

MAXSYS[®]

PC4401 v1.0
Developer's Guide

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1. Introduction

The PC4401 module can be used for the following functions when it is connected to a PC4020 v3.2 and higher system:

- DataLink module
(interface for third-party applications)
- Printer module
- PC-LINK isolator
- DVACS* communications

Each PC4401 module can only be used for one of the above functions.

This manual describes the commands that are available to developers of third-party applications for the Maxsys PC4020 system. The PC4401 module can be set up to act as an interface from your application to the PC4020 system.

For instructions on installing and setting up a PC4401 module on a PC4020 v3.2 system, please see the *PC4401 Printer/PC-LINK Isolator/DataLink Module Installation Guide*.

If you will be using a PC4401 module for DVACS communications, please see the *PC4401 DVACS Module Installation Guide*.

How to Use This Document

This document describes the commands available to developers of third-party applications through the PC4401 interface. For information on how to integrate these commands into your application, please refer to the documentation available for the programming language you have used.

Please read through the introductory material on pages 1 and 2 for information about the PC4401 interface, the command structure, and sample transmissions. For information on each command, refer to the command tables on pages 3 to 7.

2. Developing PC4020 Applications

The PC4020 v3.2 and higher, through the PC4401 module, provides an Application Programming Interface (API) to allow third-party applications to communicate with the security system.

You can incorporate PC4401 API commands in any application that can send and receive hexadecimal ASCII codes.

When you are programming your application, you can use any of the API commands described in this *Guide*. There are two types of commands available to you:

- commands which your application sends to the PC4020 system
- event-driven commands which the PC4020 system sends to your application.

The PC4020 v3.2 and higher API only supports DTR/DSR handshakes.

Common Uses of PC4020 Applications

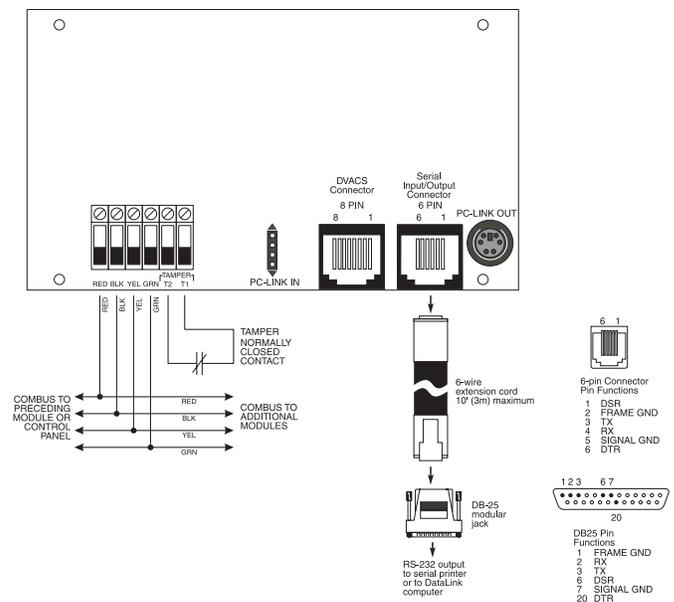
You can use the PC4401 commands for whatever purpose you and your users want. Some common applications may be:

- a custom interface for your users
- integration of other building systems (e.g. a CCTV system) with the PC4020 security system.

3. PC4401 Module Serial Connection

The PC4401 module uses a serial cable to connect to the computer running your application. Refer to the diagram below for more information.

PC4401 Module - DataLink Connection



* DVACS is a registered trademark of Electro Arts Limited

4. Structure of PC4401 Commands

All data is sent as hexadecimal ASCII codes. Each transmission frame to and from the PC4401 consists of:

3-digit command	data	checksum	CR/LF
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Command: This tells the PC4020 or your application what to do. Commands are 3 characters long. For example, the Status Request command (001) would be sent as the hexadecimal ASCII codes 30 30 31. See the tables in this Guide for a list of available commands.

Data Byte(s): This is the data that may be needed for each command. For example, after the Partition Arm command (030), your application would need to send one data byte specifying which partition should be armed (1 to 8). Refer to the tables in this Guide for the required data for each command.

Checksum: The checksum is calculated by adding all hexadecimal ASCII values, and truncating to 8 bits. The checksum includes the command and the data bytes, but does not include the checksum byte or the CR/LF bytes. The checksum is converted to ASCII after being calculated.

Example: For the Zone Alarm command, where there has been an alarm on zone 002, the PC4020 would send (decimal):

601 002

The hexadecimal ASCII codes for this would be:

36 30 31 30 30 32

The sum of these codes is hexadecimal 129. The truncated checksum would be 29. Therefore, the full transmission from the PC4020 (in hex. ASCII) would be:

Command	Data	Checksum	CR/LF
36 30 31	30 30 32	32 39	0D 0A

CR/LF: Each transmission frame is followed with a carriage return (hex. ASCII 0D), and a line feed (hex. ASCII 0A), to indicate the end of the transmission.

5. Error Checking

The PC4020 will reply with a Command Acknowledge (500) or Command Error (501) after each frame it receives. The Command Acknowledge will include the command number of the last frame the panel received.

NOTE: When transmitting commands to the PC4020 system, your application should either wait for the Command Acknowledge code to be returned, or for 2 seconds, before transmitting the next command.

Example:

Your application sends a command to arm partition 1:

030 1 C4 CR LF

This frame shows the Partition Arm command (030), followed by the partition number (1) and the checksum (C4).

Command Acknowledge:

The panel responds with the Command Acknowledge (500), followed by the previous command it received (030) and the checksum (hex. 128, truncated to 28).

500 030 28 CR LF

This form of command confirmation gives you the option of using error checking with command retransmission. If you want, your application can disregard the 500 and 501 commands from the panel.

6. Sample Transmissions

Example 1

Burglary zone 020 on partition 1 has gone into alarm. The PC4020 system sends the following:

Command	Format	3-digit Code	Data	Checksum	CR/LF
Zone Alarm	Code	6 0 1	0 2 0	2 9	CR LF
	ASCII (Hex)	36 30 31	30 32 30	32 39	0D 0A
Partition Alarm	Code	6 5 4	1	D 0	CR LF
	ASCII (Hex)	36 35 34	31	44 30	0D 0A

Example 2

Waterflow zone 100 on partition 3 has gone into alarm. The PC4020 system sends the following:

Command	Format	3-digit Code	Data	Checksum	CR/LR
Zone Alarm	Code	6 0 1	1 0 0	2 8	CR LF
	ASCII (Hex)	36 30 31	31 30 30	32 38	0D 0A
Waterflow Alarm	Code	6 3 3	--	9 C	CR LF
	ASCII (Hex)	36 33 33	--	39 43	0D 0A
Partition Alarm	Code	6 5 4	3	D 2	CR LF
	ASCII (Hex)	36 35 34	33	44 32	0D 0A

Example 3

PC4020 partition 1 becomes ready to arm. The PC4020 system sends the Partition Ready command. Your application responds with the Arm Partition 1 command. The PC4020 then replies with the Command Acknowledge code. If the partition was armed successfully, the PC4020 sends a Partition Armed code.

Command	Format	3-digit Code	Data	Checksum	CR/LR
Partition Ready (sent by PC4020)	Code	6 5 0	1	C C	CR LF
	ASCII (Hex)	36 35 30	31	43 43	0D 0A
Arm Partition (sent by application)	Code	0 3 0	1	C 4	CR LF
	ASCII (Hex)	30 33 30	31	43 34	0D 0A
Command Acknowledge (sent by PC4020)	Code	5 0 0	0 3 0	2 8	CR LF
	ASCII (Hex)	35 30 30	30 33 30	32 38	0D 0A
Partition Armed (sent by PC4020)	Code	6 5 2	1	C E	CR LF
	ASCII (Hex)	36 35 32	31	43 45	0D 0A

7. Available Commands

Commands Originated By the Third-Party Application

These are commands that can be sent from your application to the PC4020 system.

Description	Command	# of Data Bytes	Data Bytes
Poll The PC4020 will reply with a Command Acknowledge code (sent after every successfully received command).	000	0	
Status Request The PC4020 will send updates for all zone and trouble status to the application.	001	0	
Set Time and Date The PC4020 will change the time and date to that sent by the application.	010	10	Time and Date (HHMM MMDDYY)
Command Output Control The PC4020 will activate or deactivate the selected Command Output.	020	2	Partition #(1-8) Command Output # (1-8)
Partition Arm Control The PC4020 will attempt to arm the selected partition	030	1	Partition #(1-8)
Partition Disarm Control The PC4020 will disarm the selected partition. This command can also be used to acknowledge alarms on a partition. Sending the Partition Disarm command for a partition will silence any burglary alarm on the partition, as well as disarm the partition (if armed). NOTE: Fire alarms cannot be silenced through the PC4401 DataLink interface. Fire alarms can only be silenced at a system keypad.	040	1	Partition #(1-8)
Bypass Zone The PC4020 will attempt to bypass the selected zone. If successful, the PC4020 will send the Zone Bypass/Unbypass Status Update.	100	3	Zone #(001-128)
Unbypass Zone The PC4020 will attempt to unbypass the selected zone. If successful, the PC4020 will send the Zone Bypass/Unbypass Status Update.	101	3	Zone #(001-128)

Commands Originated By the PC4020

These are event-driven commands that will be sent from the PC4020 system to your application. The commands are listed alphabetically. To find a command by the 3-digit command code, please see the Command Index on page x.

Description	Command	# of Data Bytes	Data Bytes
2 Wire Smoke Alarm A 2-wire smoke alarm has been activated.	631	0	
2 Wire Smoke Restore A 2-wire smoke alarm has been restored.	632	0	
2 Wire Smoke Trouble Restore A 2-wire smoke zone trouble has been restored.	636	0	
2 Wire Smoke Trouble A 2-wire smoke zone has a trouble condition.	635	0	
[A] Key Alarm An Auxiliary key alarm has been activated.	623	1	Partition Number (1-8)
[A] Key Restoral An Auxiliary key alarm has been restored.	624	1	Partition Number (1-8)
Buffer Near Full The DLS software has not uploaded the Event Buffer for 2250 events.	816	0	
Combus Restoral Combus low power has been restored.	809	0	
Combus Trouble The Combus has low power.	808	0	
Command Acknowledge A command has been received successfully.	500	3	Previous Command Received
Command Error A command has not been received successfully.	501	0	
Door Forced Alarm An access controlled door has been forced open.	627	3	Zone Number (001-128)
Door Forced Restore A door forced open alarm has been restored.	628	3	Zone Number (001-128)
Door Open Too Long Alarm An access controlled door has been kept open past the programmed Door Open time.	629	3	Zone Number (001-128)
Door Open Too Long Restore A door open too long alarm has been restored.	630	0	
Duress Alarm A Duress code has been entered on a system keypad.	620	4	User Number (0001-1500)
[F] Key Alarm A Fire key alarm has been activated.	621	1	Partition Number (1-8)
[F] Key Restoral A Fire key alarm has been restored.	622	1	Partition Number (1-8)
FTC Restoral The PC4020 has restored communications to central station	815	0	
FTC Trouble The PC4020 has had trouble communicating to the central station.	814	0	
General Device Low Battery Restoral The low battery has been restored.	822	3	Zone #(001-128)
General Device Low Battery One or more of the following devices have a low battery: wireless zones/pendants (WLS908) (zones 001-128)	821	3	Zone #(001-128)
General Module Com Fault Restoral Communications to connected modules have been restored.	824	0	
General Module Com Fault The PC4020 has lost communications with one or more connected modules.	823	0	

Description	Command	# of Data Bytes	Data Bytes
General System Tamper Alarm A tamper has occurred on a zone or module.	829	0	
General System Tamper Restore All tamper conditions on a zone or module have restored.	830	0	
General System Trouble One or more of the following has occurred: PC4204/PC4820/PC4850/PC4702 AC, battery and Aux Supply troubles, Alternate Communicator troubles, PC4400 troubles, automation fault, PC4164 RF jam	819	0	
General System Trouble Restoral A general system trouble has been restored.	820	0	
Ground Fault There is a problem with the EGND connection.	817	0	
Ground Fault Restoral The ground fault has been restored.	818	0	
Handheld Keypad Low Battery Alarm One or more handheld keypads (WLS910) have a low battery.	827	3	HHK Number (001-004)
Handheld Keypad Low Battery Restoral Low batteries have been restored on handheld keypads.	828	3	HHK Number (001-004)
[P] Key Alarm A Panic key alarm has been activated.	625	1	Partition Number (1-8)
[P] Key Restoral A Panic key alarm has been restored.	626	1	Partition Number (1-8)
Panel AC Restoral AC power to the panel has been restored.	803	0	
Panel AC Trouble AC power to the panel has been disconnected or interrupted	802	0	
Panel Aux Restoral The auxiliary power supply has been restored.	805	0	
Panel Aux Trouble There is a problem with the auxiliary power supply.	804	0	
Panel Battery Restoral The panel's battery has been restored.	801	0	
Panel Battery Trouble The panel's battery is low.	800	0	
Partition Armed A partition has been armed - sent at the beginning of the exit delay. Also sent after an alarm (after the Bell Cutoff timer expires).	652	1	Partition #(1-8)
Partition Disarm A partition has been disarmed. Also sent after an alarm (after the Bell Cutoff timer expires).	655	1	Partition #(1-8)
Partition Force Armed A partition has been force armed - sent at the beginning of the exit delay.	653	1	Partition #(1-8)
Partition In Alarm A partition is in alarm.	654	1	Partition #(1-8)
Partition Not Ready The PC4020 will send this command when a partition becomes not ready to arm (e.g. when a zone is opened on the partition).	651	1	Partition #(1-8)
Partition Ready The PC4020 will send this command when a partition becomes ready to arm (e.g. when all zones on the partition are closed).	650	1	Partition #(1-8)
Special Closing A partition has been armed by one of the following methods: DataLink application, quick arm, auto arm, keyswitch, function key, DLS software, wireless key.	701	1	Partition #(1-8)

Description	Command	# of Data Bytes	Data Bytes
Special Opening A partition has been disarmed by one of the following methods: DataLink application, auto disarm, keyswitch, function key, DLS software, wireless key.	751	1	Partition #(1-8)
System Bell Restoral The bell trouble has been restored.	807	0	
System Bell Trouble An open circuit has been detected across the bell terminals.	806	0	
TLM Failure Line 2 There is a problem communicating with telephone line 2.	812	0	
TLM Failure There is a problem communicating with telephone line 1.	810	0	
TLM Restoral Communications with telephone line 1 have been restored.	811	0	
TLM Restoral Line 2 Communications with telephone line 2 have been restored.	813	0	
User Closing A partition has been armed by a user - sent at the end of the exit delay	700	5	Partition #(1-8) User #(0001-1500)
User Opening A partition has been disarmed by a user.	750	5	Partition #(1-8) User #(0001-1500)
Waterflow Alarm A waterflow alarm has been activated.	633	0	
Waterflow Restore A waterflow alarm has been restored.	634	0	
Waterflow Trouble Restore A waterflow zone trouble has been restored.	638	0	
Waterflow Trouble A waterflow zone has a trouble condition.	637	0	
Wireless Key Low Battery Alarm One or more wireless keys (WLS909) have a low battery.	825	3	Wireless Key Number (001-016)
Wireless Key Low Battery Restoral Low batteries have been restored on wireless keys.	826	3	Wireless Key Number (001-016)
Zone Alarm* A zone has gone into alarm.	601	3	Zone #(001-128)
Zone Bypass A zone has been bypassed.	607	3	Zone #(001-128)
Zone Fault Restoral A zone fault has been restored.	606	3	Zone #(001-128)
Zone Fault A zone has a fault.	605	3	Zone #(001-128)
Zone Opened* A zone has been opened.	609	3	Zone #(001-128)
Zone Restored* A zone has been restored.	610	3	Zone #(001-128)
Zone Restoral* A zone alarm has been restored.	602	3	Zone #(001-128)
Zone Tamper Restoral A zone tamper condition has been restored.	604	3	Zone #(001-128)
Zone Tamper A zone has a tamper condition.	603	3	Zone #(001-128)
Zone Unbypass A zone has been unbypassed.	608	3	Zone #(001-128)
*NOTE: Commands 609 and 610 are only supported on the PC4020 v3.5 and higher.			

8. Command Index

Command	Description	Command	Description
000	Poll	651	Partition Not Ready
001	Status Request	652	Partition Armed
010	Set Time and Date	653	Partition Force Armed
020	Command Output Control	654	Partition In Alarm
030	Partition Arm Control	655	Partition Disarm
040	Partition Disarm Control	700	User Closing
100	Bypass Zone Control	701	Special Closing
101	Unbypass Zone Control	750	User Opening
500	Command Acknowledge	751	Special Opening
501	Command Error	800	Panel Battery Trouble
601	Zone Alarm	801	Panel Battery Restoral
602	Zone Restoral	802	Panel AC Trouble
603	Zone Tamper	803	Panel AC Restoral
604	Zone Tamper Restoral	804	Panel Aux Trouble
605	Zone Fault	805	Panel Aux Restoral
606	Zone Fault Restoral	806	System Bell Trouble
607	Zone Bypass (from PC4020)	807	System Bell Restoral
608	Zone Unbypass (from PC4020)	808	Combus Trouble
609	Zone Opened	809	Combus Restoral
610	Zone Restored	810	TLM Failure
620	Duress Alarm	811	TLM Restoral
621	[F] Key Alarm	812	TLM Failure Line 2
622	[F] Key Restoral	813	TLM Restoral Line 2
623	[A] Key Alarm	814	FTC Trouble
624	[A] Key Restoral	815	FTC Restoral
625	[P] Key Alarm	816	Buffer Near Full
626	[P] Key Restoral	817	Ground Fault
627	Door Forced Alarm	818	Ground Fault Restoral
628	Door Forced Restore	819	General System Trouble
629	Door Open Too Long Alarm	820	General System Trouble Restoral
630	Door Open Too Long Restore	821	General Device Low Battery
631	2 Wire Smoke Alarm	822	General Device Low Battery Restoral
632	2 Wire Smoke Restore	823	General Module Com Fault
633	Waterflow Alarm	824	General Module Com Fault Restoral
634	Waterflow Restore	825	Wireless Key Low Battery Alarm
635	2 Wire Smoke Trouble	826	Wireless Key Low Battery Restoral
636	2 Wire Smoke Trouble Restore	827	Handheld Keypad Low Battery Alarm
637	Waterflow Trouble	828	Handheld Keypad Low Battery Restoral
638	Waterflow Trouble Restore	829	General System Tamper Alarm
650	Partition Ready	830	General System Tamper Restore

NOTES:



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