

G U A R D I A N T E L E C O M

Product and Services Guide

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About Guardian Telecom

- Building on a Legacy of Design and Service
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CONNECTED. PROTECTED.

SECTION

1





Visit industrial sites around the world and you can find telephones and communication systems designed, manufactured, distributed and commissioned by Guardian Telecom. From certified and ruggedized telephone and paging endpoints, to loudspeakers & ringers, cable, accessories, acoustic booths and much more. Our product line is extensive and our knowledge in-depth.

Guardian manufactures and assembles at our modern, ISO certified, CSA, UL and ATEX approved facility located east of the Canadian Rockies in Calgary, Alberta, Canada.

Working closely with our customers has always been a cornerstone in our work ethic. It keeps us up to date on their evolving needs and requirements as they operate in a demanding and uncompromising industrial world.

Guardian Telecom has completed its initial VoIP telephone product launch. As the IP world continues to evolve and grow, we will continue to invest both time and resources in design and testing to meet the stringent requirements that clients demand.

The in-house channel-partner sales and technical teams are here to work directly with you or through our network of distributors and representatives, locally, nationally and globally. Take advantage of their practical experience and product knowledge to make informed decisions based on your communication needs, environmental factors, regulatory requirements, budget considerations, growth and scheduling.

From individual telephone units to complete systems, our focus on customers' distinct needs is also addressed by customizing products whenever practical. From features to colors, finishes to labels, graphics, parts, enclosures and more.

Guardian can help guide you through the product selection process no matter how complex it is. We invite you to contact us to discuss your needs and see if our products & services will be the right fit.



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Guardian Telecom's Product and Services Guide Catalogue is a compilation of individual Category Sections. They include an in-depth selection of Product Data Sheets from our extensive product lines including Analog and VoIP Telephones, Page/Talk, Cable, Talk/Back, PA/GA equipment, Acoustic Booths, Loudspeakers & Ringers and Accessories at the date of publication.

Based on a policy of continuous improvement, Guardian is constantly evaluating and redesigning existing models, adding new features and introducing new products to the benefit of our customers. Additional information can be found on our website at www.guardiantelecom.com.

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Building on a Legacy of Design and Service

Maintaining reliable communications at industrial sites has always been a challenge

Everyday factors such as weather, water, and dust create problems which increases significantly in the presence of corrosive elements and explosive atmospheres.

While the barriers presented by many of these environmental factors have successfully been overcome, hazardous atmospheres proved to be the ultimate challenge to communications equipment.

Low voltage, intrinsically safe intercom systems were the first step in providing a link. While this technology virtually eliminated the potential for sparking, low voltage placed significant constraints on a system's ability to keep pace with modern technology.

In 1986, Guardian developed and marketed a new generation of safe, hazardous area communications equipment that overcame the disadvantages of stand-alone, low-voltage intercoms.

This new generation of telephone equipment — safe even in hazardous environments — permitted users to take full advantage of existing telephone systems, with features not available with intercom, cellular or radio systems.



Introduction of telephony to the plant site environment allows users to benefit by:

- augmenting the existing telephone system and its ability to access the global telephone network
- reducing costs by eliminating duplication and the need for specialized, incompatible, and independent wiring and equipment
- providing reliable communications where Radio Frequency Interference would hamper cellular and wireless options

At the same time, telephone systems permit users to access a wide range of convenient features such as private or conference calling, call-hold, call-transfer, speed dialing, off-site calling, voice mail and more.

A Continuing legacy of success

In 1993, Guardian Telecom began introducing telephones and communication systems for use in other rigorous service conditions such as **salt spray** onboard ships and at dockside, high temperature environments, high humidity and shock in hard-rock

mines, handling areas for corrosive chemicals, dusty potash mines, vandal-prone public locations, and weather exposed construction sites.

Communications — Easy, Reliable and Safe

Whether at corporate offices, on construction sites, in whirring factories, deep below the surface of the earth, or far out at sea on oil rigs or ships, the telephone is an indispensable communication tool. No matter what environmental conditions exist, telephones and paging systems are constantly relied on for direct, immediate, safe and clear information exchange.

Guardian's designs and technology make it **easy and cost effective** to extend telephone communication from the office to any- where on an industrial site regardless of exposure to weather, water, dust, humidity, corrosive or explosive atmospheres.

Our equipment easily connects to existing telephone networks without the need for separate internal systems, special wiring or isolation barriers.

Guardian provides combined telephone, intercom and paging capabilities as well as a full range of telephone features in one easy to install, easy to maintain and easy to use system.



Our goal and vision is to provide seamless communication solutions that respond to customers' needs for today and tomorrow and well into the future.



At Guardian, *we make communications reliable* by ensuring products are fit for duty by subjecting each model to grueling tests in the laboratory and out on the job. All of our equipment meets or exceeds standards set by major telephone equipment suppliers and utility companies.

Guardian's telephones and equipment have been designed for and successfully used in **freezing Arctic** winters, **searing Middle East** temperatures, the rigors of oil well **drilling platforms** and the hazardous atmosphere of **oil refineries**.

Our products provide safe communication. We design and manufacture our telephone equipment and systems specifically to meet or exceed the challenges of harsh and hazardous environments.

When the bottom line is safety, you can always count on Guardian for dependable communications.

Guardian's equipment and systems offer the reliability, safety, flexibility and capability of a telephone — complete with its full range of services — to everyone regardless of their work environment.

We are proud to continue that legacy of providing cost effective, safe and reliable communications solutions to industries around the world.

More Choices, Selections and Services

Guardian Telecom designs, manufactures and delivers a diverse range of communications solutions to clients in more than 100 countries around the world. By extending existing telephone networks, our equipment provides a safe, flexible, economical and efficient system for every area of an industrial site.

We know that every client and project can present different communication challenges and that is why Guardian Telecom provides you with more choice.

From our extensive and expanded product line to the design of customized products, our systems are especially developed to meet a customer's specific needs.

We want to make safety a way of working and communicating, not a barrier. This is why Guardian offers a broad range of equipment to meet the extremes of **Hazardous Area** and **Explosive environments, including Zones 1 and 2**, to demanding industrial or public settings that still require specialized, rugged equipment without the expense of highly regulated equipment.

Explosion Proof Analog Telephones

Intended for use in the highest hazardous area classifications, Guardian's Explosion Proof equipment is designed and constructed to contain explosions within the equipment to prevent an explosion from igniting the hazardous atmosphere outside of the unit.



Hazardous Area Analog Telephones

Historically, communication in potentially hazardous environments has been a struggle between safety and effectiveness. Naturally, safety has always won. Guardian's Hazardous Area equipment ends the trade-off by providing unquestionably safe yet highly-effective communications in one telephone.



Guardian's Hazardous Area equipment gives you safety, quality, reliability, flexibility and capabilities all in one system — without compromise by:

- providing easy connection to existing telephone systems
- allowing flexibility to connect up to five telephones on one line, up to **15,000 feet (4,600 meters)** from the telephone switch, all without degrading voice quality
- offering a full range of telephone features beyond expectation

Outdoor Industrial & Industrial Analog Telephones

While on-site communication environments are not always hazardous, many present punishing conditions that require demanding solutions. Guardian's telephones have been designed, inside and out, to provide dependable service regardless of exposure to weather, dust, water or corrosive elements.

With advanced features such as encapsulated circuitry and membrane keypads that reduce wear and resist the elements, rust proof and corrosion resistant stainless steel fittings that provide long, dependable service, and sturdy construction that resists shock and rough use, Guardian's telephones are guaranteed to perform in even the worst conditions.



"More Choices, Selections and Services" continued ...

Emergency/Help Point Analog Telephones

During the 1990's, Guardian responded to requests for the development of a hands free unit that would work in harsh conditions including extremely cold weather, rain and noisy environments.



In many cases, these products would be used in locations where **public safety** was a concern including College and University **campuses**, as well as **transit** facilities with high ambient noise areas.

Guardian Engineers developed our HDE-A series with an advanced circuit board that will effectively allow reliable two-way voice communication in noisy areas up to 92 decibels when used with an external power source. All HDE (Heavy Duty Emergency) units have louvers which are very effective against rain, sleet, snow and dust. The louvers can also prevent damage caused by vandalism to the speaker and microphone areas from sharp items such as an ice pick.

Correctional Analog Telephones



Our CIT (Correctional Institute Telephones) were originally designed in conjunction with a major North American Justice System to provide reliable rugged equipment for jails, prisons and other holding or correctional facilities.

Guardian's **vandal resistant** Correctional equipment is designed to endure public abuse and tampering as well as low or high temperatures, dust, water and corrosion.

The rugged nature of these units **reduces overall cost** and downtime for repairs or replacement. Safety was a main factor in the design of these units as the standard hand set armored-cord length was reduced to 16" to lessen the chance of the hand set being used as a club or choking device.

VoIP Telephones

Guardian Telecom has combined the benefits of VoIP (Voice over Internet Protocol) with the outstanding quality of our existing industrial telephony products.



All that is required is a simple network connection with Guardian Telecom's VoIP telephones.

SIP connectivity expands Guardian VoIP reach into demanding and rugged environments with seamless integration into your existing or new VoIP infrastructure.

Guardian VoIP products are Power over Ethernet compliant (PoE) or can be powered using an optional power supply.

To date Guardian has released Outdoor Industrial models, Indoor Industrial models and Emergency Help Point models. A new selection of Hazardous Area VoIP telephones are currently undergoing a multitude of tests for certification and are expected to be released to the market in the foreseeable future.

¹GAI-Tronics Page/Party® is a registered mark of the GAI-Tronics Corporation and its use does not imply endorsement.

Page/Talk

Where simplicity and reliability are required, Guardian's Page/Talk intercom products, cable and system components have stood the test of time and punishment from harsh and explosive environments.

Use Page/Talk Explosion Proof products and Page/Talk Stations to combine plant-wide or zone selected paging capability with single or five line intercom communication.

Unrestricted conference call capability and unlimited system expansion without complicated re-configuration makes Page/Talk effective for end users to fulfill many requirements in one simple but effective communication system.



Guardian Page/Talk products have the ability to **interface with other phone or emergency systems** for increased compatibility. Components can be also be used with other current system manufactures for better cost-effectiveness.

Page Station Replacement

When it's time to replace your existing Guardian or **third-party Page Station** system components including GAI-Tronics Page/Party® units¹, Guardian addresses the need with a cost-effective answer by offering replacement station modules.

Direct compatibility of Guardian PTA & PTR modules & PPA & PPR modules for GAI-Tronics Page/Party® units allows end users to protect their original system investment by replacing failed or aged units on the fly without having to power down the entire communication system.



Third-party Page Station PPA amplifier modules & PPR handset amplifier modules replacement, complete Guardian Page/Talk stations can be implemented into current expanding third-party systems. Continue to use your present systems while benefiting from Guardian Telecom's Page/Talk station features and quality.



Talk/Back

Paging with Talk/Back capability allows users to maintain **hands-free communication** during critical operations. Guardian's standard or explosion proof Talk/Back systems will meet the demand.

Master to single slave or multiple slave (non-hazardous) configurations are available. From drilling rig operations right through to specialized applications, Guardian's Talk/Back systems can be customized for specific functionality.

PA/GA – Public Address/General Alarm

Quality solutions for PA/GA integration include safety features such as alarm tone generation, power amplifier control, distribution and zoning plus auto switch over in the case of failure. Key components can keep a paging/alarm system safe, simple and cost effective.



"More Choices, Selections and Services" continued ...

Acoustic Booths

The sound proofing qualities of Guardian Telecom's Acoustic Booths greatly enhance communication in areas with high background noise levels, while protecting the apparatus and user from the elements.

The AB-100 metal shell is made of powder coated sheet aluminum, has a perforated galvanized steel liner and features full acoustic insulation for interior and exterior use.

The top-selling AB-1000 booth is molded from GRP (glass reinforced plastic). Available with urethane interior coating, stainless steel liner and acoustic insulation for interior, exterior and offshore use.



Loudspeakers/Ringers

Guardian Telecom Loudspeakers & Ringers can be utilized for loudspeaker paging, or incoming ringing or both functions within one device. With our wide variety of products all applications can be met.

Explosion Proof

Meet the rigorous demands of environments where ignitable concentrations of flammable gases, vapors or liquids can exist all of the time or some of the time under normal operating conditions while maintaining the appropriate safety standards.



Hazardous Area



Designed and manufactured to meet the demands of Hazardous Areas where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operating conditions while maintaining the appropriate safety standards.

ATEX-IEC

Guardian Telecom's **ATEX-IEC approved** series of speakers were designed for use both indoors and outdoors within ATEX-IEC certified hazardous areas.



General Area



A wide variety of Indoor/Outdoor, Metal/Plastic, Horn/Cone type Speakers & Ringers to meet your requirements outside of hazardous rated areas.

Visit Guardian Telecom's web site www.guardiantelecom.com for our full line of Loudspeakers and Ringers.

Accessories

Guardian Telecom accessories were designed with the versatility to enhance our two major product lines — Telephones & Page/Talk.

Telephone Accessories



- Vandal & Weather Resistant Instrument Enclosures
 - WTE-100 – Thermoplastic Resin
 - ACE-100 – Aluminum Casting

- **Ring Detect Relays**, Off-Hook Relays and optional weather proof or explosion proof enclosures.



- Standard or Advanced Speaker Phone / Ringdown Circuit boards.



- ALD – **Automatic Line Disconnect** Module.



- **HS-EXT-401 Headset** and **HSK-EXT-401 Headset Kit**
– Intrinsically safe field replacement for the standard handset on an EXT-401 Explosion Proof Telephone



Page/Talk Accessories

- Page/Talk **Desk Set Amplifier Harness**
- Page/Talk **PPR Outdoor Ambient Noise Sensor Kit**
- Page/Talk **Indoor Housing Backplate Kit**
- Page/Talk **Indoor Housing Flush Mount Kit**

New Developments

Safe, reliable and effective communication is important to all businesses and at Guardian Telecom we are focused on designing and manufacturing the highest quality communication solutions.

We are committed to a philosophy of making communications easy for all of our customers.

By listening closely and responding to your needs, Guardian has constantly upgraded the capabilities of our telephones. When challenged by special needs, Guardian has responded by modifying its existing models or developing new solutions.

Guardian is introducing new materials and models that help to address the reality of world economics while meeting the safety, design and functionality requirements that customers have come to expect.

Standard Features

One of Guardian Telecom's major strengths is in the variety and quality of both standard features and options we are able to provide.

Connectability – Guardian Telephones, Acoustic Booths and Accessories, including Strobe Lights, Ring Detect Relays and Loudspeaker/Tone Ringers are all designed to be installed & connected easily and economically.

Since Guardian telephones can be connected to any telephone network accepting single line telephones using standard wiring, adding to or changing a Guardian system is easy. Up to five phones may be connected to one line at distances up to 15,000 feet (4,600 meters) from the main telephone switch. Flexibility and growth potential are provided without compromising voice quality.

Maintaining safety standards may require use of special wiring conduits or other considerations. Contact your qualified Guardian Telecom representative for details.

Tone/Pulse Switching – With the exception of the HDE Emergency series telephones, all phones can be switched between DTMF tone or pulse dialing. Initial settings are performed prior to delivery. In-service switching may require technical assistance.

Ringers – Excluding the CIT-40 and the EXT-401, the majority of Guardian telephones contain ringers. The EXT-401 Explosion Proof Telephone requires external signaling equipment because the sound suppression characteristics of the telephone's protective housing make an internal ringer impractical.

Magnetic Hook Switch – All of Guardian's telephone products incorporate a hermetically sealed magnetic hook switch rated for over one million operations.

Armored Handset Cord – The handset cord is protected against cutting by metallic sheathing. It is anchored in the handset and the telephone enclosure by an aircraft grade steel lanyard.

Vandal Resistant Handset – Vandal resistant handsets are constructed of high-impact engineered polymers.

Options & Accessories

Enhance the capabilities of telephone, Page/Talk and other communication equipment by adding features, rugged parts and equipment.

Auto Dialer – Provides user programmable numbers on select ringdown models.

Conduit Hub – Provides a port to thread conduit pipes for cable installation.

Conformal Coated Circuitry – Circuits are encapsulated within resin to provide complete protection from moisture.

Custom Colors – Handsets to cords, buttons, graphics, enclosures and more. See "Custom Design" for more information.

Handset Cord Lengths – A variety of field replaceable curly or armored handset cords of various lengths can be used for specific models.

Basic Headset – Guardian offers a basic, aviator-style, double coverage, monaural headset with microphone and Push-to-Talk control. Intended for use in high noise areas, the headset functions like a standard radio microphone.

Externally Powered Paging Speaker – For use with Guardian's Page/Talk MIZCS (Merge Isolate Zone Control System).

Locking Doors – Limit access of equipment to authorized personnel.

Push-to-Page Headset – For use with Guardian Page/Talk PTI and PTO Stations these headsets feature a Push-to-Page switch on the handset.

For other headset requirements, a Guardian Telecom Representative can help you make a suitable selection for your application from a wide selection of leading manufacturers.

Mounting Plates – Provides easily accessible front access for mounting of select models.

Noise Cancelling Microphone – Enhanced, more focused communication by minimizing external background noise.

Noise Sensor Kits – Indoor and Outdoor Ambient Noise Sensor Kits for PPA/PPR and PTA/PTR replacement modules.

Retainer Clips – Keep handsets securely in place with removable retainer clips. (Standard on select models).

Relays – Ring Detect Relays, Off-Hook Relays in Weather Proof and Explosion Proof Relay enclosures.

Ringers – See Standard Features.

Vandal Resistant Faceplate Screws – Helps to prevent unauthorized access to equipment interiors. Requires special tools to remove or insert screws.

Optional Equipment for Explosive and Hazardous Areas

Guardian offers a full range of optional equipment that meets communication requirements for explosive and hazardous environments or other rough service conditions.

EXT-401 Headset – For use with the EXT-401 Explosion Proof Telephone



SRX-50-2 Supplementary Receiver

– Enhanced reception for use with Guardian Telecom's DTT-Z/DTR-Z series, DTT-H/DTR-H series and the DTT/DTR series of telephones and ring-down telephones.

For additional information on these and other optional features, rugged parts, accessories and equipment confer with your Guardian Representative to see which options work best for your situation.

Beyond individual products, Guardian Telecom provides services ranging from consultation to commissioning, sound studies, training, maintenance and custom design.

Product and Project Consultation

From providing initial background information to conceptual planning and estimates, product recommendations, analyzing your project objectives, phasing and risks, our qualified channel partners and our technical staff are available to assist with project requirements. We can help you answer questions such as:

- *What telephones will work best?*
- *Can drawings be analyzed so that communications can be planned in the design stage?*
- *Will a sound study be required?*
- *Does existing equipment have to be replaced? Can new equipment integrate with existing facilities?*
- *Which equipment will meet the regulations for this application?*

From the purchase of a single unit up to a complex paging system, Industrial Communication Equipment projects are usually unique. Each have their own set of parameters for efficient and effective workplace communication.

Every project has different requirements that should also be considered carefully. From interim warehousing & transportation to remote locations, regulatory requirements, product weight and handling, schedules, installation and cost.

Our teams are available to make sure that you can make informed and knowledgeable decisions. We can discuss what you need in the present and what your organization is planning for the future. Guardian can review your terms of reference to make sure that all considerations have been addressed or help you to develop terms of reference if you don't have the expertise.

On-site consultations can be carried out when customers want a maintenance evaluation or are faced with **replacing or expanding existing communication equipment and systems**. A building's footprint, layout, spacial volume, construction materials and content will all have a bearing on system design and are all taken into consideration. Depending on a client's needs and contract agreement, our service technicians may analyze current environ-

ments, future plans, develop sound plans and make system recommendations.

Our trained service representatives have traveled the world to carry out site inspections and determine solutions, provide project consultation, installation, commissioning services and training.

Commissioning Services

Make sure that equipment you have installed meets regulations, certification, operational and warranty requirements.

Qualified Guardian Telecom commissioning personnel will perform start-up of the equipment, and can then make any necessary adjustments, tests and inspections to make sure that your equipment is in operable condition and meets the performance specifications according to the system plan and design function.



Sound Studies

Acoustic environments are an important contributing factor to the continuous safety of personnel, distribution of important messages and normal day to day operations.

Understanding industrial acoustics requires skills that span many scientific and engineering disciplines. In industrial settings, it can be critical to understand and respond to the complex and demanding sound situations with the installation and operation of the correct communications systems.

Sound studies provide information that can be used to pinpoint current issues at an existing location or be used as a tool



in the development of an acoustic plan for new sites. Clarity, projection, reception, dissemination, desired sound and unwanted sound are all important factors that are taken into account.

Guardian technicians map and assess audio levels by monitoring and measuring existing on-site conditions and reviewing future plans. From there they can make noise model projections and propose solutions using computer modeled sound processing techniques.

After conducting an on-site sound survey, accurate system design can ensure proper paging/emergency sound coverage to maintain safety requirements and cost-effective system implementation.

Training

Ensure your personnel are using your communications equipment effectively so it is working efficiently now and for the future.

Training is available at our corporate office, through the internet or can take place at a location of your choosing.

Hands on demonstrations and presentations focus on equipment set-up, functions, product operation and system maintenance along with trouble shooting techniques.

Maintenance, Cleaning, Trouble Shooting & Refurbishment

Field Services

– Maintenance and Cleaning

Authorized personnel conduct on site maintenance and cleaning of your communications equipment. Maintain and increase the efficiency and life of critical components.

– Inspection and Repair

On request, authorized field representatives will work at a customer's site to inspect, diagnose and carry out in-field repairs when they are possible. Services are billed on a time and material basis.

Depot Repair

Repair and refurbishment of existing Guardian Telecom equipment can be carried out at Guardian Telecom's manufacturing plant or at one of Guardian's authorized Repair Depots.

Custom Design

Guardian Telecom has a reputation for a willingness to modify or customize products to make them work the way our customers want and need them to operate in their environments.

At Guardian, "Custom Design" are words with many meanings, from the modification of existing products to the use of color, graphics, features, parts or labeling including the development of new products.

Guardian's fully qualified network of representatives, VARs and distributors work directly with you to understand your requirements, interface with the Guardian design team to carry out an analysis and recommend solutions to meet your needs.

Existing Product Modification

There are times when Guardian's extensive line of telephone products might not exactly fit your needs. This might include a stock Guardian product that is close to what you want but requires some modifications or you require specific branding using your corporate colors, graphics or safety message. Guardian can usually accommodate these requirements using various graphic or design and manufacturing techniques.

Colors



From handsets and cords, to buttons, graphics, enclosures and more, customers can select from a wide selection of custom colors to meet their communication needs including.

- corporate colors for brand awareness
- equipment that visually stands out clearly during an emergency situation
- as a source of school, institution or corporate pride

We work closely with our suppliers and customers to choose colors that are close to a specified swatch and can be attained in the manufacturing process.

Graphics and Labels



Apply your organization's branding, include additional languages, highlight important messages, instructions or equipment function using custom graphics, symbols, embossing, labels and decals.

Parts and Features

Add parts or features to models that don't normally include them or remove them to put limitations on an existing model. For example, you might want to upgrade to a noise canceling microphone for greater control in noisy environments or change the length of a handset-cord to either increase or decrease reach or even replace a mechanical hook switch in place of our magnetic reed switch version.



Housings & Enclosures

There may be a need to create an enclosure to house existing hardware that already offers the features that meet your needs for size and shape.

A major U.S. University was interested in one of our existing models that met all of their needs except for the physical measurements. They required a phone that met **ADA (American Disabilities Act)** requirements limiting the distance that an item could project from a wall. At the same time they wanted the unit to be aesthetically pleasing and complement their decor.

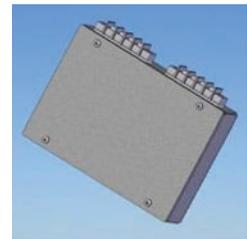
Working closely with them, we designed new housings including a wall mount and a recessed model that met their needs.

New Product Development

When one of our existing products can't be modified to meet your needs, developing a new product from the ground up just might be the answer.

Our approach is to establish a close working relationship and open dialog throughout the conceptual, design and manufacturing processes. Important considerations include the client's objectives, the environmental factors they will encounter, regulations, materials, supply, resources, budgets, time lines and risks.

Whether it is straight forward or complex, the introduction of a new product might require a substantial investment of time, effort and resources from the client and the Guardian Telecom team. We are fully committed to ensuring that if you choose to have a new product developed, we will deliver a beneficial and effective solution.



Models

Our design team prides itself on quick turns on 2D drawings and 3D models of concepts for customer validation, prior to manufacturing.

2D drawings can be supplied in a variety of formats. 3D Models are supplied to customers in eDrawing format. **Download the edrawings application for free** at <http://www.edrawingsviewer.com/ed/solidworks-viewer.htm>.

Cost

The cost of customizing depends on a combination of design and manufacturing requirements, quantities and schedules.

For details on custom options, contact a qualified Guardian Telecom Representative, Distributor or the Corporate Technical Support team.



Page/Talk, Telephone, PA/GA and Talk/Back Systems

From small, straight forward systems to large, complex projects, Guardian Telecom has the knowledge, experience, expertise and the ability to deliver with success.

Understanding your present operational requirements and anticipating future growth lays the foundation for creating the system your organization needs.

Page/Talk Systems

Where simplicity and reliability are required, Guardian's Page/Talk intercom systems stand the test of time and punishment from harsh and explosive environments.

Guardian's Page/Talk systems combine plant-wide or zone-selected paging capability with single or five-line intercom communication.



Unrestricted conference call capability and unlimited system expansion without complicated re-configuration make Guardian Page/Talk systems effective for our clients to fulfill many requirements in one simple but effective communication system.

Guardian Page/Talk systems have the ability to interface with other phone or emergency systems thereby enhancing your current investment. Guardian Page/Talk systems and components can be also be installed in installations using equipment from other manufacturers, providing for additional cost-effectiveness.

Telephone Systems

Guardian's implementation of small to large industrial PABX phone systems allows internal/external communication via traditional phone networks and VoIP infrastructure or backbone.

Voice mail packages and battery back-up are only a few of the additional features available to make any phone system complete in today's demanding world. With the addition of ATAs (analog terminal adapters) and VoIP Gateways, plus Guardian's full-line up of industrial analog telephones that include weather proof and explosion proof models, client demands are met or exceeded with Guardian turnkey PABX phone system solutions.

PA/GA Systems

Public Address and General Alarm systems are a daily necessity for plant operation and safety.

Guardian Telecom partners with Manufacturer's Representatives, VARs, engineering companies, integrators, distributors and end-users to design, implement and commission small to full-blown system configurations.

On-site sound surveys and computer assisted sound modeling are some of the Guardian services available to help you achieve maximum results for PA system sound coverage.

Specific client feature base and operation procedures can be customized into Guardian PA/GA systems instead of limited off-the-shelf designs. High quality components for system longevity are paramount and features such as redundant system capability make implemented Guardian PA/GA systems that much safer – for that much longer.

Talk/Back Systems

Paging with Talk/Back capability allows operators to maintain hands-free communication during critical operations.

Guardian's Talk/Back systems meet this demand with standard and explosion proof versions. Master to single slave or multiple slave configurations are available. From drilling operations through to specialized applications, Guardian's Talk/Back systems can be tailored to meet your unique requirements.



Whatever stage your organization is at, from preliminary concept to carrying out an upgrade evaluation, in system design, product analysis or developing the terms for an RFP, *there isn't a better time* to contact a Guardian Telecom representative.

“Quality Products That Exceed Our Clients' Expectations”

Robust quality processes and leading regulatory approvals form the foundation from which our products are designed and manufactured. Products are produced to the highest standards and classifications recognized world wide. Refer to individual model types for specific compliance ratings.



Guardian's Design and Manufacturing plant is ISO 9001:2008 certified and we are an approved CSA, UL and ATEX facility.

Standards

Manufacturing Workmanship Standards

All Guardian Telecom products are manufactured under strict ISO controls to the IPC-610 Class 2 & 3 workmanship standards.



ISO 9001:2008 certification

Water and Dust Ratings

Selected telephones manufactured by Guardian have been tested by the Canadian Standards Association, Underwriters Laboratories or TR&C and these equipment meets equivalent NEMA and IP requirements for water and dust.

Accessories

Actual standards ratings for accessories may be based on the rating of the enclosure used for each device. Product test reports are available upon request.

Classifications

ATEX-IEC – Zone 1 (21) & Zone 2 (22)

Guardian's DTT-Z and DTR-Z series of Telephones and Ringdown Telephones have been tested and certified to meet EC legislation and harmonized standards.



ATEX facility certification

Canadian Standards Association and Underwriters Laboratories (CSA and UL)

All hazardous area models of Guardian telephones have been tested by CSA and/or UL. Both agencies have certified Guardian units comply with relevant standards.

Department of Industry and Federal Communications Commissions (Industry Canada and FCC),

Australian Communications Authority

Comisión Federal de Telecomunicaciones

Conformity Europe

Guardian equipment is tested and certified to meet telephone standards set by the Governments of Canada, the United States of America, México, Australia and Europe.

Others

SASO – Saudi Arabian Standards Organization

Knowledge Base

Guardian Telecom is pleased to present a selection of general information that designers, planners and purchasers of Industrial Communications Equipment will find relevant and useful towards understanding the requirements of their project needs.

General Information on Classes, Zones, Groups & Division – ATEX, NEC, CEC, IEC

The content in this section presents general information describing the classification systems that Guardian Telecom designs, manufactures and markets telephone and paging system products to including ATEX, NEC, CEC and IEC.

All information is for general reference purposes only. All applicable local and national regulations and practices concerning Explosion Proof and Hazardous Area communications equipment must be strictly followed and adhered to. For detailed information refer to published documents on hazardous location definitions and installation requirements presented by 1) NEC®, 2) CEC Canadian Electrical Code, 3) IEC.

ATEX

Guardian Telecom designs and manufactures and distributes Hazardous Area telephone equipment and speakers that meet the stringent ATEX requirements and EN standards for items that will be put into service within the European Union (EU).

ATEX is the common name given to a set of European Directives relating to Hazardous Area Installations (Flammable Atmospheres) that takes its name from the French "Atmosphères Explosibles". ATEX Directives have been mandatory since July 1, 2003.

Hazardous Areas

According to the EN standards description, Hazardous Areas are when "potentially explosive atmospheres exist where there is a risk of explosion due to mixtures of gas/air, vapor/air, dust/air or other flammable combinations". Process plants, refineries, oil and gas platforms etc are divided into Zones (European and IEC method) or Divisions (North American method) according to the likelihood of a potentially explosive atmosphere being present.

The following standards are used to define the classification for Guardian Telecom Zone 1 products:

- EN 60079-0:2006: Electrical Apparatus for use in Zones 0, 1 & 2 Haz Loc - General Requirements
- EN 60079-7:2007: Electrical Apparatus for use in Zones 0, 1 & 2 Haz Loc - Increased Safety "e"
- EN 60079-11:2007: Electrical Apparatus for use in Zones 0, 1 & 2 Haz Loc - Intrinsic Safety "i"
- EN 60079-18:2004: Electrical Apparatus for use in Zones 1 - Encapsulation "m"
- EN 60950-1:2006: Information Technology Equipment - Safety

Table 1. Comparing between Zones and Divisions

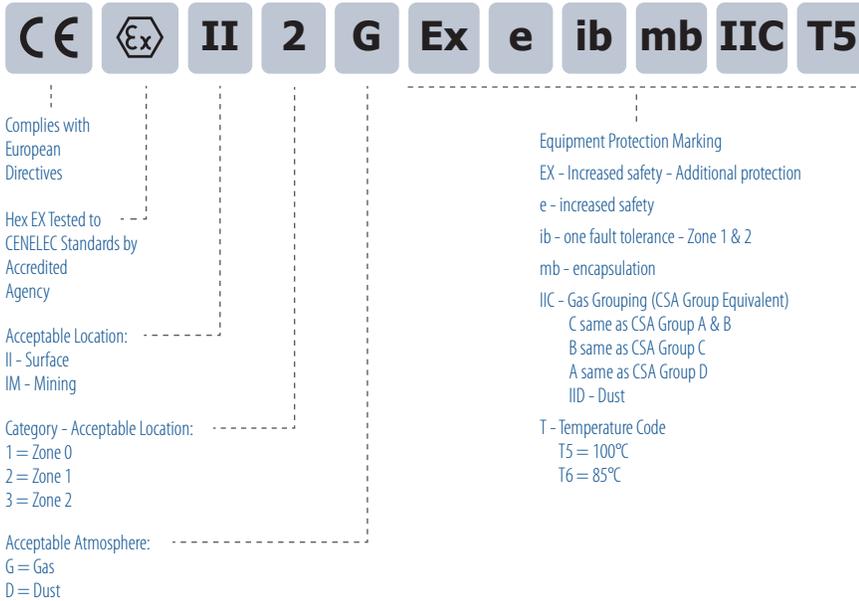
| European & IEC Classification | Definition of Zone or Division | North American Classification |
|-------------------------------|---|---------------------------------|
| Zone 0 (gasses) | An area in which an explosive mixture is continuously present or present for long periods | Class I Division 1 (gases) |
| Zone 20 (dusts) | | Class II Division 1 (dusts) |
| Zone 1 (gases) | An area in which an explosive mixture is likely to occur in normal operation | Class I Division 1 (gases) |
| Zone 21 (dusts) | | Class II Division 1 (dust) |
| Zone 2 (gasses) | An area in which an explosive mixture is not likely to occur in normal operation and if it occurs it will exist only for a short time | Class I Division 2 (gases) |
| Zone 22 (dusts) | | Class II Division 1 & 2 (dusts) |
| | | Class III Division 1 (fibres) |
| | | Class III Division 2 (fibres) |

Note that many (but certainly not all) Countries outside of North America use the IEC Standards as a basis for their own national standards.

Zone System Marking

EC type certificates are issued by a notified body. Certificates indicate to the user that equipment has been assessed against the relevant regulations in use at the date of issue. Each certificate has its own unique number which are identified as shown in the following example:

Figure 1. Example Zone system marks



Approval Marks

EX — European Community Mark



Introduced in 1975, the European Community Mark is used to identify equipment which is designed to be used in potentially explosive* atmospheres.

It identifies to each member state that the marked equipment is designed in accordance with the various standards and was intended to afford free trade around all European Community member states.

**Does not apply to equipment designed for work underground in mines susceptible to fire damp.*

CE — Community European Mark



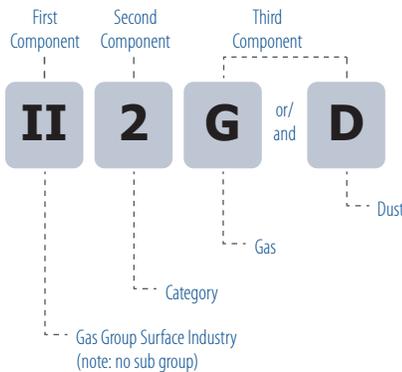
The CE Community European Mark is intended to allow free trade between member states.

Understanding ATEX Markings

ATEX manufactured equipment is marked to identify the hazardous area category that it can be used in.

An ATEX mark is made up of three components:

Figure 2. ATEX mark components



First Component

This is the gas group identified by the Roman Numeral II; it indicates that it is intended for use in a surface industry.

Second Component

The second component is the category identifier. There are three categories: 1, 2 and 3.

Categories equate with zones:

- Category 1 equipment is suitable for Zone 0 or Zone 20
- Category 2 equipment is suitable for Zone 1 or Zone 21
- Category 3 equipment is suitable for Zone 2 or Zone 22

Third Component

The third component is the explosive atmosphere which could be formed by gases, vapors or combustible dusts or a combination of both.

An atmosphere is identified by G for Gas or D for Dust. It can also be a combination of both, i.e. GD.

Guardian Telecom Zone 1 Phone Markings:



II 2G Ex e ib mb IIC T5 Gb
II 2D Ex ib mb tb IIIC T100°C Db
-30°C ≤ Ta ≤ +60°C

II 2G Ex e ib mb IIC T6 Gb
II 2D Ex ib mb tb IIIC T85°C Db
-30°C ≤ Ta ≤ +45°C

Hazardous and classified locations are essentially the same. They can be defined as locations where fire or explosion hazards may exist due to the presence of flammable gases or vapors, flammable liquids, combustible dusts and ignitable fibres or flyings.

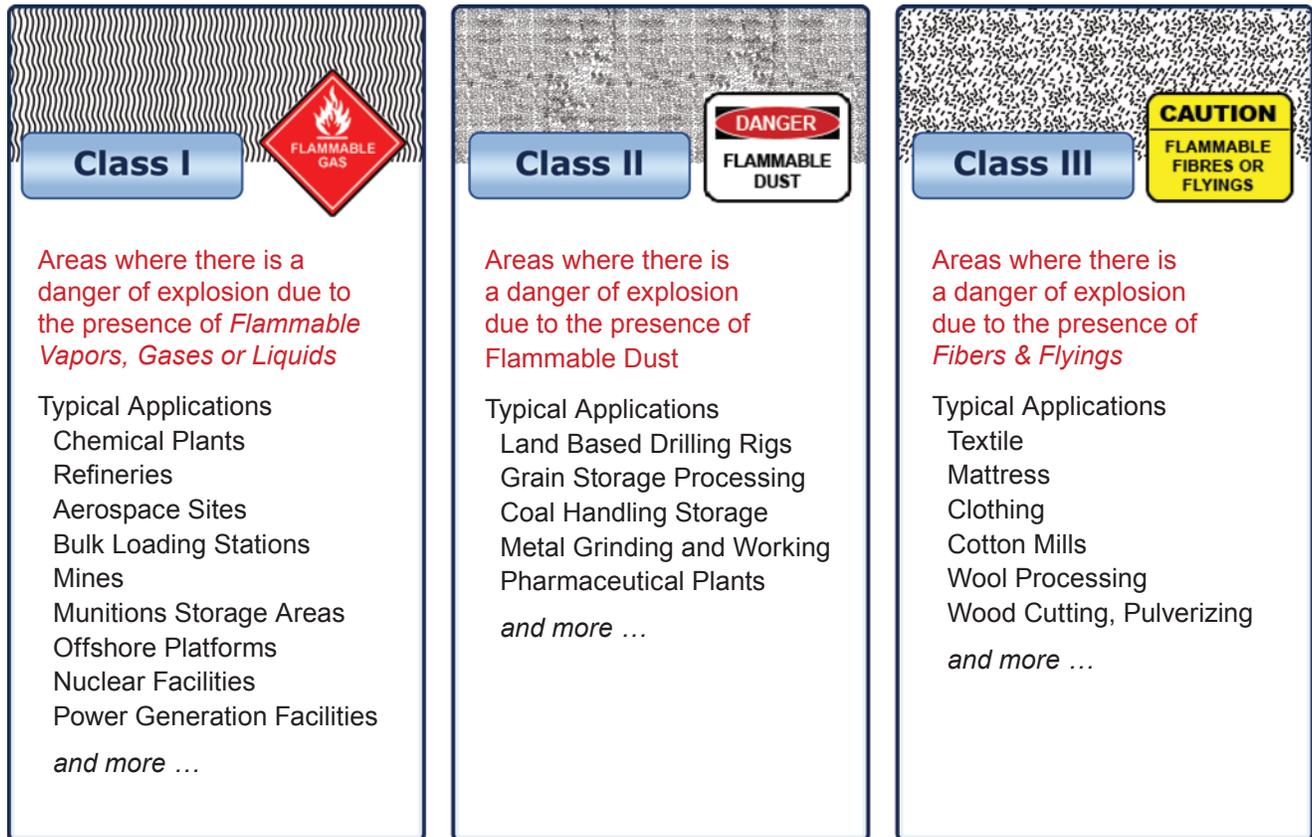
When an area is “classified” hazardous gases, vapors or dust have been identified and put in a specific Class, Division / (IEC) Zone and Group.

Once classified, only industrial telephone communications equipment which is approved for that Class, Division and Group can be installed and used.

Identifying NEC® Hazardous Locations — Class, Division / (IEC) Zone and Group

The information presented in this section is for general reference purposes only. All applicable local and national regulations and practices concerning Explosion Proof and Hazardous Area communications equipment must be strictly followed and adhered to. For detailed information refer to published documents on hazardous location definitions and installation requirements presented by 1) NEC®, 2) CEC Canadian Electrical Code, 3) IEC.

Figure 3. Hazardous Location Classes Defined



Divisions Identified

North American NEC®/CEC European — IEC Conversion

The European CENELEC and (IEC) system was introduced to North America in 1966 and was adopted by the CEC in 1998 to promote harmonization with international standards. In the U.S. and Canada it is permitted to apply its system of classification of hazardous locations to Class I locations. It is now part of the NEC® (article 505) and CE Code (section 18).

Guardian Telecom designs and manufactures individual products that adhere to the high standards of NEC®/CEC, CENELEC and IEC. They have been tested and approved or certified by recognized third party testing agencies. While some countries do not have a set of regulations in force, they can rely on products that adhere to these classification systems to meet their needs for safety, quality and reliability.

Table 2. NEC Divisions compared to IEC Zones

| NEC Divisions Identified | IEC Zones Identified |
|--|---|
| Hazardous Areas are divided into two divisions | Hazardous Areas are divided into three zones |
| Division 1: An area where ignitable concentrations of flammable gases, vapors or liquids can exist all of the time or some of the time under normal operation conditions. | Zone 0: Continuous Hazard An area where ignitable concentrations of flammable gases, vapors or liquids can exist all of the time or for long periods of time under normal conditions. Zone 1: Intermittent Hazard An area where ignitable concentrations of flammable gases, vapors or liquids can exist some of the time under normal operating conditions. |
| Division 2: An area where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operation conditions. | Zone 2: Hazard Under Abnormal Conditions An area where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operation conditions. |

Groups Identified

After “Classes/Divisions” are established they are then broken down into “Groups”.

Table 3. Groups

| |
|---|
| Class I Areas in which flammable gases or vapors may be present in the air in sufficient quantities to be explosive. |
| <ul style="list-style-type: none"> • Group A: Atmospheres containing acetylene • Group B: Atmospheres such as butadiene, ethylene oxide, propylene oxide, acrolein, or hydrogen (or gases or vapors equivalent in hazard to hydrogen such as manufactured gas). • Group C: Atmospheres such as cyclopropane, ethyl ether, or gases or vapor of equivalent hazard. • Group D: Atmospheres such as acetone, alcohol, ammonia, benzene, benzol, butane, gasoline, hexane, lacquer solvent vapors, naphtha, natural gas, propane, or gas or vapor of equivalent hazard. |
| Class II Areas made hazardous by the presence of combustible dust. |
| <ul style="list-style-type: none"> • Group E: Atmospheres containing combustible metals: aluminum, magnesium, titanium, zinc, bronze, chromium, tin, cadmium. • Group F: Coal, charcoal, carbon black • Group G: Atmospheres containing combustible alfalfa, cocoa, coffee, corn, cornstarch, malt, rice, sugar, wheat, cellulose acetate. |
| Class III Areas made hazardous by the presence of easily ignitable fibres or flyings, but which are not likely to be in suspension in the air in quantities that are sufficient to ignite. |
| <ul style="list-style-type: none"> • Division 1 & 2: Cotton lint, flax, rayon. |

Table 4. North American and IEC Groups

| North American and IEC Groups | | |
|-------------------------------|---------------------------|-----|
| North America | Gas or Vapor | IEC |
| A | Acetylene | IIC |
| B | Hydrogen | IIC |
| C | Ethylene | IIB |
| C | Ethyl Ether | IIB |
| C | Cyclopropane | IIB |
| C | Butadiene 1-3 | IIB |
| D | Propane | IIA |
| D | Ethane | IIA |
| D | Butane | IIA |
| D | Benzene | IIA |
| D | Pentane | IIA |
| D | Heptane | IIA |
| D | Acetone | IIA |
| D | Methyl Ethyl Keytone | IIA |
| D | Methanol (Methyl Alcohol) | IIA |

*While the NEC®/CE and IEC classification systems are similar they are not identical and care should be taken to avoid confusing Group II and Class II. At this time the NEC® or CE Code does not recognize any CENELEC or IEC dust classifications. NEC® - National Electrical Code is a registered trademark.

Guardian Telecom Enclosure Types

Designed and manufactured to the highest standards, Guardian Telecom equipment for use in either Explosion Proof or Hazardous Area applications is housed in enclosures rated for those areas.

Depending on the country, governing body, jurisdiction and regulations, there are a number of standards that are used to define the type and applicability of enclosures.

NEMA (National Electrical Manufacturers Association) Enclosures Types

IP (Ingress Protection) Code Designations

Approximate Conversion of NEMA Enclosure Types to IP Designations

NEMA Enclosures

Developed by National Electrical Manufacturers Association, NEMA enclosure protection designations have been adopted by UL, CSA and other North American conformance bodies.

In Non-Hazardous locations, specific enclosure types, their applications, and the environmental conditions they are designed to protect against, when completely and properly installed, are as follows:

Figure 7. Guardian Telecom NEMA Enclosure Types

Guardian Telecom designs, manufactures and distributes telephone products that have been tested by CSA/UL to the following NEMA standards:

Type 3R

Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment; to provide a degree of protection against falling dirt, rain, sleet, and snow; and that will be undamaged by the external formation of ice on the enclosure.

Type 4X

Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment; to provide a degree of protection against falling dirt, rain, sleet, snow, windblown dust, splashing water, hose-directed water, and **corrosion**; and that will be undamaged by the external formation of ice on the enclosure.

For more information on NEMA standards visit: www.nema.org - NEMA Standards Publication 250

Ingress Protection (IP) Code Designations

Developed by the European Committee for Electro-Technical Standardization (CENELEC), Ingress Protection (IP) ratings specify the environmental protection that an enclosure will provide.

An IP rating normally has two numbers:

1. Protection from solid objects or materials
2. Protection from liquids (water)

The first number or digit designates protection from solid objects, while the second number or digit designates protection from moisture.

The levels for the first digit (protection against solid or foreign objects) vary from 1 through 6.

The levels for the second digit (protection from moisture) vary from 1 through 9.

A larger number means increased protection.

Select Guardian Telecom enclosures and telephones meet the requirements and standards of IP66.

- WTE-100 enclosures
- DTT & DTR analog and VoIP telephones* including Zone 1 (21) & 2 (22), Hazardous Area and ruggedized Industrial models.

*excluding DTT-20 and DTT-20-H models.

Table 5. IP Code Designations

Example Code: IP 66

| 1st Digit | Protection Against Foreign Objects | 2nd Digit | Protection Against Liquids |
|-----------|---|-----------|--|
| 0 | Not Protected | 0 | Not Protected |
| 1 | Protected against solid objects up to 50 mm | 1 | Protected against vertically falling drops of water; e.g. condensation |
| 2 | Protected against solid objects up to 12 mm | 2 | Protected against direct sprays of water when tilted up to 15N from vertical |
| 3 | Protected against solid objects over 2.5mm | 3 | Protected against direct sprays of water when tilted up to 60N from vertical |
| 4 | Protected against solid objects up to 1 mm | 4 | Protected against splashing water from all directions - limited ingress permitted |
| 5 | Dust protected | 5 | Protected against low projections of water from all directions - limited ingress permitted |
| 6 | Dust tight | 6 | Protected against strong water jets from all directions; e.g. heavy seas |
| | | 7 | Protected against the effects of temporary immersion between 15 cm and 1 m |
| | | 8 | Protected against the effects of continuous immersion under pressure |
| | | 9 | Protected against high pressure, high temperature jets of water from multiple directions |

Approximate Conversions of Nema Enclosure Types to IP Classification Designations

NEMA ratings can only be approximately compared to those of the IP system. Other factors such as corrosion protection and construction details are involved in the NEMA system; please refer to each organization's official documentation for details.

The table provides a near equivalent guide for converting from NEMA Enclosure Type Numbers to IEC Enclosure Classification Designations.

This information is provided as a guide only for comparing NEMA enclosure types to IEC designations. The table should not be used to convert from IEC classifications to NEMA Types and the NEMA to IEC conversion should be verified by test.

For more information on IP standards visit:
IEC – www.iec.ch - Ingress Protection (IP) Standard 60529

Table 6. Approximate Conversions of Nema Enclosure Types to IP Classification Designations

| NEMA Enclosure Type Number | IEC Enclosure Designation |
|----------------------------|---------------------------|
| 1 | IP23 |
| 2 | IP30 |
| 3 | IP54 |
| 3R | IP54 |
| 3S | IP54 |
| 4 and 4X | IP66 |
| 5 | IP52 |
| 6 and 6P | IP67 |
| 12 and 12K | IP55 |
| 13 | IP65 |

Table 7. Main IEC Protection Techniques

Flameproof “d”



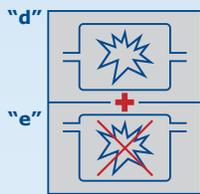
- **Zone 1**
- Contain internal explosion
- Control external temperature of enclosure
- Similar to NEC® explosion proof

Increased Safety “e”



- **Zone 1**
- High impact resistant enclosures – FRP, GRP, Sheet steel / Aluminum
- Will not hold static charge
- Use approved components
- Control internal and external temperature
- Maintain minimum of IP 54 ingress protection
- No arcs, no sparks

Flameproof Plus Increased Safety “de”



- **Zone 1**
- Location of arcing has “d” protection (flameproof)
- Connection terminals have “e” protection (increased safety)
- Typical use in switches, lighting, power outlets – where arcs can normally occur

Non-sparking “n”



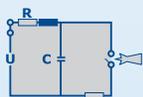
- **Zone 2**
- Equipment has no normally arcing parts
- Thermal effects incapable of ignition
- nA = non sparking
- nR = restricted breathing
- nC = hermetically sealed non-incendive

Pressurized Apparatus “p”



- **Zone 1**
- Expels ignitable vapor / gas
- Maintains positive enclosure pressure

Intrinsic Safety “ia” - “ib”



- **ia Zone 0 & 1**
- **ib Zone 1**
- Incapable of releasing enough energy to cause an explosion

Encapsulation “m”

- **Zone 1 category**
- Protection where parts that are capable of ignition by spark or heat are enclosed in a compound in such a way to prevent such ignition from occurring

A mixture of hazardous gases and air may ignite when a spark, flame or hot surface is present. Conditions for ignition depend on several factors including surface area, temperature and gas concentration.

Temperature codes on approved equipment indicate the maximum surface temperature of the equipment. A “T” number is assigned to apparatuses after thorough temperature testing. A high “T” number means a cool running apparatus.

Lowest rating is “T1”, while the highest rating is “T6”.

Table 8. Temperature Codes

| Degrees °F | Temperature Code | Degrees °C |
|------------|------------------|------------|
| 842° | T1 | 450° |
| 572° | T2 | 300° |
| 392° | T3 | 200° |
| 275° | T4 | 135° |
| 212° | T5 | 100° |
| 185° | T6 | 85° |

ACA – Australian Communications Authority

ADA – American Disabilities Act

Ambient – Surrounding, encircling or close, within a short distance.

ATEX – The ATEX directive is two EU directives describing what equipment and work environment is allowed in an environment with an explosive atmosphere.

CEC – Canadian Electrical Code

CSA – Canadian Standards Association

Corrosion resistant – an enclosure method that provides a degree of protection against corrosive materials and/or is fabricated of materials which will not corrode.

Dust Proof – an enclosure method that provides a degree of protection against windblown dust.

Encapsulated – Components of the equipment are encased in a resin type material.

EU – European Union

FCC – United States Federal Communications Commission regulates all forms of electronic communications in the United States.

IEC – International Electrotechnical Commission

Industry Canada – Canada’s Department of Communications became part of the Department of Industry in 1993. Among other functions, it oversees standards for communications hardware used in Canada.

Intrinsically Safe – electrical energy in circuits and equipment is limited to levels that are too low to ignite the most easily ignitable mixture of dust or gas that is commonly present.

ISO – International Organization for Standardization. An international-standard-setting body composed of representatives from various national standards organizations which sets and publishes high proprietary industrial and commercial standard.

NEC – National Electrical Code

NEMA – National Electrical Manufacturers Association

Non-incendive – Equipment is non-incendive or non-sparking.

RoHS – Restriction of Hazardous Substances. European Union (EU) Directive 94/9/EC commonly called “ATEX” covers electrical and non-electrical equipment that is used in potentially explosive atmospheres.

UL – Underwriters Laboratories Inc.

VoIP – Voice over Internet Protocol.

Watertight – an enclosure method that provides a degree of protection against the entry of water during temporary submersion.

Weather Resistant – an enclosure method that provides a high degree of protection from rain snow, windblown dust, splashing and hose-directed water and is undamaged by external formation of ice.



Download the latest versions of Guardian Telecom's individual Product data sheets, Analog and VoIP Product Guide brochures, Product & Services Guide catalogue sections, Product Quick Fact sheets and Systems brochures.

Product Guides provide quick reference with product category overviews and images of individual models. Available in English, Español and Français.

Product & Services Guide Catalogue Sections group individual Product Data Sheets into product line categories.

Product Quick Fact Sheets present brief model overviews, bullet points and product images.

Systems Brochures present overviews on PA/GA Systems, Page/Talk Systems, Talk/Back Systems and Telephone Systems.

Select the Support link on the top drop down menu at:

www.guardiantelecom.com

Sections

Guardian Telecom's Product and Services Guide Catalogue is a compilation of individual Category Section Publications

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- Options & Accessories
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¹ Page/Party® is a registered trademark of GAI-Tronics Inc. Use does not imply endorsement.

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Guardian represents DNH, E2S, Federal Signal, MEDC and TOA, and has access to an extensive range of other world class leading manufacturers. Visit www.guardiantelecom.com for additional information on Explosion Proof, Hazardous Area, ATEX-IEC and General Area Loudspeakers & Ringers.

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