Simplex

2004 Foundation Series Fire Alarm Control Unit Operation Guide

579-1403 Rev A

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1 Cautions, Warnings, and Regulatory Information

READ AND SAVE THESE INSTRUCTIONS Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depend upon proper installation.

DO NOT INSTALL ANY SIMPLEX™ PRODUCT THAT APPEARS DAMAGED Upon unpacking your Simplex product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify an authorized Simplex product supplier.

ELECTRICAL HAZARD Disconnect electrical field power when making any internal adjustments or repairs. All repairs should be performed by a representative or an authorized agent of your local Simplex product supplier.

STATIC HAZARD Static electricity can damage components. Handle as follows:

- Ground yourself before opening or installing components.
- Prior to installation, keep components wrapped in anti-static material at all times.

SULFURIC ACID WARNING Battery contains sulfuric acid, which can cause severe burns to the skin and eyes and can destroy fabric. Replace any leaking or damaged battery while wearing appropriate protective gear. If you come in contact with sulfuric acid, immediately flush skin or eyes with water for 15 minutes and seek immediate medical attention.

FCC RULES AND REGULATIONS – PART 15

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

SYSTEM REACCEPTANCE TEST AFTER SOFTWARE CHANGES

To ensure proper system operation, this product must be tested in accordance with NFPA-72, after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

NFPA 72® is a registered trademark of the National Fire Protection Association.

2 Introduction

The 2004-9101 is a conventional fire alarm control unit (FACU). The system includes four Class B Initiating Device Circuits (IDCs) and one Notification Appliance Circuit (NAC). You can wire the NAC using Class A or Class B wiring.

Use the built-in Digital Alarm Communications Transmitter (DACT) for remote station or central station monitoring.

The 2004-9101 system uses audible and visible indications during alarm, supervisory or trouble conditions. If any of these conditions occur, the system activates the applicable notification appliances, respective LEDs, and the control unit piezo. The indications continue until an operator acknowledges the condition.

The user interface features LED indicators and a keypad. You can configure the various functions of the control unit using DIP switches on the system board.

3 User interface

The user interface is used to operate the FACU.

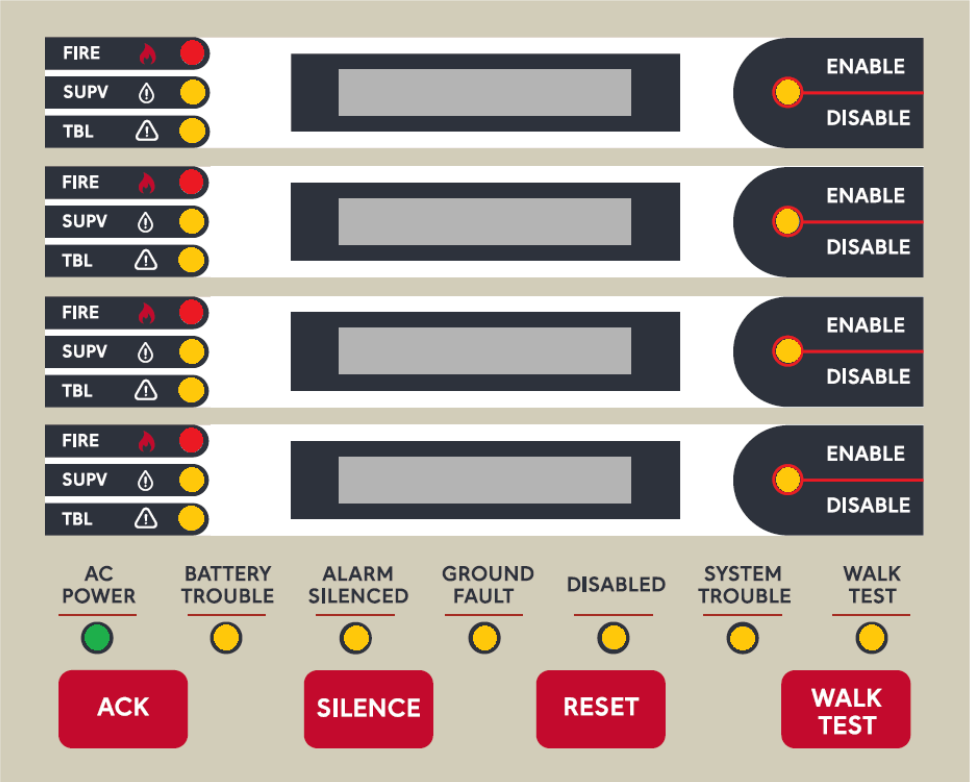

Figure 1: User interface

3.1 Control unit buttons

3.1.1 ACK

Pressing the **ACK** key performs the following actions:

- Silences the piezo sounder
- Acknowledges all unacknowledged alarm, supervisory and trouble events.
- Changes the flashing LED to steady
- And sends acknowledge messages to the history file.

The **ACK** key does not have any effect on the NACs.

3.1.2 SILENCE

If an alarm exists, press the **SILENCE** key to turn off all silenceable outputs, such as NACs. The system turns on the **ALARM SILENCED** LED. The system also sends an alarm silenced message to the history file.

Hold the **SILENCE** key for more than 10 seconds to perform a **DACT** test and send a test signal to the receiving station.

3.1.3 RESET

Press and release the **RESET** key to complete the following actions:

- Reset all alarm notification appliances and controls.
- Remove alarms from the alarm list after respective devices are restored to a normal state.
- Silence all silenceable outputs.
- Reset detectors.
- Return the system to a normal state, provided that no alarm, supervisory or trouble conditions are present.

Hold the **RESET** key for more than ten seconds to perform a **Lamp test** by turning on all LEDs and control unit piezos for up to five seconds. If any alarm or trouble exists after a reset, the notification appliance circuits resound.

3.1.4 WALK TEST

Press the **WALK TEST** key to activate the walk test feature and turn on the control unit piezo. The **WALK TEST** LED turns on steady and the **SYSTEM TROUBLE** LED starts flashing.

3.1.5 ENABLE/ DISABLE

Press the **ENABLE/ DISABLE** key next to the zone display to quickly disable the zone. The system turns on the control unit piezo and the **DISABLED** LED and the **SYSTEM TROUBLE** LED start flashing.

To enable the disabled zone, press the **ENABLE/ DISABLE** key again.

3.2 LED indicators and piezo

Table 1: LED indicators

Component	LED colour	Description
Zonal Fire LEDs	Red	Separate fire indicators for each zone indicate a fire alarm when the LED of a respective zone is flashing, and an acknowledged alarm when steady on.
Zonal Supervisory LEDs	Yellow	Separate supervisory indicators for each zone indicate a supervisory condition when the LED of a respective zone is flashing, and an acknowledged condition when steady on.
Zonal Trouble LEDs	Yellow	Separate trouble indicators for each zone indicate a trouble condition when the LED of a respective zone is flashing, and an acknowledged trouble when steady on, in the zone displayed next to the LED.
Zonal Disable LEDs	Yellow	Separate disable indicators for each zone indicate a disabled condition when the LED of a respective zone is flashing and an acknowledged trouble when steady on.
AC Power LED	Green	Indicates AC power is applied to the control unit when steady on.
Battery Trouble LED	Yellow	Indicates a battery trouble state when flashing and acknowledged trouble when steady on.
Alarm Silenced LED	Yellow	Indicates an alarm has been silenced when steady on.
Ground Fault LED	Yellow	Indicates a ground fault state when flashing and an acknowledged trouble when steady on.
Disabled LED	Yellow	Indicates the system NAC or DACT or City card has been disabled when flashing and an acknowledged trouble when steady on.
System Trouble LED	Yellow	Indicates a trouble state when flashing and acknowledged trouble when steady on.
Walk Test LED	Yellow	Indicates system is in walk test when steady on.
Piezo	-	Emits tones during alarm, supervisory and trouble conditions. Tone-alert pulses for an alarm condition, and is on steady for a trouble or supervisory.

4 Operations

4.1 Normal operation

Normal condition is the standard condition of operation. When no alarm or trouble conditions exist, the control unit's operator interface shows the following:

- Green **AC POWER** LED is on steady.
- All other control unit indicator LEDs and local piezo are off.
- All NACs are off.
- All relays are in their normal state.

4.2 Fire alarm operation

An alarm condition occurs when an initiating device, such as a smoke detector or heat detector, activates.

When an alarm occurs, the control unit's operator interface shows the following:

- The respective zone's red **FIRE** LED starts flashing.
- The local piezo produces a pulse tone.
- Alarms latch and are not allowed to clear automatically.
- Activates the general alarm relay and NAC.
- Communicates the alarm condition to the central station, and the remote station if programmed.
- The system stores an alarm event in the history file.

When you press the **ACK** key, the following actions occur:

- The respective zone's **FIRE** LED illuminates steady.
- The local piezo turns off.
- The system stores an acknowledged event in the history file.

When you press the **SILENCE** key, the following actions occur:

- The yellow **ALARM SILENCED** LED turns on. There is no effect on any other LEDs.
- The system turns off the NAC, if programmed as SSIG.
- The system stores an alarm silence event in the history file.
- If a subsequent alarm occurs, the respective **FIRE** LED starts flashing, the **Alarm Silenced** LED turns off and the NACs and local piezo resounds.

When you press the **RESET** key, the following actions occur:

- The system returns to its normal state if an alarm condition has been cleared and the respective zone's **FIRE** LED turns off.
- All latched circuits reset automatically.
- Turns off all devices and circuits that are programmed to turn off when this key is pressed. For example, the NAC's configured as RSIG and Alarm relay (RRELAY).
- The system stores a system reset event in the history file.
- If a device remains in alarm state during the reset period, the system reset is aborted, and the system remains in the alarm state.

4.3 Supervisory operation

A supervisory condition occurs when an initiating device activates. An example is a smoke detector or a heat detector that connects to an IDC with a supervisory (SUPV) function type.

When a supervisory condition occurs, the control unit's operator interface shows the following:

- The respective zone's yellow **SUPV** LED starts flashing.
- The local piezo produces a steady tone.
- Activates the general supervisory relay.
- Communicates the supervisory condition to the central station, remote station (if programmed).
- The system stores an supervisory event in the history file.

When you press the **ACK** key, the following actions occur:

- The respective zone's **SUPV** LED illuminates steady.
- The local piezo turns off.
- The system stores an acknowledged event in the history file.

4.4 Trouble operation

When the trouble condition occurs, the control unit's operator interface shows the following:

- The yellow **SYSTEM TROUBLE** LED starts flashing.
- You can see the different LEDs to see specific troubles:
  - If there are troubles on the IDC zone, the respective zone's yellow **TROUBLE** LED starts flashing.
  - If there is AC loss, the green **AC POWER** LED turns off.
  - If there are battery faults, the yellow **BATTERY TROUBLE** LED starts flashing.
  - If there are ground faults, the yellow **GROUND FAULT** LED starts flashing.
  - If the system is disabled, the respective yellow **DISABLED** LED starts flashing.
- The local piezo produces a steady tone.
- The system activates the general trouble relay.
- Communicate the trouble condition to the central station, and the remote station if programmed.
- The system stores a trouble event in the history file.

When you press the **ACK** key, the following actions occur:

- The **SYSTEM TROUBLE** LED and all other specific trouble indicators illuminates steady.
- The local piezo turns off.
- The system stores an acknowledged event in the history file.

The following are latch-able trouble:

NAC over current Trouble: NAC short during alarm condition

Recovery steps:

- Clear the alarm condition and reset the panel.
- Reset the panel again to clear the trouble.

5 Default programming assignments

5.1 IDC, NAC, and relay default function types

For information on the default function types of IDCs, NACs and relays, see Table 2.

The function type of IDCs and NACs is a programmable attribute that you can manually change.

Table 2: Default function types of IDC, NAC, and relay

Circuit	Default function type
IDC1-4	Fire
NAC1	QALERT
AUX1 (Relay 1)	Common Trouble
AUX2 (Relay 2)	Common Alarm, On Until Reset (RRELAY)
AUX3 (Relay 3)	Common Supervisory

For an explanation of relay functions, see the follow points:

- RRELAY: Relay activates on general alarm; it remains on-until-reset.
- Common Trouble: Relay activates when a Trouble condition occurs; remains on-until-cleared.
- Common Supervisory: Relay activates when a Supervisory condition occurs; remains on-until-cleared.

5.2 NAC, relay, and signal circuit output mode assignments

See Table 3 for default, output, method (steady, temporal, for example) assignments for the NAC and Relay circuits.

The operating of NAC is a programmable attribute that you can manually change.

Table 3: Default operating modes of NAC, relay and signal circuit outputs

Circuit	Operating mode
NAC1	Temporal Code: A three pulse coding pattern consisting of three 1/2 second pulses, each separated by 1/2 second silence. Each group of three pulses is separated by 1.5 seconds of silence
Relay 1 to 3	Steady on
SIGNAL Modules	Steady on

5.3 DACT defaults

Default NAC is enabled, the rest setting can be configured through the PC tool.

Table 4: Default CID event codes

Function type	Fire	Supervisory	Trouble
FIRE	110	-	330
WSO	110	200	330
SUPV	-	200	330
VSMOKE	111	-	330

Note: Any other trouble not specifically mentioned would have a code of 330. For example, a trouble on an output device reports an event code of 330.

6 Programming

Important: Notice to 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.

Table 5: IDC, NAC, relay function settings

Program feature or option	Permitted in UL 864? (Y/N)	Possible settings	Settings permitted in UL 864
IDC Function Type	Y	FIRE, WSO, SUPV, VSMOKE	FIRE, WSO, SUPV, VSMOKE
NAC Function Type	Y	QALERT, SSIG, RSIG	QALERT, SSIG, RSIG
Relay Function Type	Y	RRELAY, SUPV, TRBL	RRELAY, SUPV, TRBL
Reminder Setting option	Y	On / Off	On
AC delay transmission setting	Y	0 hrs to 24 hrs	0 hrs to 3 hrs

This section describes setting the characteristics of each initiating device and notification appliance to the specific values required for the job.

You can set the following attributes for each of the control unit's IDCs and NACs:

- **Function Type -** Determines the operation of the point.

  IDC: You can can set whether the device indicates the status change as a fire alarm or supervisory.

  NAC: You can can set whether the device turns off on silence or resets.

6.1 Programming IDCs

By default, the system configures all IDCs for the **FIRE** function type.

To edit the IDC function type, complete the following steps:

1. Turn off the unit.
2. Open the control unit's door to access the DIP switches on the system board.
3. DIP switch SW1 is used to configure the IDC function type.

Table 6: DIP switch setting for IDC configuration

IDC function type	DIP switches 1 through 8							
	IDC-1		IDC-2		IDC-3		IDC-4	
	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
FIRE	0	0	0	0	0	0	0	0
SUPV	0	1	0	1	0	1	0	1
VSMOKE	1	0	1	0	1	0	1	0
WSO	1	1	1	1	1	1	1	1

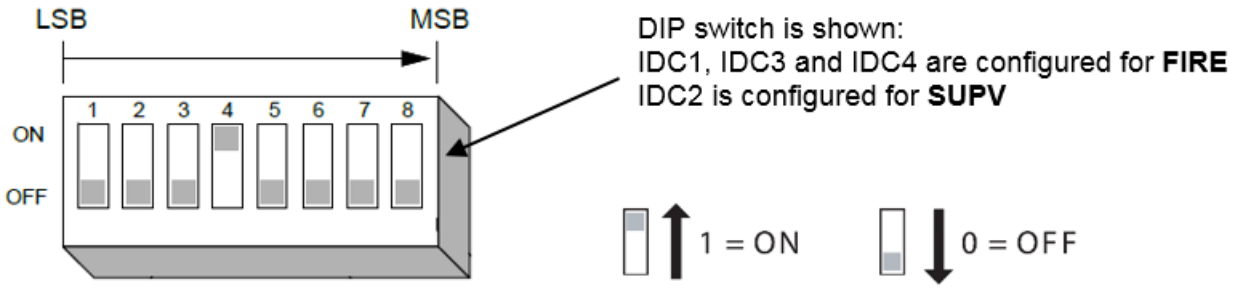

Figure 2: DIP switch SW1 settings

Note: As shown in Figure 2, IDC1, IDC3 and IDC4 are configured for **FIRE** IDC2 is configured for **SUPV**.

Table 7: IDC function types

Function type	Device state = status	Description
FIRE	Normal = NORMAL Abnormal = FIRE Short = FIRE Open = TROUBLE	Fire monitor zone
WSO	Normal = NORMAL Current Limited = SUPERVISORY Short = FIRE Open = TROUBLE	Combination waterflow and water supervisory zone
SUPV	Normal = NORMAL Abnormal = SUPERVISORY Short = SUPERVISORY Open = TROUBLE	Supervisory monitor
VSMOKE See the following notes	Normal = NORMAL Abnormal = VERIFY Short = FIRE Open = TROUBLE	Verified fire alarm – the abnormal (current limited) state causes the alarm verification cycle to start. A short is an immediate alarm.

Note: The alarm verification cycle works in every zone as follows:

- Only connect smoke detectors to IDCs with the VSMOKE function type. If a device with the function type VSMOKE enters a current-limited state, the alarm verification cycle begins. The control unit starts a delay timer of 25 seconds. When the timer expires, the zone containing the activated detector is reset. Following the reset, another 15 second timer starts. When the 15 second timer expires, the system checks the zone for an alarm. If a current-limited condition exists on the zone, the control unit initiates a fire alarm. If no current-limited condition exists, the control unit starts a 2 minute timer. While the timer is counting down, any current-limited condition on any zone will trigger a fire alarm.
- Only connect the following detectors to IDCs with the VSMOKE function type:
  - Smoke detectors without an alarm verification feature.
  - Smoke detectors with an alarm verification feature of less than 10 sec that do not reset.

A short from a pull-station always triggers an alarm condition, regardless of the alarm verification cycle.

At any stage of the alarm verification cycle, the presence of two devices in alarm triggers an alarm condition.

6.2 Programming NAC

Default NAC is configured for QALERT function type and temporal coding pattern.

To edit the NAC function type, coding pattern, EOLR value selection and operations, complete the following steps:

1. Turn off the control unit.
2. Open the control unit's door to access the DIP switches on the system board.
3. Use DIP switch SW2 to configure the NAC function type and coding pattern. See Figure 3, Table 8 and Table 9.
4. Use DIP switch SW3 to configure EOLR value selection and operations. See Figure 4 and Table 10. An EOLR is required for NAC terminated in Class B wiring style.

Table 8: DIP switch setting for NAC function type configuration

NAC function type	DIP switches 1 and 2	
	NAC-1	
	SW2-1	SW2-2
QALERT	0	0
SSIG	0	1
RSIG	1	0
-	1	1

Table 9: NAC function types

Function type	Description	Function type	Description
SSIG	General Alarm (on-until-silence). Use for NAC circuits containing only audible devices. If you use NAC circuits to connect external sync modules, set coding pattern as **Steady**.	QALERT	General Alarm Horn/Strobe (Horn on-until-silence; Strobe on-until-reset). Use for NAC circuits containing both horns and strobes. **Note:** If NFPA NAC is enabled (active), then both horns and strobes will turn off on pressing silenced key.
RSIG	General Alarm (on steady-until-reset). If you use NAC circuits to connect visual-only devices, set coding pattern as **Sync**. If you use NAC circuits to connect external sync modules, set coding pattern as **Steady**.		

Table 10: DIP switch setting for NAC coding pattern configuration

NAC coding pattern	DIP switches 3 through 5		
	NAC-1		
	SW2-3	SW2-4	SW2-5
Temporal	0	0	0
Sync	0	0	1
Steady	0	1	0
20 BPM	0	1	1
120 BPM	1	0	0
-	1	0	1
-	1	1	0
-	1	1	1

Table 11: NAC coding patterns

Coding pattern	Description	Coding pattern	Description
Temporal	Standard Temporal coded pattern. A three pulse coding pattern consisting of three 1/2 second pulses, each separated by 1/2 second silence. Each group of three pulses is separated by 1.5 seconds of silence.	Steady	Steady On
		20 BPM	Slow March Time - 20 beats per minute (See note)
Synch	Generates synchronization pulse for visual only devices connected to NAC circuits.	120 BPM	Fast March Time - 120 beats per minute (See note)

Note: 60 BPM March-Time rate is used when both the QALERT function types are selected and either 20 BPM or 120 BPM is selected as the NAC coding pattern.

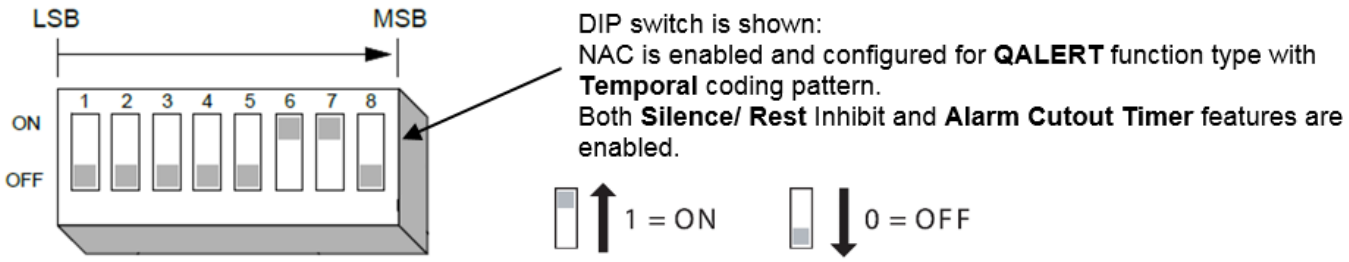

Figure 3: DIP switch SW2 settings

Note: NAC is enabled and configured for QALERT function type with **Temporal** coding pattern. Both **Silence/ Rest Inhibit** and **Alarm Cutout Timer** features are enabled. See Figure 3.

- Use DIP switch SW2-6 to **enable or disable the Silence/Reset Inhibit** feature.
  The default switch position is OFF. To enable this feature turn the switch position to ON.
- Use DIP switch SW2-7 to **enable or disable the Alarm Cutout Timer** feature.
  The default switch position is OFF. To enable this feature turn the switch position to ON.

- Use DIP switch SW2-8 to **enable or disable NAC**.

  The default switch position is OFF. To disable the NAC turn the switch position to ON.

Table 12: DIP switch setting for NAC EOLR selection

NAC EOLR values	DIP switches 1 through 3		
	NAC-1		
	SW3-1	SW3-2	SW3-3
10 KΩ	0	0	0
3.9 KΩ	0	0	1
4.7 KΩ	0	1	0
5.1 KΩ	0	1	1
5.6 KΩ	1	0	0
15 KΩ	1	0	1
-	1	1	0
-	1	1	1

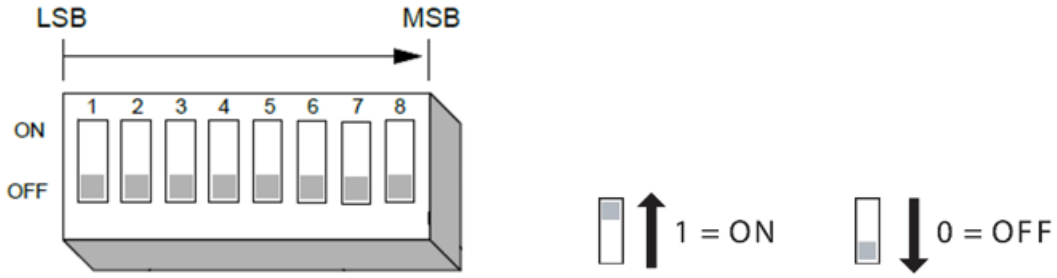

Figure 4: DIP switch SW3 settings

- Use DIP switch SW3-4 to **enable or disable the Class-A wiring configuration** of an NAC feature.
  The default switch position is OFF. To enable this feature turn the switch position to ON.
- Use DIP switch SW3-5 to **enable or disable the NFPA NAC** setting.
  The default switch position if OFF. To enable this setting turn the switch position to ON.
- DIP switches SW3-6, SW3-7 and SW3-8 are spare. No settings are linked to those switches.

6.3 Programming DACT

With the DACT facility, the control unit can use one or two telephone lines, or a single Ethernet connection, to call a supervising station (remote station or central station) and report a local alarm, trouble, or supervisory condition.

You can **disconnect** DACT by setting the DIP switch SW4-3 to On state. Configure the following settings through the PC tool only. Refer to the *PC programming manual* for more details.

- Setting Primary Phone Number
- Setting Primary Account Number
- Setting Secondary Phone Number
- Setting Secondary Account Number
- Test Report Time:

  This option specifies the time at which the Test Report Event is sent to the supervising station. Time is set in 24 hour, military format. For system software revision 01.00 and later, the test report message is sent at 6 hour intervals, beginning at the time entered. The time is set by the PC tool.
- AC Fail Delay
- IP Communicator
- CID Event Codes

6.4 Programming system options

The programming system options can be either of the following:

- Pre-defined modes of operation with a range of settings to choose. These type of system options define global operations such as the time and date format and door drop timers, for example.
- Options you can use to enable or disable a specific hardware module, such as the city circuit.

To edit system options, complete the following steps:

1. Turn off the control unit.
2. Open the control unit door to access the DIP switches on the system board.
3. Use DIP switches SW2, SW3 and SW4 to configure different system options.

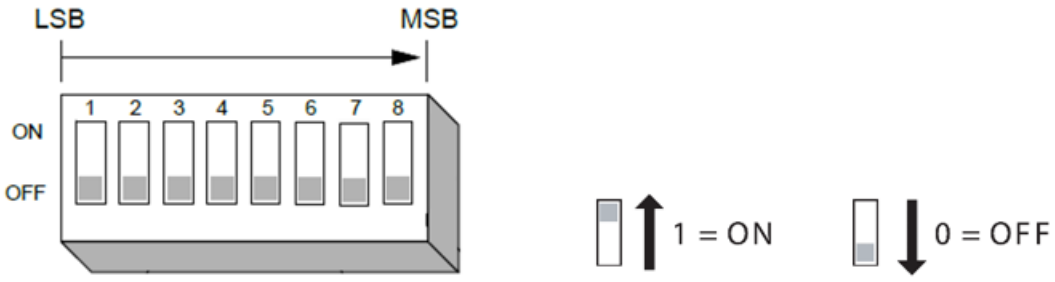

Figure 5: DIP switch settings

Table 13: System options configuration

System option	Switch name	Switch position	Operation
Alarm Silence/ Reset Inhibit – Enable / Disable	SW2-6	OFF	**Alarm Silence/ Reset Inhibit** feature is disabled - Press the **SILENCE** or **RESET** key to activate Alarm Silence/ Reset.
		ON	**Alarm Silence/ Reset Inhibit** feature is enabled - Silence/Reset inhibited for 1 min
Alarm Cutout Timer – Enable / Disable	SW2-7	OFF	**Alarm Cutout Timer** feature is disabled
		ON	**Alarm Cutout Timer** feature is enabled – NAC will automatically Silence after 20 mins
NAC Wiring – Class-A or Class-B	SW3-4	OFF	NAC is set for Class-B wiring style
		ON	NAC is set for Class-A wiring style
NFPA NAC – Enable / Disable	SW3-5	OFF	**NFPA NAC** feature is disabled – **SILENCE** key turns off horn and reset key turns off strobe
		ON	NFPA NAC feature is enabled – **SILENCE** key turns off both horn and strobe
Annunciator 1 – Enable / Disable	SW4-1	OFF	Annunciator is disabled
		ON	Annunciator is enabled
Annunciator 2 – Enable / Disable	SW4-2	OFF	Annunciator is disabled
		ON	Annunciator is enabled
DACT – Connect / Disconnect	SW4-3	OFF	DACT is connected
		ON	DACT is disconnected
City Circuit – Enable / Disable	SW4-4	OFF	City circuit module is disabled
		ON	City circuit module is enabled
Active Status Reminder – Enable / Disable	SW4-5	OFF	**Active Status Reminder** feature is enabled – Reminder is set to 8 hrs
		ON	**Active Status Reminder** feature is disabled – No reminder
AHJ Reset Feature – On / Off	SW4-6	OFF	AHJ Reset Feature is Off
		ON	AHJ Reset Feature is On
Depleted Battery Cutout – Enable / Disable	SW4-7	OFF	Depleted Battery Cutout is disabled
		ON	Depleted Battery Cutout is enabled
CPU Restart – Cold Start / Warm Start	SW4-8	OFF	Warm start power cycle is selected
		ON	Cold start power cycle is selected

Table 14: System options setting

Options	Settings	Options	Settings
Active Status Reminder	Use the Active Status Reminder option to set an interval and duration during which the system piezo reminds operators that a **FIRE**, **SUPV**, or **TBL** condition still exists. This is accomplished by sounding the front control unit tone-alert as well as flashing the LEDs for respective events. Choose ON or OFF. The default is ON. If you choose ON, the reminder interval is set to eight hours. Signal duration on until **ACK**; means acknowledge is required to silence the reminder.	Depleted Battery Cutout	Choose ON or OFF (default = OFF). This option selects the operation of the control unit if an alarm occurs during an AC power loss while a depleted battery trouble exists. If this option is selected, the system does the following: • An alarm does not initiate if the first alarm occurs after the depleted battery state has been detected. If the hardware jumper for depleted battery cutout has been clipped, the system shuts down 60 seconds after the depleted battery condition is detected. • An alarm continues to sound if the depleted battery state is reached after the system is already in the alarm state.
Alarm Silence/ Reset Inhibit	While the timer is counting down, the Alarm Silence/Reset Inhibit Timer prevents a system operator from using either the Alarm Silence or System Reset functions. When the inhibit timer expires, the system operator can silence or reset the control unit. Choose ON or OFF. The default is OFF. If you choose ON, inhibit timer is set to one minute.	Enable City Circuit	Choose ON or OFF (default = OFF). This option activates the control unit's city circuit module. If you use a city circuit in the system, you must select this option or the system reports a trouble. If you select this option and you do not connect the city module, the system reports a trouble. There is no other programming required for the city module. The city type is configured with jumpers on the city circuit board.
Alarm Cutout Timer	Use the Alarm Signal Cutout timer to set a duration for how long notification appliances sound after an alarm. Choose ON or OFF. The default is OFF. If you choose ON, the NAC silences after 20 minutes.	Disconnect DACT	Choose ON or OFF. The default setting is OFF. If you choose ON, it disconnects the DACT and causes a trouble.
Enable Annunciator	Choose ON or OFF. The default is OFF. This option enables communication with annunciators. If you enable an annunciator but you do not connect an annunciator to the control unit, the system reports a trouble.	AHJ Reset Feature	Choose ON or OFF. The default setting is OFF. When set to ON, the system resets if the current state of a device or point no longer causes an alarm. For example, the system resets if a device or circuit is in a **Trouble** state. When set to OFF, the system resets only if the current state of a device or point is normal.
NFPA NAC	Choose ON or OFF. The default is OFF. If you set this option to ON, both horns and strobes connected on the QALERT NACs turn off when you activate alarm silence. If you set this option to OFF, strobes turn off after the completion of a system reset.	Cold Start / Warm Start	Choose ON or OFF. The default is OFF. Off – Warm start; On – Cold start. This option sets the power cycle of the control unit.

6.5 Walk test

The operator can use the **WALK TEST** feature to test the functionality of the control unit's devices.

Press the **WALK TEST** key to activate the **WALK TEST** feature. This feature turns on the control unit piezo and the **WALK TEST** LED turns steady on and the **SYSTEM TROUBLE** LED starts flashing.

To disable the **WALK TEST** feature, press the key again. The LED turns off, indicating that the walk test is disabled.

The walk test options are configured as follows:

- **SIG:** Enables the NAC for signal activation of an alarm or trouble condition. To enable **WALK TEST** in this mode, press the **WALK TEST** key and to disable it press the **WALK TEST** key again.
- **SIL:** Disables the NACs so that the NACs do not sound during the walk test. To enable **WALK TEST** in this mode, press both the **WALK TEST** and the **SILENCE** keys together and to disable it press both the **WALK TEST** and the **SILENCE** keys again.

When the control unit is in **WALK TEST** mode, you can test the following features:

- **IDC alarm sensing:** To test the alarm capability of each detector, use a pole magnet or canned smoke to activate the initiating device. If the device is functioning correctly, either of the following actions occur:
  - If the walk test signaling option is set to **SIG**, the control unit pulses the device's zone number on the control unit's NACs. After seven seconds the control unit drops power to the zone, resetting the activated device. Subsequently activating another initiating device on the same zone sounds a double pulse on the NAC.
  - In both the silenced and signaled walk test options the control unit stores the walk test logs under TLOG.
- **IDC trouble sensing:** To test the control unit's ability to sense a trouble condition for each initiating device, disconnect one of the IDC wires at the detector. If the control unit senses the trouble condition correctly, either of the following actions occur:
  - If the walk test signaling option is set to **SIG**, the control unit activates the control unit's NACs for four seconds.
  - In both the silenced and signaled walk test options the control unit stores the walk test logs under TLOG.
- **Earth ground sensing:** To test the control unit's ability to detect an earth ground, short one of the control unit's circuits to earth. If the control unit senses the trouble condition correctly, either of the following actions occur:
  - If the walk test signaling option is set to **SIG**, the control unit activates the control unit's NACs for four seconds.
  - In both the silenced and signaled walk test options the control unit stores the walk test logs under TLOG.
- **NAC trouble sensing:** To test the control unit's ability to sense a trouble condition for each NAC, disconnect one of the NAC wires at the control unit. If the control unit senses the trouble condition correctly, either of the following actions occur:
  - If the walk test signaling option is set to **SIG**, the control unit activates the control unit's NACs for four seconds.
  - In both the silenced and signaled walk test options the control unit stores the walk test logs under TLOG.

6.6 Setting the time and date

Set the time and date using the PC tool only. Refer to the *PC programming manual* for more details.

6.7 Uploading and downloading job files

Upload or download files to transfer the control unit's job files between a service PC and the control unit.

The term upload refers to transferring a job file from the control unit to a PC. The term download refers to moving a job file from the PC to the control unit.

To start transfer from the control unit, press the **ACK** and **SILENCE** key together for five seconds.

6.8 Restarting the CPU

To start the CPU using different memory configurations, you can use the warm or cold start functionality.

Warm start: Clears the alarm verification tally trouble and restarts the control unit, but preserves the control unit's non-volatile memory, including time and date information, historical logs, and all currently disabled points.

Cold start: Re-initializes the control unit's non-volatile memory, clears the historical logs and disabled points, but saves the time and date information.

To begin a **warm start**, complete the following steps:

1. Make sure the DIP switch SW4-8 is set to the off position.
2. Perform the power cycle or press the SW0 switch on the system board to restart the control unit in **warm restart** mode.

To begin a **cold start**, complete the following steps:

1. Change the position of DIP switch SW4-8 to the on state.
2. Perform the power cycle or press the SW0 switch on the system board to restart the control unit.
3. After the control unit restarts, perform the power cycle or press the SW0 switch again to restart the control unit in **cold restart** mode.
4. After the cold restart is done, set the switch SW4-8 back to the off state and perform the power cycle or press the SW0 switch to restart the control unit and set it back to **warm restart** mode.

7 Troubleshooting

Table 15: System board trouble LEDs

Sr. No.	Trouble list	Description	Indication on front panel	Indication on diagnosis LED				
				LED 1	LED 2	LED 3	LED 4	LED 5
1	NAC open	The NAC line wiring is open, or the end of line resistor is not connected.	**SYSTEM TROUBLE** LED flashing	OFF	OFF	OFF	OFF	ON
2	NAC short	The NAC positive and negative line has shorted.		OFF	OFF	OFF	ON	OFF
3	NAC Overcurrent	Overcurrent condition is detected on the NAC circuit (only when in alarm).		OFF	OFF	OFF	ON	ON
4	NAC Disable	The NAC is disabled from the DIP switches.		OFF	OFF	ON	OFF	OFF
5	Low Battery	The battery voltage is less than 22 V.	Both **SYSTEM TROUBLE** and **BATTERY TROUBLE** LED flashing	OFF	OFF	ON	OFF	ON
6	Battery Depleted	The battery voltage is less than 19 V.		OFF	OFF	ON	ON	OFF
7	Low Battery Cutout	When the Low Battery Cutout option is enabled from the DIP switches, Depleted Battery trouble is set and system is battery operated, then this trouble shall be set.		OFF	OFF	ON	ON	ON
8	Charger Trouble	Voltage is less than 24 V and charger is off.		OFF	ON	OFF	OFF	OFF
9	AUX Power Trouble	The battery voltage is less than 18 V.		OFF	ON	OFF	OFF	ON
10	DACT Phone Line 1 Trouble	The control unit is unable to communicate by the DACT line 1.	**SYSTEM TROUBLE** LED flashing	OFF	ON	OFF	ON	OFF
11	DACT Phone Line 2 Trouble	The control unit is unable to communicate by the DACT line 2.		OFF	ON	OFF	ON	ON
12	Central Station Communication Trouble	2008 detects Central Station Communication Trouble when it is unable to communicate to the central station for 15 minutes.		OFF	ON	ON	OFF	OFF
13	DACT Disable	The DACT is disabled from the DIP switches.		OFF	ON	ON	OFF	ON
14	City 1 Trouble	The city line 1 is disconnected; or there is a mismatch in the system option and physical status.		OFF	ON	ON	ON	OFF
15	City 2 Trouble	The city line 2 is disconnected; or there is a mismatch in the system option and physical status.		OFF	ON	ON	ON	ON
16	AV Tally Exceeded	Alarm verification fails 10 times.		ON	OFF	OFF	OFF	OFF
17	Event Queue Overflow	The communication is lost with the LCD annunciator and the number of events exceed the maximum number of events in the queue (255), or the events occur so fast the queue is overflowed before processing.	**SYSTEM TROUBLE** LED flashing	ON	OFF	OFF	OFF	ON
18	Walk Test Active	WALK TEST is enabled.		ON	OFF	OFF	ON	OFF
19	Card 4 Fail	Communication is lost on card 4 for more than 10 seconds; or if card 4 is configured but not connected to the control unit.		ON	OFF	OFF	ON	ON
20	Card 5 Fail	Communication is lost on card 5 for more than 10 seconds; or if card 5 is configured but not connected to the control unit.		ON	OFF	ON	OFF	OFF
21	Extra Card	The annunciator connected to the control unit but not configured yet.		ON	OFF	ON	OFF	ON
22	Time and date not set	Time and date is not configured.		ON	OFF	ON	ON	OFF
23	Positive Ground Fault	Positive ground fault is present on the control unit.		ON	OFF	ON	ON	ON
24	Negative Ground Fault	Negative ground fault is present on the control unit.		ON	ON	OFF	OFF	OFF
25	Configuration TRBL	Control unit configuration is set from spare DIP switches.		ON	ON	OFF	OFF	ON
26	EEPROM WRITE FAIL	EEPROM write fail.		ON	ON	OFF	ON	OFF

Note:

1. The LEDs indicate one trouble at a time.
2. The LEDs indicate the latest trouble, after that trouble is cleared it will show the next trouble. For example, if there are a total of three troubles in the sequence of:

- NAC short (oldest)
- Extra card
- Charger trouble (latest)

The LEDs first indicate the latest trouble: the charger trouble. After you clear the trouble, the LEDs indicate the extra card trouble and then the NAC short trouble.

3. All LEDs remain OFF if the system is normal.

8 DIP switch setting

8.1 DIP switch SW1

1. IDC function type for Zone 1 can be set using DIP switches SW1-1 and SW1-2.
2. IDC function type for Zone 2 can be set using DIP switches SW1-3 and SW1-4.
3. IDC function type for Zone 3 can be set using DIP switches SW1-5 and SW1-6.
4. IDC function type for Zone 4 can be set using DIP switches SW1-7 and SW1-8.
5. See the following tables for switch setting.

Table 16: DIP switch SW1 to SW8 settings

SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8	Description
0	0	0	0	0	0	0	0	IDC function type for all 4 zones: FIRE (Default)
0	1	0	1	0	1	0	1	IDC function type for all 4 zones: SUPV
1	0	1	0	1	0	1	0	IDC function type for all 4 zones: VSMOKE
1	1	1	1	1	1	1	1	IDC function type for all 4 zones: WSO

Note: You can assign different function types to each zone using their respective DIP switches.

8.2 DIP switch SW2

1. NAC function type for NAC 1 can be set using DIP switches SW2-1 and SW2-2.
2. NAC coding pattern for NAC 1 can be set using DIP switches SW2-3, SW2-4 and SW2-5.
3. Silence/ Reset Inhibit feature can be enable or disable using DIP switch SW2-6.
4. Alarm Cutout Timer feature can be enable or disable using DIP switch SW2-7.
5. NAC 1 can be enable or disable using DIP switch SW2-8.
6. See the following tables for switch setting.

Table 17: DIP switch SW2-1 and SW2-2 settings

SW2-1	SW2-2	Description
0	0	NAC function type for NAC 1: QALERT (Default)
0	1	NAC function type for NAC 1: SSIG
1	0	NAC function type for NAC 1: RSIG
1	1	SPARE

Table 18: DIP switch SW2-3, SW2-4 and SW2-5 settings

SW2-3	SW2-4	SW2-5	Description
0	0	0	NAC coding pattern for NAC 1: Temporal (Default)
0	0	1	NAC coding pattern for NAC 1: Sync
0	1	0	NAC coding pattern for NAC 1: Steady
0	1	1	NAC coding pattern for NAC 1: 20 BPM
1	0	0	NAC coding pattern for NAC 1: 120 BPM
1	0	1	SPARE
1	1	0	SPARE
1	1	1	SPARE

Table 19: DIP switch SW2-6 settings

SW2-6	Description
0	Silence/ Reset Inhibit feature is disabled (default)
1	Silence/ Reset Inhibit feature is enabled

Table 20: DIP switch SW2-7 settings

SW2-7	Description
0	Alarm Cutout Timer feature is disabled (default)
1	Alarm Cutout Timer feature is enabled

Table 21: DIP switch SW2-8 settings

SW2-8	Description
0	NAC 1 is enabled (default)
1	NAC 1 is disabled

8.3 DIP switch SW3

1. You can select the EOLR value for NAC 1 by using DIP switches SW3-1, SW3-2 and SW3-3.
2. You can enable or disable Class-A wiring configuration for NAC 1 using DIP switch SW3-4.
3. You can enable or disable the NFPA NAC feature using DIP switch SW3-5.
4. DIP switches SW3-6, SW3-7 and SW3-8 are spare for future settings.
5. See the following tables for switch setting.

Table 22: DIP switch SW3-1, SW3-2 and SW3-3 settings

SW3-1	SW3-2	SW3-3	Description
0	0	0	EOLR value for NAC 1 is set to 10 KΩ (default)
0	0	1	EOLR value for NAC 1 is set to 3.9 KΩ
0	1	0	EOLR value for NAC 1 is set to 4.7 KΩ
0	1	1	EOLR value for NAC 1 is set to 5.1 KΩ
1	0	0	EOLR value for NAC 1 is set to 5.6 KΩ
1	0	1	EOLR value for NAC 1 is set to 15 KΩ
1	1	0	SPARE
1	1	1	SPARE

Table 23: DIP switch SW3-4 settings

SW3-4	Description
0	Class-A wiring configuration for NAC 1 is disabled (default)
1	Class-A wiring configuration for NAC 1 is enabled

Table 24: DIP switch SW3-5 settings

SW3-5	Description
0	NFPA NAC feature is disabled (default)
1	NFPA NAC feature is enabled

Table 25: DIP switch SW3-6, SW3-7, SW3-8 settings

SW3-6	SW3-7	SW3-8	Description
0	0	0	SPARE

8.4 DIP switch SW4

1. You can enable or disable annunciators using DIP switches SW4-1 and SW4-2.
2. You can connect or disconnect the DACT using DIP switch SW4-3.
3. You can enable or disable the city circuit module using DIP switch SW4-4.
4. You can enable or disable the **Active Status Reminder** feature using DIP switch SW4-5.
5. You can turn the **AHJ Reset** feature on or off using DIP SW4-6.
6. You can enable or disable the **Depleted Battery Cutout** feature using DIP switch SW4-7.
7. You can select the **Warm start** or **Cold start** power cycle using DIP switch SW4-8.
8. See the following tables for switch setting.

Table 26: DIP switch SW4-1 settings

SW4-1	Description
0	Annunciator 1 is disabled (Default)
1	Annunciator is enabled

Table 27: DIP switch SW4-2 settings

SW4-2	Description
0	Annunciator 2 is disabled (default)
1	Annunciator is enabled

Table 28: DIP switch SW4-3 settings

SW4-3	Description
0	DACT is connected (default)
1	DACT is disconnected

Table 29: DIP switch SW4-4 settings

SW4-4	Description
0	City circuit module is disabled (default)
1	City circuit module is enabled

Table 30: DIP switch SW4-5 settings

SW4-5	Description
0	**Active Status Reminder** feature is enabled (default)
1	**Active Status Reminder** feature is disabled

Table 31: DIP switch SW4-6 settings

SW4-6	Description
0	**AHJ Reset** feature is off (default)
1	**AHJ Reset** feature is on

Table 32: DIP switch SW4-7 settings

SW4-7	Description
0	**Depleted Battery Cutout** feature is disabled (default)
1	**Depleted Battery Cutout** feature is enabled

Table 33: DIP switch SW4-8 settings

SW4-8	Description
0	**Warm start** power cycle is selected (default)
1	**Cold start** power cycle is selected

9 Appendix A: CID points default values

Table 34: CID points default values

Description	CID points	Event code
IDC 1 through IDC 4	GRP:01 ID:001 through GRP:01 ID:004	Based on device function type
NAC 1	GRP:01 ID:201	*
Aux relay 1	GRP:01 ID:203	*
Aux relay 2	GRP:01 ID:204	*
Aux relay 3	GRP:01 ID:205	*
AC power	GRP:01 ID:207	Trouble 301
Aux power	GRP:01 ID:208	Trouble
Positive earth fault	GRP:01 ID:209	Trouble 310
Negative earth fault	GRP:01 ID:210	Trouble 310
Low battery	GRP:01 ID:211	Trouble 302
Battery depleted	GRP:01 ID:212	Trouble
Low battery cutout	GRP:01 ID:213	Trouble
Charger trouble	GRP:01 ID:214	Trouble
Manual test report	GRP:01 ID:233	Test 601
DACT phone line 1 trouble	GRP:01 ID:233	Trouble 351
DACT phone line 2 trouble	GRP:01 ID:234	Trouble 352
6 hr test report	GRP:01 ID:235	Test 602
6 hr test report, off normal	GRP:01 ID:235	Test 608
Extra card	GRP:01 ID:236	Trouble
External comm trouble	GRP:01 ID:237	Trouble
Cold start	GRP:01 ID:239	Trouble
Warm start	GRP:01 ID:240	Trouble
Time and date not set	GRP:01 ID:242	Trouble
List overflow	GRP:01 ID:244	Trouble
City disconnect	GRP:01 ID:245	Trouble
City 1 trouble	GRP:01 ID:246	Trouble
City 2 trouble	GRP:01 ID:247	Trouble
Control bypass	GRP:01 ID:248	Trouble
Elevator bypass	GRP:01 ID:249	Trouble
Door bypass	GRP:01 ID:250	Trouble
AV tally exceeded	GRP:01 ID:251	Trouble
Walk test active	GRP:01 ID:252	Trouble
Programming mode	GRP:01 ID:255	Trouble
Event queue overflow	GRP:01 ID:256	Trouble