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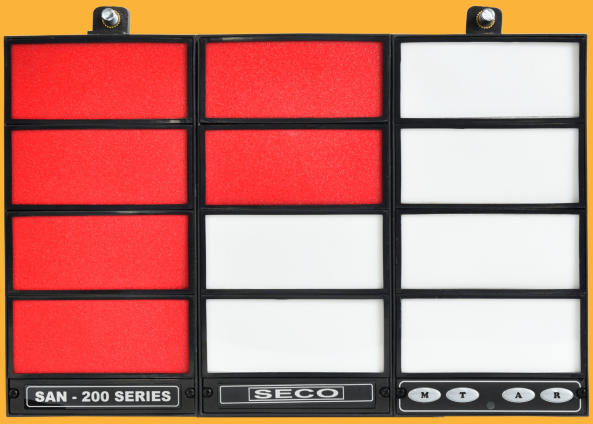
SECO

USER'S MANUAL

ANNUNCIATOR



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SECO M 002 V: 1.0
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TABLE OF CONTENTS

INTRODUCTION

The SAN 200 Series Microcontroller based Annunciator system is an unique modular product of **SECO**, designed to give indication of an alarm condition or equipment status, where high degree of reliability and flexibility is required.

The Annunciator external body is built by high pressure injection moulded ABS plastic to provide excellent protection to internal parts and to give good aesthetic finish. This also prevents the equipment getting corroded in the extreme weather conditions. The design of very low 120mm depth, and combination of small, big multi sized windows have almost solved the dimensional issues. That's how SAN 200 Series have become most popular among our customer and users.

The SAN 200 Series Annunciator is programmable for four different Sequences. As the system is field programmable, the operating specification of both alarm sequence and function can be changed during commissioning or at a later date after the equipment is installed.

Since, most interacting area for the user in an Annunciator is facia, extreme care has been taken during the design of this part of SAN 200 Annunciator. The facia windows are equally illuminated through ultra high bright, low power consuming LED's for all the colour. Special diffusers and filters are provided to achieve even distribution of illumination all over the window. As the life expectancy of LED's are in excess of 10 years, this is truly a "fit and forget" solution. It will avoid the need to continuously replace lamps over the life of the Annunciator.

Accessibility for changing Legends and colour of LED's to identify normal and critical faults are well designed and being accomplished from the front of the panel with the use of simple tools.

The standard unit supplied is equipped with a range of output relays that suits most of the applications, where as separate volt free built in "NO" dry contact can also be provided for each individual channel on request.

CONSTRUCTIONAL DETAILS

General

Each Annunciator is manufactured to meet individual customer's requirements, and passed through several stages of rugged tests. With the implementation of latest technology and robust software has proved SAN 200 Annunciator more flexible, reliable and programmable than others.

Mother Board

A pre- tested mother board, with high speed latest microcontroller provides all the interconnections between Inputs and Outputs. Embedded software will manage all the critical functions. The mother board also contains group of opto-couplers which will provide the isolation between field contacts and internal circuits.

Power Supply Unit

High efficient regulated switching mode power supply drives the whole system. This has been designed to source constant output to the internal circuits, even at the time of huge fluctuation and variation in the input.

LED Board

Backlit illumination to the facia is made available through the LED's mounted on the LED Board. A jumper to change the LED colour at site is also mounted on the same board.

The Facia

Front facia is constructed of one or more number of ABS moulded N cases, which can accommodate 8 small or 4 big windows as required. Multiple N cases can be stacked to get any number of windows (Maximum 64 windows or 16 N cases) LED's will provide the backlit illumination via a grid of plastic windows and diffusers/ colored filters. Four push buttons are normally fitted in the bottom right side of the facia for interface with the operator to cover all standard system functions like Mute, Test, Accept, Reset and watchdog LED is also provided to indicate the unit healthiness.

External Enclosures and Terminals

All the external parts are made of high engineering moulded ABS Plastic to provide protection to the internal parts and also give good aesthetic finish to the equipment. Terminals provided at the rear end come as an integrated part of the unit to make external connections and can carry two numbers of 2.5 sq.mm wires at a time. All the terminals are properly shrouded to prevent any electrical hazards and to ensure safety to the operator or wireman.

STANDARD AND OPTIONAL FEATURES

Annunciator Inputs

SAN 200 Series Annunciator operates from site selectable normally open and normally closed potential-free contacts. All inputs from alarm contacts and external push-buttons are opto-coupled which improves the system's tolerance to noise interface and provides 4 kV isolation between input and output.

Common Outputs

Site selectable two common output relay "NO" contacts are provided to identify critical and non critical audio alarms for each channel, where as fixed single relay "NO" contact is available in Baseline series.

Internal and External Push-buttons

All SAN 200 Series units are available with inbuilt push-buttons for Mute, Test, Accept and Reset operation, accessible from the front side of the Annunciator, which will operate in parallel to the similar contacts provided in the rear end of the unit to connect external push buttons.

Site Selectable Parameters

Vast range of system parameters are available to be configured by user such as window flash rate, audio output relay ON during function test, alarm sequence, critical and non critical alarm relay outputs. No special software or tools are needed for system setting. All are configurable through DIP Switch selection.

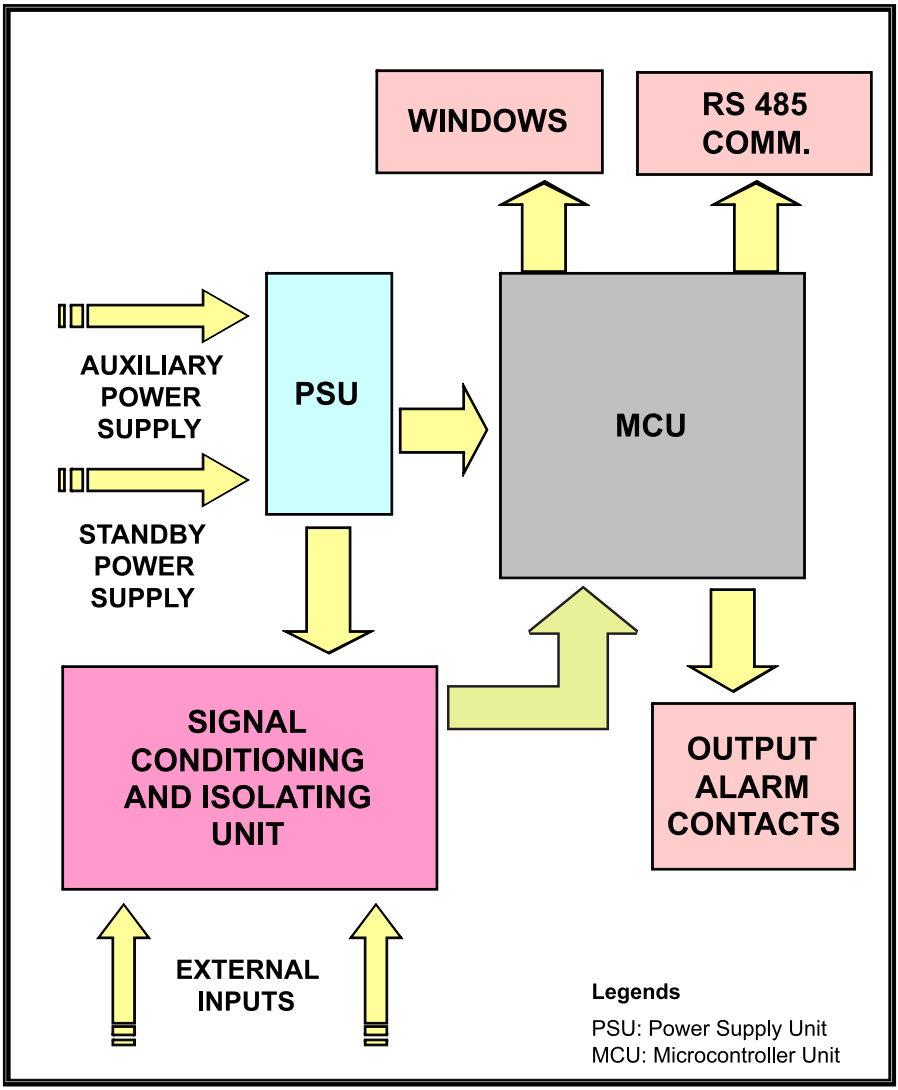
Optional features

SAN 200 **Midline** Annunciator is available with the below optional features on request.

- Field selectable Trip/Nontrip selection and "NO/NC" Inputs for each channel.
- Self change over to stand by power supply during main supply failure.
- Built in auxiliary supply fail supervision.
- Separate fault follower (Repeat relay) volt free dry "NO" contacts for each individual channel.
- Built in Hooters for both Trip and Non trip alarms.
- Field selectable (any two) window colour – Red/ Yellow, & Red/ White.
- Any specified potential fault initiating input.
- SAN 200 **Baseline** Annunciator is available with the below optional features.
- Built in Hooter for audio alarm in place of two big windows.
- Field selectable window colour – Red/ Yellow, & Red/ White.
- Any specified potential fault initiating input.

***** Apart from the above, any customized feature can also be provided on request**.**

FUNCTIONAL BLOCK DIAGRAM



TECHNICAL SPECIFICATIONS

INPUT POWER SOURCE

Auxiliary Supply:
- 75 to 275V AC / DC
- 20 to 150V DC
- 10 to 18V DC

Stand by Supply:
- 75 to 275V AC / DC

DISPLAY

Illumination:
- Ultra high bright LED's. Power consumption of < 0.8 Watt / window

Window Sizes (HXW):
- Small 34 X 37 mm
- Big 34 X 74 mm

Window Colour:
- Red and Yellow site selectable
- Red and White site selectable

INPUTS

All inputs are opto isolated from system supply voltage

Standard:
- Potential free contacts (potential on request)

Upon Request:
- 48V DC Dry contacts
- 110V DC Dry contacts
- 220V DC Dry contacts

Response time:
- 20m sec maximum

Push buttons:
Both integral push buttons and terminals for remote connections
- Mute
- Test
- Accept
- Reset

OUTPUTS

Audible:
Common "NO" output contacts
rated *5A @ 30V DC*, *5A @ 250V AC*
resistive (make and carry only)
- 1"NO" contact for Trip
- 1"NO" contact for Nontrip
- 1"NO" contact for DC fail
- 1"NO" contact for AC fail

Window Specific Relays:
System can be supplied with 1"NO" contact
rated *1A @ 30V DC*, *1A @ 250V AC*
repeat relay per window on request

Audio Alarm:

Inbuilt hooters can be provided on request
Sound level > 90 dB @ 1 meter
RS 485 Communication : Optional

FIELD PROGRAMABILITY

Audible and Window Setting:
- Trip / Nontrip audible or NO / NC input
- Flash rate 60 / 100 flashes per minute
- Hooter ON / OFF during test
- Colour of the window

Operating Sequences:

- Manual / Normal
- Auto Accept
- Priority mode
- Ring Back
- Manual Reset M
- Manual Reset N
- Auto Reset S
- First Up

GENERAL

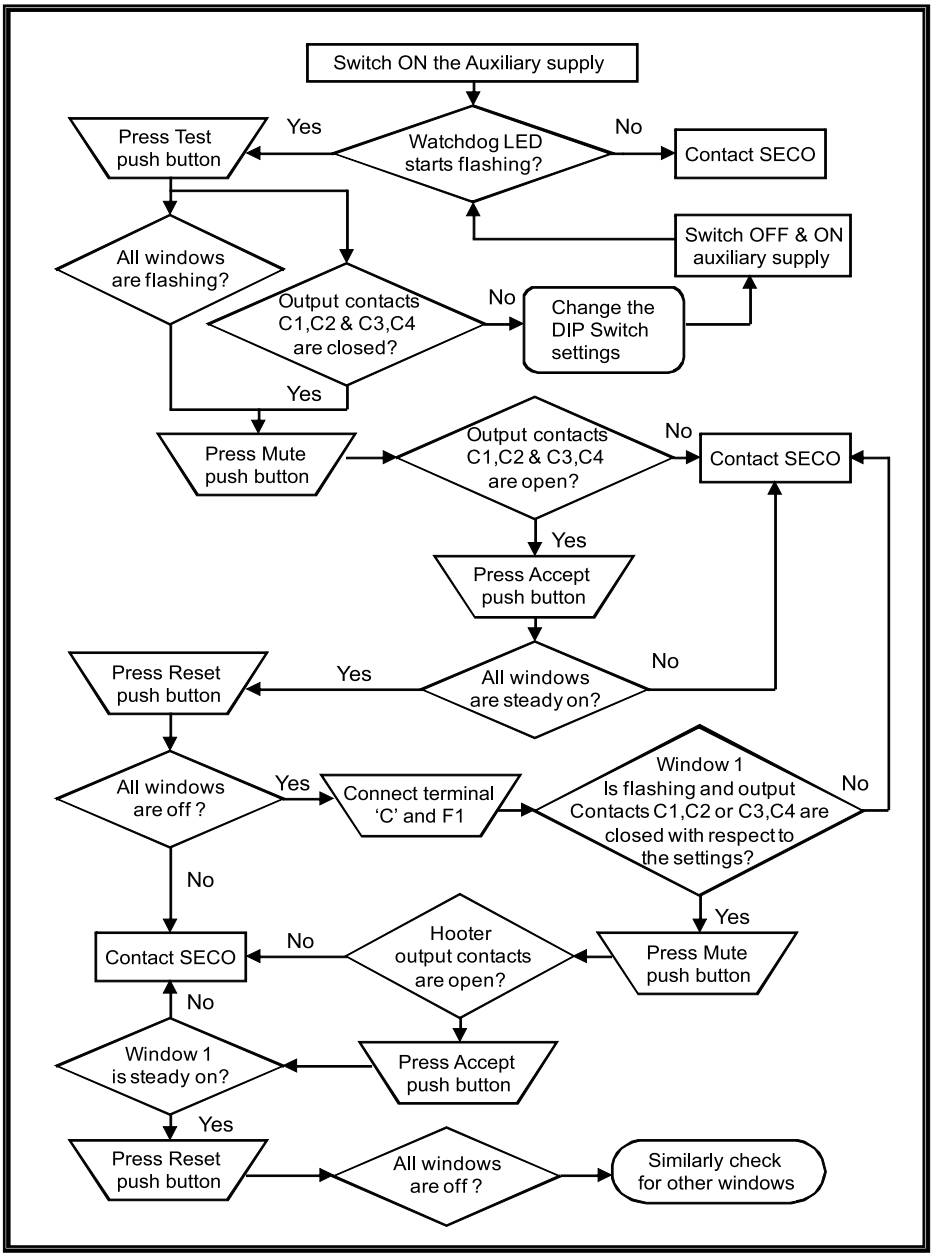
Environmental:
- Operating temperature : 0ºC to +60ºC
- Storage temperature : - 10ºC to +70ºC
- Humidity : 0-95% RH, non -condensing

Weight:
- Each 1N Case 500gm. Approximately

Protection:

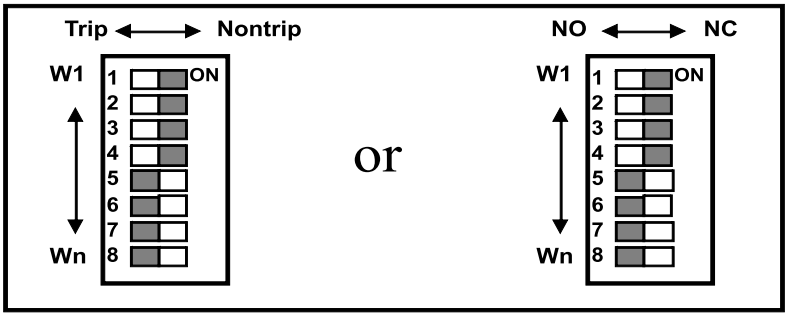
- Front panel – IP 54
- Rear of Enclosure – IP20

TESTING FLOW CHART



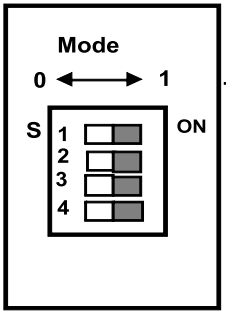
PROGRAMMING AND DIP SWITCH SETTING

SAN 200 Midline Annunciator features integral Dip switches accessible from rear end, to enable the user to program Trip / Nontrip output or NO / NC input as per requirement.



Operating Sequences

SAN 200 system is provided with 4 operating field programmable sequences. The selection can be made through Dip switches.

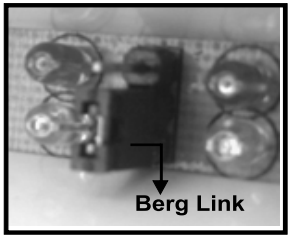


S1	S2	S3	S4	TYPE 1	TYPE 2
0	0	–	–	Ring Back	Manual Reset M
0	1	–	–	Auto Accept	Auto Reset S
1	0	–	–	Priority	First Up
1	1	–	–	Normal	Manual Reset N
–	–	1	–	Hooter ON during Test	Alarm ON
–	–	–	0	60 Flashes / Minute	60 FPM
–	–	–	1	100 Flashes / Minute	100 FPM

Selection of Window Colour

The colour of the window can be changed through Berg links to identify critical and non critical faults. This is an optional feature, available on request.

Remove the bezel from the Window with a screwdriver



Move berg link up or down to change the window colour

Sequence of operation – Working Mode – Type 1

MANUAL/ NORMAL MODE:-

CONDITION	MANUAL ACTION	WINDOW STATUS	ALARM CONTACT STATUS
NORMAL		OFF	OPEN
ABNORMAL		FLASHING	CLOSED
	ACCEPT	STEADY ON	OPEN
ABNORMAL	RESET	FLASHING	CLOSED
NORMAL BEFORE RESET	RESET	OFF	OPEN
NORMAL	TEST	FLASHING	CLOSED

Sequence of operation – Working Mode – Type 1

PRIORITY MODE:-

CONDITION	MANUAL ACTION	WINDOW STATUS	ALARM CONTACT STATUS
NORMAL		OFF	OPEN
ABNORMAL (EX. CONTINUOUS -3 INPUTS		PARTICULAR WINDOWS FLASHING	CLOSED
	ACCEPT -1	STEADY ON– FIRST WINDOW,ALL OTHER FLASHING	OPEN
	ACCEPT -2	STEADY ON – SECOND WINDOW, ALL OTHER FLASHING	OPEN
	ACCEPT -3	STEADY ON THIRD WINDOW	OPEN
ABNORMAL	RESET	FLASHING	CLOSED
NORMAL BEFORE RESET	RESET	OFF WHICH IS STEADY	OPEN
NORMAL	TEST	FLASHING	CLOSED

Sequence of operation – Working Mode – Type 1

AUTO ACCEPT MODE:-

CONDITION	MANUAL ACTION	WINDOW STATUS	ALARM CONTACT STATUS
NORMAL		OFF	OPEN
ABNORMAL		FLASHING	CLOSED
AFTER 10 SECONDS		STEADY ON	OPEN
BEFORE 10 SECONDS	ACCEPT	STEADY ON	OPEN
ABNORMAL	RESET	FLASHING	CLOSE
NORMAL BEFORE RESET	RESET	OFF	OPEN
NORMAL	TEST	FLASHING	CLOSED

Sequence of operation – Working Mode – Type 1

RING BACK MODE:-

CONDITION	MANUAL ACTION	WINDOW STATUS	ALARM CONTACT STATUS
NORMAL		OFF	OPEN
AB-NORMAL		FLASHING	CLOSED
	ACCEPT	STEADY ON	OPEN
NORMAL BEFORE RESET		SLOW FLASHING	CLOSED
NORMAL	RESET	OFF	OPEN
TEST		FLASHING	CLOSED

Sequence of operation – Working Mode – Type 2

MANUAL RESET "M" :-

CONDITION	MANUAL ACTION	WINDOW STATUS	ALARM CONTACT STATUS
NORMAL		OFF	OPEN
ABNORMAL		FLASHING	CLOSED
NORMAL/ABNORMAL	ACCEPT	STEADY ON	OPEN
ABNORMAL	RESET	STEADY ON	OPEN
NORMAL	RESET	OFF	OPEN
NORMAL	TEST	FLASHING	CLOSED

Sequence of operation – Working Mode – Type 2

MANUAL RESET "N" (W/O FIRST UP SEQ.)

CONDITION	MANUAL ACTION	WINDOW STATUS	ALARM CONTACT STATUS
NORMAL		OFF	OPEN
ABNORMAL		FLASHING	CLOSED
NORMAL/ABNORMAL	ACCEPT	STEADY ON	OPEN
ABNORMAL	RESET	FLASHING	CLOSED
NORMAL	RESET	OFF	OPEN
ABNORMAL	ACCEPT	STEADY ON	OPEN
NORMAL	RESET	OFF	OPEN
NORMAL	TEST	FLASHING	CLOSED

Sequence of operation – Working Mode – Type 2

SELF RESET OR AUTO RESET "S":-

CONDITION	MANUAL ACTION	WINDOW STATUS	ALARM CONTACT STATUS
NORMAL		OFF	OPEN
ABNORMAL		FLASHING	CLOSED
NORMAL/ABNORMAL	ACCEPT	STEADY ON	OPEN
ABNORMAL	RESET	STEADY ON	OPEN
NORMAL WITHOUT RESET		OFF	OPEN
NORMAL	TEST	FLASHING	CLOSED

Sequence of operation – Working Mode – Type 2

FIRST UP:-

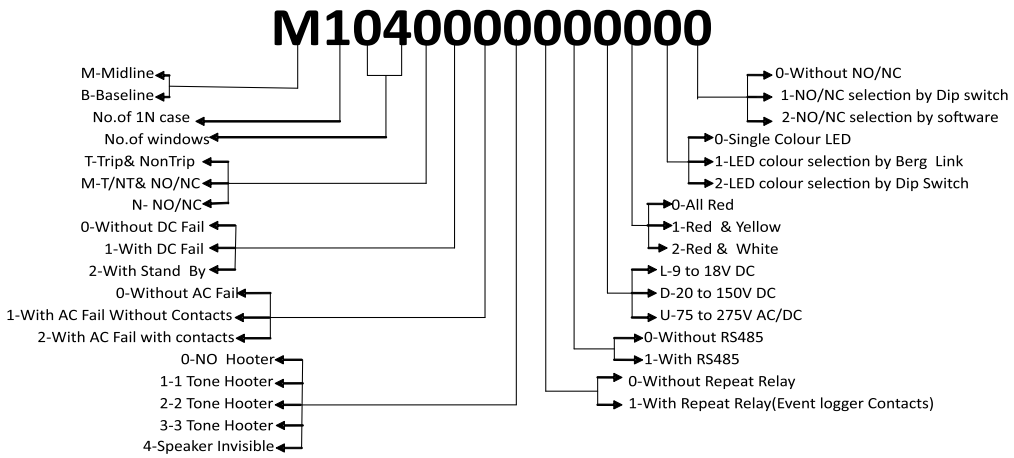
CONDITION	MANUAL ACTION	WINDOW STATUS	ALARM CONTACT STATUS
NORMAL		OFF	OPEN
AB-NORMAL (EX. CONTINUOUS 3 INPUTS)		FIRST ONE – FAST FLASHING SUBSEQUENT SLOW FLASHING	CLOSED
NORMAL/ABNORMAL	ACCEPT	FIRST ONE – FAST FLASHING SUBSEQUENT STEADY	OPEN
NORMAL	RESET	OFF	OPEN
ABNORMAL	RESET	ABNORMAL WINDOW STEADY OTHER WINDOWS OFF	OPEN
NORMAL	TEST	FLASHING	CLOSED

MODEL CODING TABLE

In order to solve most of the commercial issues and to meet specific requirement of the customers, SECO Annunciators are divided in to BASE LINE and MID LINE Versions. Some of the Standard features available in both are tabulated below.

STANDARD AVAILABLE MODELS	IN BUILT STAND BY POWER SUPPLY	IN BUILT DC FAIL SUPERVISION	IN BUILT HOOTER	IN BUILT REPEAT RELAY	TRIP/NONTRIP OR NO/NC SELECTION	SITE SELECTABLE OPERATING MODES	SITE SELECTABLE WINDOW COLORS (ONLY IN BIG WINDOWS)	IN BUILT PUSH BUTTONS	SITE SELECTABLE FLASH RATE (60 OR 100 FPM)	COMBINATION OF BOTH BIG & SMALL WINDOWS	1 'N' CASE MODEL	HOOTER ON/OFF DURING TEST	RED & YELLOW, RED & WHITE WINDOWS	RS 485 COMMUNICATION
BASE LINE			*	*				*		*	*		*	
MIDLINE	*	*	*	*	*	*	*	*	*	*	*	*	*	*

The below given table help's you out to generate Codes for the Annunciator as per your functional requirement during ordering.



Notes:

1. Each 'N' Case can have maximum 8 small, or 4 big windows. For mixed window sizes please contact SECO
2. SAN 200 range of Annunciation system can be customised to meet individual requirements, for technical advice or to discuss your application please contact SECO before ordering.
3. Two hooter module can be provided with any Midline unit with addition of 1N case.

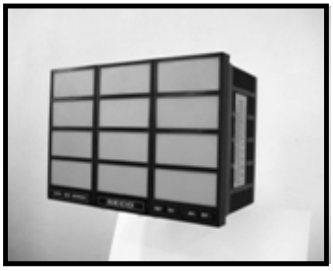
STANDARD SYSTEM ENCLOSURES

Modular construction of SAN 200 Annunciator is built up with 1 or more number of N cases to construct any number of windows. (Maximum of 64 windows or 16 N cases)

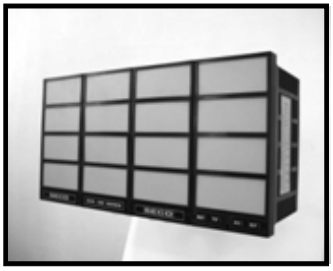
1N CASE

2N CASE

3N CASE

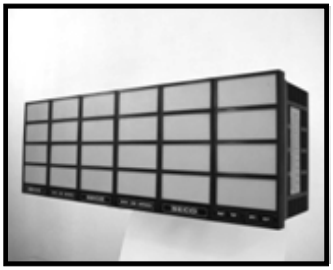


4N CASE



5N CASE

6N CASE



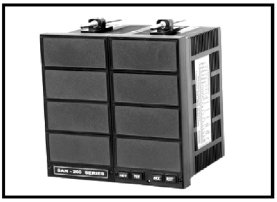
STANDARD AVAILABLE MODELS

B104

B106

B108

B/M208



B206XX13

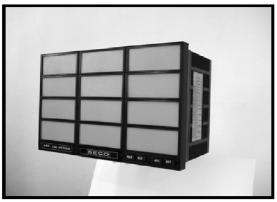
B210XX13

B212XX13

B/M212

B/M216

B/M312

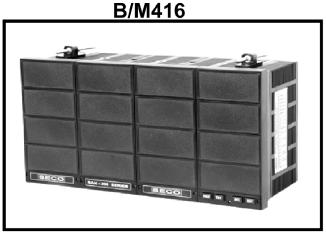


B/M316

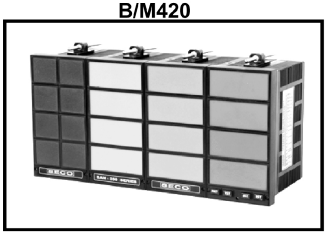
B/M320

B/M324

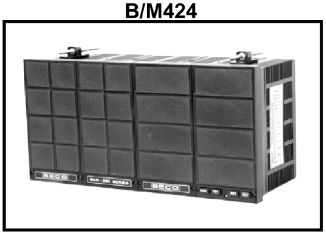
B/M416



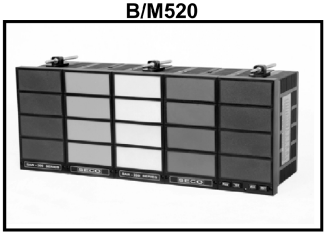
B/M420



B/M424



B/M520



B/M524

B/M624

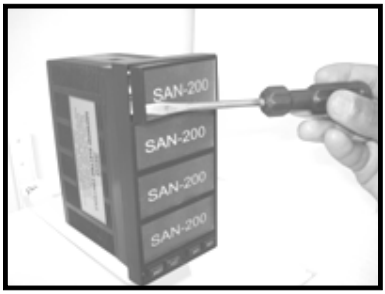
HOOTER MODULE

- Hooter module can be added to any Midline unit on request.

REPLACEMENT OF LEGENDS AND INSCRIPTIONS

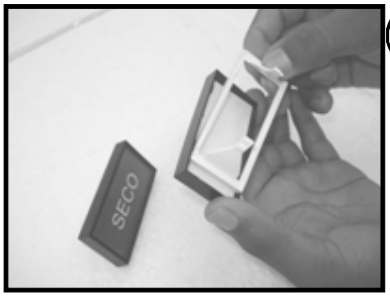
1

Choose the window in which legend has to be replaced.



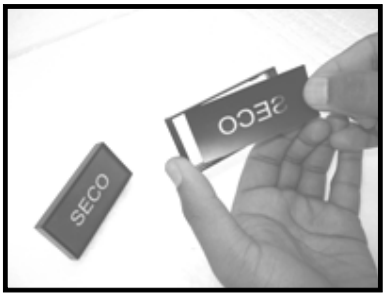
2

Remove the bezel gently by using a screwdriver.



3

Remove the old legend by opening the window clamp and diffuser from the bezel.



4

Insert the new legend and fix diffuser and window clamp to bezel properly.

5

Fix bezel assembly back to the window as before.

6

Legends are replaced in window 1 and 2.

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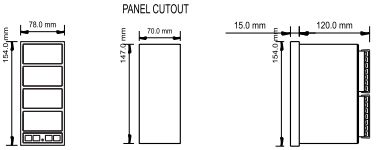
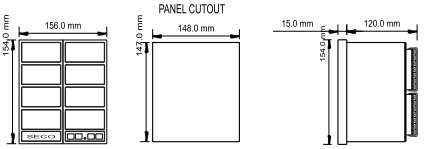
DIMENSION AND PANEL CUTOUT DETAILS

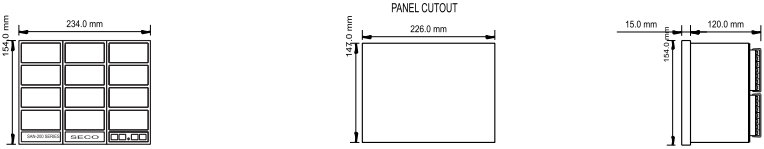
1N CASE



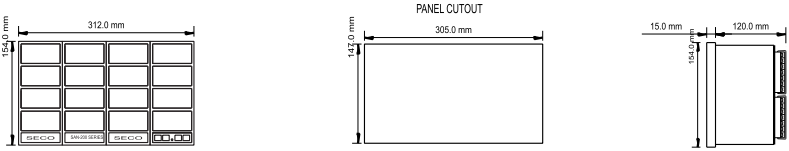
2N CASE



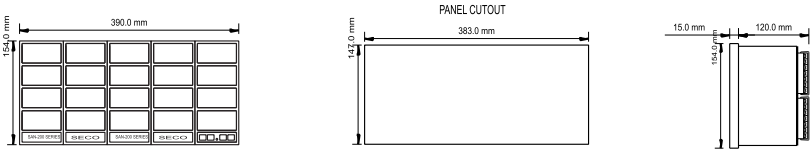
3N CASE



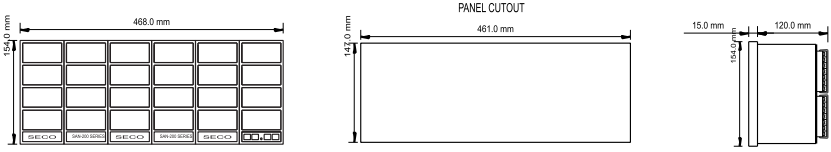
4N CASE



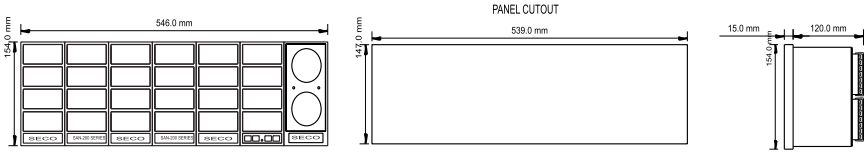
5N CASE



6N CASE



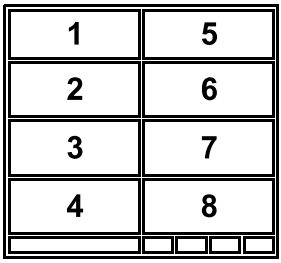
7N CASE



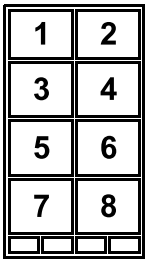
ADDITIONAL INFORMATION

Window Numbering System

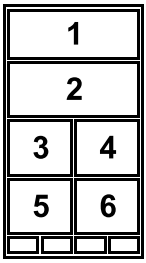
SECO uses the following window numbering sequences in building SAN 200 Series. Please refer to them when ordering and providing text or configuration information.



8 point Big window configuration



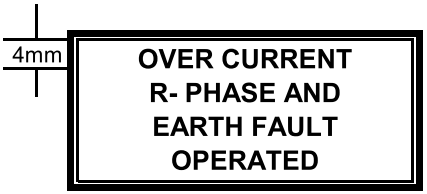
8 point Small window configuration

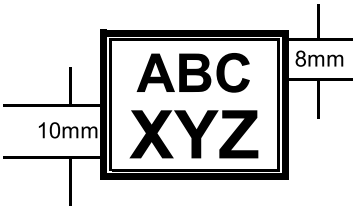


6 point Small and Big window configuration

Legends and Letter Sizes

LETTER's SIZE (in mm)	NO. OF LINES PER WINDOW	NO. OF LETTERS PER LINE	
		Small Window	Big Window
3	5	10	22
4	4	7	14
5	3	6	12
8	2	3	7
10	2	3	6
12	1	-	6





NOTES

OUR PRODUCT RANGE

1. ALARM ANNUNCIATORS
2. ANNUNCIATOR WITH INBUILT HOOTER (SPEAKER VISIBLE)
3. ANNUNCIATOR WITH INBUILT HOOTER (SPEAKER INVISIBLE)
4. WIRELESS ANNUNCIATORS
5. ANNUNCIATOR GSM BASED (MESSAGE ALERT)
6. ANNUNCIATOR – INPUT FROM PLC (RS 485 INPUT)
7. ANNUNCIATOR – SPLIT TYPE
8. STATUS INDICATOR (FACIA UNIT)
9. ANNUNCIATOR – 96 SQ. mm
10. ANNUNCIATOR – ELECTROMECHANICAL TYPE
11. ELECTRONIC HOOTERS
12. ELECTRONIC BUZZERS
13. ELECTRONIC BELLS
14. HOOTER WITH ACCEPT PUSH BUTTON
15. MULTITONE ALARM 2DC + 1AC INPUT
16. MULTITONE ALARM 3DC + 1 AC INPUT
17. EARTH LEAKAGE RELAYS
18. EARTH FAULT RELAYS
19. BATTERY EARTH LEAKAGE RELAY WITH DISPLAY
20. BATTERY EARTH LEAKAGE RELAYS (DIP SWITCH SETTING)
21. DC UNDER AND OVER VOLTAGE RELAYS
22. AC UNDER AND OVER VOLTAGE RELAYS
23. DC FAIL ALARM RELAYS
24. DC FAILURE RELAY WITH INBUILT HOOTER
25. AC AND DC FAIL ALARM RELAY WITH BUILT IN HOOTER
26. TRIP CIRCUIT SUPERVISION RELAYS
27. TAP POSITION INDICATORS – RESISTOR INPUT
28. TAP POSITION INDICATORS – BCD INPUT
29. TAP POSITION INDICATORS – 4 TO 20 mA INPUT
30. DIGITAL COUNTERS 4 CHANNELS
31. DIGITAL COUNTERS 8 CHANNELS
32. TEMPERATURE SCANNER 4 CHANNEL FOR DRY TYPE TRANSFORMER
33. AVR FOR TRANSFORMER
34. POWER PACK WITH BATTERY BACKUP
35. POWER PACK WITH CAPACITOR BACKUP
36. ACCL 3 PHASE
37. ACCL SINGLE PHASE
38. LED INDICATING LAMPS
39. PUSH BUTTONS AND ELEMENTS
40. TEST TERMINAL BLOCK
41. REMOTE CONTROL ANNUNCIATION PANEL FOR 11 kV