minilec®

USER'S MANUAL
MBAS 08

Ver. 01 (30/03/2011)

MICROPROCESSOR BASED ALARM ANNUNCIATOR SYSTEM

1.0 Scope

The scope of this USER'S MANUAL is limited to the product named MBAS 08 annunciation systems / modules manufactured, Marketed and serviced by MINILEC. The scope is further limited to the extent of technical specifications enlisted in this USER'S MANUAL only.

Users should not refer this manual for using any other annunciator other than MBAS 08 with unspecified technical specifications and features.

2.0 MBAS 08 System Details

2.01 General

The MBAS 08 series are microprocessor based annunication Systems.

MINILEC, a well known name in the field of electronic motor protection and microprocessor based annunciators, offer this unique alarm annunciation system based on latest single chip microprocessor technology with a totally new face-lift and with considerable size reduction, having moulded enclouser, with 92 x 92 mm cutout.

These highly reliable and compact systems offer multipoint annunciation with operating sequence as per ISA standards and with optional features such as extra auxillary relay outputs, for remote annunciation, multicoloured front replaceable window Acrylic Plate for easy differentiation of trip and non-trip, or alarm and trip type of faults, manned/unmanned mode of operation etc.

Thus there is a readily available option for the specific needs of every installation. Minilec offers annunciators for all applications.

2.02 Standard Features

The Design Features

- Single chip microcontroller logic
- Opto isolated inputs and outputs.
- Super Bright LED window illumination.
- High Noise immunity / isolation.
- Switch mode power supply.
- Self surveillance watchdog LED.

The Constructional Flexibility

- With cutout size 92x92 mm
- Replaceable lens-on window bezel.
- Replaceable window inscriptions (Legends)
- Two different windows sizes.
- Moulded enclosures.

The Functional Features

- Selectable Sequence (S1/S2/S3/S4) by programming.
- Sequence as per ISA standard.
- Potential free dry contact inputs.
- NO/NC input / Trip-Non Trip grouping selectable, configuration by programming.
- Relay output for external Audible Hooter
- 3rd Relay optional for either of below mentioned feature.
  a) Ring back hooter
  b) Supervisory control
- Inbuilt buzzer for Group 1/Group 2 for 4/6 pt. Models only.

2.03 Optional Features

- Preprogrammed Custom built operating sequence (without site selection facility)
- Manned / Unmanned function
- 5 different colours for window illumination.
- Ringback sequence with optional 3rd relay output for Ringback hooter with trip & Nontrip grouping facility
- External and / or built-in control push buttons.
- Serial Port - RS232 or RS485.
- Supply fail annunciation externally.
- Built in Buzzer for 4 & 6 window modules only.

2.04 Constructional Details

■ The CPU Block

The Central Processing Unit block scans and processes digital (dry contact) inputs and triggers the corresponding facia window and hooter relay and other optional auxillary relay output (if any), as per the operating sequence given in the order.

The CPU block's 'BRAIN' is the single chip microcontroller IC which is powered by +5 V DC regulated from Power Supply block.

■ The Power Supply Block

The Power Supply block is integral. This switch mode power supply accepts specified AC or DC input supply 20-60 V AC/DC, 90-270 V AC / DC and converts it into 3 different filtered noise free DC outputs which are fed to the CPU block (+5 V & +12 V DC isolated) and to the Facia block (+12 V DC)

■ The Facia Block

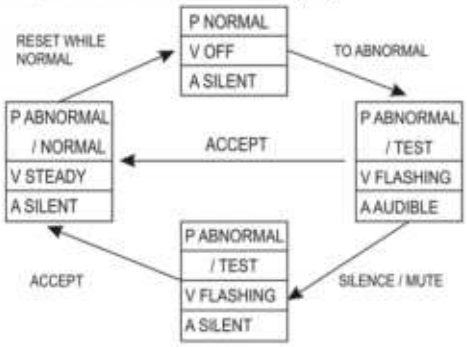
The Facia Block is accessible from front with replaceable Acrylic. Put legend inscription in between acrylic and diffuser. It consist of single PCB with Super Bright LED's and front acrylic plates. This Facia Block also incorporate Push Button Capsules (except 8pt.). It Consists of 4 nos. feather touch Push Buttons mounted in a 37 x 17 mm moulded capsule which is press fitted in last window Location.

2.05 Standard Operating Sequence

The MBAS 08 annunciation systems are programmed to operate as per following operating sequences confirming to ISA standards. Other sequences / non standard sequences are given as per customer's requirement.

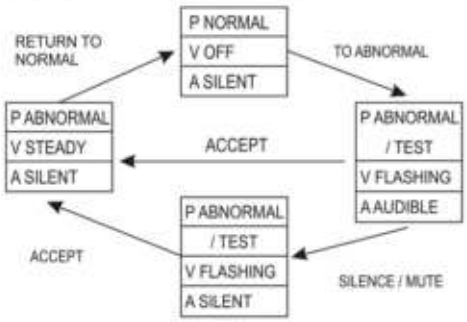
Minilec Sequence Code	Operating Sequence Title	ISA Std. Code
S1	Manual Reset	M1
S2	Auto Reset	A1
S3	Ringback	R1-12
S4	First UP	F2M-1

SEQUENCE S1 : Manual Reset (M1)



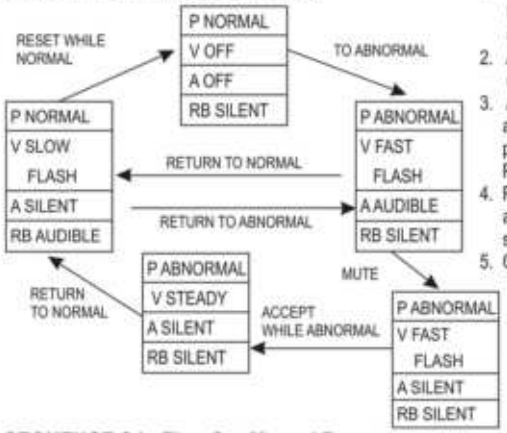
1. Test, Silence, Accept, Reset Push Buttons are external.
2. Audible alarm can be silenced by pressing Silence (Mute) Push button.
3. Manual reset of Accepted faults after process conditions return to normal.
4. Operation test provided.

SEQUENCE S2 : Auto Reset (A1)



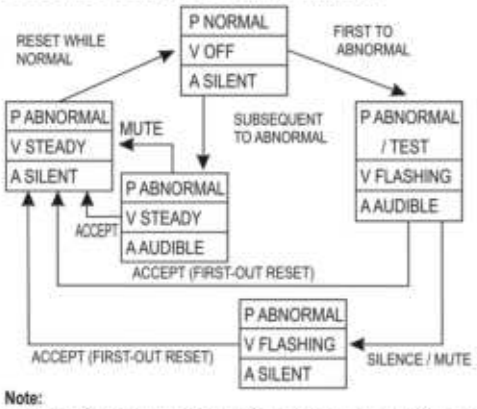
1. Test, Silence, Accept, Reset Push Buttons are external.
2. Audible alarm can be silenced by pressing Silence (Mute) Push button.
3. Automatic reset of Accepted faults after process conditions return to normal.
4. Operation test provided.

SEQUENCE S3 : Ringback (R1-12)



1. Test, Silence, Accept, Reset Push Buttons are external.
2. Alarm & ringback Audible devices.
3. Audible device or ringback alarm can be silenced by pressing Silence (Mute) Push button.
4. Ringback visual & audible alarm when process status returns to normal.
5. Operation test provided.

SEQUENCE S4 : First Out Manual Reset



1. Test, Silence, Accept, Reset Push Buttons are external.
2. First-out flashing are subsequently steady.
3. Manual reset of Accepted faults when process status return to normal.
4. Operation test provided.

Note:
P : Process Status, **V :** Visual Alarm Status, **A :** Audible Alarm Status, **RB :** Ringback audible alarm status.

2.06 System Enclosure

The MBAS 08 annunciation systems is configured in 96x96 mm type moulded enclosure.

Fig 1 Standard Enclosure

The size confirms to standard bezel (96 x 96 mm) and panel cutout (92 x 92 mm).

2.07 Scope of supply

Minilec offers to supply its microcontroller based Annunciation system MBAS 08 as an isolated system to be installed in a suitable control cubicle.

Minilec's scope of supply is limited to following:

1. MBAS 08 Standard annunciator module
2. Built in Power supply block as per Purchase Order specifications. (Either AC or DC)
3. Push Button capsules as built-in or provision for external connection.

Following mandatory accessories are also supplied with MBAS 08

1. Noise suppressing NETWORK (RRC N/W) supplied with the annunciators to be wired across the inductive load of the audible device.
2. 2 Nos. mounting clamps for panel flush mounting.
3. User's manual (may be supplied with consignment or will be sent to the user/buyer separately.)

2.08 Optional Accessories

Following optional accessories will be supplied only if these are ordered by buyer as additional facilities:

1. Industrial diaphragm type AC or DC Powered Hooter (Audible Device)
2. Electronic (Tone controlled) type AC or DC Powered Hooter (Audible Device)
3. External NO type Push Buttons (4 Nos. = 1 set)
4. Ringback sequence with 3rd relay output for Ringback hooter.
5. Supply fail annunciation facility for same supply voltage range(External).

2.09 List of Spares (Recommended)

1. Pre-propgrammed Microcontroller chip.
2. CPU Card.
3. Power Supply Card.
4. LED Board.
5. Push Buttons
6. Buzzer.

2.10 Technical Specifications

1. Supply Voltage : 90-270 V AC/DC / 20-60 V AC/DC
2. Supply Frequency (for AC) : 50 Hz / 60 Hz +/- 3%
3. Windows : 4/6/7/8 [max]
4. Display (Window) : Window Acrylic replaceable. Legends replaceable
5. Window Dimensions : For 4/6/7/8 small window 37 x 17 mm For 4 big window 37 x 27 mm (Only).
6. Unit Dimensions :

Overall	Cutout
96 x 96 x 82 mm	92 x 92 mm

7. Weight (approx.) : 350 gms
8. Power Consumption : 1.5 Watts / window (Max.)
9. Flash Rate : 50-60 Flash / Min. in fast flash 20-30 Flash / Min. in slow flash
10. Legends : Legend plate with inscriptions

11. Operating Sequence	: S1, S2,S3 (Optional), S4 Site selectable by programming mode using push button Keyboard.
12. Other features	: NO/NC fault selection and Grouping (Trip/Non Trip) Selection Supply Fail Annunciation (External)
13. Optional features	: Any other operating sequence Man / Unmanned Feature.
14. Input Signal	: Through Potential free contact.
15. Input Interrogation Voltage	: +12 V DC
16. Window colour	: Red, Green, Yellow (Amber), Blue.
17. Output contacts	: 1 NO + 1 NO (for Hooter) 1 NO for Ring back (Optional)
18. Output contact Rating	: 5 Amp, 240 V AC (Resistive)
19. Operations Temp. Limit	: 0°C to 60°C
20. Storage Temp. Limit	: -10°C TO 60°C
21. Humidity	: Upto 95% Rh
22. Push Buttons	: 4 Nos. (Test, Mute, Accept, Reset) Membrane Type (Built-in or Optional)
23. Communication	: RS 232/RS 485 (Optional) Modbus RTU or ASCII (Optional)
24. Enclosure	: ABS Moulded Enclosure

3.0 Installation Instructions

3.01 Check list of supply

Check whether following essential items are delivered with MBAS 08 annunciator packing box.

MBAS 08 annunciator module as per order and dispatch documents

- 2 mounting clamps
- Legends - Photo positive or Negative inscriptions.
- Other optional accessories if ordered. (The Hooter, external Push-buttons etc.)
- Verify ordered specifications like number of windows. Input Supply Voltage etc.

3.02 Part Names & Locations

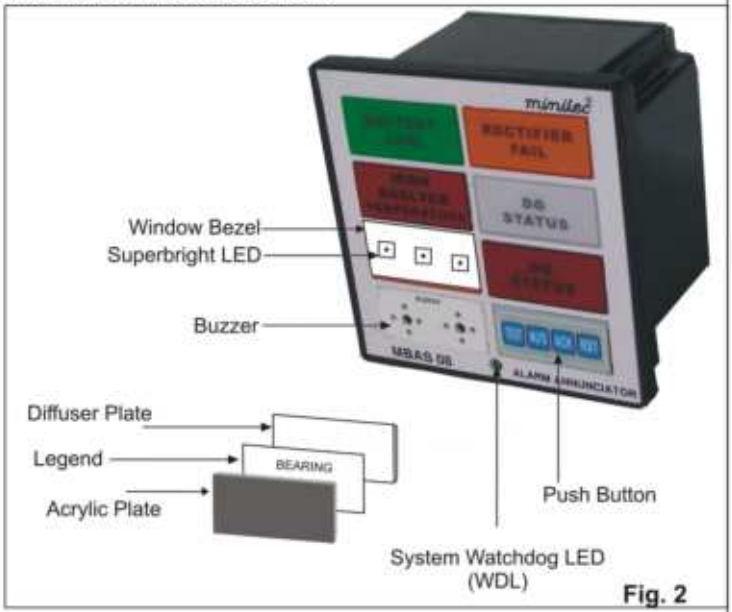


Fig. 2

3.03 Pre-Installation Checks

i) List the ordered features like

- Normal supply voltage.
- Windows size.
- Number of windows
- Number of coloured windows.
- Operating Sequence Fixed or site selectable.
- NO/NC fault selection & Grouping site selectable.

ii) Connect specified normal power supply voltage to MBAS 08 and wait. The 'Self-Surveillance' watch-dog LED will switch 'ON' and start flashing. This indicates MBAS 08 logic circuit is operating perfectly as designed.

iii) Below listed test sequence is with a presumption of 'MANUAL RESET (S1)' operating sequence and NO type fault contacts as inputs, with MBAS 08 in MANNED mode operation.

If 'Push buttons' is provided as inbuilt / external then
a) Press TEST push-button. All windows will flash.
b) Check the output hooter relay RLY 1 is energized and contact (I1) and (C1) is closed.
c) Press MUTE Push Button Output hooter relay will be de-energize and contacts (I1) & (C1) will open.
d) Press ' ACCEPT' Push Button. All windows should stop flashing and glow steady.
e) Press ' RESET' Push Button to clear all windows.

For testing other operating sequence refer sequence chart. (If push button capsule is not provided built-in, then connect external 'NO' type push buttons to test the functioning of MBAS 08 module, as detailed above.)
f) Press TEST & ACK push button at a time for to enter in program mode.

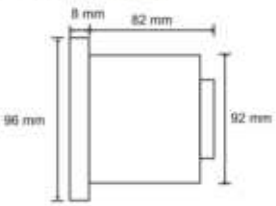
***Note:** If push button capsule is not inbuilt, then give Test, Mute, Accept, Reset signals by external No type switches / push buttons.

iv) Now, use a 'Shortlink' to actuate individual fault input and operate, MUTE, ACCEPT & RESET push-button sequentially.
a) If ringback sequence is used then on fault actuation, window will fast flash & hooter contacts of RLY 1 or RLY 2 will energize (I1 & C1 or I2 & C2 will close). On fault normalization before or after ACCEPT command then Ringback Hooter Relay RLY 3 will energize with slow flashing window. (Fig. 14).
b) If grouping facility is provided
RLY1 will energize for GROUP 1 faults.
RLY 2 will energize for GROUP 2 faults.
c) For 'MANNED' or 'UNMANNED' mode of operation connect external. Double Pole Single Throw Switch as shown in figure fig. 10 of this users mannual. Remove the shortlinks provided at these terminals of MBAS 08.
d) Supply Fail Annunciation. (fig. 11).

3.04 Installation

Install the MBAS 08 Annunciator modules in designed panel cutout, inserting from front of panel. Before installation please ensure that in the visinity of MBAS 08 there are no equipments / systems generating heat, vibration, noise, RF Signals etc.

3.05 Mounting



For fixing, use the mounting Clamps supplied with the Annunciator, Tighten suitably so that it does not move or get loose.

Fig 3 Front Panel Mouting

3.06 External Electrical Cable Connections

(Refer Ch. 6 (Fig. 8) of this user manual)
Connect various fault contact cables (2.5 sq.mm max.) With pin lugs to the fault inputs at terminals with respective labels. Please ensure that these are potential free contacts and do not carry any voltage from source end. Connect Hooter(s) along with Network RRC.

3.07 Window Legends

For inserting legends or window inscriptions, please remove the front acrylic Plate by Screw-driver. Insert the inscribed label at the front of the opaque diffusing plate fitted to the window acrylic lens. The inscription label is sandwitched between the acrylic Plate and diffusing plate.

3.08 Trip & Non-Trip Group Selection

'See 7.0'

3.09 Sequence Selection

'See 7.0'

3.10 NO/NC Configuration Selection

'See 7.0'

3.11 Post Installation Checks

Before connecting power supply, please check all wiring terminals for correctness. Please ensure power supply voltage is same as that of MBAS 08.

3.12 Testing & Commissioning

Connect power supply and test for operation of MBAS 08 as per Testing Flow Chart given in clause 5.01.

3.13 Precautions

Please ensure that power supply to MBAS 08 is stable and free from spikes and surges. Please ensure that fault contact cabling does not pick up RF signals. Please ensure that, there is no heat generating and vibration near to the MBAS 08 installation.

4.0 Maintenance Instructions

4.01 Changing Windows Legends

In case of changing the legends, remove the front Acrylic plate gently by screwdriver as shown below.

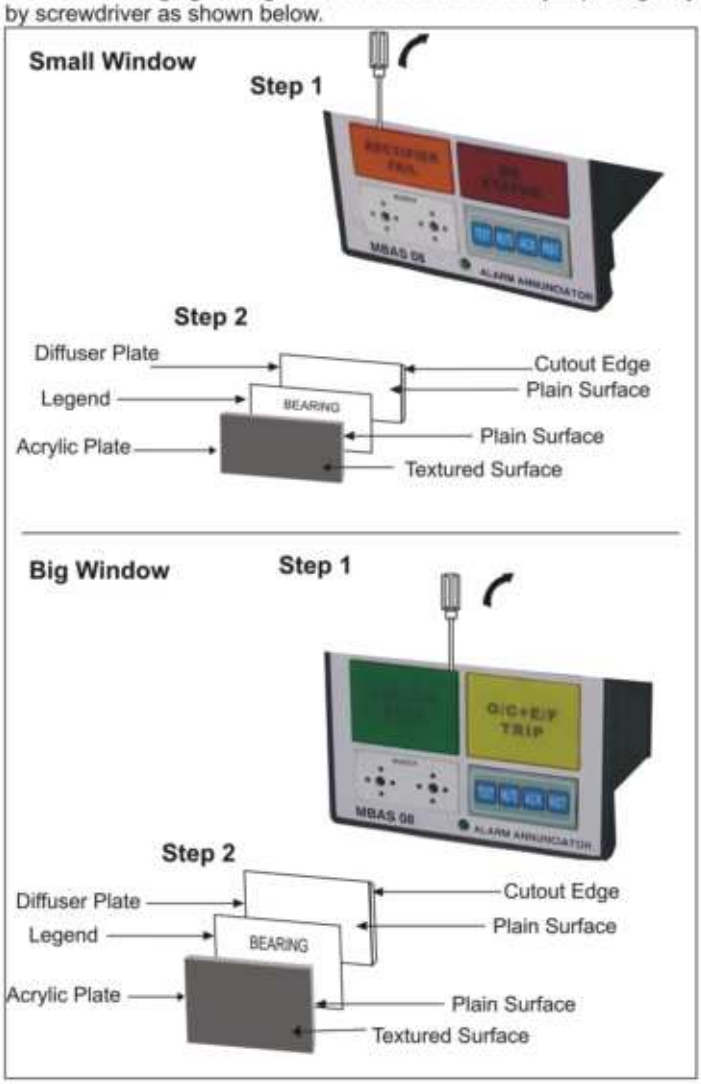


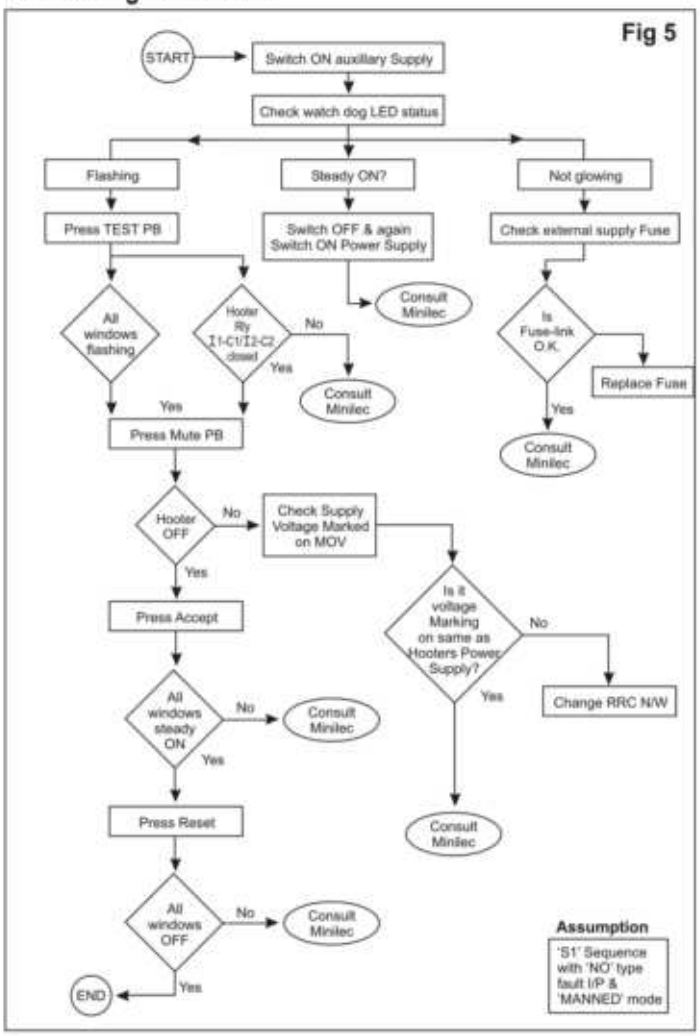
Fig. 4

Normally diffuser plate is not required to take out for legend fitting. For refitting, first insert the diffuser plate keeping plain surface on the front side & the surface provided with cutout edges on the back side, so that the diffuser gets fitted in slot provided on window bezel. Put Legend paper on the top of diffuser. Then insert the front Acrylic Plate keeping Textured Surface side on the front & plain surface on the back side. Back side of Acrylic Plate is provided with cutout edges from all the four sides & also having 2 small edges for locking on top & bottom of the left & right hand side of the acrylic plate. After insertion, press the Acrylic plate from all the sides to gets fitted in an appropriate slot. Always ensure proper refitting of Acrylic Plates.

5.0 Drawings / Illustrations

5.01 Testing Flow Chart

Fig 5



5.02 Functional Block Diagram

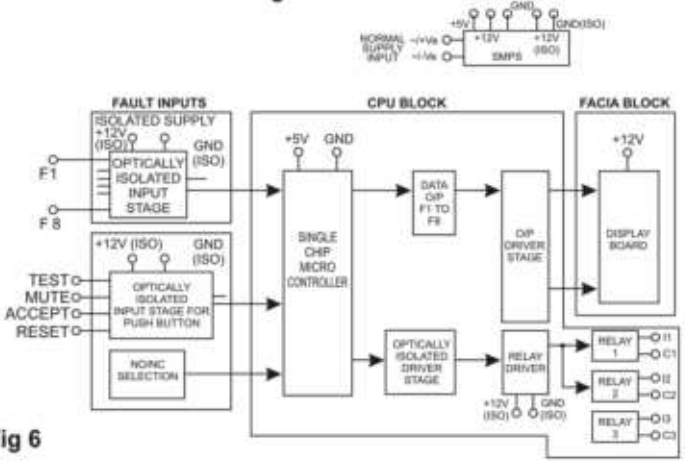
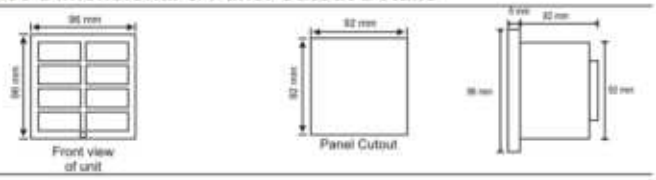


Fig 6

5.03 Dimensional & Panel Cutout Details



5.04 3D View of various models with different windows sizes with / without push buttons & buzzer blocks

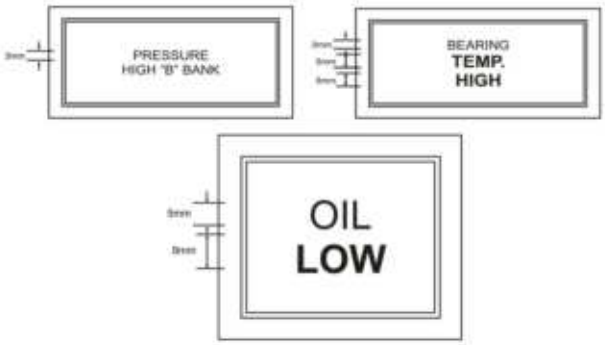
4pt. Big Window with Push Button & Buzzer | 6pt. Small Window with Push Button & Buzzer | 7pt. Small Window with Push Button | 8pt. Small Window

Fig 7

5.05 Legends Letter Sizes

MBAS 08 facia incorporates a 'Photo Negative' type or 'Photo Positive' Type legend plates which are individually accessible from the front of the unit. General guidelines for selection of letter sizes & number of lines per window are

LETTER SIZE IN mm	NO. OF LETTERS PER LINE	NO. OF LINE PER WINDOW	
		Small	Big
3	9	4	5
5	6	3	4
8	4	2	3
10	3	1	2



5.06 Window Numbering System

A) 8pt. Small Window configuration

B) 4pt. Big Window configuration

The numbering system is shown for 8/7/6/4 pt. (Small) & 4 pt. (Big) models for reference.

C) 6pt. Small Window configuration

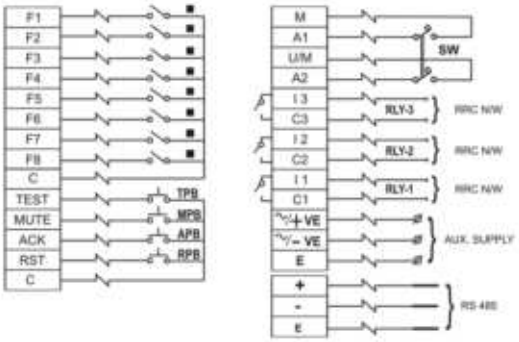
D) 7pt. Small Window configuration

E) 4pt. Small Window configuration
D= DUMMY

6.0 Connection Diagram

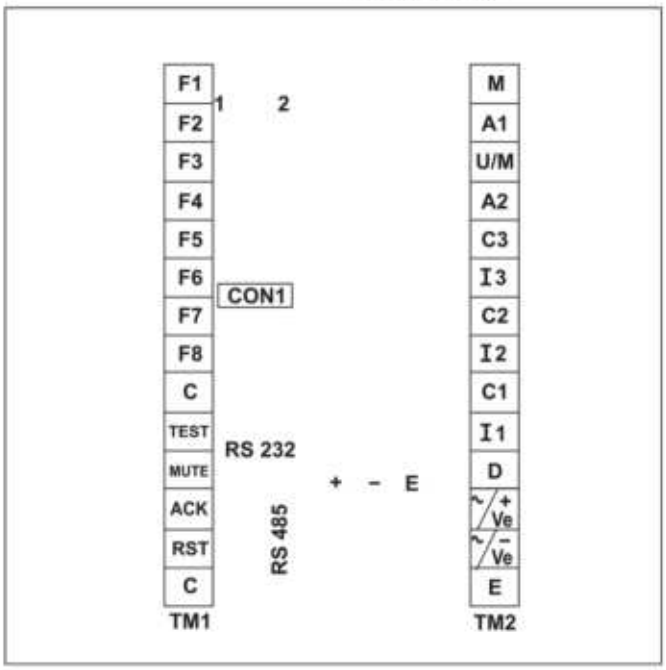
6.01 Fault Inputs Connection Diagram

Fig 8



NOTES-

1) ■ - External potential free fault contacts
2) F - Fault Input Contact
3) C - Common Point Fault Input Contact
4) TPB - Test Push Button
5) MPB - Mute Push Button
6) APB - Acknowledge Push Button
7) RPB - Reset Push Button
8) RLY - 1 - Normal Hooter contact / Group - 1 Hooter Contact.
9) RLY - 2 - Normal Hooter Contact / Group - 2 Hooter Contact.
10) RLY - 3 - Optional Relay
    A) Ring Back Hooter Relay With Grouping Facility. Or
    B) Supervisory Relay. Or
    C) Any Other Function (Optional).
11) Connect RRC Network Across Hooter Coil.
12) RS 232 - For 232 the facility is provided optionally.
13) RS 485 - for 485 the facility is provided optionally.
14) For 4 point F5, F6, F7, F8 are dummy.
15) For 6 point F7, F8 are dummy.
16) For 7 point F8 is dummy.
17) Manned / Unmanned mode selection facility is provided optionally.



REAR VIEW OF 4 POINT BIG **OR** 4 OR 6 OR 7 OR 8 POINT SMALL MODELS

6.02 Stand by Power Source Connection

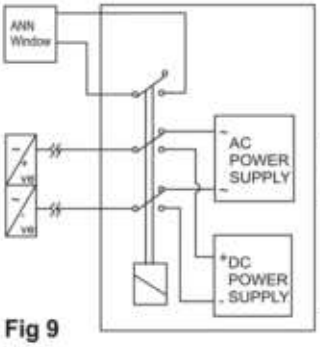


Fig 9

Changeover relay assembly effecting switch over to standby Power Source is external to the annunciator.

Normal supply Voltage	Standby Supply Voltage
90-270 V AC/DC	90-270 V AC/DC
20-60 V AC/DC	20-60 V AC/DC

6.03 Manned Or Unmanned Mode

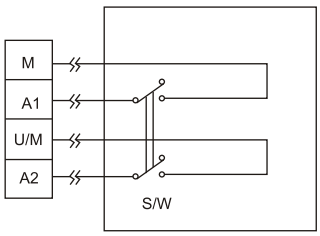


Fig 10

Connect external (shown in the Box) double pole single throw switch (DPST) to enable you to select the MBAS 08 annunciator in either MANNED MODE or UNMANNED mode of operation.

SW SWITCH POSITION	CLOSED	OPEN
MODE OF POSITION	MANNED MODE	UNMANNED MODE

6.04 External relay connection diagram for supply fail annunciation function

(Application for:- a) Any type of same normal voltage & standby voltage OR b) Different normal voltage & standby voltage within the range of 90V to 270 V AC/DC OR 20-60 V AC/DC)

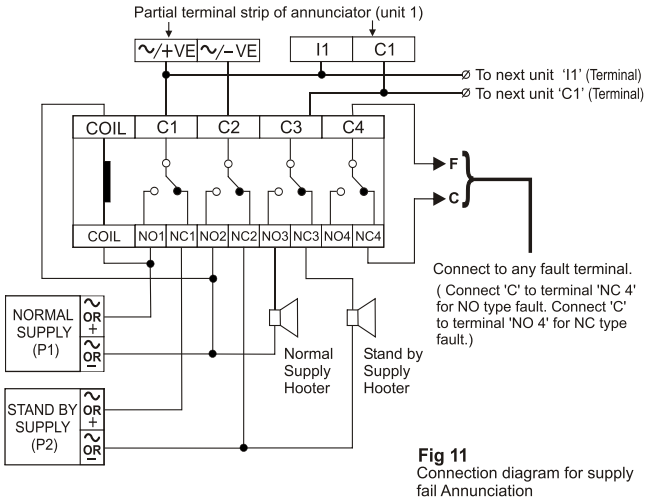


Fig 11
Connection diagram for supply fail Annunciation

Note:-

1) R1 - External 4 CO plug in type relay with base. (Coil Voltage must be same as normal supply - P1).
2) P1 - Normal Supply.
3) P2 - Stand by Supply.
4) No ring back hooter operation when normal supply P1 fails.
5) Connect RRC network across hooter with annunciator.
6) Relay contacts shown in de-energised condition.

6.05 Push Buttons

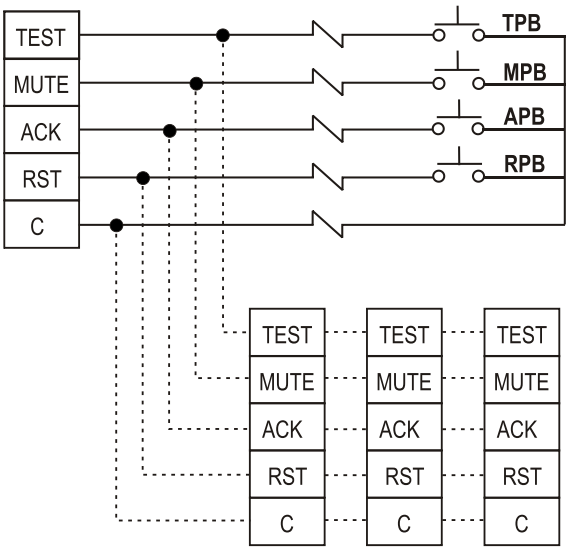
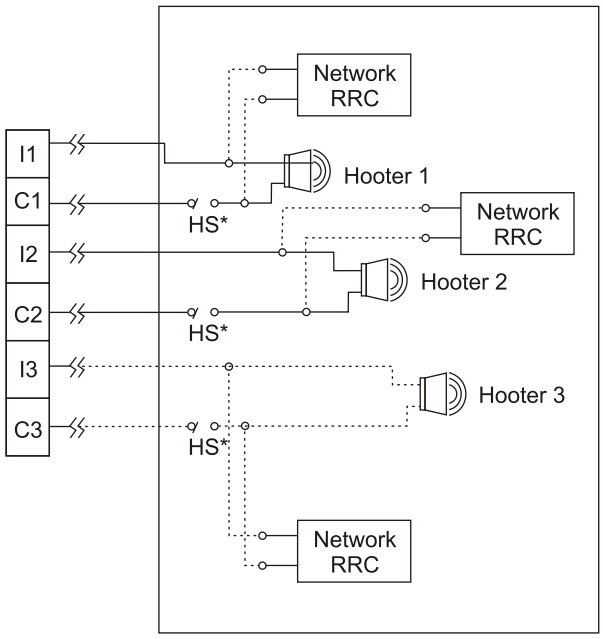


Fig 12
Common External Push Button Connection diagram

NOTE:-
External Potential free NO type Push Buttons. Whenever multiple units (mouldes) are used together for multipoint widows, the same set of push button should be connected in parallel as shown above.

6.06 Hooter Relay Contact Connections, with RRC Network.



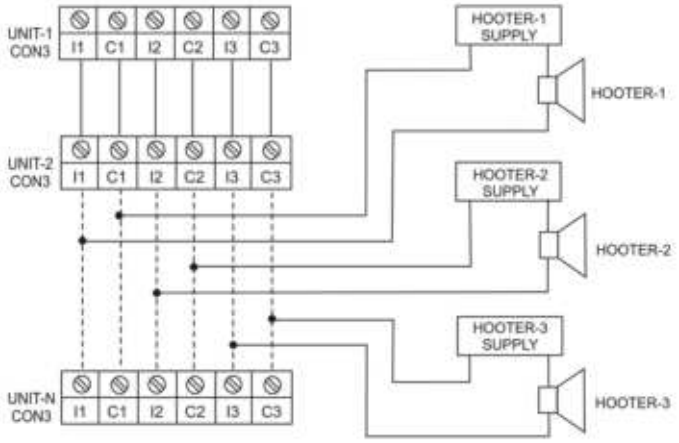
Dotted line to be considered for 3rd relay.

✱ HS = Hooter Supply

Fig 13
Common Hooter Relay connection diagram

- Hooter 1, Hooter 2 & Hooter 3 shown inside the box are external to the annunciator module.
- RLY 1 & RLY 2 are universally provided with every MBAS 08 annunciator module.
  RLY3 is optional provided on request.
  When Ring Back alarm sequence is asked for.
- Network RRC assembly is supplied with every annunciator Module. It is designed for normal Power supply voltage of Hooter Coil (load).
- RRC Network used for noise suppression.
- Presumption
- Normal supply voltage of MBAS 08 and Hooter coil supply voltage are same.
- When more annunciator modules are used together, for multiple window configuration, consult Minilec while ordering or before delivery to enable correct supply of the network RRC or one common audible device (Hooter).
- **RRC Network is mandatory across the Hooter coil.**

6.07 Parallel Connections for more than one Annunciation Units.



NOTE : UNIT - 1, UNIT -2 UPTO UNIT - N ARE CONNECTOR STRIP FOR ANY MBAS 08

Fig 14

7.0 Programming & Device ID Selection

7.01 Device ID selection:

For Device ID selection, using Program mode refer the following chart.

1. Device ID can be set from 1 to 32 (decimal) for 8 points & 1 to 15 (decimal) for 4 points unit.
2. Once you enter into Device ID selection mode, WDL led will start flashing very fast. Windows will show the present Device ID.
3. Use TEST key to increment the Device ID. Windows will flash & show the binay equivalent value of Device ID, as shown in following table. After 32, Device ID will start again from 1.
4. Use ACK key to confirm & select the required Device ID.
5. Window : ON : 1
   OFF : 0
   W1 to W8 : Window 1 to Window 8

SR. NO.	W8	W7	W6	W5	W4	W3	W2	W1	Device ID
1.	0	0	0	0	0	0	0	1	**1**
2.	0	0	0	0	0	0	1	0	**2**
3.	0	0	0	0	0	0	1	1	**3**
4.	0	0	0	0	0	1	0	0	**4**
5.	0	0	0	0	0	1	0	1	**5**
6.	0	0	0	0	0	1	1	0	**6**
7.	0	0	0	0	0	1	1	1	**7**
8.	0	0	0	0	1	0	0	0	**8**
9.	0	0	0	0	1	0	0	1	**9**
10.	0	0	0	0	1	0	1	0	**10**
11.	0	0	0	0	1	0	1	1	**11**
12.	0	0	0	0	1	1	0	0	**12**
13.	0	0	0	0	1	1	0	1	**13**
14.	0	0	0	0	1	1	1	0	**14**
15.	0	0	0	0	1	1	1	1	**15**
16.	0	0	0	1	0	0	0	0	**16**
17.	0	0	0	1	0	0	0	1	**17**
18.	0	0	0	1	0	0	1	0	**18**
19.	0	0	0	1	0	0	1	1	**19**
20.	0	0	0	1	0	1	0	0	**20**
21.	0	0	0	1	0	1	0	1	**21**
22.	0	0	0	1	0	1	1	0	**22**
23.	0	0	0	1	0	1	1	1	**23**
24.	0	0	0	1	1	0	0	0	**24**
25.	0	0	0	1	1	0	0	1	**25**
26.	0	0	0	1	1	0	1	0	**26**
27.	0	0	0	1	1	0	1	1	**27**
28	0	0	0	1	1	1	0	0	**28**
29.	0	0	0	1	1	1	0	1	**29**
30.	0	0	0	1	1	1	1	0	**30**
31.	0	0	0	1	1	1	1	1	**31**
32.	0	0	1	0	0	0	0	0	**32**

7.02 Programming Chart :

MBAS 08 is an Annunciator without any DIP switches for selection of NO/NC,Grouping etc. Here, TEST & ACK keys are used with the Windows for setting of Sequence, NO/NC or grouping. Program mode is used for selection or setting of following parameters.

1. Sequence Selection
2. NO / NC Selection.
3. Grouping Selection
4. Device ID Selection

Program Mode :

1. To enter into Program Mode, press TEST + ACK keys simultaneously for 2 sec.
2. After 2 sec, all Windows will start flashing very fast, & relay o/p will be off. This indicates that Annunciator is in Program Mode. To go from one selection mode to another, press again TEST + ACK keys simultaneously for 2 sec.
   Here WDL led will guide you through the selection mode as follows.
3. During program mode, if no key is pressed for 5 sec, unit will auto exit from program mode to normal run mode.

Sr. No.	Keys Action	Windows	Selection Mode & WDL Led
1.	No key pressed	Normal, as per operation. Annunciator will sense fault inputs & will show on windows as per selection of NO/NC, Grouping etc.	**Normal Run Mode** WDL Led: Flashing, (60 flash / min).
2.	TEST + ACK pressed & hold for 2 sec	Starts very fast flashing for 2 to 3 sec, & then off	**ProgramMode** WDL Led: Flashing, (60 flash / min).
3.		W1 to W4 shows Sequence S1 to S4 resp. Steady on Window: Present sequence Flashing Window: new sequence to be selected.	**Sequence Selection Mode** WDL Led: Flashing, (60 flash / min).
4.	TEST key press & release	Use TEST key to move the cursor to required position. Flashing cursor shows new selection to be done.	
5.	ACK key press & release	To select the new Sequence. Flashing window will become steady on. This confirms your new selection.	

Sr. No.	Keys Action	Windows	Selection Mode & WDL Led
6.	TEST + ACK pressed & hold for 2 sec	Once your current mode setting is completed, press TEST + ACK keys to go to next selection mode.	**NO/NC Selection Mode** WDL Led: Off.
7.		Each window shows corresponding Faults NO/NC selection as follows Window on : NO Selection Window off : NC selection Eg. Window W1:On, i.e. Fault F1 is NO Type.	
8.	TEST key press & release	Use TEST key to move the cursor to required fault window. Flashing cursor shows present selection. Fast Flashing: NO Type slow Flashing: NC Type	
9.	ACK key press & release	To select the type of fault. If Flashing window becomes steady on: NO. Window off: NC selection. This confirms your new selection for that fault. Now use the TEST key to move to next fault window.	
10.	TEST + ACK pressed & hold for 2 sec.	Once your current mode setting is completed, press TEST + ACK keys to go to next selection mode	**Grouping Selection mode** WDL Led : Steady On
11.		Each window shows corresponding Faults Grouping selection as follows Window on : Group 1 selection Window off: Group 2 selection Eg. Window W1: On, i.e. Fault F1 is of Group 1.	
12.	TEST key press & release	Use TEST key to move the cursor to required fault window. Flashing cursor shows present selection. Fast Flashing: Group1 Type Slow Flashing Group2 Type	

Sr. No.	Keys Action	Windows	Selection Mode & WDL Led
13.	ACK key press & release	To select the type of fault. If Flashing window becomes steady on: Group1, Window off: Group2 selection. This confirms your new selection for that fault. Now use the TEST key to move to next fault window.	
14.	TEST + ACK pressed & hold for 2 sec	Once your current mode setting is completed, press TEST + ACK keys to go to next selection mode.	**Device ID Selection Mode** WDL Led: Very Fast Flashing
15.	TEST key press & release	Use TEST key to increment the device ID no. to required fault window. Flashing cursor shows present device ID selection. Please go through the chart for Device ID selection.	
16.	ACK key press & release	To select the Device ID. If Flashing window becomes steady on: Shows the selected Device ID no selection. This confirms your new selection. To change the Device ID, use the TEST key.	
17.	TEST + ACK pressed & hold for 2 sec.	Once your current mode setting is completed, press TEST + ACK keys to go to next selection mode. Here after Device ID selection mode, program mode is repeated from step 3, i.e. Sequence selection mode.	**Sequence Selection mode** WDL Led: Flashing (60 flash/min)

5 Years Warranty
(For free repairs & servicing from date of supply against manufacturing defects only.)

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