DIGITIZE®

DET-16 User Manual

Digitize, Inc.
158 Edison Road
Lake Hopatcong, New Jersey 07849
Tel: (973) 663-1011
E-mail: info@digitize-inc.com
Website: http://www.digitize-inc.com

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Digitize, Inc.
158 Edison Road
Lake Hopatcong, NJ 07849-2217

PROPRIETARY NOTICE
AND
DISCLAIMER

DIGITIZE, INC.

158 EDISON ROAD

LAKE HOPATCONG, NJ 07849-2217

PH: (973) 663-1011

E-Mail: info@digitize-inc.com

Website: http://www.digitize-inc.com

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1 Introduction

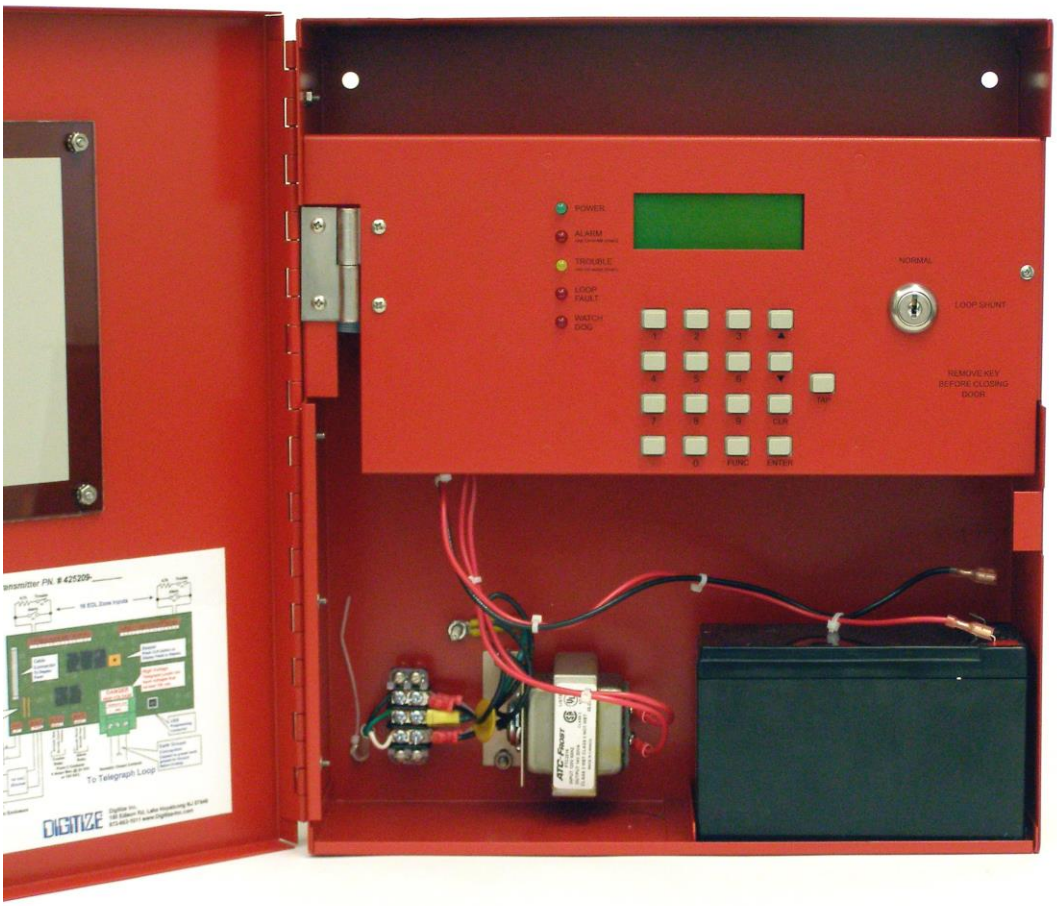
The DIGITIZE Electronic Telegraph Transmitter, 16 Zone (DET-16) is a solid-state microprocessor coder for use over telegraph hard wire. The DET-16 is designed to operate with a loop current from 50 mA to 750 mA.

DET-16 Telegraph Transmitter

1.1 System Description

The DIGITIZE DET-16 is a Telegraph Transmitter for Fire and Security Alarms. The unit has up to 16 End of Line (EOL) resistor zones and includes a CAM lock, AC transformer, LCD Display with keypad, standby battery and built-in charger. The unit is housed in a steel enclosure and is suitable for mounting in convenient, out of the way locations on an interior wall. The DET-16 can be used on the same loop with mechanical Fire Alarm Boxes.

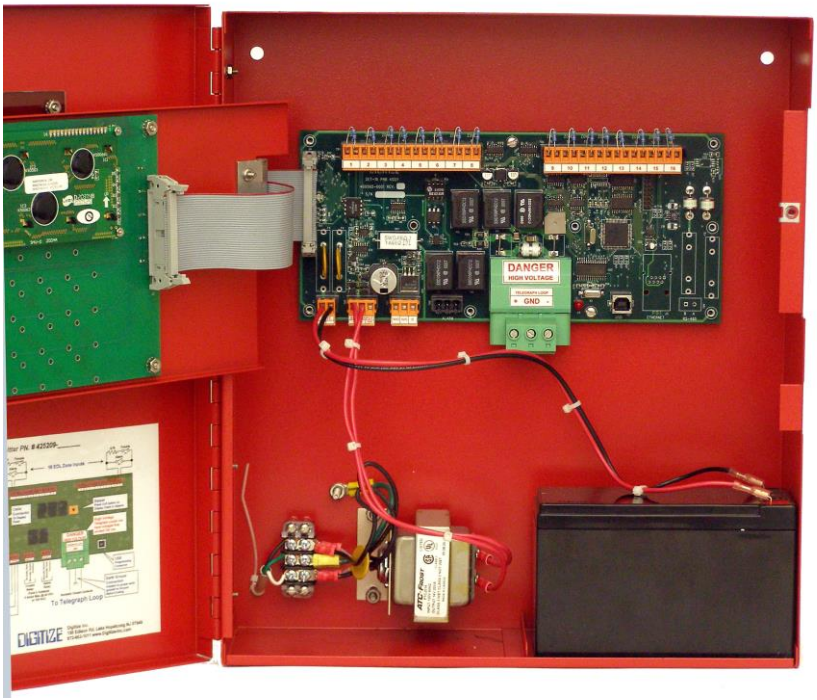
Telegraph codes unique to each of the sixteen zones for Trouble, Alarm and Secure as well as Low Battery and AC Power Fail are transmitted over a 100 milliampere circuit using PNIS (Positive Non-Interfering Successive) or SNI (Serial Non-Interfering). The DET-16 has line current detection to avoid clashes between more than one transmitting device. Automatic ground return, a Watch Dog Timer, and a trouble buzzer assure continued main system operation and operator notification in the event of a box failure.



DET-16 Panel with Enclosure Door Open Revealing the Display Panel.

Transmission speed is adjustable to match existing decoding units, as are the number of digits for the box number and the last digit for alarm, trouble, and restore. Number of rounds for each condition is also programmable.

Automatic switchover to battery power is performed upon AC power loss with a low battery code transmitted if power is not returned in approximately 70 hours (when the battery voltage drops below 10.5 volts). When the battery voltage drops below 9.5 volts, the unit bypasses all input circuits to avoid spurious transmission of false alarms.



DET-16 Controller Bd. in Enclosure

1.2 Specifications

AC Power In	115 VAC 50/60 Hz @ 250 mA Max.
EOL Inputs	16 Supervised 4.7k Ohm End of Line Resistor Inputs
Telegraph Relay Outputs	1 Form C (SPDT) contacts rated for 6 Amps max. @ 24 VDC or 120 VAC.
Alarm Output Contacts	1 Form C (SPDT) contacts rated for 6 Amps max. @ 24 VDC or 120 VAC.
Trouble Output Contacts	1 Form C (SPDT) contacts rated for 6 Amps max. @ 24 VDC or 120 VAC.
Display	4 line x 20 character, 5 x 7 dots with yellow LED backlight. Viewing Area: 76 mm Wide x 25.2 mm High.
Keypad	4 x4 Conductive Rubber Switchpad
LED Indicators	Alarm (Red), Trouble (Yellow), Loop Problem (Yellow), Watchdog (Red), AC/DC Input (Green)
Beeper	2,200 ± 300 hz. @ 85 dB.
Ethernet	10/100BASE-T Ethernet – Auto-Sensing
USB	USB version 2.0
Standby Battery	7.5 Amp Hour Sealed Lead Acid, Digitize PN 900414-0004
Panel Size	13.5” wide x 15” high x 4“ deep
Construction	Electro Galvanized Steel chassis, plastic front bezel
System Weight	approx. 18 lbs. including 7.5 amp hour battery.

2 Definitions

100 mA Loop:

Also known as the municipal loop or city loop. This is the wire that runs in and out of the telegraph boxes and carries the telegraph code. Voltages on these loops can range from just a few volts to as much as 140 volts dc. Power supplies at the head end are programmed to maintain 100 mA on the loop, and do so by varying the voltage on the lines.

Box Round

Is one complete transmission of the box number plus any additional codes.

Bulldog or Bulldogging the Line

A box is said to be "bulldogging" when it transmits on the loop that already has another box transmitting on it. When a zone on a panel is tripped the panel looks to the loop to see if any other boxes are currently transmitting. If another box is currently transmitting, it will wait for a preprogrammed time period after which it will bulldog the loop and transmit over the other box.

It was a feature of the older windup boxes that needed to transmit within a certain period after the hook was pulled or risk winding down without sending the alarm.

Form Four

Power supply cards designed to power telegraph loops.

Ground Mode

This is a backup method for transmitting an Alarm when an open loop condition exists. If a telegraph transmitter needs to make a transmission and detects an "Open Loop" condition, it will then switch to Ground Mode in an attempt to get the transmission through. At the same time, when an Open Loop condition occurs, the Form Four cards at the head end detect the open and apply a positive voltage to both sides of the loop and references earth ground as the negative side of the loop. The telegraph box sends the transmission coding the loop to earth ground.

Open Loop

Current must flow through the loop at all times in order to transmit an alarm. Any break in the loop stops the flow of current, creating an "Open Loop". When an Open Loop occurs, the Form Four card will detect the absence of current flow and enter "Ground Mode".

PNIS (Positive Non-Interfering Successive)

Each box on a telegraph loop monitors the telegraph for coding activity and waits for a "quiet" before proceeding to send its telegraph transmission.

Preemption

Where a zone of a higher status or priority interrupts the current telegraph transmission of a zone of lesser status or priority. The zone which has been interrupted is reinstalled on the queue awaiting transmission.

Transmission Speed

The speed at which a telegraph transmitter sends its transmission. The transmission speed is the time it will take for one opening and closing of the 100 mA line. The speed generally ranges from 1/8 second to 4 seconds.

3 System Installation

3.1 Handling

3.1.1 Precautions

Caution: Do not touch circuitry during installation as static discharge may damage components.

3.1.2 Unpacking and Inspection

Before opening, inspect the shipping container for unusual damage. Then unpack the unit and inspect it for scratches, dents, and loose internal components. If your inspection reveals any physical damage, retain the packing material and contact the carrier immediately. Each unit has been thoroughly inspected prior to shipment.

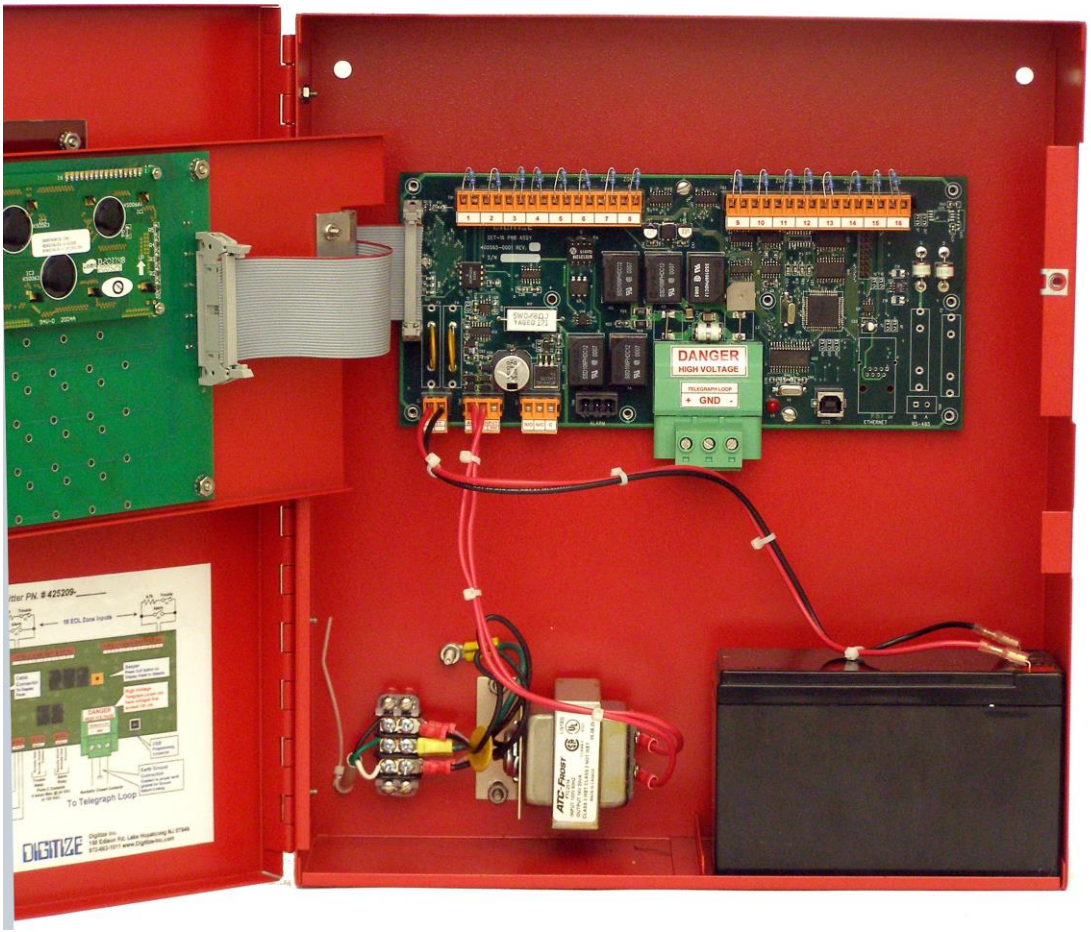
3.2 Site Location

The individual site selection for the DET-16 Telegraphic Coded Transmitter is dependent on the location of the devices used to activate the zone inputs. Normally, the DET-16 would be installed next to the interior Fire Alarm Panel. The DET-16 should be located as close as possible and the interconnecting wires should be run in conduit.

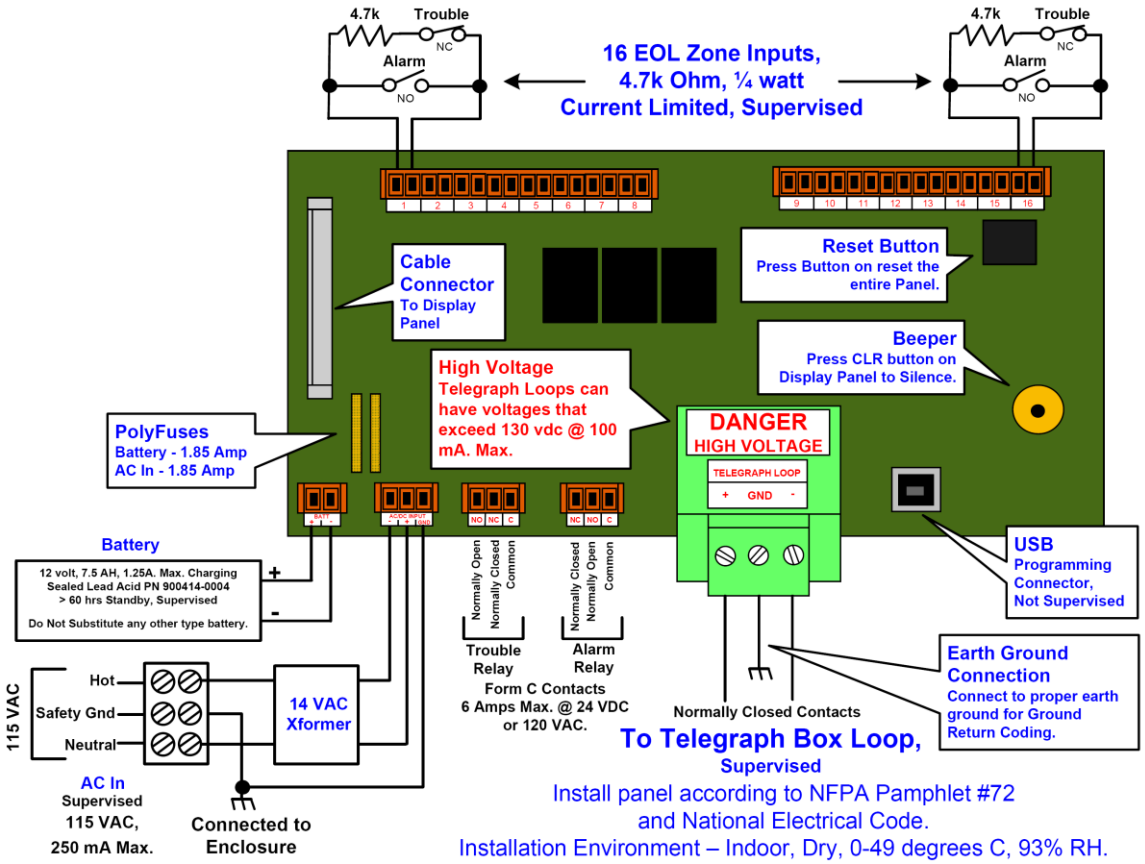
3.3 Installation Details

1. Lightning protection should be provided for the 100mA Telegraph Line as it enters the building, as it enters at the DET-16 and at the AC Terminal Input.
2. Mount the shell in the desired location. There are four holes in the rear of the enclosure for this purpose.
3. Remove the desired knockouts for the AC power to enter the box. Also, remove knock-outs for the interconnection wiring to the fire alarm panel, as well as for the coded line. Lightning protection should be wired in at the 115V AC input side of the transformer.
4. Install the conduit and wiring into the shell, as per local electrical codes. The DET-16 has a buzzer that will activate when there is an open or trouble. If the trouble relay output of the DET-16 is connected to the fire alarm panel trouble input, the buzzer can be disabled if desired.
5. Should the fire alarm panel have a local trouble input, then it is suggested that the trouble contacts be connected to this input. A FORM “C” contact is supplied for this purpose.
6. The Dry Contact Inputs are the next set of connections and are located at the top of PCB.
7. Remove the End of Line Resistor and install the wiring from the Fire Alarm Panel as per drawing. Install the wiring from the output of the fire alarm panel to the different inputs and install the End of Line Resistor into the fire alarm panel outputs.

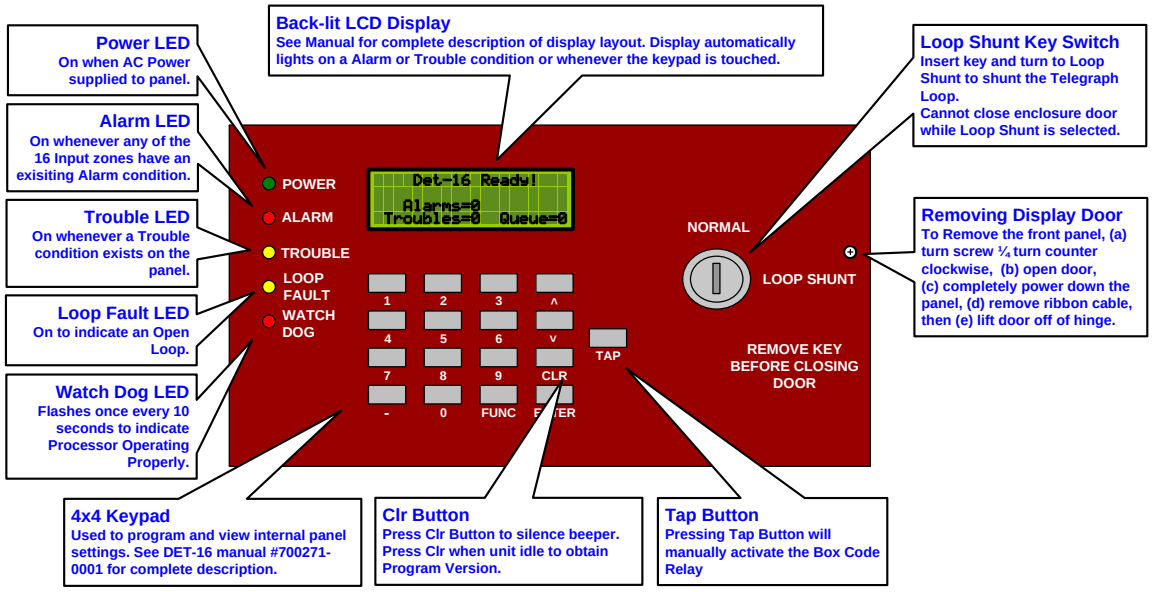
8. Apply 120 VAC power to the DET-16 step down transformer. Then connect the 12 VDC battery for back up.
9. Call the alarm receiving location and request a test of the box.
10. Activate each input in the same manner that the fire system would. Be sure that the code for the desired input is actually received at the alarm receiving location.
11. When the testing is complete, close and lock the front door of the cabinet.
12. Most locations like to know which zones activate which input. This can be accomplished by listing them inside the front door.



DET-16 with Display Door Open



DET-16 Controller PCB Wiring Diagram



DET-16 Display Panel

4 System Operation

4.1 Power Up

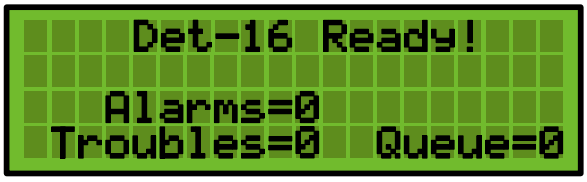
During power up, the DET-16 panel displays the following:

Note: Version Number V1.0.0 may be different.

While powering up, the panel will test the EE Memory. The EE Memory stores the user selectable panel settings. If the panel detects corrupted data in the EE Memory, it will automatically rewrite the memory with the factory default settings.

4.2 Normal Operation

The following display represents a panel during Normal Operation.



During normal operation, the panel will be testing the following functions:

a. Test each of the 16 zone inputs for change.

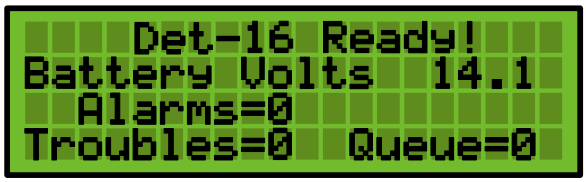
b. Test the status of the 100 mA Loop.

c. Test the status of the Backup Battery and the AC Power Supply.

4.3 Battery

The DET-16 panel is shipped with a 12 volt 7 amp-hour lead acid battery. This battery, when new and fully charged, will provide more than 70 hours of continuous "quiet" operation for the panel during an ac power failure.

During normal operation, the panel will continuously charge the battery. Once every two minutes, the panel will test that the battery is connected to the panel and measure the current battery voltage. The voltage will be displayed on the 2nd line of the display.

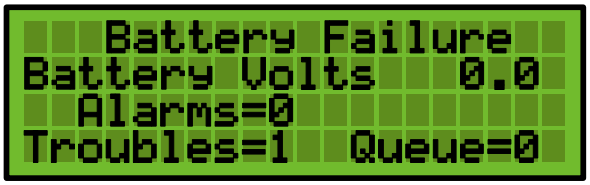


Remember that the battery is only tested once every two minutes.

A Battery Failure will be reported if any of the following conditions occur:

1. The battery is not connected to the panel.
2. The battery is accidentally connected backwards disabling Fuse F3.
3. Fuse F3 has been disabled due to some other over current problem.
4. The battery voltage currently measures less than 10.5 volts.

When a battery failure is detected, the panel Trouble Relay will release. The display will show the following data concerning the battery.

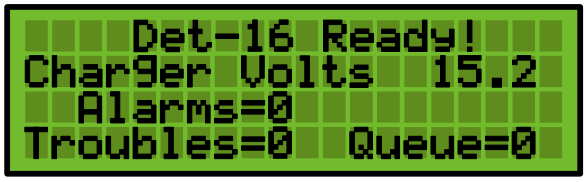


See Function 2 to program how the panel will react when a battery failure is detected and corrected. The panel can be programmed to initiate a telegraph transmission when a battery failure is detected and corrected.

Note: If the battery is allowed to completely discharge during an AC Power Failure, the user is encouraged to consider replacing the battery. Sealed Lead Acid batteries ratings drop considerably after a "Deep Discharge Cycle". Battery ratings also will decrease over time. A battery testing procedure should be implemented to guarantee a minimum time for standby operation and to replace old batteries.

4.4 AC Power

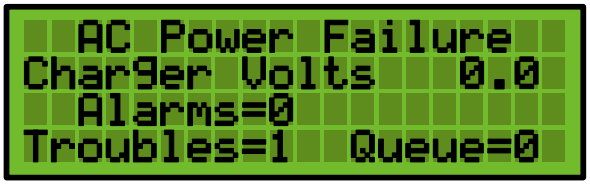
AC power for the DET-16 is provided by a 14 VAC Class B transformer mounted inside the panel. During normal operation, the ac power input supplies power for the panel and the backup battery charger. Below is a typical display indicating the battery charger voltage.



An AC Power Failure will be reported after a delay that is programmed using Function 19 (1 to 255 minutes), if any of the following conditions occur:

1. The AC voltage failure allowing the backup battery to begin to power the panel.
2. Fuse F4 opens for any reason.

When an ac power failure is detected, the panel Trouble Relay will release. The display will show the following data concerning the ac power.



4.5 Ground Mode

The DET-16 panel will transmit using Ground Mode whenever the panel detects an Open Loop condition and Function 12 is enabled. The top line of the display will alternate with "GROUND MODE" and "TRANSMITTING" while the panel transmits on the loop.

4.6 Bulldog

The DET-16 panel will "BULLDOG" (See Definitions) the telegraph line when all of the following occur:

a. The panel has a condition which requires it to transmit over the telegraph loop, and

b. The panel detects that the telegraph loop has remained "busy" for a period longer than the programmed timeout (See Function 7), and

c. The BULLDOG option has been enabled (See Function 11).

4.7 Standby Mode

Standby Mode allows an installer to test the zone inputs of the panel without worrying that the panel inadvertently transmits on the telegraph loop. To turn Standby Mode on and off, use Function 17. The panel will automatically return to Normal Operation if the panel remains in Standby Mode longer than the programmed Standby Timeout (factory default is 60 minutes).

4.8 Alarm Relay

The Alarm Relay has a set of Form C relay contacts that "turn on" whenever any of the 16 EOL zones remains in an "Alarm" condition. All of the 16 zones must return from the Alarm state before the relay will "turn off". This is the default setup.

Alternately, using Function 15, the Alarm relay can be programmed for Serial Non-Interfering mode. In this setting, just prior to a transmission, the Code relay will open and the Alarm relay will code out the transmission. At the end of the transmission, the Alarm relay will turn off and the Code relay will close.

4.9 Trouble Relay

The Trouble Relay has a set of Form C relay contacts that "remain on" whenever the panel is in service. If all power is removed from the panel, the Trouble Relay will "turn off". If any Trouble condition exists on the panel, the Trouble relay will "turn off".

4.10 Buzzer

The DET-16 controller board contains an 85 dB buzzer. The buzzer will sound when any of the following conditions occur:

1. AC Power Failure
2. Battery Failure
3. Telegraph Loop Open and a transmission is about to occur.
4. Any of the 16 EOL zones goes into a Trouble State, if the zone is programmed to transmit a code on a trouble condition.

Press the CLR button to silence the Buzzer. The Buzzer also has a timeout feature that will automatically silence the Buzzer. See Function 8.

4.11 LCD Display

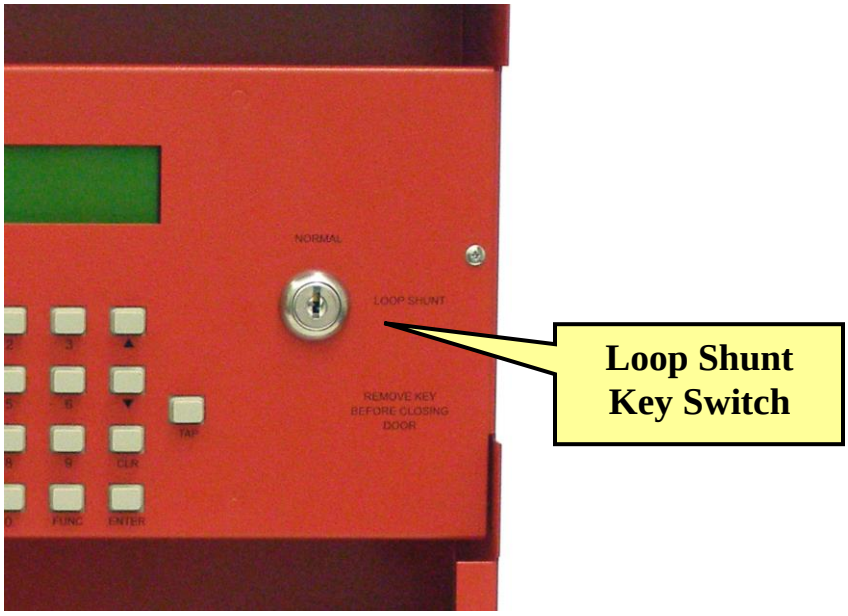
The DET-16 panel also contains a 4 line by 20 character LCD display with green LED backlighting. During normal operation the backlight will remain off. The backlight turns on during a telegraph transmission and anytime there is keypad activity.

4.12 Loop Shunt Key Switch

The Loop shunt key switch allows the panel to be quickly shunted from the Telegraph Loop without having to disconnect the wiring for the panel.

To shunt the panel, the operator installs a key in the Loop Shunt Key Switch located on the front panel and turns it ¼ turn clockwise.

The door to the enclosure cannot be closed while the panel is shunted from the loop.



Loop Shunt Key Switch on Display Panel

5 System Programming

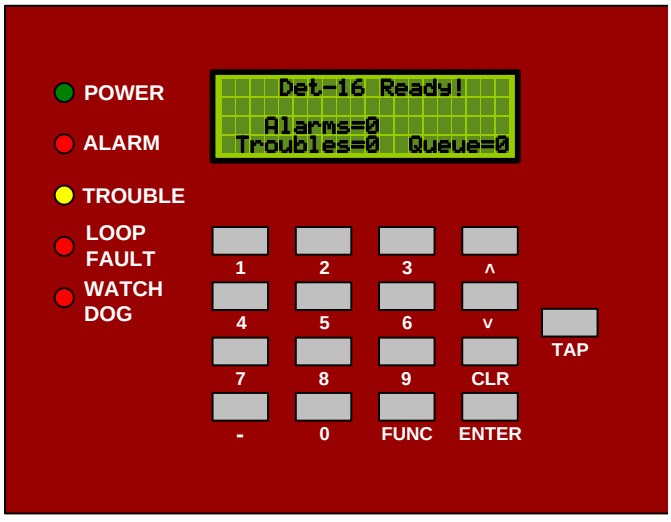
5.1 UL 864 Compliance

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION, AND OTHER INVOLVED PARTIES

This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.

Program feature or option	Permitted in UL864? (Y/N)	Possible settings	Settings permitted in UL864
Function #1, Setting #3 - Alarm Code Rounds	Y	1-4 Rounds	3 or 4 Rounds

5.2 4x4+1 Keypad



FUNC – Use to select Function to view or modify.

ENTER – Press ENTER to save new setting.

CLR – Press to silence beeper or to clear entry on the display.

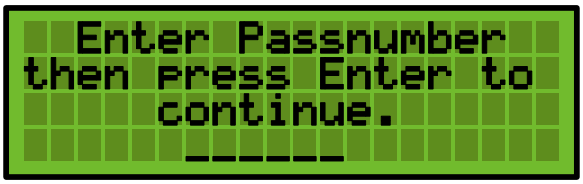
▲▼- After entering passnumber, use the Up and Down arrows to navigate through the panel functions.

- (Hyphen) – Use the Hyphen button when entering a box number that contains a prefix that is larger than 9, i.e. 10-1234.

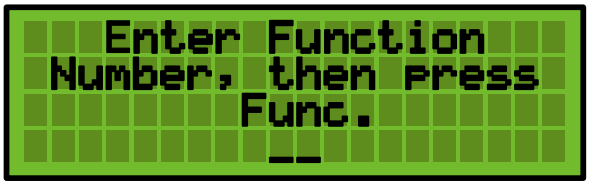
TAP – Pressing the Tap Button will manually activate the Box Code Relay.

5.3 How To Modify Panel Settings

1. Press the desired function number and the press the FUNC button. If you didn't previously enter the Passnumber, the panel will request the proper passnumber. Enter it, and then press ENTER. The default passnumber is 123456.



2. Enter the Function number. Press one (1), then press FUNC.



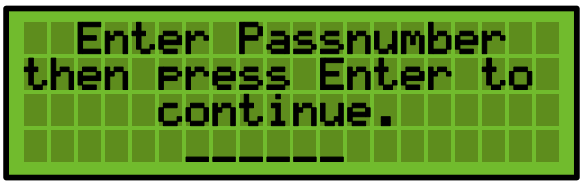
3. Now use the ▲ and ▼ arrow buttons to navigate through the available functions.

5.4 Function 1 Zone Settings

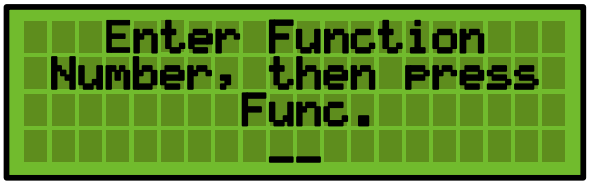
Function 1, Zone Settings. Each of the 16 zones on a DET-16 panel can be programmed independently with 20 different settings. In most cases, the factory default settings will be acceptable.

How to Modify Setting:

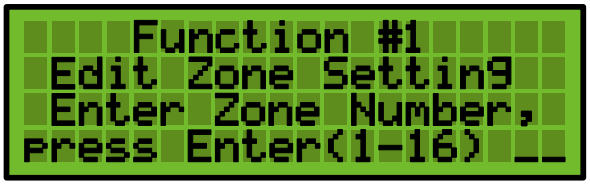
1. Press the 1, then the FUNC button. If you didn't previously enter the Passnumber, the panel will request the proper passnumber. Enter it, and then press ENTER. The default passnumber is 123456.



2. Enter the Function number. Press one (1), then press FUNC.



3. Enter the Zone Number. For the example, the zone number is 1. Press one (1), then ENTER.



4. Use the Up Arrow to sequence through each of the 20 settings.

5. Press CLR to exit. The display will also automatically clear if no entry is made within 60 seconds.

5.4.1 Setting 1 Zone Box Number

Each zone of the DET-16 panel can be programmed with a completely independent box number or all the same box number. The box number can be up to 8 digits long. For example: Zone 1 can be programmed with box number 2222 while Zone 7 can be programmed with 44567.

Default Settings are:

Zones 1 – 8	123
Zones 9 – 16	124

5.4.2 Setting 2 Zone Alarm Code

Each zone of the DET-16 panel can be programmed with a completely independent Alarm Code. The Zone Alarm Code can be set from 0 – 9. When a zone is tripped into Alarm, the DET-16 will first transmit the box number followed by the Zone Alarm Code. For example: Zone 1 is placed in Alarm, the panel would send 22221. The "1" is the alarm code.

Default Settings:

Zone 1	1	Zone 9	1
Zone 2	2	Zone 10	2
Zone 3	3	Zone 11	3
Zone 4	4	Zone 12	4
Zone 5	5	Zone 13	5
Zone 6	6	Zone 14	6
Zone 7	7	Zone 15	7
Zone 8	8	Zone 16	8

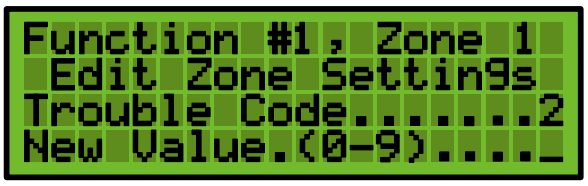
5.4.3 Setting 3 Zone Alarm Code Rounds

This function sets the number of times a Zone Box Number & Alarm Code will be sent when a zone is placed in an ALARM condition. The number of rounds can be set from 1 to 4.

Default Settings: For ALL Zones: 4 Rounds.

5.4.4 Setting 4 Zone Trouble Code

Each zone of the DET-16 panel can be programmed with a completely independent Trouble Code. The Zone Trouble Code can be set from 0 – 9. When a zone goes into a Trouble condition, the DET-16 will first transmit the box number followed by the Zone Trouble Code. For example: Zone 1 is placed in Trouble, the panel would send 22221. The "1" is the trouble code.



Default Settings:

Zone 1	1	Zone 9	1
Zone 2	2	Zone 10	2
Zone 3	3	Zone 11	3
Zone 4	4	Zone 12	4
Zone 5	5	Zone 13	5
Zone 6	6	Zone 14	6
Zone 7	7	Zone 15	7
Zone 8	8	Zone 16	8

5.4.5 Setting 5 Zone Trouble Code Rounds

This function sets the number of times a Zone Box Number & Trouble Code will be sent when a zone is placed in a TROUBLE condition. The number of rounds can be set from 0 to 4. If the rounds is set equal to 0, no transmission will occur when the zone is placed in trouble.

Default Settings: For ALL Zones: 0 Rounds

5.4.6 Setting 6 Zone Alarm Restore Code

The DET-16 sends an Alarm Restore Transmission when a zone that was previously in an Alarm condition returns to a Secure condition. Each zone of the DET-16 panel can be programmed with a completely independent Alarm Restore Code. The Zone Alarm Restore Code can be set from 0 – 9. When an Alarm Restoral is sent, the DET-16 will first transmit the box number followed by the Zone Alarm Restore Code. For example: Zone 1 returns to a Secure condition after previously being in Alarm, the panel would send 22221. The "1" is the alarm restore code.

Default Settings:

Zone 1	1	Zone 9	1
Zone 2	2	Zone 10	2

Zone 3	3	Zone 11	3
Zone 4	4	Zone 12	4
Zone 5	5	Zone 13	5
Zone 6	6	Zone 14	6
Zone 7	7	Zone 15	7
Zone 8	8	Zone 16	8

5.4.7 Setting 7 Zone Alarm Restore Code Rounds

This function sets the number of times a Zone Box Number & Alarm Restore Code will be sent when a zone that was previously in Alarm returns to a Secure condition. The number of rounds can be set from 0 to 4. If the rounds is set equal to 0, no transmission will occur when the zone returns to secure status.

Default Setting: For ALL Zones: 0 Rounds

5.4.8 Setting 8 Zone Trouble Restore Code

The DET-16 sends a Trouble Restore Transmission when a zone that was previously in a Trouble condition returns to a Secure condition. Each zone of the DET-16 panel can be programmed with a completely independent Trouble Restore Code. The Zone Trouble Restore Code can be set from 0 – 9. When a Trouble Restoral is sent, the DET-16 will first transmit the box number followed by the Zone Trouble Restore Code. For example: Zone 1 returns to a Secure condition after previously being in Trouble, the panel would send 22221. The 1 is the trouble restore code.

Default Settings:

Zone 1	1	Zone 9	1
Zone 2	2	Zone 10	2
Zone 3	3	Zone 11	3
Zone 4	4	Zone 12	4

Zone 5	5	Zone 13	5
Zone 6	6	Zone 14	6
Zone 7	7	Zone 15	7
Zone 8	8	Zone 16	8

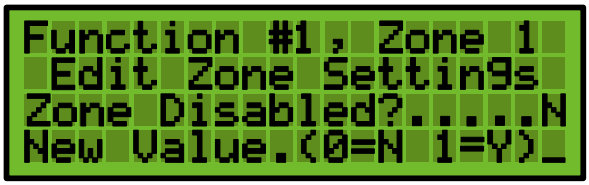
5.4.9 Setting 9 Zone Trouble Restore Code Rounds

This function sets the number of times a Zone Box Number & Trouble Restore Code will be sent when a zone that was previously in Trouble returns to a Secure condition. The number of rounds can be set from 0 to 4. If the rounds is set equal to 0, no transmission will occur when the zone returns to a Secure condition.

Default Settings: For ALL Zones: 0 Rounds

5.4.10 Setting 10 Disable / Enable Zones

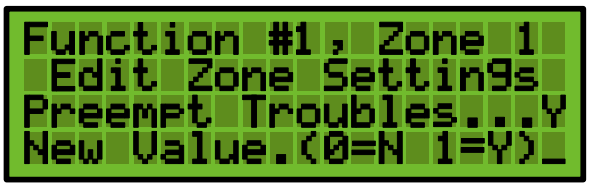
Each of the 16 zones on the DET-16 panel can be disabled. Tripping a disabled zone will not start a telegraph transmission.



Default Settings: For ALL Zones: Enabled

5.4.11 Setting 11 Preempt Troubles

When enabled, if this zone goes into Trouble it can preempt the telegraph transmission of another zone in Trouble with a lower Priority level. This setting is factory set and should only be changed with careful consideration.



Default Settings: For ALL Zones: Enabled

5.4.12 Setting 12 Preempt Alarms

When enabled, if this zone goes into Alarm it can preempt the telegraph transmission of another zone in Alarm with a lower Priority Setting or any zone in Trouble. This setting is factory set and should only be changed with careful consideration.

Default Settings: For ALL Zones: Enabled

5.4.13 Setting 13 Preempt Power

When enabled, if this zone goes into Alarm, it will preempt the telegraph transmission of a Low Battery or AC Fail condition. This setting is factory set and should only be changed with careful consideration.

Default Settings: For ALL Zones: Enabled

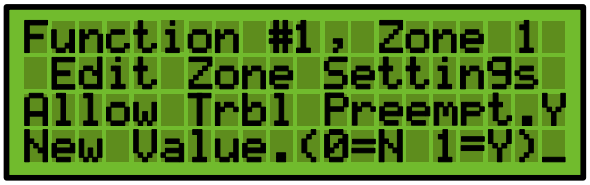
5.4.14 Setting 14 Allow Alarm Preemption

When enabled, if this zone goes into Alarm, it will allow another zone in Alarm with a higher Priority Level to preempt the telegraph transmission of this zone. This setting is factory set and should only be changed with careful consideration.

Default Settings: For ALL Zones: Enabled

5.4.15 Setting 15 Allow Trouble Preemption

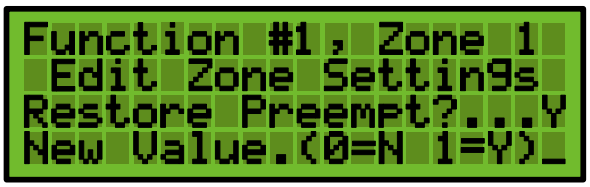
When enabled, if this zone goes into Trouble, it will allow another zone in a Trouble state with a higher Priority Level or any zone in Alarm to preempt the telegraph transmission of this zone. This setting is factory set and should only be changed with careful consideration.



Default Settings: For ALL Zones: Enabled

5.4.16 Setting 16 Allow Restore Preemption

When enabled, if this zone becomes restored it will allow any Alarm or Trouble to preempt the telegraph transmission of this restored zone. This setting is factory set and should only be changed with careful consideration.



Default Settings: For ALL Zones: Enabled

5.4.17 Setting 17 Zones: Normally Open / Normally Closed

Each zone can be independently programmed to monitor Normally Open or Normally Closed contacts.

Default Settings: For ALL Zones: Normally Open

5.4.18 Setting 18 Zone Priority

The Priority for each of the 16 zones can be independently programmed from 0 to 15. Zones with a higher priority level and the proper settings will preempt zones with a lower priority. Zones with a higher priority level will be removed first from the queue when transmitting. The factory setting is Zone 1 the highest priority, zone 16 the lowest.

Default Settings:

Zone 1	0	Zone 9	8

Zone 2	1	Zone 10	9
Zone 3	2	Zone 11	10
Zone 4	3	Zone 12	11
Zone 5	4	Zone 13	12
Zone 6	5	Zone 14	13
Zone 7	6	Zone 15	14
Zone 8	7	Zone 16	15

5.4.19 Setting 19 Zone Alarm Level

Programs the point at which the Panel determines that a zone has changed from a Secure to an Alarm condition. The Zone Alarm Level for each zone can be programmed separately. This setting is factory set and should not be changed.

Default Settings: Zone Alarm Level: 64

5.4.20 Setting 20 Zone Trouble Level

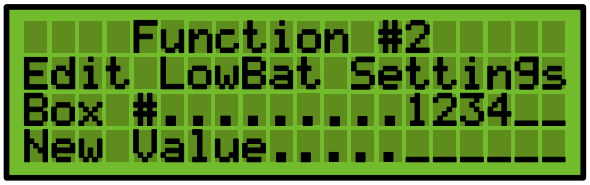
Programs the point at which the Panel determines that a zone has changed from a Secure to a Trouble condition. The Zone Trouble Level for each zone can be programmed separately. This setting is factory set and should not be changed.

Default Settings: Zone Trouble Level: 192

5.5 Function 2 Low Battery Settings

5.5.1 Setting 1 Low Battery Box Number

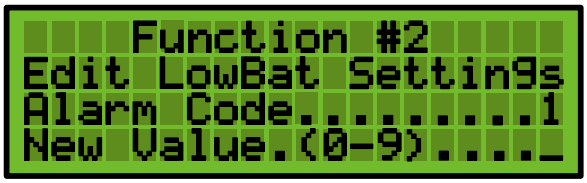
The DET-16 panel can be programmed to send an independent box number when it detects a Low Battery Condition. The box number can be up to 8 digits long.



Default Setting: Low Battery Box Number: 125

5.5.2 Setting 2 Low Battery Code

When the DET-16 panel detects a Low Battery condition, it will transmit a Low Battery Box Number followed by the Low Battery Code. The Low Battery Code can be set from 0 – 9.



Default Setting: Low Battery Code: 1

5.5.3 Setting 3 Low Battery Rounds

This function sets the number of times a Low Battery Box Number & Code will be sent when a Low Battery condition is detected. The number of rounds can be set from 0 to 4. If the rounds is set equal to 0, no transmission will occur.

Default Setting: Low Battery Rounds: 0 Rounds.

5.5.4 Setting 4 Low Battery Restore Code

The DET-16 sends a Low Battery Restore Transmission when the panel goes from a Low Battery condition to a Normal Operating or "Charged Battery" condition. The Low battery Restore Code can be set from 0 – 9. When the Battery returns to a normal condition, the DET-16 will first transmit the box number followed by the Low Battery Restore Code.

Default Setting: Low Battery Restore Code: 1

5.5.5 Setting 5 Low Battery Restore Code Rounds

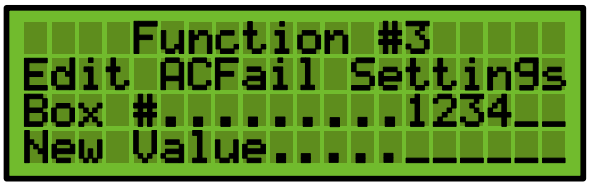
This function sets the number of times a Low Battery Box Number & Low Battery Restore Code will be sent when the panel returns from a Low Battery condition to a Normal Condition. The number of rounds can be set from 0 to 4. If the rounds is set equal to 0, no transmission will occur.

Default Setting: Low Battery Restore Rounds: 0 Rounds

5.6 Function 3 AC Fail Settings

5.6.1 Setting 1 AC Fail Box Number

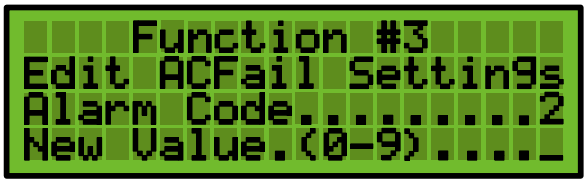
The DET-16 panel can be programmed to send an independent box number when it detects an AC Fail Condition. The box number can be up to 8 digits long.



Default Setting: AC Fail Box Number: 125

5.6.2 Setting 2 AC Fail Code

When the DET-16 panel detects an AC Fail condition, it will transmit an AC Fail Box Number followed by the AC Fail Code. The AC Fail Code can be set from 0 – 9.



Default Setting: AC Fail Code: 2

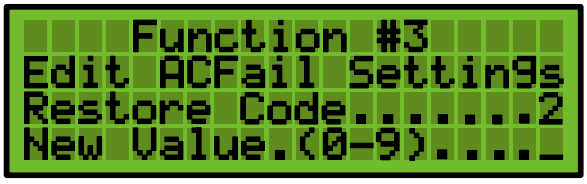
5.6.3 Setting 3 AC Fail Rounds

This function sets the number of times an AC Fail Box Number & Code will be sent when an AC Fail condition is detected. The number of rounds can be set from 0 to 4. If the rounds is set equal to 0, no transmission will occur.

Default Setting: AC Fail Rounds: 1 Round.

5.6.4 Setting 4 AC Fail Restore Code

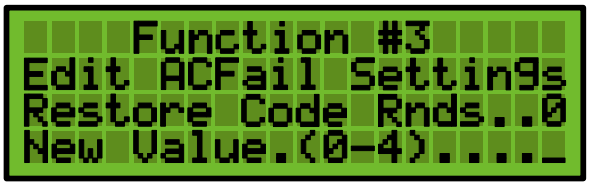
The DET-16 sends an AC Fail Restore Transmission when the panel goes from an AC Fail condition to a Normal Operating condition. The AC Fail Restore Code can be set from 0 – 9. When the AC Line voltage returns to a normal condition, the DET-16 will first transmit the box number followed by the AC Fail Restore Code.



Default Setting: AC Fail Restore Code: 2

5.6.5 Setting 5 AC Fail Restore Code Rounds

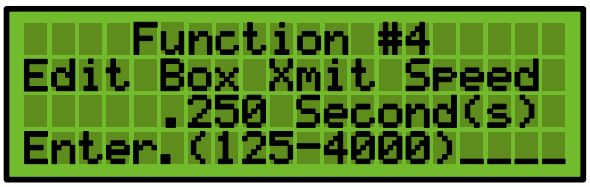
This function sets the number of times an AC Fail Box Number & AC Fail Restore Code will be sent when the panel returns from an AC Fail condition to a Normal Condition. The number of rounds can be set from 0 to 4. If the rounds is set equal to 0, no transmission will occur.



Default Setting: AC Fail Restore Rounds: 0 Rounds

5.7 Function 4 Transmission Speed

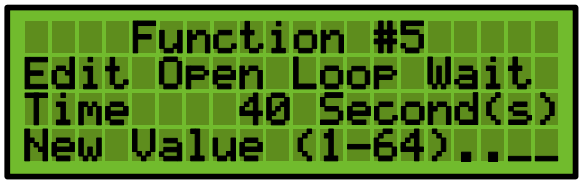
The speed of transmission is adjustable over a range from 1/8 (.125) to four (4.000) seconds.



Default Setting: Transmission Speed: .250 Seconds (1/4 second)

5.8 Function 5 Open Loop Wait Time

The Open Loop Wait Time is the amount of time (in seconds) that the DET-16 panel will wait before declaring the Telegraph Loop "Open". Open Loop Wait Time can be set from 1 to 64 seconds.



Default Setting: Ground Wait Time: 40 Seconds

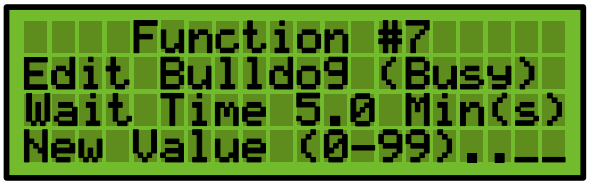
5.9 Function 6 Free Loop Wait Time

Free Loop Wait Time is the time (in seconds) that the panel must wait before declaring the Telegraph Loop "quiet" or inactive. Free Loop Wait Time can be set from 1 to 64 seconds.

Default Setting: Free Loop Wait Time: 10 Seconds

5.10 Function 7 Bulldog Loop Wait Time

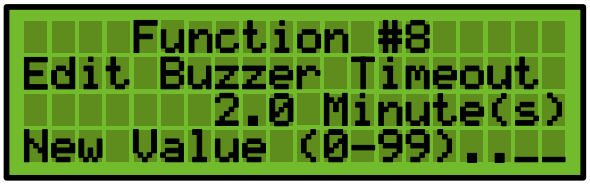
Bulldog Loop Wait Time is the time (in minutes) that the panel will wait for a "Quiet" or inactive loop, before Bulldogging the loop and transmitting. The Bulldog Loop Wait Time is active when the panel has any pending transmission and the Telegraph Loop is "Busy".



Default Setting: Bulldog Loop Wait Time: 5 Minutes

5.11 Function 8 Buzzer Timeout

Function 8, Buzzer Timeout sets how long the buzzer will remain on before automatically turning itself off. Timeout can be set from 0 to 9.9 minutes. Timeout is disabled when set to 0.



Default Setting: Buzzer Timeout: 02 minutes

5.12 Function 9

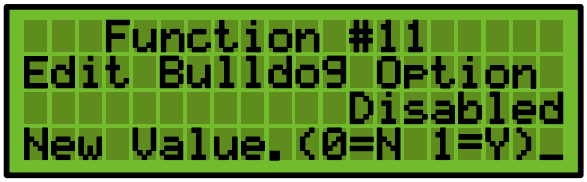
Function 9 is not used for this version of the software.

5.13 Function 10

Function 10 is not used for this version of the software.

5.14 Function 11 Bulldog

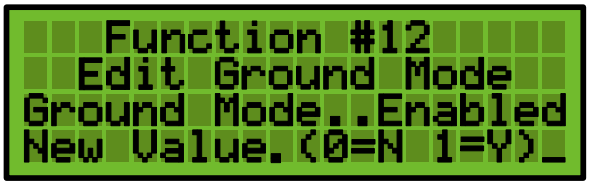
Function 11 controls if the Bulldog feature is enabled or disabled. See Definitions.



Default Setting: Bulldog: Disabled

5.15 Function 12 Ground Mode

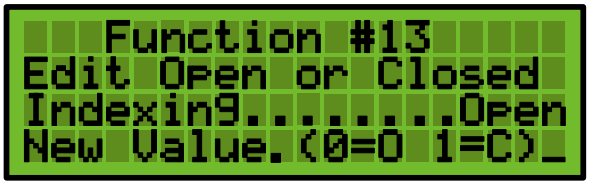
Function12 controls the Ground Mode feature. If the panel detects that the Telegraph Loop is OPEN and Ground Mode is Enabled, the panel will go into Ground Loop Mode. The DET-16 will activate the Ground Code relay and code the telegraph transmission to earth ground.



Default Setting: Ground Mode: Enabled

5.16 Function 13 Open / Closed Indexing

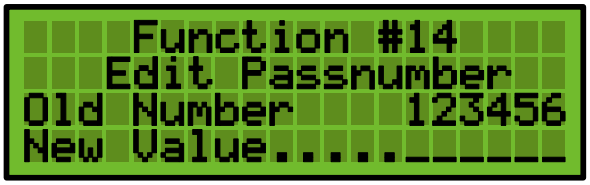
Function 13 sets the entire DET-16 panel to be either Open or Closed Indexing. The panel must be set to match the type of indexing used by the telegraph loop decoder to work properly. Open Indexing is normally the standard.



Default Setting: Loop Indexing: Open

5.17 Function 14 Change Passnumber

All of the panel's programmable functions on the DET-16 are protected by a six-digit user passnumber. Function 14 allows the user to change the passnumber. The pass number must be six digits long.



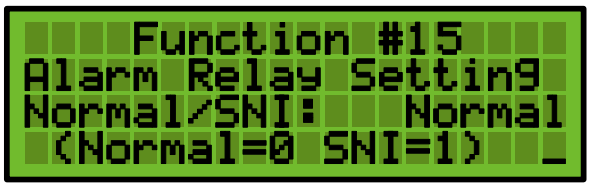
Default Setting: User Passnumber: 123456

5.18 Function 15 Alarm Relay Programming

The Alarm Relay can be programmed to perform two separate functions.

Normal: Normal operation for the Alarm relay is to activate whenever any of the sixteen zones on the Det panel are in an Alarm condition.

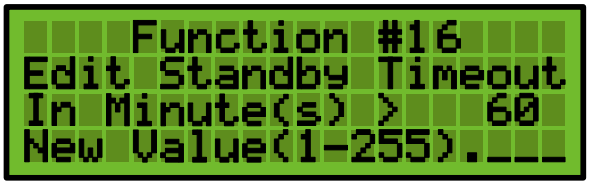
SNI Mode: Serial Non-Interfering Loop configuration. When the Det is about to begin a telegraph transmission, the panel will activate the Code relay, then use the Alarm relay to send the telegraphic transmission. On completion, the Alarm relay will turn off (open) and the Code relay will turn off (close).



Default Setting: Alarm Relay: Normal

5.19 Function 16 Edit Standby Timeout

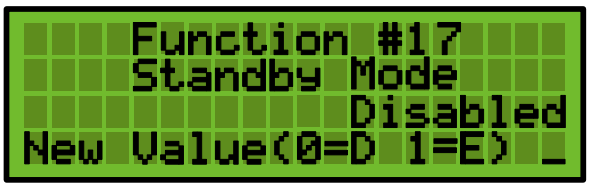
The Standby Timeout is the amount of time that the Standby Mode will remain in effect after being activated (See Function 17). When enabled, Standby Mode prevents the panel from transmitting when a zone is activated. Panel Testing can be conducted in Standby Mode. The Standby Timeout is the amount of time the panel will remain in Standby. When the timer reaches 0, the panel will return to Normal Operation automatically.



Default Setting: 60 Minutes

5.20 Function 17 Standby Mode

When enabled, Standby Mode prevents the panel from transmitting when a zone is activated. Panel Testing can be conducted in Standby Mode. The Standby Timeout is the amount of time the panel will remain in Standby (See Function 16).

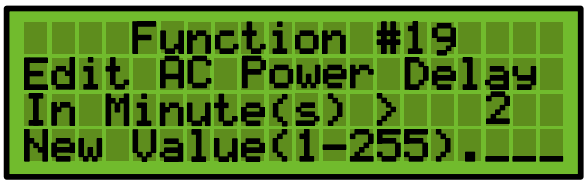


5.21 Function 18 Reset Factory Defaults

Returns the entire panel back to the factory default settings. Press "1" then Enter.

5.22 Function 19 AC Power Delay

Function 19 will delay the report of an AC Power Failure at the panel for up to 255 minutes. If the power is restored to the panel during this delay period, the panel will automatically restore to a Normal condition.



Default Setting: 2 Minutes

6 Det-16 Programming Utility

6.1 Overview

The Det-16 Programming Utility is a programming aid that runs on a Windows laptop computer. It allows the firmware and panel settings to be uploaded and downloaded from the Det-16 panel. The settings can be edited and saved on the laptop computer.

The requirements for the Det-16 Programming Utility are simple; A computer running Windows XP or newer with a USB port.

6.2 Installation

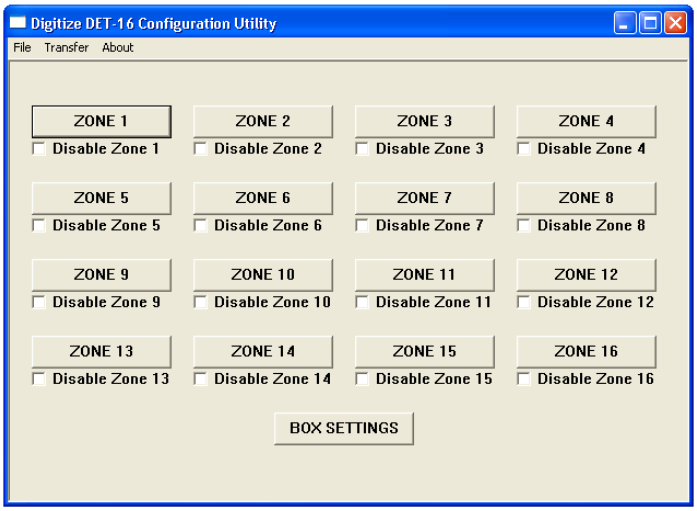
Installation of the Det-16 Programming Utility is a simple two step operation. First the USB drivers need to be loaded, and then second the Det-16 Programming Utility needs to be copied onto the computer.

Copy the Det-16 Programming Utility folder onto the computer to be used to connect to the Det-16 panels.

Connect the computer to the USB port of a powered Det-16 panel. The computer will then try to install the drivers required to run the USB ports. When prompted, select the Det-16 folder that contains the USB Drivers. The computer will then finish installing the USB drivers.

To install the Programming Utility, simply copy the Det-16 Programming Utility "exe" file from the folder to the hard drive on your computer, preferably the desktop, since it will be easier to locate. That is all that is required to install the software.

To start the program, simply double click on the icon. The following screen will appear.



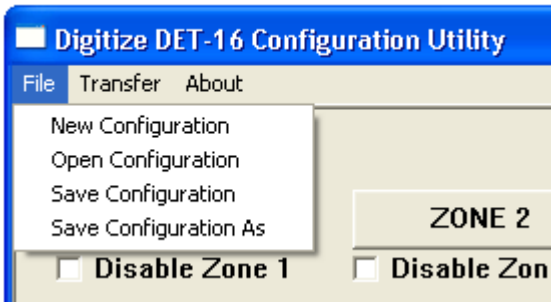
6.3 Operation

The Det-16 Programming Utility allows perform the following tasks on a Det-16 panel:

- Upload firmware to the Det-16
- Download the firmware currently installed on the Det-16.
- Download the settings from the Det-16 panel.
- Edit the settings for the Det-16 panel.
- Save the settings to disk.
- Load settings from disk.
- Upload settings into the Det-16.

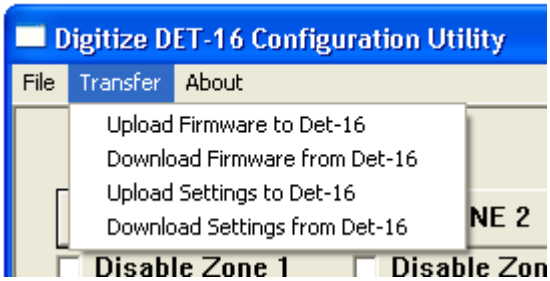
6.3.1 The File Menu

The File Menu pull down tab allows you to Open and Save Det-16 configurations. Selecting "New" configuration loads all of the default settings for a Det-16 into the programmer software.



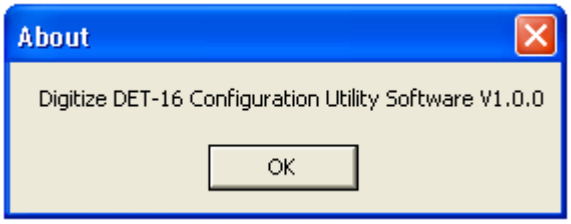
6.3.2 The Transfer Menu

The Transfer Menu contains all the routines for uploading and downloading the firmware and the configurations for the Det-16.



6.3.3 The About Menu

The About Menu displays the version information for the Det-16 programmer.



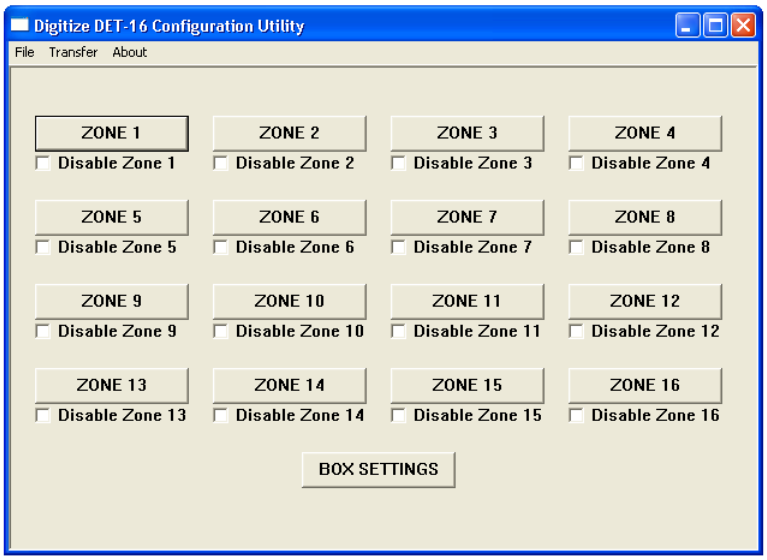
6.3.4 Editing a Det-16 Configuration

The source of the configuration can come from three places.

- A new configuration set to the default values.
- A configuration downloaded from a Det-16 panel.
- A saved configuration loaded into the programmer

Once the required configuration has been loaded, the main screen of the programmer will be displayed.

6.3.5 Main Screen

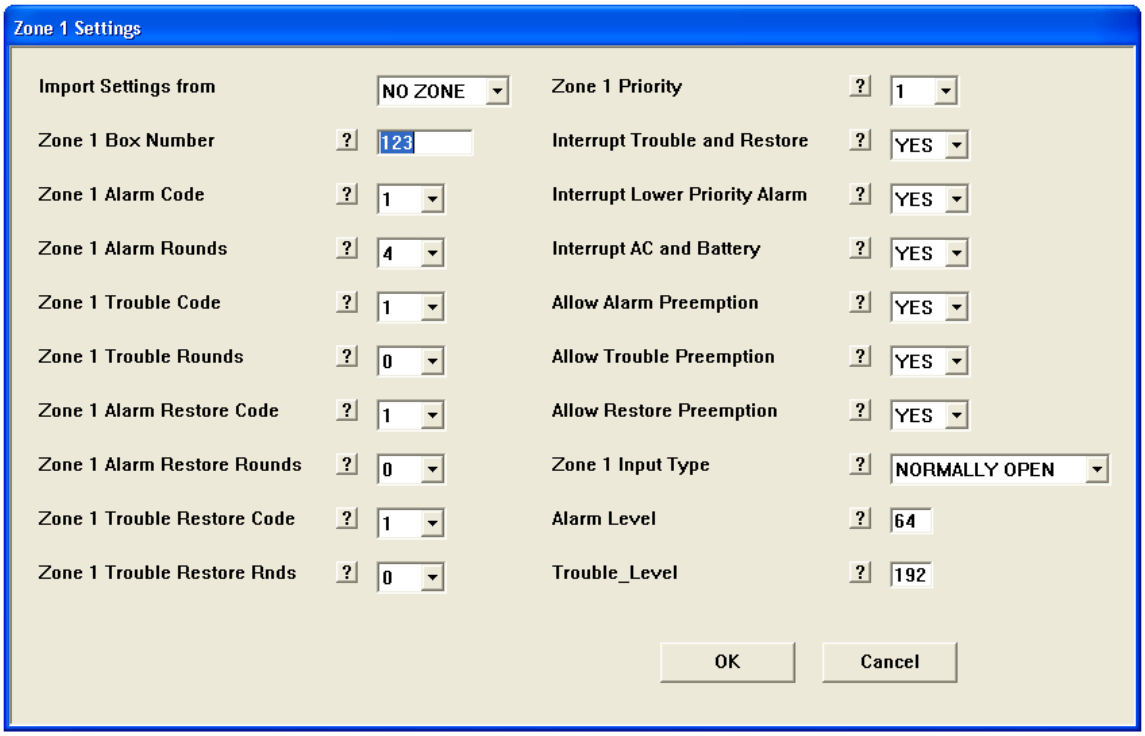


Zones (1-16) - Each zone has a tab for editing the zone data and a checkbox for disabling the zone.

Box Settings – opens a new window for editing various settings common to the entire Det-16 panel, such as AC Power Fail and Low Battery.

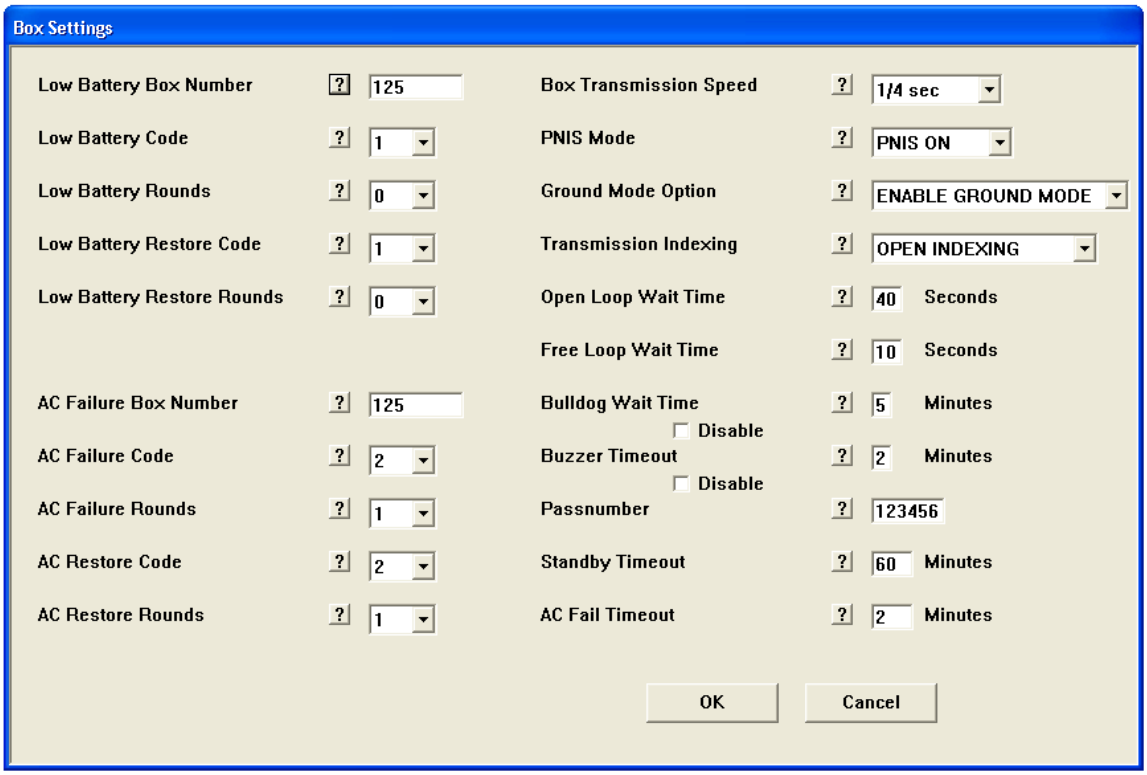
6.3.6 Zone Settings Window

The Zone Settings Window permits editing settings specific for each of the sixteen zones. The upper left corner displays which zone is being edited. Help information for each of the settings is available by clicking the "?" button. Entries for each of the zone settings are limited to appropriate values. Press OK to accept the new settings or Cancel to exit the window with the settings unchanged.



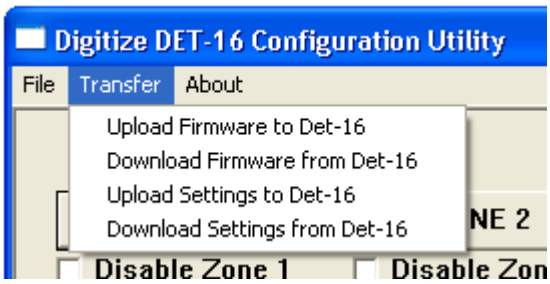
6.3.7 Box Settings Window

The Box Settings Window permits editing settings common for the entire Det-16 panel. The upper left corner displays "Box Settings". Help information for each of the settings is available by clicking the "?" button. Entries for each of the settings are limited to appropriate values. Press OK to accept the new settings or Cancel to exit the window with the settings unchanged.

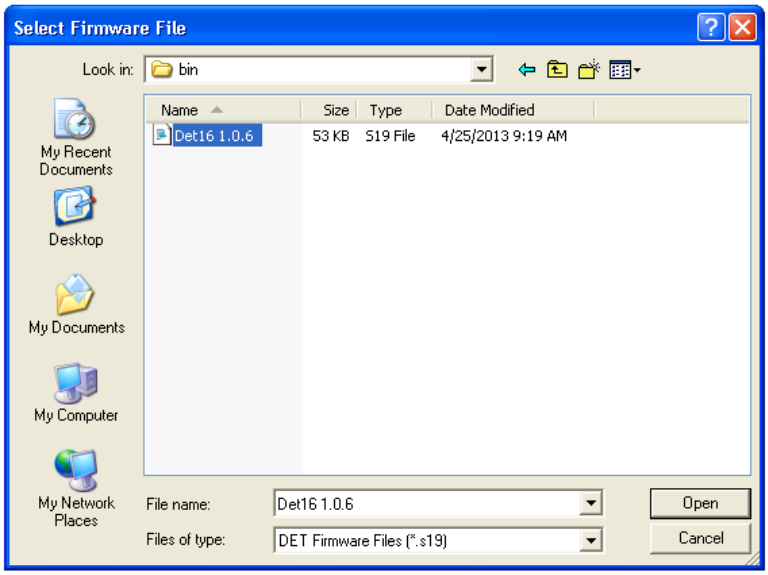


6.3.8 Uploading Firmware to the Det-16

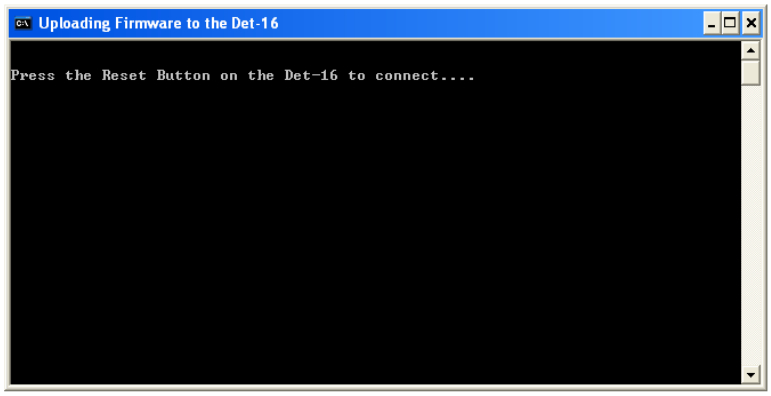
1. Connect a USB cable from the ZDet-16 panel to the laptop computer.
2. Select “Upload Firmware to Det-16” from the Transfer Pull down Menu.



3. Select the file containing the firmware you wish to upload to the Det-16, the hit “Open”.



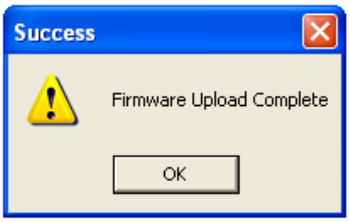
4. A new window will open. Press the Reset button on the Det-16 panel to start the upload.



5. If the panel and computer connect properly, the upload procedure will begin and the progress will be reported in the window.

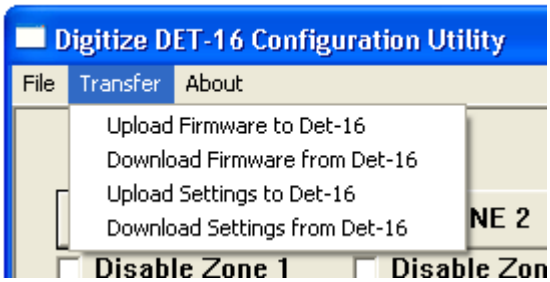
If the panel and the computer fail to connect, the following window will open. Check the connection of the USB cable and try again.

6. The following window signals the successful end of the upload procedure.

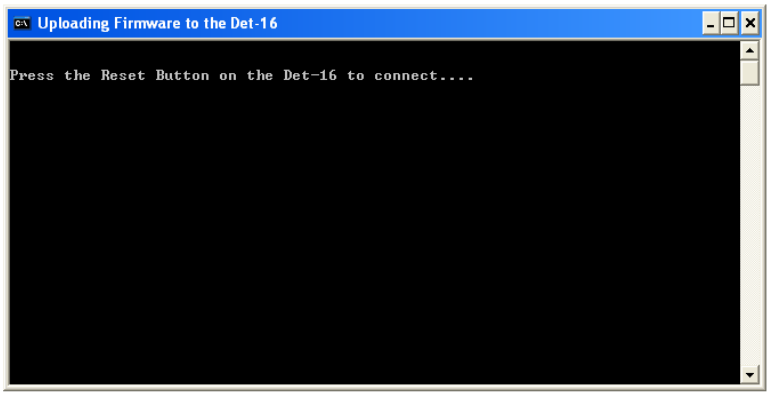


6.3.9 Downloading Firmware from the Det-16

1. Connect a USB cable from the Det-16 panel to the laptop computer.
2. Select “Download Firmware from Det-16” from the Transfer Pull down Menu.



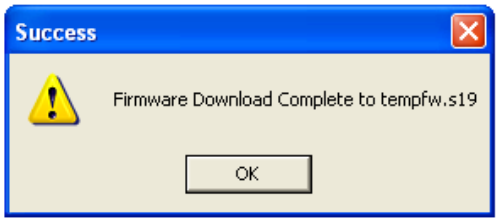
3. A new window will open. Press the Reset button on the Det-16 panel to start the download.



4. If the panel and computer connect properly, the download procedure will begin and the progress will be reported in the window.

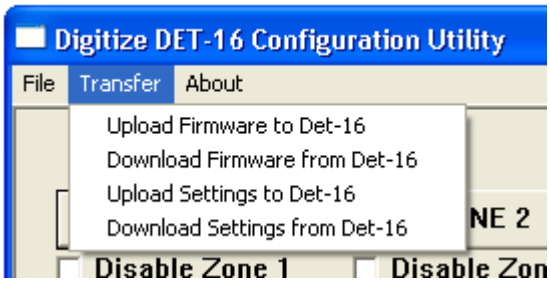
If the panel and the computer fail to connect, the following window will open. Check the connection of the USB cable and try again.

5. The following window signals the successful end of the download procedure.

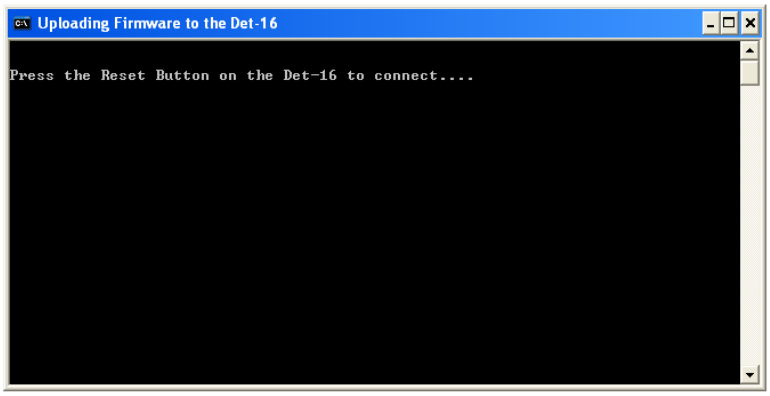


6.3.10 Uploading Settings from the Det-16

1. Connect a USB cable from the Det-16 panel to the laptop computer.
2. Select “Upload Settings from Det-16” from the Transfer Pull down Menu.



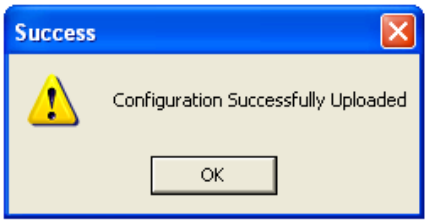
3. A new window will open. Press the Reset button on the Det-16 panel to start the upload.



4. If the panel and computer connect properly, the upload procedure will begin and the progress will be reported in the window.

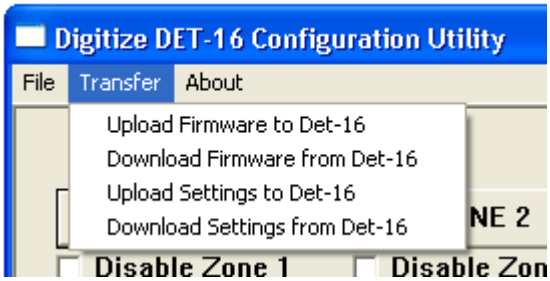
If the panel and the computer fail to connect, the following window will open. Check the connection of the USB cable and try again.

5. The following window signals the successful end of the upload procedure.

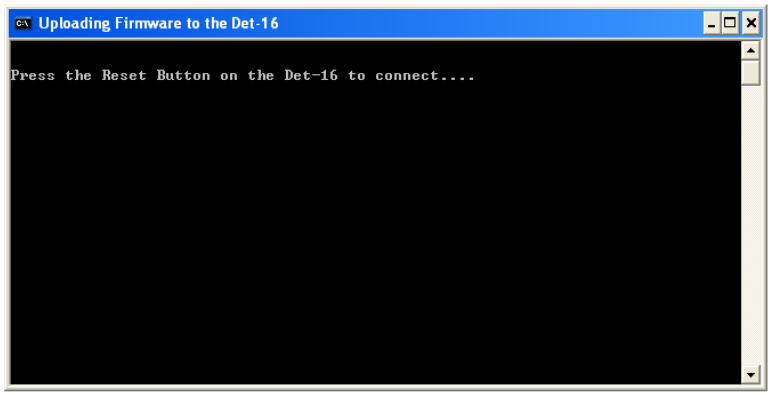


6.3.11 Downloading Settings from the Det-16

1. Connect a USB cable from the Det-16 panel to the laptop computer.
2. Select “Download Settings from Det-16” from the Transfer Pull down Menu.



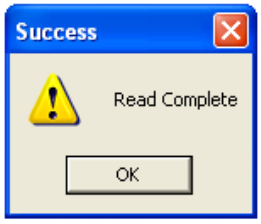
3. A new window will open. Press the Reset button on the Det-16 panel to start the download.



4. If the panel and computer connect properly, the download procedure will begin and the progress will be reported in the window.

If the panel and the computer fail to connect, the following window will open. Check the connection of the USB cable and try again.

5. The following window signals the successful end of the download procedure. The Zone Settings and Box Settings now reflect the values downloaded from the Det-16.



7 System Testing

It is recommended that at a minimum, the panel should be completely tested after it is installed and placed into service. This test should include:

- Confirming the display and leds are all functioning.
- All of the display switches are functioning.
- Confirming all wire connections are proper and tight.
- The panel will recognize an AC Failure by removing the AC voltage with the Standby battery is connected.
- The panel will report a low/missing Standby battery by removing the battery while the panel is AC powered.
- Test each of the input circuits and confirming the proper box number is programmed for each input. Also confirm that the panel was decoded properly at the dispatching center.
- Test the ability of the Det-16 to transmit in Ground Mode. Confirm that the Det-16 was decoded properly at the dispatch center.
- Any other testing as required by the local jurisdiction having authority.

8 System Maintenance

8.1 Recommended Maintenance

The Det-16 panel should be tested periodically per the local codes.

It is recommended that at a minimum, the panel should be visited at least once a year to confirm its proper operation which would include:

- Confirming the display and leds are all functioning.
- Confirming all wire connections are proper and tight.
- Test each of the input circuits and confirming the proper box number is programmed for each input.
- The panel is locked and secured properly.

No other maintenance is required.

8.2 Battery Maintenance and Replacement

The Det-16 is shipped with a 12 volt, 7.5 Amp Hour sealed Lead Acid battery, Digitize PN 900414-0004. The charging circuit of the Det-16 was designed to work specifically with this type of battery.

Important!! Never connect any other type of battery to the Det-16 panel.

Expected life of the Det-16 batteries can be as long as five years. The life of a battery is dependant on a number of criteria which include but are not limited to:

- The temperature where the battery is located.
- The number of times the battery has discharged then been recharged.
- Whether the battery was allowed to completely discharge (deep discharge) and how long it was allowed to remain that way before it is recharged.
- Whether the battery was ever overcharged.

Digitize recommends that the batteries be replaced every four years.

Batteries should be tested per the battery manufacturer's specification to confirm that it has sufficient capacity to operate the Det-16 for a minimum of 60 hours of Standby.

IMPORTANT NOTICE: DIGITIZE, INC. products should be tested every month (under no circumstances less than every three months) to insure complete and proper operation and proper input and output connections.

STATEMENT OF LIMITED WARRANTY

Digitize, Inc. ("Digitize") warrants to its distributors, systems houses, end users, and OEMs ("Buyer"), that products manufactured by Digitize are free from defects in materials and workmanship. Digitizes obligations under this warranty are limited to repairing or replacing, at Digitizes option, the part or parts of the products which prove defective in material or workmanship for 12 months within 15 months after shipment by Digitize. Buyer must pass along to its initial customer or user ("Customer") a minimum of 12 months' coverage within the 15-month warranty period, provided the Buyer gives Digitize prompt notice of any defect and satisfactory proof thereof. Products may be returned by Buyer only after a Return Material Authorization number ("RMA") has been obtained from Digitize by telephone or in writing. Buyer will prepay all freight charges to return any products to the repair facility designated by Digitize and include the RMA number on the shipping container. Digitize will, at its option, either repair the defective products or parts or deliver replacements for defective products or parts on an exchange basis to Buyer, freight prepaid to the Buyer. Products returned to Digitize under this warranty will become the property of Digitize. With respect to any products or art thereof not manufactured by Digitize, only the warranty, if any, given by the manufacturer thereof, applies.

EXCLUSIONS

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