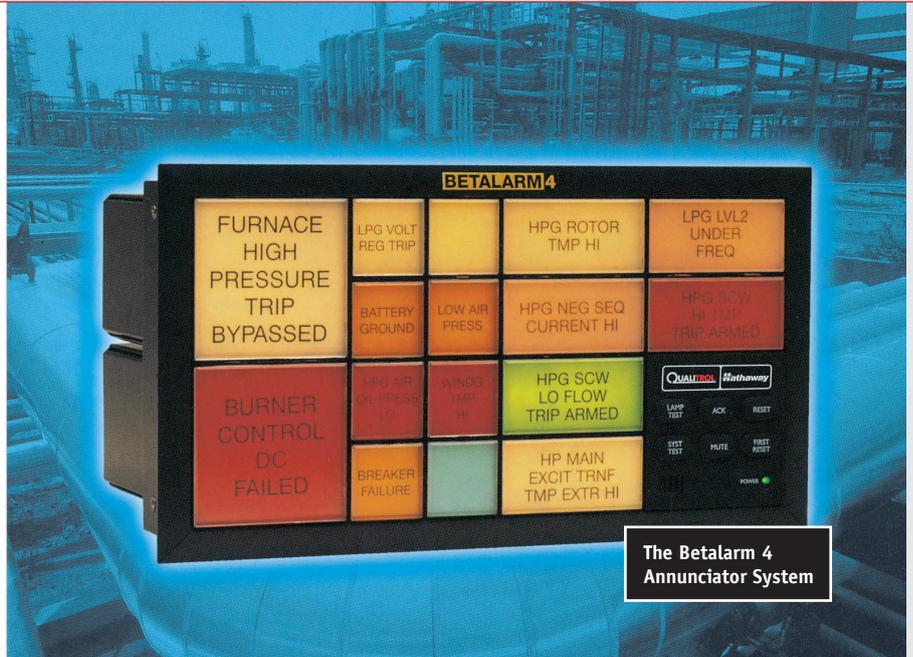




The most cost effective annunciation solution available today

Tailored to your precise requirements



The Betalarm 4 Annunciator System

**Build to suit.** The Betalarm 4 is the ideal annunciator, because you can specify a system uniquely matched to your operating needs and site specifications. If those requirements change down the road, Betalarm 4 is easily field configurable and expandable to accommodate them. Such flexibility makes it the most cost effective annunciation solution available today and it is made possible by the latest Application Specific Integrated Circuit (ASIC) technology. You can build just about any size system and fit it into just about any available space, horizontal or vertical.



The Betalarm 4 annunciator system is defined by a series of modular cells. Each cell serves a single point with one large 60mm by 60 mm (2.4" by 2.4") window, or multiple points through sub-division into either two medium 30mm by 60 mm (1.2" by 2.4") windows, or four small 30 by 30 mm (1.2" x 1.2") windows.

Cells with different size windows can be mixed throughout the same system. In this manner, the dimensions and number of points in a system are all but unrestricted. The bottom right cell is reserved for a pushbutton and audible module, making Betalarm 4 completely self-contained. As an option, this cell can be used for additional alarm points by using a remote panel or wall mounting version of the pushbutton and audible module. Other features of this innovative annunciator include: any standard ISA alarm sequence, six different window colors, high intensity LED display option, high reliability and 'No-Master-Module' architecture.

### The Betalarm 4 Annunciator System:

- n Offers flexible power requirements
- n Enables choice of enclosure
- n Is configurable and expandable
- n Provides flexible window configuration
- n Offers reliability through redundancy
- n Is simple to maintain
- n Provides first-out grouping
- n Includes auto-mute and auto-acknowledge
- n Has a sleep mode
- n Offers custom response time
- n Has flexible relay outputs





# POWER OF CHOICE

## Flexible power requirements

The Betalarm 4 system offers extremely flexible power requirements.

- n The annunciator needs a 24Vdc lamp and logic supply and suitable field contact interrogation voltage. However, these can be supplied from a low cost, unregulated source because the Betalarm 4 will provide all the necessary smoothing and regulation.
- n If desired, Qualitrol Hathaway can provide suitable power supplies to operate the annunciator from nearly any AC or DC voltage source, including UPS or a battery back-up system.
- n For field contact interrogation, we offer 24Vdc as standard; 48, 125, or 250Vdc or 110Vac as options; special voltages can be provided upon request.

# PACKAGING AND PROTECTION

## Choose your enclosure

A choice of eight different NEMA 1, 4, and 12 enclosures further expand the Betalarm 4s applicability.

- n These include a general-purpose enclosure for semi-flush mounting in a single panel cutout (supplied as standard), as well as 483mm (19") and 610mm (24") rack mounting versions (see our ordering section for additional choices).
- n Remarkably, depth is only 140mm (5.5"), a fraction of what traditional annunciators require.
- n Installation is easy. All customer connections are to the rear via screw clamp terminals that accept a 2.5mm (12 AWG) wire rather than a cumbersome wire lug.
- n For harsh environments, the Betalarm 4 can be tropicalized with conformal-coated circuitry and sealed relays, or protected by an optional special enclosure.



modular design,  
specify your shape and size....  
what size betalarm 4  
can we build for you?

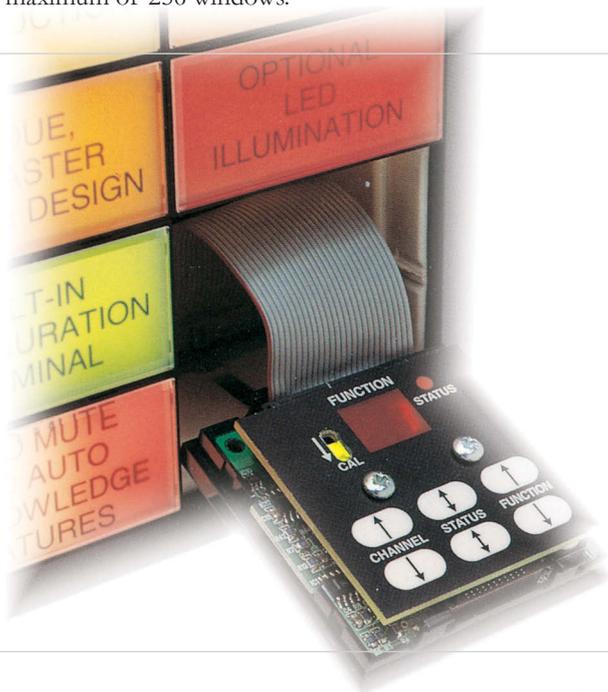
<b>BETALARM4</b> Alarm Annunciator The power of process information		CE EMC & LV COMPLIANT	OPTIONAL REPEAT RELAYS	MODULAR CONSTRUCTION	THREE WINDOW SIZES
FIVE COMMON RELAYS	ANY ISA ALARM SEQUENCE	UNIQUE, NO MASTER MODULE DESIGN	OPTIONAL LED ILLUMINATION	<b>QUALITROL Hathaway</b> LAMP TEST    ACK    RESET SYST TEST    MUTE    FIRST RESET POWER ●	
483mm DEEP	SLEEP MODE FOUR FIRST-OUT GROUPS	BUILT-IN CONFIGURATION TERMINAL	AUTO MUTE AND AUTO ACKNOWLEDGE FEATURES		

## THE IDEAL SIZE

### Configurable and expandable

A single Betalarm 4 system can consist of multiple annunciators up to a maximum of 256 windows.

- Multiple annunciators are linked by ribbon cable to synchronize flash rates and share first-out and pushbutton information.
- The Betalarm 4 is the perfect size no matter how little or how much annunciation you require. Any alarm sequence defined in the ANSI/ISA S18.1 1979 (R1985) 'Annunciator Sequence and Specifications' standard is available. Operating parameters are stored in EEPROM for exceptional repeatability, high reliability, and to eliminate the need for battery back-up.
- The keypad in the lower right cell drops down to reveal a small terminal with integral LED display and scrolling buttons for channel, status, and function selection. This allows easy access to the system enabling full field configuration.



size to sequence,  
input power to enclosure,  
window size to window color  
to window illumination....  
all configurable

## WINDOWS YOUR WAY

### Flexible window configuration

While Betalarm 4 windows come in large, medium and small sizes, you have many additional appearance choices.

- As standard, we supply window cells with incandescent lamps; however, LEDs are an increasingly popular option because of their longevity, especially for critical alarms. These small, ultra-bright LED assemblies plug into the same lamp holder as the standard incandescent lamp.
- Regardless of which light source is chosen, a variety of different effects can be achieved by varying the order of the windows diffuser, film legend and color lens. For example, all legends can be made invisible under normal conditions, then readable only when their specific point(s) are on alarm.
- Legends can either be supplied by Qualitrol Hathaway, or Windows based software is available so users can create their own on transparent film, in their choice of language, using a PC and laser printer.





## Betalarm 4 Advanced Features

### Reliability through redundancy

The Betalarm 4 employs a uniquely decentralized approach to control.

- It has no master module common to the entire annunciator, so there is no possibility of a single central processing unit causing complete system failure. Instead, each cells dedicated circuit module acts as the master controller, an operating scheme whose redundancy ensures the highest possible reliability.

### Simple to maintain

All normal service procedures are through the front of the unit.

- These include lamp/LED removal, changing window legends and adjustment of any of the selectable parameters. No special tools are required. The only exceptions are the cards that drive the windows, but these are readily accessible from the rear and service is seldom needed.

### First-out grouping

Four different first-out sequences.

- It is often essential to establish which alarm occurred first within a group of alarms. The Betalarm 4 provides four different first-out sequences and allows each point to be assigned to one of four different first-out groups.

### Auto-mute and auto-acknowledge

An important selectable feature.

- The system will automatically mute and automatically acknowledge alarms after a designated time period. This is ideal for unmanned sites and other situations in which manual acknowledgment might be delayed.

### Sleep mode

When used at an unmanned site, visual and audible features can be disabled to reduce power consumption.

- In this sleep mode the annunciator works as it does normally, latching in alarms and driving repeat relays. However, the drive to both the lamps and horn are disabled, along with the pushbutton inputs. Thus, when the unit is returned to its normal operating mode, all the alarm information will be immediately available.

### Custom response time

Optional custom response time.

- As standard, Betalarm 4s alarm points will be activated by signals over 22ms in duration. As an option, Qualitrol Hathaway can provide either a longer (up to 2 seconds) or a shorter (down to 3ms) response time.

## Betalarm 4 Inputs and Outputs

### Inputs

All inputs are opto-coupled.

- All Betalarm 4 inputs comply with the stringent requirements of the European Communitys electromagnetic and low voltage directives. These measures all but eliminate potential for false alarms.

### Common relay outputs

Five standard relay outputs are supplied.

- These outputs cover all common annunciator applications:
  - critical audible relay
  - non-critical audible relay
  - critical group relay
  - non-critical group relay
  - special function relay.

### Audible relay outputs

Integral 90dB(A) audible and two audible relays included.

- The integral audible and two audible (critical and non-critical) relays are for activating external audible warning devices. Each alarm point can be assigned to one, both, or neither of the two audible groups. The integral audible will always sound on the critical group.

### Group relay outputs with reflash

Two group relays (critical and non-critical) are supplied as standard.

- As with the audible relays, each alarm point can be assigned to be in one, both, or neither group. Each group relay can also be set for reflash operation to indicate the occurrence of a new alarm in the group. The initial alarm will cause the relay to change state to the alarm condition. Each subsequent alarm will cause the relay to return to the normal condition for approximately 0.5 seconds and then set the relay back to the alarm state.

### Special function relay

Configurable dedicated relay included.

- This can be set to act in a variety of different ways depending upon the application. This flexibility enables its use as:
  - a total group relay
  - a ringback audible relay
  - a first-out relay
  - a power on/watchdog relay.

### Auxiliary relays

As an option, each alarm point can be equipped with an auxiliary relay.

- These can be configured for either energized or de-energized operation to provide a changeover contact output. Auxiliary relays can be set up to follow the alarm logic, follow the field contact, or follow the display.

### Serial communications

The Betalarm 4 has an optional serial communication input and output capability.

- Using the MODBUS protocol, alarms can be transmitted to or received from intelligent devices such as PLC and DCS systems, industrial computers, SCADA systems or any other device using this protocol. For details on serial communications, please refer to the *Betalarm 4 Serial Communications Application Note* (document number 40-8455) available on request from Qualitrol Hathaway.

## Betalarm 4 System Specifics

### Annunciator Dimensions

The size of a Betalarm 4 in its panel-mounting enclosure is easy to determine by using the following formula or table below.

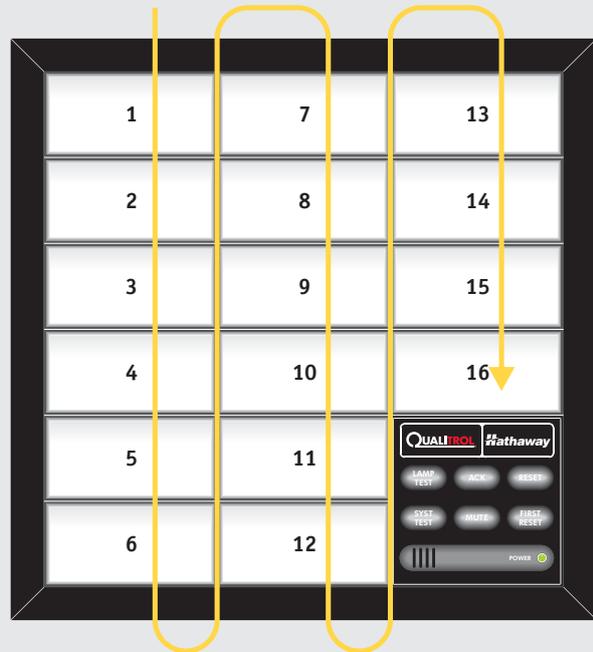
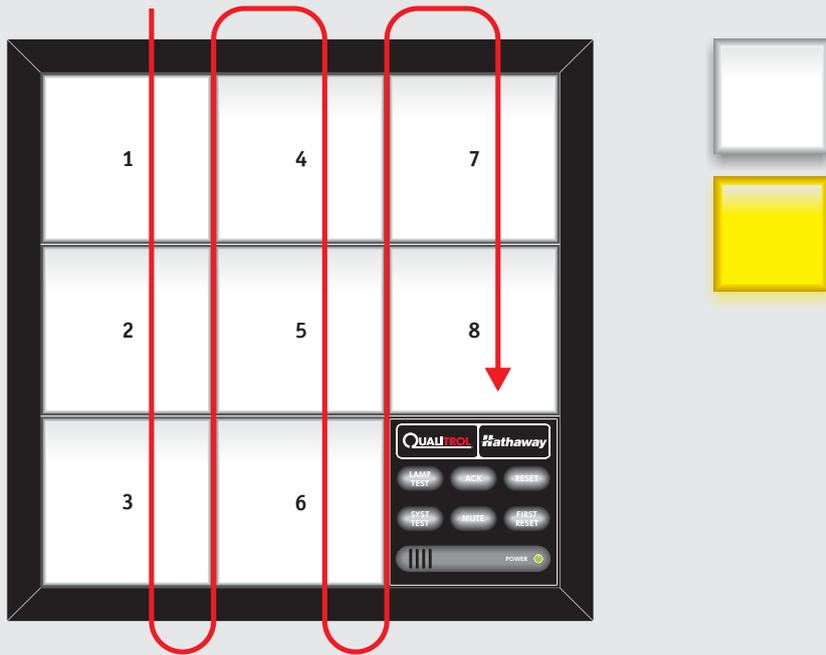
#### Overall dimensions:

$$= [(No. of cells \times 60 \text{ mm}) + 24 \text{ mm}]$$

#### Cutout dimensions:

$$= [(No. of cells \times 60 \text{ mm}) + 14 \text{ mm}]$$

Cells High or wide	Overall		Cutout	
	mm	inches	mm	inches
1	84	3.31	74	2.91
2	144	5.67	134	5.28
3	204	8.03	194	7.64
4	264	10.39	254	10.00
5	324	12.76	314	12.36
6	384	15.12	374	14.72
7	444	17.48	434	17.09
8	504	19.84	494	19.45
9	564	22.20	554	21.81
10	624	24.57	614	24.17
11	684	26.93	674	26.54
12	744	29.29	734	28.90
13	804	31.65	794	31.26
14	864	34.02	854	33.62
15	924	36.38	914	35.98
16	984	38.74	974	38.35
17	1044	41.10	1034	40.71
18	1104	43.46	1094	43.07
19	1164	45.83	1154	45.43
20	1224	48.19	1214	48.70



Note: A cell comprises one large window, two medium windows or four small windows.

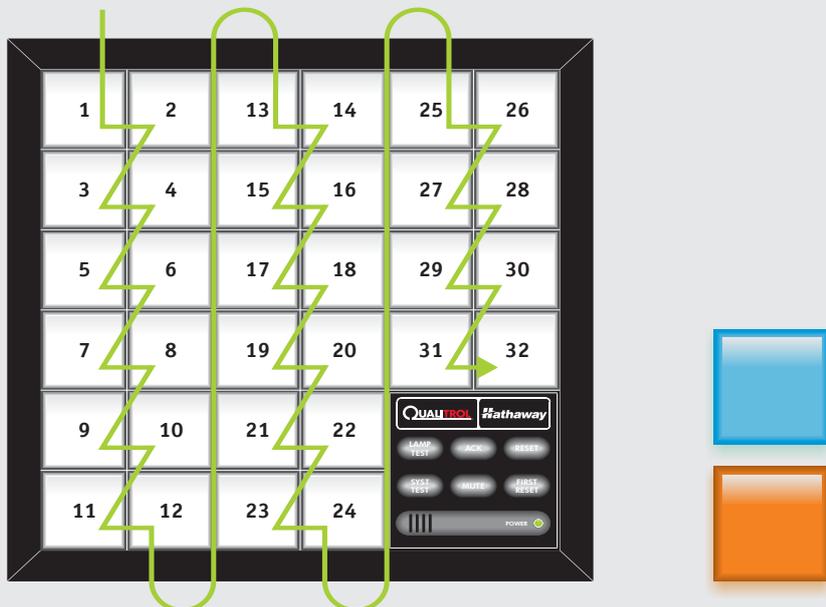
### Window Limits

Betalarm 4 systems can be configured into nearly any size or shape, as long as the overall annunciator width or height is no greater than 30 cells and the overall number of windows does not exceed the following limits:

- n Small window: 256 windows
- n Medium window: 200 windows
- n Large window: 100 windows.

### Window Numbering

Qualitrol Hathaway uses the window numbering sequences shown opposite in building Betalarm 4 systems. Please refer to them when ordering.





## Ordering Information

# Betalarm 4--HxW------------

### Model

### Window Size

- 1 Small
- 2 Medium
- 3 Large
- X Mixed (see note 1).

### Cells High

### Cells Wide

### Field Contact Voltage

- 1 24Vdc
- 2 48Vdc
- 3 125Vdc
- 6 250Vdc
- 9 110Vac
- X Special (see note 2).

### Auxiliary Relay Outputs

- 0 None
- 1 Per point
- X Mixed (see note 3).

### Pushbutton/Audible Module

- 0 Internal (mounted in lower right corner)
- 1 External panel mounted
- 2 External DIN rail mounted
- 3 External wall mounted.

### Window Legend Film

- 0 Blank film only
- 1 Factory printed film (see note 4)
- 2 Software and blank film
- 3 Software only.

### Window Color

- 0 White
- 1 Yellow
- 2 Red
- 3 Green
- 4 Blue
- 5 Amber
- X Mixed (see note 5).

### Options (see note 6).

- 0 None
- 1 LED illumination
- 2 Tropicalization (conformal coating of PCBs and sealed relays)
- 3 Custom response time (greater or less than standard 22ms response time to alarms)
- 4 No internal horn
- 5 Serial comms. (see note 7)
- X Special.

### Enclosures

- 0 **IP41/NEMA 1**  
general purpose semi-flush panel mounted
- 1 **IP41/NEMA 1**  
wall/surface mounted
- 2 **IP52/NEMA 12**  
semi-flush panel mounted
- 3 **IP52/NEMA 12**  
wall/surface mounted
- 4 **IP55/NEMA 4**  
semi-flush panel mounted
- 5 **IP55/NEMA 4**  
wall/surface mounted
- 6 **IP41/NEMA 1**  
19" rack mounted
- 7 **IP41/NEMA 1**  
24" rack mounted.

### Spares

#### Betalarm 4 Annunciator Spares Kit

A Betalarm 4 spares kit is available from Qualitrol Hathaway. The kit consists of:

- n 10 off spare bulbs
- n 1 off lamp remover tool
- n 1 off 8A quick blow fuse
- n 1 off 1A quick blow SMT fuse.

Please quote part number **DAL-85-105099-001** when ordering.

### Notes

1. Each cell can have a single large window, two medium windows or four small windows. For mixed window sizes in the same annunciator, please contact Qualitrol Hathaway for matrix order form.
2. Units can be supplied with nearly any field contact voltage in the range of 5V to 150Vac or 5V to 250Vdc. Please contact Qualitrol Hathaway for further information.
3. Each cell contains one or two, 2-channel alarm modules, supplied either with or without auxiliary relays. For mixed auxiliary relay outputs, please contact Qualitrol Hathaway for matrix order form.
4. Factory printed legends are available in alphanumeric characters only. Legend details must accompany order.
5. For mixed window colors, please contact Qualitrol Hathaway for matrix order form.
6. Refer to option section and specify all required options separating each with a slash (/).
7. For details on serial communications, please refer to the *Betalarm 4 Serial Communications Application Note* (document number 40-8455) available on request from Qualitrol Hathaway.

## Technical Specifications

■ <b>Power Supply</b>	<b>Input power:</b>	24Vdc nominal (19 - 28Vdc). Standard power supplies and DC/DC converters can be supplied on request.
	<b>Field contact power supply:</b>	All inputs are opto-coupled. Field contact interrogation voltages ( $\pm 20\%$ ): <ul style="list-style-type: none"> <li>▫ 24Vdc</li> <li>▫ 48Vdc</li> <li>▫ 125Vdc</li> <li>▫ 250Vdc</li> <li>▫ 110Vac.</li> </ul> Other voltages available upon request. Units can be supplied with nearly any field contact voltage in the range of 5V to 150Vac or 5V to 250Vdc. Contact Qualitrol Hathaway for further information.
	<b>Supply current per alarm point (at 24Vdc supply):</b>	<ul style="list-style-type: none"> <li>▫ Quiescent: 9 mA (at 24Vdc field contact voltage)</li> <li>▫ Lamps: small window: 45mA, medium: 90mA, large: 180mA.</li> <li>▫ LEDs: small window: 20mA, medium: 40mA, large: 80mA</li> <li>▫ Relays: (all window sizes): 10 mA.</li> </ul> Additional current for pushbutton module, common relay and audible is nominally 100mA.
■ <b>Display</b>	<b>Window sizes (H x W):</b>	<ul style="list-style-type: none"> <li>▫ Small: 30mm x 30mm (1.2" x 1.2")</li> <li>▫ Medium: 30mm x 60mm (1.2" x 2.4")</li> <li>▫ Large: 60mm x 60mm (2.4" x 2.4").</li> </ul>
	<b>Window colors:</b>	<ul style="list-style-type: none"> <li>▫ White</li> <li>▫ Yellow</li> <li>▫ Red</li> <li>▫ Green</li> <li>▫ Blue</li> <li>▫ Amber.</li> </ul> Available for both lamp and LED illumination.
	<b>Illumination:</b>	Lamps are supplied as standard; optional LED assemblies are comprised of four ultra-bright LEDs and plug into standard lampholder. <ul style="list-style-type: none"> <li>▫ Small window: single lamp/LED</li> <li>▫ Medium window: two lamps/LEDs</li> <li>▫ Large window: four lamps/LEDs.</li> </ul>
	<b>Lamps:</b>	28V, 50 mA, 10mm glass wedge; 10000 hour service life.
	<b>Legends:</b>	Qualitrol Hathaway can supply legends as requested or provide film legend software for users to produce their own using a PC and standard laser printer
■ <b>Inputs</b>	<b>Alarm contact and cable resistance:</b>	<ul style="list-style-type: none"> <li>▫ NC contact: series resistance of contact cables, 20k<math>\Omega</math> maximum</li> <li>▫ NO contact: parallel resistance of contact cables, 50k<math>\Omega</math> minimum</li> <li>▫ Current through the alarm contact is nominally 3mA.</li> </ul>
	<b>Input response time:</b>	<ul style="list-style-type: none"> <li>▫ Signals shorter than approximately 22ms will not trigger the annunciator</li> <li>▫ Shorter (down to 3ms) or longer (up to 2 seconds) response times available upon request.</li> </ul>
	<b>First-up discrimination:</b>	Better than 5ms.
	<b>Configuration:</b>	Using integral keypad. Both integral pushbuttons and terminals for remote connection: <ul style="list-style-type: none"> <li>▫ Lamp test</li> <li>▫ Acknowledge</li> <li>▫ Reset</li> <li>▫ System test</li> <li>▫ Silence</li> <li>▫ First-up reset.</li> </ul>
■ <b>Outputs</b>	<b>Common relays:</b>	Contacts rated at 1A @ 24Vdc. <ul style="list-style-type: none"> <li>▫ Critical Audible</li> <li>▫ Non-critical Audible</li> <li>▫ Critical Group</li> <li>▫ Non-critical Group</li> <li>▫ Special Function Relay.</li> </ul>
	<b>Auxiliary relays:</b>	Each alarm way can have individual repeat relays; changeover contact available with contacts rated at 1A @ 24Vdc.
■ <b>Immunity</b>	<b>EMC compliance:</b>	<ul style="list-style-type: none"> <li>▫ Immunity to EN 50082-2: 1995</li> <li>▫ Emissions to EN 50081-2: 1994.</li> </ul>
	<b>LVD compliance:</b>	Designed and manufactured to safety specification EN 61010-1: 1993.
	<b>Input protection:</b>	Inputs protected against accidental connection to primary voltages up to 230Vac, 50/60 Hz and to a 1000V Megger test.
	<b>Surge Withstand Transient:</b>	To ANSI-C37.90a, IEEE 472-1980 and IEC255.4 <ul style="list-style-type: none"> <li>▫ Common mode: 1kV</li> <li>▫ Series mode: 2kV.</li> </ul>
■ <b>Environmental</b>	<b>Operating temperature:</b>	-20° to +50°C (-4° to +122°F).
	<b>Storage temperature:</b>	-20° to +80°C (-4° to +176°F).
	<b>Humidity:</b>	0 to 95% RH, non-condensing.
■ <b>Mechanical</b>	<b>Dimensions:</b>	Refer to 'System Specifics' on previous page.
	<b>Weight:</b>	Approx. 0.4kg (0.88lbs) per cell.
	<b>Terminals:</b>	Terminals: screw clamp type terminals, for conductors up to 2.5mm (12 AWG).





# betalarm 4

...bringing your annunciation technology into the 21st century

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Defining Reliability

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