OPERATIONAL NOTES

POWER SUPPLY

All output off 47mA.
common TRBL relay energized
1 LED illuminated

All outputs on 197mA NOTE: Audible device not included.
common TRBL relay not energized
8 zones in alarm
13 relays energized
12 LEDs illuminated

COMMON TROUBLE ANNUNCIATOR RELAY

This relay is used in an inverse logic manner. If no trouble conditions exist, it is energized. If any trouble condition exists, it is de-energized. The NO contacts are used as if they were the NC contacts, and the NC contacts are used as if they were the NO contacts. This allows a power failure to appear as a trouble (relay de-energizes)

SIL/TEST PUSHBUTTON

When the SIL/TEST pushbutton is pressed, the audible device will be silenced, and the following actions will be performed, depending on the positions of SW1 & SW2.

SW1 selects an option, SW2 determines the zone to which the option applies.

SW1 = 0 = SOUND AUDIBLE DEVICE
SW1 = 1 = RELOAD from EEPROM
SW1 = 2 = LOAD DEFAULTS
SW1 = 3 = LOAD DEFAULTS & WRITE THEM TO EEPROM
SW1 = 4 = SUSPEND ZONE (ZONE = SW2)
SW1 = 5 = ACTIVATE ZONE (ZONE = SW2)
SW1 = 6 = SEND ALARM CODE ON LOOP (ZONE = SW2)
SW1 = 7 = SEND TROUBLE CODE ON LOOP (ZONE = SW2)
SW1 = 8 = OPERATE ANNUNCIATORS (ZONE = SW2)
SW1 = 9 = Not used

If SW1 = 0-3, then SW2 is not used.
SW2 = 0 through 9 = Not used

If SW1 = 4-7, then SW2 selects an input zone.

SW2 = 0 = Not used
SW2 = 1 = Zone 1
SW2 = 2 = Zone 2
SW2 = 3 = Zone 3
SW2 = 4 = Zone 4
SW2 = 5 = Zone 5
SW2 = 6 = Zone 6
SW2 = 7 = Zone 7
SW2 = 8 = Zone 8
SW2 = 9 = Local Energy zone

If SW1 = 8, then SW2 selects the annunciator outputs.

SW2 = 0 = common TRBL (LED & relay)
SW2 = 1 = Zone 1 (LED & relay)
SW2 = 2 = Zone 2 (LED & relay)
SW2 = 3 = Zone 3 (LED & relay)
SW2 = 4 = Zone 4 (LED & relay)
SW2 = 5 = Zone 5 (LED & relay)
SW2 = 6 = Zone 6 (LED & relay)
SW2 = 7 = Zone 7 (LED & relay)
SW2 = 8 = Zone 8 (LED & relay)
SW2 = 9 = Local Energy (LED & relay)

Sound Audible Device

The audible device may be tested by setting SW1 = 0 and pressing the SIL/TEST pushbutton. The audible device will sound for as long as the SIL/TEST pushbutton is pressed.

Configuration and Defaults

The configuration information that is downloaded from a PC is stored in the EEPROM memory. The factory default configuration is embedded in the software program.

When the uP is reset (power-up or RESET pushbutton), the configuration stored in the EEPROM memory is checked for corruption. If no corruption is detected then the uP memory is loaded from the EEPROM memory. If the EEPROM memory is found to be corrupted then the uP memory is loaded with the factory default configuration.

The uP can be manually forced to reload its configuration memory from EEPROM by setting SW1 = 1 and pressing the SIL/TEST pushbutton. Since the uP is not reset by this operation, the "run time" data stored in the uP memory is not lost. This may be useful for troubleshooting and/or production testing.

The uP can be manually forced to reload the factory default values into its configuration memory by setting SW1 = 2 and pressing the SIL/TEST pushbutton. Note that loading the factory default values into uP memory does not alter the contents of the EEPROM memory, and the uP memory may be reloaded from EEPROM memory again at any time.

Setting SW1 = 3 and pressing the SIL/TEST pushbutton will reload the factory default values (embedded in software) into the uP memory, and will store them in the EEPROM memory. The original EEPROM memory contents will be over-written.

Suspend Zone(s)

Any input zone may be manually suspended by setting SW1 = 4 and pressing the SIL/TEST pushbutton. The input zone to be suspended is selected by SW2.

If SW2 = 0 then all input zones will be activated.

If SW2 = 1 through 8, then the selected zone will be suspended.

1. The red LED for the selected zone will extinguish.
2. The relay for the selected zone will be de-energized.
3. The selected zone will not operate the common ALARM LED.
4. The selected zone will not operate the common ALARM relay.
5. The selected zone will operate the common TRBL LED.
6. The selected zone will operate the common TRBL relay.
7. A Trouble Code may be transmitted (configuration dependent).

If SW2 = 9, then the Local Energy zone will be suspended.

1. The red Local Energy LED will extinguish.
2. The Local Energy relay will be de-energized.
3. The Local Energy zone will not operate the common ALARM LED.
4. The Local Energy zone will not operate the common ALARM relay.
5. The Local Energy zone will operate the common TRBL LED.
6. The Local Energy zone will operate the common TRBL relay.
7. A Trouble Code may be transmitted (configuration dependent).

A zone can be suspended only by means of the SIL/TEST pushbutton. It cannot be suspended by a download from a PC. See **Disabled**.

A suspended input zone will not respond to any status changes (alarm, trouble, restore).

A suspended input zone will remain suspended until it is manually activated.

If the uP is reset (power-up or RESET pushbutton), then all input zones are activated, i.e. all "zone suspends" are cleared.

Activate Zone(s)

Any input zone may be manually activated by setting SW1 = 5 and pressing the SIL/TEST pushbutton. The input zone to be activated is selected by SW2.

If SW2 = 0 then all input zones will be activated.

If SW2 = 1 through 8, then the selected zone will be activated.

If SW2 = 9, then the Local Energy zone will be activated.

Alarm Simulation

An alarm condition may be simulated for any input zone by setting SW1 = 6 and pressing the SIL/TEST pushbutton. The input zone to be simulated is selected by SW2.

If SW2 = 0, then no input zone will be simulated. No CODE will be transmitted. The following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The red common ALARM LED will illuminate.
2. The common ALARM relay will operate.

If SW2 = 1 through 8, then an alarm condition will be simulated for the selected input zone. The alarm CODE assigned to the selected input zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the "transmit" configuration parameters assigned to the selected input zone. The following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The red LED for the selected input zone will illuminate.
2. The annunciator relay for the selected input zone will operate.
3. The red common ALARM LED will illuminate.
4. The common ALARM relay will operate.

If SW2 = 9, then an alarm condition will be simulated for the Local Energy zone.

The alarm CODE assigned to the Local Energy zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the "transmit" configuration parameters assigned to the Local Energy zone. The following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The red Local Energy LED will illuminate.
2. The Local Energy relay will operate.
3. The red common ALARM LED will illuminate.
4. The common ALARM relay will operate.

Trouble Simulation

A trouble condition may be simulated for any input zone by setting SW1 = 7 and pressing the SIL/TEST pushbutton. The input zone to be simulated is selected by SW2.

If SW2 = 0, then no input zone will be simulated. No CODE will be transmitted. The following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The yellow common TRBL LED will illuminate.
2. The common TRBL relay will operate.

If SW2 = 1 through 8, then a trouble condition will be simulated for the selected input zone. The trouble CODE assigned to the selected input zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the "transmit" configuration parameters assigned to the selected input zone. The following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The yellow common TRBL LED will illuminate.
2. The common TRBL relay will operate.

If SW2 = 9, then a trouble condition will be simulated for the Local Energy zone. The trouble CODE assigned to the Local Energy zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the "transmit" configuration parameters assigned to the Local Energy zone. The following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The yellow common TRBL LED will illuminate.
2. The common TRBL relay will operate.

Annunciator Tests

The annunciator outputs may be manually operated by setting SW1 = 8 and pressing the SIL/TEST pushbutton. The annunciator output to be operated is selected by SW2.

If SW2 = 0 then the following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The yellow common TRBL yellow LED will illuminate.
2. The common TRBL relay will operate.

If SW2 = 1 through 8, then the following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The red LED for the selected zone will illuminate.
2. The annunciator relay for the selected zone will operate.
3. The red common ALARM LED will illuminate.
4. The common ALARM relay will operate.

If SW2 = 9, then the following conditions will be established for as long as the SIL/TEST pushbutton is pressed.

1. The red Local Energy LED will illuminate.
2. The Local Energy relay will operate.
3. The red common ALARM LED will illuminate.
4. The common ALARM relay will operate.

INPUT DEBOUNCING

Events on the input zones, the Local Energy zone, and the SIL/TEST pushbutton are debounced for one (1) second.

INPUT ZONES

The input zones will detect an alarm condition when the input voltage exceeds 75% of the unit's power source voltage. For example:

	Alarm Trip Voltage	Trouble Trip Voltage
Unit power source = 24VDC	6.0 VDC	18.0VDC
Unit power source = 30VDC	7.5 VDC	22.5VDC

Maximum external resistance = 3.333K

Alarm

If an input zone is put into an alarm condition, the alarm CODE assigned to the input zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the (transmit) configuration parameters assigned to the input zone. The following conditions will be established for as long as the input zone is in an alarm condition:

1. The red LED for the selected input zone will illuminate.
2. The annunciator relay for the selected input zone will operate.
3. The red common ALARM LED will illuminate.
4. The common ALARM relay will operate.

Trouble

If an input zone is put into an trouble condition, the trouble CODE assigned to the input zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the (transmit) configuration parameters assigned to the input zone. The following conditions will be established for as long as the input zone is in a trouble condition:

1. The yellow common TRBL LED will illuminate.
2. The common TRBL relay will operate.

Suspended

If an input zone is suspended, the trouble CODE assigned to the input zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the (transmit) configuration parameters assigned to the input zone. The following conditions will be established for as long as the input zone is suspended:

1. The red LED for the selected zone will extinguish.
2. The relay for the selected zone will be de-energized.
3. The selected zone will not operate the common ALARM LED.
4. The selected zone will not operate the common ALARM relay.
5. The selected zone will operate the common TRBL LED.
6. The selected zone will operate the common TRBL relay.

A zone can be suspended only by means of the SIL/TEST pushbutton. It cannot be suspended by a download from a PC. See **Disabled**.

A suspended input zone will not respond to any status changes (alarm, trouble, restore).

A suspended input zone will remain suspended until it is manually activated.

If the uP is reset (power-up or RESET pushbutton), then all input zones are activated, i.e. all "zone suspends" are cleared.

Disabled

If an input zone is disabled, it will behave as if the input is in a normal condition, i.e., no CODEs are transmitted, no LEDs are operated, and no relays are operated.

Input zones can only be disabled (or activated) by a setting in the configuration (downloaded from a PC). Zones cannot be disabled (or activated) without downloading. This setting is intended for zones that will not be used in the application.

LOCAL ENERGY INPUT ZONE

The Local Energy input zone will detect an alarm condition when the Local Energy input voltage exceeds 80% of the unit's power source voltage. For example:

	Trip Voltage	Trip Current
Unit power source = 24VDC	19.8 VDC	15mA
Unit power source = 30VDC	24.7 VDC	24mA

Alarm

If the Local Energy input zone is put into an alarm condition, the alarm CODE assigned to the Local Energy input zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the (transmit) configuration parameters assigned to the Local Energy input zone. The following conditions will be established for as long as the Local Energy input zone is in an alarm condition:

1. The red Local Energy LED will illuminate.
2. The Local Energy relay will operate.
3. The red common ALARM LED will illuminate.
4. The common ALARM relay will operate.

Trouble

The Local Energy input zone does not have an input trouble condition, however, a trouble CODE may be transmitted if the Local Energy input zone is suspended.

Suspended

If the Local Energy input zone is suspended, the trouble CODE assigned to the Local Energy input zone will be transmitted on the municipal loop and/or Emergency Ground Return circuit, using the (transmit) configuration parameters assigned to the Local Energy input zone. The following conditions will be established for as long as the

Local Energy input zone is suspended:

1. The red Local Energy LED will extinguish.
2. The Local Energy relay will be de-energized.
3. The Local Energy zone will not operate the common ALARM LED.
4. The Local Energy zone will not operate the common ALARM relay.
5. The Local Energy zone will operate the common TRBL LED.
6. The Local Energy zone will operate the common TRBL relay.

If the Local Energy input zone is suspended, it will not respond to any status changes (alarm, trouble, restore).

If the Local Energy input zone is suspended, it will remain suspended until it is manually activated, or the uP is reset. If the uP is reset (power-up or RESET pushbutton), then all input zones are enabled, i.e. the Local Energy "zone suspend" is are cleared.

Disabled

If the Local Energy zone the is disabled, it will behave as if the the Local Energy input zone is in a normal condition, i.e., no CODEs are transmitted, no LEDs are operated, and no relays are operated.

The Local Energy zone can only be disabled (or activated) by a setting in the configuration (downloaded from a PC). It cannot be disabled (or activated) without downloading. This setting is intended for applications that will not use the Local Energy zone.

AUDIBLE DEVICE

The audible device will sound when an input zone (including the Local Energy input zone) enters an alarm, supervisory, or trouble condition. It will continue to sound until the input zone restores, or the SIL/TEST pushbutton is pressed.