

## Other Devices

G Instruments designs and manufactures many other devices. We can also very quickly design a custom device and then manufacture it for you.

### Pulse Converter GPC10K

GPC10K can not only divide pulses but it can also multiply them. So the frequency at the output can be higher or lower than the input. The input is universal and can power the sensor while the output is high frequency isolated open drain. LCD display makes it very easy to enter the exact ratio between the input and the output in seconds. The ratio is stored in a non-volatile memory but can be changed at any time. In normal mode GPC10K shows accurately the input frequency with a very stable reading. It can be a very useful device when matching a high frequency turbine flow meter to a low frequency PLC input. It can also scale the pulse output of a flow computer or other pulse devices.

- universal pulse input for up to 10 kHz
- 10 points ratio curve to linearize or change the input/output relation
- the input can power the sensor with 10 V / 10 mA
- programmable input/output ratio from 0.001 to 9999.999
- a single ratio or a ratio curve, programmable
- isolated open drain output for up to 10 kHz, 100V / 100mA
- reverse polarity protection on the output to 100 mA and high input protection
- works on 12 - 40 VDC, reverse polarity, transients and surge protected
- icons on the LCD to show the presence of input and output pulses
- the ratio factor and the curve menus can be locked

### Pulse Totalizer GPT36

GPT36 is a micro power pulse totalizer with universal input. It has an input for a fast remote reset. When the input terminals are shorted it immediately clears the total number of pulses and starts totalizing again until the remote input opens.

- Universal pulse input up to 10 kHz, no pre-amplifiers for the coils are needed
- works on a single AA size replaceable battery. Has a LOBAT indicator
- high protection on both inputs

### Stop Watch GSW43

GSW43 is a micro power stop watch that can be used for precise time measurements. It has an input for a fast remote start/stop. If enabled it immediately clears the time and starts measuring until the remote input disables it.

- measures time up to 10,000 seconds with 1 ms resolution
- the total error is lower than 0.005% + 2 ms
- works on a single AA size replaceable battery. Has a LOBAT indicator



## Flow Computers for Liquids, Gases and Steam

GFC300 can be ordered as a single, two independent or a dual flow computer. It can very accurately measure volume, compensated volume and mass of liquids and gases. Or volume and mass of steam, saturated or superheated, in a very large range of pressures and temperatures. GFC300 calculates density and compressibility factors with a very high accuracy.

Each channel has one flow input that accepts pulses with 24VDC / 20 mA power for the pulse sensor and 4-20 mA loop power flow signal.

30 points linearization for each pulse input can significantly improve the flow meters performances. Flow meter calibration tables can be entered there.

Each channel has one 4-20 mA loop power input for temperature or density. The typical error is 0.01% full scale.

Each channel also has one 4-20 mA loop power input for pressure with a typical error of 0.01% full scale.

The isolated analog output of each channel can be ordered as 4-20 mA loop power, 0-5V or 0-10V. It can be programmed to represent rate, rate A+B, pressure or temperature.

The isolated pulse output of each channel is sinking open drain 100V / 100 mA and can represent total, total A-B or total A+B. It can produce pulses with a frequency up to 10kHz..

Each channel has also one relay for 250VAC / 5 A with programmable hysteresis for rate, rate A+B, pressure or temperature

Both flow rates are seven digit, totals are eight digit. There are separate units for flow rate and total for each channel. Many volume and mass units are listed in special menus. Flow rate and total for each channel have independent programmable decimal places. GFC300 has many preset liquids, gases and temperature transmitters which simplifies its programming

Power can be ordered as 85-250 VAC, or 12VDC or 24 VDC, all with high isolation, surge, reverse polarity, under-voltage, over-current and short circuit protection. GFC300 has a bright transmissive color graphic display with a white back-light and easy to use scroll drop list menus. Fully compliant, programmable RS485, 1/8 load, MODBUS RTU for baud rates up to 115 200 makes GFC300 highly network-able. Multilevel menus, the first of which can be locked make programming easy, simple and protected.

Size is DIN 72 x144 mm panel mount, weight is 0.45 kg (1.0 lb).

All software options can be enabled on the field with passwords.



## 6 GPM Inline Totalizing

### Magmeter

**GMAG100** is a 1/4" in-line magmeter (electromagnetic flow meter) for up to 25 L/M (6.6 GPM) max. It has no moving parts, wide power supply voltage range, empty pipe detection, self-cleaning electrodes, isolated pulse output and RS485 MODBUS RTU communication port. Proprietary software algorithms and signal processing techniques ensure its high accuracy, repeatability, linearity and large turn-down ratio along with very low consumption.

Having isolated output ensures high reliability and compatibility to any device.

Using the RS485 MODBUS RTU, the flow rate, the total and many other parameters can be read many times a second remotely, monitored, stored or transmitted to another device or system over a radio link. All settings can be read or changed, output functions altered. GMAG100 can work as an accurate flow meter, accurate programmable flow switch or as an accurate batch controller of very low volumes.

- max. flow rate 25 L/M (6.6 GPM). Above that GMAG100 will limit the pulse output but the MODBUS port will still read correctly.
- max:min flow -6600:1 (if cut off is programmed to be 0.001 GPM)
- cut-off can be programmed down to 0.001
- can measure highly pulsating flow
- 0.3% of rate (1:1 to 100:1), 0.5% of rate (100:1 to 200:1)
- max pressure 1034 kpa (150 psi)
- power 8.5 – 40 VDC, less than 2.2 VA, surge and polarity protected
- isolated no polarity programmable digital output, 100V / 100 mA, for
  - pulse output up to 1 kHz.
  - high / low alarm with programmable hysteresis
  - batch
- programmable cut off and batch amount
- stores the total in a non-volatile memory
- total is resettable through MODBUS
- fully compliant programmable RS485 MODBUS RTU
- weather proof enclosure from die cast aluminum
- shielded cable, no moving parts, no grounding rings needed
- empty pipe detection, very fast response
- body from KYNAR PVDF
- self-cleaning electrodes from 316 SS
- weight 530 g (18.7 oz) including the cables
- dimensions 102x98x35 mm (4"x3.85"x1.35")



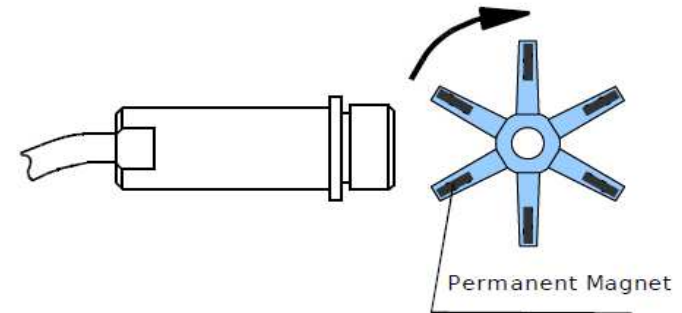
## Micro-power and Low-power Magnetic Pick-up Sensors

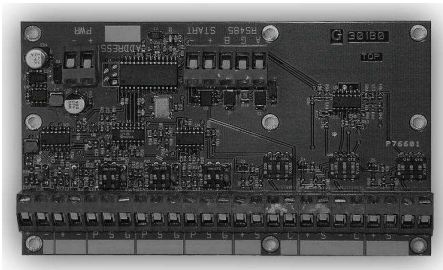
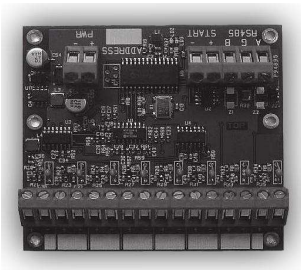
**GMS300** is a precision micro power wide voltage range magnetic pick-up sensor with very high sensitivity and hysteresis, designed for harsh industrial environment. Its sensitivity and hysteresis can be easily changed at the factory and made by

customer requirements. The sensor works with either north or south pole of the magnet. When the magnetic field exceeds its operate point the open drain output will turn on and sink current up to 100 mA DC. When the field decreases and reaches the release point the output will turn off and stand voltage up to 100 V DC. The high hysteresis between both trigger levels (operate and release) provides high noise immunity and reliability. GMS300 is ideal for battery power applications with its unmatched combination of low voltage, high sensitivity and hysteresis and low current consumption.

- wide voltage range: 2 – 40 VDC with reverse polarity and surge protection
- low current consumption: 50 uA
- wide bandwidth: 1 kHz
- open drain sinking, 100V / 100 mA output with reverse polarity protection
- high sensitivity and hysteresis
- omnipolar: works with either north or south pole of the magnet

**GMS400** is designed for use with low power flow meters or RPM meters. It can work with pulses of magnetic field as short as 50 us or frequencies as high as 10 kHz which is especially important for high RPM measurements or measurements of RPM with large diameters where the magnetic field pulse can be short.





## SCADA Devices and Systems

**GDA8A** powers up to eight sensors or devices, measures all inputs one hundred times per second with an error of 0.01% FS typ., filters and conditions their signal. Using its RS485 two wire communication capabilities the data for all inputs can be read by a MODBUS RTU master. GDA8A has a stop watch input and measures accurately the duration for which that input has been shorted.

- powers and measures the signal of eight loop power 4-20 mA sensors
- all inputs measured 100 times / sec, all data - up to 40 times / sec
- error 0.01% FS typ. All inputs protected
- works with 7-40 VDC power, reverse polarity and surge protected
- stop watch input with an error lower than 1 ms
- RS485, 1/8 load, two wire communication with high protection
- built-in termination resistor, jumper selectable

**GDA8M1** provides a large amount of data for analog and digital signals. Each pulse input can be programmed to work independently from the stop watch, to be enabled by the stop watch or to be cleared and enabled by the stop watch. A special way is provided to synchronously read the total of all pulse inputs at exactly the same time. Also all totals can be cleared at exactly the same time. Using multiple GDA8M1 on different remote locations a high quality data acquisition system can be built. The stop watch time provided by each GDA8M1 can be used for detailed and accurate data logging and reports, or just as a digital input. The high protection of all inputs, the power supply and RS485 connection ensures high reliability and accuracy.

- two loop power 4-20 mA, three universal analog inputs, three universal pulse / frequency sensors up to 10 kHz. No preamplifiers for the coils needed
- provides total pulses for each pulse input and the difference of the totals, frequency, frequency ratio and frequency difference
- all analog inputs measured 100 times / sec with an error 0.01% FS typ.
- works with 7- 40 VDC power, reverse polarity and surge protected
- stop watch input with an error lower than 1 ms
- synchronous work of all pulse inputs and the stop watch, independently programmable for each input
- RS485, 1/8 load, two wire communication with high protection
- built-in termination resistor, jumper selectable



## GFC100/200 Series Micro-power and Low-power Flow Computers

GFC100/200 series flow computers offer a large amount of versions with a variety of accurate isolated outputs. They have isolated an analog output (4-20 mA or 0-5V), an isolated digital output that can be programmed to be a pulse,

alarm, batch or limit, three totals, programmable decimal places, volume and time units, calibration curves and many others.

Micro-power versions work for years on a single AA size replaceable battery while low power versions offer higher input and output frequency and communication ports.

- **GFC101** has an universal input that can accept almost any pulse flow meter
- **GFC101L** works with lower frequency and has more stable flow rate reading
- **GFC101D** works with down to 1 pulse every 5 minutes, shows stable flow rate.
- **GFC101V** has an isolated 0-5V (instead of 4-20 mA) analog output
- **GFC101VF** has an isolated 0-5V fast analog output
- **GFC103** has 2 flow inputs and displays Total A - Total B.
- **GFC104** has a simplified 2 level menu, separate volume units for rate and total and separate lock for each level of the menu
- **GFC105** is a lower cost version, has no outputs and measures down to 1 pulse every 8 seconds
- **GFC110**- isolated 100V/100mA, no polarity pulse output up to 500 Hz
- **GFC110P** provides stable and regulated voltage to the sensor
- **GFC110D** can work with down to 1 pulse every 5 minutes and still show stable flow rate.
- **GFC111** accepts NAMUR and 2 wire meters ... Up to 5 kHz input
- **GFC111L** can work better with frequencies as low as 0.2-0.3 Hz and provide stable reading for the flow rate at these low frequencies
- **GFC113** has a fast, 10 ms response time 0-5V or 4-20mA output
- **GFC114** has a very simple and easy to use menus, no batch, no limit, no data logging, total B and C are non-resettable
- **GFC200** compensates for the temperature of the liquid when used for gasoline or diesel
- **GFC111-MB** has a RS485 MODBUS RTU communication port. The flow rate and total A can be read many times a second remotely by the master
- **GFC240** works with differential pressure sensors taking a square root of the signal or regular flow meters with an analog output linear to the flow rate



## GRD100 series Remote Displays

GRD100 series displays are input and output types. The input type connects its input to a device, measures, conditions, displays and transmits its value over MODBUS RTU link. The output types receive data over the MODBUS RTU link, display the variable and produce an analog output for it.

A **typical application** can be for an instance: A temperature transmitter is head mounted and connected with two wires only to GRD101-0 which is in the control room hundreds of meters away. The operator can monitor the temperature but the SCADA system of the plant can also receive an accurate number for that temperature over the MODBUS RTU link.

Another **typical application** for an output type can be: The master (SCADA, PLC, PC or other device) sends periodically data to GRD120 over a radio link. GRD120 is miles away and it receives the data, display the programmed number and produces an isolated 4-20 mA signal to control a pump or a valve. There can be a GRD101-0 to measure a signal and send a feedback to the master.

- accepts 0-20 mA, 4-20 mA, 0-5V, 0-10V, 1-5V or 2-10V, programmable
- accepts passive and active devices
- the input is over current and over voltage protected
- total error less than 0.01% FS, typical under 0.005% FS
- six 14.2 mm (0.56") high digits, bright red LED display
- powers the sensor (if passive) with 24VDC regulated, short circuit and over current protected
- programmable digital filter
- programmable number to be displayed for 0% and for 100% input in the range from -199,999 to 999,999
- programmable decimal places
- power supply 15-40 VDC, 1.7 VA with surge, transients and reverse polarity
- protection, isolated (option)
- programmable through RS232 MODBUS RTU
- two wire only connection to all of our flow computers and many others
- weight less than 145 g (5.1 oz)
- DIN 43700 panel mount 48x96 mm enclosure from self-extinguishing PPO



## GTT100/200 series Temperature Transmitters

GTT100/200 series temperature transmitters can be mounted in the head of the RTD/thermocouple but they can also be mounted on a DIN rail or a wall.

**GTT101** is a range of two wire loop power, 4-20 mA temperature transmitters for Pt100 by IEC 751 with alpha 0.00385

- 4-20 mA loop power, linear to temperature with 0.1% FS max total error
- reverse polarity and surge protection
- non-isolated 3-wire or 2-wire connection to the RTD
- head mount or DIN rail mount
- 44.4 mm dia x 19 H mm (1.75"dia x 0.75"H), height includes the terminals
- weight 20 g (0.7 oz)

**GTT103** is a RTD temperature transmitter that can be field programmed at any time for any temperature range in degrees F or C. Its height is only 15 mm including the terminals. Regardless of the temperature range programmed the total error and non-linearity is well below 0.1% FS. Coming soon ...

**GTT202** is a field programmable two wire loop power 4-20 mA temperature transmitters for most of the thermocouples in use and millivolts.

- -10 to +80 mV
- Type B, NIST Monograph 175, IEC 584
- Type C, W5Re/W26Re, type W5, ASTM E 988-96
- Type E, NIST Monograph 175, IEC 584
- Type J, NIST Monograph 175, IEC 584
- Type K, NIST Monograph 175, IEC 584
- Type L, DIN 43710
- Type N, NIST Monograph 175, IEC 584
- Type R, NIST Monograph 175, IEC 584
- Type S, NIST Monograph 175, IEC 584
- Type T, NIST Monograph 175, IEC 584
- Type U, DIN 43710
- total error is less than 0.1 % FS
- built-in cold junction compensation with error less than 0.25 °C
- everything is field programmable – thermocouple type, failsafe output, offset / span, normal/inverse .....
- reverse polarity and surge protection. Coming soon ...