

Alarm Annunciator



Features

- 12 or 20 windows. Replaceable LED modules
- 11 Alarm Sequences as per ISA-18.1 standard
- Each channel/window fully field programmable
- RS232 or RS485 MODBUS-RTU communication
- Repeat relay for each window and multifunction relays
- Sleep or unattended mode
- Auto-silence and auto-acknowledge

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1.0 Introduction

Annunciator is used to call attention to abnormal process conditions. It includes individual illuminated visual displays that are labelled to identify the particular monitored variable and audible devices. It may also call attention to the return to normal of the process conditions.

Visual displays usually flash to indicate abnormal process conditions. Manual operation of pushbuttons are usually required to silence audible devices and acknowledge new alarms. Visual displays usually change from flashing to on when alarms are acknowledged.

Additional types of flashing can indicate that process conditions have returned to normal or which of a group of alarm points operated first. Additional pushbuttons can be used to acknowledge alarms that return to normal, to reset first out indications, and to test annunciator lamps and circuits.

The Mikro AN1xx Series Alarm Annunciator system is designed to perform all the standard required functions of an annunciator with a high degree of reliability. It also has the flexibility of configuring settings via pushbuttons or a PC.

These system includes a compact casing, removable windows front panel with engraved label, replaceable LED module, integrated pushbuttons, status LED, internal buzzer, opto-isolated inputs and relay outputs.

2.0 System Description and Features

2.1 Features

AN1xx Annunciator includes a compact casing, removable windows front panel with engraved label, replaceable LED module, integrated pushbuttons, status LED, internal buzzer, opto-isolated inputs and relay outputs.

Windows (visual display) flash and internal buzzer (audible devices) to indicate abnormal process conditions. Manual operation of pushbuttons are usually required to silence audible devices and acknowledge new alarms. Windows usually change from flashing to on when alarms are acknowledged.

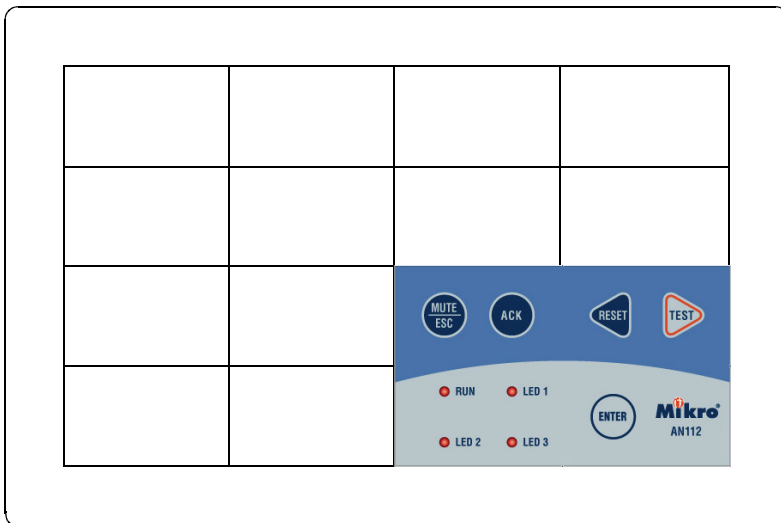


Figure 2.1: Front layout of 12 windows annunciator.

- 12, 20 windows. Replaceable super-bright LED modules, with choice of amber or red illumination
- 11 Alarm Sequences as per ISA-18.1 standard
- Each channel/window fully field programmable, either from front panel built-in pushbutton or using PC
- Option of either RS232 or RS485 modbus-RTU communication. User-friendly configuration software will be supplied free of charge.
- Repeat relay for each window as well as numerous configurable multifunction output relays for connection to external equipment to form alarm management system
- Sleep or unattended mode feature is available, for stations not permanently manned
- Auto-silence and auto-acknowledge features, with delay settable from 1 – 255 s

2.2 Pushbuttons and Status LED

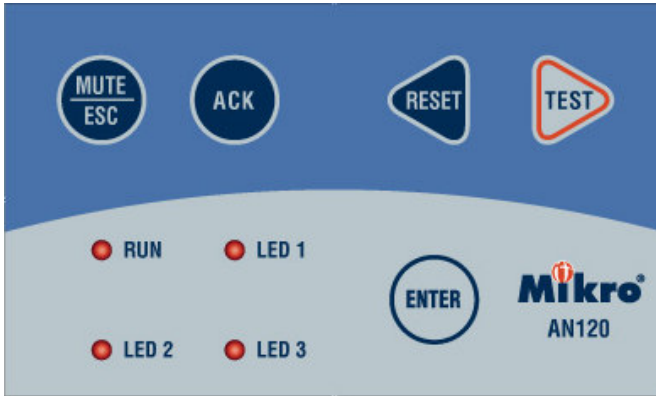






Figure 2.2: Front Panel of Annunciator

RUN LED on to indicate normal operation mode. It slow blinks during sleep/unattended mode. LED1, LED2 and LED3 are used during soft settings configuration mode using pushbuttons.

There are 5 pushbuttons available:


- i)  **Mute/Esc:** To off the alarm audible device. This avoids continuing noise during new alarm sequence state while retaining the flashing visual displays for reviewing or logging. It also off the ringback audible output.
- ii)  **Acknowledge:** To acknowledge new alarms. The audible device is off and the visual displays change to acknowledged sequence.
- iii)  **Reset/Left Arrow:** To reset the sequence to the normal after acknowledge when the process condition returns to normal. Auto reset sequences do not required reset pushbutton.

Also used in soft settings configuration mode as Left Arrow.
- iv)  **Test/Right Arrow:** To perform diagnosis manually.

Visual test: When pressed down, all the visual display will on, when released, current alarm state is resumed.

Operational test: When pressed and hold for more than **5** seconds, the system simulates simultaneous abnormal conditions on all inputs points. Release of the button simulates return to normal. Operation of pushbuttons are required to complete the sequence.

Also used in soft settings configuration mode as Right Arrow.

- v)  **Enter:** To enter soft settings configuration mode. To confirm setting value.

First out reset: Available as field contact input. Used only on F3A/F3M sequences. To change the first out visual displays to be the same as subsequent visual displays.

Pushbutton can be **Disabled** by shorting Key Enable Contact Input to common.

2.3 Power Up

Upon power up All the display will on and internal buzzer will sound for 1 second as self test. Self supervisory relay will turn on if no internal error. RUN LED turns on to indicate normal operation mode.

Power up in last state: During power on, the unit will recall the last state before power down. The states are visual display, audible device status and the output relay status.

2.4 Sleep/Unattended Mode

By closing Sleep contact input, sleep/unattended mode is activated.

In this mode, Run LED Slow blinks. Visual display and audible is off. Relay outputs and ringback audible device are still active. The detection of alarm is still active in the background.

2.5 Relay Outputs

There are few output relays available:

i) Individual contact follower. These outputs follow state of input contacts.

ii) Auxiliary outputs (AUX1-AUX3). These multifunction outputs are shared among all the alarm points and can be configured as:

- a) Audible device follower. Output on when new alarm, off when mute, or acknowledge pressed. (independent of internal buzzer setting)
- b) Visual device follower - Acknowledge off. Output on when new alarm, off when acknowledge pressed. (used to indicate that uninspected new alarm available)
- c) Visual device follower. Output on when new alarm, off when all window points that relate to this output have reset (off).
- d) Contact follower. Output on when any alarm point that enables this output abnormal. (disabled for follower sequence)

These outputs are active only when enabled by individual alarm point. An output can be enabled by few alarm points to enabled alarm group indication.

iv) Self supervisory output (SSP). This output on when the annunciator is on. This output off when detects internal fault or failure.

v) Ringback audible device (RBCK). This audible output is available for ringback sequences. It is on when any alarm point has a ringback state.

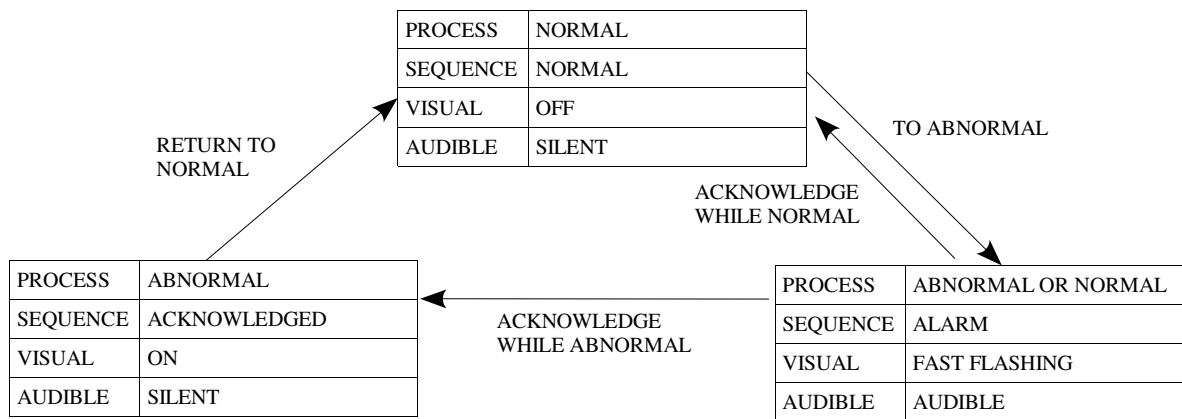
3.0. Alarm Sequences

The following alarm sequences are available:

3.1 Follower

No alarm sequence is related. The Visual display will on when its input contact abnormal, off when input contact normal.

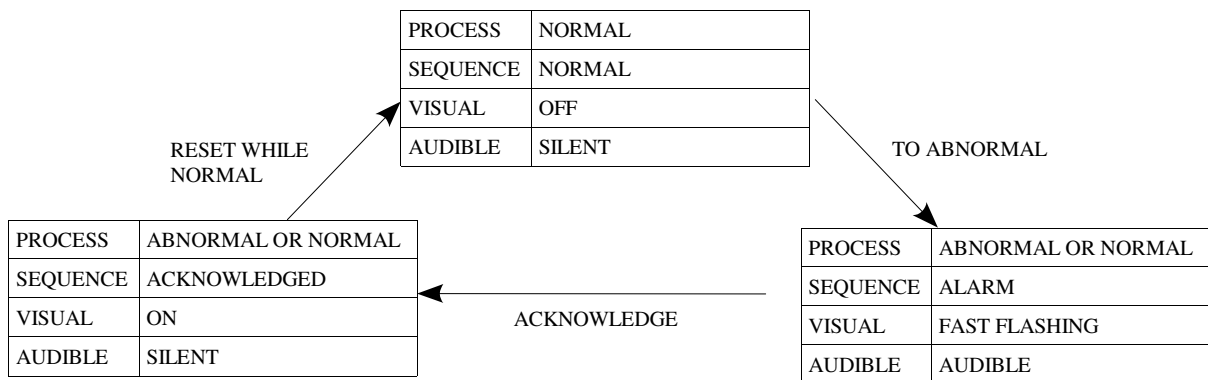
3.2 Sequence A, Automatic Reset



Sequence features

1. Acknowledge, Test, and Mute pushbuttons.
2. Audible alarm can be silenced by pressing Mute pushbutton.
3. The audible device is silenced and flashing stops when acknowledged
4. Automatic reset of acknowledged alarm when process conditions return to normal.
5. Operational test.

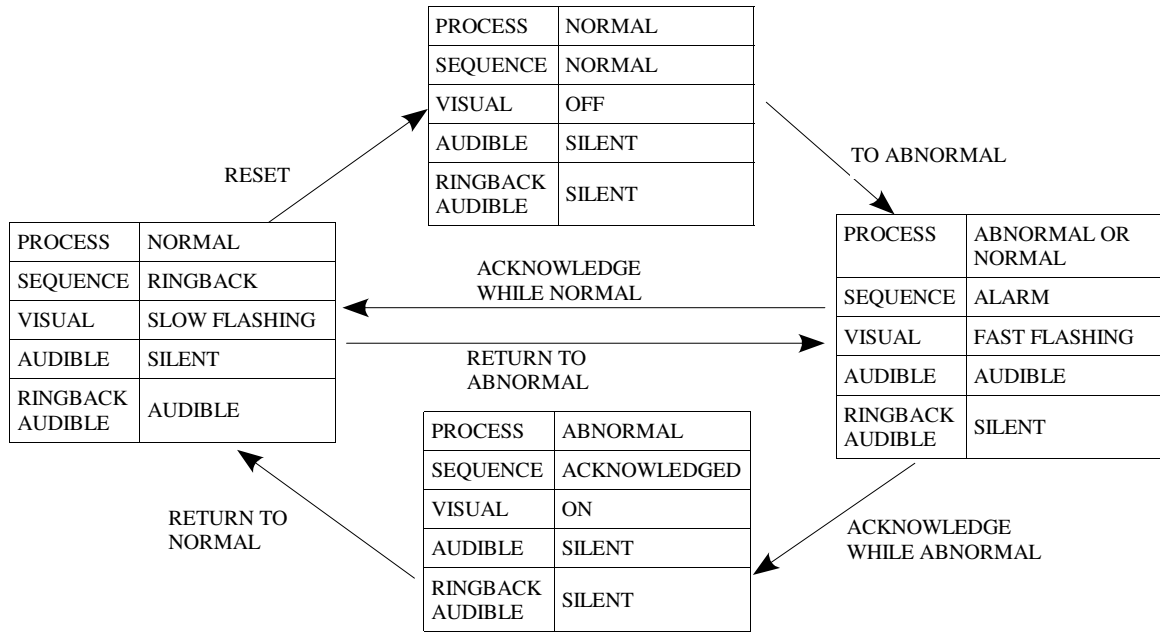
3.3 Sequence M, Manual Reset



Sequence features

1. Acknowledge, Reset, Test, and Mute pushbuttons.
2. Audible alarm can be silenced by pressing Mute pushbutton.
3. The audible device is silenced and flashing stops when acknowledged
4. Manual reset of acknowledged alarm when process conditions return to normal.
5. Operational test.

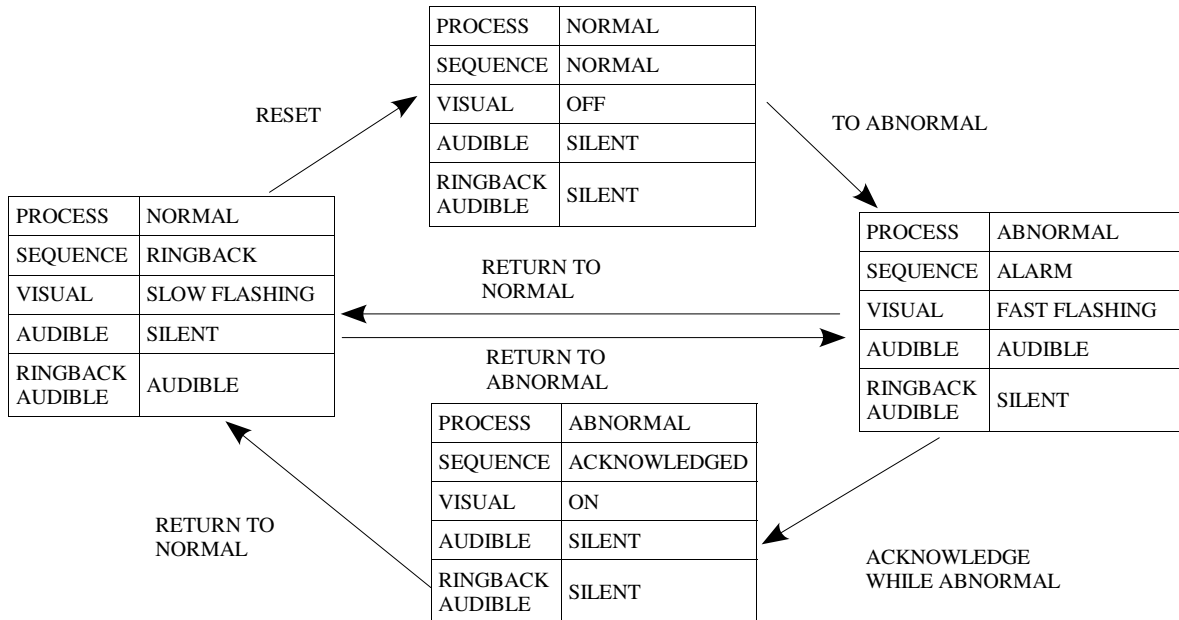
3.4 Sequence R, Ringback



Sequence features

1. Acknowledge, Reset, Test, and mute pushbuttons.
2. Alarm and ringback audible devices.
3. Audible alarm or ringback alarm can be silenced by pressing Mute pushbutton.
4. Ringback visual and audible alarm when process conditions return to normal.
5. Manual reset of ringback indications.
6. Operational test.

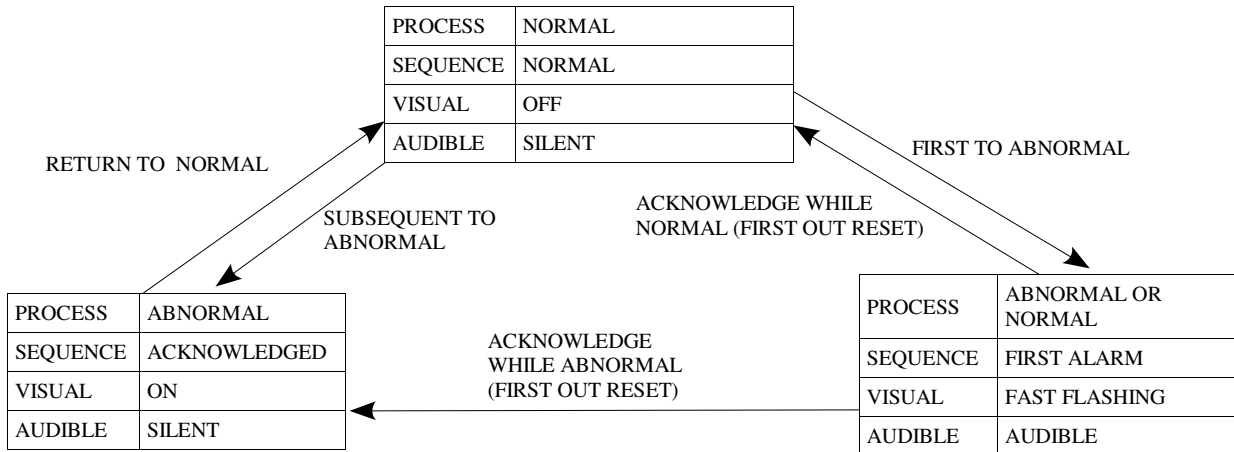
3.5 Sequence R-12, Ringback with Auto Acknowledge



Sequence features

1. Acknowledge, Reset, Test, and Mute pushbuttons.
2. Alarm and ringback audible devices.
3. Audible alarm or ringback alarm can be silenced by pressing Mute pushbutton.
4. Momentary alarms go to ringback sequence without operation of the acknowledge pushbutton.
5. Ringback visual and audible alarm when process conditions return to normal.
6. Manual reset of ringback indications.
7. Operational test.

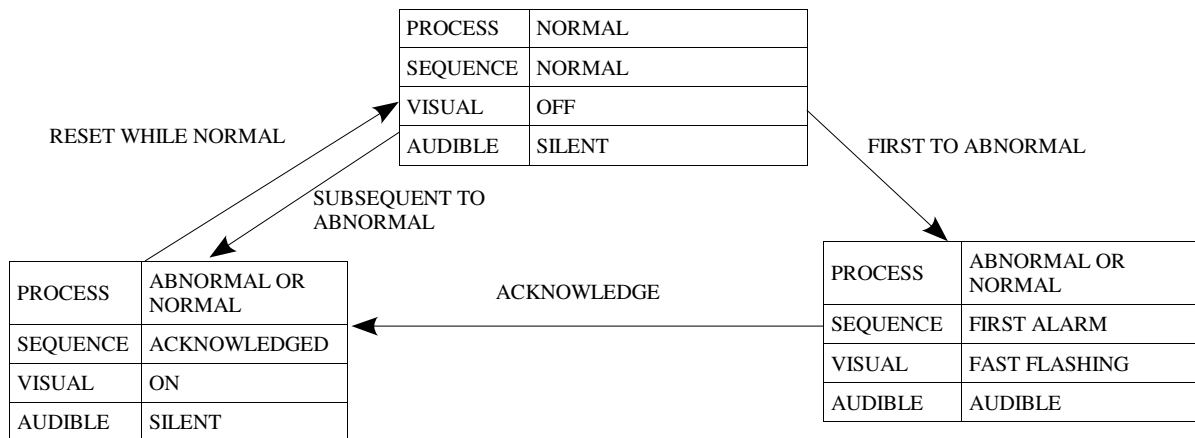
3.6 Sequence F1A, Automatic Reset First Out with No Subsequent Alarm State



Sequence features

1. Acknowledge, Test, and Mute pushbuttons.
2. Alarm audible devices.
3. Audible alarm can be silenced by pressing Mute pushbutton.
4. Flashing and audible indications for first alarm only. New subsequent alarms go to the acknowledge state.
5. First out indication is reset and the audible is silenced when acknowledged.
6. Automatic reset of acknowledged alarm when process conditions return to normal.
7. Operational test.

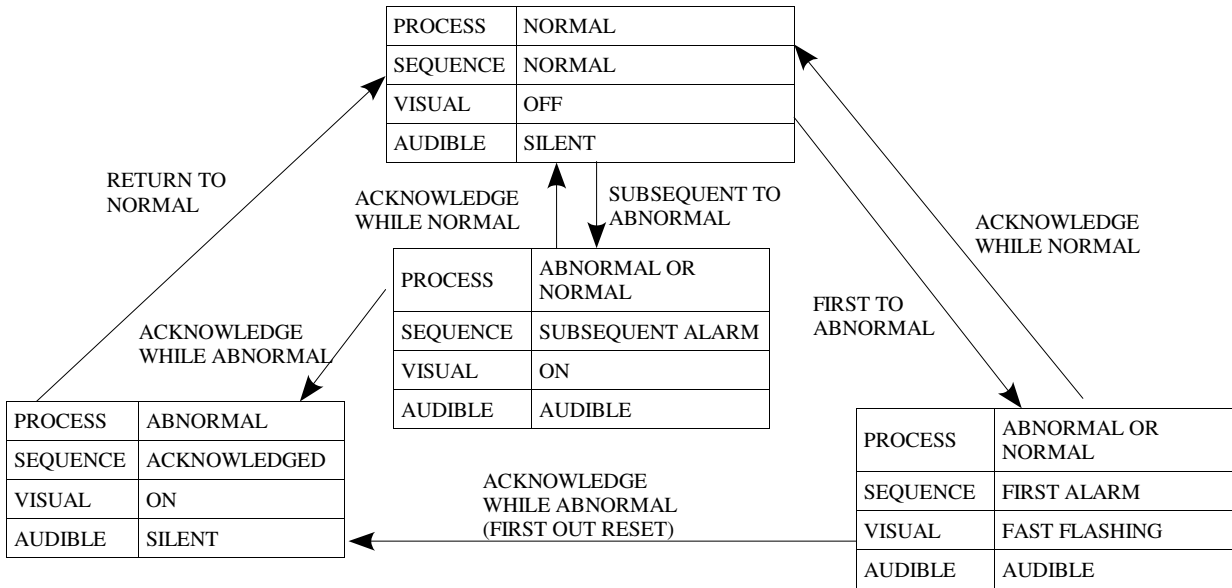
3.7 Sequence F1M, Manual Reset First Out with No Subsequent Alarm State



Sequence features

1. Acknowledge, Reset, Test, and Mute pushbuttons.
2. Alarm audible devices.
3. Audible alarm can be silenced by pressing Mute pushbutton.
4. Flashing and audible indications for first alarm only. New subsequent alarms go to the acknowledge state.
5. First out indication is reset and the audible is silenced when acknowledged.
6. Manual reset of acknowledged alarm when process conditions return to normal.
7. Operational test.

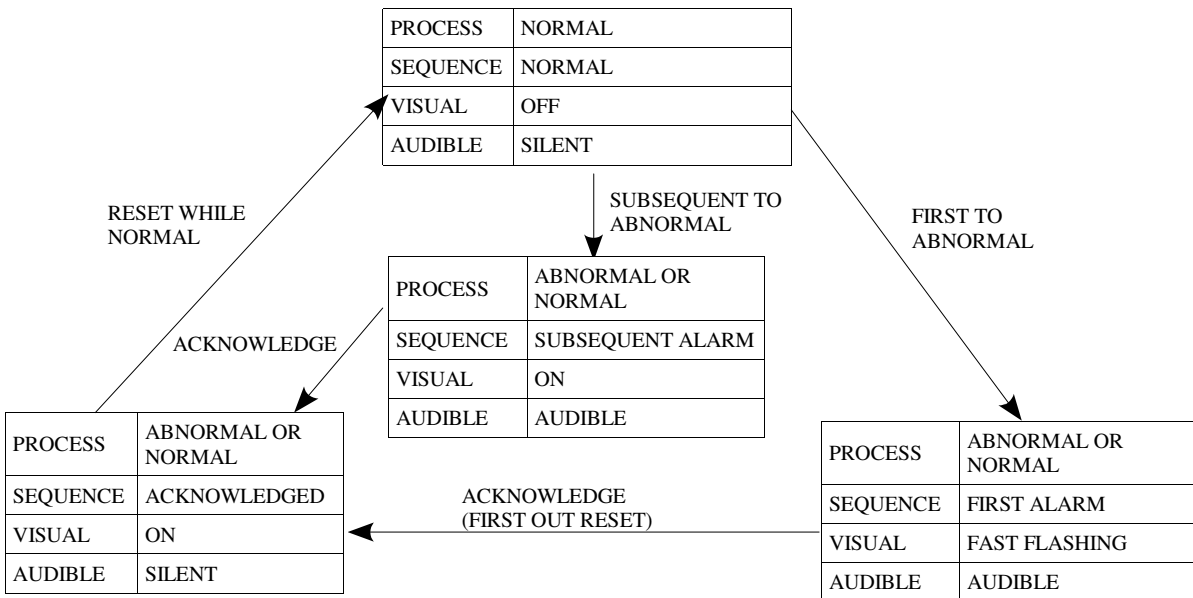
3.8 Sequence F2A, Automatic Reset First Out with No Subsequent Alarm Flashing



Sequence features

1. Acknowledge, Test, and Mute pushbuttons.
2. Alarm audible devices.
3. Audible alarm can be silenced by pressing Mute pushbutton.
4. Flashing indications for first alarm. New subsequent alarms have same visual indication as acknowledged alarms.
5. First out indication is reset and the audible is silenced when acknowledged.
6. Automatic reset of acknowledged alarm when process conditions return to normal.
7. Operational test.

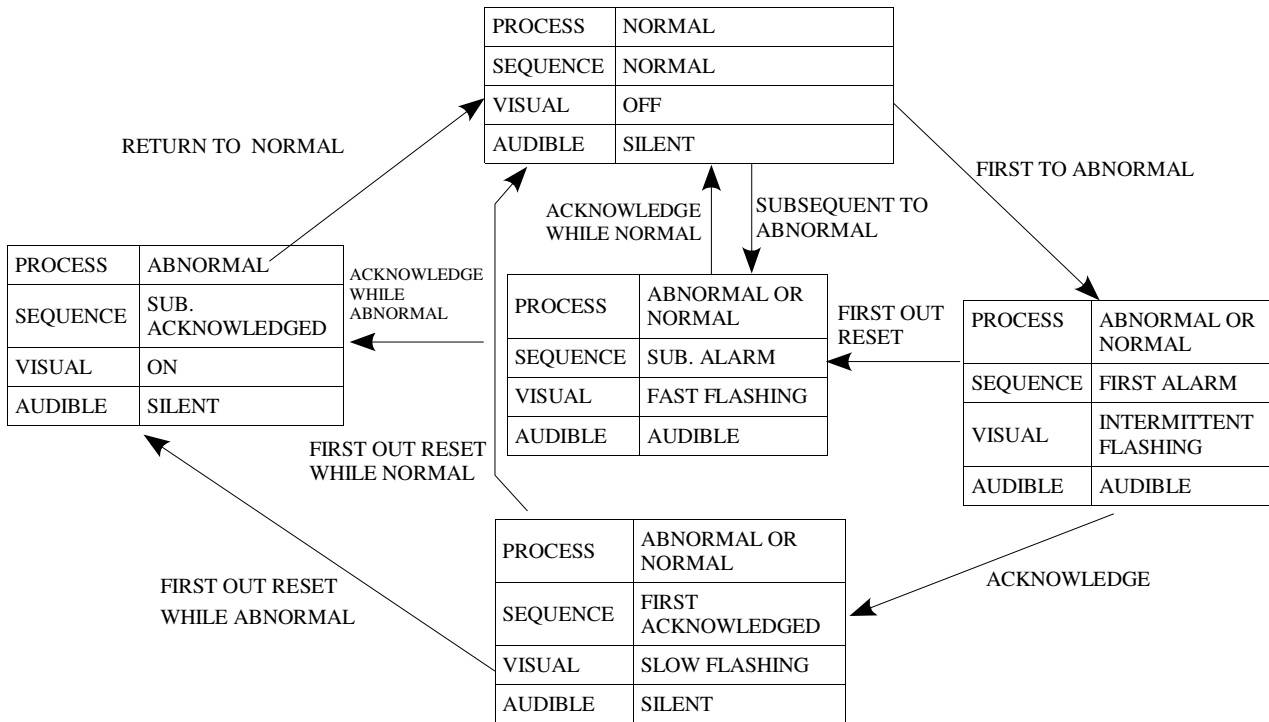
3.9 Sequence F2M, Manual Reset First Out with No Subsequent Alarm Flashing



Sequence features

1. Acknowledge, Test, and Mute pushbuttons.
2. Alarm audible devices.
3. Audible alarm can be silenced by pressing Mute pushbutton.
4. Flashing indications for first alarm. New subsequent alarms have same visual indication as acknowledged alarms.
5. First out indication is reset and the audible is silenced when acknowledged.
6. Manual reset of acknowledged alarm when process conditions return to normal.
7. Operational test.

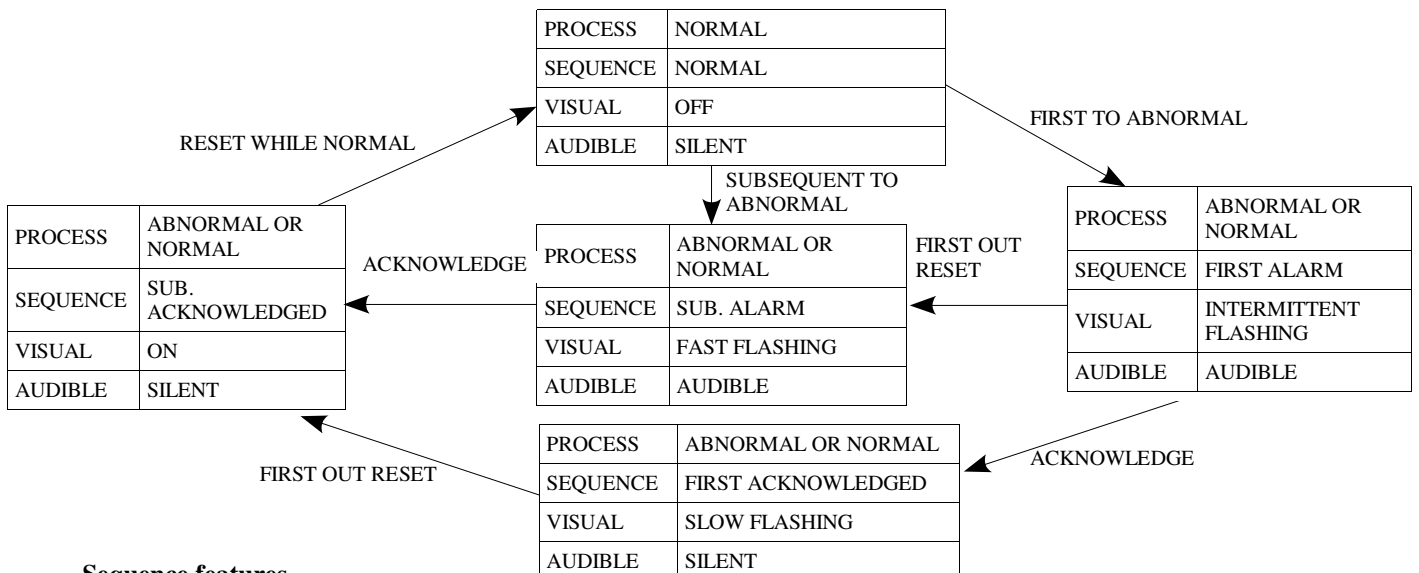
3.10 Sequence F3A, Automatic Reset First Out with First Out Flashing and Reset Pushbutton



Sequence features

1. Acknowledge, First out Reset, Test, and Mute pushbuttons.
2. Alarm audible devices.
3. Audible alarm can be silenced by pressing Mute pushbutton.
4. First out flashing different from subsequent flashing.
5. First out Reset pushbutton to change the first out visual indication to be the same as subsequent visual indications.
6. Automatic reset of acknowledged alarm when process conditions return to normal.
7. Operational test.

3.11 Sequence F3M, Manual Reset First Out with First Out Flashing and Reset Pushbutton



Sequence features

1. Acknowledge, Reset, Test, and Mute pushbuttons.
2. Alarm audible devices.
3. Audible alarm can be silenced by pressing Mute pushbutton.
4. First out flashing different from subsequent flashing.
5. First out Reset pushbutton to change the first out visual indication to be the same as subsequent visual indications.
6. Manual reset of acknowledged alarm when process conditions return to normal.
7. Operational test.

4.0 Soft Settings

The soft settings can be configured through Modbus-RTU RS232 or RS485 interface to PC based ANTools software, or via built in pushbuttons.

4.1 General Settings

General settings that affects the whole Annunciator unit

4.1.1 Internal Buzzer On/Off

To turn the internal buzzer on or off. This will not affect the Auxiliary output relays that configured into audible device follower.

4.1.2 Auto Alarm Silence, Auto Alarm Silence Delay

If enabled, the audible alarm that triggers by any alarm will be off after the Auto Alarm Silence Delay. Settings are Disabled, Enabled with 1s to 255s delay (counting from latest alarm). This will also off the auxiliary output relays if configured as audible device follower output.

4.1.3 Auto Ringback Silence, Auto Ringback Silence Delay

If enabled, the Ringback output relay will be off after the Auto ringback silence delay. Settings are Disabled, Enabled with 1s to 255s (counting from latest ringback state).

Note: Auto alarm silence and Auto ringback silence is tied together when configured via pushbutton.

4.1.4 Auto Acknowledge, Auto Acknowledge Delay

If enabled, the annunciator will acknowledge to alarm after the Auto acknowledge delay as if the acknowledge button is pressed. Settings are Disabled, Enabled with 1s to 255s (counting from latest alarm).

4.1.5 Auxiliary Output Relay Function

AUX1, AUX2 and AUX3 output relays can be configured to perform one of the functions below:

a) Contact follower - NO (Normally Open)

The output is off (Open) when ALL the alarm point input contacts that select it are Normal. The output is on (Close) when ANY of the alarm point input contacts that selects it is abnormal.

b) Contact follower - NC (Normally Close)

The output is on (Close) when ALL the alarm point input contacts that select it are Normal. The output is off (Open) when ANY of the alarm point input contact that selects it is abnormal.

c) Visual device follower – Ack off

The output is on when the alarm point that selects it in alarm state. The output is off when acknowledge is pressed.

d) Audible device follower

The output is on when the alarm point that selects it in alarm state. The output is off when mute is pressed.

e) Visual device follower

The output is on when the alarm point that selects it in alarm state. The output is off when all the alarm points that select it normal.

Refer also to *4.2.5 Auxiliary Output Relay Select*.

Note: the Auxiliary output relay is not function if the alarm sequence of the alarm point is set to Follower.

4.1.6 Communication Baud Rate, Data Format and Address

These settings can be configured via push buttons only. The setting should tally with the settings of Modbus master (PC ANTools or other Modbus master).

Baud rate: This is the speed of the communication in bits per second (bps). Select between 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 and 57600bps.

Data format:

Stop Bits. This is the number of bits at the end of data stream.

Parity. This is the error checking method of the data stream.

Select between

1. No parity, 1 stop bit
2. No parity, 2 stop bits
3. Even parity, 1 stop bit
4. Odd parity, 1 stop bit

Communication address: This is the Modbus address of the annunciator. Combine the low and high address settings to get address between 0 to 149.

4.2 Individual Settings

Each alarm point can have its own settings

4.2.1 Input Contact

Defines the way input contact behaves. For Normally Open, the input is normal when open, abnormal when close. For Normally Close, the input is normal when close, abnormal when open.

4.2.2 Alarm Sequence

Manual, Auto, Ringback, Ringback 12, F1M, F1A, F2M, F2A, F3M, F3A, Follower.

Please refer to *3.0. Alarm Sequences* for description of each sequence.

Note: For F3M and F3A sequence, external First Out Reset button should be connected.

4.2.3 Internal Buzzer Type

Sets the internal buzzer ring type if the buzzer is triggered by this alarm point.

- a) Off. The buzzer is always off.
- b) Constant. Buzzer on when there is an alarm.
- c) 0.9Hz. Buzzer on intermittently at 0.9Hz when there is an alarm.
- c) 2.2Hz. Buzzer on intermittently at 2.2Hz when there is an alarm.

Note: Internal buzzer is always off If *4.1.1 Internal Buzzer On/Off* is set to off.

4.2.4 Input Delay

This is the response time of the input contact, a short time makes the input more sensitive, a long time makes it less sensitive. Value range is 2.5ms to 635ms. Only certain values can be set using pushbuttons. Value is rounded to nearest 5ms when it is set with ANTools.

4.2.5 Auxiliary Output Relay Select

Selects which AUX1, AUX2 and AUX3 relay is triggered by the state change of input contact or alarm states of this alarm point. Refer to *4.1.5 Auxiliary Output Relay Function* for description of the output function.

Note: the Auxiliary relay output is not function if the alarm sequence of the alarm point is set to Follower.

4.3 Configuration via Pushbutton

These 4 buttons are used in soft settings configuration mode:



Left and Right buttons. To select setting, to select alarm point, to change value



To Enter into next level with selected setting/alarm point. To save value and return to previous level.



To return to previous level, to return without saving value.

4.3.1 Configuration Settings

Configuration mode of Group1 settings is entered by **Pressing and Holding Enter for 3 to 4 seconds**. A beep sound indicates entering of configuration mode with setting 1 selected. LED2 on and flash intermittently. Figure 4.1 shows the flow of Configuration settings configuration mode. Table 4.1 shows the visual display for each settings.

Press to cycle the setting from 1 to 13, the RUN LED, LED2, LED3 and LED4 indicate currently selected setting. These LEDs will blink intermittently.

For settings 6 to 13, press Enter to go into value change level. The windows 1 to 4 will **Slow blink** to indicate current value, press to change value, press Enter to save value and exit to previous level. Press Esc to return to previous level and cancel the change if Enter has not been pressed.

* Settings 1 to 5 is individual alarm point settings, the particular alarm point needs to be selected before its value can be changed. After pressing Enter at settings 1 to 5, the window will **Fast blink** to indicate the selected alarm point. Press and Enter to select the alarm point and go into value change level. Global change can be performed by pressing Enter when **All** the windows Fast blink. Press Esc to return to previous level.

The unit will exit from configuration mode if no button is pressed for more that 3 minutes.

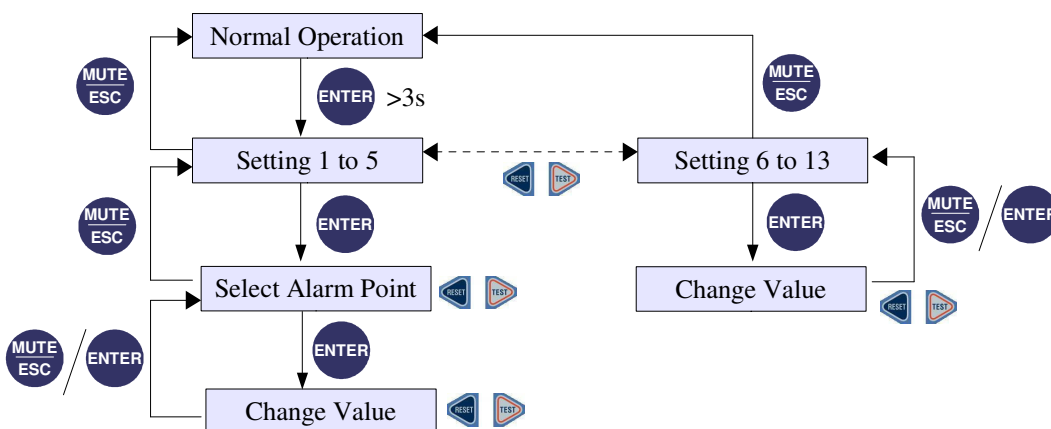


Figure 4.1: Flow chart of Configuration settings

| Settings | LED | | Window | | Value |
|----------------------------------|----------------------------------|----------------------------------|--------|--------|----------------------------|
| | RUN LED2 | LED1 LED3 | 3 1 | 4 2 | |
| 1. Input Contact Type * | <input type="radio"/> | <input type="radio"/> | | | Normally open [#] |
| | <input checked="" type="radio"/> | <input type="radio"/> | | | Normally close |
| 2. Alarm Sequence * | <input type="radio"/> | <input type="radio"/> | | | Manual reset [#] |
| | <input type="radio"/> | <input checked="" type="radio"/> | | | Auto reset |
| | | | | | Ringback |
| | | | | | Ringbak 12 |
| | | | | | F1M |
| | | | | | F1A |
| | | | | | F2M |
| | | | | | F2A |
| | | | | | F3M |
| | | | | | F3A |
| | | | | | Follower |
| 3. Internal Buzzer Type * | <input type="radio"/> | <input type="radio"/> | | | Off |
| | <input checked="" type="radio"/> | <input checked="" type="radio"/> | | | Constant [#] |
| | | | | | Intermittent 1 (0.9Hz) |
| | | | | | Intermittent 2 (2.2Hz) |
| 4. Output Select * | <input checked="" type="radio"/> | <input type="radio"/> | | | None |
| | <input type="radio"/> | <input type="radio"/> | | | Aux output 1 [#] |
| | | | | | Aux output 2 |
| | | | | | Aux output 1 and 2 |
| | | | | | Aux output 3 |
| | | | | | Aux output 1 and 3 |
| | | | | | Aux output 2 and 3 |
| | | | | | Aux output 1, 2 and 3 |
| 5. Input Delay * | <input checked="" type="radio"/> | <input type="radio"/> | | | 3ms |
| | <input checked="" type="radio"/> | <input type="radio"/> | | | 5ms [#] |
| | | | | | 10ms |
| | | | | | 15ms |
| | | | | | 20ms |
| | | | | | 25ms |
| | | | | | 30ms |
| | | | | | 40ms |
| | | | | | 50ms |
| | | | | | 60ms |

| Settings | LED | | Window | | Value |
|---|----------------------------------|----------------------------------|--------|--------|------------------------|
| | RUN LED2 | LED1 LED3 | 3 1 | 4 2 | |
| | | | | | 80ms |
| | | | | | 100ms |
| | | | | | 150ms |
| | | | | | 300ms |
| | | | | | 600ms |
| 6. Internal Buzzer | <input checked="" type="radio"/> | <input type="radio"/> | | | Buzzer on [#] |
| | <input type="radio"/> | <input checked="" type="radio"/> | | | Buzzer off |
| 7. Auto Alarm/Ringback Silence | <input checked="" type="radio"/> | <input type="radio"/> | | | Disabled [#] |
| | <input checked="" type="radio"/> | <input checked="" type="radio"/> | | | Enabled |
| 8. Auto Alarm/Ringback Silence Delay | <input type="radio"/> | <input checked="" type="radio"/> | | | 5s |
| | <input type="radio"/> | <input type="radio"/> | | | 10s |
| | | | | | 15s |
| | | | | | 20s |
| | | | | | 30s [#] |
| | | | | | 40s |
| | | | | | 50s |
| | | | | | 60s |
| | | | | | 80s |
| | | | | | 100s |
| | | | | | 130s |
| | | | | | 160s |
| | | | | | 190s |
| | | | | | 220s |
| | | | | | 250s |
| 9. Auto Acknowledge | <input type="radio"/> | <input checked="" type="radio"/> | | | Enabled |
| | <input checked="" type="radio"/> | <input type="radio"/> | | | Disabled [#] |
| 10. Auto Acknowledge Delay | <input type="radio"/> | <input checked="" type="radio"/> | | | 5s |
| | <input type="radio"/> | <input type="radio"/> | | | 10s |
| | | | | | 15s |
| | | | | | 20s |
| | | | | | 30s [#] |
| | | | | | 40s |
| | | | | | 50s |
| | | | | | 60s |
| | | | | | 80s |

| Settings | LED | | Window | | Value |
|---------------------------------------|----------------------------------|----------------------------------|--------|--------|--------------------------------------|
| | RUN LED2 | LED1 LED3 | 3 1 | 4 2 | |
| | | | | | 100s |
| | | | | | 130s |
| | | | | | 160s |
| | | | | | 190s |
| | | | | | 220s |
| | | | | | 250s |
| 11. Aux Output 1 Configuration | <input type="radio"/> | <input checked="" type="radio"/> | | | Contact follower - NO |
| | | | | | Contact follower - NC |
| | | | | | Visual device follower – Ack off |
| | | | | | Audible device follower [#] |
| | | | | | Visual device follower |
| 12. Aux Output 2 Configuration | <input checked="" type="radio"/> | <input checked="" type="radio"/> | | | Contact follower - NO [#] |
| | <input type="radio"/> | <input type="radio"/> | | | Contact follower - NC |
| | | | | | Visual device follower – Ack off |
| | | | | | Audible device follower |
| | | | | | Visual device follower |
| 13. Aux Output 3 Configuration | <input checked="" type="radio"/> | <input checked="" type="radio"/> | | | Contact follower - NO [#] |
| | <input checked="" type="radio"/> | <input type="radio"/> | | | Contact follower - NC |
| | | | | | Visual device follower – Ack off |
| | | | | | Audible device follower |
| | | | | | Visual device follower |

Table 4.1



* Individual alarm point settings



Default value

4.3.2 Communication Settings

Group2 settings define the Modbus communication data format.

Configuration mode of Group2 settings is entered by **Pressing and Holding Enter And Test together for 3 to 4 seconds**. A beep sound indicates entering of configuration mode with setting 1 selected. LED2 on and flash intermittently. LED1 always on to indicate Communication settings. Figure 4.2 shows the flow of Communication settings configuration mode. Table 4.2 shows the visual display for each settings.

Press   to cycle the setting to change from 1 to 4. the RUN LED, LED2, LED3 will cycle to indicate currently selected setting. These LEDs will blink intermittently.

Press Enter to go into value change level. The windows 1 to 4 will **Slow blink** to indicate current value, press   to change value, press Enter to save value and exit to previous level. Press Esc to return to previous level and cancel the change if Enter has not been pressed.

The unit will exit from configuration mode if no button pressed for more that 3 minutes.

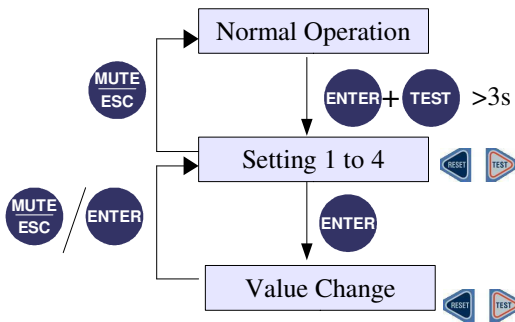


Figure 4.2: Flow chart of Communication settings

| Settings | LED | | Window | | Value |
|-----------------------------------|----------------------------------|----------------------------------|--------|--------|--------------------------------------|
| | RUN LED2 | LED1 LED3 | 3 1 | 4 2 | |
| 1. Communication Baud Rate | <input type="radio"/> | <input checked="" type="radio"/> | | | 300bps |
| | <input checked="" type="radio"/> | <input type="radio"/> | | | 600bps |
| | <input type="radio"/> | <input type="radio"/> | | | 1200bps |
| | <input type="radio"/> | <input type="radio"/> | | | 2400bps |
| | <input type="radio"/> | <input type="radio"/> | | | 4800bps |
| | <input type="radio"/> | <input type="radio"/> | | | 9600bps [#] |
| | <input type="radio"/> | <input type="radio"/> | | | 19200bps |
| | <input type="radio"/> | <input type="radio"/> | | | 38400bps |
| | <input type="radio"/> | <input type="radio"/> | | | 57600bps |
| 2. Communication Format | <input type="radio"/> | <input checked="" type="radio"/> | | | No parity, 1 stop bit |
| | <input type="radio"/> | <input checked="" type="radio"/> | | | No parity, 2 stop bits |
| | <input type="radio"/> | <input type="radio"/> | | | Even parity, 1 stop bit [#] |
| | <input type="radio"/> | <input type="radio"/> | | | Odd parity, 1 stop bit |

| Settings | LED | | Window | | Value |
|--|----------------------------------|----------------------------------|-------------------------------------|-------------------------------------|-------|
| | RUN LED2 | LED1 LED3 | 3 1 | 4 2 | |
| 3. Communication Address Low | <input type="radio"/> | <input checked="" type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0# |
| Example: address low=8, address high=11, | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 1 |
| Resultant address: 118 | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2 |
| Maximum address: 149 | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3 |
| | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 5 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 6 |
| | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 7 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 8 |
| | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 9 |
| 4. Communication Address High | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 0# |
| | <input type="radio"/> | <input type="radio"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 1 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2 |
| | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3 |
| | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 5 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 6 |
| | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 7 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 8 |
| | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 9 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 10 |
| | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 11 |
| | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 12 |
| | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 13 |
| | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 14 |

Table 4.2

* Individual Window settings

Default value

4.4 Configuration via ANTools

ANTools is an easy to use PC Windows based software for configuring AN1xx series Annunciator settings.

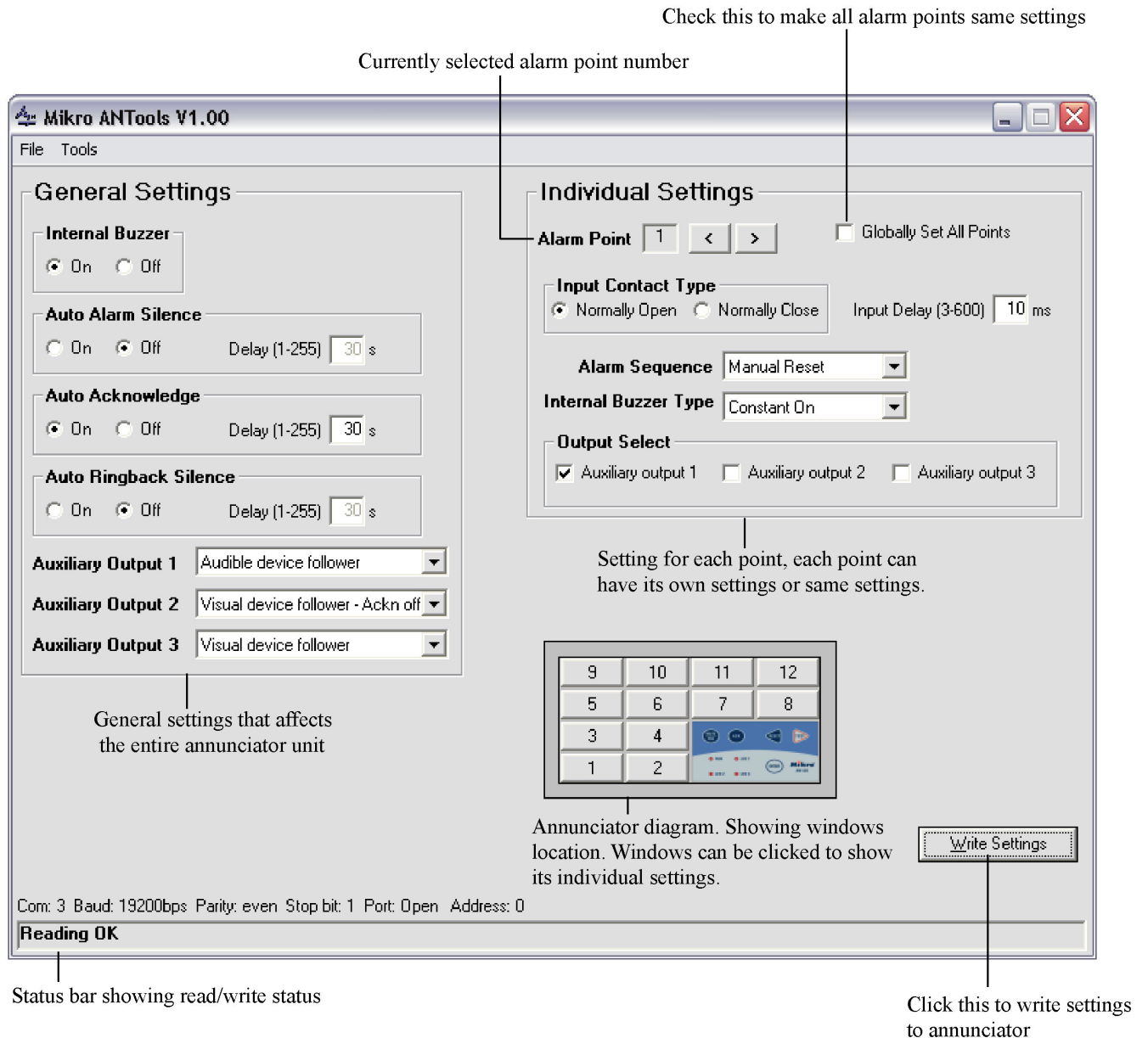


Figure 4.3: Main screen of ANTools.

4.4.1 Installation

Installation is straight forward. Just run the setup.bat. Then create a shortcut to c:\program files\ANTools\ANTools.exe to desired location (Eg: Desktop). Double click the shortcut to run.

4.4.2 Start Up

Upon starting up, ANTools will try to communicate with annunciator on the COM port. Make sure that the Annunciator is power up and connected to the PC. The status bar will show "Reading Settings OK" if reading is successful. Error messages will shown if ANTools failed to communicate with annunciator. Please see *Section 4.4.5 Error Messengers* for more detail.

4.4.3 Communication Settings

Communication settings on ANTools must be the SAME as the annunciator for proper communication.

Use Tools-->Communication Settings... to open the dialogue box.

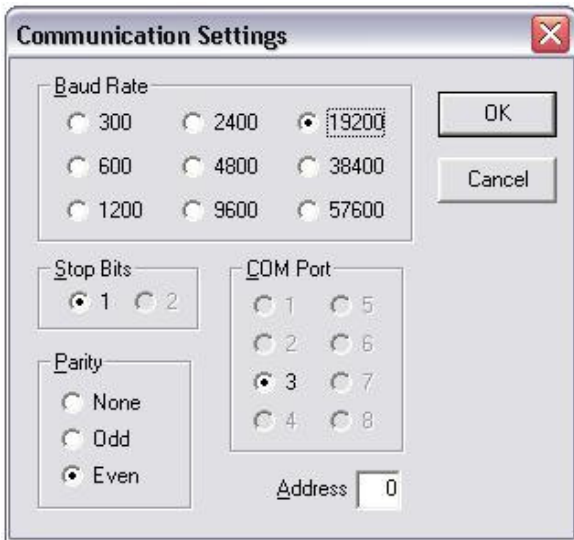


Figure 4.4: Communication Settings dialogue box.

Baud Rate. This is the speed of the communication in bit per second (bps).

Stop Bits. This is the number of bits at the end of data stream.

Parity. This is the error checking method of the data stream.

Com Port. This is the Communication Port (COM port) that connecting PC and Annunciator. Only available ports are shown.

Address. This is the Modbus address of the annunciator.

Select the appropriate settings as required and click **OK** to save and return. Click **Cancel** to return without save.

Communication settings on the annunciator can be set via Pushbuttons. Please refer to *Section 4.3.2 Communication Settings*.

4.4.4 Menu Items

There are 2 menus, File menu and Tools menu.

File Menu Items



Figure 4.5: File Menu items

File --> Read Settings From Annunciator.

This will read the settings from connected annunciator. Normally ANTools already read from annunciator upon starting up. This function is useful if the user wants to override any changes that has been made on ANTools to settings from annunciator.

File --> Write Settings To Annunciator.

This is the same as the **Write Settings** button on the bottom right. This will write the settings on the ANTools on the screen to the connected annunciator.

File --> Load Settings From File...

This will open the Load Settings dialogue box. A annunciator settings file that has been saved can be loaded as current ANTools settings.

File --> Save Settings From File...

This will open the Save Settings dialogue box. The current settings of ANTools on the screen can be written to a annunciator settings file.

Tools Menu Items



Figure 4.6: Tools Menu items

Tools --> Communication Settings...

This will open the Communication Settings dialogue box. Refer to *4.4.3 Communication Settings*.

Tools --> Show Communication Settings

This is a menu that once enable, ANTools will show the communicating settings on the line above Status Bar.

Tools --> Port Open

This is a menu that will show the Open/close status of the communication port (COM port). Normally this is automatically checked if the COM port is valid and not opened by another program. Only click this to close the COM port if required by another program. COM port is automatically opened if Writing or Reading of settings are performed.

Tools --> About ANTools...

This will open the About ANTools dialogue box to show the general information of the software and the connected annunciator.

4.4.5 Error Messengers

Some of the error messengers shown on the Status Bar are listed below. Error Message is shown in red colour. Most of the error messengers are related to communication problems.

'Communication Error. Using Default Value. Please Check Communication Settings.' - This is shown only during start up.

Make sure that the annunciator is powered up and connected to the PC.

Make sure that the communication settings of the annunciator is the same as ANTools.

If a error message popped up during start up before the Status Bar showing error, that could mean COM port is either opened by another program, or invalid COM port selected, or other COM port error.

'Write to Annunciator Error' / 'Reading Error' - Also communication related error. Please refer to above for solution.

5.0 Technical Data

5.1 General and Electrical

Window

| | |
|-------------------|--|
| Window Dimension: | 50X30mm. |
| Type: | White translucent lens. |
| Colours | Red, Amber. Coloured by field replaceable LED module. |
| Windows Flash | Fast: 1.4Hz (0.4s on, 0.4s off), Slow: 0.45Hz (1.1s on, 1.1s off). Intermittent: 0.4s on, 1.8s off) |

Alarm Sequences M, A, R, R-12, F1A, F1M, F2A, F2M, F3A, F3M, Follower

Type of Mounting Panel Mounting

Auxiliary Power Input

| | |
|-------------------|------------------------|
| Fuse protected. | |
| AN1xx-30 | 24-36VDC or 18-27VAC. |
| AN1xx-110 | 88-132VDC or 64-95VAC. |
| Power consumption | AN112: 6W. AN120: 8W |

Alarm Contact Inputs

| | |
|-----------------------|------------------------|
| Opto-isolated inputs. | |
| AN1xx-30 | 24-36VDC or 18-27VAC. |
| AN1xx-110 | 88-132VDC or 64-95VAC. |
| Input current | 3mA typical |

Relay Outputs

| | |
|--------------------------|---|
| Repeat relays | Potential free for each alarm point. 5A at 250 VAC, 3A at 30VDC. Resistive load. |
| AUX1-AUX3, RBACK, SSP | 5A at 250 VAC, 5A at 30VDC. Resistive load. |

Terminals

| | |
|---|--|
| Wire size | 28-14AWG. (0.08mm ² to 2.5mm ²) |
| Removable screw type terminal block (removable) | |

Environment

| | |
|-----------------------|--------------------------|
| Operation temperature | -20 to 60°C |
| Storage temperature | -20 to 80°C |
| Humidity | 0-95% RH, non condensing |

Communication

| | |
|--------------------|---|
| Hardware interface | AN1xx-xx-x-A: RS232 AN1xx-xx-x-B: Isolated RS485 |
| Protocol | Modbus-RTU |
| Baud rate | 300 to 57600 |

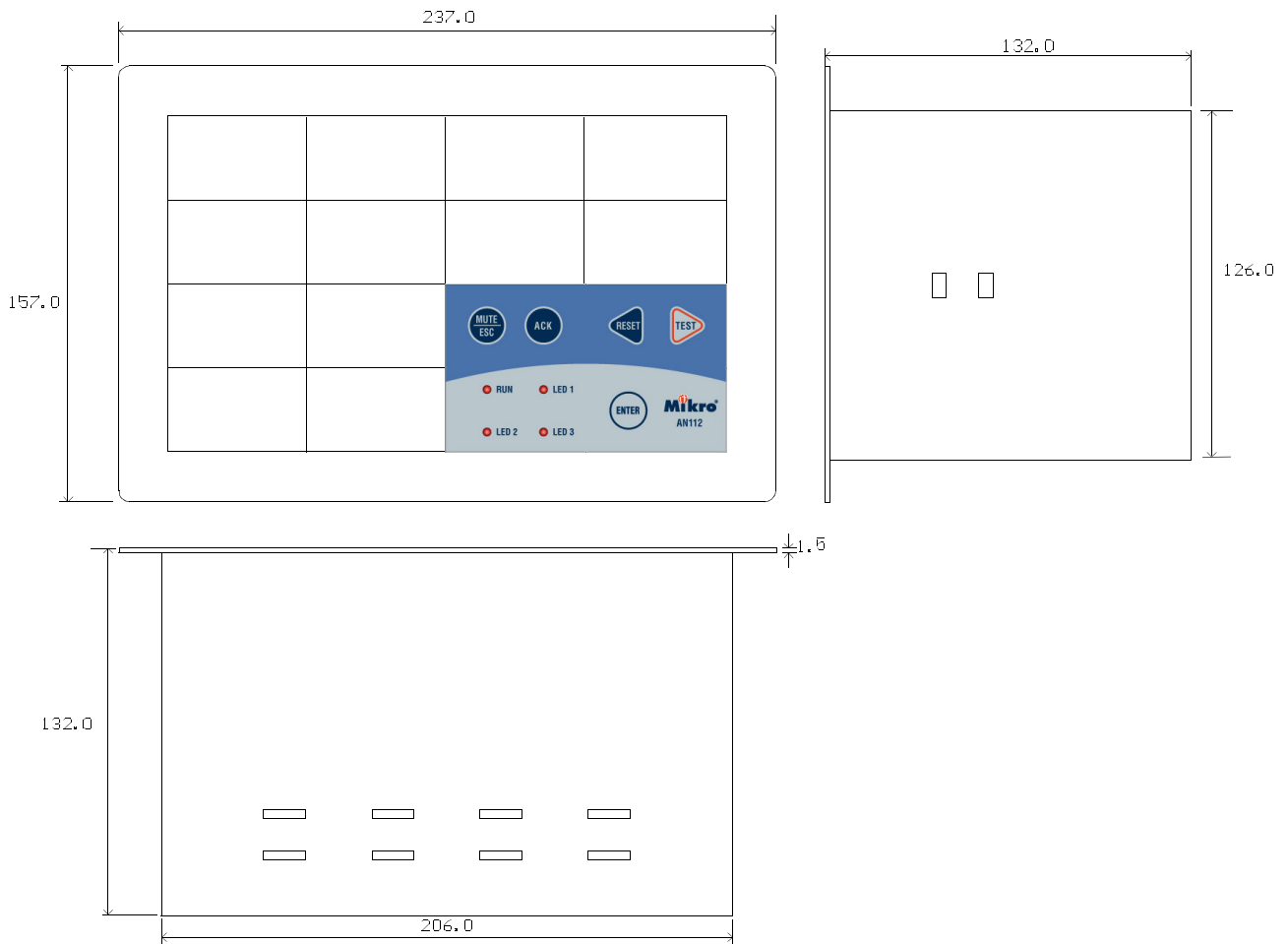
Product Approvals

| | |
|--|-----------------------|
| Electrostatic discharge IEC61000-4-2, Class III, air discharge | 8kV |
| Electrostatic discharge IEC61000-4-2, Class III, contact discharge | 6kV |
| Electrical fast transient IEC61000-4-4, 4kV, 5/50ns | |
| Surge immunity IEC61000-4-5, 4kV, L to E | |
| Enclosure protection when panel mounted, Front: | IP41. Enclosure: IP30 |

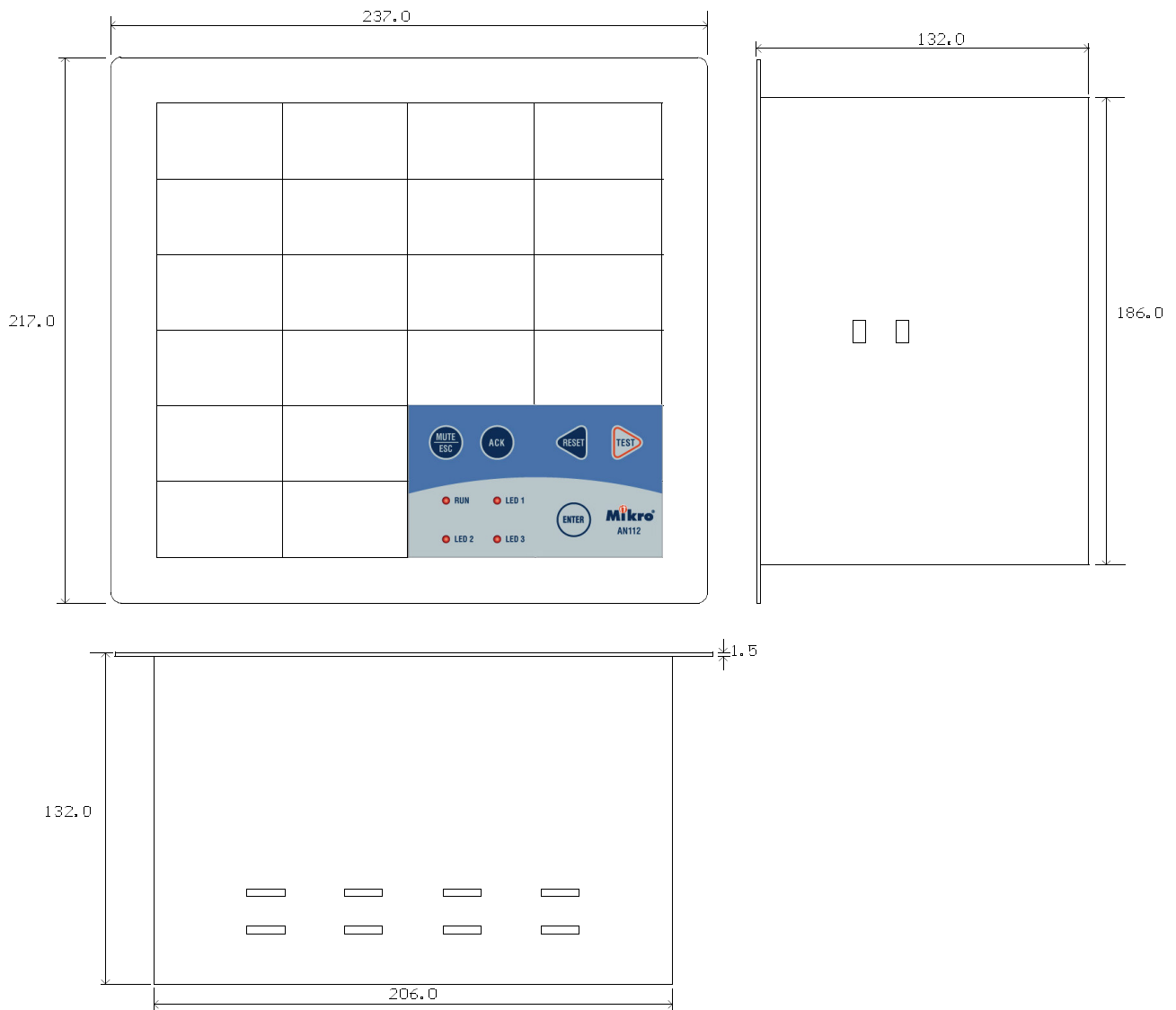
5.2 Dimensions

All dimensions in mm.

5.2.1 AN112



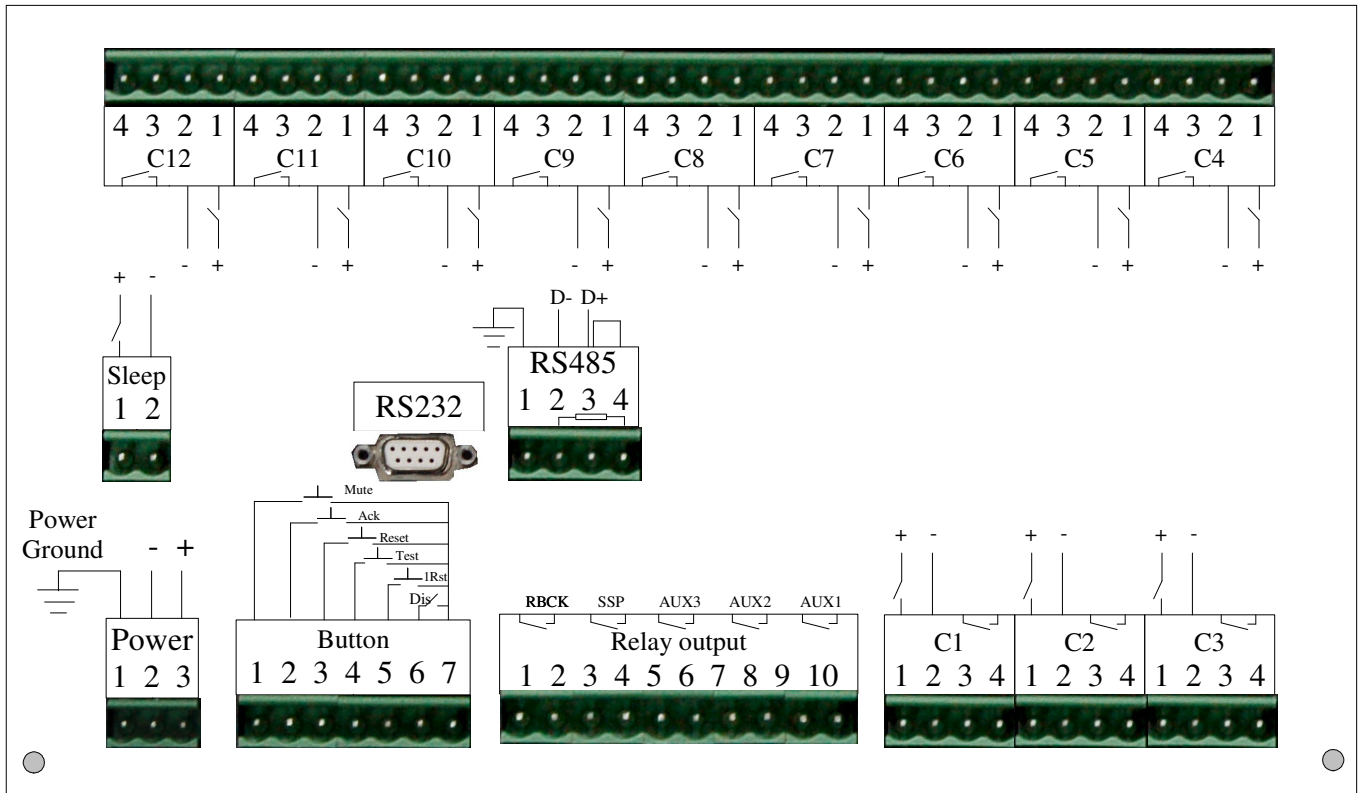
5.2.2 AN120



5.3 Connection Diagram

5.3.1 AN112 With Repeat Relay

(Either RS232 or RS485 is available)



Connector Identification

| Connector | Pin | Function |
|---------------------|-----|-----------------------------------|
| Power | 1 | Power Earth |
| | 2 | -Vdc (Voltage is model dependent) |
| | 3 | +Vdc (Voltage is model dependent) |
| Button | 1 | Mute |
| | 2 | Acknowledge |
| | 3 | Reset |
| | 4 | Test |
| | 5 | First out reset |
| | 6 | Front panel button disable |
| | 7 | Common return for all buttons |
| Relay Output | 1 | Ringback (common) |
| | 2 | Ringback (NO) |
| | 3 | Self supervisory (common) |
| | 4 | Self supervisory (NO) |
| | 5 | Auxiliary 3 (common) |
| | 6 | Auxiliary 3 (NO) |
| | 7 | Auxiliary 2 (common) |
| | 8 | Auxiliary 2 (NO) |

| Connector | Pin | Function |
|-----------------------------------|------------|--|
| | 9 | Auxiliary 1 (common) |
| | 10 | Auxiliary 1 (NO) |
| RS232 | 2 | RX (connects to Pin 2 of PC/Master) |
| (Availability is model dependent) | 3 | TX (connects to Pin 3 of PC/Master) |
| | 5 | GND (connects to Pin 5 of PC/Master) |
| | 7 | RTS (connects to Pin 7 of PC/Master) |
| RS485 | 1 | GND |
| (Availability is model dependent) | 2 | RX |
| | 3 | TX |
| | 4 | 120Ω Loop terminate (Short 4 to 3 to enable) |
| Sleep | 1 | Sleep input (+) * |
| | 2 | Sleep input (-) |
| C1 | 1 | Alarm Point 1 Input (+) * |
| | 2 | Alarm Point 1 Input (-) |
| | 3 | Repeat Relay 1 (common) |
| | 4 | Repeat Relay 1 (NO) |
| C2 | 1 | Alarm Point 2 Input (+) |
| | 2 | Alarm Point 2 Input (-) |
| | 3 | Repeat Relay 2 (common) |
| | 4 | Repeat Relay 2 (NO) |
| C3 | 1 | Alarm Point 3 Input (+) |
| | 2 | Alarm Point 3 Input (-) |
| | 3 | Repeat Relay 3 (common) |
| | 4 | Repeat Relay 3 (NO) |
| C4 | 1 | Alarm Point 4 Input (+) |
| | 2 | Alarm Point 4 Input (-) |
| | 3 | Repeat Relay 4 (common) |
| | 4 | Repeat Relay 4 (NO) |
| C5 | 1 | Alarm Point 5 Input (+) |
| | 2 | Alarm Point 5 Input (-) |
| | 3 | Repeat Relay 5 (common) |
| | 4 | Repeat Relay 5 (NO) |
| C6 | 1 | Alarm Point 6 Input (+) |
| | 2 | Alarm Point 6 Input (-) |
| | 3 | Repeat Relay 6 (common) |
| | 4 | Repeat Relay 6 (NO) |
| C7 | 1 | Alarm Point 7 Input (+) |
| | 2 | Alarm Point 7 Input (-) |
| | 3 | Repeat Relay 7 (common) |
| | 4 | Repeat Relay 7 (NO) |

| Connector | Pin | Function |
|------------------|------------|--------------------------|
| C8 | 1 | Alarm Point 8 Input (+) |
| | 2 | Alarm Point 8 Input (-) |
| | 3 | Repeat Relay 8 (common) |
| | 4 | Repeat Relay 8 (NO) |
| C9 | 1 | Alarm Point 9 Input (+) |
| | 2 | Alarm Point 9 Input (-) |
| | 3 | Repeat Relay 9 (common) |
| | 4 | Repeat Relay 9 (NO) |
| C10 | 1 | Alarm Point 10 Input (+) |
| | 2 | Alarm Point 10 Input (-) |
| | 3 | Repeat Relay 10 (common) |
| | 4 | Repeat Relay 10 (NO) |
| C11 | 1 | Alarm Point 11 Input (+) |
| | 2 | Alarm Point 11 Input (-) |
| | 3 | Repeat Relay 11 (common) |
| | 4 | Repeat Relay 11 (NO) |
| C12 | 1 | Alarm Point 12 Input (+) |
| | 2 | Alarm Point 12 Input (-) |
| | 3 | Repeat Relay 12 (common) |
| | 4 | Repeat Relay 12 (NO) |

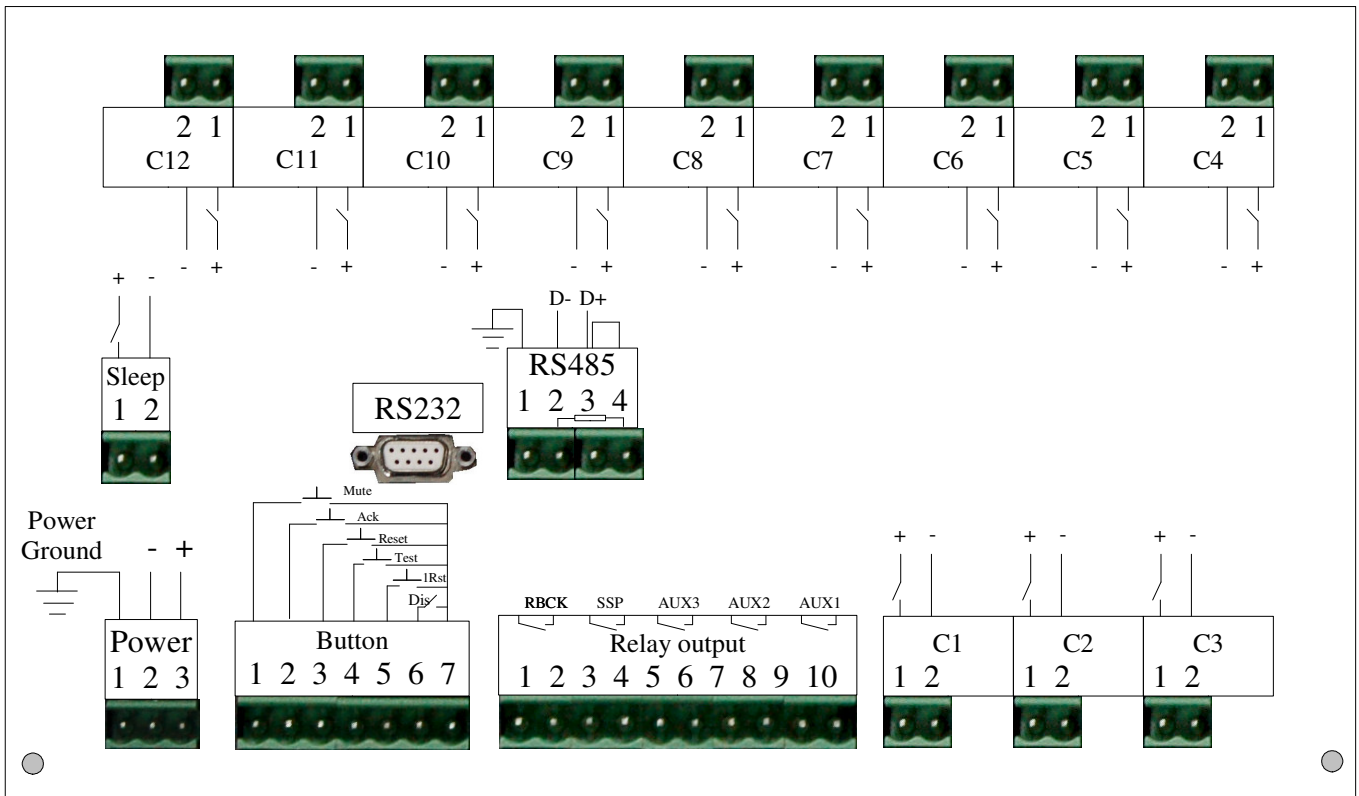
* Sleep and C1-C12 Input voltage rating should be same as Power input.

5.3.2 AN120 With Repeat Relay

See 5.3.1 AN112 With Repeat Relay for connection of AN120. AN120 has extra **C13** to **C20** inputs. The pin assignment and connection is similar to C1 to C12.

5.3.3 AN112 Without Repeat Relays

(Either RS232 or RS485 is available)



Connector Identification

| Connector | Pin | Function |
|---------------------|-----|-----------------------------------|
| Power | 1 | Power Earth |
| | 2 | -Vdc (Voltage is model dependent) |
| | 3 | +Vdc (Voltage is model dependent) |
| Button | 1 | Mute |
| | 2 | Acknowledge |
| | 3 | Reset |
| | 4 | Test |
| | 5 | First out reset |
| | 6 | Front panel button disable |
| | 7 | Common return for all buttons |
| Relay Output | 1 | Ringback (common) |
| | 2 | Ringback (NO) |
| | 3 | Self supervisory (common) |
| | 4 | Self supervisory (NO) |
| | 5 | Auxiliary 3 (common) |
| | 6 | Auxiliary 3 (NO) |
| | 7 | Auxiliary 2 (common) |
| | 8 | Auxiliary 2 (NO) |
| | 9 | Auxiliary 1 (common) |
| | 10 | Auxiliary 1 (NO) |

| Connector | Pin | Function |
|-----------------------------------|-----|--|
| RS232 | 2 | RX |
| (Availability is model dependent) | 3 | TX |
| | 5 | GND |
| | 7 | RTS |
| RS485 | 1 | GND |
| (Availability is model dependent) | 2 | RX |
| | 3 | TX |
| | 4 | 120Ω Loop terminate (Short 4 to 3 to enable) |
| Sleep | 1 | Sleep input (+) * |
| | 2 | Sleep input (-) |
| C1 | 1 | Alarm Point 1 Input (+) * |
| | 2 | Alarm Point 1 Input (-) |
| C2 | 1 | Alarm Point 2 Input (+) |
| | 2 | Alarm Point 2 Input (-) |
| C3 | 1 | Alarm Point 3 Input (+) |
| | 2 | Alarm Point 3 Input (-) |
| C4 | 1 | Alarm Point 4 Input (+) |
| | 2 | Alarm Point 4 Input (-) |
| C5 | 1 | Alarm Point 5 Input (+) |
| | 2 | Alarm Point 5 Input (-) |
| C6 | 1 | Alarm Point 6 Input (+) |
| | 2 | Alarm Point 6 Input (-) |
| C7 | 1 | Alarm Point 7 Input (+) |
| | 2 | Alarm Point 7 Input (-) |
| C8 | 1 | Alarm Point 8 Input (+) |
| | 2 | Alarm Point 8 Input (-) |
| C9 | 1 | Alarm Point 9 Input (+) |
| | 2 | Alarm Point 9 Input (-) |
| C10 | 1 | Alarm Point 10 Input (+) |
| | 2 | Alarm Point 10 Input (-) |
| C11 | 1 | Alarm Point 11 Input (+) |
| | 2 | Alarm Point 11 Input (-) |
| C12 | 1 | Alarm Point 12 Input (+) |
| | 2 | Alarm Point 12 Input (-) |

* Sleep and C1-C12 Input voltage rating should be same as Power input.

5.3.4 AN120 Without Repeat Relay

See 5.3.3 AN112 Without Repeat Relay for connection of AN120. AN120 has extra **C13 to C20** inputs. The pin assignment and connection is similar to C1 to C12.

6.0 Modbus-RTU

6.1 Modbus Protocol

The format used is Modbus RTU mode, selectable baud rate, parity bit and stop bits. (See 4.3.2 *Communication Settings*). RS485 or RS232 communication is dependent on hardware option. The acceptable Modbus commands are shown below:

0x03/0x04 Read Input/Holding Registers

These 2 commands have the same function on the Annunciator

| | | | |
|----------------|-----------------------|---------|----------------------|
| Request | Communication address | 1 byte | 0 to 149 |
| | Function code | 1 byte | 0x03/0x04 |
| | Starting Address | 2 bytes | 0x0000 to 0xFFFF |
| | Quantity of Registers | 2 bytes | 0x0001 to 0x0020 (N) |
| | CRC | 2 bytes | 2 bytes CRC |

| | | | |
|-----------------|-----------------------|-------------|-------------|
| Response | Communication address | 1 byte | 0 to 149 |
| | Function code | 1 byte | 0x03/0x04 |
| | Byte count | 1 byte | 2 X N |
| | Register value | N X 2 bytes | Value |
| | CRC | 2 bytes | 2 bytes CRC |

| | | | |
|--------------|-----------------------|---------|------------------------|
| Error | Communication address | 1 byte | 0 to 149 |
| | Error code | 1 byte | 0x83/0x84 |
| | Exception code | 1 byte | 0x01 or 02 or 03 or 04 |
| | CRC | 2 bytes | 2 bytes CRC |

0x06 Write Single Register

| | | | |
|----------------|-----------------------|---------|------------------|
| Request | Communication address | 1 byte | 0 to 149 |
| | Function code | 1 byte | 0x06 |
| | Register Address | 2 bytes | 0x0000 to 0xFFFF |
| | Register value | 2 bytes | Value |
| | CRC | 2 bytes | 2 bytes CRC |

| | | | |
|-----------------|-----------------------|---------|------------------|
| Response | Communication address | 1 byte | 0 to 149 |
| | Function code | 1 byte | 0x06 |
| | Register value | 2 bytes | 0x0000 to 0xFFFF |
| | CRC | 2 bytes | 2 bytes CRC |

| | | | |
|--------------|-----------------------|---------|------------------------|
| Error | Communication address | 1 byte | 0 to 149 |
| | Error code | 1 byte | 0x86 |
| | Exception code | 1 byte | 0x01 or 02 or 03 or 04 |
| | CRC | 2 bytes | 2 bytes CRC |

0x10 Write Multiple Registers

| | | | |
|----------------|-----------------------|-------------|----------------------|
| Request | Communication address | 1 byte | 0 to 149 |
| | Function code | 1 byte | 0x10 |
| | Starting Address | 2 bytes | 0x0000 to 0xFFFF |
| | Quantity of Registers | 2 bytes | 0x0001 to 0x0020 (N) |
| | Byte count | 1 byte | 2 X N |
| | Register value | N X 2 bytes | Value |
| | CRC | 2 bytes | 2 bytes CRC |

| | | | |
|-----------------|-----------------------|---------|-----------------|
| Response | Communication address | 1 byte | 0 to 149 |
| | Function code | 1 byte | 0x10 |
| | Quantity of Registers | 2 bytes | No of words (N) |
| | CRC | 2 bytes | 2 bytes CRC |

| | | | |
|--------------|-----------------------|---------|------------------------|
| Error | Communication address | 1 byte | 0 to 149 |
| | Error code | 1 byte | 0x90 |
| | Exception code | 1 byte | 0x01 or 02 or 03 or 04 |
| | CRC | 2 bytes | 2 bytes CRC |

6.2 Modbus RTU Table

| Address | | Parameter | Format | General description |
|------------|------|----------------------------------|--------|--|
| Dec | Hex | | | |
| Read only | | Product information | | Function 0x03 or 0x04 |
| 0 | 0 | Model description 1 & 2 | F10 | 'AN' |
| 1 | 0001 | Model description 3 & 4 | F10 | '1x' (x=number of windows high digit) |
| 2 | 0002 | Model description 5 & 6 | F10 | 'yz' (y=number of windows low digit, z=reserved) |
| 3 | 0003 | Manufacturer 1 & 2 | F10 | 'MI' |
| 4 | 0004 | Manufacturer 3 & 4 | F10 | 'KR' |
| 5 | 0005 | Manufacturer 5 & 6 | F10 | 'O' ' ' |
| 6 | 0006 | Firmware version | F10 | 'xx' (x.x) |
| 7 | 0007 | Number of windows | F10 | 'xx' |
| Read only | | System Status | | Function 0x03 or 0x04 |
| 16 | 0010 | Window 1 & 2 status | F11 | Window off, on, slow, fast, intermittent blink |
| 17 | 0011 | Window 3 & 4 status | F11 | |
| 18 | 0012 | Window 5 & 6 status | F11 | |
| 19 | 0013 | Window 7 & 8 status | F11 | |
| 20 | 0014 | Window 9 & 10 status | F11 | |
| 21 | 0015 | Window 11 & 12 status | F11 | |
| 22 | 0016 | Window 13 & 14 status | F11 | |
| 23 | 0017 | Window 15 & 16 status | F11 | |
| 24 | 0018 | Window 17 & 18 status | F11 | |
| 25 | 0019 | Window 19 & 20 status | F11 | |
| 26 | 001A | Window 21 & 22 status | F11 | |
| 27 | 001B | Window 23 & 24 status | F11 | |
| 28 | 001C | Window 25 & 26 status | F11 | |
| 29 | 001D | Window 27 & 28 status | F11 | |
| 30 | 001E | Window 29 & 30 status | F11 | |
| 31 | 001F | Window 31 & 32 status | F11 | |
| 32 | 0020 | Window 33 & 34 status | F11 | |
| 33 | 0021 | Window 35 & 36 status | F11 | |
| 34 | 0022 | Window 37 & 38 status | F11 | |
| 35 | 0023 | Window 39 & 40 status | F11 | |
| 36 | 0024 | Window 41 & 42 status | F11 | |
| 37 | 0025 | Window 43 & 44 status | F11 | |
| 38 | 0026 | Window 45 & 46 status | F11 | |
| 39 | 0027 | Window 47 & 48 status | F11 | |
| 40 | 0028 | Window 49 & 50 status | F11 | |
| 41 | 0029 | Window 51 & 52 status | F11 | |
| 42 | 002A | Window 53 & 54 status | F11 | |
| 43 | 002B | Window 55 & 56 status | F11 | |
| 44 | 002C | Window 57 & 58 status | F11 | |
| 45 | 002D | Window 59 & 60 status | F11 | |
| 46 | 002E | Window 61 & 62 status | F11 | |
| 47 | 002F | Window 63 & 64 status | F11 | |
| 160 | 00A0 | Alarm point input 1 - 16 status | F19 | |
| 161 | 00A1 | Alarm point input 17 - 32 status | F19 | |
| 162 | 00A2 | Alarm point input 33 - 48 status | F19 | |
| 163 | 00A3 | Alarm point input 49 - 64 status | F19 | |
| 176 | 00B0 | Buzzer & output relay status | F12 | |
| Write only | | Remote command | | Function 0x06 |
| 256 | 0100 | Button command | F13 | Mute, ack, reset, first reset |

| Read/Write | | Parameter setting | | Function 0x03,0x04, 0x06, or 0x10 |
|------------|------|--------------------------|-----|--|
| 4096 | 1000 | Alarm point 1 setting 1 | F14 | NO/NC, sequences, buzzer type, output select Input delay time |
| 4097 | 1001 | Alarm point 1 setting 2 | F15 | |
| 4098 | 1002 | Alarm point 2 setting 1 | F14 | |
| 4099 | 1003 | Alarm point 2 setting 2 | F15 | |
| 4100 | 1004 | Alarm point 3 setting 1 | F14 | |
| 4101 | 1005 | Alarm point 3 setting 2 | F15 | |
| 4102 | 1006 | Alarm point 4 setting 1 | F14 | |
| 4103 | 1007 | Alarm point 4 setting 2 | F15 | |
| 4104 | 1008 | Alarm point 5 setting 1 | F14 | |
| 4105 | 1009 | Alarm point 5 setting 2 | F15 | |
| 4106 | 100A | Alarm point 6 setting 1 | F14 | |
| 4107 | 100B | Alarm point 6 setting 2 | F15 | |
| 4108 | 100C | Alarm point 7 setting 1 | F14 | |
| 4109 | 100D | Alarm point 7 setting 2 | F15 | |
| 4110 | 100E | Alarm point 8 setting 1 | F14 | |
| 4111 | 100F | Alarm point 8 setting 2 | F15 | |
| 4112 | 1010 | Alarm point 9 setting 1 | F14 | |
| 4113 | 1011 | Alarm point 9 setting 2 | F15 | |
| 4114 | 1012 | Alarm point 10 setting 1 | F14 | |
| 4115 | 1013 | Alarm point 10 setting 2 | F15 | |
| 4116 | 1014 | Alarm point 11 setting 1 | F14 | |
| 4117 | 1015 | Alarm point 11 setting 2 | F15 | |
| 4118 | 1016 | Alarm point 12 setting 1 | F14 | |
| 4119 | 1017 | Alarm point 12 setting 2 | F15 | |
| 4120 | 1018 | Alarm point 13 setting 1 | F14 | |
| 4121 | 1019 | Alarm point 13 setting 2 | F15 | |
| 4122 | 101A | Alarm point 14 setting 1 | F14 | |
| 4123 | 101B | Alarm point 14 setting 2 | F15 | |
| 4124 | 101C | Alarm point 15 setting 1 | F14 | |
| 4125 | 101D | Alarm point 15 setting 2 | F15 | |
| 4126 | 101E | Alarm point 16 setting 1 | F14 | |
| 4127 | 101F | Alarm point 16 setting 2 | F15 | |
| 4128 | 1020 | Alarm point 17 setting 1 | F14 | |
| 4129 | 1021 | Alarm point 17 setting 2 | F15 | |
| 4130 | 1022 | Alarm point 18 setting 1 | F14 | |
| 4131 | 1023 | Alarm point 18 setting 2 | F15 | |
| 4132 | 1024 | Alarm point 19 setting 1 | F14 | |
| 4133 | 1025 | Alarm point 19 setting 2 | F15 | |
| 4134 | 1026 | Alarm point 20 setting 1 | F14 | |
| 4135 | 1027 | Alarm point 20 setting 2 | F15 | |
| 4136 | 1028 | Alarm point 21 setting 1 | F14 | |
| 4137 | 1029 | Alarm point 21 setting 2 | F15 | |
| 4138 | 102A | Alarm point 22 setting 1 | F14 | |
| 4139 | 102B | Alarm point 22 setting 2 | F15 | |
| 4140 | 102C | Alarm point 23 setting 1 | F14 | |
| 4141 | 102D | Alarm point 23 setting 2 | F15 | |
| 4142 | 102E | Alarm point 24 setting 1 | F14 | |
| 4143 | 102F | Alarm point 24 setting 2 | F15 | |
| 4144 | 1030 | Alarm point 25 setting 1 | F14 | |
| 4145 | 1031 | Alarm point 25 setting 2 | F15 | |
| 4146 | 1032 | Alarm point 26 setting 1 | F14 | |
| 4147 | 1033 | Alarm point 26 setting 2 | F15 | |
| 4148 | 1034 | Alarm point 27 setting 1 | F14 | |
| 4149 | 1035 | Alarm point 27 setting 2 | F15 | |
| 4150 | 1036 | Alarm point 28 setting 1 | F14 | |
| 4151 | 1037 | Alarm point 28 setting 2 | F15 | |
| 4152 | 1038 | Alarm point 29 setting 1 | F14 | |
| 4153 | 1039 | Alarm point 29 setting 2 | F15 | |
| 4154 | 103A | Alarm point 30 setting 1 | F14 | |
| 4155 | 103B | Alarm point 30 setting 2 | F15 | |
| 4156 | 103C | Alarm point 31 setting 1 | F14 | |
| 4157 | 103D | Alarm point 31 setting 2 | F15 | |
| 4158 | 103E | Alarm point 32 setting 1 | F14 | |
| 4159 | 103F | Alarm point 32 setting 2 | F15 | |
| 4160 | 1040 | Alarm point 33 setting 1 | F14 | |
| 4161 | 1041 | Alarm point 33 setting 2 | F15 | |

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|------|------|---|-----|--|
| 4162 | 1042 | Alarm point 34 setting 1 | F14 | |
| 4163 | 1043 | Alarm point 34 setting 2 | F15 | |
| 4164 | 1044 | Alarm point 35 setting 1 | F14 | |
| 4165 | 1045 | Alarm point 35 setting 2 | F15 | |
| 4166 | 1046 | Alarm point 36 setting 1 | F14 | |
| 4167 | 1047 | Alarm point 36 setting 2 | F15 | |
| 4168 | 1048 | Alarm point 37 setting 1 | F14 | |
| 4169 | 1049 | Alarm point 37 setting 2 | F15 | |
| 4170 | 104A | Alarm point 38 setting 1 | F14 | |
| 4171 | 104B | Alarm point 38 setting 2 | F15 | |
| 4172 | 104C | Alarm point 39 setting 1 | F14 | |
| 4173 | 104D | Alarm point 39 setting 2 | F15 | |
| 4174 | 104E | Alarm point 40 setting 1 | F14 | |
| 4175 | 104F | Alarm point 40 setting 2 | F15 | |
| 4176 | 1050 | Alarm point 41 setting 1 | F14 | |
| 4177 | 1051 | Alarm point 41 setting 2 | F15 | |
| 4178 | 1052 | Alarm point 42 setting 1 | F14 | |
| 4179 | 1053 | Alarm point 42 setting 2 | F15 | |
| 4180 | 1054 | Alarm point 43 setting 1 | F14 | |
| 4181 | 1055 | Alarm point 43 setting 2 | F15 | |
| 4182 | 1056 | Alarm point 44 setting 1 | F14 | |
| 4183 | 1057 | Alarm point 44 setting 2 | F15 | |
| 4184 | 1058 | Alarm point 45 setting 1 | F14 | |
| 4185 | 1059 | Alarm point 45 setting 2 | F15 | |
| 4186 | 105A | Alarm point 46 setting 1 | F14 | |
| 4187 | 105B | Alarm point 46 setting 2 | F15 | |
| 4188 | 105C | Alarm point 47 setting 1 | F14 | |
| 4189 | 105D | Alarm point 47 setting 2 | F15 | |
| 4190 | 105E | Alarm point 48 setting 1 | F14 | |
| 4191 | 105F | Alarm point 48 setting 2 | F15 | |
| 4192 | 1060 | Alarm point 49 setting 1 | F14 | |
| 4193 | 1061 | Alarm point 49 setting 2 | F15 | |
| 4194 | 1062 | Alarm point 50 setting 1 | F14 | |
| 4195 | 1063 | Alarm point 50 setting 2 | F15 | |
| 4196 | 1064 | Alarm point 51 setting 1 | F14 | |
| 4197 | 1065 | Alarm point 51 setting 2 | F15 | |
| 4198 | 1066 | Alarm point 52 setting 1 | F14 | |
| 4199 | 1067 | Alarm point 52 setting 2 | F15 | |
| 4200 | 1068 | Alarm point 53 setting 1 | F14 | |
| 4201 | 1069 | Alarm point 53 setting 2 | F15 | |
| 4202 | 106A | Alarm point 54 setting 1 | F14 | |
| 4203 | 106B | Alarm point 54 setting 2 | F15 | |
| 4204 | 106C | Alarm point 55 setting 1 | F14 | |
| 4205 | 106D | Alarm point 55 setting 2 | F15 | |
| 4206 | 106E | Alarm point 56 setting 1 | F14 | |
| 4207 | 106F | Alarm point 56 setting 2 | F15 | |
| 4208 | 1070 | Alarm point 57 setting 1 | F14 | |
| 4209 | 1071 | Alarm point 57 setting 2 | F15 | |
| 4210 | 1072 | Alarm point 58 setting 1 | F14 | |
| 4211 | 1073 | Alarm point 58 setting 2 | F15 | |
| 4212 | 1074 | Alarm point 59 setting 1 | F14 | |
| 4213 | 1075 | Alarm point 59 setting 2 | F15 | |
| 4214 | 1076 | Alarm point 60 setting 1 | F14 | |
| 4215 | 1077 | Alarm point 60 setting 2 | F15 | |
| 4216 | 1078 | Alarm point 61 setting 1 | F14 | |
| 4217 | 1079 | Alarm point 61 setting 2 | F15 | |
| 4218 | 107A | Alarm point 62 setting 1 | F14 | |
| 4219 | 107B | Alarm point 62 setting 2 | F15 | |
| 4220 | 107C | Alarm point 63 setting 1 | F14 | |
| 4221 | 107D | Alarm point 63 setting 2 | F15 | |
| 4222 | 107E | Alarm point 64 setting 1 | F14 | |
| 4223 | 107F | Alarm point 64 setting 2 | F15 | |
| 4352 | 1100 | General setting | F16 | Low byte: Buzzer, sleep, auto alarm/ringback mute, ack |
| 4353 | 1101 | Aux 1 & aux 2 configuration | F17 | High byte: Aux 1, Low byte: Aux 2 |
| 4354 | 1102 | Aux 3 configuration | F17 | High byte: Aux 3, Low byte: unused |
| 4355 | 1103 | Auto alarm & auto ringback silence time | F18 | High byte: alarm, Low byte: ringback |
| 4356 | 1104 | Auto acknowledge time | F18 | High byte: auto acknowledge, Low byte: unused |

*Read/write of unused or unavailable Window or Alarm point parameter is acceptable but would give unexpected results

6.2.1 Description of Field

| Format | Type | Description |
|--------|-------------------------------|--|
| F10 | Product info | ASCII character |
| F11 | Window status | High byte: even no. window. Low byte: odd no. window 0 = window off 1 = window on 2 = slow flashing 3 = fast flashing 4 = intermittent flashing |
| F12 | Buzzer & output relay status | High byte: Buzzer status 0 = buzzer off 1 = constant on 2 = intermittent 1 (0.9Hz) 3 = intermittent 2 (2.2Hz) Low byte: Output relay status 0' = off, '1' = on Bit 0 – aux1 relay Bit 1 – aux2 relay Bit 2 – aux3 relay Bit 4 – ringback relay Bit 5 – SSP relay |
| F13 | Button command | High byte: 0, Low byte as below: To trigger the respective button. Set '1' to trigger, '0' no action Bit 0 – Mute button Bit 1 – Ack button Bit 2 – Reset button Bit 3 – First up Reset button (only 1 bit set at a time) |
| F14 | Alarm point setting 1 | High byte: Bit 0: 0 = NO, 1 = NC Bit 1 – 4: 0000 = Manual reset 0001 = Auto reset 0010 = Ringback 0011 = Ringback with auto acknowledge 0100 = F1M 0101 = F1A 0110 = F2M 0111 = F2A 1000 = F3M 1001 = F3A 1010 = FOLLOWER Bit 5 – 7: Internal buzzer type 000 = off 001 = constant on 010 = intermittent 1 (0.9 Hz) 011 = intermittent 2 (2.2 Hz) Low byte: '1' to select Aux relay Bit 0 – Aux 1 relay selected Bit 1 – Aux 2 relay selected Bit 2 – Aux 3 relay selected |
| F15 | Alarm point setting 2 | Input contact delay/confirmation High byte: 0 Low byte: Valid range: 1-255 (x 2.5ms) |
| F16 | General setting | General setting for the annunciator High byte: 0, Low byte as below: Bit 0 – Internal buzzer on/off. '1' = off, '0' = on Bit 1 – sleep mode. '1' = sleep, '0' = normal (read only) Bit 2 – auto alarm silence. '1' = enabled, '0' = disabled Bit 3 – auto ringback silence. '1' = enabled, '0' = disabled Bit 4 – auto acknowledge. '1' = enabled, '0' = disabled |
| F17 | Auxiliary relay configuration | High byte: Aux1 or 3, Low byte: Aux 2 Bit 0 – 3: 0000 = Follow input contact, on = fault, off = normal 0001 = follow input contact, off = fault, on = normal 0010 = On when buzzer on, off after ack 0011 = On when buzzer on, off after mute/ack 0100 = On when buzzer on, off when window is off (normal) |
| F18 | Auto timer setting | 1 – 255 second |
| F19 | Alarm point input status | Alarm point input contact status. '0' = normal, '1' = fault. Bit 0 - min input number, bit 15 – max input number |