

Guardian BBU Annunciator Installation Guide



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Document 5403501 Rev A
11/23

OVERVIEW

TowerIQ Guardian Annunciator is designed to provide compliance with the requirements of UL 2524 ULCS527 for in-building 2-Way Emergency Radio Communication Systems.

It allows local and remote annunciation of various trouble conditions of BDA (Bi-Directional Amplifier) and BBU (Battery Backup Unit) and reporting those conditions to the FACP through the separate set of dry contacts, visual and audible indicators.

SPECIFICATIONS

Agency Listings:	<ul style="list-style-type: none">UL2524 Standard for In-Building 2-Way Emergency Radio Communication Enhancement Systems
Input:	<ul style="list-style-type: none">12-24 VDC, 400mA input power.Input Fuse Rating: non field-replaceable 2A fuse.
Supervised Inputs:	<ul style="list-style-type: none">Nine (9) 10K EOL supervised inputs to connect to power supply and other equipment that require annunciation of trouble conditions:<ul style="list-style-type: none">AC FailLow BatteryCharger FailComponent FailGround FaultRF Emitter FailureDonor Antenna DisconnectDonor Antenna Malfunction.RF Emitter Component Failure.
Relay Outputs (Dry NC contacts relays):	<ul style="list-style-type: none">Ten (10) Form "C" output contacts to connect to FACP and other monitoring equipment with convenient end of line resistor wiring terminals. Use to report trouble conditions to FACP or other equipment:<ul style="list-style-type: none">AC FailLow BatteryCharger FailComponent FailGround FaultRF Emitter FailureDonor Antenna DisconnectDonor Antenna MalfunctionFACP ReportingCommunication Failure
Visual Indicators (See LED Diagnostics Table):	<ul style="list-style-type: none">10 bicolor visual indicators of trouble conditions visible through the observation window of the enclosure.
Enclosure Dimensions (H x W x D):	<ul style="list-style-type: none">11.8" x 9.84" x 5.9" (300mm x 250mm x 150mm). NEMA4X stainless steel red color enclosure.

INSTALLATION INSTRUCTIONS:

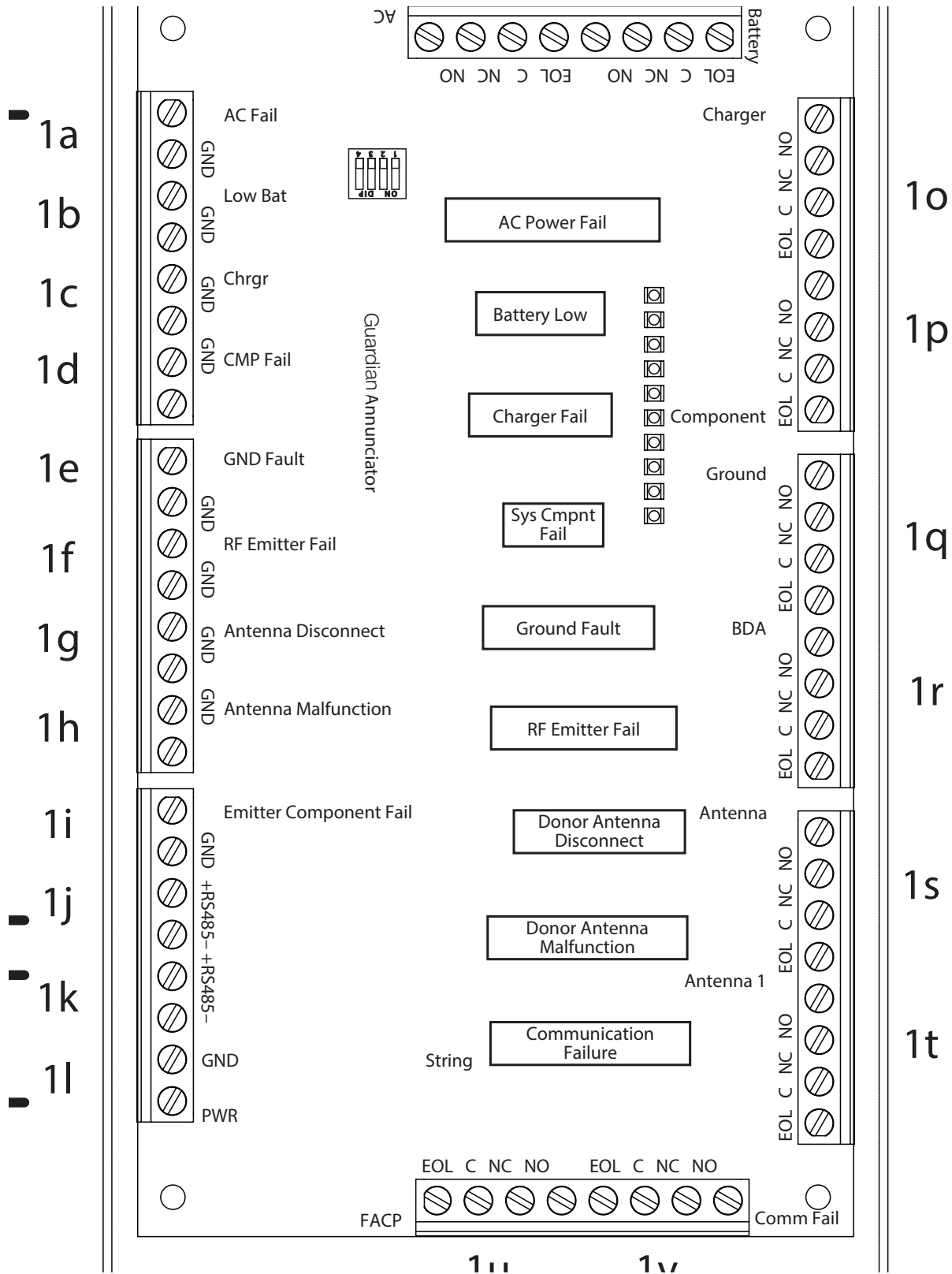
Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/NFPA 72/ANSI, and with all local codes and authorities having jurisdiction. Product is intended for indoor use only.

- Mount unit in the desired location. Mark and predrill holes in the wall to line up with mounting hardware level and secure. Mark the position of the lower two holes. Drill the lower holes and install two fasteners. Install the two lower screws and make sure to tighten all screws (Enclosure Dimensions, pg. 8). Secure enclosure to earth ground using ground stud inside.
- Connect [Power +] and [Power -] terminals to 12-24VDC power source UL listed for the application (TowerIQ Guardian BBU or similar). 400mA are required. Use [+ AUX -] terminals of Guardian BBU. Carefully observe polarity, damage may occur.
- Connect Inputs to the equipment to be monitored, use 10K end of line resistor mounted at the equipment end for monitoring of integrity of the connections. TowerIQ Guardian BBU power supply provides special terminals that allow easy mounting of EOL resistors. Connect BDA, Donor Antenna Fail and Donor Antenna Disconnect terminals to equipment to be monitored. Inputs not used must be terminated with 10K end of line resistors connected directly to specific input terminals. See Terminal Identification, pg. 4.
- Connect relay outputs to the FACP or other monitoring equipment. If it is located not in the same enclosure, supervision must be provided. Use the end of line resistor recommended by the equipment that facilitates the supervision and connect those to terminals marked EOL. Connect the equipment to output relay terminals. See detailed instructions below.
- Connect FACP contacts to Fire Alarm Control panel to provide trouble supervision.
- Please ensure that the cover is secured with the provided lock.

WIRING

Use 18 AWG or larger for connections.

Fig 1



GUARDIAN ANNUNCIATOR LED DIAGNOSTICS:

LED	Description
AC Power Fail	Green: AC power normal, Red: AC power failure or brownout.
Battery Low	Green: Battery normal. Red: Battery is missing or discharged below 30% capacity.
Charger Fail	Green: Charger operates normally. Red: Charger failure.
Sys Cmpnt Fail	Green: No critical component failure detected. Red: Critical component failure.
Ground Fault	Green: No ground fault. Red: Ground fault.
RF Emitter Fail	Green: RF emitter operates normally. Red: RF emitter failure.
Donor Antenna Disconnect	Green: Donor antenna connected. Red: Donor antenna disconnected.
Donor Antenna Malfunction	Green: Donor antenna operates normally. Red: Donor antenna failure.
Communication Failure	Green: RS485 normal. Red: RS485 lost.
Communication Mode	Solid Green: RS485 communication disabled, all local inputs enabled, Blinking Green/Red: RS485 communication enabled, first five local inputs disabled.

GUARDIAN ANNUNCIATOR TERMINAL IDENTIFICATION INPUTS:

Terminal Legend	Function/Description
AC Fail Input (Fig. 1a, pg. 3)	AC Fail trouble input, 10K EOL supervised. To be connected to Guardian BBU power supply AC Trouble output. Terminate with 10K resistor if not used.
Low Battery Input (Fig. 1b, pg. 3)	Battery Trouble input, 10K EOL supervised. To be connected to Guardian BBU power supply Battery Trouble output. Terminate with 10K resistor if not used.
Charger Fail Input (Fig. 1c, pg. 3)	Charger Fail input, 10K EOL supervised. To be connected to Guardian BBU power supply Charger Trouble output. Terminate with 10K resistor if not used.
Component Fail Input (Fig. 1d, pg. 3)	Component Fail input, 10K EOL supervised. To be connected to Guardian BBU power supply Component Fail output. Terminate with 10K resistor if not used.
GND Fault Input (Fig. 1e, pg. 3)	Optional Connection. Ground fault input. 10K EOL supervised. If reporting is desired, should be connected to Guardian BBU Ground Fault output. Terminate with 10K resistor if not used.
RF Emitter Fail Input (Fig. 1f, pg. 3)	Failure of RF emitter input, 10K EOL supervised. To be connected to the RF Emitter Fail output of BDA. Terminate with 10K resistor if not used
Antenna Disconnect (Fig. 1g, pg. 3)	Donor antenna disconnect trouble input. To be connected to the Donor Antenna Disconnect of BDA. Terminate with 10K resistor if not used..
Antenna Malfunction (Fig. 1h, pg. 3)	Donor antenna malfunction trouble input. To be connected to the Donor Antenna Malfunction of BDA. Terminate with 10K resistor if not used.
Emitter Component Fail (Fig. 1h, pg. 3)	RF Emitter Critical Component Failure input. To be connected to RF emitter critical component failure output of BDA. Terminate with 10K resistor if not used
- RS485 + (Fig. 1j, pg. 3)	RS485 communication link connection. If employed, it will override the signal coming from the local inputs related to operation of Guardian BBU power supply (1-5). The other inputs remain active. Connect to [RS485 +/-] terminals of Guardian BBU power supply
- RS485 + (Fig. 1k, pg. 3)	Connections to the next Guardian Annunciator or 120 Ohm end termination resistor.
PWR GND (Fig. 1l, pg. 3)	Input power connections from AUX output of Guardian BBU power supply or different power source. 12-24V 400mA. Power: positive, GND: negative

GUARDIAN ANNUNCIATOR TERMINAL IDENTIFICATION OUTPUTS:

Terminal Legend	Function/Description
AC Fail EOL C NC NO (Fig. 1m, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports AC failure to FACP
Batt Fail EOL C NC NO (Fig. 1n, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports Battery failure to FACP
Charger EOL C NC NO (Fig. 1o, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports Charger failure to FACP.
Component EOL C NC NO (Fig. 1p, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports Critical component failure to FACP.
Ground EOL C NC NO (Fig. 1q, pg. 3)	Optional connection. Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports ground fault to FACP.
BDA EOL C NC NO (Fig. 1r, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports RF emitting device failure to FACP.
Antenna EOL C NC NO (Fig. 1s, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports donor antenna disconnect to FACP.
Antenna 1 EOL C NC NO (Fig. 1t, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports donor antenna malfunction to FACP
Communication Failure EOL C NC NO (Fig. 1v, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports RS485 failure or registered device disconnect to FACP.
FACP EOL C NC NO (Fig. 1u, pg. 3)	Form"C" relay output. 1A/28V, 0.6 power factor. Relay is normally energized. Reports all above mentioned troubles to FACP.

TOWERIQ GUARDIAN ANNUNCIATOR CONNECTIONS TO THE GUARDIAN BBU POWER SUPPLY: ■

See Guardian BBU Power Supply Installation Guide 5403500 Rev. A for more information.

Use [AUX +/-] terminals of Guardian BBU power supply to connect to power terminals of Guardian Annunciator. Any other 12-24V UL listed UL864 compliant power source can be used. 400mA current rating minimum is required.

Method 1. Hard Wiring of Guardian Annunciator to Guardian BBU:

1. Use 10K EOL resistor TowerIQ model number ALEOL10.
2. Connect EOLs between [EOL] and corresponding [C] terminals of reporting outputs of Guardian BBU.
3. Connect trouble inputs of Guardian Annunciator to "NC" and "NO" terminals. Unused inputs are to be terminated with 10K EOL. Trouble condition inputs and outputs have to be matched for proper operation.

Method 2. Using RS485 Link:

Up to 7 Guardian Annunciators can be connected to one Guardian BBU.

Total length of connecting wires should not exceed 1500 Ft. Use 18AWG twisted pair.

1. Connect [RS485 +/-] of Guardian BBU to [RS485 +/-] of Guardian Annunciator, connect next Guardian Annunciator to the second set of [RS485 +/-] terminals. On the last Guardian Annunciator connect termination resistor to the second set of [RS485 +/-] terminals.
2. Set address: Each Guardian Annunciator has to have unique address from 1 to 7, set by the DIP switches 1, 2 and 3 on the Guardian Annunciator boards. Follow the chart below to determine DIP switch positions Address 1 (One) has to be present for proper operation. If only 1 Guardian Annunciator is employed, it has to have address 1.
3. Power up the system. Turn DIP switch 4 "on" for 30 seconds to record existing system configuration. If one of the connected Guardian Annunciators fail after the configuration has been fixed, the trouble condition will be reported to FACP by Guardian BBU and all other Guardian Annunciator units still connected.

DIP SWITCH 1-3 ADDRESS SETTING CHART: ■

Address	DIP 1	DIP 2	DIP 3
1	ON	OFF	OFF
2	OFF	ON	OFF
3	ON	ON	OFF
4	OFF	OFF	ON
5	ON	OFF	ON
6	OFF	ON	ON
7	ON	ON	ON

AUDIBLE TROUBLE CONDITION ANNUNCIATION: ■

Guardian Annunciator will provide audible signal upon detecting any trouble condition.

DRY FORM "C" RELAY CONTACTS REPORTING: ■

Dry Form"C" relay contacts are used to report individual trouble conditions to FACP. Use FACP EOL to connect between [EOL] and [C] terminals of corresponding outputs. Connect wiring from FACP to [NO] and [NC] terminals.

Connection does not need to be supervised if the equipment is located in the same room. Dry contacts C, NO, NC can be employed for those connections.

FACP relay reports all trouble conditions. It has to be connected to FACP to meet UL requirements.

Individual trouble condition reporting is optional.

Fig 2 Guardian Annunciator



ENCLOSURE DIMENSIONS (H X W X D APPROXIMATE):

Fig 3

11.8" X 9.84" X 5.9" (300MM X 250MM X 150MM)

