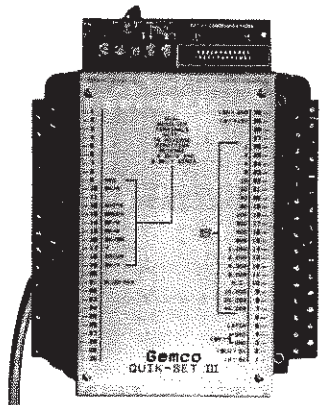
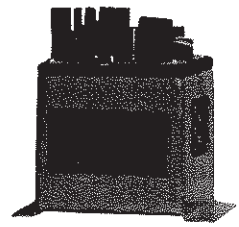
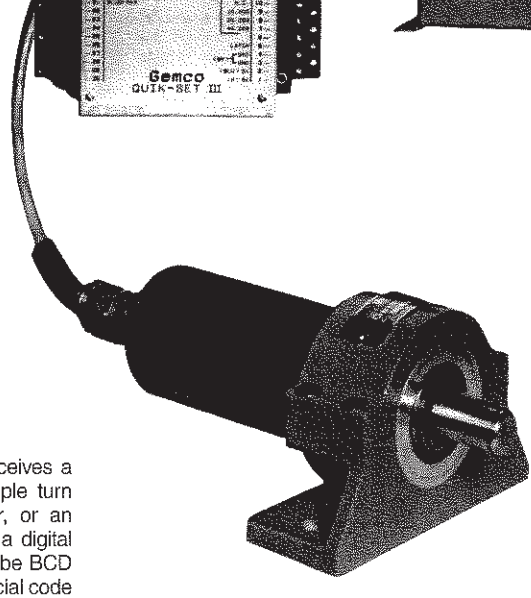
AMETEK®
PATRIOT SENSORS

Series 1989
Gemco™
Absolute PLC Interface

Accurate Position Input To Programmable Controller







FEATURES:

- Resolver or Linear Transducer Inputs
- Microprocessor Based
- Scan Time As Low As 100 μ Sec
- Optional Keypad Assembly to
  - — Field Change Scale Factor
  - — Program Offset
  - — Change Preset
- Reset to Preset Number Available
- Optional Bus Enable
- Memory Latch Option
- Single or Multiple Turn
- Remote Display Option
- RS232 Transceiver Available
- Optional Analog Output

DESCRIPTION:

The Gemco Absolute P.L.C. Interface receives a signal from either a single turn or multiple turn resolver, linear displacement transducer, or an analog input and converts this signal to a digital code. In most instances this code would be BCD but it can also be Binary, Gray, or any special code which is required. No battery back-up is required, since this conversion is absolute. The scale factor can be anything from 2 to 99,999 per turn or per stroke. The scale factor is set at the factory but can be changed in the field with an optional keypad. A Bus enable feature allows multiplexing many interfaces to a single programmable controller input card, while memory latch allows the quickly changing interface microprocessor to be read by the slower P.L.C. Optional offset and reset features allow for easier machine set-up and operation.

APPLICATION:

Gemco's P.L.C. Interface is a pilot device used for industrial applications such as material handling, assembly machines, packaging machines, press automation, steel mills and in many other applications where accurate position sensing is required in control circuitry. The absolute P.L.C. interface makes it possible to feed position information to a programmable controller and supply digital displays with machine position references.

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Absolute PLC Interface

1989-I/O ABSOLUTE PLC INTERFACE MODULE

1989—I/O——BCD-3600-R—12

ITEM
I/O Absolute Interface Module*

***Order D Type Connector Kit below if I/O Module to be used with portable keypad.**

OUTPUT CODE	
Binary Coded Decimal	BCD
Natural Binary	BIN
Grey Code	GRY

SCALE FACTOR 2 to 99,999**

****Total counts (scale Factor times turns) cannot exceed 79,999 for BCD, and 524,288 for BIN & GRY for standard modules. Consult factory for special scale factors not listed — including fractional scale factors or larger scale factors.**

	POSITIONS PER TURN/STROKE
12	Up to 4096 Positions 12 BIT Resolution
14	16,384 Positions 14 BIT Resolution R and T Input Only

	INPUT TYPE
R	Resolver
T	Linear Displacement Transducer
A	Analog 4-20 mA
V	Analog 0-10 V

PART NO.	RESOLVER TRANSDUCERS
SD0284200	Standard Single Turn
SD0322700	Dual 64 Turn
SD0365701	Dual 128 Turn

POWER SUPPLY
1989-0-115-X-S

PART NO.	ITEM
1989 PKP*	Optional Portable Keypad Assembly in Carrying Case with 6 FT. Cable (With D-Type Connector)
SD0389600*	D-Type Connector Kit for modifying I/O Module to accept plug from 1989 PKP

Absolute PLC Interface

64 — E — O — H

NO. OF TURNS	
S	Single Turn Resolver (Also use for T, A, & V)
64	Up to 64 Turn Dual Resolver
128	Up to 128 Turn Dual Resolver

OUTPUT TYPE	
E	Current Sinking
C	Current Sourcing
T	TTL

	OPTIONS	
NOTE 1	O (Note 2)	Remote Reset to Preset Number
NOTE 1	B (Note 3)	Buss Enable
NOTE 1	L	Memory Latch
NOTE 1	R	Remote Serial Display RS422 Transmitter (Order Display Below)
NOTE 4	H	RS232 Transceiver
NOTE 4	A □ (Note 5)	Analog Output
	X	No Options

NOTE 1 — Only one of these options are available on standard multi-turn units. Consult the factory for special units with more than one option.
NOTE 2 — Specify preset number — if not, preset will be set at zero.
NOTE 3 — Option B not available with TTL output.
NOTE 4 — Any two options maximum.
NOTE 5 — Insert number to specify type of analog output
1. 0 to 10V D.C.
2. −10 to +10V D.C.
3. 4 to 20 mA

OPTIONAL REMOTE SERIAL DISPLAYS (SEE OPTION R)	
PART NO.	ITEM
SD0352700	4 Digit Display (Less Cable)
SD0343500	8 Digit Display (Less Cable)

RESOLVER CABLE ASSEMBLIES		
PART NO.	ITEM	STD. LENGTH
SD0334200	Single Turn Resolver to I/O Module	15 ft.
SD0334900	Multi-Turn Resolver to I/O Module	15 ft.
SD0295500	Single Turn Resolver to I/O Module with 90° Right Angle Connector	15 ft.
SD0366000	Multi-Turn Resolver to I/O Module with 90° Right Angle Connector	15 ft.

DISPLAY CABLE ASSEMBLY		
SD0300800	2 Conductor Shielded Serial Readout Cable (600 ft. Maximum)	25 ft.

ORDERING INFORMATION

In addition to specifying a complete 1989 I/O catalog number, a resolver and resolver cable need to be ordered separately for rotary input applications. Also the separate 115 volt power supply must be ordered where 15 volt, and 5 volt regulated D.C. power is not available.

An optional 4 or 8 digit display and serial readout cable, or an optional keypad can be ordered for increased versatility.

OPTIONS:

OUTPUT CODE/TYPES — Binary Coded Decimal (BCD), Natural Binary (BIN) or Gray Code (GRY) outputs are available on the output connector. These codes are available in either current sinking, current sourcing or TTL outputs.

SCALE FACTOR — The Scale Factor allows one complete revolution of a resolver transducer to read out in any angular increment. If a scale factor of 360 is used, each increment would be 1°. If a scale factor of 3600 were used, each increment would be .1°.

For resolver applications using linear motion, the linear dimension can be related to the transducer position. For example, if a rack drives the transducer one revolution in 9.98 inches, a scale factor of 998 results in a direct readout in inches. For linear applications using multi-turn resolvers, calculate the scale factor by using linear travel per turn.

The scale factor can be factory set from 2 to 99,999. However, for standard modules, the total output count (scale factor times turns) is limited to 524,288 (19 BIT) in Binary or Grey Code and 79,999 in BCD code. If for example, a scale factor of 5,000 was used with a 64 turn resolver transducer, the BCD output would count from 0 to 79,999 over 16 turns of the transducer and would repeat this count 4 times over the full 64 turns of the transducer.

For convenience in changing scale factors due to production changes, a separate optional keypad can be ordered. To change the scale factor, enter the new scale factor (in program mode) and then depress the scale factor switch on the optional keypad.

MAXIMUM RESOLUTION — The Maximum Resolution of the encoder is the number of increments that the encoder can measure. A resolution of 12 BIT (4096) allows the encoder to view 4096 locations in one resolver revolution. Scale factors greater than the maximum resolution will cause some digits to be skipped. The digital output will read the nearest location selected by the microprocessor.

The single turn resolver and linear displacement transducer can provide resolution up to 14 BIT (16,384). Multi-turn resolvers can offer resolution up to 14 BITS per turn (i.e. 20 BITS total for the 64 turn unit and 21 BITS total for the 128 turn unit.)

REMOTE DISPLAYS — A remote serial RS422 output for driving remote displays is a frequently used option. Both a 4 digit and an 8 digit remote display are available. The remote displays should be ordered separately. A two conductor twisted shielded cable (SD0300800) to the remote display can be ordered separately. The remote displays can be mounted up to 600 feet away.

RS232 TRANSCEIVER — The RS232 Transceiver option is available from terminals on the I/O module.. This transmitter/receiver allows programmer interrogation and remote programming of scale factor, offset and reset to preset value via a programmable controller or any ASC11 CRT terminal via a RS232 4 wire serial data link.

BUS ENABLE — A command signal from a programmable controller can select any one of a number of P.L.C. Encoders to transmit its data over a common data bus. This option allows a programmable controller with a single input card to multiplex many absolute P.L.C. Encoders. The bus enable input pin on each module is normally high before the P.L.C. sinks this pin to ground to read data. The bus enable option is not available with the TTL output option.

MEMORY LATCH — A command signal from a programmable contoller, or similar micro-processor based equipment, can freeze the quickly changing output of the P.L.C. Encoder, thus allowing sufficient time for the equipment to read the signal.

RESET TO PRESET NUMBER — A command signal from a P.L.C. can automatically reset the output (or displays) to zero by pulling one input pin of the P.L.C. Encoder to ground. In case of power loss the output returns to the resolver mechanical zero plus any programmed offset value. Other preset values are available on request. An optional keypad allows the operator to change the preset value.

OFFSET (WITH OPTIONAL KEYPAD) — The angular displacement output (and display) of the P.L.C. Encoder can be electronically changed with an optional keypad. The input to the P.L.C. Encoder should not be changing when the required offset data is entered. For programming offset see the 1989 catalog section.

GENERAL TECHNICAL INFORMATION — The bus enable, memory latch, or reset to preset number functions are activated within 200 μ seconds of grounding the input pin.

SPECIFICATIONS — For temperature range, and programmer output types, see catalog section 1989 specifications.

DIMENSIONS — For dimensions or 1989 I/O (CPU module), optional keypad, and resolver transducers, see 1989 Catalog Section.

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