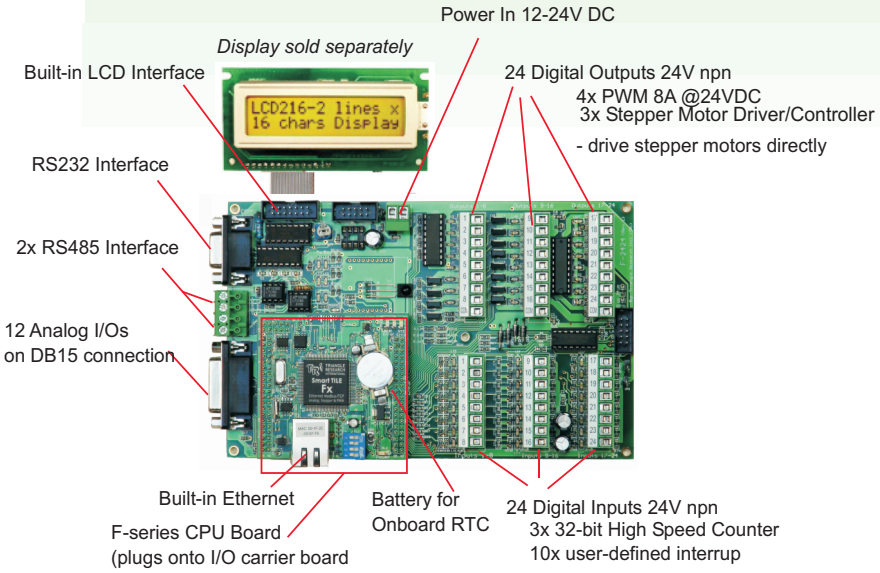
Fx2424 PLC

F-series : Ethernet, Modbus TCP/IP, Stepper Motor Drive, +Analog I/O, LCD port, RS232, RS485, Floating Pt, TRiLOGI Ladder+Basic

Product Description

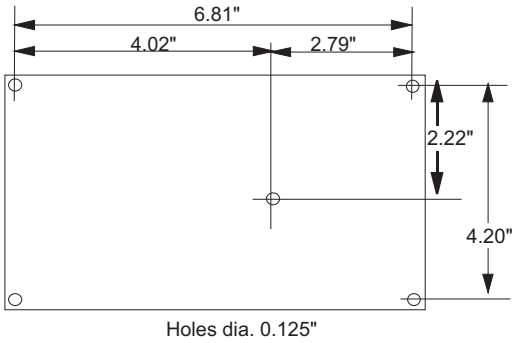
The Fx2424 PLC replaces Triangle Research Intl's (TRi) top-line F-series F2424 PLC and is floating-point math enabled. The brain board of this Super PLC is the Smart TILE (TRi Integrated Logic Engine) which incorporates high performance capabilities, versatility through a broad range of useful control features and communication readiness to support the automation trends in a more and more connected industrial world. Featuring a built-in Ethernet interface, the Fx2424 is readily programmable over the Internet using our proprietary i-TRiLOGI programming/monitoring software. As the PLC hosts both a PLC webserver and a Modbus/TCP server, it allows up to 6 simultaneous connections with i-TRiLOGI, ExcelLink, SCADA, HMI and MS-Excel's web query software as well as other enterprise database softwares. The Fx2424 is also able to perform machine-to-machine (M2M) communication, send dynamic content to any email address based on specified events, as well as open client connections and communicate with other network devices over the Internet.

An Fx2424 PLC has 24 digital inputs, 24 digital outputs and 12 analog I/Os built-in and is expandable up to 256 digital I/Os. It is capable of controlling and/or driving up to 3 stepper motors directly with up to 4A per phase@24VDC. Its high speed digital inputs allow up to 3 quadrature encoders which may be connected to provide both position and speed information of moving devices. With 1 RS232 port and 2 RS485 ports and all of them supporting Modbus ASCII/RTU protocols, the Fx2424 is fully equipped for connectivity to a whole range of peripheral devices. Furthermore, each Fx2424 comes equipped with an IR remote control receiver for contactless data entry, and supports an optional ZigBee wireless radio module - XBee supplied by Digi International Inc. While this highly integrated and flexible product is ideal for the OEM machine manufacturer, it is also poised for project applications in factory, home and building automation. Pricing is multi-tiered with progressively attractive discounts depending on OEM order quantity. Like all Triangle Research PLCs, the F-series PLC price-to-performance profile is quite possibly the best in its class in the market.



Mounting

(a) Hole mounting locations for direct panel mount



(b) Optional Din-Rail mounting kit available for installation on din-rails

Accessories Available :

- MMI8050iE (4.3") and MMI6070iE (7") Touchpanel COlor Display
- FP4030MR 3.1"HMI with 18 Push-Buttons
- 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
- I/O Expansion : Exp4040 or Exp1616R (16 Opto-isolated Digital Inouts, 16 Relay Outputs)
- 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

Features and Specs

Fx2424 PLC

Operating Voltage	Input **12** to **24V DC** (jumper not required)	
Digital Inputs	**24** (24V npn) with LED indicators	
	Encoder Inputs	- 3 x 32-bit High Speed Counter (quadrature: 2 D/Is per channel)
	Interrupts	- 10 x user-defined interrupt (latency < 0.5ms, +ve or –ve edge triggered)
Digital Outputs	**24** (24V npn) with LED Indicators	
	#5 to #16 : 24V, Max 8A npn, Continuous Output Current 4A, Driver Type : N-Channel power MOSFET with low r_{DS} = 0.05 Ω	
	#1 to #4 & #17 to #24: 24V, Max.1A npn, Continuous Output Current 350mA. Driver type : N-chanel power MOSFET IC	
	PWM (current)	- 4 x PWM 8A @24VDC (continuous frequencies, 0.1% duty cycle resolution)
	Stepper Motor Control	- 3 x stepper motor control pulse/direction outputs (2 D/Os per stepper output), or 3 x unipolar stepper motor DRIVER outputs (4 D/Os per stepper driver).
Analog I/Os	**8**	
	- Input Interface	8 ch, 12 bit, 0-5V
	- Output Interface	4 ch, 12 bit, 0-5V
Processing	I/O Scan time = 0.5ms (can be interrupted by input interrupts), Program Scan time = 2us per step	
High-Speed Counter	6 x pulse frequency, period and width measurement - may be used with pulse measurement, therefore allowing both position speed measurement from 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	Real Time Clock and Calendar (Year, Day, Month, Hours, Min, Sec, day-of-week) - Lithium CR1632 battery-backed (runs up to 3 years without ext.l power or 10 years if powered off only 1/3 of the time) - Real Time Clock can be updated with Atomic clock data from NIST timer server if PLC is connected to the Internet	
PID	Built-in 16 channels PID Computation Engine (Proportional, Integral, Derviative digital control)	
Connection Ports	- RS232	**1** (DB9 female connector , DCE)
	- RS485	**2 x** (two-pin screw terminals)
	- Ethernet	**1** RJ45
	- LCD	**1** (IDC 14-pin)
	- I/O Expansion	**1** (IDC 10-pin)
	- Infra Red Remote Control	**1** (38 KHz carrier) Learning IR Remote control input. Learn up to 128 IR command Can be used to control external AV device. May also be used as contactless data entry.
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 socket connection to any Server IP address:port number for data upload/download - FTP upload of PLC's created data files to external FTP servers - Event-driven Emailing. Create and save data file on a networked PC's hard disk - Excel spreadsheet Data Logging using TRi-ExcelLink software
	- 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	- Program	**23.5K** words (16-bit) of program memory stored in flash memory.
	- Data	**A to Z** (32-bit Integer)**, A$ to Z$** (ASCII strings) [2] **DM[1]** to **DM[4000]** (16-bit integer array) **A# to Z#,** [2] **FP[1] to FP[1000]** (32-bit floating point variables) [1]**FRAM** - 6K bytes additional non-volatile memory for integers and string storage
	- Flash File System	1740K bytes Flash Drive. Data Logging, storage of user's webpages or applet. Access by FTP
Programming Lang. / Env.	**iTRiLOGI Version 7** (Ladder Logic +Floating Point BASIC)	
Dimensions / Weight	· 7.05."(L)x 4.5"(W) x 1.5"(H) / 0.56 lb (0.257 kg)	
I/O Expansion (Digital)	Expandable to 128 D/I and 128 D/O using EXP4040, EXP2424 and EXP1616R.	

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

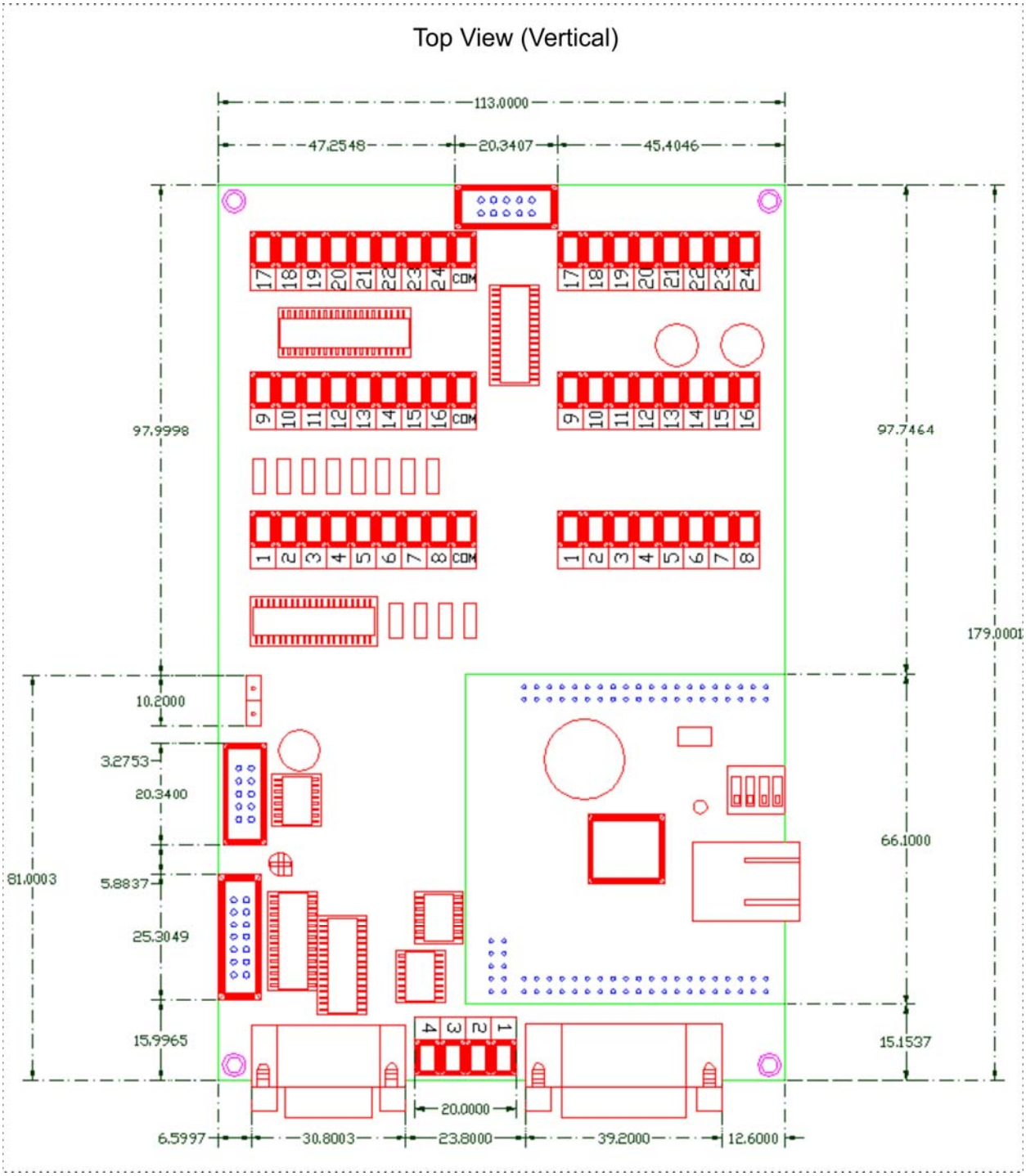
Power Supply Input	30V
Digital Inputs	30V
Digital Outputs	30V
Analog Channels (0 to 5V)	7V

[1]**FRAM:** State-of-The-Art, Ferro Magnetic RAM. No battery required. Unlimited read/write cycles

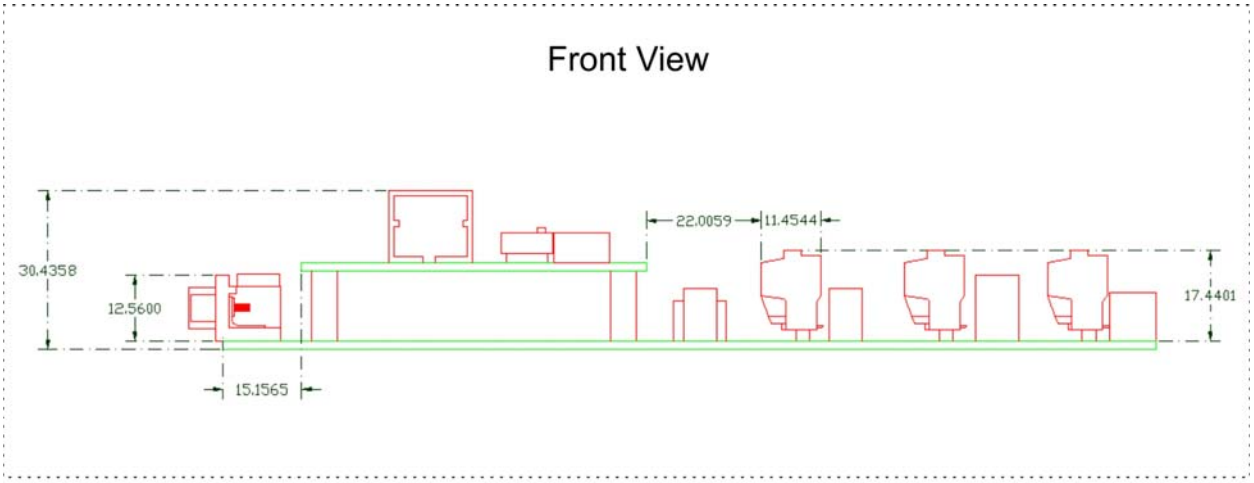
[2]**DM[ ] & FP[ ]:** DM[1]-DM[4000] and FP[1]-FP[1000] are automatically backup in FRAM and are therefore non-volatile.

RoHS	Compliant

Fx2424 Connector Positions and Physical Dimensions



Fx2424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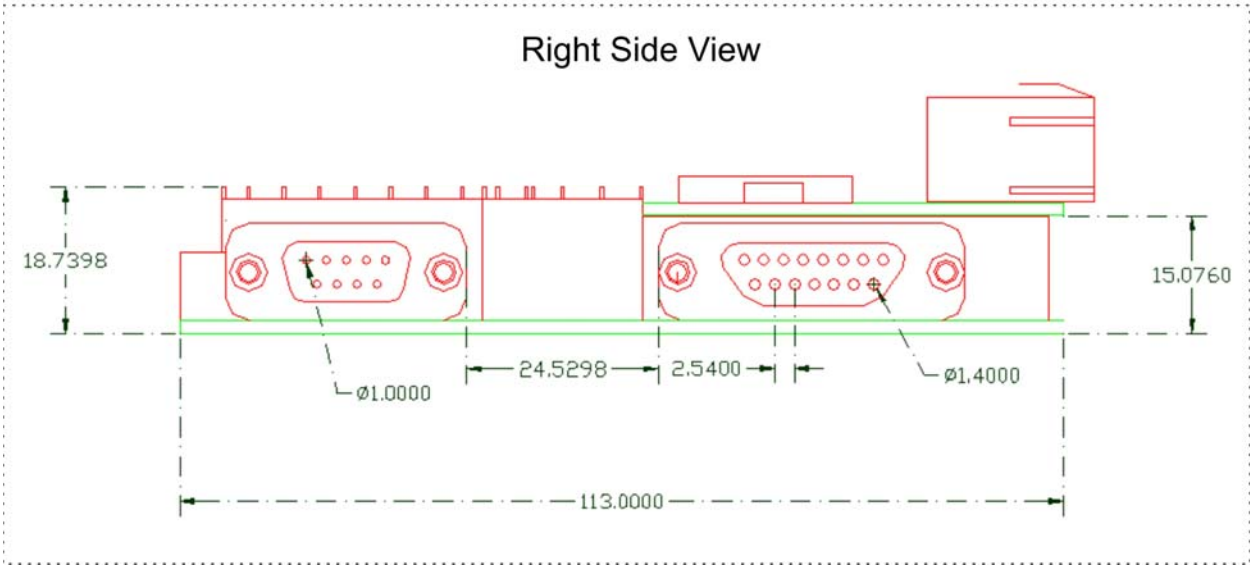
Right Side View
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Ø1.4000
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