IMPORTANT

This manual contains information on limitations regarding product use and function and information on the limitations as to liability of the manufacturer. The entire manual should be carefully read.

IT-100 Data Interface Module v1.1 Developer's Guide

DSC®

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1. Introduction

The IT-100 module is an Application Programming Interface (API) that allows third-party applications to communicate with PowerSeries™ security systems. IT-100 API commands can be incorporated into any application that can send and receive hexadecimal ASCII codes. Common applications include:

- Custom User interfaces
- Integration of additional building systems (e.g. a CCTV system) with a PowerSeries™ security system.

This manual describes the commands that are available to developers of third-party control applications for the PowerSeries™ series of alarm panels using the IT-100 Data Interface Module.

- For details on installing and setting up an IT-100 module on a PowerSeries™ panel, refer to the *IT-100 Installation Instructions.*
- For information on how to integrate these commands into your application, refer to your programming language documentation.
- Refer to Appendix A for programming examples.

1.1 Virtual Keypad

The virtual keypad functions allow third party emulation of a PowerSeries Keypad. Keypresses can be simulated by sending the **Key Pressed Command (070)** followed by a numeric key, emergency, or function key value. See Key Pressed (070) in Section 4: Application Originated Commands. The IT-100

NOTE: *For Virtual Keypad Functions to work. The Virtual Keypad Control (058) must be enabled. This is the default setting*

Keypad Commands. Keypad Commands are not limited to simulating keypresses with virtual key commands. Most commands / functions may simulate a number of keystrokes to initate a function.

For example the **Set time and Date command (010)** replaces 18 keypress commands required to enter the date and time:

i.e.,keypresses"[*][6][CODE][1]hhmmMMDDYY])

IT-100 Virtual Keypad commands send data so that keypad responses can be duplicated in a software application. All Keypad indications (ie. indicator lights, moving cursor, bell outputs) are transmitted as IT-100 initiated commands. These include:

(901) LCD Update

(902) LCD Curosr

(903) LED Status

(904) Beep Status

(905) Tone Status

(906) Buzzer Status

(907) Door Chime Status

2. Communications Protocol

2.1 RS-232 Communications:

The IT-100 communicates with the application with a serial cable from an on-board RS-232 interface (DB9 connector).The connection uses only the RX, TX and GND lines in the RS-232 Standard and does not support hardware/software flow control.

2.2 Baud Rate

The default settings are:

9600 baud rate with **8** bit data, **No** parity and **1** stop bit

The baud rate can be changed by the application by sending a **Baud Rate Change (080)** command. The IT-100 responds with the **Baud Rate Set (580)** command to confirm the change. Recommended Baud rates are listed below. .

If Virtual Keypad Control (058) is NOT enabled or Time Stamp Control (055) is OFF the default 9600 baud rate will meet the requirements for normal operation. A higher baud rate is required if these options have been selected. DSC recommends using the highest baud rate compatible with cable length.
Baud Rate Default settings can be can also be set as follows:

- Disconnect Keybus cable (if connected)
- Jumper pins 2 &3 of the RS232 DB9 connector
- Connect Keybus and wait for LED to start flashing
- Remove jumper between Pins 2 & 3

Baud Rate will now be set to the default value (9600 baud)

Baud Rate	Cable Length*
9600 (def)	**98’(30.4m)**
19200	50’ (15.2m)
38400	25’ (7.6m)
57600	20’ (6.0m)
115200	8’ (2.4m)

*Cable Capacitance 50pF/ft

Refer to the *IT-100 Installation Instructions* for additional details

2.3 Handshaking

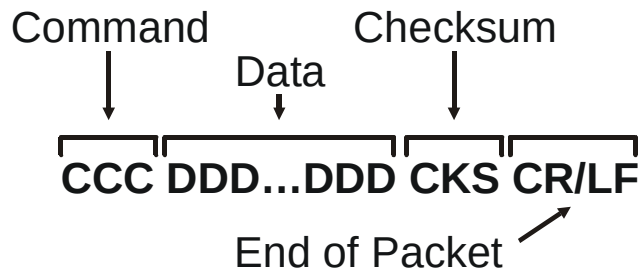
NOTE: *The IT-100 does not support handshaking and does not buffer events. If the application computer stops functioning, events occurring during that time will be overwritten.*

Two types of commands available to the application developer: Commands which your application sends to the IT-100 and Event-driven or State-Change commands which the IT-100 sends back to your application.

Handshaking is only initiated by Application Originated Commands, the IT-100 does not initiate handshaking, therefore IT-100 can not determine if the application is active or inactive. When a command is initiated by the application, the IT-100 responds with a **Command Acknowledge(500)** if a communication is successful or with **Command Error (501)** if a command has been received with a bad checksum.

2.4 Command Protocol

All data is sent as hex ASCII codes. The transmission protocol consists of the following:



	CCC Command	DDD...DDD Data Bytes	CKS Checksum		CR/LF End of Packet	
Code	**654**	**1 (Partition 1-8)**	Dh	2h	CR	LF
ASCII (Hex)	36, 35, 34h	**33h** (Partition 3)	44	32	0Dh	0Ah

CCC **Command (3-digits)**	The 3-digit Command tells the module or the application what to do. Commands are 3 characters long. For example, the Partition in Alarm command (654) would be sent as hex ASCII codes '36 35 34'. See the following tables for supported commands.
DDD...DDD **Data Bytes**	This is the data required for the command. For example, after the Partition in Alarm command (654), the application must specify which partition should be armed (1-8). The following tables indicate the data requirements are for each command. Some commands, like the User Closing (700), have space holding zeros. In this case all 4 digits are sent even though this module uses only two.
CKS **Checksum**	The checksum is calculated by adding the hex value of all command and data digits, and truncating the result to 8 bits. The upper and lower nibbles of the result are converted to ASCII characters before sending. E.g., a Partition Alarm on partition 3 would be sent like this: The command and data fields contain: **6 5 4 3** The ASCII codes for this would be:36 35 34 33 The Checksum = 36 + 35 + 34 + 33 = **D2**.
CR/LF **End of Packet**	Carriage Return & Line Feed Each transmission is followed with a carriage return (hex ASCII 0D) and a line feed (hex ASCII 0A) to indicate the end of a transmission.

3. Additional Programming Requirements

3.1 Power Up / Power Loss

When using the IT-100 with a PC5020 (POWER864) panel, the first command after power-up of the IT-100 may show incorrect partition information if that command displays the partition. This is due to the method the IT-100 uses to detect which type of panel it is connected to. If partition information is critical, the installer should open and close a zone to clear this condition before leaving the installation.

On power-up, the IT-100 is not immediately aware of the state of all partitions and zones. When the IT-100 detects a *change-in-state* the appropriate *change-of-state* command listed above will be sent. The output of the API Command 001 (STATUS) state information it displays may be false if the IT-100 has recently been added to the security system bus. This is because the IT-100 has not seen a state transition yet and therefore reports the default state for both partitions and zones; READY and CLOSED respectively. Partition information also may not be displayed if the IT-100 has not detected a partition status change for that partition. These issues are only relevant for 5 minutes maximum after the IT-100 has been added to the system bus.

Configuration commands for the IT-100 module (e.g., 010, 055, 056, 057) are stored in on-board EEPROM and are not lost in the event of a power loss to the module.

3.2 User/Master Codes

Some IT-100 commands require a user code in order to execute. An example would be command output (CMD 020). If a code is required by the panel, the IT-100 will issue a 900 command to indicate to the application that a 4-digit or 6-digit code must be entered.

Arming, disarming and functions that require codes to execute follow the following protocol.

- Select the function (arm, disarm, output) by sending the appropriate command.
- If a code is required, the IT-100 will send command 900.
- The application must then respond with command 200 containing a valid user code.

> ***NOTE:*** *If no code is required a command 200 is not required. The application will have the panel's time window for entering the access code. If a command 200 is issued to the IT-100 outside of the panel's window, it is ignored. Maintenance codes are not supported by the IT-100.*

3.3 Programming Delays

It is not always possible to determine the delay the IT-100 will take to respond to an application command. Depending on the alarm system configuration and complexity delays can vary dramatically. Some error codes (See Appendix B: Error Codes) will indicate if partitions etc. are not ready to respond or if certain functions are busy. These types of error codes can be used by the application to prompt repeated queries.

IF problems arise programming for unanticipated delays, contact your DSC representative.

4. Application Originated Commands

Application Originated Commands request data from the alarm system or set the alarm system to a specific state. Application initiated commands fall within the range of [000]-[499]. IT-100 initiated commands fall between codes [500] to [999]. For commands with a known or absent data the checksum is provided. The range of responses that the IT-100 generates for each command are included and summarized in Appendix A for quick reference.

NOTE: *Depending on the type of alarm system and the options programmed, the IT-100 may send additional responses to application commands than are listed here. Refer to Appendix B for possible error codes or the System Error(502) command.*

	Command	Data Bytes	Checksum		End of Packet	
Poll	**000** (30, 30, 30h)	**0**	90h		CR(0Dh)	LF(0Ah)
Verifies communication channel with IT-100. IT-100 responds with: Command Acknowledge.....(500)						
Status Request	**001** (30, 30, 31h)	**0**	91h		CR(0Dh)	LF(0Ah)
IT-100 responds with general zone, partition, and trouble status updates to the "Control Software Application". Troubles are limited to the status of the trouble LED on a keypad. Only the partitions that have been detected, and their trouble states, will be displayed. When connected to a PowerSeries panel, the module will send the status of: all zones, troubles, and status of enabled partitions only. The IT-100 responds to this command with the following commands in the sequence indicated: Software Version (908) command Keybus Fault (896) or Keybus Fault Restored (897) Partition Status Commands (Maximum 8 commands, 1 for each Partition), may include any of the following: Partition Ready.....(650) Partition Not Ready.....(651) Partition in Alarm.....(654) Partition Disarmed .....(655) Exit Delay in Progress.....(656) Entry Delay in Progress .....(657) Keypad Lock-out.....(658) Keypad Blanking.....(659) Command output in progress .....(660) Invalid Access Code.....(670) Function Not Available.....(671) Failed To Arm.....(672) Partition Busy.....(673) Code Required.....(900) Trouble LED Commands (Maximum of 8 Commands, 1 of the following for each partition) Trouble LED ON .....(840) Trouble LED OFF.....(841) 9 LED Status (903) commands (Total of 9 Commands, 1 for each LED status reports ON, OFF or FLASHING) 1 Ready 2 Armed 3 Memory 4 Bypass 5 Trouble 6 Program 7 Fire 8 Backlight 9 AC Zone Status Commands (Maximum of 64 Commands, 1 of the following for each Zone): Zone Opened .....(609) Zone Restored .....(610)						
Labels Request	**002** (30, 30, 32h)	**0**	92h		CR(0Dh)	LF(0Ah)
IT-100 responds by sending all programmable labels to the Software application. The IT-100 responds with: Broadcast Labels.....(570)						
Set Time and Date	**010** (30, 31, 30h)	10 (hhmmMMDDYY)**	XX	XX	CR(0Dh)	LF(0Ah)
Sets new Time and Date on the Alarm System. The IT-100 responds with: *Code Required..... (900) **Dependent on Alarm System programming.* ** Hexadecimal ASCII						

	Command	Data Bytes	Checksum		End of Packet	
Command Output Control	**020** (30, 32, 30h)	2 (Part 1-8 (31-38h), Pgm 1-4(31-34h))	XX	XX	CR(0Dh)	LF(0Ah)
Activates the selected **Command Output**. ***(1-4)*** on the selected partition (1-8), the IT-100 responds with: *Code Required..... (900) **Dependent on Alarm System programming.* Command Output in Progress..... (660)						
Partition Arm Control - Away	**030** (30, 33, 30h)	1 Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
Arms selected partition in ***AWAY*** mode (no zones bypassed). The IT-100 responds with: *Code Required..... (900) **Dependent on Alarm System programming.* Exit Delay in Progress..... (656)						
Partition Arm Control - Stay	**031** (30, 33, 31h)	1 Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
Arms the selected partition in ***STAY-ARM*** mode. The IT-100 responds with: *Code Required..... (900) **Dependent on Alarm System programming.* Exit Delay in Progress..... (656)						
Partition Arm Control - Armed, No Entry Delay	**032** (30, 33, 32h)	1 Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
Arms selected partition with **NO** entry delay. The IT-100 responds with: *Code Required..... (900) **Dependent on Alarm System programming.* Exit Delay in Progress..... (656)						
Partition Arm Control - With Code	**033** (30, 33, 33h)	7 (Part.1-8 (31-38h) & Code 6 bytes h)	XX	XX	CR(0Dh)	LF(0Ah)
Requires a *user code* to arm the selected partition. This is identical to entering an access code when a partition is in ***Ready*** mode. The IT-100 responds with: Exit Delay in Progress.....(656) ***NOTE:*** *A 6-digit code is required. If 4-digit codes are in use, add "00 " to create a 6-digit code. E.g., Code "1234" becomes "123400"*						
Partition Disarm Control - With Code	**040** (30, 34, 30h)	7 (Part 1-8 (31-38h) & Code 6 bytes h)	XX	XX	CR(0Dh)	LF(0Ah)
Disarms the selected partition. Sending the Partition Disarm command will silence any alarms as well as disarm the partition. *The IT-100 does not send a response to this command unless there is a system error.* ***NOTE:*** *A 6-digit code is required. If 4-digit codes are in use, add "00 " to create a 6-digit code. E.g., Code "1234" becomes "123400"*						
Time Stamp Control	**055** (30, 35, 35)	1 (On/Off (1,0) (31, 30h)	XX	XX	CR(0Dh)	LF(0Ah)
This command followed by a "**1**" enables the Time Stamp control. Default is "**0**" disabled. This control prefixes all IT-100 commands with an 8-digit time stamp (hhmmMMDDYY) followed by a space (0x20). *The IT-100 does not send an immediate response to this command unless there is a system error.*						
Time/Date Broadcast Control	**056** (30, 35, 36)	1 (On/Off (1,0) (31, 30h))	XX	XX	CR(0Dh)	LF(0Ah)
This command followed by a "**1**" enables the Time/Date Broadcast control. Default is "**0**" disabled. This control causes the IT-100 to transmit system time broadcasts at 4 minute intervals. The IT-100 responds with: Time/Date Broadcast.....(550) *The IT-100 does not send an immediate response to this command unless there is a system error.*						
Temperature Broadcast Control	**057** (30, 35, 37)	1 (On/Off (1,0) (31, 30h))	XX	XX	CR(0Dh)	LF(0Ah)
This command followed by a "**1**" enables the Temperature Broadcast control. Default is "**0**" disabled. This control causes the IT-100 to transmit interior and exterior temperatures at 1 minute intervals. The IT-100 responds with: Indoor Temperature Broadcast.....(561) Outdoor Temperature Broadcast.....(562) *The IT-100 does not send an immediate response to this command unless there is a system error.*						
Virtual Keypad Control (Virt)	**058** (30, 35, 38)	1 (On/Off (1,0) (31, 30h))	XX	XX	CR(0Dh)	LF(0Ah)
This command enables/disables the virtual keypad. When enabled, all virtual keypad commands **(Virt)** from the application will be processed. All virtual keypad responses (i.e., menu, status lights updates) are automatically initiated by the IT-100 and sent to the application. When this command is disabled all virtual keypad commands (Virt) are ignored. *The IT-100 does not send a response to this command unless there is a system error.* ***NOTE:*** *The default setting for the Virtual Keypad Control is enabled (1).*						
Trigger Panic Alarm	**060** (30, 36, 30)	**1** (1 (31h)= F, 2(32h) = A, 3 (33h= P)	XX	XX	CR(0Dh)	LF(0Ah)
Emulates the **FAP** (Fire, Ambulance, Panic) keys on a **DSC** keypad causing an instant alarm.						

	Command	Data Bytes	Checksum		End of Packet	
Key Pressed (Virt)	**070** (30, 37, 30)	**1** (Key)	XX	XX	CR(0Dh)	LF(0Ah)

This command simulates a Keypress on a Keypad

Numerical Keypad: ..... **0** (30), **1**(31), **2**(32), **3**(33), **4**(34), **5**(35), **6**(36), **7**(37), **8**(38), **9**(39), ✱(2A), #(23h)
Fire, Ambulance, Panic keys..... **F** (46), **A** (41), **P**(50h)
Function Keys 1- 5..... **a** (61), **b** (62), **c** (63), **d** (64), **e** (65h)
Arrow Keys..... < (3C), > (3Eh)
Both Arrow Keys<> ..... =, (3Dh)
Break Key ..... ^ (5Eh)

Some operations require a long keypress (> 1.5 seconds). To accomodate this requirement, each simulated Keypress (070, D, XX, CR/LF) command must be followed by a keybreak (070, ^, F5, CR/LF). To create a long keypress, insert a 1.5 second delay before sending the Break Key.

The IT-100 does not send a response to this command unless there is a system error.

***NOTE:** The Virtual Keypad Control must be enabled (default) for this command to function.*

Baud Rate Change	**080** (30, 38, 30)	**1** (Val 0 - 4) (30-34h)	XX	XX	CR(0Dh)	LF(0Ah)

This command changes the Baud Rate.

Val 0 = 9600, 1 = 19200, 2 = 38400, 3 = 57600, 4 = 115200

The IT-100 responds with:

Baud Rate Set.....(580)

Get Temperature Set Point	**095** (30, 39, 35)	1 (Val 1 - 4) (31-34h)	XX	XX	CR(0Dh)	LF(0Ah)

This command requests the IT-100 to send the thermostat temperature set points of an Escort module. See Appendix C

Val (1-4) = Thermostat# to change

The IT-100 responds with the current set points in the target thermostat:

Thermostat Set Points .....(563)

***NOTE:** If an Escort module is not connected to the alarm system, an error code will be returned.*

Temperature Change	**096** (30, 39, 36)	8 (T,S,M,A1,A2,A3)	XX	XX	CR(0Dh)	LF(0Ah)

This command changes the thermostat temperature in the target Escort module. This command does not directly change the temperature set points on an Escort Module. This value is sent to the Escort module using the Save temperature (097) command.

Val T = Thermostat# to change (1-4) (31-34h)
S = Type of Set Point to Change (C= Cool Set Point, H=Heat Set Point)
M = Mode: Use "+" (2Bh) to increment current temp 1°, "-" (2Dh) to decrement 1°, "=" (3Dh)to set to specified temperature
A1 - A3: Used with Mode(=) to enter the specified temperature value. The three digit temperature is a decimal representation of a signed byte representing -127 to +127 degrees Fahrenheit or Centigrade depending on panel settings (most significant bit is the sign bit).

The IT-100 responds with the new set points stored in the IT-100

Thermostat Set Points .....(563)

***NOTE:** If an Escort module is not connected to the alarm system, an error code will be returned.*
If a "Get Temeperature Set Point (095)" command has not been previously sent, an error code will be returned.

Save Temperature Setting	**097** (30, 39, 37)	1 (Val 1 - 4) (31-34h)	XX	XX	CR(0Dh)	LF(0Ah)

This command changes the thermostat temperature in the target Escort module.
See Appendix C:Application Notes for details.

Val (1-4) = Thermostat# to change

The IT-100 responds with the current set points in the target thermostat:

Thermostat Set Points .....(563)

***NOTE:** If an Escort module is not connected to the alarm system, an error code will be returned.*

Code Send	**200** (32, 30, 30)	**6** (Access Code in hex ASCII)	XX	XX	CR(0Dh)	LF(0Ah)

This command is required to send an access code. For example, if a command, such as *Command Output*, is sent to the IT-100 and the IT-100 responds with command 900 to tell the user to enter an access code. The *Code Send* command transfers this code.

***NOTE:** The code entered is sent to the partition that sent the 900 request. The IT-100 remembers the partition the code request came from.*

***NOTE:** If a code is not required then a Code Send (200) command is not required, The application must send the access code within the alarm panel's time window or it will be ignored. Maintenance codes are not supported by the IT-100.*

5. IT-100 Originated Commands

Most of the commands the IT-100 issues are event driven (e.g., Application command or security system event). The remaining commands reflect the status of certain systems and are only issued when a *change-of-state* is encountered. For example, command 650 tells the application that the indicated partition is READY. Because this is state information, it is only sent when the partition state changes from another state (e.g., PARTITION_IN_ALARM, to the READY state). This also applies to zone states. The specific commands are 609, 610, 650, 651, 652, 654, 655, 656, 657, 670, and 671

	Command	Data Bytes	Checksum		End of Packet	
Command Acknowledge	**500** (35, 30, 30h)	**3** (CMD received in Hex ASCII)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a Command has been received by IT-100. This command is always the first response to a command from the application unless there is a checksum error then a Command Error (501) is sent.						
Command Error	**501** (35, 30, 31h)	**0**	96h		CR(0Dh)	LF(0Ah)
This command indicates that a Command has been received with a bad checksum. No additional data is available						
System Error	**502** (35, 30, 32h)	**3** (Error Code in Hex ASCII)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that one of the following errors has been detected. **017** Keybus Busy - Installer Mode **021** Requested Partition is out of Range **023** Partition is Not Armed **024** Partition is Not Ready to Arm **026** User Code Not Required **028** Virtual Keypad is Disabled **029** Not Valid Parameter **030** Keypad Does Not Come Out of Blank Mode **031** IT-100 is already in Thermostat menu **032** IT-100 is Not in Thermostat menu **033** No Response from Thermostat (or Escort Module)						
Time/Date Broadcast	**550** (35, 35, 30h)	**10 ***(hhmmMMDDYY)	XX	XX	CR(0Dh)	LF(0Ah)
The IT-100 transmits system time broadcasts at 4 minute intervals in response to the following application command. Time/Date Broadcast Control ..... (056) *** Enter values in Hex ASCII**						
Ring Detected	**560** (35, 36, 30h)	**10 ***(hhmmMMDDYY)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that the panel has detected a ring on the telephone line. ***NOTE:** An **ESCORT™5580TC** module is required to receive this command.* *** Enter values in Hex ASCII**						
Indoor Temperature Broadcast	**561** (35, 36, 32h)	**4** (TT (31-34h), *T1-T3,)	XX	XX	CR(0Dh)	LF(0Ah)
The IT-100 sends the interior temperature and thermostat number at 1 minute intervals in response to the following application command. Temperature Broadcast Control..... (057) Val TT = Thermostat# to change (1-4) (31-34h) *T1-T3 =Temperature. The three digit temperature is a decimal representation of a signed byte representing -127 to +127 degrees Fahrenheit or centigrade depending on panel settings (the most significant bit is the sign bit.) ***NOTE:** An **ESCORT™5580TC** module and minimum of one **ENERSTAT** thermostat is required.)*						
Outdoor Temperatrure Broadcast	**562** (35, 36, 32h)	**4** (TT (31-34h), *T1-T3)	XX	XX	CR(0Dh)	LF(0Ah)
The IT-100 sends the exterior temperature and thermostat number at 1 minute intervals in response to the following application command. Temperature Broadcast Control..... (057) Val TT = Thermostat# to change (1-4) (31-34h) *T1-T3 =Temperature. The three digit temperature is a decimal representation of a signed byte representing -127 to +127 degrees Fahrenheit or centigrade depending on panel settings (the most significant bit is the sign bit.) ***NOTE:** An **ESCORT™5580TC** module and minimum of one **ENERSTAT** thermostat is required.*						
Thermostat Set Points	**563** (35, 36, 33)	8 (TT,C1-C3, H1-H3)	XX	XX	CR(0Dh)	LF(0Ah)
This command is sent after any of the following commands has been received by the IT-100 Get Temperature Set Point..... (095) Temperature Change..... (096) Save Temperature Setting..... (097) **Val** TT = Thermostat# to change (1-4) (31-34h) C1-C3 = The current Cool Set Point A1-A3 = The current Heat Set Point ***NOTE:** Temperature. The three digit temperature is a decimal representation of a signed byte representing -127 to +127 degrees Fahrenheit or centigrade depending on panel settings (most significant bit is the sign bit.*						

	Command	Data Bytes	Checksum		End of Packet	
Broadcast Labels	**570** (35, 37, 30h)	**35** (Lbl# 3, Lbl 32 Bytes)	XX	XX	CR(0Dh)	LF(0Ah)

The IT-100 sends this command in response to the following application command:

Label Request.....(002)

Lbl# 3 Bytes (001 - 064) Zone Labels,
(065) Fire Alarm Label
(066) Failed to Arm Label
(067) Alarm when Armed Label
(101 - 108) Partition Labels
(120 - 151) Command Output Labels for Partitions 1-8

Lbl 32 Bytes Labels less than 32 Bytes will be padded with spaces

NOTE: *This function is only available with the PowerSeries PC1616/1832/1864 Panels*

Baud Rate Set	**580** (35, 38, 30h)	**1** (Val = 0- 4)(30-34h)	XX	XX	CR(0Dh)	LF(0Ah)

The IT-100 sends the command in response to the following command sent by the application.

Baud Change Rate .....(080)

Val 0 (30h) = 9600
1 (31h) = 19200
2 (32h) = 38400
3 (33h) = 57600
4 (34h) = 115200

Zone Alarm	**601** (36, 30, 31h)	**4** (Partition. 1-8, Zn 1-64)	XX	XX	CR(0Dh)	LF(0Ah)

This IT-100 command indicates that a zone and associated partition has gone into alarm.
Partition **1**(31h) - 8(38h), **Zn 1** (30, 30, 31h) **- Zone 64** (30, 36, 34h)

Zone Alarm Restore	**602** (36, 30, 32h)	**4** (Part. 1-8, Zn 1-64)	XX	XX	CR(0Dh)	LF(0Ah)

This IT-100 command indicates that a zone alarm and associated partition has been restored
Partition **1**(31h) - 8(38h), **Zn 1** (30, 30, 31h) **- Zone 64** (30, 36, 34h)

Zone Tamper	**603** (36, 30, 33h)	**4** (Part. 1-8, Zn 1-64)	XX	XX	CR(0Dh)	LF(0Ah)

This IT-100 command indicates that a zone and associated partition has a tamper condition.
Partition **1**(31h) - 8(38h), **Zn 1** (30, 30, 31h) **- Zone 64** (30, 36, 34h)

Zone Tamper Restore	**604** (36, 30, 34h)	**4** (Part. 1-8, Zn 1-64)	XX	XX	CR(0Dh)	LF(0Ah)

This command indicates that a zone tamper condition (and associated partition) has been restored
Partition **1**(31h) - 8(38h), **Zn 1** (30, 30, 31h) **- Zone 64** (30, 36, 34h)

Zone Fault	**605** (36, 30, 35h)	**3** (Zn 1-64) (30, 30, 31-30, 36, 34h)	XX	XX	CR(0Dh)	LF(0Ah)

This command indicates that a zone has a fault condition.

Zone Fault Restore	**606** (36, 30, 36h)	**3** (Zn 1-64) (30, 30, 31-30, 36, 34h)	XX	XX	CR(0Dh)	LF(0Ah)

This command indicates that a zone fault condition has been restored.

Zone Open	**609** (36, 30, 39h)	**3** (Zn 1-64) (30, 30, 31-30, 36, 34h)	XX	XX	CR(0Dh)	LF(0Ah)

This command indicates the general status of the zone.

Zone Restored	**610** (36, 31, 30h)	**3** (Zn 1-64) (30, 30, 31-30, 36, 34h)	XX	XX	CR(0Dh)	LF(0Ah)

This command indicates the general status of the zone.

Duress Alarm	**620** (36, 32, 30h)	**4** (0000) in Hex ASCII	XX	XX	CR(0Dh)	LF(0Ah)

This command indicates that a duress code has been entered on a system keypad.

[F] Key Alarm	**621** (36, 32, 31h)	**0**	99h		CR(0Dh)	LF(0Ah)

This command indicates that a Fire key alarm has been activated

[F] Key Restoral	**622** (36, 32, 32h)	**0**	9Ah		CR(0Dh)	LF(0Ah)

This command indicates that a Fire key alarm has been restored (sent automatically after the alarm).

[A] Key Alarm	**623** (36, 32, 33h)	**0**	9Bh		CR(0Dh)	LF(0Ah)

This command indicates that an Auxiliary key alarm has been activated.

[A] Key Restoral	**624** (36, 32, 34h)	**0**	9Ch		CR(0Dh)	LF(0Ah)

This command indicates that an Auxiliary key alarm has been restored (sent automatically after the alarm).

	Command	Data Bytes	Checksum		End of Packet	
[P] Key Alarm	**625** (36, 32, 35h)	**0**	9Dh		CR(0Dh)	LF(0Ah)
This command indicates that a Panic key alarm has been activated						
[P] Key Restoral	**626** (36, 32, 36h)	**0**	9Eh		CR(0Dh)	LF(0Ah)
This command indicates that a Panic key alarm has been restored (sent automatically after the alarm).						
Auxiliary Input Alarm	**631** (36, 33, 31h)	**0**	9Ah		CR(0Dh)	LF(0Ah)
This command indicates that an auxiliary input alarm has been activated.						
Auxiliary Input Alarm Restored	**632** (36, 33, 32h)	**0**	9Bh		CR(0Dh)	LF(0Ah)
This command indicates that an auxiliary input alarm was restored on the system.						
Partition Ready	**626** (36, 32, 36h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that the partition can now be armed (all zones restored, no troubles, etc). Also issued at the end of Bell Timeout if the partition was READY when an alarm occurred.						
Partition Not Ready	**651** (36, 35, 31h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that the partition cannot be armed (zones open, trouble present, etc).						
Partition Armed - Descriptive Mode	**652** (36, 35, 32h)	**2** Partition 1-8 (31-38h), Mode*	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition has been armed and the mode it has been armed in. This command is sent at the end of an **Exit Delay** and after an alarm if the **Bell Cutoff** expires. ***Modes: 0 (30h) = Away** **1 (31h) = Stay** **2 (32h) = Away, No Delay** **3 (33h) = Stay, No Delay**						
Partition in Ready to Force Arm	**653** (36, 35, 33h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition is in ready to Force Arm.						
Partition In Alarm	**654** (36, 35, 34h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition is in alarm.						
Partition Disarmed	**655** (36, 35, 35h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition has been disarmed.						
Exit Delay in Progress	**656** (36, 35, 36h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition is in Exit Delay.						
Entry Delay in Progress	**657** (36, 35, 37h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition is in Entry Delay.						
Keypad Lock-out	**658** (36, 35, 38h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition is in Keypad Lockout due to too many failed user code attempts.						
Keypad Blanking	**659** (36, 35, 39h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that Keypad Blanking has occurred on a partition						
Command Output In Progress	**660** (36, 36, 30h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition is in command output mode of operation.						
Invalid Access Code	**670** (36, 37, 30h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that an access code that was entered was invalid. If an access code was sent by the IT100 and this indication comes from the alarm panel within one second, then this command will be sent to the application. Otherwise this indication will be ignored and this command will not be sent.						
Function Not Available	**671** (36, 37, 31h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a function that was selected is not available. This command indicates that the requested function is not available at the present time. If a function requested by the IT100 from the panel does not occur within one second, then this command will be sent to the application. Otherwise this indication will be ignored and this command will not be sent. This command is only sent for commands from the application and does not apply to virtual keypad commands.						

	Command	Data Bytes	Checksum		End of Packet	
Fail to Arm	**672** (36, 37, 32h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition failed to arm						
Partition Busy	**673** (36, 37, 33h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
User Closing	**700** (37, 30, 30h)	**5** Partition 1-8 (31-38h), *User Code)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition has been armed by a user – sent at the end of exit delay. *User Codes = 0001- 0042 (30, 30, 30, 31 - 30, 30, 34, 32h)						
Special Closing	**701** (37, 30, 31h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
Indicates that a partition has been armed by one of the following methods: Quick Arm, Auto Arm, Keyswitch, DLS software, Wireless Key.						
Partial Closing	**702** (37, 30, 32h)	**1** Partition 1-8 (31-38h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition has been armed but one or more zones have been bypassed.						
User Opening	**750** (37, 35, 30h)	**5** Partition 1-8 (31-38h), *UUUU)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a partition has been disarmed by a user. *UUUU = User Codes 0001- 0042 (30, 30, 30, 31 - 30, 30, 34, 32h)						
Special Opening	**751** (37, 35, 31h)	**1 Partition 1-8 (31-38h)**	XX	XX	CR(0Dh)	LF(0Ah)
Special Opening - indicates that a partition has been disarmed by one of the following methods: Keyswitch, DLS software, Wireless Key.						
Panel Battery Trouble	**800** (38, 30, 30h)	**0**	98h		CR(0Dh)	LF(0Ah)
This command indicates that the panel has a low battery						
Panel Battery Trouble Restore	**801** (38, 30, 31h)	**0**	99h		CR(0Dh)	LF(0Ah)
This command indicates that the panel's low battery has been restored.						
Panel AC Trouble	**802** (38, 30, 32h)	**0**	9Ah		CR(0Dh)	LF(0Ah)
This command indicates that AC power to the panel has been removed.						
Panel AC Restore	**803** (38, 30, 33h)	**0**	9Bh		CR(0Dh)	LF(0Ah)
Indicates that AC power to the panel has been restored						
System Bell Trouble	**806** (38, 30, 36h)	**0**	9Eh		CR(0Dh)	LF(0Ah)
This command indicates that an open circuit has been detected across the bell terminals.						
System Bell Trouble Restoral	**807** (38, 30, 37h)	**0**	9Fh		CR(0Dh)	LF(0Ah)
This command indicates that the bell trouble has been restored.						
TLM Line 1 Trouble	**810** (38, 31, 30h)	**0**	99h		CR(0Dh)	LF(0Ah)
This command indicates that the phone line is a open or shorted condition.						
TLM Line 1 Trouble Restored	**811** (38, 31, 31h)	**0**	9Ah		CR(0Dh)	LF(0Ah)
This command indicates that the phone line trouble condition has been restored.						
TLM Line 2 Trouble	**812** (38, 31, 32h)	**0**	9Bh		CR(0Dh)	LF(0Ah)
This command indicates that the phone line is a open or shorted condition on the secondary line.						
TLM Line 2 Trouble Restored	**813** (38, 31, 33h)	**0**	9Ch		CR(0Dh)	LF(0Ah)
This command indicates that the phone line trouble condition has been restored on the secondary line.						
FTC Trouble	**814** (38, 31, 34h)	**0**	9Dh		CR(0Dh)	LF(0Ah)
Indicates that the panel has failed to communicate successfully to the monitoring station.						
Buffer Near Full	**816** (38, 31, 36h)	**0**	9Fh		CR(0Dh)	LF(0Ah)
Indicates that the panel's Event Buffer is 75% full from time last uploaded to DLS.						
General Device Low Battery	**821** (38, 32, 31h)	**3** (Zn 001-032)(30, 30, 31-30, 33, 32h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a wireless zone has a low battery.						
General Device Low Battery Restore	**822** (38, 32, 32h)	**3** (Zn 001-032)(30, 30, 31-30, 33, 32h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that the low battery condition on a wireless zone has been restored.						

	Command	Data Bytes	Checksum		End of Packet	
Wireless Key Low Battery Trouble	**825** (38, 32, 35h)	**3** (001-016) (30, 30, 31 - 30, 31, 36h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a wireless key has a low battery condition.						
Wireless Key Low Battery Trouble Restore	**826** (38, 32, 36h)	**3** (001-016) (30, 30, 31-30, 31, 36h)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that a wireless key low battery condition has been restored.						
Handheld Keypad Low Battery Trouble	**827** (38, 32, 37h)	**3** (001-004) (30, 30, 31-30, 30, 34)	XX	XX	CR(0Dh)	LF(0Ah)
Indicates that a hand held keypad has a low battery condition.						
Handheld Keypad Low Battery Restore Restored	**828** (38, 32, 38h)	**3** (001-004) (30, 30, 31-30, 30, 34)	XX	XX	CR(0Dh)	LF(0Ah)
Indicates that a hand held keypad low battery condition has been restored.						
General System Tamper	**829** (38, 32, 39h)	**0**	A3h		CR(0Dh)	LF(0Ah)
This command indicates that a tamper has ocurred on an alarm system module.						
General System Tamper Restore	**830** (38, 33, 30h)	**0**	9Bh		CR(0Dh)	LF(0Ah)
This command indicates that a tamper has been restored on an alarm system module.						
Home Automation Trouble	**831** (38, 33, 31h)	**0**	9Ch		CR(0Dh)	LF(0Ah)
This command indicates a Escort 5580 module trouble.						
Home Automation Trouble Restore	**832** (38, 33, 32h)	**0**	9Dh		CR(0Dh)	LF(0Ah)
This command indicates that the Escort 5580 module trouble has been restored.						
Trouble Status (LED ON)	**840** (38, 34, 30h)	**1 Partition 1-8 (31-38h)**	XX	XX	CR(0Dh)	LF(0Ah)
This command sends the general trouble status that the trouble LED on a keypad normally displays when there is a trouble present on system.						
Trouble Status Restore (LED OFF)	**841** (38, 34, 31h)	**1 Partition 1-8 (31-38h)**	XX	XX	CR(0Dh)	LF(0Ah)
This command sends the general trouble status that the trouble LED on a keypad normally displays when there are no troubles on system.						
Fire Trouble Alarm	**842** (38, 34, 32h)	**0**	9Eh		CR(0Dh)	LF(0Ah)
This command indicates a Fire Trouble						
Fire Trouble Alarm Restored	**843** (38, 34, 33h)	**0**	9Fh		CR(0Dh)	LF(0Ah)
This command indicates that a Fire trouble has been restored.						
Keybus Fault	**896** (38, 39, 36h)	**0**	A7h		CR(0Dh)	LF(0Ah)
This command indicates a keybus fault has occured.						
Keybus Fault Restore	**897** (38, 39, 37h)	**0**	A8h		CR(0Dh)	LF(0Ah)
This command indicates a keybus fault has has been restored.						
Code Required	**900** (39, 30, 30h)	**2 (**Part (1-8 (31-38h), Code length 6)	XX	XX	CR(0Dh)	LF(0Ah)
This command indicates that an access code is required. When the code is entered, the 200 command will be sent to perform the required action. The code must be entered within the window time of the panel.						
LCD Update	**901**(39, 30, 31h)	**6-37** (L,C1,C2, D1, D2, A1-An)	XX	XX	CR(0Dh)	LF(0Ah)
The IT-100 sends this command whenever the text of the IT-100 menu changes **L** **Line number (0-1) (30-31)** **C1 - C2** **Column Number (0-15) (30, 30 - 31, 35h)** **D1 - D2** **Number of characters to display (1-32) (30, 31 - 33, 32h)** **A1 - An** **ASCII Data (size of D1, D2) - ASCII Data may contain special ASCII Chararacters 0-7**						
LCD Cursor	**902** (39, 30, 32h)	**4 (T,L,C1,C2)**	XX	XX	CR(0Dh)	LF(0Ah)
The IT-100 sends this command whenever the cursor position changes **Curor Type T:** **0 (30h)= OFF** **1 (31h) = Normal (underscore)** **2 (32h) = Block** **Line No. L:** **0 (30h) or 1 (31h)** **Column No. C1,C2** **0 - 15 (30, 30 - 31, 35h)**						

LED Status	**903** (39, 30, 33h)	**2** (LS)	XX	XX	CR(0Dh)	LF(0Ah)
L LED#: **1 (31h) = Ready 4 (34h) = Bypass 7 (37h) = Fire** **2 (32h) = Armed 5 (35h) = Trouble 8 (38h) = Backlight** **3 (33h) = Memory 6 (36h) = Program 9 (39h) = AC** **S Status: 0 (30h)= OFF 1 (31h) = ON 2 (32h) = Flashing**						
Beep Status	**904** (39, 30, 34h)	**3 ***(0-255 Beeps)	XX	XX	CR(0Dh)	LF(0Ah)
The IT-100 sends Beep Status to the application (duration 0 - 255 secs) (30, 30, 30h)-(32, 35, 35h)						

	Command	**Data Bytes**	**Checksum**		**End of Packet**	
Tone Status	**905** (39, 30, 35h)	**4** (C, B, I1, I2)	XX	XX	CR(0Dh)	LF(0Ah)
C = Constant Tone Control ('0'(30h) = OFF, '1'(31h) = ON) **B = Number of Beeps (0 - 7)(30-37h), '0' indicates constant tone and is controlled by C byte.** **I1, I2 = Interval (1-15) (30, 30h - 31, 35h)**						
Buzzer Status	**906** (39, 30, 36h)	**3** (000-255 secs)	XX	XX	CR(0Dh)	LF(0Ah)
The IT-100 sends Buzzer Status (duration 0 - 255 secs)(30, 30, 30h)-(32, 35, 35h)						
Door Chime Status	**907** (39, 30, 37h)	**0**	A0h		CR(0Dh)	LF(0Ah)
This command is sent when the application requests door chime for the current partition.						
Software Version	**908** (39, 30, 38h)	**6 (VVSSXX)**	XX	XX	**CR**(0Dh)	LF(0Ah)
The It-100 sends this command following power up and when the following command is sent by the application: Status Command ..... (001) **VV=Software version (hex ASCII)** **SS = Sub Version (hex ASCII)** **XX= Future Use)**						

Appendix A: IT-100 Responses to Application Commands

Application Command	IT-100 Response
(001) Status Request	
	1.“Software Version” (908) 2.One of the following for each partition (1-8) that shows the current mode of that partition: • Partition Ready (650) • Partition Not Ready (651) • Partition in Alarm (654) • Partition Disarmed (655) • Exit Delay in Progress (656) • Entry Delay in Progress (657) • Keypad Lock-out (658) • Keypad Blanking (659) • Command output in progress (660) • Invalid Access Code (670) • Function Not Available (671) • Failed To Arm (672) • Partition Busy (673) • Code Required (900) 3.One of the following for each partition (1-8): • Trouble LED ON (840) • Trouble LED OFF (841) 4.Nine “LED Status” (903) commands for 9 LEDs 5.One of the following command for each zone (1-64): • Zone Opened (609) • Zone Restored (610)
(002) Labels Request	
	Several “Broadcast Labels” (570) commands for all labels (001-151)
(010) Set Time and Date	
	If any of these values are out of range, it sends “System Error” (502) command with error number = 29, otherwise set time/date in control panel.
(020) Command Output Control	
	IT100 replies with one of the following: 1.If command output number is out of range, it sends “System Error” (502) command with error number = 29. 2.If partition number is out of range, it sends “System Error” (502) command with error number = 21. 3.If partition is busy, it sends “System Error” (502) command with error number = 17. 4.If none of the above, IT100 sends the request to Control Panel. Other activities and mode changes are based on behavior of Control Panel, i.e. it accepts the request and goes into “command output in progress” mode that will cause IT100 to send command “Command output in progress” (660) to 3rd party, or if applicable, Panel requests for user code that causes IT100 to send “Code Required” (900). Other scenarios may be applicable based on the type of Control Panel and its options setting.

(030) Partition Arm Control – Away Arm mode	
	IT100 replies with one of the following: 1.If partition number is out of range, it sends “System Error” (502) command with error number = 21. 2.If partition is busy, it sends “System Error” (502) command with error number = 17. 3.If none of the above, IT100 sends the request to Control Panel. Other activities and mode changes are based on behavior of Control Panel, i.e. it accepts the request and goes into “exit delay” mode that will cause IT100 to send command “Exit Delay in Progress” (656) to 3rd party , or if applicable, Panel requests for user code that causes IT100 to send “Code Required” (900). Other scenarios may be applicable based on the type of Control Panel and its options setting.
(031) Partition Arm Control - Stay Arm mode	
	The same as Away Arm mode.
(032) Partition Arm Control - Zero Entry	
	The same as Away Arm mode.
(033) Partition Arm Control - With Code	
	IT100 replies with one of the following: 1.If partition number is out of range, it sends “System Error” (502) command with error number = 21. 2.If any of user code digits is out of range, it sends “System Error” (502) command with error number = 29. 3.If partition is busy, it sends “System Error” (502) command with error number = 17. 4.If partition is not ready to arm, it sends “System Error” (502) command with error number = 24. 5.If none of the above, IT100 sends the request to Control Panel. Other activities and mode changes are based on behavior of Control Panel, i.e. it accepts the request and goes into “exit delay” mode that will cause IT100 to send command “Exit Delay in Progress” (656) to 3rd party. Other scenarios may be applicable based on the type of Control Panel and its options setting.
(040) Partition Disarm Control	
	IT100 replies with one of the following: 1.If partition number is out of range, it sends “System Error” (502) command with error number = 21. 2.If any of user code digits is out of range, it sends “System Error” (502) command with error number = 29. 3.If partition is busy, it sends “System Error” (502) command with error number = 17. 4.If partition is not armed, it sends “System Error” (502) command with error number = 23. 5.If none of the above, IT100 sends the request to Control Panel. Other activities and mode changes are based on behavior of Control Panel
(055) Time Stamp Control (ON/OFF)	
	If the parameter is out of range, IT100 sends “System Error” (502) command with error number = 29, otherwise set ON/OFF time stamp option.
(056) Time Broadcast Control	
	If the parameter is out of range, IT100 sends “System Error” (502) command with error number = 29, otherwise set ON/OFF time broadcast option.
(057) Temperature Broadcast Control	
	If the parameter is out of range, IT100 sends “System Error” (502) command with error number = 29, otherwise set ON/OFF temperature broadcast option.
(058) Virtual Keypad Control	
	If the parameter is out of range, IT100 sends “System Error” (502) command with error number = 29, otherwise set ON/OFF virtual Keypad option.

(060) Trigger FAP Alarm	
	If the parameter is out of range, IT100 sends “System Error” (502) command with error number = 29, otherwise send FAP request to Control Panel.
(070) Key Pressed	
	IT100 replies with one of the following: 1.If the key code is not valid key, IT100 sends “System Error” (502) command with error number = 29. 2.If virtual keypad is not enabled, IT100 sends “System Error” (502) command with error number = 28, otherwise it sends the key to Control Panel.
(080) Baud Rate Change	
	IT100 replies with one of the following: 1.If the parameter is out of the range, IT100 sends: • “System Error” (502) command with error number = 29. • “Baud rate Set” (580) with current baud rate setting. 2.If the parameter is OK, IT100 sends “Baud rate Set” (580) with new baud rate that will be programmed and then program the serial port. Afterward, everything will be sent out with new baud rate.
(095) Get Temperature Set Point	
	IT100 replies with one of the following: 1.If IT100 is finishing the previous thermostat setting, it sends “System Error” (502) command with error number = 31. 2.If thermostat number is out of range or it is valid but that thermostat is not enabled, IT100 sends “System Error” (502) command with error number = 29. 3.If none of the above, IT100 sends “Thermostat Set Points” (563) with the current set points in target thermostat.
(096) Temperature Change	
	IT100 replies with one of the following: 1.If user has not started with “Get Temperature Set Point”, IT100 sends “System Error” (502) command with error number = 32. 2.If any of thermostat number or change type (Heat/Cool) or temperature value or setting type (+/-/=) is out of range, IT100 sends “System Error” (502) command with error number = 29. 3.If none of the above, IT100 sends “Thermostat Set Points” (563) with the current set points in IT100 (locally saved value).
(097) Save Temperature Setting	
	IT100 replies with one of the following: 1.If user has not started with “Get Temperature Set Point”, IT100 sends “System Error” (502) command with error number = 32. 2.If thermostat number is out of range, IT100 sends “System Error” (502) command with error number = 29. 3.If none of the above, IT100 sends “Thermostat Set Points” (563) with the current set points in target thermostat.

(200) Code Send (access code)	
	IT100 replies with one of the following: 1.If partition number is out of range, it sends “System Error” (502) command with error number = 21. 2.If any of user code digits is out of range, it sends “System Error” (502) command with error number = 29. 3.If Control Panel is not waiting for user code, it sends “System Error” (502) command with error number = 26. 4.If none of the above, IT100 sends the received user code to Control Panel.

Appendix B: IT-100 Error Codes

Code	Description
017	Keybus Busy - Installer Mode
021	Requested Partition is out of Range
023	Partition is not Armed
024	Partition is not Ready to Arm
026	User Code Not Required
028	Virtual Keypad is Disabled
029	Not Valid Parameter
030	Keypad Does Not Come Out of Blank Mode
031	IT-100 is already in Thermostat Menu
032	IT-100 is NOT in Thermostat Menu
033	No response from thermostat or Escort™ module

Appendix C: Application Notes:

All commands that are specified in this document are assuming that a CR (0x0D) and a LF (0x0A) will be placed after the command.

These instructions assume that you are connected to an IT-100 and are able to send a Poll (00090) command and receive an Acknowledgment (50000025) command.

How to bypass a zone using the Virtual Keypad of the IT-100	
1	Enable the Virtual Keypad by sending the command **(0581CEh)**.
2	Ensure that the partition the IT-100 is programmed for is in the disarmed state. If the partition is armed, send the Disarm command (040). If the partition is busy, wait until it is ready.
3	Send a "*" keycode command (070*C1) followed by a break keycode command (070^F5).
4	Send a "1" keycode command (0701C8) followed by a break keycode command (070^F5).
5	If your system is configured to require an access code to enter the bypass menu then you will have to either:
	a. Enter the access code using keycode commands.
	b. Send an Access Code command (200).
6	You should be in the Bypass menu now, so you will need to enter a zone number to bypass a zone. Send a keycode command for the first digit of the zone number ("0" - "6") followed by a break keycode command (070^F5). Then send the second digit of the zone number ("0" – "9") followed by a break keycode command (070^F5).
7	To determine if a zone is actually bypassed or not you will need to read the LCD update command (901). The last character in the ASCII data section of the command will tell you if the zone is bypassed or not. For the English language, the character 'B' means the zone is bypassed and the character ' ' (space) means the zone is unbypassed.
8	To exit out of the bypass menu you can either wait approximately 30 seconds for the menu to timeout or send a "#" keycode command (070#BA) followed by a break keycode command (070^F5).
Timing:	To determine if a command was received properly by an IT-100, wait until an Acknowledgment command (500) or an Error command (501) is received before sending the next command.
	The timing between sending a keycode command followed by a break keycode command in this example should be less than 2 seconds.
	If an access code is required for step 5), wait until the "Enter your Access Code" LCD update command is received. For the English language the command would be "90100032Enter Your Access Code A9".

How to Change the Temperature Using the IT-100	
1	Send the Get Temperature command (095) for the thermostat that you would like to change.
2	Wait for the Thermostat Set points command (563) to be received. Save the cool and heat set points for the next step.
3	Choose one of the following options.
	a. To increment the temperature, send the Temperature Change command (096TC+000) to increase the cool set point for the thermostat in step 1). You should also send the Temperature Change command (096Th+000) to increase the heat set point for the thermostat in step 1).
	b. To decrement the temperature, send the Temperature Change command (096TC-000) to decrease the cool set point for the thermostat in step 1). You should also send the Temperature Change command (096Th-000) to decrease the heat set point for the thermostat in step 1).
	c. To set the temperature, send the Temperature Change command (096TC=###) to set the cool set point to a specified value. You should also send the Temperature Change command (096Th=###) to set the heat set point to a specified value less then the cool set point.
4	When you are finished setting the set points, send the Save Temperature Setting command (097) for the thermostat in step 1).

How to Macro Multiple Commands Together	
	The following example activates command output 2 (an outdoor light), arms a partition in stay mode (using access code 1234), and sets the temperature to 20 degrees Celsius (heat set point = 015, cool set point = 025) for thermostat 1.
1	Send the command output command (02012F5) to activate the outdoor light.
2	Wait for the partition to be ready. You will need to receive the partition ready command (6501CC).
3	Send the stay arm command (0311C5).
4	Wait for the access code required command (90014FE).
5	Send the access code command (200112348D).
6	Send the Get Temperature command (0951CF).
7	Send the Temperature Change command (0961C=025E7) to set the cool set point.
8	Send the Temperature Change command (0961h=015EB) to set the heat set point.
9	Send the Save Temperature Setting command (0971D1).

Appendix D: Ascii Codes

Dec	Hex	Char	
0	0	NUL	(null)
1	1	SOH	(start of heading)
2	2	STX	(start of text)
3	3	ETX	(end of text)
4	4	EOT	(end of transmission)
5	5	ENQ	(enquiry)
6	6	ACK	(acknowledge)
7	7	BEL	(bell)
8	8	BS	(backspace)
9	9	TAB	(horizontal tab)
10	A	LF	(NL line feed, new line)
11	B	VT	(vertical tab)
12	C	FF	(NP form feed, new page)
13	D	CR	(carriage return)
14	E	SO	(shift out)
15	F	SI	(shift in)
16	10	DLE	(data link escape)
17	11	DC1	(device control 1)
18	12	DC2	(device control 2)
19	13	DC3	(device control 3)
20	14	DC4	(device control 4)
21	15	NAK	(negative acknowledge)
22	16	SYN	(synchronous idle)
23	17	ETB	(end of trans. block)
24	18	CAN	(cancel)
25	19	EM	(end of medium)
26	1A	SUB	(substitute)
27	1B	ESC	(escape)
28	1C	FS	(file separator)
29	1D	GS	(group separator)
30	1E	RS	(record separator)
31	1F	US	(unit separator)
32	20	SPC	(Space)
33	21	!	
34	22	“	
35	23	#	
36	24	$	
37	25	%	
38	26	&	
39	27	‘	
40	28	(	
41	29	)	
42	2A	*	

Dec	Hex	Char
43	2B	+
44	2C	,
45	2D	-
46	2E	.
47	2F	/
48	30	0
49	31	1
50	32	2
51	33	3
52	34	4
53	35	5
54	36	6
55	37	7
56	38	8
57	39	9
58	3A	:
59	3B	;
60	3C	<
61	3D	=
62	3E	>
63	3F	?
64	40	@
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G
72	48	H
73	49	I
74	4A	J
75	4B	K
76	4C	L
77	4D	M
78	4E	N
79	4F	O
80	50	P
81	51	Q
82	52	R
83	53	S
84	54	T
85	55	U

Dec	Hex	Char
86	56	V
87	57	W
88	58	X
89	59	Y
90	5A	Z
91	5B	[
92	5C	\
93	5D	]
94	5E	^
95	5F	_
96	60	‘
97	61	a
98	62	b
99	63	c
100	64	d
101	65	e
102	66	f
103	67	g
104	68	h
105	69	i
106	6A	j
107	6B	k
108	6C	l
109	6D	m
110	6E	n
111	6F	o
112	70	p
113	71	q
114	72	r
115	73	s
116	74	t
117	75	u
118	76	v
119	77	w
120	78	x
121	79	y
122	7A	z
123	7B	{
124	7C	|
125	7D	}
126	7E	~
127	7F	¦ (DEL