



GAI-TRONICS® CORPORATION
A HUBBELL COMPANY

Model 272-001

Intrinsically-Safe Telephone

General Information

This data sheet applies to the GAI-Tronics Model 272-001 Outdoor Intrinsically-Safe (I.S.) Telephone, which is designed to be installed in hazardous areas. The Model 263 Isolation Barrier Units (IBU) or rack-mount card unit is placed in a non-hazardous area up to one mile from the telephone. This limits the energy levels going to the hazardous area.

For convenience, an I.S. telephone and the IBU can be purchased together under a single model number— Model 271-001 for outdoors.

This telephone is constructed of durable glass-reinforced polyester, which is highly resistant to chemicals and weather. In order to be *intrinsically safe*, energy and energy storage must be constrained to “safe” levels in hazardous area apparatus. Wiring inherently has capacitance formed by a dielectric material between two conductors. A buildup of this capacitance can form a surge of electricity, a dangerous situation in a hazardous area.

Intrinsically-safe telephones require cabling that will limit the amount of capacitance formed. The limitation on cable length was set by Underwriter’s Laboratory (UL) based on test results. This “worst case” cable available was found to have a capacitance of 60 picofarads/foot. Therefore, UL set the cable limitation at one mile, the length at which this worst-case cable capacitance level was still within acceptable bounds. Cable types with less capacitance have been specified to allow connection distances over one mile. For example: GAI-Tronics Model 60059-001 and 60021-301 cables allow connection distances of up to 1.5 miles.

Where multiple intrinsically-safe telephone wires are routed together, shielded cable should be used. The use of shielded cable prevents cross-talk from occurring between multiple intrinsically-safe telephone circuits. The shield must be grounded to an intrinsically-safe ground and connected only at the IBU.

Specifications

Location (Model 263 IBU)	Ordinary (non-classified) indoor/outdoor
FCC Registration Number	ADGUSA-65066-TE-E
Ringer Equivalence Number (REN).....	0.4B
IC Certification Number (Canada)	822 4541 A
Load number (LN) (Canada).....	14
Connecting method (Canada).....	CA11A
Operating temperature range.....	-40° F to +140° F (-40° C to +60° C)
Relative humidity	95% (non-condensing) maximum

Maximum safe wiring distance between IBU and I.S. telephone

Standard wire types	1 mile
Using GTC 60059-001 conductor	1.5 miles
Using GTC 60021-301 conductor	1.5 miles

Wiring

Construction.....	Twisted pair
*Type.....	Shielded
Conductor size (minimum)	No. 24 AWG
Wiring loop resistance (maximum)	275 ohms
Wiring capacitance (maximum)	0.316 uF

*Shielded cable is required where multiple I.S. telephone wires are routed together.

Electrical /Acoustical

Electrical specifications (nominal)	12 V, 12 mA
Ringer performance (typical)	98 dB @ 10 feet
Frequency (adjustable at the IBU)	1-8 kHz (typical)
Ring signal loss (No. 18 AWG).....	-4 dB/mile
Signaling	DTMF
Transmission path (2-conductor)	Full duplex
Microphone.....	Dynamic noise-canceling
Earpiece	Hearing aid compatible (HAC)
Output (0 dBm @ IBU TELCO Line)	105 dB SPL @ 1 kHz
Audio signal loss (No. 18 AWG).....	-1.3 dB/mile

NOTE: Must be connected in accordance with GAI-Tronics drawing 73242 (Pub. 42004-380).

Mechanical

Housing construction.....	Glass-reinforced polyester
Housing dimensions	9.39 W × 13.16 H × 7.46 D inches; (238.5 × 334.3 × 189.5 mm)
Enclosure rating (UL).....	Type 3R (rainproof)
Weight	10.0 lbs. (4.53 kg)

Approvals

When connected according to GAI-Tronics drawing 73242 (Pub. 42004-380):

UL/cUL.....	Class I, Div. 1, Groups A, B, C, and D; Class II, Div. I, Groups E, F, and G; Class III
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