Recovering GWR Sensor Electronics

Instruction Sheet for SmartLine Transmitters:
SLG700 Level Transmitters

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Supersedes: 12/1/2016

Please take appropriate steps to avoid ESD damage when handling transmitter electronics assemblies.

All local electrical codes, and relevant service and repair regulations must be observed.

When installed as explosion-proof or flame-proof in a hazardous location, keep covers tight while the transmitter is energized. Disconnect power to the transmitter in the non-hazardous area prior to removing end caps for service. When installed as non-incendive or non-sparking equipment in a hazardous location, disconnect power to the transmitter in the non-hazardous area, or determine that the location is non-hazardous before disconnecting or connecting the transmitter wires.

Tools required

<table>
<thead>
<tr>
<th>Use this tool</th>
<th>For this item</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF 2.0 mm Allen key</td>
<td>M4 set screw for Separating Sensor Electronics Housing from Process Connector and Communications Housing</td>
</tr>
<tr>
<td>AF 1.5 mm Allen key</td>
<td>M3 set screw for end cap removal</td>
</tr>
<tr>
<td>Parker Super O-ring Lubricant</td>
<td>Transmitter re-assembly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor Firmware Version</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000000/1.000100</td>
<td>COMM PCBA and ADVANCED DISPLAY must be replaced or have firmware upgraded.</td>
</tr>
<tr>
<td></td>
<td>TERM PCBA must be replaced if the version number in the date code is not ‘C’. An example of a correct date code label shown on the bottom of the terminal PCBA assembly, as shown in Figure 1.</td>
</tr>
<tr>
<td>1.010000, 1.020000 and later versions</td>
<td>Sensor electronics is replaceable</td>
</tr>
</tbody>
</table>

Step – 2: Remove power from transmitter.

Step – 3: If a new terminal assembly is also being installed follow instructions 34-ST-33-64. The relevant part numbers are listed in Table 2.

Table 2: Terminal assembly versions.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWR Level Terminator Module w/Lightning Protection Kit for HART Modules</td>
<td>50095191-502</td>
</tr>
<tr>
<td>GWR Level Terminator Module w/Lightning Protection Kit for FF Modules</td>
<td>50095191-510</td>
</tr>
<tr>
<td>GWR Level Terminator Module w/o Lightning Protection Kit for HART Modules,</td>
<td>50095191-501</td>
</tr>
<tr>
<td>GWR Level Terminator Module w/o Lightning Protection Kit for FF Modules</td>
<td>50095191-509</td>
</tr>
</tbody>
</table>

Step – 4: If a new Communications Module is also being installed follow instructions #34-ST-33-69.
Step – 5: Separate the sensor housing from the process connector by first loosening the 4 mm setscrews (3) and gently separating the sensor electronics housing. Do not discard setscrews or o-rings.

![Diagram of sensor components](image)

**Figure 2: Location of Sensor Electronics Housing and attachment set screws**

Step – 6: Loosen the end cap locking screw and unscrew the end cap on the Sensor Electronics side of the Transmitter Communications Housing
Figure 3. Communications Housing Assembly.

**Step – 7:** If equipped with a Display Module, carefully depress the two tabs on the sides of the Display Module, and pull it off. Ensure the interface connector (8-pin header) is not lost. **Do not discard the Display Module, or connector.**

**Step – 8:** Loosen the two retaining screws, and carefully pull the Communication Module from the Sensor Electronics compartment (do not discard the retaining set screws).

**Step – 9:** Carefully remove the sensor cable from the "P2" connector on the Communication Module at the bottom of the Communication Module.

**Step – 10:** Carefully unscrew the Sensor Electronics Housing from the Communications Housing.

**Step - 11:** Carefully transfer orange o-ring from old sensor electronics housing to new housing. Clean off o-ring and apply o-ring lubricant before re-installing.

**Step – 12:** Thread the ribbon cable of new Sensor Electronics Housing into Communications Housing.

**Step – 13:** Screw Sensor Electronics Housing into Communications Housing taking care not to damage the ribbon cable. The ribbon cable connector must be rotated with the sensor housing to ensure that it does not twist more than ½ turn during the process. Extreme care must be taken to avoid pinching the cable during rotation.

Screw only as far as indicated in Figure 4.
There should be 2.5 mm clearance between the Communications housing and the top fin of the Sensor electronics housing. The o-ring should not be visible. Over-tightening will irreparably damage the ribbon cable.

**Figure 4. Sensor electronics housing assembly with communications housing.**

**WARNING:** Do not tightly screw the Sensor Housing into the Electronics Housing. The connection should be to the point where the o-ring is not visible. Ensure the O-ring is not pinched

**Step-14:** Tighten set screw as shown in Figure 4. The set-screw should not protrude from the Communications electronics housing. Protrusion indicates that the sensor housing is screwed an incorrect amount into the communications housing.

**Step - 15:** Carefully align and connect the sensor ribbon cable to the connector “J4” at the bottom of the Communication Module. Pin 1 must be aligned with contact 1 of the ribbon cable indicated by the colored edge wire.
**Figure 5. Sensor ribbon cable**

**Note:** Sensor ribbon cable wire aligns with pin 1 of J4 as shown. The Communication Module is then rotated 180 degrees to seat in Communications Housing.

**Step - 16:** Carefully, insert the Communication Module into the Communication Electronics Housing. Ensure that the sensor ribbon cable is not pinched.

**Step - 17:** Tighten the two Communications Module retaining screws.

**Step - 18:** If a new Communications Module is being used, duplicate the jumper settings on the original module.
**Step – 19:** If applicable, re-install the Display Module as follows:

– Orient the display as desired.

– Install the Interface Connector in the Display Module such that it will mate with the socket for the display in the Communication Module.

– Carefully line up the display, and snap it into place. Verify that the two tabs on the sides of the display latch.

Orient the Display for proper viewing through the end cap window. You can rotate the meter mounting orientation in 90° increments.

**Step – 20:** Apply o-ring lubricant to the end cap o-ring before installing the end cap. Reinstall the end cap and tighten the end cap locking screw.

**Step - 21:** Ensure the small RF connector is seated firmly in place, on the bottom of the sensor electronics housing. See Figure 6

![RF Connector](image)

**Figure 6. Location of RF connector at the bottom of sensor electronics housing.**

**Step - 22:** If necessary, replace the O-ring at the top of the process connector. Apply o-ring lubricant and carefully replace the sensor electronics housing without pinching the O-ring. Tighten the set screws.

**Step – 23:** Turn ON transmitter power.
**Step - 24:** Comm and Sensor Model Number reconciliation

- If the COMM Firmware version is 1.020000 the transmitter should power up and operate with no further configuration required. However, if the sensor electronics housing has been used in another transmitter, a further configuration step is necessary. See the Appendix for detailed instructions.
- If the COMM Firmware version is 1.010000, the model number information will not be visible. This does not affect the operation of the transmitter.

**Step - 25:** If upgrading transmitter from sensor firmware version 1.000x00, the transmitter configuration will need to be set. However, if a new COMM module was ordered at the same time as the sensor electronics a basic configuration will be already in place. See manuals:

<table>
<thead>
<tr>
<th>Publication #</th>
<th>Publication Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>34-SL-25-06</td>
<td>SLG 700 SmartLine Level Transmitter Guided Wave Radar HART® Option User’s Manual</td>
</tr>
<tr>
<td>34-SL-25-07</td>
<td>SLG 700 SmartLine Level Transmitter Guided Wave Radar FOUNDATION Fieldbus Option Manual</td>
</tr>
</tbody>
</table>

**Note:** The transmitter stores its configuration on the COMM PCBA. Therefore you do not need to transfer the configuration.
Hazardous Locations

**Warning** - When installed as explosion-proof or flame-proof in a hazardous location, keep covers tight while the transmitter is energized. Disconnect power to the transmitter in the non-hazardous area prior to removing end caps for service. When installed as non-incendive or non-sparking equipment, disconnect power to the transmitter in the non-hazardous area, or determine that the location is non-hazardous before disconnecting or connecting the transmitter wires.

**Product Approvals** - All replacement sensor electronic modules are built according to the same quality and regulatory processes as the original transmitter parts and complete transmitter. Deviating from this instruction sheet, or using other replacement parts, may invalidate the product approvals marked on the transmitter nameplate.

**Hi-Pot (Dielectric Strength) Test** - The replacement sensor electronic modules are hi-pot tested at the factory prior to shipment, using a voltage of 850V for 1 second. If applicable standards for the installation still require a hi-pot test after device repair, the voltage shall not exceed 600Vac or 850Vdc between loop terminals and case. The hi-pot test will fail with lightning protection terminal assemblies installed. The hi-pot test must only be performed with a non-lightning protected terminal assembly installed in the transmitter during the test.

The Hi-Pot test may be performed on the transmitter electronics, before re-installing on the process connector.
Appendix: Reconciling Model Numbers

If a spare sensor electronics housing has been used in a transmitter, it will likely have a model number which does not match the model number stored in the COMM electronics. This will cause an error.

Using three-button interface and display:

The error can be identified by selecting

Monitor

- Non-critical errors
  - The error will appear as Model Number Mismatch

To clear this error, select

Monitor

- Model Number

The Sensor Model Number and the Communication Model number can be displayed. To clear the error, a Matching Source will have to be selected. In most cases this will be the COMM module; however, in some cases Sensor module can be selected. The Do Match must be selected to clear the fault.

Refer to the User’s manual for instructions on using the three-button interface.

Using the DTM:

The error can be identified from the Monitor, Device Status & Alarms screen. The error is identified as Model Number Mismatch (see Figure 7)

![Figure 7 - Model Number Mismatch Critical Error](image-url)
To clear this error, navigate to the Advanced Configuration, Services tab and select Reconcile Model Numbers. In most cases, it will be appropriate to select Use Comm Module Model Number to clear the error. After selection, the transmitter will restart.

![Advanced Configuration Services tab with Reconcile Model Numbers feature selected](image)

**Figure 8 - Reconcile Model Numbers feature**
Sales and Service
For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

**ASIA PACIFIC**
Honeywell Process Solutions,
Phone: + 800 12026455 or +44 (0) 1202645583
(TAC) hfs-tac-support@honeywell.com

Australia
Honeywell Limited
Phone: +(61) 7-3846 1255
FAX: +(61) 7-3840 6481
Toll Free 1300-36-39-36
Toll Free Fax: 1300-36-04-70

China – PRC - Shanghai
Honeywell China Inc.
Phone: (86-21) 5257-4568
Fax: (86-21) 6237-2826

Singapore
Honeywell Pte Ltd.
Phone: +(65) 6580 3278
Fax: +(65) 6445-3033

**EMEA**
Honeywell Process Solutions,
Phone: + 800 12026455 or +44 (0) 1202645583

Email: (Sales) FP-Sales-Apps@Honeywell.com
or (TAC) hfs-tac-support@honeywell.com

**AMERICAS**
Honeywell Process Solutions,
Phone: (TAC) (800) 423-9883 or (215) 641-3610
(Sales) 1-800-343-0228

Email: (Sales) FP-Sales-Apps@Honeywell.com
or (TAC) hfs-tac-support@honeywell.com

For more information
To learn more about SmartLine Transmitters, visit www.process.honeywell.com
Or contact your Honeywell Account Manager

Process Solutions
Honeywell
1250 W Sam Houston Pkwy S
Houston, USA, TX 77042

Honeywell Control Systems Ltd
Honeywell House, Skimmed Hill Lane
Bracknell, England, RG12 1EB

Shanghai City Centre, 100 Jungi Road
Shanghai, China 20061

www.process.honeywell.com