

# PLCBus™ Expansion Boards — to be used with any product with a PLCBus™ port



## XP8100 — Digital I/O

The XP8100's 32 I/O channels are configured as 16 inputs and 16 outputs. For added flexibility, two other versions are available, the XP8110 and XP8120, offering 32 inputs and 32 outputs, respectively. Up to eight XP8100 boards may be linked together to provide 256 additional I/O lines.

The output drivers are socketed, allowing you to replace the existing sinking driver with a sourcing driver.

The inputs can handle a voltage range of -20 V to +24 V. Input bias resistors may be user-configured as either pull-up or pull-down. Each input line is protected against transient voltages ranging from -48 V to +48 V, providing stability in

### XP8100 Specifications

Board Size	2.835" x 3.525" x 0.63"
Operating Temp.	-40°C to +70°C
Humidity	5-95%, non-condensing
Power Requirements	12-24 V DC, 110 mA
I/O Type	16 protected inputs, -20 V to +24 V. 16 high-current outputs. At 25°C, a channel can sink up to 500 mA continuously. Output subject to package power limits and duty cycle. Load limit 48 V

### Versions

XP8100 16 protected digital inputs, 16 high-current outputs

XP8110 32 protected digital inputs

XP8120 32 high-current outputs

### Options and Upgrades

**FWT50.** Field wiring terminal with 5 mm screw terminal connectors

**FWT38.** Field wiring terminal with 3.81 mm (0.15") quick-release connectors

**FWT-Opto.** Field wiring terminal with optical isolation. Uses 3.81 mm (0.15") quick-release connectors. For inputs only

**Sourcing Driver Kit.** Provides 2 (2895) sourcing driver chips (16 output lines).

Two kits are required for 32 output lines. At 25°C, a channel can source up to 250 mA continuously

noisy environments. A low-pass filter also blocks incoming voltage spikes. For additional protection, a field wiring terminal module (FWT-Opto) can optically isolate all inputs.

I/O peripherals can connect directly to 4 headers. If you want to connect individual wires to the XP8100, quick-disconnect field wiring terminals are available.

Three field wiring terminals (FWTs), the FWT50, FWT38, and FWT-Opto, make it easy to unplug wiring connections. The FWT50 has 20 screw terminals that attach as one unit to the XP8100. The FWT38 has 20 terminals that attach as 2 banks of 10 terminals. Each bank is independently removable. The FWT-Opto is slightly larger than the FWT38, but has the same connectors and provides optically isolated inputs for electrically noisy environments. Any XP8100 model can support 2 field wiring terminals.



## XP8300 — Relay

The XP8300 has 6 high-power (form C) 24 V relays. A 12 V version, the XP8310, is also available. COM (common) and NO (normally open) connections for all 6 relays are provided on the header. NC (normally closed) connections are available for relays 4 and 5. A metal oxide varistor (MOV) protects the open contact of each relay, reducing or eliminating noise transients.

Each relay is individually controllable using Dynamic C® 32 functions. The actuation voltage for the board's relays comes from the SBC over the PLCBus. Alternatively, an external voltage source may be used.

### XP8300 Specifications

Board Size	2.835" 3.525" 0.78"
Operating Temp.	-40°C to +70°C
Humidity	5-95%, non-condensing
Power Requirements	24 V, 100 mA
I/O Type	6 SPDT relays (contacts rated 6 A at 120 V AC, 6 A at 24 V DC). 2 have NO, NC, and COM connections. 4 have NO and COM connections

### Versions

XP8300 Six 24 V relays

XP8310 Six 12 V relays



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**XP8500 — A/D**

The XP8500 is equipped with 11 channels of 12-bit analog-to-digital conversion, providing an easy way to interface to analog signal devices. Seven channels have an input range of 0 V to 2.5 V. Four channels have op-amps for signal conditioning with socketed bias and gain resistors that accommodate the actual input range, allowing operation between -10 V to +10 V.

Two conversion modes are available: ratiometric and absolute. The absolute mode utilizes an onboard voltage reference for accurately reading outside voltages. The ratiometric mode uses the same supply for both the reference and sample voltages, minimizing errors due to supply fluctuations.

Application programs can use library functions supplied in Dynamic C<sup>®</sup> 32 to change calibration constants stored in the onboard EEPROM.

**XP8500 Specifications**

Board Size	2.835" x 2.12" x 0.75"
Operating Temp.	-40°C to +70°C
Humidity	5-95%, non-condensing
Power Requirements	12-24 V DC, 32-64 mA
I/O Type	Eleven 12-bit analog inputs. 4 conditioned, default input range 0-10 V. 7 unconditioned, 0-2.5 V



**XP8800 — Stepper Motor Controller**

The XP8800 is a stepper-motor controller that provides control of a single low-speed, low-current stepper motor. Multiple XP8800 boards can be connected together, providing up to 4 axes of motor control.

The XP8800 board will control motor operations independently, leaving a master controller free to perform other tasks. The onboard circuitry provides an output of 8,000 pulses per second. Either use the built-in current amplifier for full or half-stepping a motor, or route the control signals to an external motor.

Motor acceleration and deceleration are software programmable, providing complete user control of motor functions. Deceleration and end-of-travel limit switch inputs are also provided. A 16-bit quadrature decoder and counter input rated at 3 MHz can be used for position feedback.

**XP8800 Specifications**

Board Size	2.835" x 4.0" x 0.58"
Operating Temp.	-40°C to +70°C
Humidity	5-95%, non-condensing
Power Requirements	5 V, 40 mA
I/O Type	One-axis stepper motor control rated at 35 V and 1.25 A per phase in full-step mode, and 1.0 A per phase in half-step mode

**Versions**

- XP8800 Specifications listed above
- XP8810 Same as XP8800 with optically isolated inputs that share the same ground



**XP8900 — D/A**

The XP8900 series provides four or eight 12-bit digital-to-analog converters (DACs). Configuration jumpers allow you to address up to eight XP8900 boards on a single PLCBus. The XP8900 consumes little power and has a low-power standby mode.

The 8 output channels with individual grounds and terminals for external analog power (also with individual grounds) appear on the Wago (spring-type) connector.

You may choose to supply ±12 V DC power to the XP8900 instead of deriving it from the PLCBus +24 V DC circuit to prevent bus loading or to have greater control over the DAC output signals.

**XP8900 Specifications**

Board Size	4.0" x 2.835" x 0.73"
Operating Temp.	-40°C to +70°C
Humidity	5-95%, non-condensing
Power Requirements	24 V DC, 75 mA. Standby current draw is 30 mA. Accepts optional external ±12 V DC for analog power
Outputs	Eight 12-bit DAC channels generating bipolar voltage output in the range -10 V DC to +10 V DC. Relative accuracy: ± 16 LSB (prior to op-amps)

**Versions**

- XP8900 Provides eight 12-bit DAC channels
- XP8910 Provides four 12-bit DAC channels