



The **IL78A** Conditioner is a stable, high-accuracy single-channel AC strain gage conditioner of *phase-sensitive carrier-amplifier design*.

The **IL78A** delivers filtered analog output of ± 5 Vdc, ± 10 Vdc, **4-20 mA** or **4-12-20 mA**. The **IL78A**'s advanced analog design

directly addresses the problem of measurement inaccuracy in industrial environments of high electromechanical noise. *Exceptional signal stability and accuracy over a remarkably wide range of sensor inputs are achieved through*

- regulated, remotely sensed AC excitation
- precise symmetry and signal phase adjustment
- selectable low-pass active filtering
- wide range zero and span controls
- internal shunt resistor provided

While intended primarily for applications involving transformer-coupling to the transducer bridge (as with conventional **rotary-transformer torque sensors**), the Model **IL78A** can also be used when high sensitivity is required or where the electrical environment is especially noisy. Responding only to the modulated carrier frequency, the **IL78A** rejects extraneous voltages that can cause errors in DC systems, particularly when there is a need to "blow up" a portion of the transducer range.

THE IL78A OVERCOMES ERRORS THAT TRADITIONALLY PLAGUE THE STRAIN-GAGE MEASUREMENT PROCESS

For steady indication and smooth, dependable control action, the **IL78A** can provide a true average value of the measured variable, even in the face of substantial dynamic content. Model feature are:

- **Wide zero and span controls**
Compatible with a wide range of rotary torque transducer and sensor manufacturers
- **Powerful low-pass active filtering** - selectable via internal panel switch settings for removal of unwanted high-frequency measurement-signal components and the elimination of aliasing errors, if the module's output is subsequently sampled
- **Internal 59k Ohm shunt resistor** is provided for applications that require calibration or systems checkout when a dead weight method is not available or practical
- **Phase and symmetry controls** used to synchronize phase shifts due to sensor and cabling capacitance characteristics. Symmetry used to compensate sensors with non-symmetrical CW or CCW span
- **Remote sensed excitation**
Provides automatic excitation compensation control for installations which require long transducer interface cables

Model IL78A AC Strain Gage Conditioner Module

INTERNAL SHUNT CALIBRATION OR TWO POINT (DEADWEIGHT) CALIBRATION

Because of normal cable loading effects, it is a practical necessity to calibrate any AC TORQUE SENSOR / CABLE / INSTRUMENT system after installation, using a *known input standard*

The "shunt" calibration method is provided by the IL78A controls and can yield a precise and quick calibration verification of the transducer and cabling system. Easily performed with the module fully "in place" using the Positive and Negative logic inputs as

shown below. This procedure uses the transducer's calibration information to adjust + span using the Span course and fine controls along with symmetry for the - span value when the proper + or - shunt logic is applied when no torque is present on the transducer.

Specifications

Housing: ABS UL94VO Flame Retardent case.

Dimensions - Weight: 7.022" L x 3.00" W x 2.047" H - 12 Oz.

Power Requirements: 11-28 VDC; 3.6 watts max.

ESD Protection: per EN61000-4-2

Operating Temperature Range : -10° C to 70° C (14° F to 158° F)

Operating Relative Humidity : 5% to 95%, noncondensing

Transducer Types: Conventional 4-arm strain gage bridges,

typically transformer coupled - 120 Ω to 10 kΩ

Input Ranges (Nominal, Full-Scale): 0.5 mV/V to 5.0 mV/V

Excitation: 3.28 kHz; Nominal 2.77 Vac rms

Amplifier:

Normal-Mode Range: 1.5 V rms operating; ± 28 V without damage

Input Impedance (Differential): Greater than 10 MΩ

Offset : vs. temperature: ±30 ppm/°C; vs. time: ±10 ppm/month

Gain Accuracy: Limited only by calibration accuracy

Gain Stability : vs. temperature: ±30 ppm/°C; vs. time: ±10 ppm/month

Analog Filters: 10, 100, or 650 Hz, selectable

Analog Outputs: Filtered, ± 0 to 5 Vdc or ±0 to 10 Vdc or

4-20 mA or 4-12-20 mA, selectable, (20% over-range in voltage mode only)

Status Indicator Lights : Power and analog over-range

Internal Settings and Connections

