



## SPECIFICATION:

BOX SIZE	: 1*B"H=260*290*60 in mm
DATA LOGGER	
NO OF CHANNELS	: Data logger of 9 channels can be provided. Minimum requirement
DISPLAY	: 16 X 2 line LCD display with backlight.
SCAN RATE	: 0.2 sec per channel.
SAMPLING RATE	: 30 samples per sec.
INPUT	: 9 channels.
ANALOG	: 9 channel.
DIGITAL	: 0 channel .
SERIAL OUTPUT	: RS-232 Serial output provided at 9600 baud rate with USB.
POWER	: 230V 50Hz.
SOFTWARE	: FIN PIN ANALYSISER Lab View Software 2009 to Monitoring and controlling the Data Acquisition, Tend Plot, Offline Analysis, Printing.

## SENSORS

The sensors are used to measure the real physical parameters like load, deflection and etc. A sensor is a device that measures a physical quantity and converts it into a signal which can be read by an observer or by an instrument.

### K TYPE THERMOCOUPLE:

#### Special features

Type K (chromel-alumel) is the most common general purpose thermocouple with a sensitivity of approximately 41  $\mu\text{V}/^\circ\text{C}$ , chromel positive relative to alumel. It is inexpensive, and a wide variety of probes are available in its -200  $^\circ\text{C}$  to +1350  $^\circ\text{C}$  / -328  $^\circ\text{F}$  to +2462  $^\circ\text{F}$  range. Type K was specified at a time when metallurgy was less advanced than it is today, and consequently characteristics vary considerably between samples. One of the constituent metals, nickel, is magnetic; a characteristic of thermocouples made with magnetic material is that they undergo a step change in output when the magnetic material reaches its Curie point (around 354  $^\circ\text{C}$  for type K thermocouples).



### Nomenclature

Maximum Temperature Range

Extension Grade

Sensitivity

### Specifications

- 328 to 2282  $^\circ\text{F}$
- 200 to 1250  $^\circ\text{C}$
- 32 to 392  $^\circ\text{F}$
- 0 to 200  $^\circ\text{C}$
- 41  $\mu\text{V}/^\circ\text{C}$

## PRESSURE TRANSMITTER

A pressure sensor measures pressure, typically of gases or liquids. Pressure is an expression of the force required to stop a fluid from expanding, and is usually stated in terms of force per unit area. A pressure sensor usually acts as a transducer; it generates a signal as a function of the pressure imposed. For the purposes of this article, such a signal is electrical.

### EQ-PT-1000 PRESSURE TRANSMITTER

#### Model: EQ-PT-1000

The stainless steel pressure port makes the sensors resistant to aggressive media such as Oil, Fuel, Diesel, Waste Water and other aggressive liquids. The sensors are factory calibrated using the state-of-the-art, highly productive electronic trimming technology.

### Features

- Ceramic sensing element
- Shock Resistant and Vibration Resistant
- High Accuracy, High Stability
- Wide Operating Temp. Range of -40 to 125  $^\circ\text{C}$
- Output Signal : 4 ~ 20 mA



### Specification

NOMENCLATURE	SPECIFICATIONS
Measuring Range	Refer Table - A
Overload Pressure	1.5 Times the rated value
Output Signal	4 to 20 mA
Supply Voltage	9 to 30 V DC
Accuracy	$\pm 0.5\%$ F.S.
Long-term Stability	$\pm 0.2\%$ /5Year
Overload Resistance	50 (V-12)
Temp. Coefficient	$< 1 \times 0.0001 \text{ } ^\circ\text{C} \cdot \text{F.S.}$
Response Time	10ms
Compensated Temp.	-10 ~ 70 $^\circ\text{C}$
Span & full scale Adjustment	$\pm 5\%$ by two trimmers
Protection	IP 65
Weight	Approx. 165 g.

### Mechanical Properties Ceramic

Wetted parts	Ceramic
Body	Stainless Steel
Fixing Spanner	27mm
Mounting orientation	Any Direction

### Operating Conditions

Operating temperature range	-40...125 $^\circ\text{C}$
Storage temperature range	-20...50 $^\circ\text{C}$
Humidity	95% RH

## MICROCONTROLLER SPECIFICATIONS:

40-PIN 8-BIT CMOS FLASH MICROCONTROLLERS  
PIC16F877

### Microcontroller Core Features:

#### High performance RISC CPU

- Only 35 single word instructions to learn
- All single cycle instructions except for program Branches which are two cycle
- Operating speed: DC - 20 MHz clock input DC - 200 ns instruction cycle
- Up to 8K x 14 words of FLASH Program Memory,
- Up to 368 x 8 bytes of Data Memory (RAM)
- Up to 256 x 8 bytes of EEPROM Data Memory
- Pinout compatible to the PIC16F877A
- Interrupt capability (up to 14 sources)
- Eight level deep hardware stack
- Direct, indirect and relative addressing modes
- Power-on Reset (POR)
- Power-up Timer (PWRT) and Oscillator Start-up Timer (OST)
- Watchdog Timer (WDT) with its own on-chip RC oscillator for reliable operation
- Programmable code protection
- Power saving SLEEP mode
- Selectable oscillator options
- Low power, high speed CMOS FLASH/EEPROM technology
- Fully static design
- In-Circuit Serial Programming<sup>®</sup> (ICSP) via two pins
- Single 5V In-Circuit Serial Programming capability
- In-Circuit Debugging via two pins
- Processor read/write access to program memory
- Wide operating voltage range: 2.0V to 5.5V
- High Sink/Source Current: 25 mA
- Commercial, Industrial and Extended temperature ranges
- Low-power consumption:
  - < 0.6 mA typical @ 3V, 4 MHz
  - 20  $\mu\text{A}$  typical @ 3V, 32 kHz
  - < 1  $\mu\text{A}$  typical standby current

### Peripheral Features:

- Timer0: 8-bit timer/counter with 8-bit prescaler
- Timer1: 16-bit timer/counter with prescaler, Can be incremented during SLEEP via external Crystal/clock
- Timer2: 8-bit timer/counter with 8-bit period Register, prescaler and postscaler
- Two Capture, Compare, PWM modules
- Capture is 16-bit, max. resolution is 12.5 ns
- Compare is 16-bit, max. resolution is 200 ns
- PWM max. resolution is 10-bit
- 10-bit multi-channel Analog-to-Digital converter
- Synchronous Serial Port (SSP) with SPI (Master mode) and I2C (Master/Slave)
- Universal Synchronous Asynchronous Receiver Transmitter (USART/SCI) with 9-bit address detection
- Parallel Slave Port (PSP) 8-bits wide, with external RD, WR and CS controls (40/44-pin only)
- Brown-out detection circuitry for Brown-out Reset (BOR)

## PIN OUT

U1			
1	MCLR/VPP	RB7/PAGE	25L
2	RAS/ANO	RB6/PAGE	25L
3	RAL/AN	RB5	25L
4	RAS/AN/VREF	RB4	25L
5	RAS/AN/VREF	RB3/PAGE	25L
6	RAL/TDO	RB2	25L
7	RAS/AN/VSS	RB1	25L
8	RE3/AN5RDn	RB0/V	25L
9	RE3/AN5VWn	VSS	25L
10	RE3/AN7CS	VDD	25L
11	VA0	RD7/PAGE	25L
12	VA1	RD6/PAGE	25L
13	VA2	RD5/PAGE	25L
14	CS/CLEOUT	RD4/PAGE	25L
15	RD7/TD0/STCK	RD3/STCK	25L
16	RD6/TD0/STCK	RD2/STCK	25L
17	RD5/CP1	RD1/STCK	25L
18	RD4/SDSL	RD0/PAGE	25L
19	RD3/PAGE	RD0/PAGE	25L
20	RD2/PAGE	RD0/PAGE	25L
	PIC16F877		

## FUTURES:

Microcontrollers are used in automatically controlled products and devices, such as automobile engine control systems, implantable medical devices, remote controls, office machines, appliances, power tools, and toys. By reducing the size and cost compared to a design that uses a separate micro-processor, memory, and input/output devices, microcontrollers make it economical to digitally control even more devices and processes. Mixed signal microcontrollers are common, integrating analog components needed to control non-digital electronic systems

### SOFTWARE FOR MICROCONTROLLER

MPLAB IDE is used for developing the program to microcontroller in this Hitech c. compiler is used to developing c programs

### SOFTWARE SPECIFICATION

#### Lab view

LabVIEW (Laboratory Virtual Instrumentation Engineering Workbench) is a platform and development environment for a visual programming language from National Instruments. This software is used to developing of .exe file to our application .

#### BENEFITS

One benefit of LabVIEW over other development environments is the extensive support for accessing instrumentation hardware. Drivers and abstraction layers for many different types of instruments and buses are included or are available for inclusion. These present themselves as graphical nodes. In our equipment we are developing the exe file to the application of PINFIN to monitor the temperature and pressure and the voltage and current as show in fig.