

# FLOW THROUGH ORIFICE METER

## SPECIFICATION:

### DATA LOGGER

NO OF CHANNELS : Data logger of 3 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 : 3 channels.

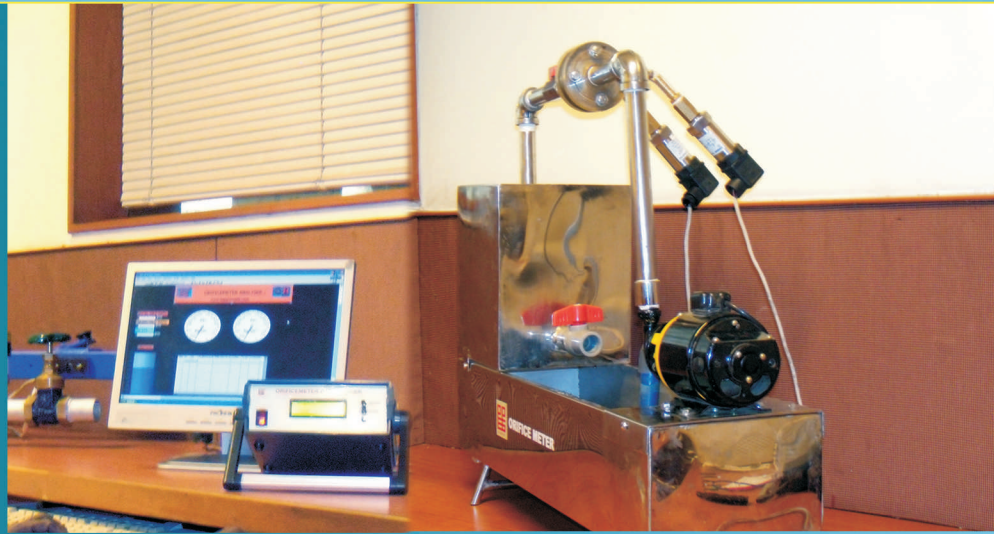
ANALOG : 3 channel.

DIGITAL : 0 channel .

SERIAL OUTPUT : RS-232 Serial output provided  
at 9600 baud rate with USB.

POWER : 230V 50HZ.

SOFTWARE : ORIFICE FLOW METER ANALYZER  
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.

## FUEL GAUGE

### Special features

A fuel gauge (water or gas gauge) is an instrument used to indicate the level of fuel contained in a tank. Commonly used in cars, these may also be used for any tank including underground storage tanks.

Nomenclature	Specifications
Maximum level Range	0 to 160mm
In put voltage	0 to 5v
Nominal resistance	260ohms
Electrical connection	3 wire Accuracy $\pm 0.5\%$ F.S.
Response Time	10ms
Output Signal	100 to 4000 mv



**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-1000-2

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 °C
- Output Signal : 4 ~ 20 mA

## Specification

NOMENCLATURE	SPECIFICATIONS
Measuring Range	0 ~ 6 k/cm2
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	$\pm 0.2\%$ /FS/Year
Overload Resistance	50 (V- 12)
Temp. Coefficient	< 1x0.0001 °C + F.S.
Response Time	10ms
Compensated Temp.	-10 ~ 70°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°C  
Storage temperature range -20...50°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  $\mu$ A typical @ 3V, 32 kHz
  - < 1  $\mu$ 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

UT	
1	MCLR/Vpp
2	RASND
3	RA1/INT
4	RAD4SD/VEEF
5	RAD4SD/VEEF
6	RA4/T0CK
7	RAD4SD/VEEF
8	RE4/AN5RDn
9	RE4/AN5WRn
10	RE4/AN7/CSn
11	V851
12	V851
13	OSC1/CLKIN
14	OSC2/CLKOUT
15	RD17/ROSO1CKE
16	RD17/ROSO2CKE
17	RD3/CCP1
18	RD3/SCK/SCL
19	RD8/PS0
20	RD1/PS0
21	RD7/PS0
22	RD6/PS0
23	RD5/PS0
24	RD4/PS0
25	RD7/PS0
26	RD6/PS0
27	RD5/PS0
28	RD4/PS0
29	RD3/PS0
30	RD2/PS0
31	RD1/PS0
32	RD0/PS0
33	RD7/PS0
34	RD6/PS0
35	RD5/PS0
36	RD4/PS0
37	RD3/PS0
38	RD2/PS0
39	RD1/PS0
40	RD0/PS0

## 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 microprocessor, 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

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## 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 .  
FRONT PANEL

## 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 ORIFICE METER to monitor the presser and level indicators as show in fig.

