INSTRUCTIONS

MODEL 61302V
BAROMETRIC PRESSURE SENSOR

$C\epsilon$

1.0 SPECIFICATIONS

Pressure	500 to 1100 hPa standard range
Digital Accuracy*	0.2 hPa (25°C)
	0.3 hPa (-40°C to +60°C)
Analog Accuracy**	0.05% of analog pressure range
Analog Temperature Dependence**	0.0017% of analog pressure range per °C (25°C reference)
Long Term Stability:	0.2% FS per year

*Defined as ±1 standard deviation from NIST-traceable pressure reference in clean, dry air. Includes non-linearity, hysteresis, repeatability, and calibration uncertainty.

**Defined as ±1 standard deviation from ideal analog output. Total analog output accuracy is the root sum square of digital accuracy, analog accuracy, and analog temperature dependence.

Output Rate	1.8 Hz (max) to 1 per minute
Voltage Output	0 to 5000 mV (standard)
	0 to 2500 mV
	12-bit resolution (1 in 4000)
	Selectable pressure range:
	500 to 1100 hPa (standard)
Serial Output	Full duplex RS-232
	1200 to 38400 baud
	Continuous ASCII text
	Polled ASCII text
	NMEA
	0.01 hPa resolution
Supply Voltage	7 to 30 VDC
	2.8 mA with Vout (standard)
	1.4 uA shutdown (Trig=0V)
	7 mA with serial I/O
Case	Fiber-reinforced thermoplastic
Weight	44 g (1.5 oz)

Better effective resolution may be achieved by mapping the voltage output to a narrower range of pressure with the VOUT HI and VOUT LO parameters. For example, with VOUT LO set to 950 hPa and VOUT HI set to 1050 hPa and the VOUT Scale set to 0-5000 mV:

hPa = 0.02 * mV + 950
Effective resolution is about 0.025 hPa

Please see section 4.3 below for details on changing the VOUT HI and LO parameters.

4.3 SOFTWARE COMMANDS

Software commands sent via serial communication may be used to set operational parameters. The sensor must be configured for serial communication and connected to a PC or other compatible device using a program like HyperTerm.

New settings are stored in temporary memory and must be burned to flash with command CMD420 to be retained.

Note that the **P1** jumper must be configured for SOFTWARE format to alter baud rate, sample average count, and output rate parameters.

Although the sensor may receive commands at any time, measurement output may be paused by sending three ESC (ASCII 27) characters or CMD300 1. While paused, COMMAND mode is indicated by a ">" prompt. All commands must be terminated with a carriage return CR (ASCII 13).

Use "?" to list available commands as shown below.

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>?

YOUNG 61300 SERIES BAROMETER V2.03
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CMD100 n    OUTPUT PERIOD (0-60 sec)
CMD105 n    AVG SAMPLE COUNT (0-32)
CMD110 n    OUTPUT FORMAT
        (1=ASCII 2=POLLED 3=NMEA 4=RAW 5=DIAG)
CMD120 n    MULTIPLIER (10000 = 1.0000)
CMD125 n    OFFSET (hPA x 100)
CMD130 n    SEA LEVEL CORRECTION (hPA x 100)
CMD140 n    VOUT RANGE HI (500-1100)
CMD142 n    VOUT RANGE LO (500-1100)
CMD144 n    VOUT SCALE (2=2.5V 5=5V)
CMD150 c    POLL ADDR CHAR
CMD160 n    BAUD RATE (38400,9600,4800,2400,1200)
CMD300 n    1=STOP, 2=RUN
CMD310 n    FORCE VOUT (0-5000 FULL SCALE)
CMD400 n    1=RPT TEXT, 2=RPT CODE ONLY
CMD410      GET CAL TABLE
CMD420      STORE SETUP PARAMETERS

>
```

CMD100 n sets output period in seconds. When set to zero, the output rate is about 1.8 per second.

CMD105 n sets the average sample count. Higher sample count yields more stable readings but will lengthen the startup delay.

CMD110 n sets output format. RAW and DIAG settings are for factory use only.

CMD120 n sets the output multiplier. 10000 represents 1.0000

CMD125 n sets the output offset in hPa x 100

CMD130 n sets the sea level correction in hPa x 100

$$= \left[P_{unadjust} * \left(Mult/10000 \right) \right] + \left[\left(Offset/100 \right) + \left(Correction_{Sea\ Lvl}/100 \right) \right]$$

CMD140 n sets the Vout Pressure Range HI

CMD142 n sets the Vout Pressure Range LO
Vout Pressure Range HI must be greater than Vout Pressure Range LO

CMD144 n sets the Vout Scale. 2 = 0 to 2500 mV. 5 = 0 to 5000 mV. This parameter setting must agree with the physical P3 jumper position to achieve calibrated voltage output.

CMD150 c sets the poll address character. Any ASCII character from '0' (ASCII 48) to 'z' (ASCII 122) may be used.

CMD160 n sets the baud rate. Acceptable values are 38400, 9600, 4800, 2400, and 1200. Note that the baud rate change occurs immediately after the command is received. Therefore, in order to continue communicating, the serial communication program that issued the command must also change to match.

CMD300 n causes the sensor to pause or resume measurement. 1 = Stop, 2 = Run.

CMD400 n causes the sensor to issue a report summarizing parameter settings.
1 = RPT text
2 = RPT code only

CMD410 retrieves the internal calibration table. This is for factory use only.

CMD420 burns new parameter settings to flash memory. This step *must* take place to retain changes otherwise parameters will revert to the previous values at the next powerup.

5.0 MAINTENANCE

The MODEL 61302V barometer requires no regular maintenance. Periodic calibration certification, if required, is available from the factory.

6.0 WARRANTY

This product is warranted to be free of defects in materials and construction for a period of 12 months from date of initial purchase. Liability is limited to repair or replacement of defective item. A copy of the warranty policy may be obtained from R. M. Young Company.

7.0 EMC COMPLIANCE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This ISM device complies with Canadian /CES-001.
Cet apparei/ISM est conforme a la norme NMB-001 du Canada.

EN55011/CISPR 11, Group 1, Class B device
Class B equipment is suitable for use in domestic establishments and in establishments directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

8.0 CE COMPLIANCE

This product has been tested and complies with European CE requirements for the EMC Directive. Please note that shielded cable must be used.

61302V BAROMETER
TYPICAL WIRING CONNECTIONS

MODEL 61302V

VOLTAGE OUTPUT CONFIGURATION

P1 A B C

BDM
P2

5 2.5
P3
A B

OUTPUT JUMPERS CONFIGURED FOR VOLTAGE OUTPUT.

P4 A B

P5

Vout FULL SCALE JUMPER POSITIONS

5 VDC   2.5 VDC

SOFTWARE SETTING MUST AGREE WITH JUMPER SETTING.

1   TRIG   REF   -PWR   +PWR   VOUT   5

OPTIONAL EXTERNAL TRIGGER

WHEN TRIG = 0V, CURRENT CONSUMPTION IS REDUCED TO 1uA (TYPICAL) AND NO OUTPUT IS AVAILABLE FROM THE SENSOR. WHEN TRIG > 1.8V, POWER IS ENABLED.

IF EXTERNAL TRIG NOT USED, LEAVE THE TERMINAL DISCONNECTED.

$$\text{Pressure} = \frac{V_{out}}{V_{FS}}(P_{RangeHI} - P_{RangeLO}) + P_{RangeLO}$$

EXAMPLE

$$988.7 \text{ hPa} = \frac{3887mV}{5000mV}(1100 - 600) + 600$$

RED — +PWR 7 TO 30VDC
BLACK — -PWR 3mA MAX, 2mA TYPICAL

GREEN — OPTIONAL EXTERNAL TRIGGER

WHITE — VOUT (0-2.5V OR 0-5V)
BROWN — SIGNAL REF

SHIELDED CABLE   EARTH GND

MODEL 61302V

RS-232 SERIAL OUTPUT CONFIGURATION

P1 A B C

BDM
P2

OPTION JUMPERS

CONTINUOUS ASCII   POLLED ASCII   NMEA   SOFTWARE

A B C

5 2.5
P3
A B

OUTPUT JUMPERS CONFIGURED FOR SERIAL CONNECTION.

P4 A B

P5

RS-232 JUMPER POSITIONS

AUTO   FIXED
A B   A B

AUTO ENABLES RS-232 HARDWARE WHEN VALID SIGNALS ARE PRESENT.

FIXED ENABLES RS-232 AT ALL TIMES.

1   RX   REF   -PWR   +PWR   TX   5

EXAMPLE SERIAL OUTPUT STRINGS

CONTINUOUS AND POLLED
ASCII OUTPUT   1000.00<CR><LF>

NMEA OUTPUT $WIXDR,P,1.00000,B,BARO*73<CR><LF>

RED — +PWR 7 TO 30VDC
BLACK — -PWR 5mA TYPICAL

GREEN — TX
WHITE — RX RS-232 SIGNALS
BROWN — REF

SHIELDED CABLE   EARTH GND