IPS Wireless™ Repeater

Wireless Data Repeating Unit

PCN = xxxxxxxxxx 8-14 (E)
Original Instructions

These instructions must be read prior to installing, operating, using and maintaining this equipment.
## CONTENTS

1 INTRODUCTION AND SAFETY ......................... 3
   1.1 GENERAL ........................................... 3
   1.2 CE MARKING AND APPROVALS .................... 3
   1.3 DISCLAIMER ........................................ 3
   1.4 COPYRIGHT ........................................ 3
   1.5 DUTY CONDITIONS .................................. 3
   1.6 SAFETY ............................................. 4
   1.7 SPECIFIC MACHINE PERFORMANCE ............... 4
   1.8 SPECIFICATIONS ................................... 4

2 TRANSPORT AND STORAGE .............................. 5
   2.1 CONSIGNMENT RECEIPT AND UNPACKING ........ 5
   2.2 HANDLING .......................................... 5
   2.3 STORAGE ............................................ 5
   2.4 RECYCLING AND END OF PRODUCT LIFE .......... 6
   2.5 DISPOSAL INSTRUCTIONS ......................... 6

3 DESCRIPTION .......................................... 6
   3.1 OPTIONS AND MODEL NUMBERS .................... 6

4 MAINTENANCE .......................................... 6
   4.1 TOOLS REQUIRED .................................. 6
   4.2 TURNING UNIT ON/OFF ............................ 6
   4.3 BATTERY REPLACEMENT ............................ 7
   4.4 PERIODIC MAINTENANCE ........................... 7

5 CUSTOM CONFIGURATION PROGRAMMING ............. 7

6 INSTALLATION AND OPERATION ....................... 7
   6.1 TOOLS REQUIRED .................................. 8
   6.2 PRELIMINARY OPERATIONAL CHECK .............. 8
   6.4 INSTALLATION PREPARATION ..................... 8
   6.5 MOUNTING .......................................... 8
   6.6 CONNECTING WIRING AND POWER-UP ............ 9
   6.7 CONFIRMING DATA RECEPTION ................... 9

7 PARTS LIST AND DRAWINGS ........................... 9
   7.1 SPARE PARTS LIST ................................. 9
   7.2 DRAWINGS .......................................... 11

8 TROUBLESHOOTING .................................... 12
   8.1 LOSS OF COMMUNICATIONS ....................... 12
   8.2 INACCURATE OR MISSING DATA ................... 13

9 CERTIFICATION ....................................... 15
1 INTRODUCTION AND SAFETY

1.1 General

These instructions must always be kept close to the product's operating location or directly with the product.

Flowserve products are designed, developed and manufactured with state-of-the-art technologies in modern facilities. The unit is produced with great care and commitment to continuous quality control, utilizing sophisticated quality techniques, and safety requirements.

Flowserve is committed to continuous quality improvement and being at your service for any further information about the product in its installation and operation or about its support products, repair and diagnostic services.

These instructions are intended to facilitate familiarization with the product and its permitted use. Operating the product in compliance with these instructions is important to help ensure reliability in service and avoid risks. The instructions may not take into account local regulations; ensure such regulations are observed by all, including those installing the product. Always coordinate repair activity with operations personnel, and follow all plant safety requirements and applicable safety and health laws/regulations.

These instructions must be read prior to installing, operating, using and maintaining the equipment in any region worldwide. The equipment must not be put into service until all the conditions relating to safety, noted in the instructions, have been met. Failure to follow and apply the present user instructions is considered to be misuse. Personal injury, product damage, delay or failure caused by misuse are not covered by the Flowserve warranty.

1.2 CE Marking and Approvals

It is a legal requirement that machinery and equipment put into service within certain regions of the world shall conform with the applicable CE Marking Directives covering Machinery and, where applicable, Low Voltage Equipment, Electromagnetic Compatibility (EMC), Pressure Equipment Directive (PED) and Equipment for Potentially Explosive Atmospheres (ATEX).

Where applicable, the Directives and any additional Approvals, cover important safety aspects relating to machinery and equipment and the satisfactory provision of technical documents and safety instructions. Where applicable this document incorporates information relevant to these Directives and Approvals.

To confirm the Approvals applying and if the product is CE marked, check the serial number plate markings and the Certification. (See section 9 CERTIFICATION).

1.3 Disclaimer

Information in these User Instructions is believed to be complete and reliable. However, in spite of all of the efforts of Flowserve Corporation to provide comprehensive instructions, good engineering and safety practice should always be used.

Flowserve manufactures products to exacting International Quality Management System Standards as certified and audited by external Quality Assurance organizations. Genuine parts and accessories have been designed, tested and incorporated into the products to help ensure their continued product quality and performance in use. As Flowserve cannot test parts and accessories sourced from other vendors the incorrect incorporation of such parts and accessories may adversely affect the performance and safety features of the products. The failure to properly select, install or use authorized Flowserve parts and accessories is considered to be misuse. Damage or failure caused by misuse is not covered by the Flowserve warranty.

In addition, any modification of Flowserve products or removal of original components may impair the safety of these products in their use.

1.4 Copyright

All rights reserved. No part of these instructions may be reproduced, stored in a retrieval system or transmitted in any form or by any means without prior permission of Flowserve.

1.5 Duty Conditions

This product has been selected to meet the specifications of your purchaser order. The acknowledgement of these conditions has been sent separately to the Purchaser. A copy should be kept with these instructions.

The product must not be operated beyond the parameters specified for the application. If there is any doubt as to the suitability of the product for the application intended, contact Flowserve for advice.
If the conditions of service on your purchase order are going to be changed (for example liquid pumped temperature or duty) it is requested that the user seeks the written agreement of Flowserve before start up.

1.6 Safety

1.6.1 Summary of safety markings
These User Instructions contain specific safety markings where non-observance of an instruction would cause hazards. The specific safety markings are:

⚠️ **DANGER** This symbol indicates electrical safety instructions where non-compliance will involve a high risk to personal safety or the loss of life.

⚠️ This symbol indicates safety instructions where non-compliance would affect personal safety and could result in loss of life. This may include specific requirements or instructions relating to the use of the product in potentially hazardous areas.

⚠️ This symbol indicates “hazardous and toxic fluid” safety instructions where non-compliance would affect personal safety and could result in loss of life.

⚠️ CAUTION This symbol indicates safety instructions where non-compliance will involve some risk to safe operation and personal safety and would damage the equipment or property.

⚠️ This symbol indicates explosive atmosphere zone marking according to ATEX. It is used in safety instructions where non-compliance in the hazardous area would cause the risk of an explosion.

⚠️ This product must not be operated beyond the parameters specified for the application. If there is any doubt as to the suitability of the product for the application intended, contact the manufacturer for advice.

⚠️ **WARNING EXPLOSION HAZARD:** DO NOT OPEN FRONT COVER OF REPEATER ENCLOSURE WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT.

⚠️ **WARNING STATIC HAZARD:** WIPE ONLY WITH A DAMP CLOTH DUE TO ELECTROSTATIC DISCHARGE HAZARD.

1.6.2 Personnel qualification and training
All personnel involved in the operation, installation, inspection and maintenance of the unit must be qualified to carry out the work involved. If the personnel in question do not already possess the necessary knowledge and skill, appropriate training and instruction must be provided. If required the operator may commission the manufacturer/supplier to provide applicable training.

Always coordinate repair activity with operations and health and safety personnel, and follow all plant safety requirements and applicable safety and health laws and regulations.

1.6.3 Safety action

**This is a summary of conditions and actions to help prevent injury to personnel and damage to the environment and to equipment. For products used in potentially explosive atmospheres section 1.6.4 also applies.**

⚠️ **DANGER** NEVER DO MAINTENANCE WORK WHEN THE UNIT IS CONNECTED TO POWER (Lock out.)

⚠️ HANDLING COMPONENTS
Many precision parts have sharp corners and the wearing of appropriate safety gloves and equipment is required when handling these components. To lift heavy pieces above 25 kg (55 lb.) use a crane appropriate for the mass and in accordance with current local regulations.

1.6.4 Products used in potentially explosive atmospheres

⚠️ EX Measures are required to:
- Avoid excess temperature
- Prevent buildup of explosive mixtures
- Prevent the generation of sparks

1.7 Specific machine performance

For performance parameters see section Error! Reference source not found.. Where performance data has been supplied separately to the purchaser these should be obtained and retained with these User Instructions if required.

1.8 Specifications

1.8.1 Repeater Specifications

**Operating frequency:** 868 MHz or 900 MHz
Transmission range: 2.4 km (1.5 miles) for 900 MHz
1.2 km (0.75 miles) for 868 MHz

Operating temperature: -20°C (-4°F) to +40°C (104°F)

Humidity: 0-95% noncondensing

Power requirement: 100-240VAC, 12VDC (optional) or solar power. All options provided with battery backup.

Enclosure: Fiberglass NEMA 4X

Enclosure Size: 10.2 cm x 35.6 cm x 40.6 cm (4in x 14in x 16in)

Weight (Without battery): 10.4 kg (23 lbs)

Mounting: Unistrut

2 TRANSPORT AND STORAGE

⚠️ Make sure that hazardous substances are disposed of safely and that the correct personal protective equipment is used. The safety specifications must be in accordance with the current local regulations at all times.

2.1 Consignment receipt and unpacking

Immediately after receipt of the equipment it must be checked against the delivery/shipping documents for its completeness and that there has been no damage in transportation. Any shortage and/or damage must be reported immediately to Flowserve and must be received in writing within ten days of receipt of the equipment. Later claims cannot be accepted.

Check any crate, boxes or wrappings for any accessories or spare parts that may be packed separately with the equipment or attached to side walls of the box or equipment.

Each product has a unique serial number. Check that this number corresponds with that advised and always quote this number in correspondence as well as when ordering spare parts or further accessories.

2.1.1 Unpacking

Carefully open package received from factory and remove protective wrapping from Repeater and accessories. Inspect all hardware for damage. Report any damage to shipping carrier immediately.

Ensure you have received the correct accessories for your application. Cross-check hardware received versus packing slip and purchase order.

Record unit serial numbers for future reference.

2.1.2 Electrostatic Discharge (ESD) Handling Procedure

⚠️ The Repeater contains sensitive electronic components that may be damaged by static electricity present in work environments. The following precautions are recommended to reduce the risk of damage due to electrostatic discharge:

- Only wipe exterior of unit with a damp cloth

2.2 Handling

Boxes, crates, pallets or cartons may be unloaded using fork lift vehicles or slings dependent on their size and construction.

2.3 Storage

⚠️ CAUTION Store the equipment in a clean, dry location. The Repeater unit should be powered-down prior to storage (see section 4 MAINTENANCE for how to power down unit) to preserve battery life.

2.3.1 Storage and packaging

All Repeater units must be carefully packaged for transport. Prior to transport or storage, each unit should have the power source disconnected, the battery disconnected and removed from the enclosure (the battery will need to be packaged separately). Each unit should be boxed individually with protective packaging (foam, bubble wrap, etc.) in the box surrounding the unit.

The unit should preferably be stored indoors in a clean, dry location.

After unpacking, protection will be the responsibility of the user.
When removing a unit from storage, follow the installation procedure in this document.

2.4 Recycling and end of product life
At the end of the service life of the product or its parts, the relevant materials and parts should be recycled or disposed of using an environmentally acceptable method and in accordance with local regulations. If the product contains substances that are harmful to the environment, these should be removed and disposed of in accordance with current local regulations.

2.5 Disposal Instructions
At the end of the product’s life, do not dispose of any electronic component or instrument in the domestic waste. Disposal should be done in accordance with applicable regulations, which vary from state to state and country to country.

3 DESCRIPTION
The ELD-FA-525-XX Repeater (where XX designates the charging power source) model is a wireless communications unit designed to repeat any transmitted IPS Wireless signals across a wide range.

The repeater is either powered by a solar panel or AC power and includes a built-in automatic battery back-up system designed for at least 10 days of continuous power. It can receive and re-transmit transmitted signals from any IPS Wireless device.

The repeater has a built-in omni-directional wireless antenna, allowing for reliable signal transmission. Data re-transmittal occurs as soon as a wireless transmission is received. The repeater also periodically transmits a status update to the appropriately configured IPS Wireless Receiver. Data is received and transmitted on either the 900MHz or 868MHz spread spectrum frequencies (frequency is pre-configured from the factory). The repeater has a maximum data transmittal range of 2.4km (1.5 miles) for 900 MHz or 1.2 km (0.75 miles) for 868 MHz under ideal conditions, but its effective transmission range can be extended using a network of additional repeaters.

Each repeater is a part of a larger wireless monitoring network. The repeater should come from the factory ready to use for receiving and re-transmitting wireless data signals from any IPS Wireless device.

3.1 Options and Model Numbers
The repeater is available in either an AC powered or solar powered configuration. There are no additional standard options available as each unit includes a battery, required fuses and the solar panel (if solar powered).

The solar powered repeater can be ordered with either a 10W (standard) or 20W (if specified) solar panel.

The model number of the unit is constructed as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 900MHz AC powered unit with battery backup.</td>
<td>AC</td>
</tr>
<tr>
<td>SP 900MHz Solar powered unit with battery backup.</td>
<td>SP</td>
</tr>
<tr>
<td>AC-868 868MHz AC powered unit with battery backup.</td>
<td>AC-868</td>
</tr>
<tr>
<td>SP-868 868MHz solar powered unit with battery backup.</td>
<td>SP-868</td>
</tr>
</tbody>
</table>

4 MAINTENANCE

4.1 Tools Required
The following tools are required to perform maintenance on the repeater:

- Multimeter
- Precision flat head screwdriver
- Needle nose pliers
- Clean cloth

4.2 Turning Unit On/Off
To power off repeater disconnect the fuse for the battery cables and the wires coming from the DC power supply or solar panel. This will stop wireless data reception and transmission.
To power up the repeater again, simply reconnect the battery and DC power supply or solar panel fuses inside the enclosure. This will activate data reception and transmission.

4.3 Battery Replacement

WARNING EXPLOSION HAZARD: DO NOT OPEN FRONT COVER OF REPEATER ENCLOSURE WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT.

Note: The substitution of components may impair intrinsic safety.

Power is provided by a sealed lead acid 12V battery located inside the repeater enclosure. The battery is then charged by either a solar panel or an DC power supply (dependent on specific unit). Battery voltage should normally be between 12.3 and 12.8 VDC. If the battery level is lower than 11V, the battery will need to be replaced. The battery voltage can be read using a voltmeter.

Perform the following steps to replace the battery:

1. Ensure an explosive atmosphere is not present, then open the cover of the repeater enclosure.
2. Power down unit by removing the battery and DC power supply/solar panel fuses inside the enclosure.
3. Disconnect the wires connecting to the battery terminals.
4. Remove old battery and place new battery inside enclosure.
5. Connect battery cables to terminals of new battery.
6. Reconnect battery and DC power supply/solar panel fuses.
7. Ensure repeater powers up, then close enclosure cover.
8. Dispose of old battery in accordance with local laws and regulations.

4.4 Periodic Maintenance

The only field maintenance required for the repeater is checking the battery and solar panel (if applicable). Check the repeater battery level every 6 months for the first year of operation, then check the battery level every year. If the battery level is above 11V, it is acceptable. Lower than that means the battery needs to be replaced.

The power source for the repeater should be checked to ensure adequate supply. Use a multimeter to check the voltage coming out of the power source (refer to the unit wiring diagram for the appropriate terminals at which to measure voltage). Expected voltages are as follows:

- DC Power supply: 12.5V or higher
- Solar panel: 17V or higher (dependent on amount of sunlight available).

The solar panel (if included with the repeater) should be cleaned and inspected for damage at least once a year. Ensure the solar panel is not covered with any substance (dirt, paint, etc) and replace damaged solar panels immediately.

5 CUSTOM CONFIGURATION PROGRAMMING

No custom configuration programming can be performed for the repeater.

6 INSTALLATION AND OPERATION

WARNING EXPLOSION HAZARD: DO NOT OPEN ENCLOSURE WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT. TURN OFF UNIT BY OPENING ALL FUSES PRIOR TO MAKING TERMINATIONS.

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2 RATING. DO NOT DISCONNECT BATTERY OR EQUIPMENT UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS.
6.1 Tools Required
- Multimeter
- Precision flat head screwdriver
- Needle nose pliers
- Tools required to install the various mounting configurations are conditional based on the type of mounting and location

6.2 Preliminary Operational Check
After unpacking and before installation, perform the following operational check on the unit:
1. Ensure all fuses are disconnected. This keeps the unit powered down during the installation process.
2. Place repeater in a vertical position with a clear line of sight to and close to (<10ft) the receiver.
3. Ensure battery is connected to battery terminal wires, then connect all fuses to power up the unit.
4. Ensure the receiver is receiving status data from the unit.
5. Disconnect all fuses to power down the unit. Disconnect and remove battery.

In case of issues with receiving data at the receiver, refer to section 8 Troubleshooting.

6.3 Installation Preparation
Prior to mounting the repeater in the field, a penetration will need to be made in the enclosure to accommodate wiring for power. This penetration should be made in accordance with local electrical codes and site standards. It is recommended that the penetration be drilled in the bottom of the enclosure to minimize moisture and/or dust entry to the enclosure.

The size of the penetration is user-dependent, it should be large enough to accommodate all the cables to be run. Either a cable grip connector or conduit fitting should be installed in the penetration to allow the power wiring to enter the enclosure.

While penetrating the enclosure and installing the fittings, take care not to damage the internal wiring and boards of the repeater.

6.4 Mounting
Each unit should be clear of physical obstructions to the receiver (or additional repeaters) and transmitting units in order to maintain consistent communications. If the repeater is solar powered, a location with plenty of sunlight (at least 6 hours per day) and an equatorial exposure should be considered.

The repeater should be mounted at the location determined during the initial site survey. The higher it is mounted (while still keeping it accessible) the more area it will be able to cover.

The repeater is designed to be mounted in a vertical position and should only be mounted in a horizontal position with approval from the factory.

Ensure the repeater is not subjected to excessive vibration unless a routine maintenance program includes verification of associated connections.

Mount the repeater before connecting any of the power wiring.

The repeater is designed to be bolted to 2 pieces of horizontal unistrut. First, both these pieces of unistrut should be mounted horizontally to a support structure (poles, pipe, hand-rail, wall, etc) using the necessary hardware (U-bolts, studs, bolts, etc). Then, use the mounting holes on the back of the repeater enclosure to bolt the unit to the pieces of unistrut.

Next, install the solar panel (if applicable) facing the equator with a tilt of location latitude +15 degrees (eg. 45 degrees for Houston, TX) from horizontal.
6.5 Connecting Wiring and Power-Up
Wiring for the solar panel (included with solar panel) or AC power should be run into the repeater through a conduit and using a cable grip connector on the enclosure penetration.

Terminate these wires according to the local electrical wiring code (such as NEC/CEC) and site standards, then connect them to the appropriate terminal blocks in accordance with the included wiring diagram.

Next, install the battery inside the enclosure and connect the Battery+ and Battery- wires to the terminals. Secure the battery just below the inner enclosure using the provided black battery strap.

Close all fuses to power up the unit.

6.6 Confirming Data Reception
After the repeater has been installed, confirm status checks from the unit are being successfully received at the receiver. This process could be one of the following depending on the data output method of your receiver:
- Read data through DCS system
- Read data through Hosted Technology Advantage Portal
- Read data through Embedded Technology Advantage Portal
- Read data through FW software utility

Refer to the appropriate product user instructions for how to read live data coming into the receiver to confirm successful data reception.

7 PARTS LIST AND DRAWINGS

7.1 Spare Parts List
Available spare parts for the repeater are shown below. No spare parts are needed during start-up; recommended quantities of 2-year operational spares are listed below.
<table>
<thead>
<tr>
<th>Part Number</th>
<th>Part Description</th>
<th>Recommended Quantity for 2-Year Operational Spares</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1-0005</td>
<td>Replacement battery, 12V, 18Ah</td>
<td>1</td>
</tr>
<tr>
<td>G2-0002</td>
<td>Replacement solar panel, 12V, 10W</td>
<td>0</td>
</tr>
<tr>
<td>G2-0010</td>
<td>Pole mounting bracket for solar panel</td>
<td>0</td>
</tr>
<tr>
<td>H0-0129</td>
<td>Replacement Fuse, 2.5A, 250V, Slo-Blo 5x20mm. Littlefuse PN: 21802.5</td>
<td>2</td>
</tr>
<tr>
<td>H0-0122</td>
<td>Replacement Fuse, 1/2A, 250V, Fast-acting. 5x20mm. Littlefuse PN: 217.500XP</td>
<td>2</td>
</tr>
</tbody>
</table>

*Table 1: Spare Parts for repeater*
7.2 Drawings

Figure 6: Sample wiring diagram for repeater
8 TROUBLESHOOTING

WARNING EXPLOSION HAZARD: DO NOT OPEN ENCLOSURE WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT. TURN OFF UNIT BY OPENING ALL FUSES PRIOR TO REPLACING BATTERY.

8.1 Loss of Communications
Loss of communications with the repeater may occur for several reasons:
- Unit not powered up
- Unit out of range of receiver
- Receiver not configured correctly

See solutions below to each of the possible causes:

8.1.1 Unit Not Powered Up
1. Confirm that unit is powered up and receiving/transmitting data. There are 4 LED lights on the repeater main board:
   a. DECODE: indicates when a message is received from a transmitting unit (usually flickers often)
   b. XMIT: indicates when the repeater is transmitting data
   c. LO BAT: not used, remains off.
   d. PWR: turned on when power is applied to the repeater.

   ![Figure 7: Repeater status lights](image)

   If unit is powered up and receiving/transmitting data, proceed to next possible solution. Otherwise, proceed to step 2.

2. Verify battery and DC power supply/solar panel fuses are connected and not blown (see section 4 MAINTENANCE for how to turn on unit).
3. Use a voltmeter to read the battery voltage across the battery terminals. If the voltage is below 11V, replace the battery according to instructions in section 4 MAINTENANCE.

4. Lastly, confirm the power source being used to charge the battery. This procedure will vary depending on if your unit has a solar panel or AC power input.
   a. AC Power: confirm the voltage coming out of the DC power supply is close to and above 12VDC. If there is no output from the power supply, confirm that AC power is connected to the power supply. If the AC power connection is working, the power supply will need to be replaced. Contact the Flowserve factory for assistance.
   b. Solar Panel: confirm the power coming out of the power regulator is 12VDC or higher. If there is no output from the regulator, confirm that the solar panel is connected to the input and functional. If the solar panel supply is working, the voltage regulator will need to be replaced. Contact the Flowserve factory for assistance.

![Figure 8: Measuring battery level on repeater using a voltmeter](image)
8.1.2 Unit Out of Range of Receiver
If communications from the repeater to the receiver are still not successful, physically move the repeater next to and with a clear line of sight to the receiver.

If data is being read from this location, then ensure that the repeater network is appropriately located and functional.

8.1.3 Receiver Not Configured Correctly
Check receiver configuration to ensure it is set up to receive data from this particular IPS Wireless system (refer to receiver instruction and operations manual).

If none of the above solutions are successful in getting data reception, contact the factory for additional support.

8.2 Inaccurate or Missing Data
If the data coming from transmitting units to the repeater is either inaccurate or missing, this could have several causes:

- Unit not powered up
- Unit out of range of transmitting units
- Transmitting units configuration incorrect
- Receiver not configured correctly

8.2.1 Unit not powered up
1. Confirm that unit is powered up and receiving/transmitting data. There are 4 LED lights on the repeater main board:
   a. **DECODE**: indicates when a message is received from a transmitting unit (usually flickers often)
   b. **XMIT**: indicates when the repeater is transmitting data
   c. **LO BAT**: not used, remains off.
   d. **PWR**: turned on when power is applied to the repeater.

If unit is powered up and receiving/transmitting data, proceed to next possible solution. Otherwise, proceed to step 2.

2. Verify battery and DC power supply/solar panel fuses are connected and not blown (see section 4 MAINTENANCE for how to turn on unit).

3. Use a voltmeter to read the battery voltage across the battery terminals. If the voltage is below 11V, replace the battery according to instructions in section 4 MAINTENANCE.

4. Lastly, confirm the power source being used to charge the battery. This procedure will vary depending on if your unit has a solar panel or AC power input.

   a. **AC Power**: confirm the voltage coming out of the DC power supply is close to and above 12VDC. If there is no output from the power supply, confirm that AC power is connected to the power supply. If the AC power connection is working, the power supply will need to be replaced. Contact the Flowserve factory for assistance.

   b. **Solar Panel**: confirm the power coming out of the power regulator is 12VDC or higher. If there is no output from the regulator, confirm that the solar panel is connected to the input and functional. If the solar panel supply is working, the voltage regulator will need to be replaced.
Contact the Flowserv factory for assistance.

If communications from certain transmitting units to the receiver are not successful, physically move some of these transmitting units next to and with a clear line of sight to the receiver.

If data is being read from this location, then ensure that the repeater network is appropriately located and functional. Confirm location of receiver enclosure is appropriate to receive data from transmitting units and repeater network.

8.2.2 Unit out of range of transmitting units
If communications from the transmitting units to repeater are still not successful, physically move the repeater next to and with a clear line of sight to the transmitting units.

If data is being read from this location, then ensure that the repeater network is appropriately located and functional.

8.2.3 Transmitting units configuration incorrect
If the data received from certain transmitting units is not accurate or missing, check those units’ configuration (refer to transmitting unit user instructions).

8.2.4 Receiver Not Configured Correctly
Check receiver configuration to ensure it is set up to receive data from this particular IPS Wireless system (refer to receiver instruction and operations manual).

If none of the above solutions are successful in getting data reception, contact the factory for additional support.
9 CERTIFICATION
Certificates, determined from the contract requirements are provided with these instructions where applicable. Examples are certificates for CE marking and ATEX marking etc. If required, copies of other certificates sent separately to the Purchaser should be obtained from Purchaser for retention with these User Instructions.

The following certifications are applicable for the repeater unit.

Flowserve
TX, USA     Model: ELD-FA-525-SP/AC Repeater

Ex nA IIC T6
Ex II 3 G D
Cl I, Div 2, Grp A,B,C,D; Cl II, Div2, Grp E,F,G, T6
Cl I, Zone 2, A/Ex nA IIC T6     Type 4X
-20°C ≤ Ta ≤ +40°C

Electrical Ratings: 115/230 Vac, 1.3/0.7A, 50-60 Hz
CAUTIONS: OPEN CIRCUIT BEFORE REMOVING COVER.
KEEP COVER TIGHT WHILE CIRCUITS ARE LIVE.
WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
DO NOT DISCONNECT BATTERY OR EQUIPMENT UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS.
USE ONLY POWER SONIC BATTERY PART NUMBER PS-12180.
10 DECLARATION OF CONFORMITY (TYPICAL)

We,  
Flowserve Corporation  
10920 West Sam Houston Parkway North  
Suite 950  
Houston, Texas 77064  
USA  

Declare in sole responsibility that the equipment:

**ELD-102-X Single Point Transmitters**  
**SELD-103-X Smart Point Transmitters**  
**ELD-FA-403-Receiver, AO/DO and Serial Modbus**  
**S-EGI-NB-4/20-AC/SP, Smart RTU**  
**ELD-FA-525-AC/SP, Intelligent Repeater**

Including all options and versions of the base model numbers to which this Declaration refers are in compliance with the Directives and Norms specified herein.

10.1  **EMC Directive 2004/108/EC**

*Basis for compliance:*

The equipment has been assessed using the following standards and is supported by the following technical documents:

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 61326-1</td>
<td>2006</td>
<td>Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General Requirements</td>
</tr>
<tr>
<td>EN 55011</td>
<td>2009</td>
<td>Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement Class A, Group 1</td>
</tr>
<tr>
<td>EN 61000-3-2</td>
<td></td>
<td>Series, Electromagnetic compatibility (EMC).</td>
</tr>
<tr>
<td>EN 61000-3-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Under these environmental and use conditions:  
Industrial Applications, Pollution Degree 2

Technical File Reference Number:  701-5000

Installation and use of this equipment shall comply with the relevant installation and use instructions.

10.2  **Low Voltage Directive 2006/95/EC**

*Basis for compliance:*

The Single point transmitters are fully-enclosed, intrinsically-safe apparatus and are considered to meet the requirements as set forth in the standard below without further consideration:

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 61010-1</td>
<td>2002</td>
<td>Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1 General requirements</td>
</tr>
</tbody>
</table>
Under these environmental and use conditions: Industrial Applications, Pollution Degree 2

**Declaration of Conformity**

10.3 ATEX Directive 94/9/EC + all amendments

**Basis for compliance:**
The equipment has been assessed using the following standards and is supported by the following technical documents:

- **EN 60079-0** 2006 Electrical apparatus for explosive gas atmospheres Part 0
  (+ corr. 1) General requirements
- **EN 60079-11** 2007 Explosive atmospheres Part 11 Equip protection by intrinsic safety i
- **EN 60079-26** 2007 Explosive Atmospheres- Part 26: Equipment with equipment protection level (ELP) Ga
- **EN 61241-0** 2006 Elec App for use in presence of combustible dust Part 0 Gen requirements
- **EN 61241-1** 2004 Elec app for use in presence of combustible dust Part1
  (+ Corr. 1 & 2) Protection by enclosures tD
- **EN 61241-11** 2005 Elec app for use in presence of combustible dust Part11
  Protection by intrinsic safety iD

Certificate Number: Sira 10ATEX2013
Notified Body: Sira Certification Services, 0518
Report Number: R20441A
Markings:

**Flowserve**
TX, USA  Model: ELD-102 and SELD-103

IECEx SIR.10.0066 CSA 2010 2273150
Sira 10ATEX2013 CI I, Zn 0 A/Ex ia IIC T6
Ex la IIC T6 Ga CI II, Div 1, Grps E, F, G;
Ex laa IIIC T85°C Da CI III, Div 1, and provides L.S. circuits with Entity Parameters per Install Manual 701-2000 and 701-3000
Tem. Code T6
-20°C ≤ Ta ≤ +60°C

**WARNING:** DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT.

**WARNING:** WIPE ONLY WITH DAMP CLOTH DUE TO ELECTROSTATIC DISCHARGE HAZARD.

ELD-102-X only:
WARNING – USE ONLY S1-1047 BATTERY PACK.

SELD-103-X only:
WARNING – USE ONLY S1-1043 BATTERY PACK.

Notified Body: CSA International
Report Number: 1005105
Markings:
The technical documentation required to demonstrate that the product meets the requirements of the Directives has been compiled by the signatory below and is available for inspection by the relevant enforcement authorities.

Signed: ___________________________________________  Date: ______________________
Authorized Person, Rick Lawson
General Manager
Your Flowserve factory contacts:
Flowserve Corporation
10920 W Sam Houston Parkway N, Suite 950
Houston, TX  77064 USA
Phone:  +1 832 375 0807

Your Flowserve sales contact:
Go To:  www.flowserve.com
Equipment Monitoring and Control Products

FLOWSERVE REGIONAL SALES OFFICES:

USA and Canada
Flowserve Corporation
Pump
5215 North O'Connor Blvd.,
Suite 2300
Irving, Texas 75039-5421 USA
Telephone:  +1 972 443 6500

Europe, Middle East, Africa
Flowserve Corporation
Parallelweg 13
4878 AH Etten-leur
The Netherlands
Telephone: +31 76 502 8100

Latin America and Caribbean
Flowserve Corporation
Martin Rodriguez 4460
B1644CGN-Victoria-San Fernando
Buenos Aires, Argentina
Telephone: +54 11 4006 8700
Telefax: +54 11 4714 1610

Asia Pacific
Flowserve Pte. Ltd
10 Tuas Loop
Singapore 637345
Telephone:  + 65 6771 1600
Telefax:  + 65 6862 2329