Nvis 3021 PLC controlled Electro Pneumatic Training platform is designed to demonstrate the design, construction and application of Pneumatic components and circuits. It integrates PLC technology to build Hybrid Industrial Automation systems with Pneumatic components and modules. Pneumatic is a key technology that is found in numerous areas of engineering. Students investigate the basic "building blocks" of modern pneumatics and how they are interconnected to form systems. Pneumatic Systems provide the power needed to control aircraft, operate heavy dump trucks, excavators, operate the brakes in our cars and even power lifts in our tall buildings. PLC provides the flexibility to design and build numerous systems using software and I/O interfaces without changes to the hard wired connections.

Features

- PLC operated Electro Pneumatic platform
- 12 Digital Input, 8 Digital Output
- Open platform to explore wide PLC and Pneumatic applications
- Industrial feel & look
- DIN rail mounting for PLC
- Function and identification of Pneumatic components and their symbols
- Powerful instruction sets
- High execution speed
- Extremely easy and student friendly software
- Several sample Ladder programs
- Practice troubleshooting skills
- Compact tabletop ergonomic design

- Ready experimental details
- Robust construction
- Toggle Switches, LED's, Buzzer, Double acting cylinder, 5/2 solenoid valve, Flow control valve, Manifold,5/2 hand lever valve Single Acting Cylinder, Proximity Sensor, 3/2 Solenoid valve and Limit Switch
- Mounting panel for Pneumatic Components
- Sequential & Linear Pneumatic Control
- Understanding of Industrial Pneumatic Components
- Pneumatic Safety awareness
- Exhaustive course material & references
- 'One Touch Push in Fittings' for easy fitting of PU tubes - which are provided for fast & leak-proof connections
- Online Product Tutorials

Scope of Learning

Study and use of:

- Ladder programming
- Normally Open bit (NO) and Normally Close bit (NC) instruction by PLC
- Memory bit
- Set Reset instruction
- Timer instruction
- Cumulative Timer instruction
- Special Memory bits
- Counter instruction
- UDCTR instruction
- PWM instruction
- Compare instruction
- Arithmetic function (addition)
- Trigonometric (Sin instruction)
- Move instruction
- Conversion (BCD to Binary instruction)
- Master control loop
- Skip control loop
- Jump & Label instruction
- Subroutine

Study and implementation of:

- NOT gate using PLC
- AND gate using PLC
- OR gate using PLC
- NAND gate using PLC
- NOR gate using PLC
- XOR gate using PLC
- XNOR gate using PLC
- Study of Sensors like Proximity Sensor and Limit Switch
- Study of Actuators like Audio Indicator, Visual Indicator, 5/2 Solenoid Valve,3/2 Solenoid Valve, single acting cylinder, double acting cylinder
- Control of single active cylinder using Flow Control Valve
- Control of double acting cylinder using flow control valve
  Control of double acting cylinder by 5/2 hand lever valve
- Control (A+A-) sequencing of double acting cylinder by using PLC
- Sequencing (A+A-) control of single acting cylinder using 3/2 Solenoid Valve and PLC
- Control (A+B+A-B-) & (A+B-A-B+)sequencing of double acting cylinder using PLC
- Control (A-B+A+B-) & (A-B-A+B+) sequencing of double acting cylinder using PLC
- Sequencing Control (Alternately) of two double acting cylinder using PLC
- Sequencing Control (Simultaneously) of two double acting cylinder using PLC
- Study of combined sequencing control of single acting cylinder and Double Acting Cylinder by 3/2 Solenoid Valve , 5/2 Solenoid Valve and PLC
- Ladder program for Counting of double acting cylinder piston forward movement using Proximity Sensor and PLC
- Ladder program for Counting of double acting cylinder piston forward movement using Limit Switch and PLC

Technical Specifications

PLC

- Digital Input : 12
- Digital Output : 8
- Program size (Words) : 2048
- Toggle Switches : 8
- LED's : 8
- Buzzer : 1
- Boolean execution speed : 0.33 µs/Sequential instruction in average
- Interfacing : RS232,
- No. of ports : 1
- Input Voltage : 24 V DC
- Output Voltage : 24 V DC
- Power Supply : 110V - 260V AC, 50/60Hz

Pneumatic components-

- Double acting cylinder : 2
- Single acting cylinder : 1
- 5/2 Hand lever valve : 1
- Manifold : 1
- FRL : 1
- Flow control Valve : 2
- 5/2 Solenoid Valve : 2
- 3/2 Solenoid Valve : 1
- Proximity Sensor : 1
- Limit Switch : 1

Dimensions (mm) : W 760 x D 310 x H 550
Weight : 8 Kg. (approximately)
Included Accessories : Interfacing cable&Mains cord:1
PU tube-7 meter, Tee Connector-2nos,Tube cutter-1no

Component details:

Double acting cylinder

Stroke length : 100 mm
Operating Pressure range : 0.5-8 kg/cm^2
Diameter : 32 mm

Physical view   Symbol

Single acting Cylinder

Stroke length : 75 mm
Operating Pressure range : 0.5-8kg/cm^2
Diameter : 32 mm
Port size : 1/8 inch

Physical view   Symbol

Solenoid Valve:

Type : 5/2 (2 position,5 port)
Pressure Range : 1.5–8 Kg /cm^2
Operating Voltage : +24V DC

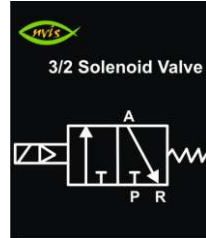Physical view   Symbol

Component details:

3/2 Solenoid Valve

Type : 3/2 (2 position, 3 port)

Pressure range : 1.5–8 Kg /cm^2

Operating Voltage : +24V DC

Physical view

Symbol

Hand lever Valve

Type : 5/2 (2 position , 5 port)

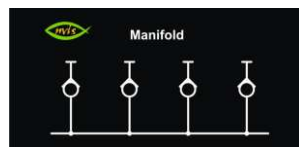Pressure range : 1.5–8 Kg /cm^2

Physical view
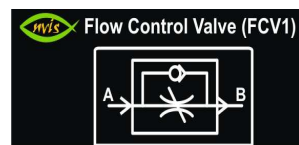
Symbol

Manifold

Ports : 4

Physical view

Symbol

Flow Control Valve

Operating Pressure range : 1.5 - 8kg /cm^2

Physical view

Symbol
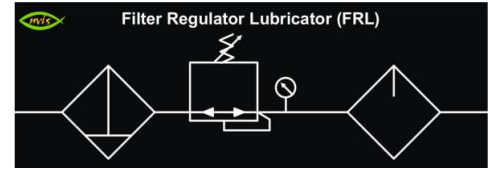
Pressure Gauge

Pressure range : Reads (0-150 psi and 0-10kg/cm^2)

Physical view

Symbol

FRL (Filter, Regulator and Lubricator)

Operating Pressure : 115 psi

Symbol

Fillter

Filter size : 25 micron

Physical view
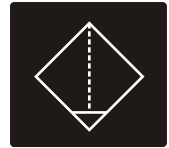
Symbol

Regulator

Applicable Pressure range:0.05 ~ 0.85 Mpa

Physical view
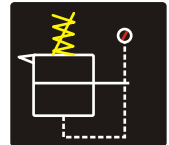
Symbol

Lubricator

Working Pressure : 0.05 ~ 0.8 Mpa

Physical view
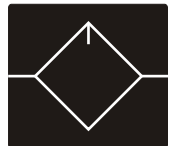
Symbol

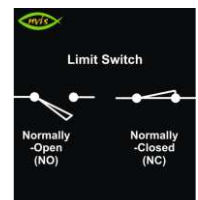### Proximity Sensor (Inductive)

Input Voltage : +24V DC

Physical view

Symbol

Limit Switch

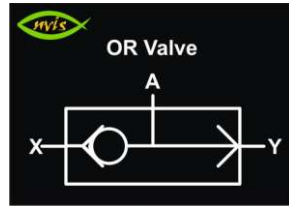Type : Roller Lever

Physical view

Symbol

Optional Components :

OR Valve (Shuttle)

Pressure range : $0.5\sim12.25\,kg/cm^2$
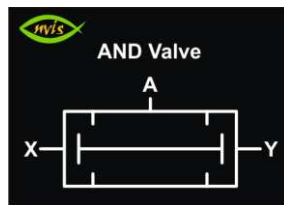

Physical view   Symbol

AND Valve (Dual Pressure)

Operating Pressure range: $0.5\text{-}12.25\,kg/cm^2$
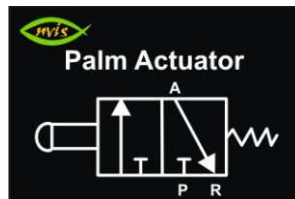

Physical view   Symbol

Push Button, or Palm Actuator

Type : 3/2 (2 Position/3 Port)

Operating Pressure range : $1.5\text{ - }8\,kg/cm^2$
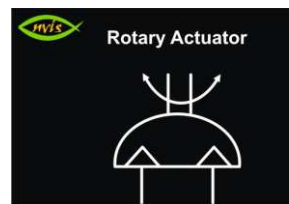

Physical view   Symbol

Rotary Actuator

Acting type : Double acting

Operating Pressure : $1\sim9.9\,kgf/cm^2$
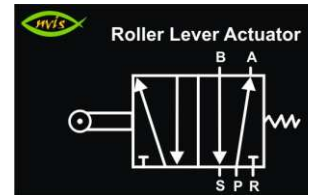

Physical view   Symbol

Roller Lever Actuator

Type : 5/2 (2 Position/5 Port)

Operating Pressure range : $1.0\,Kg/cm^2$ to $10\,Kg/cm^2$

Physical view   Symbol

Linear Actuator

Stroke Length : 250mm

Speed : 4mm/Sec

Load : 300Kg

Motor : 24VDC

Air Compressor

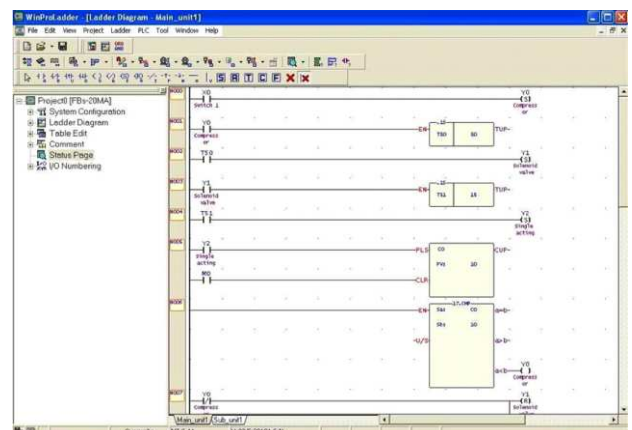Pressure range : 0 to 150 psi and 0 to $10\,kg/cm^2$

Supply : 230V AC

Motor Type : Single Phase

Motor Power : 0.5HP

Tank Capacity : 5L

Software program window

Subject to Change

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