Introduction
The GT-ASM transducer is used for analog signal conversion or re-scaling. It will accept one DC voltage, current or resistive input signal and output a non-isolated voltage or current signal. The output signal is easily calibrated for various offsets and spans and can be direct or reverse acting to provide signal inversion.

The GT-ASM also includes a regulated power output that can be used to power a transducer or a resistance input. It features top-adjust trim-pots for offset, gain, input attenuation and reverse-offset calibration. There is also an LED power indicator.

The product comes with standard snap-track for easy mounting or is also available mounted in a hinged ABS enclosure.

Applications
- Resistance to voltage or current conversion
- Voltage to voltage or current conversion
- Current to voltage or current conversion
- Voltage or current signal reversal

Before Installation
Read these instructions carefully before installing and commissioning the GT-ASM transducer. Failure to follow these instructions may result in product damage. Do not use in an explosive or hazardous environment, with combustible or flammable gases, as a safety or emergency stop device or in any other application where failure of the product could result in personal injury. Take electrostatic discharge precautions during installation and do not exceed the device ratings.

Mounting
The snap-track device may be mounted in any position. Use only fingers to remove the pcb from the snap-track, do not pry on the pcb with tools. Do not flex the pcb during removal or installation. Slide the pcb out of the snap-track or push against one side of the snap-track and lift the pcb out. Ensure any metallic mounting hardware does not contact the underside of the pcb.

For transducers installed in the hinged ABS enclosure, mount the enclosure with four sheet metal screws to a flat surface. Open the cover by releasing the latch and connect the device according to the wiring instructions. After wiring and setup are complete, close and latch the cover. Secure it with two self-tapping screws in the holes provided.

Avoid mounting in areas where the transducer is exposed to vibrations or rapid temperature changes.

Wiring
Deactivate the 24 Vac/dc power supply until all connections are made to the device to prevent electrical shock or equipment damage. Follow proper electrostatic discharge (ESD) handling procedures when installing the device or equipment damage may occur.

Use 22 AWG shielded wiring for all connections and do not locate the device wires in the same conduit with wiring used to supply inductive loads such as motors. Make all connections in accordance with national and local codes.

Connect the plus dc or the ac voltage hot side to the **PWR** terminal. The supply common is connected to the **COM** terminal. The device is reverse voltage protected and will not operate if connected backwards. It has a half-wave power supply so the supply common is the same as the signal common.

Several devices may be connected to one power supply and the output signals all share the same common. Use caution when grounding the secondary of a transformer or when wiring multiple devices to ensure the ground point is the same on all devices and the controller.

Ensure the supplied power is within the device ratings as shown in the *Specifications* section of this document. Power supply voltages outside the ratings may cause over-heating, device damage or un-reliable operation.

The analog input signal is connected to the **IN** terminal and the analog output signal is connected to the **OUT** terminal. Both the input and output signals are referenced to the **COM** terminal.

The **20V** terminal is a regulated power supply output which provides a 20 Vdc power supply at 30 mA maximum that can be used to operate an external sensor, for example.

Factory Configuration
The GT-ASM is preset as follows:
- All pots set fully counter-clockwise
- No input signal attenuation
- No output signal offset (OFFSET jumper = 0)
- Signal gain set to 1 (input:output = 1:1)
- Input signal type set to voltage (IN jumper = V)
- Output signal type set to voltage (OUT jumper = V)
- Normal acting output signal (not reverse)

Calibration and Setup
The GT-ASM is typically calibrated with a voltage type input signal to simplify the procedure. If the actual input signal will be a current type, then convert the required current signal to voltage first and apply the voltage signal for this procedure.

Calibration Voltage = Input Current Signal (Amps) x 250

For example, if the input signal will be 4-20 mA, then use a 1-5 Vdc calibration voltage.

Equipment
The following equipment will be required to change the calibration of the GT-ASM:
- 24 Vdc power supply
- Digital voltage/current meter
- Voltage input signal simulator

If a signal simulator is not available, use a 10-20K trim pot to generate the input voltage. Connect one end of the pot to the 20V terminal, the other end to the COM terminal and the pot wiper to the IN terminal. Then measure the IN voltage and set the pot to achieve the desired input voltage.

Step 1. Set the trim pots to fully ccw
The 4 pots on the pcb are multi-turn pots of about 20 turns. They are all factory set to fully counter-clockwise. If they have been adjusted previously, rotate them at least 20 turns counter-clockwise to their initial positions.

Step 2. Set the pcb jumpers
Set the Normal/Reverse jumper to the NORM position. If a reverse acting signal is required, it will be set later in the procedure.

Set the OFFSET jumper to the 0 position. If an offset is required, it will be set later in the procedure.

Set the IN jumper to the V position. If a current input signal is required, it will be set later in the procedure.

Set the OUT jumper to the V position. If a current output signal is required, it will be set later in the procedure.

Step 3. Make the wiring connections
Ensure the power supply is turned off when making connections.

Connect 24 Vdc to the PWR terminal.

Connect the power supply common, the voltmeter common (-) and the input signal common to the COM terminal.

Connect the + of the input voltage signal to the IN terminal.

Connect the + of the voltmeter to the OUT terminal.

Step 4. Apply power
Turn on the 24 Vdc power supply and the POWER LED should light.

Step 5. Input/Output signal calculation
Calculate the required INPUT voltage signal span.

Vin_span = Vin_max – Vin_min

Examples, 0-5 V input = 5 volt span, 3-12 V = 9 volt span

If the input is to be 4-20 mA, use the equivalent calibration voltage calculated previously; 4-20 mA = 1 – 5 V = 4 V span.

Calculate the required OUTPUT voltage signal span.

Vout_span = Vout_max – Vout_min

Example, 3-15 V output = 12 volt span

Step 6. Signal adjustment
Apply the input voltage span result to the IN terminal. For example, if the calculated input span is 9 volts, apply 9 volts to the IN terminal.

Compare the output meter reading to the output voltage span number calculated previously. If the meter reads higher, the adjust the ATTN pot until the meter equals the output span value. If the meter reads lower, then adjust the GAN pot until the meter equals the output span value.

During this adjustment, the input signal should be as stable as possible and the output adjustment should be as precise as possible to obtain the best results.

Step 7. Offset adjustment
The offset adjustment shifts the output signal up or down. For example, a 1-5 volt output signal has 1 volt of offset.

Apply the minimum input voltage signal and note the output signal on the meter. If the output reading is correct, leave the OFFSET jumper in the 0 position and continue to the next step.

If the output reading must be increased to the desired value, then move the OFFSET jumper to the + position and adjust the OFF pot to obtain the correct minimum output on the meter.

If the output reading must be decreased to the desired value, then move the OFFSET jumper to the - position and adjust the OFF pot to obtain the correct minimum output on the meter.

Remember that increasing or decreasing the offset value will also increase or decrease the maximum output by the same amount.

Step 8. Reverse action adjustment
If a reverse acting output signal is required (5-1 V for example), then move the REV/NORM jumper to the REV position. If this is not required then proceed to the next step.

Apply the minimum voltage input signal and adjust the REV pot for the maximum required output signal.

Step 9. Make final jumper settings
If jumper settings are to be changed, first disconnect the power and input/output connections.

If a current input signal is required, then move the IN jumper to the mA position .

If a current output signal is required, then move the OUT jumper to the mA position.

Check the operation of the GT-ASM with the correct signal types for proper signal rescaling and operation.

General Specifications

Power Supply	23 to 28 Vdc, 22 to 26 Vac (half-wave rectified)
Consumption	100 mA maximum
Protection Circuitry	Reverse voltage protected, overvoltage protected
Operating Conditions	0 to 50 °C (32 to 122 °F), 5 to 95 %RH non-condensing
Storage Conditions	-30 to 70 °C (-22 to 158 °F), 5 to 95 %RH non-condensing
Wiring Connections	Screw terminal block (14 to 22 AWG)
Enclosure	Snap track mounting standard, 2.35” long x 3.25” wide (59.7 x 82.5 mm) Hinged enclosure optional, 5.7”w x 3.95”h x 2.5”d (145 x 100 x 63 mm)

Power Output

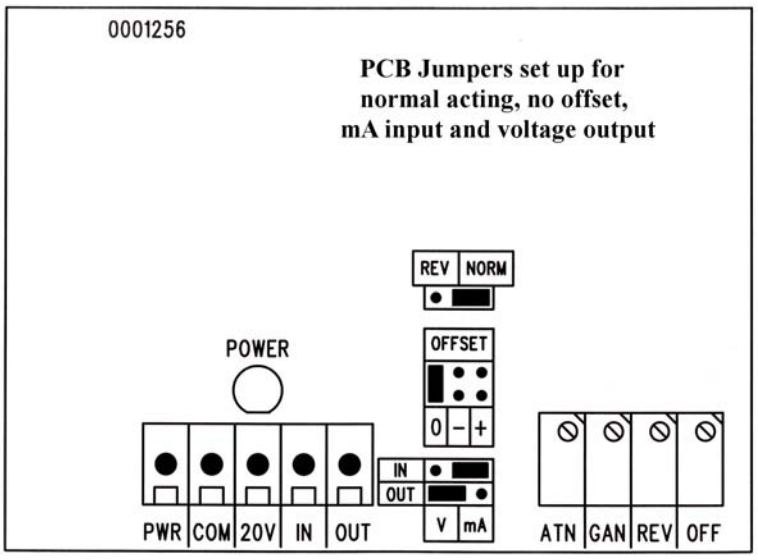
Regulated Power Output	20 Vdc ± 10% @ 30 mA maximum (use to power an external sensor)

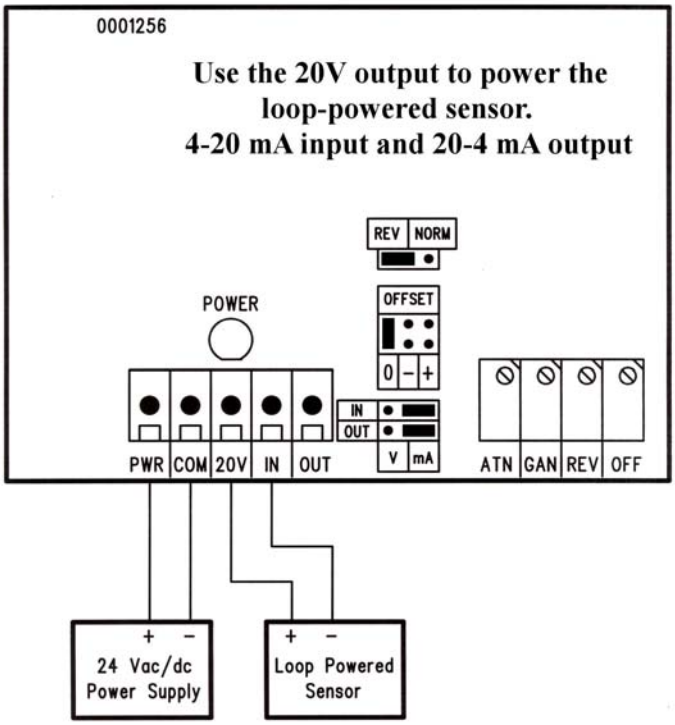
Input Signal

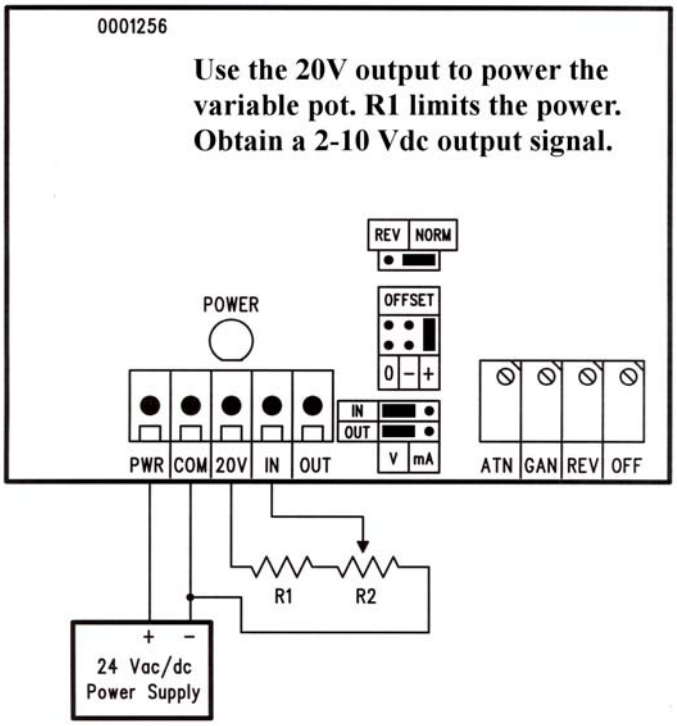
Input Voltage Range	0 to 17.5 Vdc
Input Voltage Impedance	> 100 KΩ
Input Current Range	0 to 30 mA
Input Current Impedance	250 Ω

Output Signal

Output Voltage Range	0 to 17.5 Vdc
Output Voltage Impedance	3 KΩ at 17.5 Vdc
Output Current Range	0 to 30 mA
Output Current Impedance	650 Ω at 20 mA
Accuracy	± 1 %




0001256
Use the 20V output to power the loop-powered sensor.
4-20 mA input and 20-4 mA output
REV
NORM
POWER
OFFSET
0
–
+
IN
OUT
V
mA
PWR
COM
20V
IN
OUT
ATN
GAN
REV
OFF
+
–
24 Vac/dc Power Supply
+
–
Loop Powered Sensor


0001256
Use the 20V output to power the variable pot. R1 limits the power.
Obtain a 2-10 Vdc output signal.
REV
NORM
POWER
OFFSET
0
–
+
IN
OUT
V
mA
PWR
COM
20V
IN
OUT
ATN
GAN
REV
OFF
R1
R2
+
–
24 Vac/dc Power Supply