FMD1616-10 PLC

FMD-series : Ethernet, Modbus TCP/IP, Stepper Motor Drive, +Analog I/O, LCD port, RS232, RS485, Internet-TRiLOGI Ladder+Basic
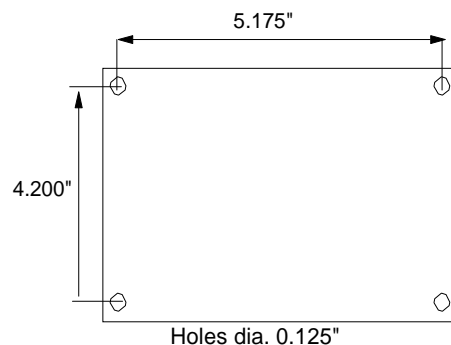
Product Description

The FMD1616-10 PLC is an upgrade version of the T100MD1616 model, bringing its built-in capabilities very much in line with that of the super F-series PLCs. With the inclusion of an onboard Ethernet port, a faster CPU, more analog I/Os and program memory, the FMD1616-10 provides great enhancement opportunities for applications currently using the T100MD1616. However, if preferred, the FMD1616-10 can also, in most cases, work simply as a drop-in replacement for the T100MD1616 PLC.

Built into the FMD1616-10 PLC are 16 digital inputs (includes 2 high speed encoders and 4 interrupts), 16 digital outputs (supports 4 PWM channels and 2 stepper motor pulse/direction controls) and 10 analog I/Os. Digital I/O capacity can be expanded to 128 digital inputs and 128 digital outputs using expansion boards EXP1616R or EXP4040. Analog I/O expansion modules which connect to the FMD1616-10's RS485 port are also readily available. Like all 'super' PLCs in Triangle Research's line-up, the FMD1616-10 is designed with ready connectivity to many peripheral device types. With the built-in Ethernet port and the iTRiLOGI client/server software, the FMD1616-10 is fully accessible for machine monitoring and OEM troubleshooting/reprogramming over the INTERNET. Built-in RS232 and RS485 connections and support of MODBUS protocols also makes the FMD1616-10 easy to integrate into mixed-brand PLC environments and networks.

As for all the super PLCs from Triangle Research, programming of the FMD1616-10 PLC is simplified with the powerful iTRiLOGI Ladder+BASIC software that is shipped with the starter kit. Similarly, as for all Triangle Research PLCs, the FMD1616-10 PLC incorporates a program code security feature in the interest of Automation OEMs' program protection.

Mounting

* Display sold separately

Built-in LCD Interface

RS485

16 Digital Outputs (24V, 1A). Also PWM & Step Motor Controller Pulse

RS232 HostLink and Modbus port

Expansion Port

10-Channel Analog I/Os

16 Digital Inputs Interrupt & Encoder (24V NPN)

Built-in Ethernet Connection

(a) Hole Mounting Locations for direct panel mount.

5.175"

4.200"

Holes dia. 0.125"

(b) Optional DIN-rail mounting kit available for installation on din rails.
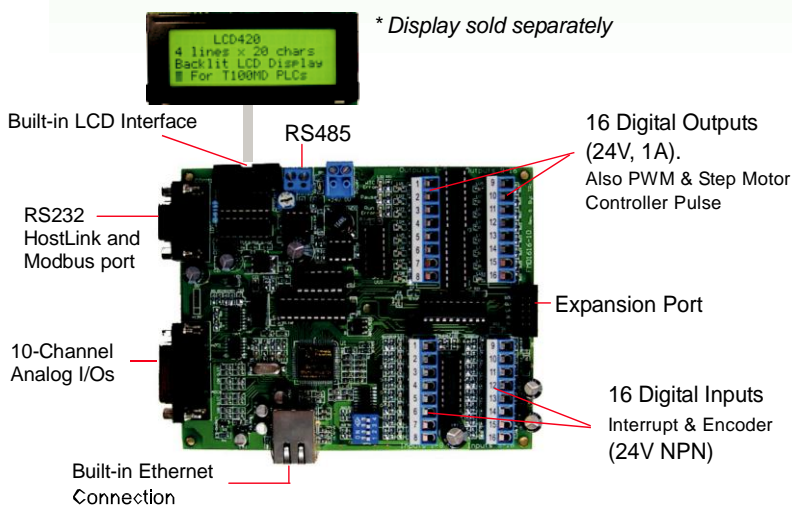
Accessories

- LCD Displays : LCD216 (2 lines x 16 char.), LCD420 (4 lines x 20 char.)
- Networked Display : MDS100-BW for multiple displays application or for extended mounting of display
- MD-HMI : 16-key pad with 8 LED and 4x20 LCD; plugs into LCD and expansion ports
- MMI6050 : 4.3`Color Graphics Touch Panel HMI
- I/O Expansion : Exp4040 or Exp1616R (16 Opto-isolated Digital Inouts, 16 Relay Outputs)
- FRAM RTC : Battery-Backed Real Time Clock plus Program/Data Memory Expansion
- Auto485 : RS232 to RS485 converter
- Analog Expansion : I-7000 series Analog I/O Expansion Modules
- USB-RS232 Interface : for connection to USB port on PC
- Din Rail Mounting : Din-Kit-2

Operating Voltage		**12 to 24V** DC (+/- 5%)
Digital Inputs		**16** (24V npn) with LED indicators
	Encoder Inputs	- **2** x 32-bit High Speed Counter (quadrature: 2 D/ls per channel)
	Interrupts	- **4** x user-defined interrupt (latency < 0.5ms, +ve or –ve edge triggered)
Digital Outputs		**16** (24V npn) with LED Indicators
		24V, Max 1A npn, Continuous Output Current 250mA, Driver Type : NPN Darlington Transistor
	PWM (current)	- **4** x PWM; shares with D/O #5 to #8 (continuous frequencies, 0.1% duty cycle resolution)
	Stepper Motor Control	- **2** x stepper motor control pulse/direction outputs (2 D/Os per stepper output)
Analog I/O		**10**
	- Input Interface	**8** x AI -12 bit, 0-5V
	- Output Interface	**2** x AO - 12 bit, 0-5V or 0-10V (Software selectable!). Expandable to **4** channels (0-5V)
Processing		I/O Scan time = 1ms (can be interrupted by input interrupts), Program Scan time = 4µs per step
High-Speed Counter		**2**x high-speed counters, **4**x pulse measurement channels (frequency, period and width)
		- simultaneous position and speed measurement on each channel.
Counters		**64**
Internal Relays / Timers		**512** internal relays, **64** timers (any one or all can be configured as "HighSpeed" timers)
Sequencers		**8** with 32 steps (step# 0 - # 31)
Real-Time Clock		<u>Standard</u> : Real Time Clock and Calendar (Year, Day, Month, Hours, Min, Sec, day-of-week) - no battery backup
		<u>With FRAM-RTC</u> : Real Time Clock and Calendar (Year, Day, Month, Hours, Min, Sec, day-of-week) - battery backup
PID		Built-in **16** channels PID Computation function (Proportional, Integral, Derviative digital control)
Connection Ports	- RS232	**1** x (DB9 Female Socket)
	- RS485	**1** x (two-pin screw terminals)
	- Ethernet	**1** x RJ45
	- Analog I/Os	**1** x DB-15 female socket for Analog Inputs and Outputs
	- LCD	**1** (IDC 14-pin)
	- Others	**4** x 8 way detachable screw terminals (5mm pitch) for digital inputs and outputs
Communicatons	Ethernet	- Direct connection to LAN or Internet for programming, monitoring and Remote Control
		- Support both Modbus/TCP Server (5 simult. connections) and Modbus/TCP Client
		- Extremely easy Peer-to-peer (or machine-to-machine) PLC communication.
		- TCP connection to any Server IP address:port number (e.g. to NIST Timer Server)
		- Event-driven Emailing. Create and save data file on a networked PC's hard disk
		- Excel spreadsheet Data Logging using TRi-ExcelLink software
		- Supports web query. Enterprise Database or MS Excel software can log PLC data directly via the Internet.
	RS232 & RS485	Supported Protocols : Native ASCII Host Link Commands (programming/monitoring)
		MODBUS RTU, MODBUS ASCII, OMRON C20H Host Link Commands
		Default COM speed 38,400 bps, may be set from 1200 to 115.2K & 230.4K bps
Memory Storage	<u>Standard</u>	
	- Program	**8K** words (16-bit) of program memory stored in flash memory.
	- Data	**A to Z** (32-bit Integer), **A$ to Z$** (ASCII strings) **DM[1]** to **DM[1000]** (16-bit integer array)
		1K Words (16-bit) additional non-volatile Flash memory for integer and string storage
	<u>With FRAM-RTC</u>	
	- Program	**16K** words (16-bit) of program memory stored in flash memory.
	- Data	**A to Z** (32-bit Integer), **A$ to Z$** (ASCII strings) **DM[1]** to **DM[4000]** (16-bit integer array) - configurable to non-volatile.
		11K Words (16-bit) non-volatile Ferromagnetic RAM memory for integer and string storage.
Programming Lang. / Env.		**iTRiLOGI Version 6.xx** (Ladder+Basic) / Windows
Dimensions / Weight		5.4"(L)x 4.5"(W) x 0.8"(H) / 5.9 oz (165 g)
I/O Expansion (Digital)		Expandable to **128** D/I and **128** D/O using EXP4040 and EXP1616R.
I2C Interface (Future)		Optional I2C-FRTC module provides I2C interface and 256K bytes EEPROM. (To Be Announced)

PLC Environmental Specs (Temperature and Vibration)

Operating Temperature	- Operating 0 to 70 deg C (32 to 158 deg F)
	- Storage -20 to +85 deg C (-4 to 185 deg F)
Operating Humidity	10% - 90% Rel. Humidity, non condensing
Electrical Noise Resistance	IEC801-4 (Fast transient)
	- 2KV to power supply, 50 microsecond pulse width, 1 min. 1KV to I/O by capacitive coupling, 50 microsecond pulse width.
Vibration resistance	IEC 68-2-6/1980 Vibration 1.6mm
	- 25Hz to 100Hz
	- Amplitude = +1.
	- Acceleration = + 4.0g

Absolute Max. Rating

Power Supply Input	30V
Digital Inputs	30V
Digital Outputs	30V
Relay Outputs	30VDC/250VAC
Analog Channels (0 to 5V)	7V