Tips for Installing AlarmNet Cellular Communicators

Overview

This document will provide guidelines and “best practices” that should be observed when installing AlarmNet cellular communicators. Most of these are pulled from various Installation manuals and are provided here collectively. Following these practices will help to ensure the device is installed properly for correct operation and communication with the cellular network.

Table of Contents

Overview....1

Table of Contents....1

Cell Communicator – General Tips....1

Cellular Remote Antenna – General Usage and Install Tips....2

EC/NO and Ec/IO (Signal to Noise Ratios) – General Info and Install Tips....3

Cell Communicator – General Tips

For reliable service, the communicator should only be installed in a location that supports consistently satisfactory signal strength. If fluctuations into unsatisfactory ranges are observed, the device should be relocated. Refer to the product installation instructions for recommended signal strength ranges.

- When choosing a suitable mounting location, understand that it must be mounted indoors and should be placed in a climate controlled environment.
- For best signal strength, the device should be mounted vertically.
- If the control panel location does not support adequate signal strength or EC/NO (see page 3), the communicator may be mounted remotely (while observing wiring limitations provided in the panel and/or communicator installation guide).
- Find the best location before mounting and wiring the radio by moving the module to several locations while monitoring the signal strength and EC/NO.
- The best signal strength can usually be found on an exterior wall at the highest point in the building. You typically want to avoid the basement unless a remote antenna is being used.
- Maintain at least 12 inches of clearance between the module and steel I-beams, HVAC ducts, metal studs, steel roofs, or roofs and exterior walls with metalized insulation, aluminum siding, and other large metal objects.
- When possible, avoid mounting on brick, stone, or concrete walls as they attenuate RF more than stud walls.
- If consistent signal strength or EC/NO cannot be found with the internal antenna, an external, remotely located antenna should be used.

- Microcells act like a mini cell tower in a premise to improve indoor cell coverage, but can interfere with Honeywell 3G/4G Cellular Communicators. Refer to Technical Notification 10 – Microcell Interference available @ https://mywebtech.honeywell.com/Intrusion/DocSearch

Cellular Remote Antenna – General Usage and Install Tips

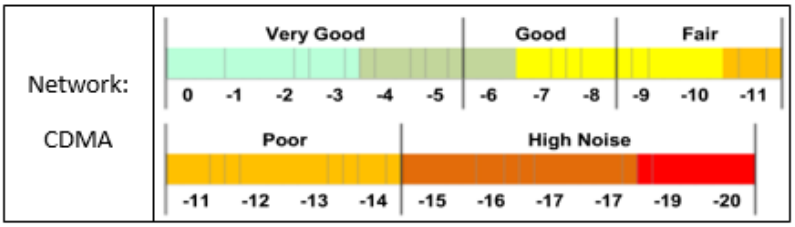
If consistently satisfactory signal strength or EC/NO cannot be found with the internal antenna, an external antenna may be used. The following tips should be observed when using an external antenna.

- The internal or external antenna(s) used with this product must be installed to provide a separation distance of at least 7.8 in from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.
- The external antenna must not exceed a maximum directional gain of 3.2 dBi at 850 MHz and 2.3 dBi at 1900 MHz
    - External antennas are available separately and meet this requirement when installed according to the instructions.
- Adjust the location of the antenna until the signal strength is at a satisfactory level.
    - When identifying a suitable location for the exterior 3dB antenna, it is helpful to carry the cellular communicator (operating on battery power) to the proposed mounting location to determine the signal levels and signal to noise ratios that will be available to the antenna at that location.
        - If the signal level and/or signal to noise ratio is unacceptable (as determined by the communicator itself), DO NOT mount the antenna at that location and find a different, more suitable mounting location.
        - It is suggested to perform this procedure to ensure the antenna is being placed in a suitable location before drilling the mounting holes and routing the antenna cabling.
- All antennas should be mounted vertically while maintaining 12 inches of clearance from large metal objects.
    - Permanently mount the antenna using the included hardware.
- Interior Antenna, part number CELL-ANT is an **indoor** fixed length antenna that should be used in installations where moving the antenna to a higher point within the building will provide better RSSI.
    - CELL-ANT cable length is fixed at approximately 10 feet.
- Exterior Antenna, part number CELL-ANT3dB is a remote weatherproof antenna that should be used in installations where the antenna must be mounted outdoors at some distance from the radio and gain is needed.
    - The antenna is an exterior weatherproof antenna that can be mounted up to 50 feet away from the radio when the proper coax cable is used. Honeywell offers this antenna in kits with a 25 foot cable or a 50 foot cable.
        - It is highly recommended to use the cabling available in these kits. Lower quality cabling is not recommended due to impendence and signal loss that can exceed the gain provided by the antenna.
        - It is preferable to install the antenna with the 25 foot cable if that accommodates the install.
        - DO NOT couple cabling together to extend the cable length and do not exceed 50 feet of cabling.

EC/NO and Ec/IO (Signal to Noise Ratios) – General Info and Install Tips

In addition to the received signal strength, another measurement that should be observed and kept within supported ranges is the signal to noise ratio. This is referenced as EC/NO on our 3G UMTS/HSPA+ (GSM) communicators and as Ec/IO on our CDMA communicators. The signal to noise ratio should always be -14 or better, although we would suggest installation in a location that allows for the best possible signal to noise ratio to maintain reliable connectivity to the cell network. If required, the signal to noise ratio may be improved by relocating the communicator or by use of an external antenna. See chart below for acceptable levels for 3G/4G network and CDMA network.

Network	Good	OK	Marginal	Bad
3G/4G	-12 dB and over	-13 to -14 dB	-15 to -17 dB	-18 dB and under



- For the most consistent and reliable operation over the cellular network, both RSSI and signal to noise ratios should be observed and improved when they fall out of acceptable ranges.
    - The signal to noise ratio may be improved by relocating the communicator or by use of an external antenna.
    - Noise may vary with the number of subscribers connected to the same cell site at the time of measurement. During busy periods the noise will increase, reducing the signal to noise and resulting in a more negative number.
- For devices with **LED indicators** for RSSI, the signal to noise ratio **is factored into the indication** of good or bad coverage.
- The Lyric and Gateway panels also factor the signal to noise ratio in the cellular RSSI reading.
- The LYNX Touch panels DO NOT factor the signal to noise ratio in the cellular RSSI reading.
    - On the Lynx Touch- Signal to noise is displayed as a separate measurement for CDMA communicators, but is not available locally for GSM (check the GSM on AlarmNet 360).
- Signal to noise values are available on AlarmNet 360 as a separate measurement in the QoS reporting for 3G/4G devices.
- Signal to noise is displayed locally as a separate measurement on the 7720p (refer to product Install Instructions).

This document contains Honeywell proprietary information. Information contained herein is to be used solely for the purpose submitted, and no part of this document or its contents shall be reproduced, published, or disclosed to a third party without the express permission of Honeywell International. HONEYWELL DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PURPOSE AND MAKES NO EXPRESS WARRANTIES EXCEPT AS MAY BE STATED IN ITS WRITTEN AGREEMENT WITH AND FOR ITS CUSTOMER. In no event is Honeywell liable to anyone for any direct, special, or consequential damages. The information and specification in this document are subject to change without notice.