ALTA Wireless IoT Sensors Kit

# Small Business

## "Things" are talking.

**ALTA Remote Monitoring Systems** enable "things" to speak. Wireless sensors, gateways and software give a voice to the IoT (Internet of Things) and allow business-es to leverage data, protect resources & save money.

For example, "things" can speak up when conditions are met that indicate an asset is at risk. The Monnit ecosystem (50+ sensor types) detects changes in variables (such as a temperature, water presence, door position, electrical current and voltages) to employ an **autonomous wireless sensing** solution that protects your bottom line.

## Kit Components

### Sensors

**Humidity**
AA Battery, Scienctific-grade (± 3% accuracy)

**Temperature**
AA Battery, 3' Leaded Probe, +/- 1% accuracy @25° C

**Open / Closed**
Coin Cell Battery, 0.75" operational gap

### Gateway

**3G Cellular** (pictured in the kit above)
AT&T (USA), Rogers (Canada), w/ Battery Backup

**Ethernet**
100% Comprehensive - no PC or subscription req'd

**Software**
iMonnit Premiere Software
(45 days free trial,
basic version always free)

**Accessories**
Quick Start Guide, Mounting Hardware,
Power supplies, Antennas

### FAST System Setup

**15 min. or less**

Build an IoT sensor network in 15 minutes or less! Monnit IoT & RF experts are standing by to help you quickly establish your monitoring system.
Email: info@monnit.com, Phone: 801-561-5555,
Web: www.monnit.com

## The only 1000' / 10-yr. IoT Sensors Platform in the World

1000'+ Wireless Range
/ 10-yr. Battery Life

**ALTA**™
Monitoring. Things.

## Enterprise-grade Performance

♦♦ 1,000+ ft. Wireless Range (through 12+ walls or ceilings, non line-of-sight)*

♦♦ Frequency Hopping Spread Spectrum (FHSS) / Interference Immunity

♦♦ Improved power management for longer battery life.** (10+ years on AA batteries or Industrial)

♦♦ Encrypt-RF™ Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages).

♦♦ Onboard data memory - up to 512 readings / sensor
 - 10 minute heartbeats = 3.5 days
 - 2 hour heartbeats = 42 days

♦♦ Over-the-air updates (future proof)

♦♦ Free iMonnit basic online monitoring and notification software (configure sensors, view data and set alerts via SMS text, email and/or voice calls)

 * Wireless range my vary according to environment.
** Battery life determined by sensor reporting & other variables

**ALTA**

**Other Wireless Platforms**

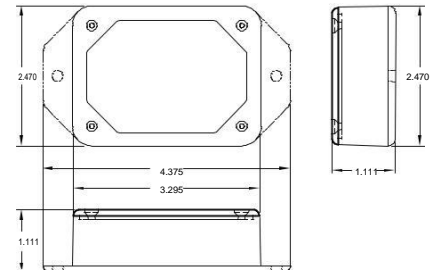**Wifi**

**Bluetooth**
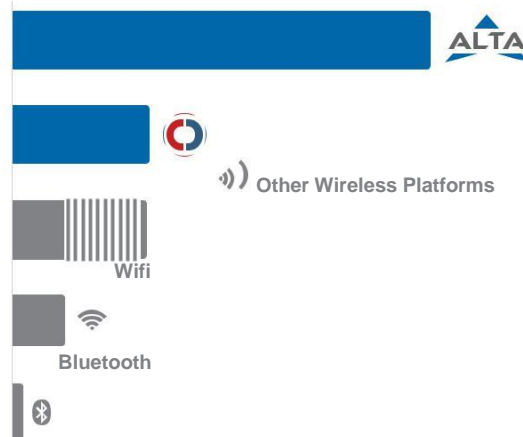
# ALTA Wireless Humidity Sensor (AA)

The ALTA Wireless Humidity (RH) Sensor allows you to accurately monitor the relative humidity of the air within a room or enclosure.

♦♦ Measures relative humidity, temperature and dew point with high accuracy.

Up to 10-Year Battery Life

♦♦ AA Battery Powered

## Technical Specifications

| | | |
|---|---|---|
| Supply Voltage | | 2.0 - 3.8 VDC (3.0 - 3.8 VDC Using Power Supply) * |
| Current Consumption | | 0.2 µA (Sleep Mode) <br> 0.7 µA (RTC Sleep) <br> 570 µA (MCU Idle) <br> 2.5 mA (MCU Active) <br> 5.5 mA (Radio RX Mode) <br> 22.6 mA (Radio TX Mode) |
| Operating Temperature Range (Board Circuitry and Batteries) | | -18°C to 55°C (0°F to 130°F) using alkaline <br> -40°C to 85°C (-40°F to 185°F) using lithium ** |
| Optimal Battery Temperature Range (AA) | | +10°C to +50°C ( +50°F to +122°F ) |
| Power Options | | 1.5V AA batteries (included) <br> Line-power w/ AA battery backup option available |
| Humidity Sensor | Accuracy | ± 3% under normal conditions ( 10% - 90% RH ) *** |
| | RH Operating Range | 0 – 100% RH *** |
| | RH Response Time | 8 sec ( tau 63% ) *** |
| Wireless Range | | 1,000+ ft. (through 12+ walls or ceilings / non line-of-sight) |
| Security | | Encrypt-RF™ (256-bit key exchange and AES-128 CTR) |
| Integrated Memory | | Up to 512 sensor messages |
| Weight | | 3.7 Ounces |
| Certifications | | 900 MHz product    FCC ID: ZTL- G2SC1 <br> IC: 9794A-G2SC1 |

\*       Hardware cannot withstand negative voltage. Please take care when connecting a power device.
\*\*      At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.
\*\*\*   View charts contained in the verbose version of the product's datasheet at Monnit.com.

Click here for complete data sheet

## Principle of Operation

The ALTA Wireless Humidity (RH) Sen-sor allows you to accurately monitor the relative humidity of the air within a room or enclosure.

HUMIDITY

Measures relative humidity, tempera-ture and dew point with high accuracy.

## Options & Add-ons

**Power Options**

♦♦ AA Battery
◊◊ Line Power (optional, w/ AA backup)
♦♦ Coin Cell Battery (smaller form factor)
♦♦ Industrial (replaceable lithium)
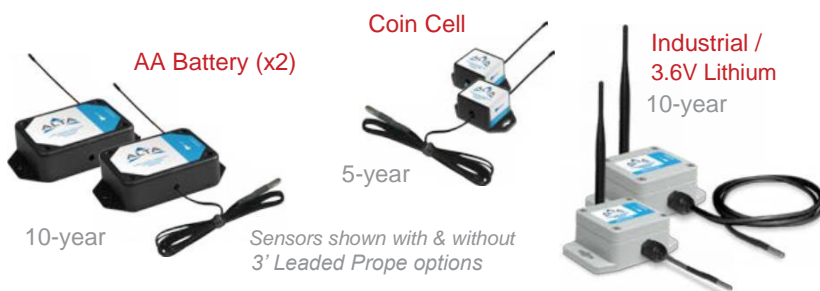◊◊ Solar (optional, w/ Lithium battery backup)

**Durability Grades**

♦♦ Industrial (Outdoors, weather & shock proof casing)
♦♦ Commercial (Indoors, AA and Coin Cell)

**Operating Frequencies**

♦♦ 900 MHz

# ALTA Wireless TEMPERATURE Sensors



AA Battery (x2)

Coin Cell

Industrial / 3.6V Lithium
10-year

5-year

10-year

*Sensors shown with & without 3' Leaded Prope options*

The ALTA Wireless Temperature Sensor uses a type NTC thermistor to measure temperature.

♦♦ Accurate to ± 1° C (± 1.8° F)

♦♦ Increased accuracy by user calibration to ± 0.25° C (± 0.45° F)

Data Sheet (short version)

click here for long version

## Technical Specifications

| | | | |
|---|---|---|---|
| Supply Voltage | | 2.0 - 3.8 VDC (3.0 - 3.8 VDC Using Power Supply) * | |
| Current Consumption | | 0.2 µA (Sleep Mode)<br>0.7 µA (RTC Sleep)<br>570 µA (MCU Idle) | 2.5 mA (MCU Active)<br>5.5 mA (Radio RX Mode)<br>22.6 mA (Radio TX Mode) |
| Temperature Sensor | Thermistor Temperature Range (Thermistor Only) | -40° to +125°C ( -40°  to +257°F ) Limited to Main Unit Circuitry, -7° to +60°C unless thermistor leads being used | |
| | Accuracy @ 25°C | +/- 1% (1° C or 1.8° F) | |
| | User Calibrated Accuracy | +/- 0.25° C (± 0.45° F) | |
| Wireless Range (900 MHz) | | 1,000'+ (through 12+ walls or ceilings / non line-of-sight) | |
| Security | | Encrypt-RF™ (256-bit key exchange and AES-128 CTR) | |
| Integrated Memory | | Up to 512 sensor messages | |
| Certifications | FC  Industry Canada | 900 MHz product:    FCC ID: ZTL- G2SC1<br>                              IC: 9794A-G2SC1<br><br>UL Listed (Industrial): UL508-4x specifications (File E194432) | |

## Power Options / Form Factors

| | AA Batteries | Coin Cell | Industrial 3.6V Lithium (1800 mAh capacity) |
|---|---|---|---|
| Time Constant @ 25°C | 15 sec max | 30 seconds | |
| Operating Temperature Range ** (board circuitry + batteries) | 0° to 130°F (-18°-55°C) alkaline, -40° to 185°F (-40° - 85°C) lithium | 20° to +140°F, (-7° - 60°C) ** | -40° to +185°F (-40° - 85°C)** |
| Optimal Operating Temperature Range (batteries) ** | +10° to +50°C (+50° to +122°F) | | -40° to +85°C (-40° to +185°F) |
| Weight | 3.7 oz. | 0.7 oz. | 4.7 oz. |
| Enclosure | High impact ABS Plastic | High impact ABS Plastic (w/ PinchPower enclosure) | IP65, NEMA 4X, CE, sealed, weather & shock proof |
| Dimensions (click #s to view dimensional drawings) | 4.375" x 2.470" x 1.120" | 2.000" x 1.125" x 0.875" | 3.701" x 2.316" x 1.378" |

* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

Solar-Powered Option (available with "Industrial" version only)

Solar Panel: 5VDC / 30mA  (53mm x 30mm)

Charging Temperature Range: 0° to 45°C (32° to 113°F)

Max. Temperature Range: -20° to 60°C (-4° to 140°F)

Rechargeable Battery (Included): 600 mAh / >2000 Charge Cycles (80% of initial capacity)

## Principle of Operation



TEMPERATURE

Sensor outputs ambient temperatures in degrees Fahrenheit. It is programmed to sleep for a user-given time interval (heartbeat); then wakeup, send power to the NTC Thermistor, wait for it to stabilize, convert the analog data, mathematically compute the temperature and transmit the data to the gateway. To stay within the abilities of the processor, the temperature is computed off a data table provided by the manufacturer.

**Get IoT Started**

801-561-5555

info@monnit.com

www.monnit.com

# ALTA Wireless OPEN / CLOSED Sensors

**Coin Cell**

**AA Battery (x2)**

**Industrial / 3.6V Lithium**

10-year

5-year

10-year

The ALTA Wireless Open / Closed Sensor uses a magenetic switch to detect when a door or window is opened or closed. The position of the contact provides the system data that can be purposed for applications such as access control, occupancy monitoring, energy management, etc.

Data Sheet (short version)      click here for long version

## Technical Specifications

| | | | |
|---|---|---|---|
| Supply Voltage | | 2.0 - 3.8 VDC (3.0 - 3.8 VDC Using Power Supply) * | |
| Current Consumption | | 0.2 µA (Sleep Mode)<br>0.7 µA (RTC Sleep)<br>570 µA (MCU Idle) | 2.5 mA (MCU Active)<br>5.5 mA (Radio RX Mode)<br>22.6 mA (Radio TX Mode) |
| Magnet Contact | Magnetic Switch | SPST, gold under -plating with Deactivated Rhodium outer-plating (capable of 50 million activations) | |
| | Operational Gap | Up to 0.75" | |
| | Wire Leads | 22 gauge / 15 inch length | |
| | Magnet | Alnico magnet / Weatherproof, high-impact ABS plastic covering with self-adhesive backing | |
| | Temperature Range (Magnet) | -15° to 160°F (-25° to 70°C) | |
| Wireless Range (900 MHz) | | 1,000'+ (through 12+ walls or ceilings / non line-of-sight) | |
| Security | | Encrypt-RF™ (256-bit key exchange and AES-128 CTR) | |
| Integrated Memory | | Up to 512 sensor messages | |
| Certifications | FC  Industry Canada | 900 MHz product -   FCC ID: ZTL- G2SC1<br>                                 IC: 9794A-G2SC1 | |
| | | UL Listed (Industrial): UL508-4x specifications (File E194432) | |

## Power Options / Form Factors

| | AA Batteries | Coin Cell | Industrial 3.6V Lithium (1800 mAh capacity) |
|---|---|---|---|
| Operating Temperature Range (board circuitry + batteries) ** | 0° to 130°F (-18°-55°C) alkaline, -40° to 185°F (-40° - 85°C) lithium | 20° to +140°F, (-7° - 60°C) ** | -40° to +185°F (-40° - 85°C)** |
| Optimal Operating Temperature Range (batteries) ** | +10° to +50°C (+50° to +122°F) | | -40° to +85°C (-40° to +185°F) |
| Weight | 3.7 oz. | 0.7 oz. | 4.7 oz. |
| Enclosure | High impact ABS Plastic | High impact ABS Plastic (w/ PinchPower enclosure) | IP65, NEMA 4X, CE, sealed, weather & shock proof |
| Dimensions (click #s to view dimensional drawings) | 4.375" x 2.470" x 1.120" | 2.000" x 1.125" x 0.875" | 3.701" x 2.316" x 1.378" |

\* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

\*\* At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

**Solar-Powered Option (available with "Industrial" version only)**

Solar Panel: 5VDC / 30mA  (53mm x 30mm)

Charging Temperature Range: 0° to 45°C (32° to 113°F)

Max. Temperature Range: -20° to 60°C (-4° to 140°F)

Rechargeable Battery (Included): 600 mAh / >2000 Charge Cycles (80% of initial capacity)

## Principle of Operation

**OPEN / CLOSED**

The ALTA Open / Closed Sensor uses an external magnetic switch to detect the presence or removal of a trigger magnet. When the sensor detects that the magnet is removed or returned, it sends the information to the iMonnit Online Sensor Monitoring and Notification System. The data is stored in the online system and can be reviewed and exported. Notifi - cations can be setup through the online system to alert the user when a magnetic source is present or not present - with the ability to specify notifications within time-of-day parameters.

**Get IoT Started**

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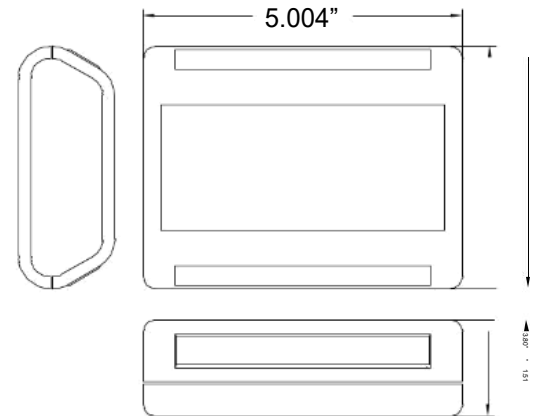www.monnit.com

# ALTA 3G Cellular Gateway

True plug & play, no hassles for Internet configuration setup

No PC required for operation

Low-cost cellular service packages

Local status LEDs with transmission and online status indicators

5.004"

| Technical Specifications | |
|---|---|
| **Cellular** | |
| Carriers Support | AT&T (USA), Rogers (Canada) |
| Cellular Technology | UMTS<br>Frequency Range: 850 / 1700 / 1900 MHz |
| Antenna | Connector: SMA<br>Gain (dBi): 1.5 |
| SIM Card Compatibility | Mini-SIM (2FF)    25 mm x 15 mm x 0.76 mm |
| **Power** | |
| Input Power | 5.5 VDC @ 2.5 A |
| Optional Battery Backup | Battery Type: Rechargeable Lithium Polymer |
|  | Battery Duration: Up to 24 hours |
|  | Battery Cycle Life: 500 times |
| **Mechanical** | |
| LEDs | Cellular Status LED, Online Status LED, Sensor Network Status LED |
| Device Memory: | 50,000 sensor messages<br>(Sensor messages will be stored in the event of Internet outage and transferred when connection is restored) |
| Enclosure | ABS |
| Dimensions | 5.004 x 3.8 x 1.51 in. |
| Weight | 7 ounces |
| **Environmental** | |
| Operating Temperature | -10 to +70 °C (14 to 158 °F) |
| Storage Temperature | -20 to +85 °C (-4 to 185 °F) |
| **Wireless** | |
| Wireless Range | 1,000+ ft. (through 12+ walls or ceilings / non-line-of-sight) |
| Security | Encrypt-RF™ (256-bit key exchange and AES-128 CTR) |
| Certifications   Industry Canada | FCC: ZTL- G2SC1, FCC: RI7HE910<br>IC: 9794A-G2SC1 and IC: 5131A-HE910 |

## Principle of Operation

The ALTA Cellular Gateways are based on the latest Dual-band CDMA and 3G wireless protocols and come integrated with Monnit's wireless access point network (WAN) for use with all Monnit wireless sensors.

The ALTA Cellular Gateway is an advanced all wireless M2M gateway that enables fast time-to-market solutions for a wide range of M2M and partner applications as well.

## Options & Add-ons

Carriers
- CDMA
  - Sprint
  - US Cellular
- 3G
  - AT&T (USA)
  - Rogers (Canada)

Protocol
- Cellular
  - CDMA
  - 3G
- Ethernet
- USB

Operating Frequency
- 900 MHz

# ALTA Ethernet Gateway

The ALTA Ethernet gateway allows your ALTA Wireless Sensors to communicate with the iMonnit™ Online Wireless Sensor Monitoring and Notification System without requiring a PC. Simply plug this device into any open network port with internet connection and it will automatically connect with online servers. With the graphical iMonnit software, you can easily configure your network, view collected sensor data and set alarms through SMS or e-mail.

5.505"
(139.827 mm)

(101.00'54.   mm)

34. 1.375"   mm)
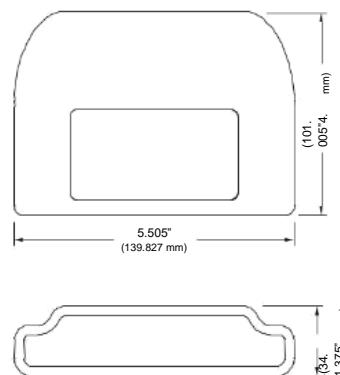
## Technical Specifications

| **Ethernet** | |
|---|---|
| Ethernet Types | Standard, POE |
| Antenna | Connector:  SMA<br>Gain:         5.0 dBi (900 MHz Product)<br>                  3.0 dBi (868 and 433 MHz Product) |
| Hardware | 10/100 Ethernet Controller |
| IEEE Standard Compliance | 802.3-2002 |
| Operation: | Full- and Half-Duplex |
| Cross-Over Correction | Automatic MDI/MDI-X |
| Addressing | Pre-programmed MAC Address |
| Host Address | t1.sensorsgateway.com |
| Default Port | 3000 |
| Protocols Supported | UDP, DHCP, TCP, SNMP, MODBUS |
| Cable Connector | Cat 5 |
| Device Memory | 16,000 sensor messages (Sensor messages will be stored in the event of Internet outage and transferred when connection is restored) |
| **Power** | |
| Power Supply | 5.5 V AC adapter or 5.5 V Power-Over-Ethernet adapter * |
| **Mechanical** | |
| LEDs | H/W status, iMonnit connection status, sensor data activity |
| Enclosure | ABS plastic |
| Dimensions | 4.0 in x 5.5 in x 1.375 in (139.85 mm x 101.75 mm x 34.95 mm) |
| Weight | 12.6 ounces |
| **Environmental** | |
| Operating Temperature | -10 to +70 °C (14 to 158 °F) ** |
| Storage Temperature | -20 to +85 °C (-4 to 185 °F) |
| **Wireless** | |
| Wireless Range | 1,000+ ft. (through 12+ walls or ceilings, non line-of-sight)*** |
| Security | Encrypt-RF™ (256-bit key exchange and AES-128 CTR) |
| Certifications   FC   Industry Canada | 900 MHz product - FCC ID: ZTL- G2SC1 and IC: 9794A-G2SC1. |

\*       Hardware cannot withstand negative voltage. Please take care when connecting a power device.

\*\* At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

\*\*\*   Actual range may vary depending on environment.

Data Capturing Options - Data collected by the Ethernet Gateway from the sensors in the network can be accessed when these interfac-es are turned on. Multiple interfaces can be active at the same time. All interfaces require that the Ethernet gateway be set to a Static IP address. (By default, the unit uses DHCP). The following data capturing options are supported:

SNMP Poll and Trap Interface • MODBUS TCP Interface • Real Time TCP Interface

## Durability Grades

### Commercial Grade

If not specified as "Industrial Grade", all ALTA sensors are commercial grade and are designed for applications in ordinary environments (normal room temperature, humidity and atmospheric pressure). Do not use these sensors under the following conditions as these factors can deteriorate the product characteristics or cause failures.

♦♦ Corrosive gas / De-oxidizing gas (chlorine, hydrogen sulfide, ammonia, sulfuric acid, nitric oxides, etc.)

♦♦ Volatile or flammable gas

♦♦ Dusty conditions

♦♦ Under low or high pressure

♦♦ Wet or excessively humid locations

♦♦ Places with salt water, oils chemical liquids or organic solvents

♦♦ Where there are excessively strong vibrations

♦♦ Other places where hazardous conditions exist

Use these product within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality.

### Industrial Grade

## Type 1, 2, 4, 4X, 12 and 13 NEMA Rated Enclosure

ALTA Industrial sensors are enclosed in reliable, weatherproof NEMA rated enclosures. Our NEMA rated enclosures are constructed for both indoor or outdoor use and protect the sensor circuitry against the ingress of solid foreign objects like dust as well as the damaging effects of water (rain, sleet, snow, splashing water, and hose directed water).

♦♦ Safe from falling dirt

♦♦ Protects against wind blown dust

♦♦ Protects against rain, sleet, snow, splashing water, and hose directed water

♦♦ Increased level of corrosion resistance

♦♦ Will remain undamaged by ice formation on the enclosure

## Options & Add-ons

### Sensor Power Sources

#### AA Battery
AA battery powered sensors are commercial grade and are ideal for indoor sensor networks. AA sensors are achieve up to a 10-year battery life.

#### Line Power (w/ AA Battery Backup)
AA battery powered sensors can be upgraded to support line-powered operations in addition.

#### Coin Cell Battery
Coin cell battery powered sensors offer the smallest form factor of all power options and achieve up to a 5-year battery life.

#### Industrial Lithium Battery

Industrial sensors are powered by a replaceable 3.6V lithium battery. Industrial sensors are ideal for indoor sensor networks. Industrial sensors achieve up to a 10-year battery life.

#### Solar

Industrial Grade Sensors can be upgraded to support solar powered operations.

### RF Operating Frequency
In North America, ALTA wireless products operate using the license-free 900 MHz ISM band. Contact Monnit regarding products requiring 868 MHz, 433 MHz or 920 MHz operating frequencies.

**MONNIT**®

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For more information about our products or to place an order, please contact our sales department at info@monnit.com or 801-561-5555.

Visit us on the web at www.monnit.com.

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

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