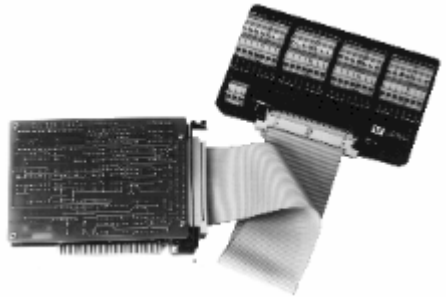
UPC601-U

UNIVERSAL SENSOR INTERFACE FOR PC DATA ACQUISITION



DESCRIPTION

The Validyne UPC601-U is a Universal Sensor Interface card for IBM PC/XT/AT or compatible computer. The UPC601-U will accept up to 16 analog sensor inputs directly; NO EXTERNAL SIGNAL CONDITIONING IS REQUIRED. Thermocouples, RTDs, potentiometers, strain gages, LVDTs and variable reluctance pressure transducers, as well as low-level DC voltages, may be wired directly to the UPC601-U IN ANY MIX OR COMBINATION. All required excitation and linearization is provided by the UPC601-U. 14 bit A/D resolution and 11 stages of programmable gain amplification to allow accurate measurement from sensor signal sources. The analog conversion rate is programmable to 5,000, 10,000, or 20,000 channels per second.

Software

The UPC601-U comes complete with EASY SENSE, a menu-driven Data Acquisition software package that supports real time graphs of sensor inputs. The program will also record data continuously to a disk file for later analysis. Additionally, each card is shipped with Basic & C driver codes to put the UPC601-U under direct control of the user's program.

A special streaming mode allows continuous storage of sensor input data to disk at 10,000 channels per second. Post-processing provides linearized sensor data in ASCII file format. For high level voltage signals, the streaming rate may be increased to 20,000 channels per second.

The UPC601-U Comes Complete With:

- ☐ Analog Input Terminal Block
- ☐ Five Foot Ribbon Cable for Terminal Block
- ☐ Easy Sense Software
- ☐ Basic and C Driver Codes

Features

- ☐ **Direct Sensor Input To PC**
- ☐ **Accepts ANY COMBINATION of:** Thermocouples, Thermistors, Strain Gages, LVDT's, RTD's Variable Reluctance, Pots, Differential, or Single-Ended DC Volts
- ☐ **14 Bit A/D Over 11 Gain Ranges**
- ☐ **Frequency Inputs, Analog Outputs**
- ☐ **16 Bits of Digital I/O**

Analog Inputs

Thermocouple types B,E,J,K,T,R, or S may be wired directly to the UPC601-U; accurate linearization (fourth-order polynomial) and reference junction compensation are provided. RTDs and thermistors may also be wired directly to the UPC601-U; a 4 Vdc, 1 mA source excitation is included. Linearization is provided for RTDs and Thermistors.

The UPC601-U supplies precision 4 Vdc excitation capable of driving 120 Ohm strain gages. Four-wire, five-wire, and six-wire input configurations are supported by the UPC601-U to provide lead wire compensation.

Any Validyne variable reluctance pressure transducer may be wired to the UPC601-U. AC exciation is supplied along with complete carrier demodulation.

Position measurement for your PC can be made using six-wire LVDTs. The UPC601-U provides 5kHz AC exciation and demodulation. Potentiometer used for position measurement can be wired directly to the UPC601-U.

In addition to sensors, the UPC601-U will also accept DC Voltages in any combination of differential and single-ended inputs. The full scale range is independently software programmable from ±10 mV to ±Vdc for each channel of DC input.

A frequency input channel is also available for signals from positive displacement flow meters, encoders, or magnetic speed pick-ups.

Specifications

Available I/O:	16 single-ended inputs (which can be paired up for up to 8 differential inputs) and one additional input for thermocouple cold junction compensation. 1 channels of frequency input.
Type of Inputs:	Thermocouple, RTD, Strain Gage, LVDT/RVDT/VR, Voltage, Resistance, Potentiometer, and Thermistor. One frequency input, TTL or AC.
Mechanical:	Half size plug-in board for PC/XT/AT or compatible occupies one expansion slot.
Environmental:	0 to +70 °C, 95% RH, non-condensing.
I/O Connections:	50 pin ribbon cable connects analog input terminal block to board edge connector. Separate frequency input with mating connector supplied.
Configuration:	All channels are programmable for PC software.
Power Required:	+5 Vdc @ 0.7 A, +12Vdc @ 50 mA, Sensor excitation current additional 200 mA maximum from +5V supply.

I/O	
Thermocouples:	Type B,E,J,K,T,R,S, linearized output °C or °F. Typical resolution 0.05 °C.
RTD:	10 Ohm to 2K Ohm, 0.00392 or 0.00385 alphas, linearized -200 to +850 °C. Platinum, nickel, copper, and thermistor probes. 3 or 4 wire configuration. Excitation from internal current source provided. Typical resolution, 0.05 °C.
LVDT/RVDT/VR:	2.5 mV/V to 1280 mV/V full scale in ten binary ranges: 2.5/ 5/ 10/ 20/ 40/ 80/ 160/ 320/ 640/ 1280 mV/V. 4 VAC, 5kHz excitation provided.
Strain Gages:	Typically 350 Ohm (120 Ohm minimum). Full Bridge configuration. Partial bridges completed with adapted. Sensitivity to ±2.5 mV/V FS (±1250 µ-strain FS, resolution 0.15 µ-strain, typical from strain gage with gage factor or 2). 4 Vdc precision excitation provided.
PC I/O Ports:	8 sequential addresses in PC I/O space. Selectable starting address.
Voltage:	±10 mV to ±10.24 V full scale, single-ended or differential input in 11 binary ranges: 10/ 20/ 40/ 80/ 160/ 320/ 640/ 1280/ 2560/ 5120 mV and 10.24 Vdc.
Excitation:	Integral 4 Vdc for Strain Gages, (0.2 A dc maximum). Current source for RTDs 1.0 mA. 4 Vac @5 kHz synchronous carrier demodulator for variable reluctance, LVDT and RVDT devices.
Input Protection:	Voltage protection to ±20 Vpk, (power off), or ±35 Vpk (power on). Typical static discharge to 4 KV is survived.
Common Mode:	±10V.
Crosstalk:	-115db or better.
Resolution:	14 bits (±13 bits)
Averaging:	Programmable averaging on each channel.
Sample Rate:	Low level inputs – 10,000 channels/Sec. High level inputs - 20,000 channels/second.
Accuracy:	Total system error 0.02% FS. All calibration factors are stored in EEPROM for each channel. Range tempco typically 50ppm/°C. Offset autozero tempco typically 0.15 µV/°C. Linearity, symmetry errors typically 0.012%FSR.
Channel Scanning:	Number of channels used software selectable.
Math Functions:	Slope and Intercept, (Y = mX + b). Polynomial Thermocouple & RED linearization.
Data Storage:	Software included supports continuously streaming of data to disk at maximum sampling rate.
Frequency Inputs:	0.02 Hz to 50 kHz with 16 bit resolution. TTL or AC input. Three selectable sensitivity levels in AC mode.
Resistance:	10 Ohms to 12K Ohms, full scale.

ADVANTAGES

- ☐ Ideal for Laptop Computers
- ☐ No Signal Conditioning Needed
- ☐ 14 Bits A/D On 11 Programmable Ranges
- ☐ Complete with Data Acquisition Software

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