

Product Description

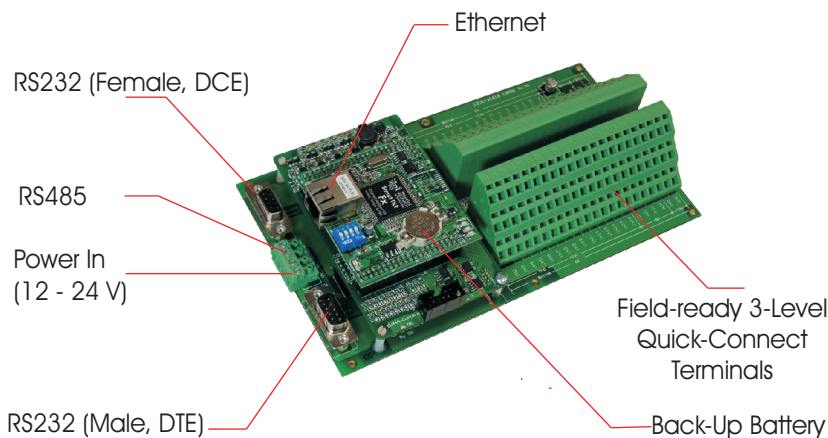
The EZWire1616 PLC is a first of its kind in the PLC market with integrated, field wiring ready I/O terminals. As every digital and analog I/O point is provided with its own power (+24V or +5V) and 0V on a 3-level screwless terminal, every sensor and actuator in the control system can be wired directly to the PLC without the need for additional screw terminal blocks and wire-harnesses. This design saves systems integrators and machine OEMs valuable time, material cost, control panel space and dreaded wiring error recovery effort during installation.

The PLC is a compact 3-board arrangement designed to take advantage of TRI's top of the line PLC features and yet allows for sensible maintenance and easy replacement of faulty sub-board where necessary. By separating the control and terminal boards, a failed control board, though rare, can be easily replaced without undoing any existing wiring in the control panel. Sitting at 4 1/2" x 8 1/8" and 1 1/2" tall, the compact EZWire1616 provides useful extra room in the control panel box for other components and lid-side devices (such as HMI), and for easier installation and maintenance access.

Being a newer model introduced in early 2015, the EZWire1616 incorporates many leading edge and time-tested features of TRI's well-established Super PLC series, in particular, the high-end F-series PLCs. It is equipped with 32 Digital I/Os (16 in, 16 out) and 12 Analog I/Os (8 in, 4 out), with expandability of up to 128 D/I and 128 D/O. Outputs will also support up to 4x PWM and up to 3x Stepper Motor Control. Real-time clock and battery backup are standard features on this PLC.

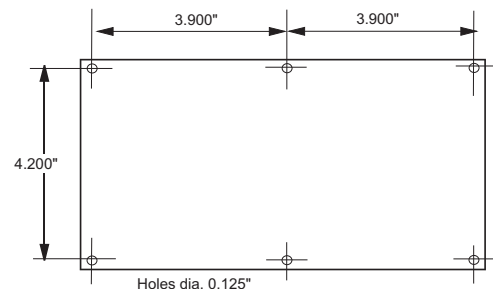
Serial communication is enabled through 2x RS232 and 1x RS485 ports supporting Native ASCII Host Link Commands, MODBUS RTU, MODBUS ASCII and OMRON C20 Hostlink Commands. Continuing the tradition of broad network connectivity for all TRI PLCs since 2001, Ethernet is built-in for direct connection to LAN or Internet for purpose of programming, monitoring and remote control. Supporting MODBUS/TCP Server and MODBUS/TCP Client, TRI PLCs readily work in multi-brand control system environments.

Programming of the EZWire1616 is with the powerful iTRiLOGI software which has been downloaded more than half a million times by users online for education, training and evaluation. Additionally, floating point math computation has been fully enabled in the EZWire1616.



Mounting

Hole mounting locations for direct panel mount



Note : Board Dimensions : 8.2"x 4.5"x 1.5"(H)

APPLICATIONS INCLUDE :

- Machinery Automation
- Test Process Automation
- Material Handling Automation
- Packaging Automation
- Food & Beverage Production
- Pharmaceutical Dispensing
- Water Treatment
- HVAC Management
- In-Vehicle/Vessel Controls



Operating Voltage	Input 12 to 24V DC (jumper not required)	
Digital Inputs	16 (24V npn) with LED indicators. Each input on 3-level quick connect terminal block that provides signal input, +24V & 0V	
	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	16 (24V npn) with LED Indicators Each output on 3-level quick connect terminal block that provides signal, +24V & 0V	
	All 16 outputs are 24V, Max 4A npn, Continuous Output Current 1A, Driver Type : N-Channel power MOSFET with low $r_{DS} = 0.05 \Omega$	
	PWM (current)	- 4 x PWM 4A @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 + 4.	
	- Input Interface	8 ch, 12 bit, 0-5V. May interface to 0-10V or 4-20mA inputs. Each Analog Input on 3-level quick connect terminal block that provides signal input, +5V & 0V
	- Output Interface	4 ch, 12 bit, 0-20mA Current. (Can be converted to 0-5V or 0-10V) Each Analog output on 3-level quick connect terminal block that provides signal output, +24V & 0V
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, Derivative digital control) with Floating-point parameters	
Connection Ports	- RS232	2 (DB9 female connector , DCE x 1. DB9 male connector, DTE x 1)
	- RS485	1 (on a two-pin screw terminals)
	- Ethernet	1 RJ45
	- Digital I/O Expansion	1 (IDC 10-pin)
Communications	- 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) ¹FRAM - 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	8.2"(L) x 4.5"(W) x 1.5"(H) / 0.9 lb (0.408 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	- Operation -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)	10V

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

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

RoHS Compliance	RoHS2 Directive 2011/65/EU
CE Conformance	MC Directive 89/336/EEC as amended by 92/31/EEC, 93/68/EEC and 93/97/EEC

Wiring Procedure

All of the terminals are on a 3-level quick connect, spring cage terminal block. They are (from top to bottom level):

- 1- Signal
- 2- Supply Voltage (either 5V or 24V)
- 3- 0V common.

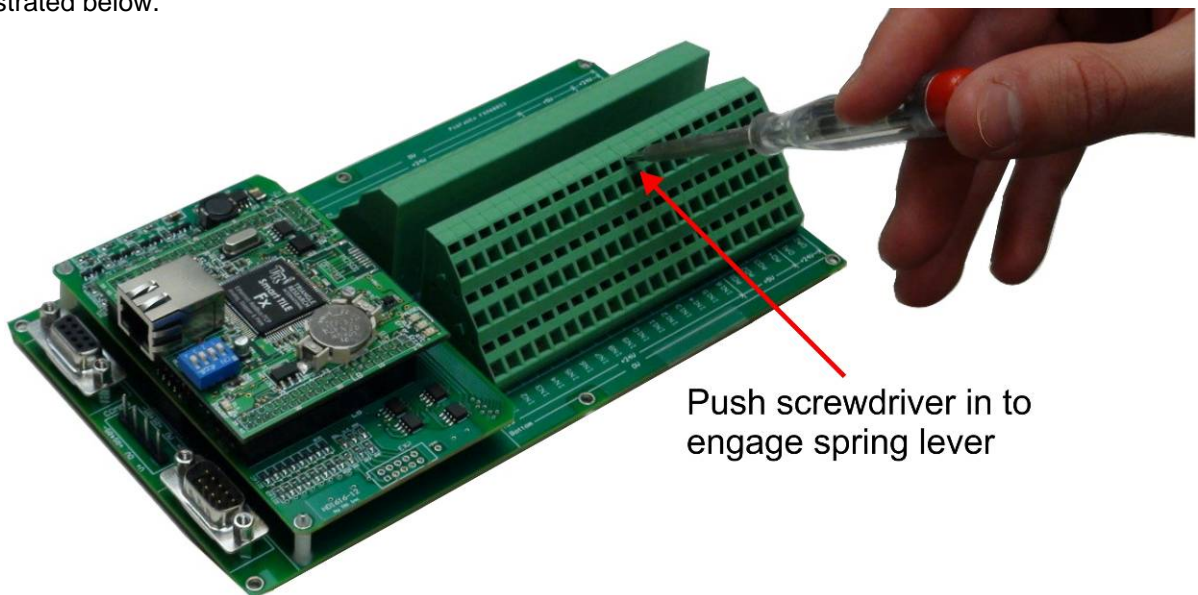


Terminal Wiring Details

Wiring the I/O is highly simplified with the quick-connect spring-cage terminals from Phoenix Contact. There are no time consuming screws to handle. The wiring technician simply needs to perform the following steps:

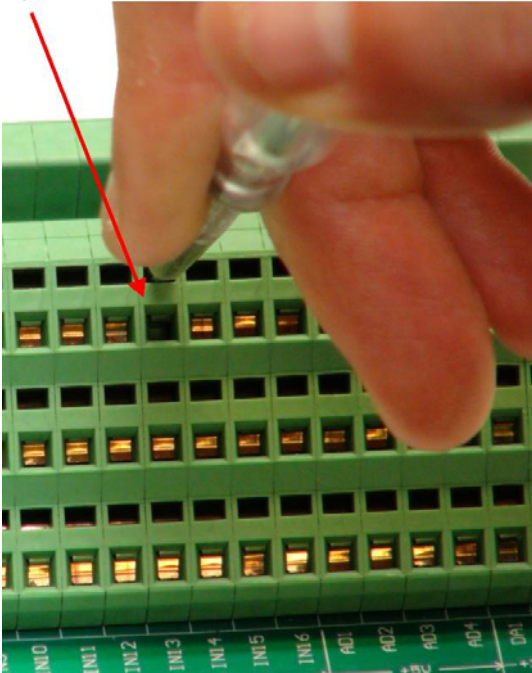
1. Insert a flathead screwdriver (1/8" wide by 1/2" long tip) into the spring-cage release hole with some pressure
2. Tilt the screwdriver up to act as a lever, which will open the associated terminal and allow for the wire to be inserted.
3. Insert the wire in the open terminal.
4. Once the wire is in place, the screwdriver can be lowered and removed from the actuation hole.

The wire is now securely held in place with an excellent electrical contact. Each of these steps are illustrated below.

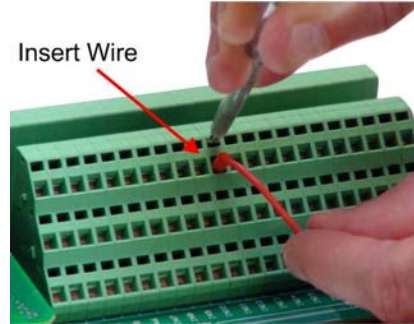


Terminal Wiring Step 1

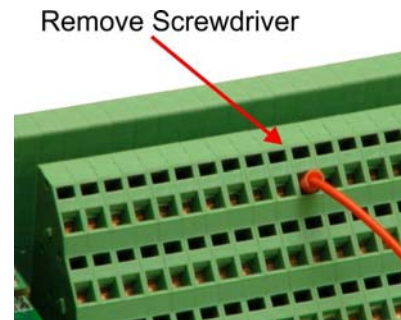
Push screwdriver up to
open wire terminal



Terminal Wiring Step 2



Terminal Wiring Step 3



Terminal Wiring Step 4

Compatible TRi Accessories for EZWire 1616 :

- Graphic Touchscreen HMI : MT8050iE (4.3"), MT6070iE (7"),
- Graphic HMI with 18 Btn Keypad : FP4030MR (3.1"), monochrome, variable color
- I/O Expansion : Exp4040, EXP2424, 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