



Nvis 3000A Control System Lab exposes students & industry professional to the fundamentals of Control System. Studies include how one device can be used to manage, command, direct, or regulate the behavior of other System Open Loop control & Close Loop control .

Nvis 3000A has various parts like Temperature Sensor, Light Sensor, DC Motor, Servo Motor, LED lamps, IR Sensor, Relay SPST, Relay DPDT, de-bounce Switch, LED bar, Buzzer etc., which can be used for study of Control System. Process can be controlled using P, PI & PID control system There are a wide range of experiments that can be performed on the platform. Nvis 3000A Control System Lab is also compatible with Nvis 630 Data Acquisition System. Nvis 630 DAQ is very useful for sensing and controlling analog and digital signals of any process. It makes easy and interesting to interface real world signals with PC/Laptop through USB bus. For ease of connection it has screw terminals.

Features

- Open Loop Control System
- Close Loop Control System
- On board Temperature Sensor and heater
- Feedback concept
- P, PI & PID Control System using software
- External DC Motor with encoder
- On board LED lamp and Light Sensor
- On board Buzzer for Alarm
- On board Infrared Sensor
- On board Relay interface
- On board LED bar display
- On board Servo Motor control
- DC Motor speed control
- Light intensity control
- V/F, F/V & V/I conversion
- Breadboard for circuit design

Nvis 630 Data Acquisition System

- 4 Analog Input (ADC) channels
- 1 Analog Output (DAC) channels
- 1 PWM Output
- 22 Digital Input and Output channels
- 10-bit ADC resolution
- Data logging facility
- USB interface
- Two unity gain given to strengthen the weak signal from any Sensor
- Removable screw terminals for easy signal connectivity
- Exhaustive course material & references



Scope of Learning

Study & observe:

- Voltage to Frequency converter
- Frequency to Voltage converter
- Characteristic of Photoconductive cell(LDR)
- Motor speed & input characteristics
- Position control of Servo Motor

Study & implement:

- Light intensity control using PWM method
- Bidirectional Motor speed control
- Tachogenerator using F/V converter
- Motor control using PWM method
- Open-Loop DC Motor control
- Closed-Loop DC Motor control
- Speed of a DC motor using P, PI & PID controller
- Open-Loop Temperature control
- Closed-Loop Temperature control
- Temperature using P, PI & PID controller
- Open-Loop Light intensity control
- Closed-Loop Light intensity control
- Study & Control Light Intensity using P, PI & PID controller

Technical Specifications

| | |
|---------------------------------|--|
| Operating Voltage | : +5V, - 5V, +12V, -12V |
| Servo Motor | : +5VDC |
| DC Motor | : +12VDC |
| Temperature Sensor | : 10mV/°C |
| Light Sensor | : Photo Conductive Cell (LDR) |
| Light Source | : 2 LED's |
| V/F | : Input 0-5V Output 0-5 KHz Approximately) |
| F/V | : Input 0-5 KHz Output 0-5V (Approximately) |
| V/I | : 4 to 20mA |
| Clock Generator | : 0-43.50 KHz |
| SPST Relay | : +5V |
| DPDT Relay | : +5V |
| De-Bounce Switch | : Monostable (5V output) |
| PWM | : 1 no. |
| Buzzer | : +5V |
| Switches | : IR Switch, DIP switch |
| Test Points | : 25 |
| DAQ Analog Inputs | : 4 Inputs with 10 bit resolution |
| DAQ Analog Output | : 1 Output 10 bit resolutions |
| DAQ Digital Inputs | : 11 TTL Inputs |
| DAQ Digital Outputs | : 11 TTL Outputs |
| DAQ Unity gain amplifier | : 2 (0V to 10V) |
| DAQ Frequency Counter | : 0 to 6 MHz (Square Wave) |
| DAQ PC Interface | : USB 2.0 |
| Weight | : 1.5 kg (Approximately) |
| Mains Supply | : 230V +/- 10%, 50/60Hz |
| Power Consumption | : 4VA (Approximately) |
| Included Accessories : | |
| Nvis 630 (DAQ) | : 1 no. |
| Patch cords | : 12 nos. |
| SMPS Power Supply | : 1 no. |
| Optional | : Laptop |

