MAGNELAB MGS SERIES THREE-PHASE INTEGRATOR AND 4-20 mA TRANSDUCER INSTALLATION INSTRUCTIONS

1. **Intended use of the equipment -**The Magnelab MGS Series three-phase integrator and 4-20 mA transducer (referred to as signal conditioner in this document) is designed to take a sinusoidal AC voltage input and integrate and convert to a 4-20 mA DC signal. The typical input voltage is up to 1.0 V AC RMS. The output current is 20 mA DC at full range when 8-35 V DC is applied across the output terminals. The device is designed to be used with flexible sense coils with suitable rating and outputs

   ⚠ This symbol indicates that caution must be taken when installing or using this device. All external connections should provide Class 2 circuit and basic insulation to ground as required by UL61010-1.

   Also note that if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

   ⚠ Use UL Listed Energy Monitoring Current Transformers

   ⚠ Note that no burden resistor is provided by the manufacturer across the MGS or MGT input. These devices are for use with Rope CT or Current Transformers that are provided with the burden component (Resistor or TVSS).

2. **Technical specification**
   a. Input 0 to 1.0V AC RMS max on three phases
   b. Output 20 mA DC at rated current on each of three phases when 8-35 V DC is applied across the output terminals
   c. Accuracy ±1%
   d. Power supply Class 2 required
   e. Input and output screw terminals rated for up to 16 AWG leads
3. **Name and address of manufacturer**
   Magnelab, Inc.
   600 Weaver Park Rd.
   Longmont, CO 80501
4. **Equipment ratings**
   a. **Supply voltage (for each phase)**
      i. **Voltage range -** 8-35V DC
      ii. **Frequency range –** DC only
      iii. **Current rating –** 50mA nominal, 174mA max
   b. **Description of all input and output connections -** screw terminal blocks suitable for wire gauges up to 16 AWG. Terminal Torque Rating for all terminals 2.7 Lb In.
      i. **Input (6 terminals) –** for connection of up to 3 Rogowski coil type current sensors or similar devices, nominal input 70mV AC

RMS, max input 1.0 V AC RMS. These units should provide Class 2 circuit and basic insulation to ground as required by UL61010-1.

ii. **Output and Power(6 terminals) –** for connection to metering device and power supply, nominal output 4 mA DC, max output 20 mA DC. Requires Class 2 power supply, 8-35 V DC, 174 mA max current (typically supplied by 4-20mA loop voltage control device).

c. Rating of insulation of external circuits – All external circuits must provide isolation of 600V AC RMS to the terminal of the device.

d. **Environmental conditions –**

i. Open Type for use inside overall enclosure.
ii. Altitude up to 2 000 m
iii. Temperature 5 °C to 55 °C Ambient
iv. Maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C
v. Pollution Degree 2 or 3

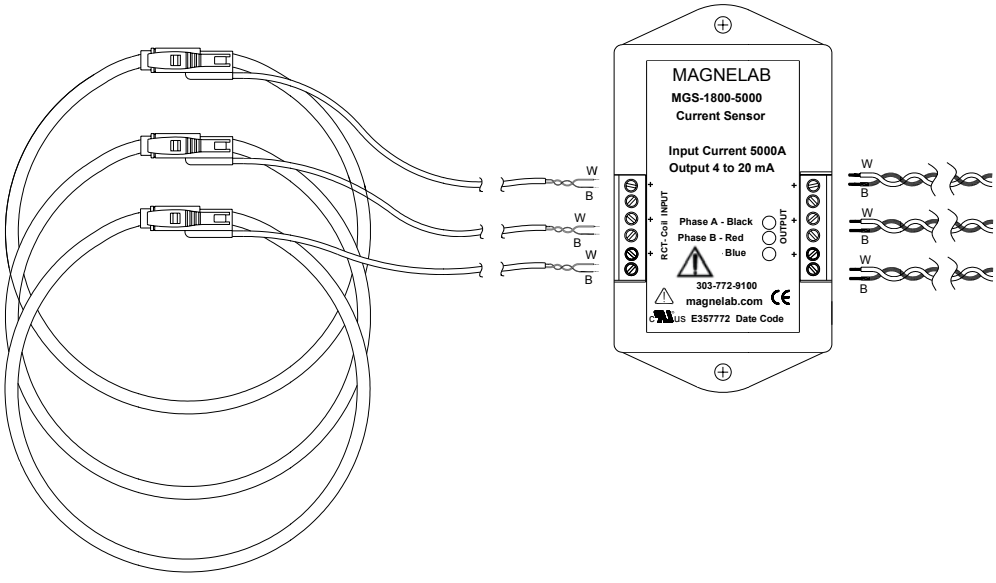
5. Equipment installation

This document provides general guidelines for the installation of the Magnelab MGS Series Three-Phase Integrator and 4to20 mA Transducer. This is a signal conditioner that is designed to be installed and used with Rogowski coil type devices. This shall act as a reference only and a working knowledge of the equipment being installed is required for safety.

DANGER! – Installing any current transformer or signal conditioner onto an energized circuit can result in severe injury or death. Installation should be performed by qualified personnel only. Disconnect all power sources before attempting installation of current transformers or signal conditioners. For the safest installation, properly connect all input and output leads to the signal conditioner to before installing it onto the conductor to be measured.

- Open the CT and place the conductor through the center opening. Securely close the CT ensuring you do not damage the connector and outer jacket.
- Allow the CT to hang or lay in an area that will allow the leads to be dressed safely away from any potential damaging sharp edges or voltage sources.
- Secure in place as needed with nonconductive materials only.
- Repeat the above steps for all three phases to be monitored (A, B, and C)
- Connect output of device (phase A, B, and C) with suitable lead wire to meter or monitoring device. The monitoring device should act as a Class 2 power supply to supply 8-35 V DC.
- If a separate power supply is needed, connect a Class 2 power supply to supply 8-35 V DC to the output terminals for each phase. Power supply should be deactivated during connection.

Install the MGS series regardless of current rating per drawing below. The label on the connector indicates the orientation of the CT in relation to the current source. All installations are subject to inspection and approval by authorized personnel before operation of the device.



6. **Equipment Operation**
    - **a.** Install Rogowski coils and Magnelab MGS Series Three-Phase Integrator and Amplifier as described in Section 5.
    - **b.** Activate measurement devices or dedicated power supplies (one per phase) that are connected to the Magnelab MGS.
    - **c.** If you are using the signal conditioner with current sensors, energize the center conductor that the current sensors are attached to. Otherwise, energize the AC signal source that the signal conditioner is connected to.
    - **d.** The output terminals for each phase (A, B, and C) should produce a DC current that varies linearly with the current passing through the corresponding center conductors. An input of zero should correspond to an output current of 4mA. This should be detectible by the meter or monitoring device connected to the output.
7. **Equipment maintenance and service**
    - **a.** Occasionally inspect for damage to insulation on sensors or lead wires to and from the MGS integrator. Contact manufacturer for replacement materials in case of damage.
    - **b.** There are no components within the device that can be serviced by the end user. Please contact the manufacturer if there are issues with the output of the MGS.
    - **c.** If it is necessary to replace the power supplies, be sure to use Class 2 devices that meet the power requirements of the MGS.