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Elecsys 02-0084-00 Modem Module

User Manual and OEM Integration Guide

For Elecsys Corporation Use Only

| Document Revision History | | | |
|---------------------------|------------------|---------------|-----------------------------|
| Version | Date Implemented | By | Comments |
| Rev A | 31 March 2016 | T. Mendenhall | Initial Release |
| Rev B | 31 March 2016 | T. Mendenhall | Updated Antenna Information |

PURPOSE:

The purpose of this manual is to serve as a guide to other Elecsys Corporation product developers to integrate the 02-0084-00 Modem Module into existing and future product lines. There is no intention of marketing this modem module directly to consumers or as a standalone product. Throughout this manual, references are made to 'OEM' responsibilities for integrating the modem module into host products. Since this module is only to be used in Elecsys product lines, the OEM referenced will be Elecsys Corporation, and the product developers that are responsible for integrating the modem module into a product. The product developers are therefore responsible for maintaining FCC and IC compliance in any final product that includes the 02-0084-00 Modem Module. Product developers may obtain relevant technical information about the 02-0084-00 Modem Module from internal engineering documentation.

WARNING

Changes or modifications not expressly approved by Elecsys Corporation could void the user's authority to operate this equipment (§ 15.21).

FCC REGULATORY NOTICES:

FCC ID: 2ABOY-02008400

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
- (§ 15.19)

The 02-0084-00 Modem Module has been granted modular approval for mobile and fixed base station applications. To comply with FCC RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons, and must not be co-located or operating in conjunction with any other antenna or transmitter (§ 2.1091).

This radio transmitter has been approved by the FCC to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this module (§ 15.204(c)).

| Elecsys P/N | Type | Gain (dBi) |
|-------------|-------------|------------|
| 48-0003-36 | SMT PIFA | 1.5 |
| 48-0003-38 | RP-SMA Omni | 4 |

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

(§ 15.105(b))

INDUSTRY CANADA REGULATORY NOTICES:

IC: 12222A-02008400

This device complies with Industry Canada's license-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this module.

| Elecsys P/N | Type | Gain (dBi) |
|-------------|-------------|------------|
| 48-0003-36 | SMT PIFA | 1.5 |
| 48-0003-38 | RP-SMA Omni | 4 |

OEM RESPONSIBILITIES FOR FCC AND INDUSTRY CANADA COMPLIANCE

The 02-0084-00 Modem Module has been certified for integration into products only by OEM integrators under the following conditions:

1. The antenna(s) must be installed such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and all persons at all times.
2. The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter.

As long as the two conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions cannot be met (for certain configurations or co-location with another transmitter), then the FCC and Industry Canada authorizations are no longer considered valid and the FCC ID and IC Certification Number cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC and Industry Canada authorization.

The 02-0084-00 Modem Module is labeled with its own FCC ID and IC Certification Number. If the FCC ID and IC Certification Number are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following:

“Contains Transmitter Module FCC ID: 2ABOY-02008400”

“Contains Transmitter Module IC: 12222A-02008400”

OR

“Contains FCC ID: 2ABOY-02008400”

“Contains IC: 12222A-02008400”

The OEM of the 02-0084-00 Modem Module must only use the approved antenna(s) listed above, which have been certified with this module. The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module or change RF related parameters in the user manual of the end product. This modem module employs RP-SMA antenna connectors to fulfill the unique connector requirements of §§ 15.203 and 15.212(a)(1)(iv).

The User Manual for the end product must also include the following information in a prominent location:

FCC and INDUSTRY CANADA NOTICES:

Contains Transmitter Module FCC ID: 2ABOY-02008400

Contains Transmitter Module IC: 12222A-02008400

This device complies with part 15 of the FCC Rules, and Industry Canada’s license-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme RSS Industrie Canada exempt de licence. Son fonctionnement est soumis aux deux conditions suivantes :

- (1) cet appareil ne peut pas provoquer d’interférences ; et,
- (2) Cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

IMPORTANT NOTE: Changes or modifications not expressly approved by Elecsys Corporation could void the user's authority to operate this equipment.

NOTE IMPORTANTE: Toute modification non expressément approuvée par Elecsys Corporation pourrait annuler l'autorisation accordée à l'utilisateur d'utiliser cet équipement.

Notice: The radio transmitter (FCC ID: 2ABOY-02008400; IC: 12222A-02008400) has been approved by the FCC and Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Avis: Cet émetteur radio (IC: 12222A-02008400) a été approuvé par Industrie Canada pour fonctionner avec les types d'antennes énumérés ci-dessous avec le gain maximal admissible et l'impédance d'antenne requise pour chaque type d'antenne indiqué. Les types d'antennes ne figurant pas dans cette liste, ayant un supérieur au gain maximal indiqué pour ce type, sont strictement interdits pour l'utilisation avec cet appareil.

| Elecsys P/N <i>Référence</i> | Type <i>catégorie</i> | Gain (dBi) <i>Gain</i> |
|---------------------------------|--------------------------|---------------------------|
| 48-0003-36 | Integrated PIFA | 1.5 |
| 48-0003-38 | Omni | 4 |

To comply with FCC and Industry Canada's radiation exposure limits for general population, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and all persons at all times and must not be co-located or operating in conjunction with any other transmitter or antenna.

Cet équipement respecte les limites d'exposition aux rayonnements IC définies pour un environnement non contrôlé. Cet équipement doit être installé et mis en marche à une distance minimale de 20 cm qui sépare l'élément rayonnant et votre corps. L'antenne (s) utilisé pour cet émetteur ne doit pas être co-localisés ou fonctionner conjointement avec une autre antenne ou transmetteur.

If applicable to end product, the following statements should also be added to the user manual:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.