS LIST FOR PRO-WATCH NT MULTI-USER, TWO DOOR HARDWIRED ACCESS CONTROL SYSTEM

Quantity	Part #	Description
1	PW-NTS-3	File server computer, monitor, keyboard, software, network operating system, and network card
	OR	
	PW-NTS-5 PW-NTS-10 PW-NTS-20	
1	PW-NT-CLIENT	Workstation computer, monitor, keyboard, software, and network card
1	PW-485-PCI-B	RS-232 to RS-485 communications converter
*** 1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
** 1	X-4	16.5 VDC 50 VA transformer
* 1	S-4	Noise suppressor for door lock
* 1	ML8011-LC	1200 lb (544.3 kg) magnetic door lock
* 1	EXB-1	Request to exit button
* 1	PR-P-PRO	Proximity card reader
* 1	PS-1-12	Power supply for magnetic lock

NETWORK SPECIFICATIONS

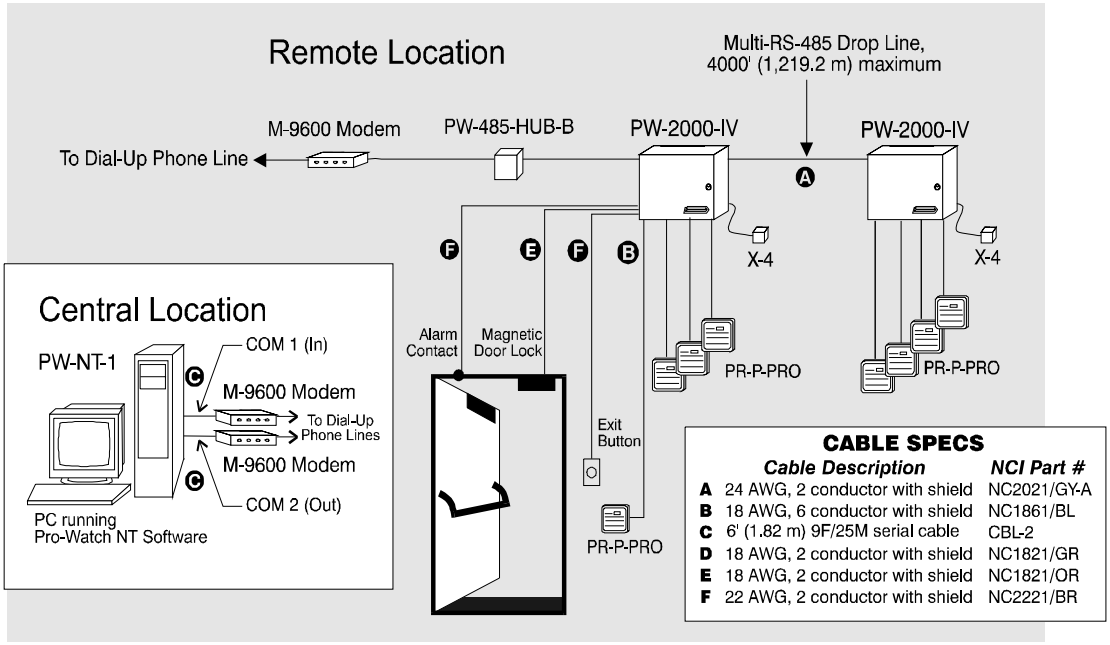
Protocol:	TCP/IP	
Station Support:	PW-NTS-3	3 clients
	PW-NTS-5	5 clients
	PW-NTS-10	10 clients
	PW-NTS-20	20 clients
Network Type:	10Base T Ethernet network cards with RJ-45 adaptors	
Network Distance:	328' (100 m) to hub using twisted pair	

COMPUTER HARDWARE/SOFTWARE SPECIFICATIONS

	Workstation	File Server (1-5 Users)
Processor	Pentium II-300	Pentium II-300
Memory	64 MB	128 MB
Hard Drive	2G	4.3G SCSI
Video	2 MB Video	2 MB Video
CD ROM	16X	16X
Software	NT 4.0 Workstation	NT 4.0 Server
Mouse	Microsoft	Microsoft
Monitor	17" (13.18 cm)	17" (13.18 cm)

* *Required for each door*
** *Required for each control panel*
*** *Required for every four readers*

Pro-Watch NT Single User Dial-Up System



PARTS LIST FOR PRO-WATCH NT SINGLE-USER, TWO DOOR DIAL-UP ACCESS CONTROL SYSTEM

Quantity	Part #	Description
1	PW-NTS-3	File server computer, monitor, keyboard, software, network operating system, and network card
	OR PW-NTS-5 PW-NTS-10 PW-NTS-20	
1	PW-NT-CLIENT	Workstation computer, monitor, keyboard, software, and network card
† 3	M-9600	Dial-up modem: 2 needed at the computer when controlling more than one remote site and one at each remote location
2	CBL-2	6' (1.82 m) 9F/25M serial cable (at computer location)
† 1	PW-485-HUB-B	RS-232 to RS-485 communications converter
*** 1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
** 1	X-4	16.5 VDC 50 VA transformer
* 1	S-4	Noise suppressor for door lock
* 1	ML8011-LC	1200 lb (554.3 KG) magnetic door lock
* 1	EXB-1	Request to exit button
* 1	PR-P-PRO	Proximity card reader
* 1	PS-1-12	Power supply for magnetic lock

NETWORK SPECIFICATIONS

Protocol:	TCP/IP	
Station Support:	PW-NTS-3	3 clients
	PW-NTS-5	5 clients
	PW-NTS-10	10 clients
	PW-NTS-20	20 clients
Network Type:	10Base T Ethernet network cards with RJ-45 adaptors	
Network Distance:	328' (100 meters) to hub using twisted pair	

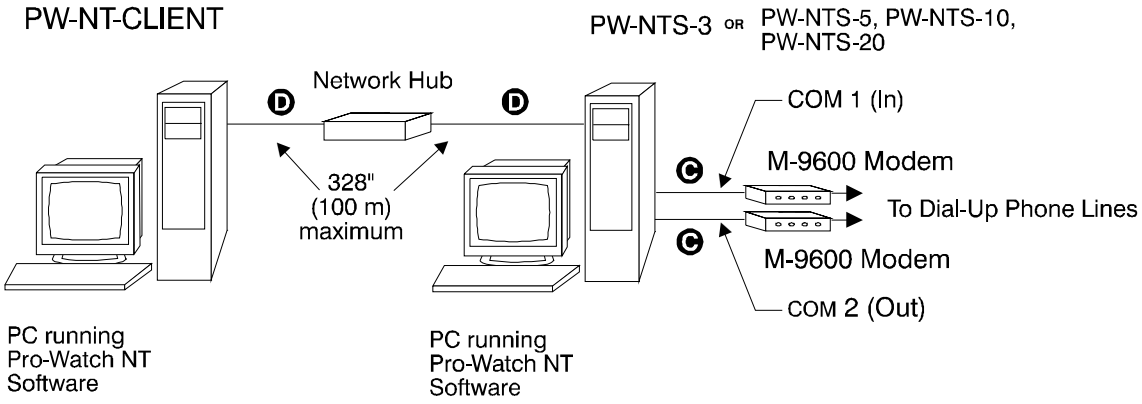
COMPUTER HARDWARE/SOFTWARE SPECIFICATIONS

	File Server (1-5 Users)
Processor	Pentium II-300
Memory	128 MB
Hard Drive	4.3G SCSI
Video	2 MB Video
CD ROM	16X
Software	NT 4.0 Server
Mouse	Microsoft
Monitor	17" (13.18 cm)

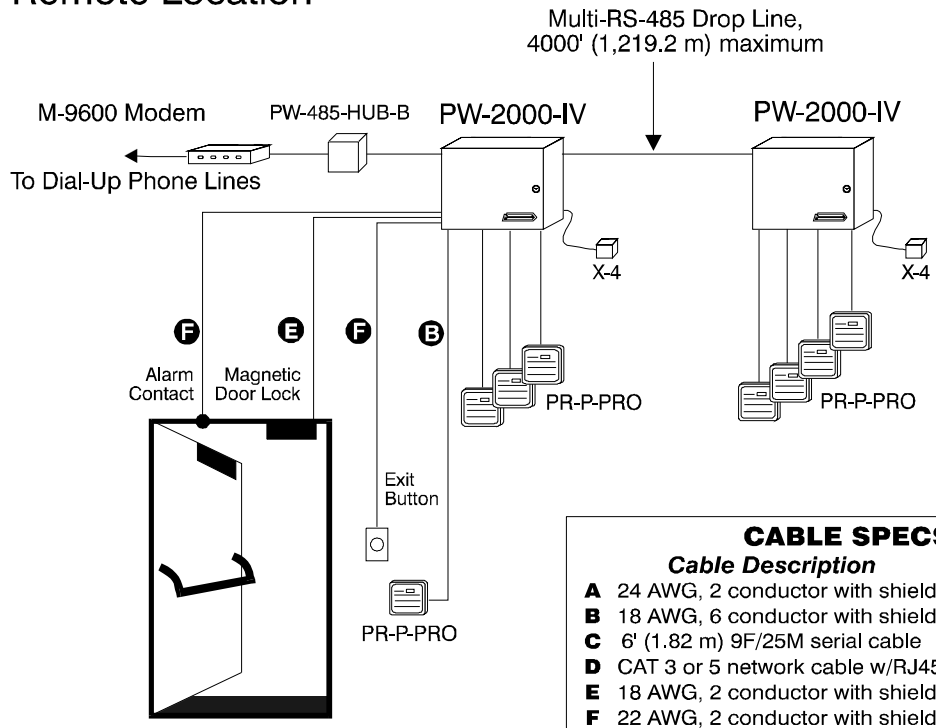
* *Required for each door*
** *Required for each control panel*
*** *Required for every four readers*
† *One required at each remote dial-up site*

Pro-Watch NT Multi-User Dial-Up System

Central Location



Remote Location



CABLE SPECS

	Cable Description	*NCI Part #*
A	24 AWG, 2 conductor with shield	NC2021/GY-A
B	18 AWG, 6 conductor with shield	NC1861/BL
C	6' (1.82 m) 9F/25M serial cable	CBL-2
D	CAT 3 or 5 network cable w/RJ45	connectors
E	18 AWG, 2 conductor with shield	NC1821/OR
F	22 AWG, 2 conductor with shield	NC2221/BR

PARTS LIST FOR PRO-WATCH NT MULTI-USER, DIAL-UP ACCESS CONTROL SYSTEM

Quantity	Part #	Description
1	PW-NTS-3	File server computer, monitor, keyboard, software, network operating system, and network card
	OR	
	PW-NTS-5 PW-NTS-10 PW-NTS-20	
1	PW-NT-CLIENT	Workstation computer, monitor, keyboard, software, and network card
† 3	M-9600	Dial-up modem: 2 at the computer when controlling more than one remote site and one at each remote location
2	CBL-2	6' (1.82 m) 9F/25M serial cable (at computer location)
† 1	PW-485-HUB-B	RS-232 to RS-485 communications converter (one at each remote site)
*** 1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
* 1	X-4	16.5 VDC 50 VA transformer
* 1	S-4	Noise suppressor for door lock
* 1	ML8011-LC	1200 lb (544.3 kg) magnetic door lock
* 1	EXB-1	Request to exit button
* 1	PR-P-PRO	Proximity card reader
* 1	PS-1-12	Power supply for magnetic lock

Note: This configuration is a multi-user system and provides dial-up access control to remote locations.

NETWORK SPECIFICATIONS

Protocol:	TCP/IP	
Station Support:	PW-NTS-3	3 client
	PW-NTS-5	5 clients
	PW-NTS-10	10 clients
	PW-NTS-20	20 clients
Network Type:	10Base T Ethernet network cards with RJ-45	
Network Distance:	328' (100 m) to hub with twisted pair	

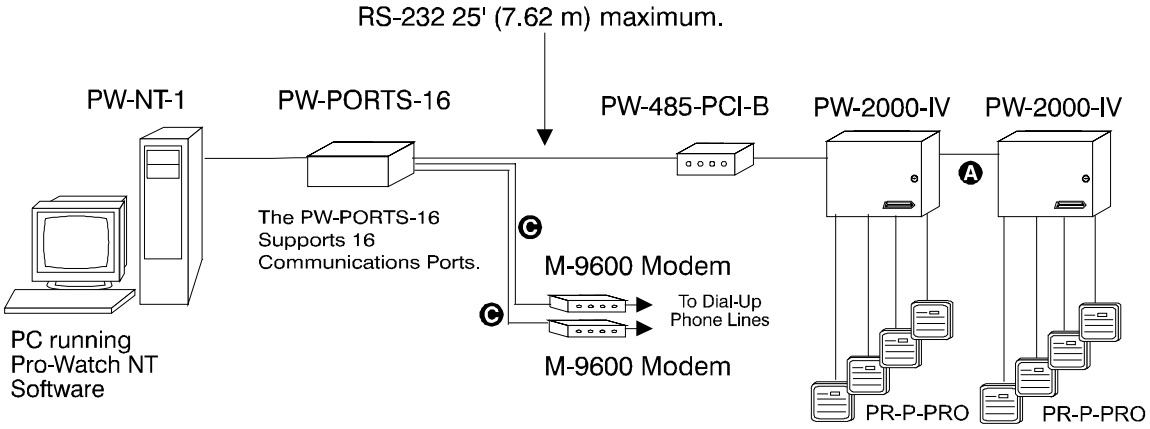
COMPUTER HARDWARE/SOFTWARE SPECIFICATIONS

	Workstation	File Server (1-5 Users)
Processor	Pentium II-300	Pentium II-300
Memory	64 MB	128 MB
Hard Drive	2G	4.3G SCSI
Video	2 MB Video	2 MB Video
CD ROM	16X	16X
Software	NT 4.0 Workstation	NT 4.0 Server
Mouse	Microsoft	Microsoft
Monitor	17" (13.18 cm)	17" (13.18 cm)

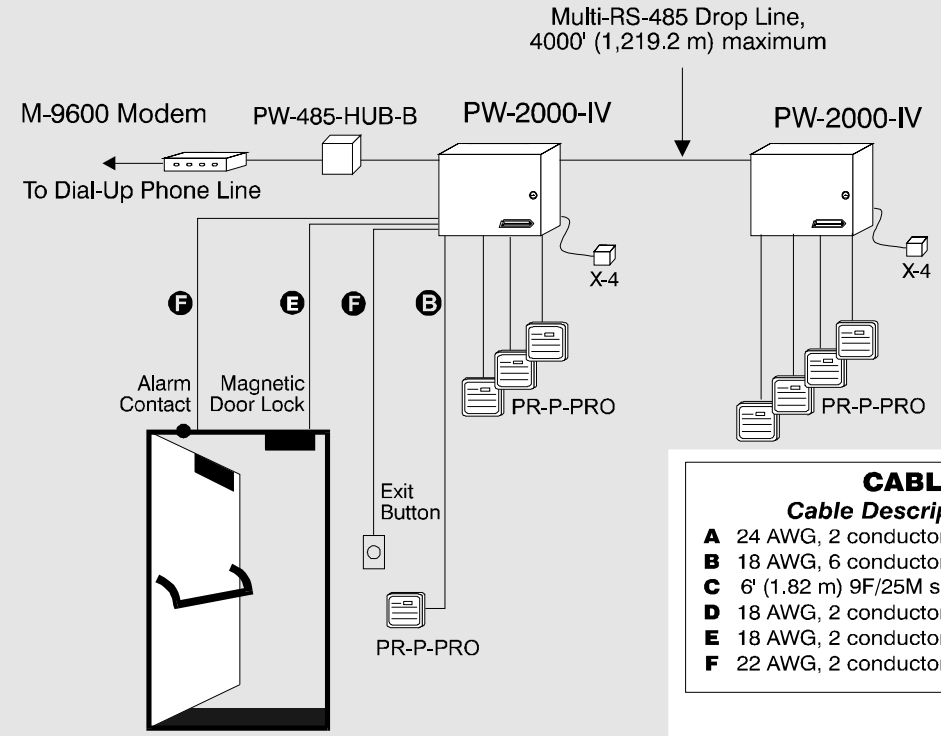
* *Required for each door*
** *Required for each control panel*
*** *Required for every four readers*
† *One required at each remote dial-up site*

Pro-Watch NT Single-User System with Dial-Up & Hardwired Panels

Central Location



Remote Dial-Up Location



CABLE SPECS

	Cable Description	NCI Part #
A	24 AWG, 2 conductor with shield	NC2021/GY-A
B	18 AWG, 6 conductor with shield	NC1861/BL
C	6' (1.82 m) 9F/25M serial cable	CBL-2
D	18 AWG, 2 conductor with shield	NC1821/GR
E	18 AWG, 2 conductor with shield	NC1821/OR
F	22 AWG, 2 conductor with shield	NC2221/BR

** Required for each set of doors*

PARTS LIST FOR PRO-WATCH NT SINGLE-USER, DIAL-UP AND HARDWIRED ACCESS CONTROL SYSTEM

Quantity	Part #	Description
Computer Site		
1	PW-NT-1	Computer, monitor, keyboard, and software
1	PW-PORTS-16	16 Port communications controller.
2	M-9600	Dial-up modem (2 needed at the computer when controlling more than one remote site
2	CBL-2	6' (1.82 m) 9F/25M serial cable (at computer location)
Remote Site		
1	PW-485-HUB-B	RS-232 to RS-485 communications converter; one needed at each remote location
*** 1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
* 1	M-9600	Dial-up modem
** 2	X-4	16.5 VDC 50 VA transformer
† 1	S-4	Noise suppressor for door lock
† 1	ML8011-LC	1200 lb (544.3 kg) magnetic door lock
† 1	EXB-1	Request to exit button
† 1	PR-P-PRO	Proximity card reader
† 1	PS-1-12	Power supply for magnetic lock
Local Hardwired Site		
1	PW-485-PCI-B	RS-232 to RS-485 communications converter; one needed at each hardwired location
***1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
**1	X-4	16.5 VDC 50 VA transformer
† 1	S-4	Noise suppressor for door lock
† 1	ML8011-LC	1200 lb (544.3 kg) magnetic door lock
† 1	EXB-1	Request to exit button
† 1	PR-P-PRO	Proximity card reader
† 1	PS-1-12	Power supply for magnetic lock

Note: This configuration provides access control from a single operator workstation to both hardwired and dial-up sites utilizing Pro-Watch NT software.

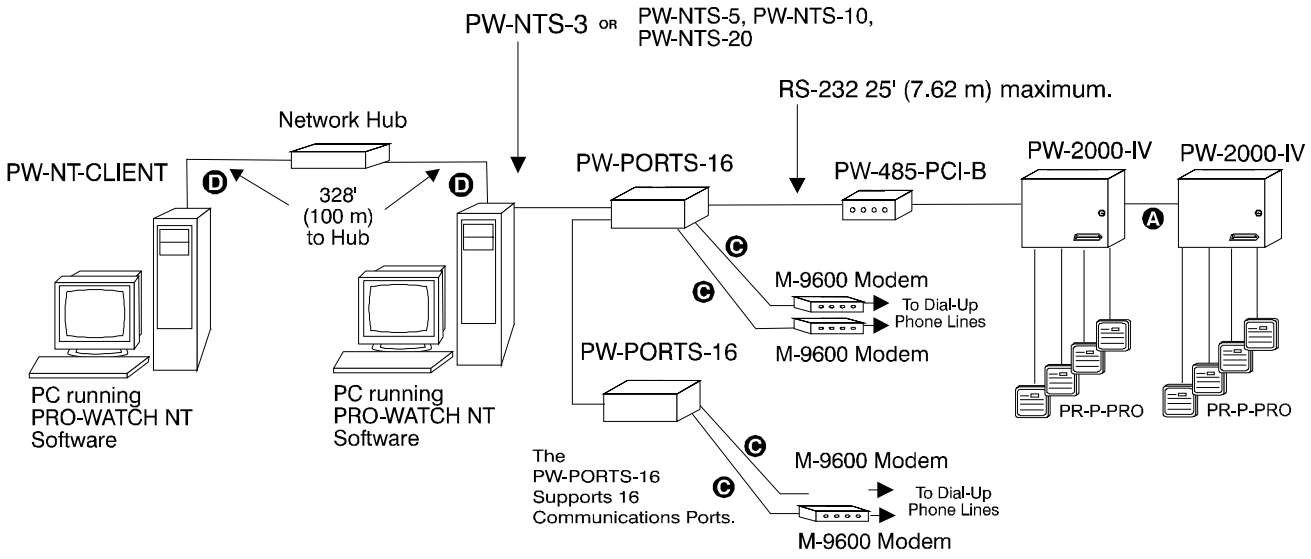
COMPUTER HARDWARE/SOFTWARE SPECIFICATIONS

	Workstation	File Server (1-5 Users)
Processor	Pentium II-300	Pentium II-300
Memory	64 MB	128 MB
Hard Drive	2G	4.3G SCSI
Video	2 MB Video	2 MB Video
CD ROM	16X	16X
Software	NT 4.0 Workstation	NT 4.0 Server
Mouse	Microsoft	Microsoft
Monitor	17" (13.18 cm)	17" (13.18 cm)

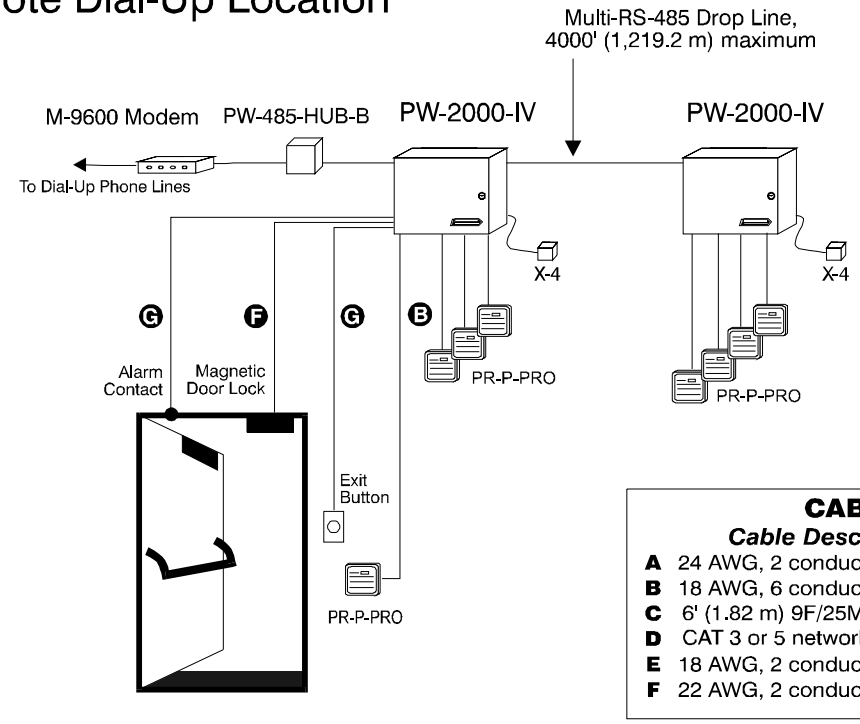
† *Required for each door*
** *Required for each control panel*
*** *Required for every four readers*
* *One required at each remote dial-up site*

Pro-Watch NT Multi-User System with Dial-Up & Hardwired Panels

Central Location



Remote Dial-Up Location



CABLE SPECS

	Cable Description	*NCI Part #*
A	24 AWG, 2 conductor with shield	NC2021/GY-A
B	18 AWG, 6 conductor with shield	NC1861/BL
C	6' (1.82 m) 9F/25M serial cable	CBL-2
D	CAT 3 or 5 network cable w/RJ45	connectors
E	18 AWG, 2 conductor with shield	NC1821/OR
F	22 AWG, 2 conductor with shield	NC2221/BR

** Required for each set of doors*

PARTS LIST FOR PRO-WATCH NT MULTI-USER, DIAL-UP AND HARDWIRED ACCESS CONTROL SYSTEM

Quantity	Part #	Description
Computer Site		
1	PW-NTS-3 PW-NTS-5 PW-NTS-10 PW-NTS-20	Computer, monitor, keyboard, software
1	PW-NT-CLIENT	Workstation computer, monitor, keyboard, software and network card
1	PW-PORTS-16	16 port communications controller
2	M-9600	Dial-up modem (2 needed at the computer when controlling more than one remote site
2	CBL-2	6' (1.82 m) 9F/25M serial cable (at computer location)
1	PW-PORTS-16-EXP	Adds 16 additional COM ports
Remote Site		
††† 1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
* 1	PW-485-HUB-B	RS-232 to RS-485 communications convert; one needed at each remote location
* 1	M-9600	Dial-up modem
†† 1	X-4	16.5 VDC 50 VA transformer
† 1	S-4	Noise suppressor for door lock
† 1	ML8011-LC	1200 lb (544.3 kg) magnetic door lock
† 1	EXB-1	Request to exit button
† 1	PR-P-PRO	Proximity card reader
† 1	PS-1-12	Power supply for magnetic lock
Local Hardwired Site		
1	PW-485-PCI-B	RS-232 to RS-485 communications converter. One needed at each hardwired location
††† 1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
†† 1	X-4	16.5 VDC 50 VA transformer

Quantity	Part #	Description
Local Hardwired Site (continued)		
† 1	S-4	Noise suppressor for door lock
† 1	ML8011-LC	1200 lb (544.3 kg) magnetic door lock
† 1	EXB-1	Request to exit button
† 1	PR-P-PRO	Proximity card reader
† 1	PS-1-12	Power supply for magnetic lock

Note: This configuration provides access control from multiple operator workstations to both hardwired and dial-up sites utilizing Pro-Watch NT software.

NETWORK SPECIFICATIONS

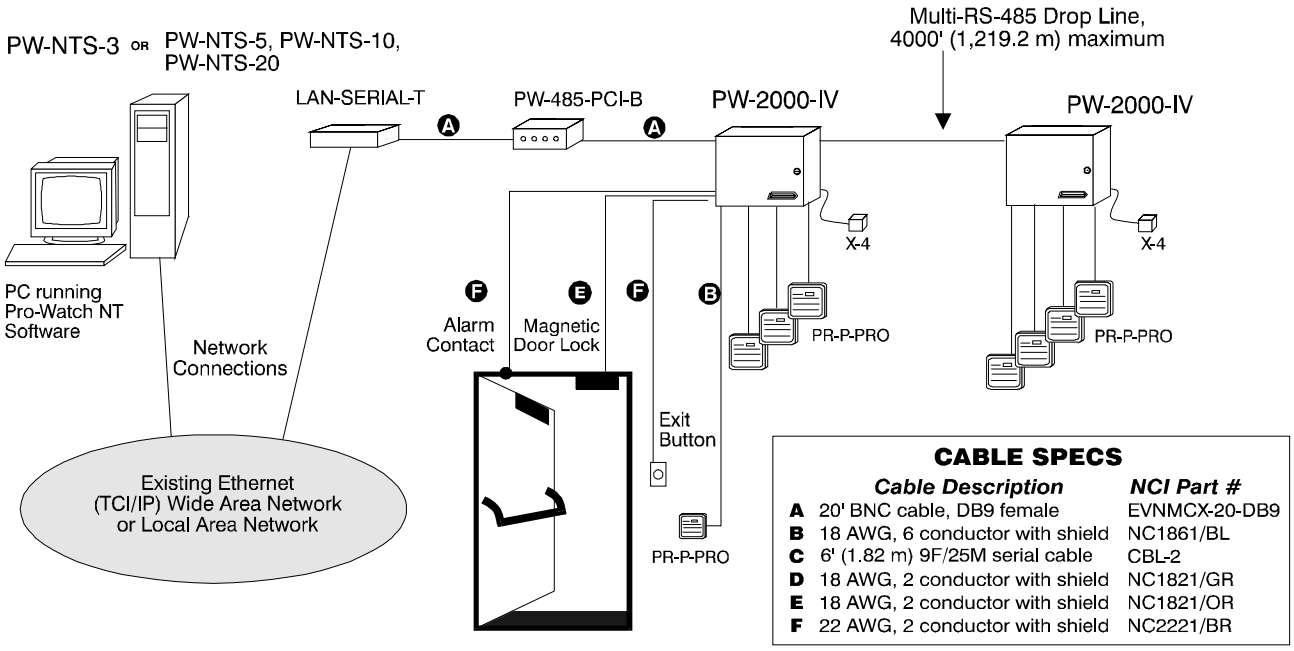
Protocol:	TCP/IP	
Station Support:	PW-NTS-3	3 clients
	PW-NTS-5	5 clients
	PW-NTS-10	10 clients
	PW-NTS-20	20 clients
Network Type:	Ethernet network cards with combination adapters RG-58 A/U cable or twisted pair	
Network Distance:	607' (185 m)	

COMPUTER HARDWARE/SOFTWARE SPECIFICATIONS

	Workstation	File Server (1-5 Users)
Processor	Pentium II-300	Pentium II-300
Memory	64 MB	128 MB
Hard Drive	2G	4.3G SCSI
Video	2 MB Video	2 MB Video
CD ROM	16X	16X
Software	NT 4.0 Workstation	NT 4.0 Server
Mouse	Microsoft	Microsoft
Monitor	17" (13.18 cm)	17" (13.18 cm)

* *One required at each remote dial-up site*
† *Required for each door*
†† *Required for each control panel*
††† *Required for every four readers*

Pro-Watch NT Multi-User System with LAN-SERIAL-T



CABLE SPECS

	Cable Description	NCI Part #
A	20' BNC cable, DB9 female	EVNMCX-20-DB9
B	18 AWG, 6 conductor with shield	NC1861/BL
C	6' (1.82 m) 9F/25M serial cable	CBL-2
D	18 AWG, 2 conductor with shield	NC1821/GR
E	18 AWG, 2 conductor with shield	NC1821/OR
F	22 AWG, 2 conductor with shield	NC2221/BR

PARTS LIST FOR PRO-WATCH NT MULTI-USER, TWO DOOR HARDWIRED ACCESS CONTROL SYSTEM

Quantity	Part #	Description
1	PW-NTS-3	File server computer, monitor, keyboard, software, network operating system, and network card
	OR	
	PW-NTS-5 PW-NTS-10 PW-NTS-20	
1	LAN-SERIAL-T	Micro serial server converter
1	PW-485-PCI-B	RS-232 to RS-485 communications converter
*** 1	PW-2000-IV	4 reader, 16 alarm point, 4 relay output control panel
** 1	X-4	16.5 VDC 50 VA transformer
* 1	S-4	Noise suppressor for door lock
* 1	ML8011-LC	1200 lb (544.3 kg) magnetic door lock
* 1	EXB-1	Request to exit button
* 1	PR-P-PRO	Proximity card reader
* 1	PS-1-12	Power supply for magnetic lock

NETWORK SPECIFICATIONS

Protocol:	TCP/IP	
Station Support:	PW-NTS-3	3 clients
	PW-NTS-5	5 clients
	PW-NTS-10	10 clients
	PW-NTS-20	20 clients
Network Type:	10Base T Ethernet network cards with RJ-45 adaptors	
Network Distance:	328' (100 m) to hub using twisted pair	

COMPUTER HARDWARE/SOFTWARE SPECIFICATIONS

	Workstation	File Server (1-5 Users)
Processor	Pentium II-300	Pentium II-300
Memory	64 MB	128 MB
Hard Drive	2G	4.3G SCSI
Video	2 MB Video	2 MB Video
CD ROM	16X	16X
Software	NT 4.0 Workstation	NT 4.0 Server
Mouse	Microsoft	Microsoft
Monitor	17" (13.18 cm)	17" (13.18 cm)

* *Required for each door*
** *Required for each control panel*
*** *Required for every four readers*

Pro-Watch NT Systems

Pro-Watch NT excels in multi-site access control applications where ease of use and alarm monitoring are important. Pro-Watch NT has been designed for the Microsoft Windows NT environment, running on a Microsoft NT platform, using Microsoft SQL Server as its database engine. Pro-Watch NT is certified to Microsoft® BackOffice™ requirements and is fully compliant with the Microsoft graphical user interface standards. In addition to full access control and alarm monitoring, Pro-Watch NT supports optional interfaces to CCTV, badging, verification, paging, and map displays.

Pro-Watch NT utilizes dial-up or leased line modems and can automatically make calls on a scheduled basis. In addition, it can operate using an existing local area or wide area network (LAN/WAN). Pro-Watch NT supports up to twenty workstations. Pro-Watch NT should be configured with the PW-2000-IV control panels. As PCs continue to change, please consult the factory for the latest PC specifications.

PW-NT-1
Pro-Watch NT, 64* reader, single user software with server setup.

PW-NTS-3
Pro-Watch NT, 64* reader, 3 user software with server setup.

PW-NTS-5
Pro-Watch NT, 256* reader, 5 user software with server setup.

PW-NTS-10
Pro-Watch NT, 256* reader, 10 user software with server setup.

PW-NTS-20
Pro-Watch NT, 256* reader, 20 user software with server setup.

Server Setup Pentium II Pro 300 PC with 128 megabytes of RAM, 4.3-GB SCSI hard disk drive, tape drive, 2 serial ports, parallel port, 3.5 floppy, Ethernet Network Adapter, 17 inch monitor, Microsoft NT 4.0 Server and Microsoft SQL Server 6.5. The number of serial ports can be expanded by adding the PW-PORTS-16 option. Printers and 485 adapters are added separately.

PW-NT-CLIENT
Pro-Watch NT client software. Pentium II Pro 300-based PC with 64 megabytes RAM, 4.3-GB hard disk drive, CD-ROM drive, 2 serial ports, parallel port, 3.5 floppy, Ethernet Network Adapter, 17 inch monitor, Microsoft NT 4.0 Workstation and Microsoft SQL Server 6.5. Printers are added separately. Panel loops are not connected to this configuration.

*The number of readers supported by the base software can be expanded with an additional software option.

PW-PORT-16 ..... 16 I/O Ports for Pro-Watch NT
When operated with the Pro-Watch NT software, this PC device adds16 serial ports to the PC.

PW-PORTS-16-EXP Additional 16 Ports PW
This add-on PCB board is attached to the PORT-16 board to provide an additional 16 ports.

PW-NT-BADGE
Pro-Watch NT integrated badging enrollment software and video capture card. Camera, printer and cables must be added separately.

PW-NT-VERIFY
Verification software and video capture card. Camera and cables must be added separately.

PW-NT-CCTV-BR
Burle CCTV Interface. CCTV equipment must be added separately.

PW-NT-CCTV-VI
Vicon CCTV Interface. CCTV equipment must be added separately.

PW-NT-PAGE
Motorola People Finder paging interface. Paging system must be added separately.

PW-NT-UPG-REDUN
Redundant server software and two network adapters; can be used with **PW-NTS-10** and **PW-NTS-20.** Identical hardware is required for the primary and backup computers.

PW-2000-IV Control Panels

PW-2000-IV ..... PW-2000-IV W/Complete Enclosure
This four reader access control panel with RS-485 communications supports Wiegand, Mag-Stripe, and proximity readers or keypads. Up to 5,000 cards/10,200 buffers can be loaded. It has 4 output relays, and 16 alarm points. The locking enclosure, battery backup, and tamper switch are included. It requires 16.5 VAC or 12 VDC linear power (provided separately). Dimensions: 16" W x 14" H x 4" D, (40.64 cm W x 35.56 cm H x 10.16 cm D). Operating temperature range is 35° C to 110° F (2° F to 43° C).

PW-2000-IV-X ..... PW-2000-IV-X W/Complete Enclosure
This four reader access control panel, with RS-485 communications, supports Wiegand, Magnetic-Stripe, and Proximity readers or keypads. Up to 25,000 cards/6,600 buffers can be loaded. It has 8 output relays, and 16 alarm points. The locking enclosure, battery backup, and tamper switch are included. It requires 16.5 VAC or 12 VDC linear power (provided separately). Dimensions: 16" W x 14" H x 4" D, (40.64 cm W x 35.56 cm H x 10.16 cm D). Operating temperature range is 35° C to 110° F (2° F to 43° C).

Modems & Converters

PW-485-PCI-B ..... PW 485 Interface

This RS-485 interface converts an RS-232 signal into a RS-485 Signal. One 485 interface is needed for every trunk line of PW-2000 control panels.

PW-485-HUB-B ..... 485 Dial-up Hub

This RS-485 converter is used for dial-up applications. Only one PW-485-HUB-B is needed per remote site. The HUB converts the transactions from the PW-2000 into an RS-232 signal. The hub plugs directly into a dial-up modem.

LAN-SERIAL-T ..... Micro Serial Server

This micro serial server converts the signal from the PCI into a 10-BaseT Ethernet signal, allowing panel loops to be connected to an existing Ethernet LAN or WAN.

M-9600-2 ..... 9600 Dial-up Modem

A 9600 baud dial-up modem supporting V.32 communications.

M-9600-LO ..... 9600 2 Wire Leased Line Modem, Originate

9600 baud 2 wire leased line modem configured to be the "Originate" modem. Use M-9600-LA for the "Answer" modem. Requires 12 VDC supply not included.

M-9600-LA ..... 9600 2 Wire Leased Line Modem, Answer

9600 baud 2 wire leased line modem configured to be the "Answer" modem. Use M-9600-LO for the "Originate" modem. Requires 12 VDC supply not included.

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