

Galaxy Base Station

User Manual

Model: Galaxy Base Station V1

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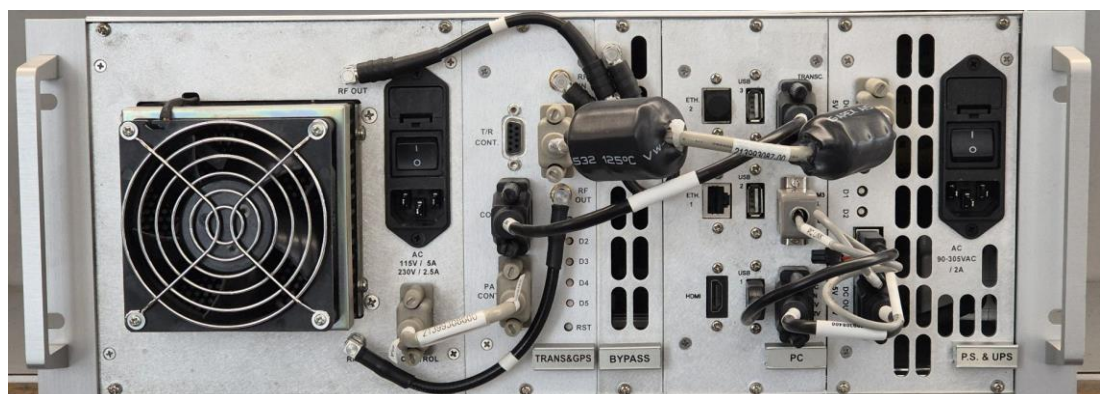
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1. General description

The Galaxy Base Station is a part of ST Engineering Telematics Wireless Galaxy system. It enables utilities, local municipalities, and maintenance companies to control and monitor its water meter end points and luminaire population in the most cost-effective and reliable way.



General view



Top view

2. Installing the Galaxy Base Station

The Galaxy Base Station is installed in a dedicated cabinet.



Cabinet - Closed and Open

2.1 Positioning the Cabinet

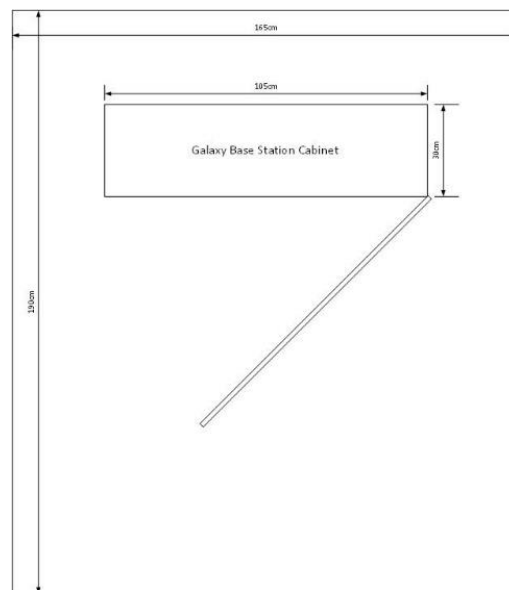
Before placing the cabinet, measure the intended space to ensure there is enough room for the cabinet including the required work area. The Galaxy Base Station cabinet has the following dimensions:

90cm (35.4 in) height x 105cm (41.3 in) width x 30cm (11.8 in) depth

If possible, a minimum of 30cm (11.8 inches) of free space should be left at the front, rear, and non-door side of the cabinet. The door side of the cabinet must have enough space for the door to open completely with an additional 30cm (11.8 inches) of workspace. With these guidelines in mind, the minimum space required for the cabinet is:

165cm (65 inches) along the width by 190cm (75 inches) along the depth

The following is a graphical representation of the space and cabinet:



Cabinet Space Layout

2.2 Inserting the Power Cable

The external 110 or 220 volt power cable that has been prepared for use with the Galaxy Base Station should now be routed inside the cabinet.

1. Make sure that the power cable is **NOT** plugged in to the wall outlet at this time.
2. Feed the power cable through the hole near the rear of the cabinet, on the non-door side. In the photo below the power cable is the white cable inserted on the left.



Power Cable Inserted into Cabinet

3. Tilt the cabinet backwards along the length of its base to expose the underneath, and to provide access to the power cable that you just fed into the cabinet.
4. Feed the power cable up into the cabinet through the hole at the bottom and near the rear.
5. Lower the cabinet back to the floor.

Do **NOT** physically attach the power cable to the cabinet at this time. For safety purposes, the power cable will be connected to the cabinet prior to powering the Galaxy Base Station on for the first time.

2.3 Connecting and Inserting the RF Jumper Cable

The RF jumper cable that was provided with the Galaxy Base Station should now be connected externally, and then routed inside the cabinet.

1. Connect the RF jumper cable N-type (Female) to the antenna RF coaxial cable, and follow the instructions for waterproofing if this connection is outside.
2. Feed the other end of the RF jumper cable N-type (Male) through the hole near the front of the cabinet, on the non-door side. In the photo below the RF jumper cable is the black cable inserted on the right.



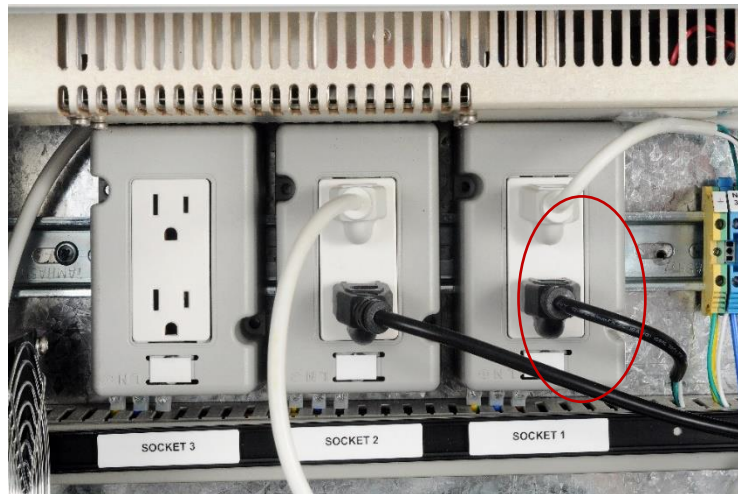
RF Cable Inserted into Cabinet

3. Tilt the cabinet backwards along the length of its base to expose the underneath, and to provide access to the RF jumper cable that you just fed into the cabinet.
4. Feed the RF jumper cable up into the cabinet through the hole at the bottom and near the front.
5. Lower the cabinet back to the floor.

You cannot physically attach the free end of the RF cable to the Galaxy Base Station at this time. The RF jumper cable will be connected to the Galaxy Base Station after it has been mounted inside the cabinet.

2.4 Verify Connection of Attached Power Cables

There are 2 power cables that are physically attached to the A/C and heating units in the cabinet. Verify that these power cables are plugged in to the power outlets labeled **SOCKET-1**.



Socket-1 Connections

2.5 Mounting the Galaxy Base Station to the Cabinet

The Galaxy Base Station must be physically secured inside the cabinet to prevent potential damage, and to ensure proper operation of the system. Prior to mounting the Galaxy Base Station inside the cabinet, we suggest that you take a photograph of the barcode stick on the side of the Base Station for future reference.

Follow these steps to mount the Galaxy Base Station to the cabinet:

1. Open the cabinet side door to the full open position.
2. Lift the Galaxy Base Station using the 2 handholds on the top front and rear of the unit.
3. Carefully place the Galaxy Base Station inside the cabinet, and set it on the metal platform.
4. Line up the 4 bolt holes at the bottom corners of the Galaxy Base Station with the 4 corresponding holes of the metal platform.
5. Remove the 4 sets of bolts and nuts from the plastic bag received in the contents of the Galaxy Base Station.
6. Insert the bolts through the lined up holes at the corners of the Galaxy Base Station.
7. Attach the nuts to each of the bolts, and tighten using a Philips screwdriver.



Bolt Securing Base Station to Cabinet

2.6 Attaching the RF Cable to the Base Station

The RF jumper cable that was previously fed through the bottom of the cabinet, as described, will now be connected to the Galaxy Base Station. Follow these steps to attach the RF jumper cable to the Galaxy Base Station:

1. Take the loose end of the RF jumper cable that was previously fed through the bottom of the cabinet.
2. Connect the loose end of the RF jumper cable to the RF connector on the bottom front of the Galaxy Base Station.



RF Cable Connection

2.7 Connect the Door Switch to the Base Station

The Door Switch monitors the cabinet door whether it is open or closed. Follow these steps to connect the door Switch cable to the Galaxy Base Station:

1. In the photo below the Door Switch serial cable is hanging down in the center of the cabinet.



Door Switch Serial Cable

2. Connect the Door Switch RS-232 9-pin D-Type serial connector to the port on the Galaxy Base Station labeled **T/R CONT.**



T/R Switch Connector

3. Secure the connection by tightening the thumb screws on the T/R Switch connector.

2.8 Attach the Ground Wire to the Galaxy Base Station

Follow these steps to attach the ground wire to the Galaxy Base Station:

1. Locate the black and yellow grounding wire that is attached to the power block under the cable management system towards the rear of the cabinet.
2. Attach the loose end of the ground wire to the grounding connection at the rear of the Galaxy Base Station.
3. Secure the ground wire to the Galaxy Base Station with the thumb screw that is provided.



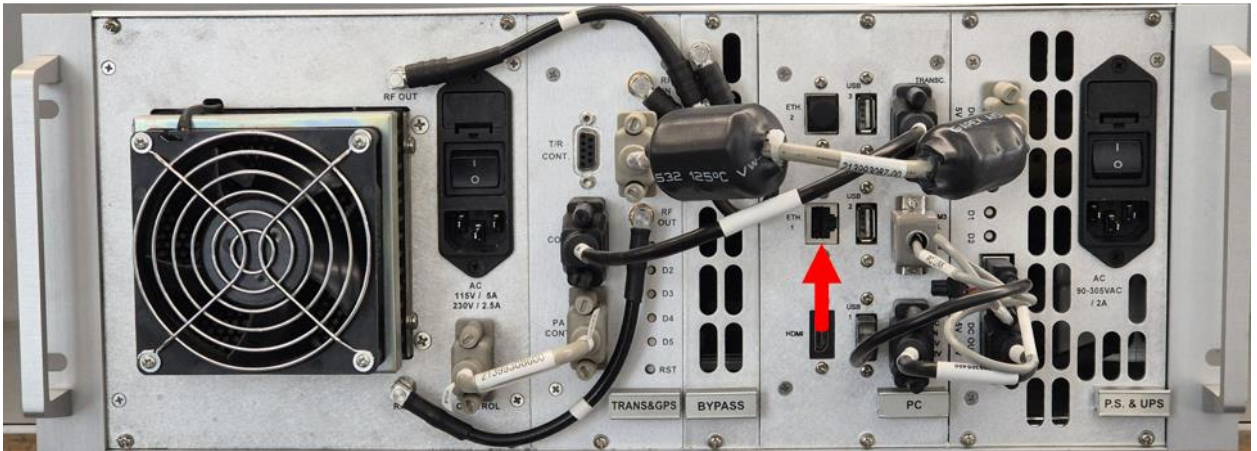
Grounding Wire

2.9 Connect the Ethernet Cable to the Galaxy Base Station

Follow these steps to attach the Ethernet cable to the Galaxy Base Station:

1. Locate the Ethernet cable that is included in the contents of the Galaxy Base Station.

2. Connect one end of the Ethernet cable to the ETH port on the Galaxy Base Station.



Ethernet Port

2.10 Connect the Power Cables to the Galaxy Base Station

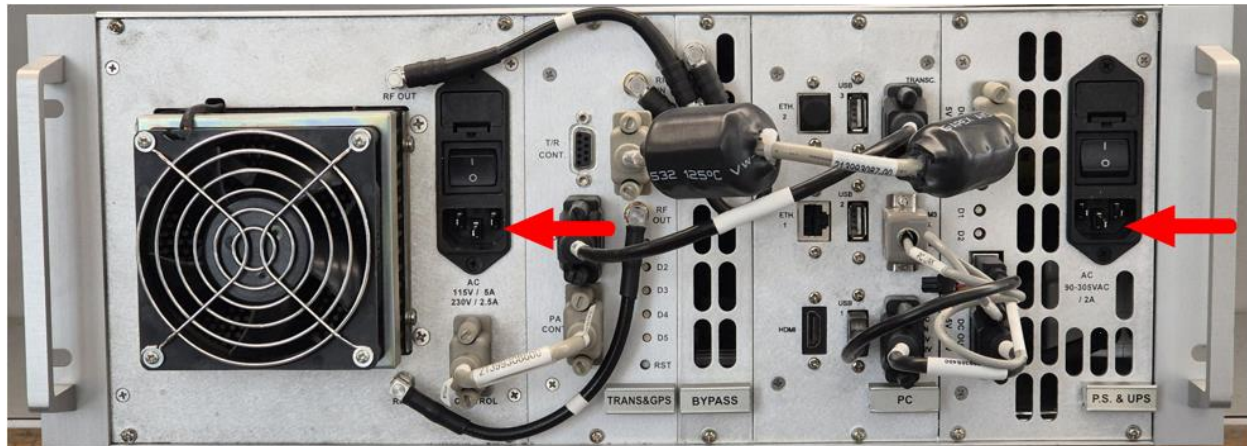
Follow these steps to connect the 2 power cables from the cabinet to the Galaxy Base Station:

1. Locate the 2 power cables that are included in the contents of the Galaxy Base Station.
2. Insert one end of both power cables to the outlets of SOCKET-2.



Connect Power Cables to Cabinet

3. Insert the loose ends of the power cables into the Galaxy Base Station AC receptacles.



Connect Power Cables to Base Station

2.11 Powering on the Galaxy Base Station

At this point the Galaxy Base Station and cabinet are ready to be powered up for the first time. Follow these steps to finish the setup, and power on the Galaxy Base Station.

Connect the Power Cable to the Cabinet

The power cable comes pre-attached at one end to the Galaxy Base Station. The loose end of the power cable must be attached to the cabinet. The power cable has 3 wires to attach to the cabinet:

- Phase – brown
- Neutral – blue
- Ground – yellow

Follow these steps to attach the 3 wires from the power cable to the cabinet:

1. Use the flat head screwdriver to loosen the screws in the power connector ports located in the cabinet.
2. Insert the brown phase wire into the brown power connector port.
3. While holding the brown phase wire in place, tighten the screw using the flat head screwdriver.
4. Insert the blue neutral wire into the blue power connector port.
5. While holding the blue neutral wire in place, tighten the screw using the flat head screwdriver.
6. Use the flat head screwdriver to loosen one of the screws on the backplane of the cabinet to the left of the power connector ports.
7. Insert the yellow ground wire, and tighten the screw to hold it in place using the flat head screwdriver.



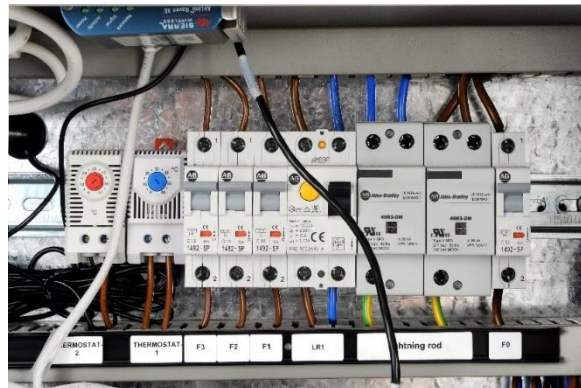
Power Connections

Verify all Connections

Before powering on the cabinet and Galaxy Base Station, verify that all connections as previously described are connected properly.

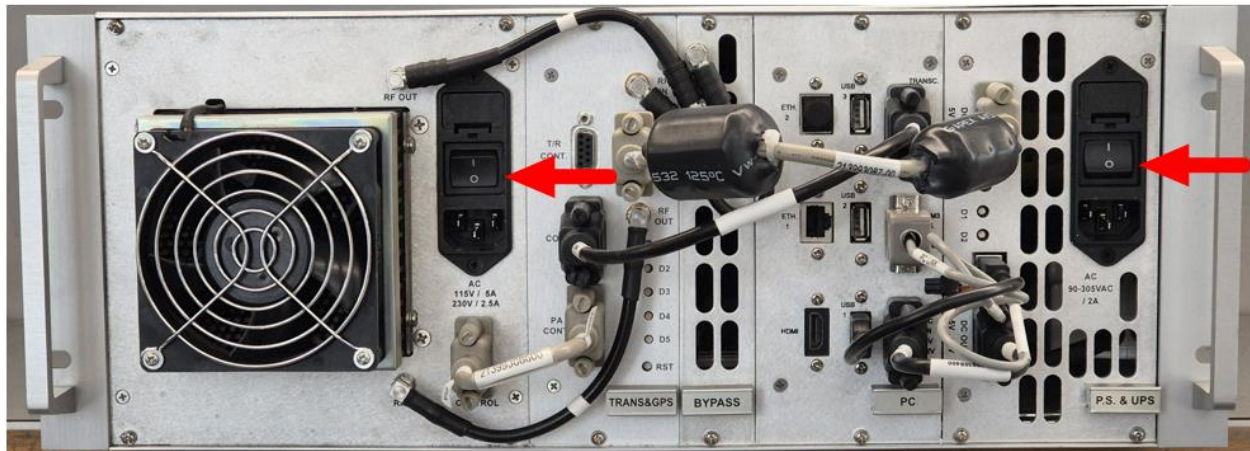
Power on the Cabinet and Base Station

Plug the external end of the power cable into the wall outlet. Make sure that all of the breaker switches are in the UP position.



Breaker Switches

Power on the Base Station by toggling the two power switches located next to the AC ports.



Base Station Power Switches

3.1 Electrical Characteristics

Parameter	Value
AC voltage	110 or 230V AC @ 50-60Hz
Power consumption @230V AC	Base Station – 0.4A Cabinet Heater (optional) – 0.25A Cabinet air-con (optional) – 1.8A

3.2 RF Radio Characteristics

Parameter		Value
Operating Frequency		450 – 470MHz (license band)
Modulation		4GFSK
Maximum Transmitter output power		20Watt (max), 20Watt ERP
Bandwidth (each channel – uplink and downlink)		6.25kHz
Data rate		4.8Kbps
Antenna Type		External , omni directional
Manufacturer, Or equivalent	P/N	Gain
Kenbotong	TQJ-450A3L	2dBi
Huber+Suhner	853266	8.5dBi
Amphenol	4220.09-445-T6	10dBi

3.3 Mechanical Characteristics

Feature	Specifications
Cabinet: Dimensions (WxHxD) Weight	105 x 90 x 30 cm 70 kg.
Base station: Dimensions (WxHxD) Weight	50 x 53 x 18 cm 18 kg.

3.4 Environmental Characteristics

Feature	Specifications
Operating Temperature	-10°C to +60°C
Storage Temperature	up to +30°C
IP rating	IP55

4. Regulations compliance

Standard	Category	Comment
Radio EMC	FCC Part 90.210 (Spectrum Mask E) FCC Part 15B	

5. Regulation Information

FCC Part 15 Regulation Class B digital device notice

The digital circuit of this device 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.

CAN ICES-3 (B)/NMB-3(B)

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

FCC interference Notice

This device complies with part 15 of the FCC rules.

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.

Industry Canada interference Notice

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.

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;*
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

FCC and Industry Canada Radiation Hazard Warning

WARNING! To comply with FCC and IC RF exposure compliance requirements, the device should be located at a distance of at least 46 cm from all persons during normal operation. The antennas used for this product must not be co-located or operated in conjunction with any other antenna or transmitter.

Le dispositif doit être placé à une distance d'au moins 46 cm à partir de toutes les personnes au cours de son fonctionnement normal. Les antennes utilisées pour ce produit ne doivent pas être situées ou exploitées conjointement avec une autre antenne ou transmetteur.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS-102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

WARNING! Changes or modifications to this equipment not expressly approved by the party responsible for compliance (ST Engineering Telematics Wireless Ltd.) could void the user's authority to operate the equipment.