SETUP AND CALIBRATION

**Note:** All setup and calibration information for the GM-17 is stored in non-volatile memory. This eliminates the need for backup battery replacement.

**Setting a high acting process switch**

To set the relay to a high acting process switch, place a jumper on the HI/LO pins located near the center of the board on the extreme right side.

**Setting a low acting process switch**

To set the relay to a low acting process switch, remove the jumper from the HI/LO pins located near the center of the board on the extreme right side.

Rotary switches

Two rotary switches, identified as S1 and S2, are used to setup and configure the GM-17. Switch S1 is located next to the terminal block receptacle. Switch S2 is located below S1. The function starts five seconds after changing the rotary switches. Refer to the GM-17 Installation and Operation guide for full descriptions of the rotary switch functions.

**Note:** In order to monitor the process and activate the process relay, both rotary switches (S1 and S2) must be set to position 0.

**Calibrating the level switch**

The calibration calculates an operating time for relay operation based on the low and high process radiation fields. See the GM-17 Installation and Operation Guide for further information on calibration requirements and graphs displaying the operating times of various configurations.

**Two point calibration (preferred method)**

You must provide high and low process conditions when performing a two point calibration.

1. Establish low process condition
2. Set S2 switch to position 2
3. Within 5 seconds, set S1 switch to position 1 (Red LED repeats 2 flashes for 2 minutes, Red LED turns off and Green LED flashes when complete)
4. Establish high process condition
5. Set S1 switch to position 2 (Red LED repeats 3 flashes for 2 minutes, Red LED turns off and Green LED flashes when complete)
6. Set S1 switch to position 3 (Green LED flashes when complete)
7. If Red LED flashes 8 times, calibration failed – repeat steps 2 thru 6
8. Set both switches to position 0 to return to operating mode.

**One point calibration (requires % Delta I)**

When performing a one point calibration method, all you need is the low process condition. The high process field is calculated based on the application’s percent Delta (i.e., %). The %Delta is based on the vessel geometry, construction, and process information. Have this information ready before contacting VEGA.

1. Obtain process % Delta I (refer to GM-17 Installation and Operation Guide for instructions or contact VEGA for assistance)
2. Establish low process condition
3. Set S1 switch for % Delta I (1=10%, 2=20%, 9=90%, 0=100%)  
4. Within 5 seconds, set S2 switch to position 1 (Red LED repeats 5 flashes for 2 minutes, RED LED turns off and Green LED flashes to indicated completion)
5. If Red LED flashes 8 times, calibration failed – repeat steps 2 thru 4
6. Set both switches to position 0 to return to operating mode.

**SAFETY INSTRUCTIONS**

- **Rotary switches**
  - The adjustment of the GM-17 can be made when the relay is powered on.
  - The order of performing the high and low level calibrations does not matter when performing a 2-point calibration.

**GM-17 calibration table**

After performing a successful calibration, verify and record the calibration information for future reference in the calibration table. Set the rotary switches and count the flashes in the sequence. For example, the red and green LEDs flash 5 times, the red LED flashes 2 times, and finally the Green LED flashes 4 times, which equals 524 counts. There is a pause between each sequence.

<table>
<thead>
<tr>
<th>Process Level</th>
<th>S1</th>
<th>S2</th>
<th>Red LED</th>
<th>Green LED</th>
<th>1 Flash</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>6</td>
<td>5</td>
<td>Flash</td>
<td>Off</td>
<td>100 CPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>5</td>
<td>7</td>
<td>Flash</td>
<td>Off</td>
<td>100 CPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>6</td>
<td>5</td>
<td>Flash</td>
<td>Off</td>
<td>100</td>
<td>Seconds</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test</th>
<th>S1</th>
<th>S2</th>
<th>Red LED</th>
<th>Green LED</th>
<th>1 Flash</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Cal counts</td>
<td>6</td>
<td>5</td>
<td>Flash</td>
<td>Off</td>
<td>100 CPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Cal counts</td>
<td>5</td>
<td>7</td>
<td>Flash</td>
<td>Off</td>
<td>100 CPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating time</td>
<td>6</td>
<td>5</td>
<td>Flash</td>
<td>Off</td>
<td>100</td>
<td>Seconds</td>
<td></td>
</tr>
</tbody>
</table>

**Vega customer service information**

To request field service within the United States and Canada, call 913-272-0131. Customers outside of the United States and Canada should contact their local VEGA representative for parts and service.

**VEGA**

GM-17 Quick Reference Startup Guide

Version 1.2

SAFETY INSTRUCTIONS

**Refer to the Radiation Safety Manual and Reference CD that came with your source holder.**

Always refer to the safety instructions in this guide and the country specific installation standards. Follow the prevailing safety regulations and accident prevention rules of your company and country.

**General**

There are no restrictions on the use of this instrument on the outside of closed metal vessels. The GM-17 should not be used in temperatures less than –40°C (<–40°F) or greater than +70°C (+158°F).

**CE conformity**

The GM-17 level switch is in compliance with CE requirements for EMI/EMC per EN61000-4 and EN-50011.

**Safety information for EX areas**

This equipment is suitable for use in the following environment:

- CSA Class I, Div 1, Groups B, C, & D
- CSA Class I, Div 2, Groups B, C, & D
- CSA Class II, Div 1 Groups E, F, & G
- CSA Class II, Div 2, Groups F & G
- CSA Class III Ta = –40°C to +70°C
- ATEX Certificate # FM06ATEX0007 II 2 G Exd IIB + H2 T6
- Ta = –40°C to +70°C, ATEX II D T80C IP66
- NEMA Type 4X IP66
- Non-hazardous locations

**Special installation, maintenance, or operating instructions**

If it is necessary to open the sensor, the following warning applies:

**EXPLOSION HAZARD** – Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

**Caution!** Open circuits before removing cover. An explosion-proof seal shall be installed within 450 mm (18") of the enclosure (including division 2 installations).

**Warning!** To avoid electrostatic discharge, wipe enclosure with a damp cloth.

**Warning!** Explosion hazard Substitution of components may impair stability for Class I, Division 2.
# Unpacking the equipment

- Unpack the unit in a clean, dry area.
- Inspect the shipment for completeness by checking against the packing slip.
- If the detector is included as a separate package in the shipment, inspect the assembly for damage. If damaged, file a claim against the carrier and report the damage in detail. Any claim on VEGA for shortages, errors in shipment, or other problems must be made within 30 days of receipt of the shipment.
- If you need to return the equipment, refer to the GM-17 Installation and Operation guide for information concerning returning equipment for repair.
- After you unpack the equipment, inspect each source holder in the shipment to assure that the source holder is locked.

## Storing the equipment

- Store the source holder in a clean, dry area.
- Verify that the source holder is locked in the off position.
- Store the detectors in an area that has temperature-control between 10 °C and 35 °C (50º F and 95 ºF) and less than 50% relative humidity.

## Mounting Instructions

Your source was sized for optimal performance at the time you ordered your system. Contact us prior to installation if the location of the equipment is different from the original order.

- Follow the site specific installation drawings.

## Checklist for field service commissioning

- Mount the source holder and level switch per the drawings (allow access for future maintenance).
- Make all wiring connections using the certified drawings and the instructions in this guide.
- If using AC power, ensure that the AC input voltage matches the requirements found on the nameplate of the unit.
- Ensure that the AC power to the transmitter is a regulated transient-free power source (UPS type power is best).
- If using DC power, verify that the ripple is less than 100mV.
- Have process ready for calibration. When possible, it is best to be able to completely fill and empty the vessel at the high and low levels.
- Do not remove the source holder lock until the unit is ready for calibration.
- Apply power to the gauge one hour before starting calibration.

Note: For European ATEX hazardous area applications, all cable glands or hubs must be EExd rated.

## Wiring the Equipment

- Make the connections at the removable terminal strips mounted on the power board. Access the power board by removing the explosion-proof housing cap.
- There is an internal and external ground screw for connection of the power earth ground wire. Remove the top cover to access the ground screws.

## Terminal Description

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L1</td>
<td>AC power input</td>
</tr>
<tr>
<td>2</td>
<td>L2/N</td>
<td>AC power input</td>
</tr>
<tr>
<td>3</td>
<td>DC IN</td>
<td>DC power input</td>
</tr>
<tr>
<td>4</td>
<td>DC IN</td>
<td>DC power input</td>
</tr>
<tr>
<td>5</td>
<td>K1 NO</td>
<td>Process relay - normally open</td>
</tr>
<tr>
<td>6</td>
<td>K1 C</td>
<td>Process relay - common</td>
</tr>
<tr>
<td>7</td>
<td>K1 NC</td>
<td>Process relay - normally closed</td>
</tr>
<tr>
<td>8</td>
<td>K2 NO</td>
<td>Process or Alarm relay - normally open</td>
</tr>
<tr>
<td>9</td>
<td>K2 C</td>
<td>Process or Alarm relay - common</td>
</tr>
<tr>
<td>10</td>
<td>K2 NC</td>
<td>Process or Alarm relay - normally closed</td>
</tr>
<tr>
<td>11</td>
<td>Not used</td>
<td></td>
</tr>
</tbody>
</table>

Caution! Do Not Apply Power until a thorough check of all the wiring is complete.

- **AC operation**:
  - Verify that the input voltage matches the configuration of the GM-17, which is pre-configured from the factory for either 110VAC or 220VAC operation. This is not jumper selectable. The nameplate indicates the input voltage rating. If the input voltage does not match this rating, contact VEGA Field Service for instructions.
  - The power is input to the top I/O connector. Location: Pin 1 (L1-hot) is next to the fuse F1 and Pin 2 is L2-neutral.
  - The input power can be 110VAC±10%, 220VAC±10% or 10—30VDC at 4VA maximum power consumption. Input power must be provided by a 15 or 20A circuit breaker.
  - For 10—30VDC operation the power is applied to the I/O connector pins 3 and 4.
  - Pin 3 is marked as DC+; however, the DC input is polarity insensitive.
  - Use wire between 1.63 to 0.843mm (#14 to #22AWG) for power wiring and rated for greater than +70 °C. Use insulation suitable for at least 300V. Always comply to local codes and standards.