



**MiHub 1.5 XR Installation & Operation Manual**  
**880-0021-501 Rev A00**

**Revision History**

**Rev Description of change Changed by Effective Date**

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**MANUFACTURER**

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# MiHub 1.5 XR Installation & Operation Manual

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## 1 FCC Information

**Changes or modifications not expressly approved by the Mueller Systems could void the user's authority to operate the equipment.**

**IMPORTANT NOTES: To comply with FCC RF exposure compliance requirements:**

- 1) The antenna used for this 915 MHz transmitter must be installed to provide a separation distance of at least 23 cm from all persons during normal operation.**
- 2) In addition, the GPRS cellular antenna must be installed to provide a separation distance of at least 20 cm from all persons during normal operation.**

Note: The antennas for this device must not be co-located within 20 cm of any other transmitting antenna or each other.

“NOTE: 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 or more 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.

## 2 IC Information

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.

*Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.*

This device complies with Industry Canada licence-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.

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

**IMPORTANT NOTES: To comply with Industry Canada RF exposure compliance requirements:**

- 1) The antenna used for this 915 MHz transmitter must be installed to provide a separation distance of at least 23 cm from all persons during normal operation.**
- 2) In addition, the GPRS cellular antenna must be installed to provide a separation distance of at least 20 cm from all persons during normal operation.**

**Remarques importantes : Se conformer aux exigences de conformité de l'exposition de l'industrie Canada RF:**

- 1) L'antenne utilisée pour ce transmetteur 915 MHz doit être installée pour fournir une distance d'au moins 23 cm de toutes les personnes pendant le fonctionnement normal.**
- 2) En outre, l'antenne cellulaire GPRS doit être installée pour fournir une distance d'au moins 20 cm de toutes les personnes pendant le fonctionnement normal.**

***Important: Selon les normes de Industrie Canada d'exposition aux champs de radiofréquences, l'antenne utilisée pour ce transmetteur doit être placée pour maintenir une distance de séparation de 23 cm au moins de tous les personnes pendant l'utilisation.***

Note: The antenna for this device must not be co-located within 20 cm of any other transmitting antenna.

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*L'antenne pour cet appareil doit être positionnée au moins de 20 cm de n'importe quelle autre antenne d'émission.*

### 3 Authorized Antennas

This radio transmitter has been approved by Industry Canada and FCC 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.

*Cet émetteur a été approuvé par Industrie Canada et FCC à opérer avec les types d'antenne indiqués ci-dessous avec l'amplification maximale admissible et impédance d'antenne pour chaque type d'antenne indiqué. Il est strictement interdit d'utiliser les types d'antenne qui ne sont pas sur la liste avec une amplification plus de celle de ce type d'antenne.*

#### 915Mhz antennas

Antenna	Gain	Impedance
LCOM HGV-906U	6dBi	50 ohm
PCTEL Omnidirectional Antenna MFB9153	5.1 dBi (3dB)	50 ohm

#### GPRS cellular

Antenna	Gain	Impedance
Nearson T6140AH-AGDP-R	2dBi	50 ohm

### 4 Intended Use:

The MiHub 1.5 XR unit is intended for indoor & outdoor use as an unattended data collector for automatic meter metering & control applications. The unit is attached (hard wired) to an external power source, 100-240 VAC , 50/ 60 HZ, 15W. The external power hookup is to meet appropriate local & national electrical codes & be performed by an appropriately licensed professional.

### 5 Environmental Cautions:

The connection to an external power source should only be performed by the appropriate professional, properly licensed within the local jurisdiction. Outdoors MiHub 1.5 XR installation should only be attempted when weather conditions permit safely accomplishing this task.

## **6 MiHub 1.5 XR Installation & Operation:**

The MiHub 1.5 XR main unit is a 7.3" x 10.4" x 3.7" NEMA 4 plastic box which contains weighs approximately 2.5 lbs. It dissipates between 4 watts (standby) & 15 watts (worst case scenario).

Typically, the MiHub 1.5 XR is fastened to a tower support or wall of a collocated structure and then power is attached & applied.

A MiHub 1.5 XR unit has both GPRS (side mounted) & 915 MHz (remotely mounted) antennas. The GPRS antenna is mounted to the side of the MiHub 1.5 XR main unit as shown in figure 1. The 915 MHz antenna connection is located on the bottom side of the main enclosure. An antenna cable is run from this connector to the RF power amplifier which is typically located at the top of the tower. The power amplifier is then connected to a band-pass filter and the filter is connected to the antenna. The 915 MHz antenna package including the power amplifier, filter and antenna may be located up to 200 feet from the main enclosure.



Figure 1: MiHub 1.5 XR with 915 MHz & GPRS.

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The bottom of the MiHub 1.5 XR has a power cord attached in the middle. To the left of that is an air vent. To the right of the power cord is the 915 MHz antenna connection (N-type female) and a green LED to indicate that the unit is powered up. On the right side is the GPRS antenna.

A pre-drilled mounting plate is attached to both the top & bottom of the main unit.

There are no other (operator/installer) accessible controls or displays.

Any use of the MiHub 1.5 XR product in other than the intended manner specified by the manufacturer may impair the protection provided by the equipment.

Installation is achieved as follows:

### 6.1 Installation Instructions:

**WARNING!** Because the installation is typically connecting the power cord to live power lines, only personnel trained & licensed properly for the local jurisdiction should perform this installation.

A. Pick a safe location where the power cord can reach the input power source. Install the MiHub 1.5 XR main enclosure by utilizing the screws & the pre-drilled mounting plates located at the top & bottom of the enclosure box. Keep the box vertical/plumb as much as possible.

B. Connect the color coded wires to the power source. This operation should be performed by a properly licensed professional. The black wire is the power input (nominally 110VAC) & the white wire is return.

C. After connecting input power, verify that the green LED on the bottom of the enclosure is lit.

D. This completes the physical installation. From this time forward, additional steps to control the MiHub 1.5 XR are all done remotely via the GPRS RF link.

## 7 Maintenance:

There are no user serviceable items within a MiHub 1.5 XR. No cleaning is required.

## 8 Product Identification and Safety Labels & Locations

### 8.1 MiHub 1.5 XR Unit Labels:



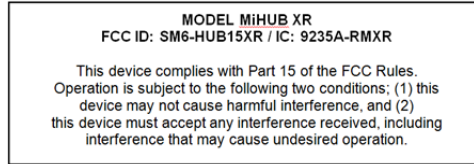
Electric Shock Hazard Warning

Finished Goods Label

5.3 Label Locations

## 9 FCC Identification Labels

This is illustration of text used on FCC label for MiHub 1.5 XR.



Below is the text for the FCC declaration label for the GPRS modem Module.

