

GENERAL DESCRIPTION

The DB-1020MPT contain nine different industrial PLC where any two PLC don't have the same brand. DB-1020MPT used seventeen (17) different input/output module for interfacing Nine (9) different PLC. Students can program, interface with input and output load from nine different industrial PLC. So the student will be familiar with most of the PLC applications and be capable of controlling any PLC operated machinery from Industries.

DB-1020MPT



Specification

LIST OF APPLICATION/EXPERIMENT WITH DIFFERENT MODULES

- | | |
|---|---|
| 1 The construction of nine different categories PLC | 22 Programming method of Variable Frequency Drive with PLC |
| 2 Interfacing method of nine different categories PLC | 23 The construction of Three Phase Induction motor |
| 3 Programming method of nine different categories PLC | 24 Interfacing Method of Three Phase Induction motor with VFD & PLC |
| 4 Pick & Place using PLC & Pneumatic Air Suction method | 25 The construction of Stepper Motor |
| 5 Pick & Place using PLC & Pneumatic Gripper method | 26 Interfacing Method of Stepper Motor with PLC |
| 6 Water Pump Control using nine different categories PLC | 27 The construction of Seven Segment Display |
| 7 Fire Indication System using nine different categories PLC | 28 Interfacing Method of Seven Segment Display with PLC |
| 8 Traffic Light Control using nine different categories PLC | 29 Interfacing Power Supply with Nine Different Categories PLC |
| 9 The construction of Pneumatic cylinder | |
| 10 Sequential Control of three Pneumatic Cylinder using nine different categories PLC | |
| 11 The construction of Pneumatic solenoid valve | |
| 12 Control of Pneumatic solenoid valve using PLC | |
| 13 Interfacing of PLC & Pneumatic solenoid valve | |
| 14 The method of Control Relay using PLC | |
| 15 The methods of three phase Induction Motor Starter using PLC | |
| 16 Forward-and-reverse operation methods of three phase Induction Motor | |
| 17 The method of interfacing PLC with Input Switch | |
| 18 The method of interfacing PLC with Input Sensor | |
| 19 Operating method of interfacing proximity sensor with PLC | |
| 20 Operating method of interfacing photo sensor with PLC | |
| 21 Use of Variable Frequency Drive with PLC | |

TECHNICAL SPECIFICATION

Main Structure:
 Main Voltage: 1 Phase 220V / 50/60Hz
 Working Table: 1 EA
 Working Frame: 3 Step
 Module Storage Cabinet: 2 EA
 Electric accessories Storage Cabinet: 1 EA
 Ari Compressor: 1 EA
 Air compressor (basic equipment minimal machine)
 Power: AC 220V±10% 50Hz/60Hz
 Motor power: 650W
 Nominal volume Air compressor: 9L normal output voltage 0.7 MPa
 Noise Degree: 66 dB
 Dimension: L x W x H (cm):173.5 x 70.0 x 166.0
 Connection facility: Safety Socket 2mm & 4mm

LIST OF MODULES

Module: DB1020-MPT01

PLC Brand: SIEMENS
 Model Number: 6ED1052-1MD00-0BA8

Programming Language: Ladder, Functional Flow, Chart Diagram
 PLC Power supply: 1 No.
 PLC Digital input: 08
 PLC Analog input: 04 Nos
 PLC Analog output: 02 Nos
 PLC Digital output: 04
 PLC Display unit: YES
 PLC Input voltage: 24VDC, 1Amp
 Permissible range, Lower limit (DC): 20.4V
 Permissible range, Upper limit (DC): 28.8V
 Programming software: LOGO Soft Comfort
 Built in Ethernet communication
 Programming Cable: PLC to PC communication cable
 Connection facility 2mm & 4mm safety socket
 Module Dimension Lx W x H (cm): 29.5 x 22.5 x 4.5

(2 points high speed 100KHz, 2 points medium speed 20KHz, 4 points medium speed total 5KHz)
 PLC Output: 6 points relay
 Communication Port: RS232/USB
 Built-in power supply: SPW14-AC/D12/D24
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

Module: DB1020-MPT04

PLC Brand: Omron
 Model Number: CPM1A-30CDR-A-V1

Power Supply: 220VAC
 Triggering Voltage: 24VDC
 Digital Input: 18
 Digital Output: 12(Relay)
 Programming Cable: PLC to PC communication Cable
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

Module: DB1020-MPT02

PLC Brand: Mitsubishi
 Model Number: FX3U-16MR-DS

Power Supply: 24 VDC
 Input Types: 24 VDC
 Output Types: Relay
 Communication Options: RS-232 • RS-485, RS-422, USB
 CPU Functions: High speed counters, 32-bit floating-point math
 Program Memory Byte (Step): 128 K max. (64,000)
 Ambient Temperature: 0-55° C (in operation) -20 ±70° C (in storage)
 Ambient Humidity: 5-95% RH, no condensation (in operation)
 Noise Immunity: 1000 Vpp noise voltage, 1 µs pulse width at 30-100Hz
 Digital Input: 8
 Digital Output: 8 (Relay)
 Programming Software: Gx-Developer
 Programming Cable: SC-09
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

Module: DB1020-MPT05

PLC Brand: Delta
 Model Number: dvp10ec00r3

Power Supply: 220VAC
 Triggering Voltage: 24VDC
 Digital Input: 06
 Digital Output: 04(Relay)
 Programming Cable: PLC to PC communication Cable
 Connection facility 2mm & 4mm Safety Socket
 Module Dimension: L x W x H (cm): 29.5 x 22.5 x 4.5

Module: DB1020-MPT06

PLC Brand- LS (LS Industrial System)
 Model number: XBC-DR30SU

Power Supply: 220 V AC
 Digital Input: 18
 Digital Output: 12(Relay)
 Triggering Voltage: 24VDC
 Programming Cable: PLC to PC communication Cable
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

Module: DB1020-MPT03

PLC Brand: Fatek
 Model Number: FBs-14MAR

PLC input: 8 points Digital
 Triggering Power: 24VDC

LIST OF MODULES

Module: DB1020-MPT07

PLC Brand: Schneider Electric
 Model Number: SR3B101BD/ AFPX-C40R

Built in display: LCD
 High-speed Operation
 Number of control scheme lines
 Maximum Number of I/O Points:
 0...500 with FBD programming
 0...240 with ladder programming
 Discrete input number: 6 conforming to EN/IEC 61131-2 type 1
 Output thermal current: 8 A for all 4 outputs (relay output)
 Number of Output: 4 Relay outputs
 Mechanical durability: 10000000 cycles (relay output)
 IP degree of protection: IP20 (terminal block) - conforming to IEC 60529
 Discrete input current: 4 mA
 Discrete input voltage: 24 V DC
 Supply voltage limits: 19.2-30 V
 Checks: Program memory on each power up
 Backup time: 10 years at 25 °C
 Cycle time: 6-90ms
 Programming Cable: PLC to PC communication Cable
 Connection facility 2 mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

Module: DB1020-MPT08

PLC Brand: Wecon
 Model Number: LX3V-0806MR-A2

Triggering Voltage: 24VDC
 Digital Output: 6 (Relay)
 Digital Input: 8
 Power Supply: 220VAC
 Programming Cable: PLC to PC communication Cable
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

Module: DB1020-MPT09

PLC Brand: Allen Bradley
 Model Number: Micro820

PLC Digital Input: 12 Nos
 PLC Digital Output: 07 Nos
 PLC Analog Input: 04 Nos
 PLC Analog Output: 01No
 20-point controllers
 Provides embedded 0-10V non-isolated 4 channel analog input and 1 channel analog output for speed control of an AC drive
 Provides embedded communications via non-isolated serial port (for RS-232 and RS-485 communications) and Ethernet port
 Communicates via Ethernet/IP™

Provides embedded micro SDTM slot for program transfer, data log, and recipe management

Provides embedded support for up to four 10k thermistor temperature inputs
 Supports program download through USB with an optional 3.5-in. Remote LCD (Optional)
 Supports up to two Micro800® Plug-in Modules
 Programming Cable: PLC to PC communication Cable
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

Module: DB1020-MPT10 (Alternative)

PLC: Panasonic (Optional)
 Model Number: AFPX-C40R

High-speed Operation
 Large Capacity Program Memory
 FP-X, 32k steps*2 program memory
 Independent Comment Memory
 Maximum Number of I/O Points
 Up to eight expansion units can be connected to one control unit, the maximum number of I/O points is 300. the number of I/O points can be increased to 382.
 Built-in 4-axis Pulse Output
 Modbus-RTU
 Power Supply: 220V AC
 Digital Input: 24
 Digital Output: 16
 Programming Cable: PLC to PC communication Cable
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

LIST OF EXPERIMENT / APPLICATION

A. PLC Pick & Place Using Pneumatic Air Suction Module

Base Plate: Aluminum Profile
 Structure: Aluminum Profile
 Function Indicator: Tower type (Red, Green, Yellow)
 Carry Function: Using Air suction method
 Pneumatic cylinder: 02 Pcs
 Optical Fiber Sensor: 02 Sets
 Solenoid Valve: 03 Pcs
 Cabinet control circuit power supply: DC 24V
 Temperature: -10 ~ 40
 Humidity: ≤90%
 Air pressure: 0.4 ~ 0.6Mpa
 Input power: Single-phase, three-wire AC 220V±10%
 50Hz/60Hz
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 60.0 x 46.0 x 2.0

B. PLC Pick & Place using Pneumatic Gripper Module

Air pressure: 0.4 ~ 0.6Mpa
 Temperature: -10 ~ 40
 Humidity: ≤90%
 Cabinet control circuit power supply: DC24V
 Solenoid Valve: 03 Pcs
 Optical Fiber Sensor: 02 Sets
 Pneumatic cylinder: 02 Pcs
 Carry Function: Using pneumatic gripper method
 Function Indicator: Tower type (Red, Green, Yellow)
 Structure: Aluminum Profile
 Base Plate: Aluminum Profile
 Input power: Single-phase, three-wire AC 220V±10%
 50Hz/60Hz
 Connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 60.0 x 46.0 x 2.0

C. Water Pump Control

Base Plate: Aluminum Profile
 Water Chamber: Upper and Lower
 Water through: Solenoid valve
 Water Pump: 5W
 Operating Voltage: 24V DC
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 60.0 x 46.0 x 2.0

D. Fire Indication System Module:

Smoke Sensor
 Operating voltage: 24V
 Interfacing PLC and DC power supply connection facility
 Interfacing facility with water level control module
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

E. Traffic Light Control Module

Built-in, Green, Yellow, Red indicator for interface PLC and DC power supply connection facility
 Operating Voltage: 24V
 PLC connection facility 2mm & 4mm safety Socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

F. Pneumatic Control Module

Pneumatic cylinder: 03 EA
 Temperature: -10 ~ 40
 Humidity: ≤90%
 Air pressure: 0.4 ~ 0.6Mpa
 PLC connection facility 2mm & 4mm Safety Socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

G. Pneumatic solenoid valve Module

Pneumatic solenoid valve: 03EA
 Operating voltage: 24V
 PLC Connection point: 03EA
 PLC connection facility 2mm & 4mm safety socket
 Interfacing facility Pneumatic control Module
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

H. Relay Control Module

Double pole Double through Relay: 04 Set
 Relay operating voltage: 24V
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

I. Motor Starter module

Magnetic Contact switch: 02 nos.
 Star Delta status indication facility
 Relay operating voltage: 220V~240VAC
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

J. Input Switch Module

Pushbutton switch: 04 Nos
 Push on Push off switch: 04 Nos
 Relay operating voltage: 24VDC
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

K. Sensor module

Proximity sensor: 02 Nos
 Photo sensor: 02 Nos
 Thermocouple: 02 Nos
 Operating voltage: 24VDC
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

LIST OF EXPERIMENT / APPLICATION

L. Output Indicator Module

Output indicator: 04 Nos
 Operating voltage: 220V~240VAC
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

M. Variable Frequency Drive Module

Variable Frequency Drive: 01 No
 Input: Three phase/Single phase
 Output: Three phase 220 VAC (PWM)
 Capacity: 400watts
 Input operating voltage: 220V~240VAC
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

N. Three Phase Induction Motor Module

Three Phase Induction Module: 01 No
 Connection system: Delta
 Input operating voltage: 220V~240VAC
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

O. Stepper Motor Control Module

Unipolar Stepper Motor: 01 No
 Bipolar Stepper Motor: 01 No
 Input operating voltage: 5V/12V
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

P. Seven Segment Display module

Seven Segment Display: 02 no
 Input operating voltage: 5V/12V
 PLC connection facility 2mm & 4mm safety socket
 Module Dimension L x W x H (cm): 29.5 x 22.5 x 4.5

Q. Power Supply Module

Input operating voltage: 220V~240 VAC
 Output AC voltage: 220V,50 Hz
 Output DC voltage: 5V(1Amp),12V(1Amp), 24V(1Amp)
 PLC connection point facility 2mm & 4mm safety socket
 Fuse for safety protection facility

Accessories:

Air Compressor: 01 no
 Connecting jack 2mm/4mm: 01Set
 Power cable: 01 no
 Simulation software for compatible PLC
 PLC to PC communication cable: 09 Sets
 English Manual & CD: 01 Set
 Working table: 01 Set
 Computer: Optional