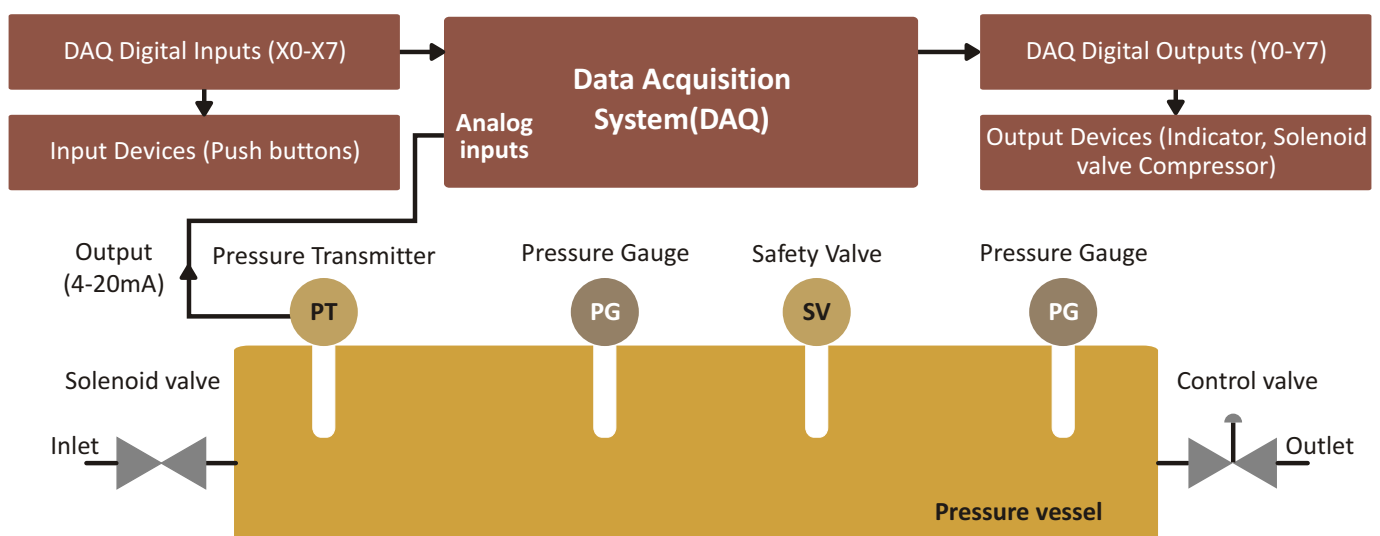


In this modern era, instrumentation & control engineering have major share for the industrial growth, whilst process control is a vital concept of it. The functionality and complexity of process control has been increased.

The workbench consisting of instrument panel and working area with antistatic mat, allows study of principal and working of pressure measurement and safety. This system comprises the latest components, which reflects the latest technological innovations in this field.

Sciencetech 2480 Pressure Measurement and Safety WorkBench contains data acquisition system (DAQ), current display, solenoid valve, control valve, pressure vessel, pressure transmitter, safety valve, hydraulic & pneumatic double acting cylinder & single acting cylinder, 5/2 solenoid valve, 3/2 solenoid valve, manifold, FRL, air compressor, hydraulic power pack, dead weight tester, and hydro pneumatic pump. It has safety measures such as emergency shutdown and overheat protector. A wide range of experiments can be performed on this platform.

Block diagram



Features

- On control panel pneumatic components like 5/2 solenoid valve, 3/2 solenoid valve, double acting cylinder, single acting cylinder, manifold, and FRL.
- On control panel hydraulic components like 4/3 solenoid valve, double acting cylinder, single acting cylinder, and flow control valve.
- Hydro pneumatic pump.
- Dead weight pressure gauge tester.
- Real-time DAQ with 8 digital inputs, 8 digital outputs, and 8 analog inputs.
- Dashboard software for supervisory control of the process.
- Pressure vessel with pressure transmitter, non returning valve, safety valve, pressure gauge and hand lever valve.
- Valve motorized/control valve and solenoid valve.
- On control panel start, stop, compressor, and solenoid switches & indicator visual, audio, compressor, and solenoid valve.
- Heavy duty workbench and electrical control panel.
- Self containing bench mounting arrangement.
- Easy to operate and self explanatory system.
- System frame with caster wheel arrangement for ease in moment.
- Enhanced electrical safety considerations.
- PC based data logging and analysis.

Scope of Learning

Study and use of

- DAQ digital input, outputs, and analog inputs.
- WorkBench operation and data analysis using software.
- Hydro pneumatic pump (booster).
- Dead weight pressure gauge tester.
- Characteristics of pressure transmitter.
- Motorized control valve.

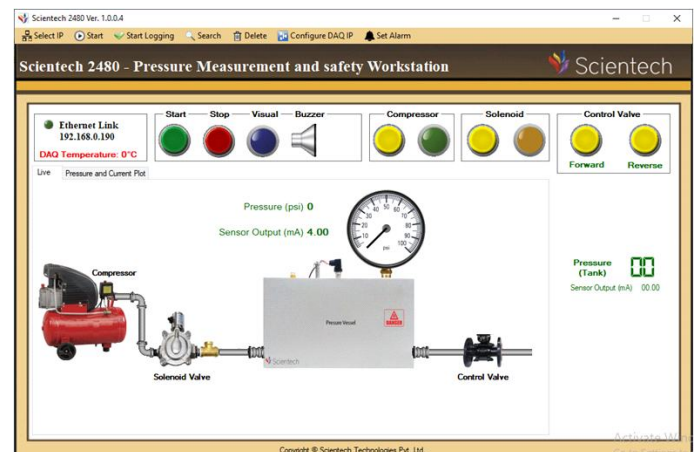
Control of:

- Pneumatic double acting cylinder by 5/2 solenoid valve.
- Pneumatic single acting cylinder by 3/2 solenoid valve.
- Hydraulic double acting cylinder by solenoid valve 1.
- Hydraulic single acting cylinder by solenoid valve 2.

Application areas

- General industrial applications, including water treatment and off-highway vehicles.
- Building automation and HVAC/R.
- Semiconductor manufacturing.
- Pharmaceuticals and health care.
- Medical facilities and lab.

Software window



Software control panel

Mechanical Specifications

WorkBench is ergonomically designed suitable for a batch of 3 students.

Frame: Cold rolled seamless 18G rectangle tube sections; rust preventive coat and powder coating.

Work area: 18mm board with lamination

Storage drawers with the following facilities-

- Telescopic with locking facility.
- Place in drawers for meters, patch cords, components and other accessories for storage, easy identification and access inside the drawers.
- MCB for On/Off control and over load protection.
- Modular design for instruments removal and maintenance.
- Necessary cables & accessories to perform pressure measurement and safety WorkBench experiments.
- Power indicator, On/Off control, circuit breaker of rating 6Amp with On/Off control and with over load protection.

Technical Specifications

Data acquisition system (DAQ)

Analog input	: 8
Digital input	: 8
Digital output	: 8
ADC resolution (in bit)	: 24
Ethernet	: Yes
Data login (PC based)	: Yes
RS485	: Yes
Software	: Yes

Dead weight pressure gauge tester

Range : 0.4kgf/cm²-25kgf/cm²

Pressure transmitter

Range : 0-10 bar

Accuracy : ± 0.5 %

Output : 4-20mA, 2 wire system

Pressure gauge

Range : 0-110 psi

Dial : 100 mm

Current display

Display : 4 digit, 7 segment

Keys : 3 nos. for parameter setting

Input type : Current

Input range : 4-20mA

Safety valve

Pressure vessel

Tank capacity : 20 liter

Pressure : 110 psi (maximum)

Hydraulic components

Double acting cylinder : 1 no.

Single acting cylinder : 1 no.

Solenoid valve : 2 nos.

Manifold : 3 nos.

DC valve or hand lever valve

Oil hydraulic power pack

Tank capacity : 25 liter with oil level indicator, breather valve, relief valve gear pump

Flow : 3 LMP

Pressure : 40-70 bar electric motor 0.5HP, 230V AC

Pneumatic components

Double acting cylinder	: 1 no.
Single acting cylinder	: 1 no.
5/2 solenoid valve	: 1 no.
3/2 solenoid valve	: 1 no.
Manifold	: 1 no.
Hydro pneumatic pump:	1 no.
Pneumatic pressure	: 5 kg/cm ²
Hydraulic pressure	: 30 kg/cm ² (at kg/cm ² pneumatic pressure)

Caster wheel

Quantity	: 2 (with lock), 2 (without lock)
Size	: 4"

MCB

Current	: 16Ampere
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Toggle switch

Indicators	: 4nos. (Visual, compressor, solenoid valve, audio)
Push to On switches	: 4nos. (Start, stop, compressor, solenoid)

Energy meter

Voltage range	: 0-440V AC
Current range	: 0-5 Ampere
Watt range	: 1000W

Solenoid valve

Range	: 0-150 psi
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Air compressor

Motor	: 1.5 HP
Current	: 6A
Tank capacity	: 25 liter

Package contains

	(in nos.)
Electro pneumatic and hydraulic system	1
Ethernet cable	1
Air compressor	1
PU tube	20 feet
Dead weight tester	1
Oil for dead weight tester 40mg	1
Handle for dead weight tester	4
Fix spanner 16-17	1
Fix spanner 3/8-1/8	1
Fix spanner 9/16-7/16	2
SS Hex M20X1.5	1
SS Hex 3/8 BSP	1
Screw driver	1
Rubber oaring	1
Plastic oaring	1
M.S. weight 0.1kgf/cm ²	1
M.S. weight 0.2kgf/cm ²	2
M.S. weight 0.4kgf/cm ²	1
M.S. weight 0.5kgf/cm ²	1
M.S. weight 1kgf/cm ²	2
M.S. weight 2kgf/cm ²	1
M.S. weight 3.6kgf/cm ²	1
M.S. weight 4kgf/cm ²	4
4mm yellow patch cord 16"	8
4mm blue patch cord 16"	8
4mm red patch cord 16"	6
4mm black patch cord 16"	4
4mm black patch cord 40"	6
4mm red patch cord 40"	6
Allen key 5mm	1
Drawer lock key	3
Hydraulic oil	13 liter
Hydraulic power pack	1
Funnel	1
Fix spanner 18-19	1
Fix spanner 20-22	1
Tower light	1
Sprit level	1