**Quick Start Guide**
00825-0300-3003, Rev AB
August 2022

# Incus GDU-01-TT

## Ultrasonic Test Transmitter


EMERSON.

## Important instructions

Emerson designs, manufactures, and tests products to function within specific conditions. Because these products are sophisticated technical instruments, it is important that the owner and operation personnel strictly adhere both to the information printed on the product nameplate and to all instructions provided in this manual prior to installation, operation, and maintenance.

## ⚠ WARNING

Installing, operating, or maintaining an Emerson product improperly could lead to serious injury or death from explosion or exposure to dangerous substances.

Comply with all information on the product, in this manual, and in any local and national codes that apply to the product.

Do not allow untrained personnel to work with this product.

Use Emerson parts and work procedures specified in this manual.

Authorized personnel for installing, operating, servicing, and maintaining the GDU-01-TT are instructed and trained qualified personnel of the operating company and the manufacturer.

It is the operating company's responsibility to:

- Train staff.
- Observe safety regulations.
- Follow the Reference Manual.

Operators must:

- Have been trained.
- Have read and understood all relevant sections of the Reference Manual before commencing work.
- Know the safety mechanisms and regulations.

To avoid personal injury and loss of property, do not install, operate, maintain, or service this instrument before reading and understanding this reference manual and receiving appropriate training.

## ⚠ WARNING

**Physical access**

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

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## Contents

# 1 Introduction

## 1.1 Product overview

Emerson has designed the GDU-01-TT Ultrasonic Test Transmitter to electrically replace the airborne ultrasound generated from a pressurized gas leak using a piezoelectric disc. You can use the GDU-01-TT to activate alarm conditions with any ultrasonic gas leak detector.

When gas moves from a high-pressure area to a low-pressure area, it generates airborne ultrasound. The ultrasonic sound level depends on three main factors:

- Pressure drop across leak
- Size of leak (area)
- Specific gas properties (molecular weight and specific gas ratio)

The GDU-01-TT is constructed from 316 stainless steel mounting hardware and a semi-crystalline polyphenylene sulfide (PPS) enclosure. The transmitter is battery-operated and is intended to be activated within close proximity of an ultrasonic detector. When activated, the transmitter helps to confirm that the ultrasonic detector is operating correctly.

The transmitter's effective range, due to the nature of the electronically produced ultrasound, is 8m. The range may be reduced based on the level of background ultrasound being generated in close proximity to the ultrasonic detector that the GDU-01-TT is activating.

## 1.2 Product recycling/disposal

Consider recycling equipment and packaging. Dispose of the product and packaging in accordance with local and national legislations and regulations.

# 2 Safety guidelines

## ⚠ WARNING

**Use in hazardous areas**

The GDU-01-TT is not hazardous area certified.

Only use the GDU-01-TT in accordance with site specific safety guidelines for non-certified equipment.

## ⚠ CAUTION

Only use the GDU-01-TT with Emerson approved accessories and charging equipment.

**Important**

All liability for the correct function of the GDU-01-TT is irrevocably transferred to the owner/operator if the GDU-01-TT is altered incorrectly by personnel not authorized by Emerson or if the GDU-01-TT is used in non-conformance to its intended use.

# 3 Unpack and inspect

### Procedure

1. Carefully remove all components from the packaging.
2. Verify the components against the enclosed packing list.
3. Inspect all components for obvious damage, such as broken or loose parts.
4. If any components are missing or damaged, contact your local Emerson representative or the factory immediately.

Store the transmitter in a covered, dry, clean, and safe environment. Ensure that the storage temperature is between -20 °C and 75 °C and that relative humidity does not exceed 95 percent non-condensing. Periodically inspect the stored box to ensure no tampering or deterioration has occurred.

# 4 Operation

The key for correct operation of the GDU-01-TT Ultrasonic Test Transmitter is in the relationship between the ultrasonic transmitter and ultrasonic detector.

Due to the nature of electronically emitted ultrasonic waves for optimal performance, it is very important to have the transmitter aligned perpendicular (±2.5 °) to the decibel sensing face. The closer the GDU-01-TT is to the detector, the higher the detector's decibel output.

The GDU-01-TT has no adjustable controls and is set up to produce approximately 106 dB at 1 meter in single operation mode.

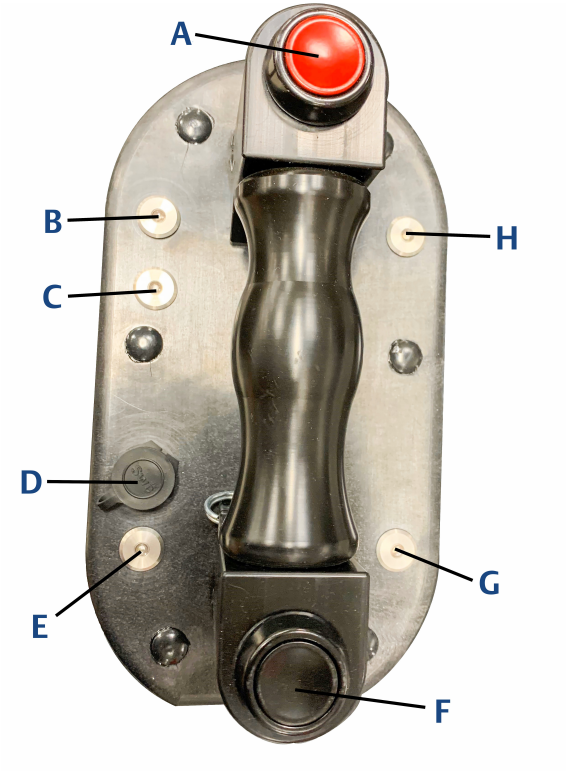
## ⚠ CAUTION

**The test transmitter is not intended to output a precise sound pressure level (SPL).**

Do not attempt to calibrate ultrasound detectors using this equipment.

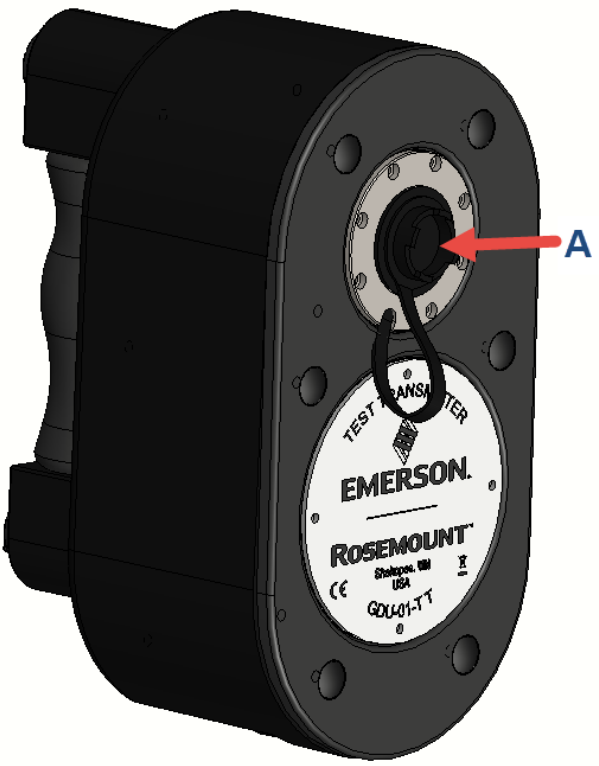
## 4.1 User interface

**Figure 4-1: Test Transmitter Interface**




A. ***Activation*** *button*
B. ***Battery Low*** *indicator*
C. ***Activation*** *indicator*
D. *Charge socket*
E. ***Battery Charge*** *indicator*
F. ***Battery Charge*** *indicator* ***On/Off*** *button*
G. ***Mains Connected*** *indicator*
H. ***On/Off*** *indicator*

**Figure 4-2: GDU-01-TT Ultrasonic Emitter Location**




*A. Ultrasonic emitter*

**⚠ CAUTION**

Always cover the ultrasonic emitter with the cap provided when not in use.

## 4.2 Operate

### Prerequisites

Ensure that the GDU-01-TT is fully charged before use. Refer to Charge the battery for charging instructions.

### Procedure

1. Check the battery charge by pushing the battery charge indicator button.

   See Figure 4-2.

   During normal operation, the **On/Off** indicator will be illuminated and the battery low indicator will be off.

   **Note**
   If the **Battery Low** indicator is illuminated, Emerson recommends charging the GDU-01-TT before use.

2. Remove the transmitter cap located on the ultrasonic emitter (see Figure 4-2) and aim the GDU-01-TT at the ultrasonic detector.

   To achieve best results see Verifying alarm settings through Activating a time delayed alarm.

3. Press and hold the **Activation** button to transmit an ultrasound emission.
   During normal operation, the activation indicator will illuminate to show ultrasound emission. If the activation indicator is off at any time while the button is pressed, the results are invalid.

### Postrequisites

Once you have finished testing the detector, Emerson recommends replacing the transmitter cap.

## 4.3 Verifying alarm settings

Determine the ultrasonic detector alarm settings before using the GDU-01-TT for operational verification.

The operator will need to determine the distance, or range, between the GDU-01-TT and the ultrasonic detector based on the ultrasonic detector's alarm level. In general, the higher the alarm level setting, the shorter you need to make the distance between the detector and the GDU-01-TT.

## 4.4 Activating a time delayed alarm

For alarm verification, determine the detector alarm delay before using the GDU-01-TT.

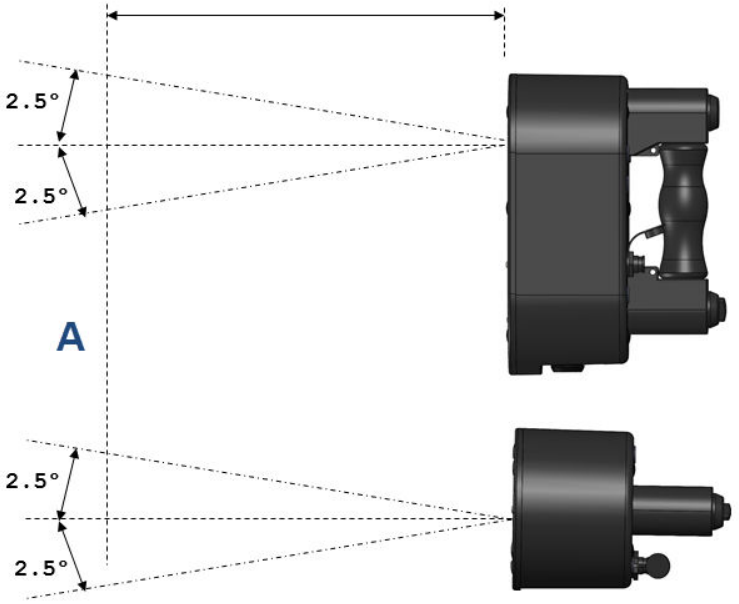
Activate the transmitter using the **Activation** button for a time longer than the delay and ensure that the activation indicator is illuminated for the specified time. Emerson recommends turning off the alarm delay during the test. Ensure the time delay is reinstated after testing to prevent unwanted alarms.

## 4.5 Operating range and alignment angle

The GDU-01-TT can electronically transmit ultrasonic waves over a long distance. However, it typically has a narrow field of response when used in conjunction with an ultrasonic detector due to the nature of electronically emitted sound.

Figure 4-3 shows the recommended angular alignment of the GDU-01-TT to the sensor face for maximum output.

**Figure 4-3: Operating Distance and Angular Alignment**




*A. Detector sensor face*

You can effectively use the GDU-01-TT at a range of up to 8 m, but take ultrasonic background noise into account before using the GDU-01-TT to verify detector operation. A higher ultrasonic background noise will reduce the GDU-01-TT's effective range.

## 4.6 Using accessories

Emerson recommends attaching the shoulder strap to the GDU-01-TT with the fastening clips before using it.

## 4.7 Charge the battery

If the **Battery Low** indicator illuminates when you turn on the GDU-01-TT, Emerson recommends fully charging it before use.

### Procedure

Plug the charger into the charging socket (orientation tab ensures correct polarity) and charge for eight hours to ensure the full charge cycle.

The mains connector illuminates to show power is connected, and the battery charge indicator will illuminate to show the charge cycle has began.

When the battery charge indicator goes off, the charge cycle is complete.

# 5 Troubleshooting

The GDU-01-TT cannot be repaired in the field.

In the event of a GDU-01-TT failure (i.e., user interface indicators failing to light, charging problems, or loss of ultrasound emission), please consult your Emerson representative.

### Related information

Service support

# A Specifications

| | |
|---|---|
| **Frequency range(s)** | 40 kHz (±1 kHz) |
| **Dimensions** | 245 mm x 180 mm x 130 mm |
| **Weight** | 4 kg |
| **Enclosure material** | Semi-crystalline modified polyphenylene sulfide and AISI 316 stainless steel transmitter mounting |
| **Operating temperature** | -20 °C to 75 °C |
| **Storage temperature** | -20 °C to 75 °C |
| **Humidity** | 0 to 95% relative humidity (RH) non condensing |

# B Accessories

| Part number | Description |
|---|---|
| GDU-01-TT-CHARGER | Spare 18 V standard charger for GDU-01-TT |

# C Service support

For technical support, contact your Emerson representative or email safety.csc@emerson.com.

The Response Center will ask for product model and serial numbers and will provide a Return Material Authorization (RMA) number.

The Response Center will also ask for the installation and application details.

**Note**
Ship all equipment prepaid. Emerson will not accept collect shipments.

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For more information: **Emerson.com**



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