

Mass Notification Warning Solutions

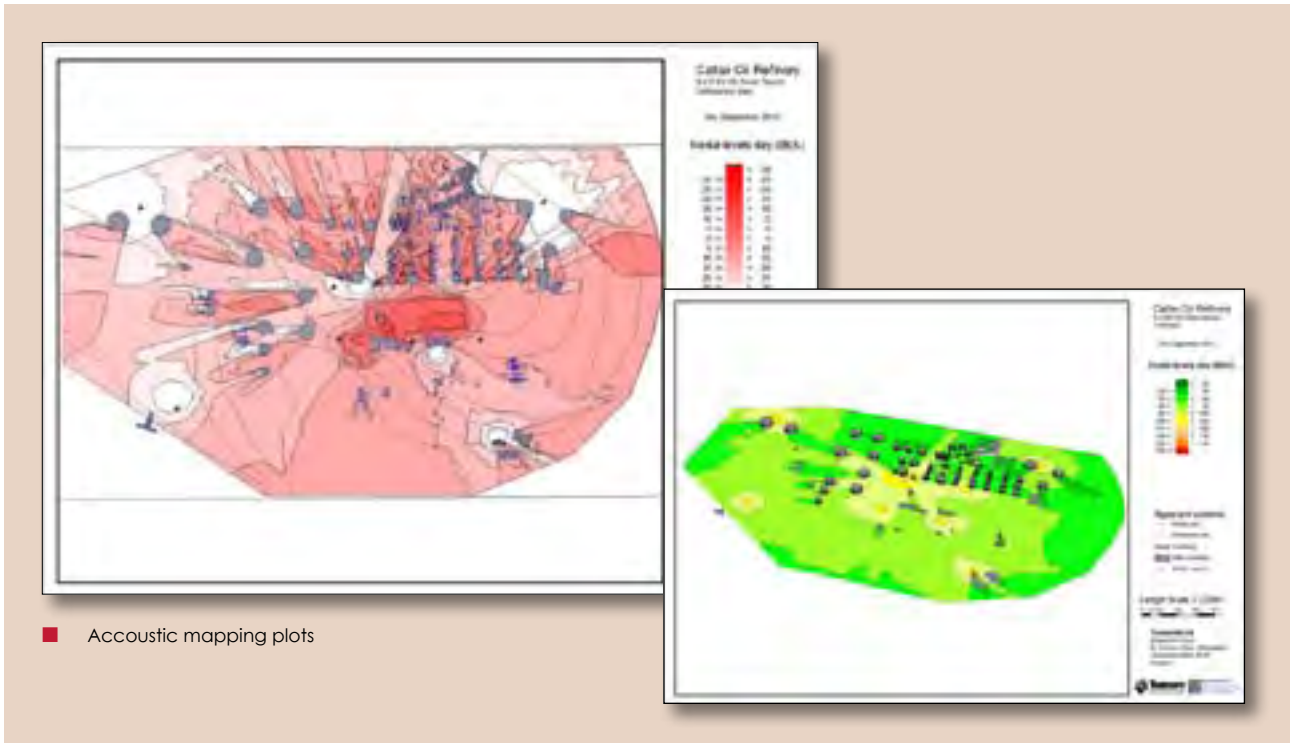
Product Specifications



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klaxon
Signalling Solutions

Introduction



Introduction

Klaxon Signals now a part of the Texecom organization have been supplying an extensive range of signalling products and warning systems to the world for over 50 years. Our wealth of experience in the field of signalling stems from vast knowledge gained by providing notification solutions for a broad spectrum of clients and industries.

With specific regards to warning systems in particular our global portfolio include some of the world leading companies in the Petro Chemical, Nuclear, Civil Defence, Ports, Weather Warning and Construction industries amongst others.

Our expert advice and extensive product range ensures the client receives a signal warning solution that addresses their specific safety requirements in a cost effective and timely manner. So whatever the requirement the client can rest assure that we have the ability to administer and control the project from concept to conclusion.

In doing so the company takes great pride in our sirens and control equipment being of the highest quality for optimum performance and reliability and also provides ongoing support over the lifetime of the system supplied.

The Company naturally has ISO 9001, accreditation and operates a continued product development programme, complemented by rigorous quality checks, which provides clients with the most up to date product offering available in today's market.

Service

Klaxon's mass notification warning systems provide a full product and service combination incorporating as required pre/post project evaluation, acoustic surveying, personnel training and maintenance for a tailor made solution to meet customer present and future requirements.

Our technical experts in the field will first assess and fully understand your specific site requirements. This may then be accompanied by a site survey which could include a full acoustic survey of the site. The information gathered is presented in a graphical format depicting prevalent ambient noise levels and the predicted effective coverage of the proposed siren system. The proposal document explains the type of siren and control arrangement options that are required to address defined objectives.

Following approval the system would be manufactured to the agreed specification. Equipment factory acceptance testing and personnel training would be offered before delivery of the equipment to the site. A system commissioning service can be requested to assist with installation.

The siren systems supplied have a one year warranty period and require very low maintenance, however even after the warranty period has expired ongoing on-site support and technical assistance is available.

Products

Klaxon Signals provides a range of warning sirens for operation in various environments. The range includes both, conventional motor driven sirens and the more sophisticated and flexible electronic siren systems for non-hazardous and hazardous environment operation.

Motor Driven Sirens

Motor driven sirens are manufactured from cast aluminium and steel for use in outdoor environments. They produce a powerful universally recognised emergency notification signal. ATEX approved models are available for use in hazardous areas.

Features

- Simple robust technology.
- Rugged construction.
- Universally recognised emergency signal.
- Custom built control panels using hardwired or radio technology.



Electronic Siren Systems

Electronic siren systems consist of;

- An array of siren horns manufactured from cast aluminium mounted on a mast. The horns can be mounted in an omni or uni directional configuration depending on the shape of the sound coverage required.
- The Controller monitors and controls siren operation.
- A full range of communication channels are available: stand alone hard wire switch control; computer system control; radio and/or satellite controlled link units.
- ATEX approved models are available for use in hazardous areas.

Features

- Low, medium and high output siren options. Ranges from 106dB – 127dB at 30 meters.
- Pre-recorded or live voice messages in addition to traditional tones. Different voice messages can be broadcast to different areas simultaneously depending on the situation in each area.
- Perform silent tests at a user defined time period which determines the operational capability of the siren.
- Battery powered siren operation means loss of site power has no effect on the functionality of the siren. An AC power supply is only required to maintain battery charge.
- Low installation costs because the siren only requires a 110/230V AC supply instead of the 400V AC 3 phase supply required for motor driven sirens.
- Up to 8 different user defined warning signals can be activated via volt free contacts and more when an RS485 interface is used as a means of control.
- Regional and Local Control. Multiple local, geographically separated warning systems can be alerted through one regionally controlled system, such as an emergency centre or remotely via a computer with internet access.
- Siren system can be charged from a solar panel array for use in remote locations.
- Variable sound levels for each warning signal enables on-site and off-site warning through the same siren.

Product Range Overview

Motor Driven Sirens Range

Product Identification	Installed Location Classification	Coverage
GP6, GP10, GP12	Non-Hazardous	Wide area omni-directional coverage
FP6, FP10	Hazardous	Wide area omni-directional coverage

* **Note:** GP sirens are available with anti-icing heaters and thermostat

Value Electronic Sirens

Product Identification	Installed Location Classification	Loudspeaker Configuration / Coverage
ES1/3V	Non-Hazardous	Wide area uni-directional coverage
ES1/2V, ES2V	Non-Hazardous	Wide area uni or omni-directional coverage

Superior Electronic Sirens

Product Identification	Installed Location Classification	Loudspeaker Configuration / Coverage
ES1/3S	Non-Hazardous	Wide area uni-directional coverage
ES1/2S, ES2S, ES3S, ES4S	Non-Hazardous	Wide area uni or omni-directional coverage
ES1SLD, ES2SLD, ES3SLD	Hazardous / Non Hazardous	100V ac line driven distributed loudspeaker system. (Control panel must be located in a non-hazardous location)
ES1/2SPK	Non-Hazardous	Wide area omni-directional coverage using lightweight horns and pump mast
ES1/2SP, ES1/3SP	Non-Hazardous	Wide area uni or omni-directional coverage using standard aluminium horns
ES2SF	Hazardous	Wide area uni or omni-directional coverage
ES2SFLD	Hazardous	100V ac line driven distributed loudspeaker system

Siren Control

Siren Type	Available Means of Control
Motor Driven Sirens	Standard control panels offering integral and remote hardwired control.
Value Electronic Sirens	Over radio, satellite, RS485 hardwired communication cable or a simple multicore cable utilizing the following HMI modules. (DT-11 console or Switch Panel)
Superior Electronic Sirens	Over radio, satellite, RS232/RS485 hardwired communication cable or a simple multicore cable utilizing the following HMI modules. (CMC-4, CMC-8 consoles, Talos PC operating software or Switch Panel)



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Motor Driven Sirens



GP Range

The GP range of conventional motor powered sirens provides a basic solution to address wide area mass alert signalling for all industrial, civil, commercial and environmental requirements.

The products are of simple rugged construction and provide a low frequency traditional air raid siren sound.

Main Features

- Audibility range between 135db @ 1 metre, (105db @ 30metres) for the smallest unit to 145db @ 1 metre, (115db @ 30metres for the largest unit. Sirens in this range in increasing order of sound output are the GP6, GP10 & GP12 units.
- 475Hz constant tone signal for the GP6 & GP10 sirens and a combined 475/560Hz constant tone signal for the GP12 siren.
- Roughly omni-directional sound coverage which peaks in the direction of the front stator face
- 400Vac +/- 10% 50Hz 3 phase nominal power supply requirement. (Alternative voltages and frequencies available on request).
- Operating temperature range for the standard GP6 & GP10 units of -20 to +60 degrees C and for the GP12 -20 to +55 degrees C.
- Cast aluminium & steel construction.
- Environmental rating of IP55.
- If the power supply to the sirens is pulsed to enable the siren to produce a 'wail' tone then the maximum run time of the siren is reduced from continuous for constant tone to 15 minutes.
- Control units can be supplied to enable the siren to produce the 'wail' tone signal with associated control switches.
- If mounted in a climate where icing can occur the unit should be fitted with thermostatically controlled heaters.
- The Motor windings are tropicalized as standard.
- Anti-condensation heaters for the motor can be supplied.



GP6 Siren



GP10 Siren



GP12 Siren

Note: Dimensions indicated are for sirens fitted with standard motors.

Numeric Information

Siren Type	Product Code	Motor Power	Current Rating	Weight	Dimensions: Overall Length Width & Height
GP6	SWG0032	3.8Kw de-rated to 2.2Kw	5A	50Kg	492 x 398 x 438mm
GP6 with Heaters	SWG0036	for 60°C operation		52Kg	582 x 398 x 438mm
GP10	SWG0023	7.5Kw de-rated to 5.5Kw	11A	110Kg	536 x 495 x 557mm
GP10 with Heaters	SWG0037	for 60°C operation		112Kg	576 x 495 x 557mm
GP12	SWG0006	11Kw	22A	195Kg	762 x 496 x 585mm
GP12 with Heaters	SWG0005			199Kg	842 x 496 x 585mm

Motor Driven Sirens



FP6 Siren



FP10 Siren

FP Range

The FP range of conventional motor powered sirens provides a basic solution to address wide area mass alert signalling in hazardous area locations for all industrial, civil, commercial and environmental requirements.

The products are of simple rugged construction and provide a low frequency traditional air raid sound.

Main Features

- Audibility range between 135db @ 1 metre, (105db @ 30metres) for the smallest unit to 140db @ 1 metre, (110db @ 30metres for the largest unit. Sirens in this range in increasing order of sound output are the FP6 & FP10 units.
- 475Hz constant tone signal.
- ATEX approved for zone 1 & 2.
- Overall siren standard approval Exd IIG IIC T4.
- Non electrical parts standard approval EExc IIC T1..T6 X.
- Roughly omni-directional sound coverage which peaks in the direction of the front stator face.
- 400Vac +/- 10% 50Hz 3 phase nominal power supply requirement. (Alternative voltages and frequencies available on request).
- Operating temperature range for the FP6 & FP10 units of -20 to +60 degrees C.
- Cast aluminium & steel construction.
- Environmental rating of IP55.
- If the power supply to the sirens is pulsed to enable the siren to produce a 'wail' tone then the maximum run time of the siren is reduced from continuous for constant tone to 15 minutes or less.
- Control units can be supplied to enable the siren to produce the 'wail' tone signal with associated control switches. The controls are only suitable for locating in a non-hazardous area.
- The Motor windings are tropicalized as standard.
- Anti-condensation heaters for the motor can be supplied.
- The standard siren builds offered are fitted with EExde rated motors but EExd motors can be supplied.

Note: Dimensions indicated are for sirens fitted with standard motors.

Numeric Information

Siren Type	Product Code	Motor Power	Current Rating	Weight	Dimensions: Length x Width x Height
FP6	SWG0028	3.8Kw de-rated to 2.2Kw for 60°C operation	5A	66Kg	521 x 398 x 448mm
FP10	SWG0034	7.5Kw de-rated to 5.5Kw for 60°C operation	11A	143Kg	612 x 495 x 557mm

GP & FP Siren Control Panels

Control panels are available for use in controlling GP & FP sirens to enable the sirens to which they are attached to produce two warning signals. A constant tone signal and a wail/undulating tone signal.

Main Features

- Lockable IP65 rated enclosure manufactured from powder coated mild steel with a lockable door isolator switch.
- Integral switches mounted on the door of the enclosure to activate and deactivate the attached siren.
- Remote input switch facility. (VFC switches required to switch a 110Vac powered control signal).
- Adjustable wail tone signal duty cycle. (Normally set to 4 seconds on 4 seconds off cycle pattern).
- Adjustable maximum warning signal duration timer.
- Monitoring facilities include:
 1. Contactor overload relay state via an auxiliary volt free contact.
 2. Contactor state via an auxiliary volt free contact.
 3. 2 indicators to show the presence of 400Vac and the derived 110Vac.
- Protected GP siren heater 230Vac power output source.
- Protected 110Vac remote siren contactor feed for multiple sirens.
- Thermistor trip relay for FP sirens.



Product Code	Siren Control Panel
SWC - 0027	GP6
SWC - 0028	FP6
SWC - 0029	GP10
SWC - 0030	FP10
SWC - 0031	GP12

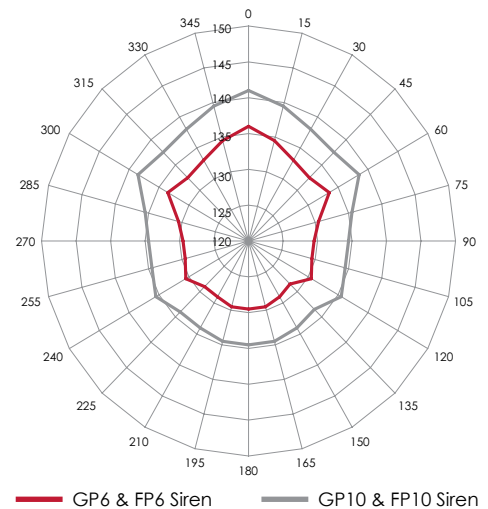
Sound Attenuation Chart

Model Audibility (db)	Configuration Omni-Directional	Distance from Siren (Metres)						
		30	100	200	400	800	1000	1500
GP6/FP6	○	105	93	83	73	63	-	-
GP10/FP10	○	110	98	88	78	68	65	-
GP12	○	115	103	93	83	73	70	63

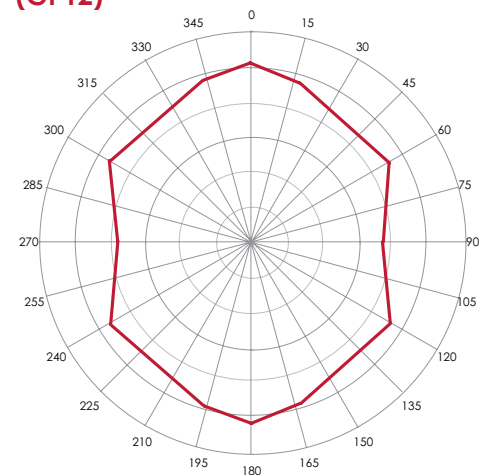
Sound Coverage Plots

The plots below show the anticipated coverage distance in clear still air on level terrain with no obstructions, using a 10db reduction in sound pressure level per doubling of distance.

Single ended GP & FP siren coverage (GP6, FP6, GP10 & FP10)



Double ended GP siren coverage (GP12)



Electronic Sirens – Value Range

ES Siren

The ES siren value range provides a robust economic solution to address wide area mass alert signalling for all industrial, civil, commercial and environmental requirement users who previously found conventional motor driven sirens acceptable for their needs but would like the advantages of battery operation and no 400Vac cabling.

The products are of modular construction which allows the sirens to be scaled and tailored to the user's specific needs in terms of signalling and omni or uni - directional sound coverage.



Main Features

- Audibility range between 106db @ 30metres for the smallest unit to 121db @ 30metres for the largest unit. Sirens in this range in increasing order of sound output are the ES1/2V, ES1/3V and ES2V units.
- 4 user selectable & configurable emergency signals.
- Live PA via a 600 ohm balanced & isolated input.
- Battery operated from an integral battery pack to overcome AC power failure.
- Full control of a single or multiple units via an RS485 interface of up to 1.5km distance from the siren.
- Simple control and fault reporting via 5 VFC opto-coupled inputs, (Up to 4 alarm signals and PA) plus siren fault and AC power relay outputs.
- Supports a radio & modem for remote operation via an integrated RS232 interface.
- Class D 375W amplifier used in the output with self healing short circuit, thermal & over current protection.
- Active alarm signal or PA output via a set of N/O & N/C relay contacts for control of and supplementary devices. (i.e. Strobe beacon).
- Supports DT11 activation panel with microphone input facility.
- Minimum alarm signal operating time of at least 6 minutes after a 4 day AC power loss.
- Control cabinet constructed from coated steel as standard or stainless steel on request, (600 x 400 x 200mm), which provides an environmental rating of IP65 and the siren horns are manufactured of cast aluminium
- Power supplied by an integral 48Vdc battery pack and an 88-132/176-264Vac @ 47-63Hz power source.
- Operating temperature range of -20 to +60 degrees C.



SIP-51 HMI

The basic switch & indicator HMI unit provides a means of siren control and basic supervision for a single or multiple value range siren system.

- Activation of up to 4 alarm signals.
- Test result displayed on a single indicator beacon which has been connected to the siren fault output relay.
- Smaller units available with less switches/beacons.
- Environmental rating of IP65.



DT-11 HMI Console

The DT-11 HMI unit provides a means of siren activation and live voice input for a single or multiple value range siren system via its RS485 communication interface.

- Activation for up to 4 alarm signals or live PA via its keypad and integral 2 line 16 character LCD backlit module.
- Microphone input connector for live voice.
- Power for the unit is provided by the RS485 interface or via the units 12Vdc input connector, if there is to great a volt drop or used in conjunction with a radio link.
- May be linked via a uni-directional radio link to the siren controller instead of a hardwire link.
- Can be located in the siren control panel or on a convenient wall location.
- All configuration information is stored in non-volatile memory.

Electronic Sirens – Value Range – Radio Control



Radio and Control Equipment

Siren radio communication equipment:

- Motorola GM340 Databox. Transceiver. Operating frequencies VHF 136-174 MHz, or UHF 403-470 MHz.
- Antenna. 3-Element YAGI.
- TK401 Data Modem 1200-4800 bps.
- Cables and installation accessories.

Base station communication equipment:

- Simplex transceiver for voice and DATA computer connection.
- Operating frequencies VHF 136-174 MHz, or UHF 403-470 MHz.
- RF power 1 to 25 W programmable.
- RJ45 input for Motorola desktop Microphone (HMN-3000B) for live voice announcements.
- External battery connection for continues operation when AC failure.
- Integrated power supply 120W - 110/230VAC for continues operating and charging battery.
- TK401 Radio-modem 1200 - 4800 Bps Transparent Mode.
- 2U 19" Rack Mountable Cabinet, with temperature control fan (Wall mounting cabinet optional).
- Antenna VHF (3DB) or UHF (5 DB) Collinear.
- 30 m coaxial antenna feeder.

Control Station:

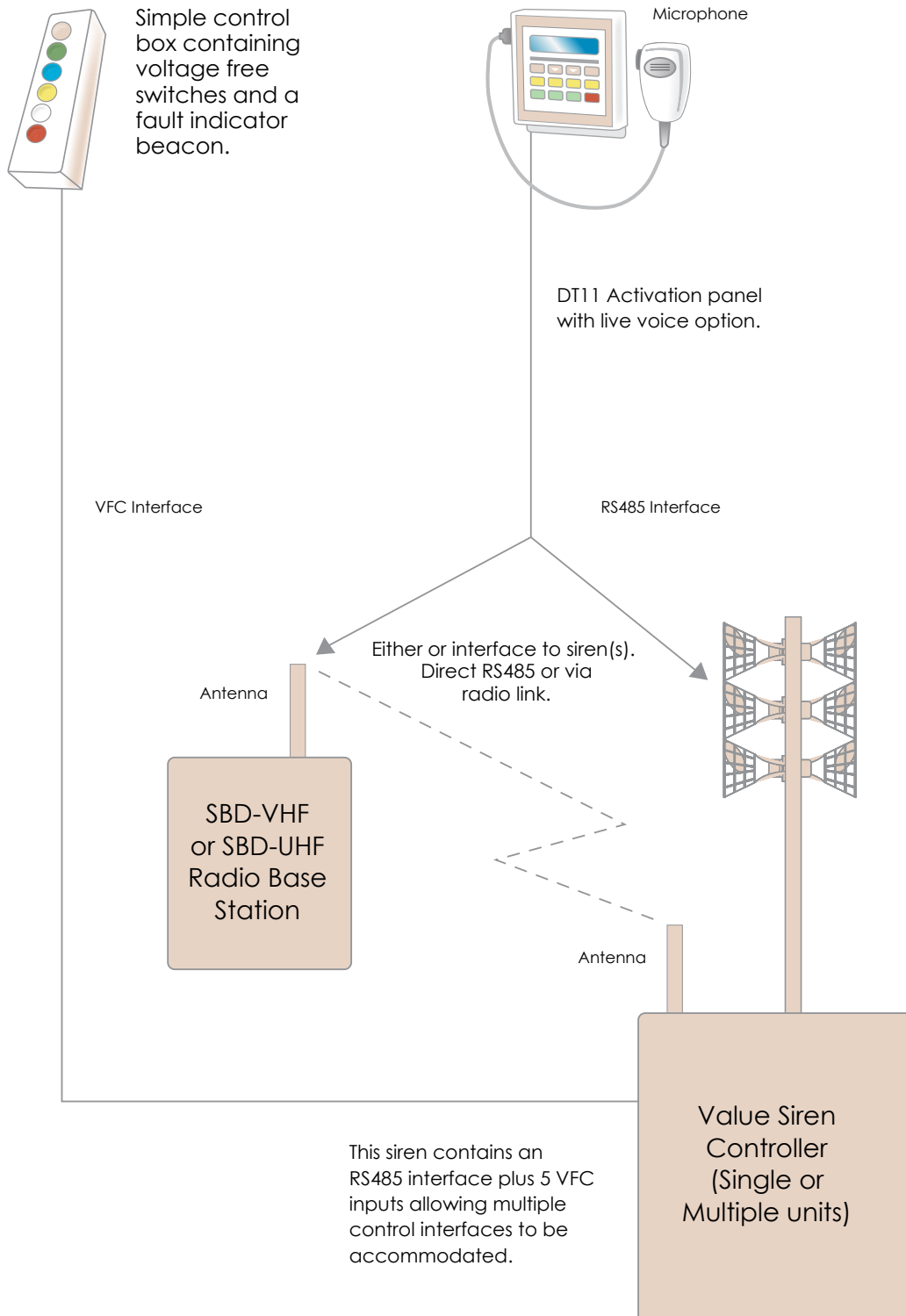
- DT11 HMI.
- Desk microphone.



Sound Coverage Chart

Siren Model Audibility (db)	Configuration Omni or Uni Directional	Distance from Siren (Metres)						
		30	100	200	400	800	1000	1500
ES1/2 V	O	106	90	80	70	60	-	-
ES1/3 V	U	115	98	88	78	68	65	-
ES2 V	O	115	98	88	78	68	65	-
ES2 V	U	121	103	93	83	73	70	-

Value Siren Models



Electronic Sirens – Superior Range



ES Siren

The ES siren superior range provides a sophisticated, robust and resilient solution to address wide area mass alert signalling for all industrial, civil, commercial and environmental requirements.

The products are of modular construction incorporating an extremely flexible user configuration software package which allows the sirens to be scaled and tailored to the user's most complex specific needs including omni or uni – directional sound coverage.



Main Features

- Audibility range between 106db @ 30metres for the smallest unit to 127db @ 30metres for the largest unit. Sirens in this range in increasing order of sound output are the ES1/2S, ES1/3S, ES2S, ES3S and ES4S units.
- 16 user selectable & configurable emergency signals.
- Storage for up to & selectable 400 pre-recorded voice messages. (Voice files are stored as PCM-CCITT 8 kHz 8 bits mono).
- Live PA via a 600 ohm balanced & isolated input.
- Battery operated from an integral battery pack to overcome AC power failure.
- User definable schedules for time/date signalling.
- Silent test facility to minimise nuisance signalling to test the siren.
- Full control and fault diagnosis of a single or multiple units via an RS485 interface of up to 1.5km distance from the siren.
- Simple control and fault reporting via 8 VFC opto-coupled inputs and relay output(s).
- Supports a radio & modem for remote operation via bi-directional integrated RS232 interface.
- Supports a GPS clock for accurate time synchronisation for schedules via an integrated RS232 interface.
- Class D 375W amplifier used in the output with self healing short circuit, thermal & over current protection.
- Option of driving 100V line driver horns in stead of or as well as the standard horns for hazardous area operations and mass coverage within a building.
- Active alarm signal or PA output via a set of N/O & N/C relay contacts for control of and supplementary devices. (i.e. Strobe beacon).
- Four configurable VFC opto-coupled monitor inputs. (i.e. AC Power, Cabinet door open etc).
- Four configurable relays with changeover contacts used to monitor the activities of the unit.
- Siren activity and fault report log.
- Minimum alarm signal operating time of at least 6 minutes after a 7 day AC power loss.
- Supports CMC 4 optional engineer's activation & supervision panel with microphone input facility.
- Control cabinet constructed from coated steel as standard or stainless steel on request, (800 x 600 x 250mm), which provides an environmental rating of IP65 and the siren horns are manufactured of cast aluminium.
- Power supplied by an integral 48Vdc battery pack and an 88-132/176-264Vac @ 47-63Hz power source.
- Operating temperature range of -20 to +60 degrees C.

Electronic Sirens – Superior Range – HMI Interfaces



SIP-51 HMI

The basic switch & indicator HMI unit provides a means of siren control and basic supervision for a single or multiple superior range siren system.

- Activation of up to 5 alarm signals or pre-recorded messages and silent test.
- Silent test result displayed on a single indicator beacon which has been connected to a programmed relay output to indicate the state of the siren on its controller.
- Smaller units available with less switches/beacons.
- Environmental rating of IP65.



CMC-4 HMI Console

The CMC-4 HMI unit provides a means of siren control and supervision for a single or multiple superior range siren system via its RS485 communication interface.

- Control of up to 4 alarm signals & 2 pre-recorded messages via its keypad and integral 2 line 16 character LCD backlit module.
- Microphone input connector for live voice or record & play voice messages.
- Silent test activation facility and results displayed via its LCD module.
- Power for the unit is provided by the RS485 interface.
- Magnetic coded switch to enable signal and voice activation functions.
- May be linked via a bi-directional radio link to the siren controller instead of a hardwire link.
- Can be located in the siren control panel or on a convenient wall location.
- All configuration information is stored in non-volatile memory.





CMC-8 HMI Console

The CMC-8 HMI Console provides a means of siren control and supervision for a multiple superior range siren system where the use of a PC based control system is not appropriate for the environment or where simple activation switches next to the HMI are also required.

- Control of up to 96 sirens from a single control station.
- Selection of up to 16 alarm signal and 400 pre-recorded messages.
- Microphone input connector for live voice or record & play voice messages.
- Silent test activation facility for individual attached siren with the results being displayed on the units 2 line LCD module.
- User definable siren groups.
- User definable legends for sirens, siren groups and signals for ease of operator control.
- Master volume control for activated sirens.
- Event and siren test logs output to a printer.
- Suitable for wall or desk mounting.
- All configuration information stored in non-volatile memory.
- Secure multiple operator access control via magnetic coded key tags.
- May be linked via bi-directional radio link to the siren controller instead of an RS485 communication network.
- Individual password protection and configurable command control restrictions.



TALOS 128 HMI Software for a PC System

The software which operates under Microsoft windows allows the means of control and supervision required for a complex multiple siren system using the Superior range of sirens.

- Control of up to 128 sirens from a single control station.
- The ability to have multiple control stations connected to a master overall supervisory control station
- Selection of up to 16 alarm signal and 400 pre-recorded messages.
- Live voice broadcast communication facility
- Individual or group siren silent test facility with the results dynamically displayed,.
- User definable legends for sirens, siren groups and signals for ease of operator control
- Master volume control for activated sirens
- Event and siren test logs output to a file or printer.
- Secure multiple operator access control with Individual password protection and configurable command control restrictions



Electronic Sirens – Superior Range – Radio Control

Radio and Control Equipment

Siren radio communication equipment:

- Motorola GM340 Databox. Transceiver. Operating frequencies VHF 136-174 MHz, or UHF 403-470 MHz.
- Antenna. 3-Element YAGI.
- TK401 Data Modem 1200-4800 bps.
- Cables and installation accessories.

Base station communication equipment:

- Simplex transceiver for voice and DATA computer connection.
- Operating frequencies VHF 136-174 MHz, or UHF 403-470 MHz.
- RF power 1 to 25 W programmable.
- RJ45 input for Motorola desktop Microphone (HMN-3000B) for live voice announcements.
- External battery connection for continues operation when AC failure.
- Integrated power supply 120W - 110/230VAC for continues operating and charging battery.
- TK401 Radio-modem 1200 - 4800 Bps Transparent Mode.
- 2U 19" Rack Mountable Cabinet, with temperature control fan (Wall mounting cabinet optional).
- Antenna VHF (3DB) or UHF (5 DB) Collinear.
- 30 m coaxial antenna feeder.

Control Station:

- Workstation. Pentium 400MHz 64 bit processor, keyboard, mouse, and CD Rom drive.
- 17 inch monitor.
- UPS 30 minutes.
- Printer: Dot Matrix – Continuous feed.
- Desk microphone.

or

CMC 4 Console

or

CMC 8 Console



Sound Coverage Chart

Siren Model Audibility (db)	Configuration Omni or Uni Directional	Distance from Siren (Metres)						
		30	100	200	400	800	1000	1500
ES1/2 S	O	106	90	80	70	-	-	-
ES1/3 S	U	115	98	88	78	68	-	-
ES2 S	O	115	98	88	78	68	-	-
ES2 S	U	121	103	93	87	75	70	-
ES3 S	O	121	103	93	83	73	70	-
ES3 S	U	124	107	97	87	77	74	67
ES4 S	O	124	107	97	87	77	74	67
ES4 S	U	127	110	100	90	80	77	70

A superior siren system controlled via a PC running Talos 128 control software or a CMC 8 console can provide siren event notification to individuals or groups of people by SMS messaging over a GSM network and email messaging.

Key System Features

- Sends SMS – Emails when an event is triggered.
- Can handle different events.
- Configurable SMS message for every event.
- Supports unlimited users and groups of users.
- Can connect with one or more alert systems (sirens) (optional).
- Connects with one or more DinStar GSM gateways and up to 255 GSM modems.
- Can send manually SMS / e-mails to a user or to a group of users.
- Simple to configure.
- Keeps tracks of all logs (SMTP events, GSM events, e-mail events, alert events) to database and text files.
- Immediate print of every event to dot matrix printer (optional).
- Administrators can check health of system remotely (by sending SMS).
- Operates on a Windows XP / Vista / 7, 32 bit – 64 bit PC.



Electronic Sirens – Superior Range – Portable

ES Siren Superior Portable

The ES siren superior portable range provides an extremely robust and sophisticated rapidly deployable wide area warning device with its own integral battery pack making it ideally suitable for emergency and civil defence operation, quarrying, open cast mining, railway maintenance and many other mass notification applications.

The products are based on the standard superior range of siren which allows the sirens to be scaled and tailored to the user's specific needs in terms of signalling and omni or uni – directional sound coverage.



Main Features

- Audibility range between 106db @ 30metres for the smallest unit to 115db @ 30metres for the largest unit. Sirens in this range in increasing order of sound output are the ES1/2SP and ES1/3SP.
- 16 user selectable & configurable emergency signals.
- Storage for up to & selectable 200 pre-recorded voice messages. (Voice files are stored as PCM-CCITT 8000 kHz 8 bits mono).
- Live PA via a 600 ohm balanced & isolated input & record playback facility to avoid acoustic feedback.
- Battery operated from an integral battery pack housed in its own container for rapid replacement in operational conditions.
- User definable schedules for time/date signalling.
- Silent test facility to minimise nuisance signalling to test the siren.
- Full control and fault diagnosis of a single or multiple units via an RS485 interface of up to 1km distance from the siren.
- Simple control and fault reporting via 8 VFC opto-coupled inputs. (3 connected to buttons on the enclosure).
- Supports a radio & modem for remote operation via bi-directional integrated RS232 interface.
- Supports a GPS clock for accurate time synchronisation for schedules via an integrated RS232 interface.
- Class D 375W amplifier used in the output with self healing short circuit, thermal & over current protection.
- Auxiliary monitor & control inputs & outputs.
- Siren activity and fault report log.
- Operation run time when emitting a continuous sound or message is approximately 1 hour from a fully charged battery pack.
- Supports CMC 4 optional engineer's activation & supervision panel with microphone input facility.
- Control and battery enclosures constructed from die cast aluminium and fitted with fully weatherproof Mil-Standard connectors which provide an environmental rating of IP65. The battery enclosure also contains an integrated charger for ease of maintenance. (Enclosure sizes & weight 420x300x230mm, 9Kg control unit & 26Kg battery unit).
- Battery pack would be rechargeable from a suitable 230Vac supply and would take in the region of 8 hours when charging from a fully discharged state.
- Operating temperature range of -20 to +60 degrees C
- Either standard loudspeaker horns permanently installed on a suitable structure or as part of a trailer/sledge arrangement can be used for the speaker array or alternatively lightweight fibreglass horns mounted on the a quickly erectable hydraulic portable mast.
- Portable mast is manufactured to Mil standard 810F has an erected height of 4 metres, retracted length of 1.8 metres in its carry case and weighs approximately 28Kg.
- Alternative mast arrangement available for solid tarmac or concrete surfaced.



Numeric Information

Module	Dimensions (cms)	Weight (Kg)
Control Box	43 x 30 x 33 cms (L x W x H)	9Kg
Battery Box	43 x 30 x 33 cms (L x W x H)	24Kg
Mast	110 x 55 x 47 cms (L x W x H)	37.5Kg
Horn Array	190 x 23 x 23 cms (L x W x H)	25Kg
Accessory Equipment	Small bag	12Kg
Cable Reel	230mm diameter reel	4Kg

Sound Coverage Chart

Siren Model Audibility (db)	Configuration Omni or Uni Directional	Distance from Siren (Metres)						
		30	100	200	400	800	1000	1500
ES1/2 SP STD Horns*	O	106	90	80	70	-	-	-
ES1/3 SP STD Horns*	U	115	98	88	78	68	-	-
ES1/2SPK Lightweight Horns^	O	96	86	76	66	-	-	-

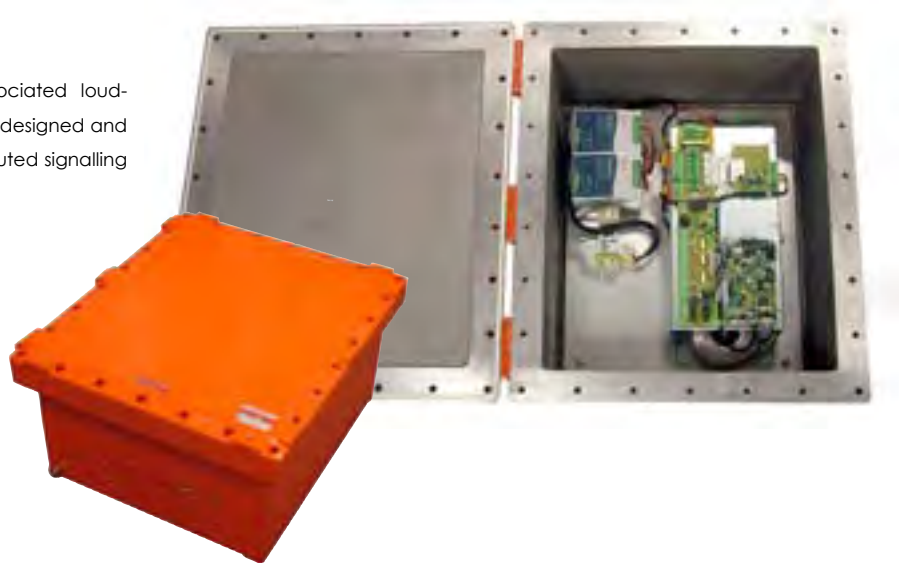
*System fitted with standard aluminium loudspeaker horns

^System fitted with lightweight horns constructed of fibreglass body and aluminium cone

Electronic Siren - Superior Range - ATEX Approved

ES Siren ATEX

The Superior siren controller and associated loud-speaker devices have been specifically designed and manufactured for wide area and distributed signalling in hazardous area locations.



Main Features

- Certified EExd IIB T6 IP66 Category Ex II 2 G D
- Silent test facility to minimise nuisance signalling to test the siren
- Siren activity and fault report log
- User definable schedules for time/date signalling.
- Full control and fault diagnosis of a single or multiple units via an RS485 interface of up to 1.5km distance from the siren
- 16 user selectable & configurable emergency signals.
- Storage for up to & selectable 400 pre-recorded voice messages. (Voice files are stored as PCM-CCITT 8 kHz 8 bits mono).
- Live PA via a 600 ohm balanced & isolated input.
- Multiple control interfaces which include RS232, RS485 and a simple VFC interface via 12 VFC opto-coupled inputs and 4 relay outputs.
- Class D 375W amplifier used in the output with self healing short circuit, thermal & over current protection.
- Option of driving 100V line driver horns instead of or as well as the standard horns for distributed horn installations in hazardous areas.
- Warning and message signalling plus functional siren control completely software configurable to allow ease of modification should requirements change.
- Control cabinet constructed from cast aluminium as (670 x 580 x 333mm), which provides an environmental rating of IP66 and the siren horns are manufactured of cast aluminium.
- Power supplied from an 88-132/176-264Vac @ 47-63Hz power source.
- Operating temperature range of -40 to +40 degrees C.

Sound Coverage Chart

Siren Model Audibility (db)	Configuration Omni or Uni Directional	Distance from Siren (Metres)						
		30	100	200	400	800	1000	1500
ES2SF	O	105	88	78	68	-	-	-
ES2SF	U	108	90	80	70	60	-	-

Note: ES2SFLD controller is used to power 100V line drive speakers

Sound Coverage

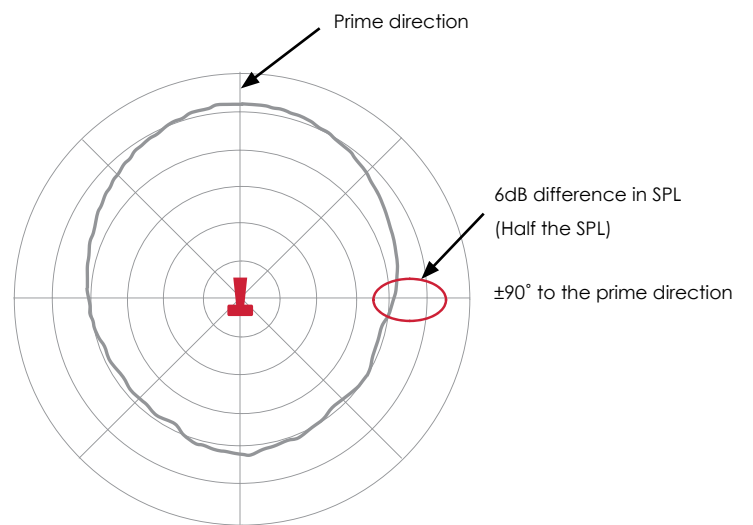
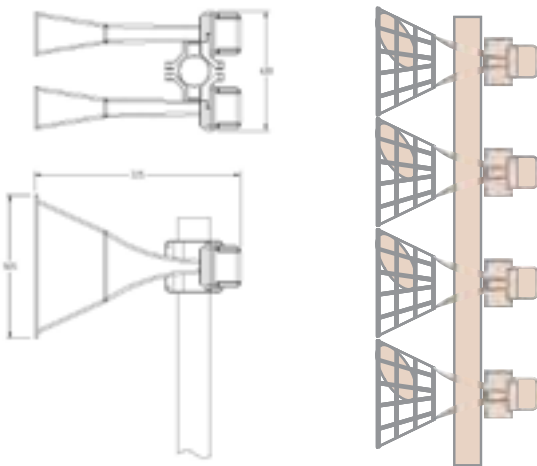
The ES range of sirens can be configured for omni- or uni-directional sound coverage.

Below are typical sound coverage plots in clear still air on level terrain with no obstructions.

The horn has the narrow - rectangular shape to provide a specific SPL at $\pm 90^\circ$ to the prime direction of radiation.

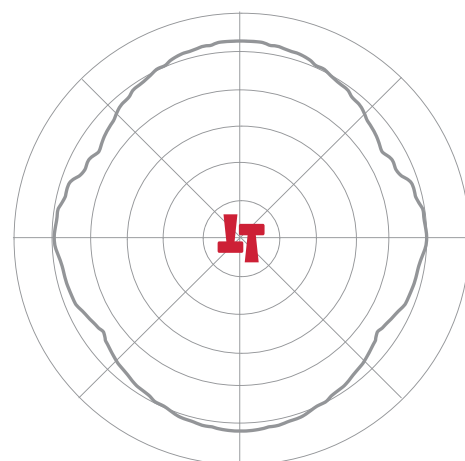
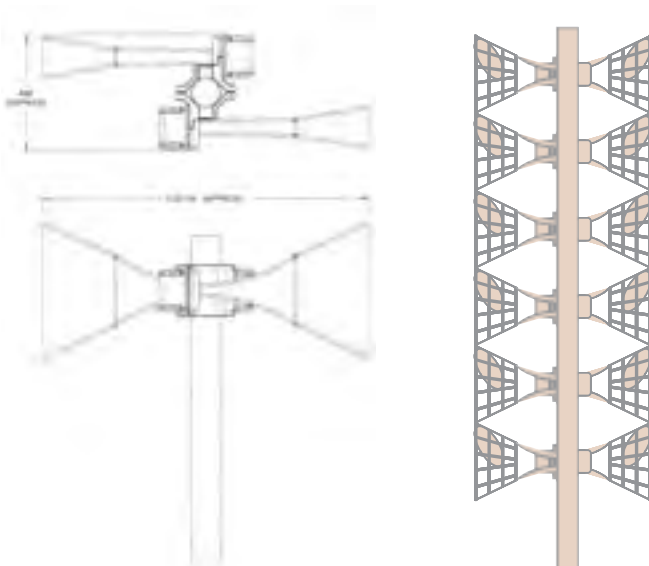
Uni-directional Configuration

Dimensions

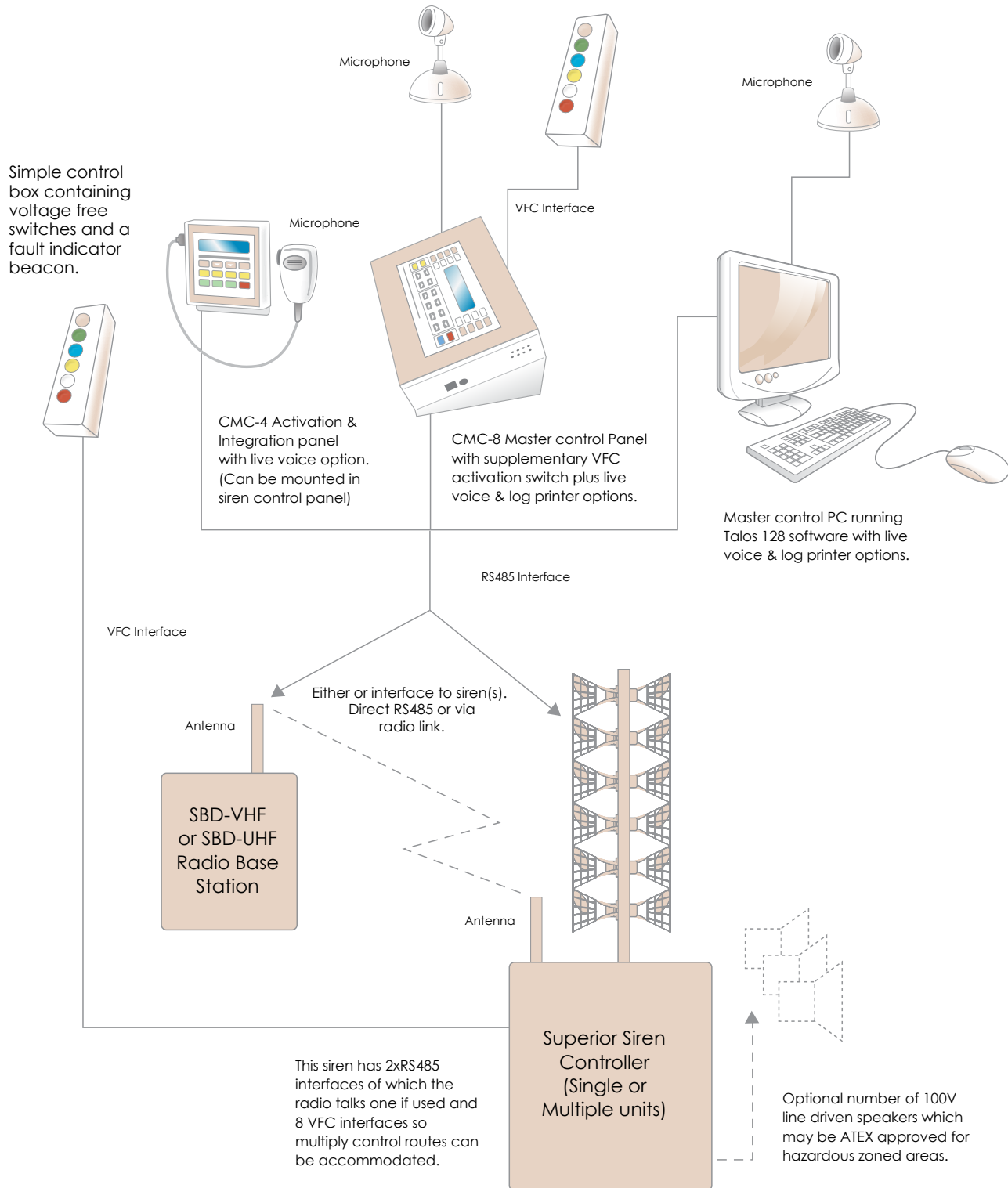


Omni-directional Configuration

Dimensions



Electronic Sirens - Superior Range - Control Options





Siren
Supervised
External
Uni-directional
Audible
Warning Device



Siren
Supervised
Internal 100V line drive
Audible
Warning Device



Siren
Supervised
Internal 100V line drive &
external Audible
Warning Device



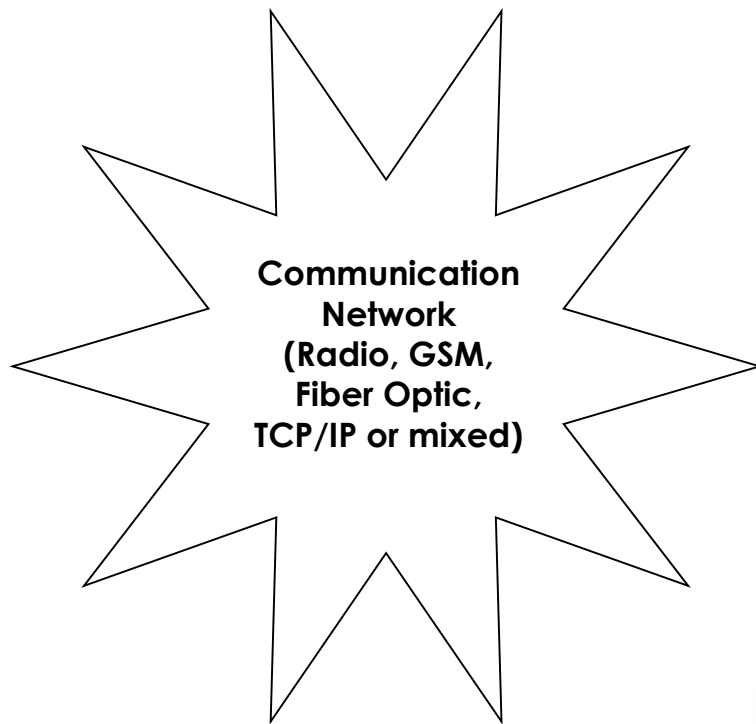
Siren
Supervised External
Omni-directional
Audible Warning Device



Master Control Station
PC or CMC8 Console with
microphone, PA input and
event log printer



Slave or Backup Control Station
PC or CMC8 Console with
microphone, PA input and
event log printer



GSM Mobile Phone
Alerting & Activation
System



**Strobes & Rotating
Beacons**



**Weather or Seismic
Monitoring Station**



Text Display Board



Siren Selection Criteria

Siren Selection

The main factors to take into consideration when determining a solution for a siren system are:

- The sound pressure level* (SPL), of the required warning signals.
- The quality and type of sound(s) in the local environment.
- The ambient noise level that has to be overcome.
- The number of distinct warning signals required.
- The reliance of the siren to operate when required even in the event of power failure.
- The annoyance factor that may be created from scheduled siren testing of certain siren types.
- The electricity supply available to power the siren and the installation costs, particularly if high voltage cabling is required.
- The required duration of the warning signal.
- The means of siren activation and possibly condition monitoring.
- The shape of the sound coverage required.

To aid further in evaluating of the considerations outlined the main two aspects are:

- Understanding of the required sound pressure levels.
- Choice of siren type.

*Understanding of the Required Sound Pressure Levels

In an ideal situation the difference between ambient background sound levels and siren warning signal would be in excess of 6db, and a useful guide to determining sound level is contained in the table below.

A further influence in this area and the ability to distinguish a siren signal from ambient noise is if the signal contains for instance sweeping frequencies and varying temporal patterns as this aids the signal recognition to personnel even if the difference between signal and background sound is marginal.

Motor Operated Sirens

Advantages:

- Simple unsophisticated technology.
- Cost in terms of audible output level over the Superior siren units. However if the siren requires an additional control unit to enable the siren to produce a second warning signal the Value siren range is probably the more cost effective option.

Limitations:

- Loss of AC mains power to the siren which could occur in a major site incident would prevent the sirens operation and hence prevent a safety warning being provided.
- Only one steady tone alarm signal can be produced unless an electronic control unit is added to allow a wail tone second signal. Maximum number of 2 alarm signals.
- The siren must be sounded at regular intervals to determine its operational condition.
- The sirens require a nominal 400Vac 3 ph supply which may be expensive to provide if the power cable run is long.
- Unit weight if required to be mounted on a mast.

These limitations can be overcome with Electronic Sirens.

		Light Street Noise										
		Average Office Noise										
		Stockroom Noise										
		Light Assembly Room Noise										
		Shipping Room Noise										
		Heavy Street Noise										
		Heavy Assembly Room Noise										
		Light Machine Room Noise										
		Punch Press Room Noise										
	Whisper @ 1m					Boiler Factory Noise						
		Casual Conversation @ 1m				Heavy Machine Room Noise						
						Hammering Steel						
10	40	50	60	70	80	90	100	110	120	130dB(A)		

Electronic Sirens

Advantages:

- The siren is battery powered in operation, requiring an AC power supply only to maintain the battery charge, therefore loss of site power has no effect on the operation and functionality of the siren.
- The siren perform silent tests at a user defined time period to determine the operational capability of the siren and relays the results of such a test to a monitoring point so that action can be initiated to repair the unit if necessary in a timely fashion and without causing any nuisance sound to neighbours for testing purposes.
- Up to 8 different alarm signals can be activated via volt free contacts and more if an RS485 interface is used to control the siren.
- The alarm signals are fully user definable and may include pre-recorded voice messages as well as tone signals. Live voice is also an option.
- Because the electronic siren only requires a 110/230Vac supply instead of the 400Vac 3ph supply required for motor driven sirens there may be a significant saving on installation costs.
- In suitable remote locations the siren could be powered from a solar panel array.
- Sound levels of each signal can be user defined therefore enabling the possibility of the same siren being able to be used for on-site and off-site warning.
- The siren also contains two extremely flexible user definable schedulers for time signalling purposes.
- The sirens can also support 100V line drive loudspeakers for overcoming high ambient noise levels in specific locations or if a PA function is required.

Limitations:

- More sophisticated technology and therefore requires a greater installation and maintenance skill level.
- Greater initial cost than a conventional motor driven siren (for the superior models) but this is usually offset by the advantages and reduced installation costs of an electronic siren.

Main Differences between Value and Superior Electronic Sirens are as follows:

- The Value range of sirens can be considered as a mid technology solution fitting between the very limited signalling and control facilities of the motor operated siren technology and the fully configurable and monitored Superior siren technology.
- The Value siren offers up to a maximum of 4 different warning signals, live voice broadcasting and battery powered operation so would be unaffected by loss of site power unless for a prolonged period of several days. Control of a single siren via simple VFC switches or single and group siren control over an RS485 or radio network.
- A major advantage over the motor driven technology but falling short of the Superior siren range which offers all that the Value siren range can provide but with the addition of full siren functionality monitoring and the ability of silent self testing meaning the siren only has to be sounded to make people aware of an emergency situation or to provide them periodic awareness of what the signal sounds like. Other issues to be considered are the ability to store pre-recorded messages, configurable VFC input and outputs, greater number and flexibility in the definition and use of warning signals, sophisticated onboard scheduling options and the maximum size of the siren and hence audible output available. The Value siren systems are limited to a maximum of a 6 horn siren unit.

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