# Bitronics® PowerPlex II

The PowerPlex II (PPX II) is a new Automation Transducer built in the same package as the original PowerPlex, or with digital I/O added, in the M571 case. It is an Ethernet transducer with fast, 1-cycle updates that can be used in SCADA automation schemes and in synchronizing applications in conjunction with PLCs. It is an excellent choice as a replacement for the Bitronics M571 in non-recording applications. Two sets of three-phase voltages that allow direct connect for 600V ac systems are provided.

The PowerPlex II transducers are simple to set up and use, and provide the following features:

### Communications
- No need for PC software – Ethernet service port provides access to web server in the instrument so meters can be interfaced with just a web browser for viewing and configuration
- Ethernet protocol support for DNP3, Modbus TCP, or IEC 61850
- Built-in Ethernet switch allows pass-through from one device to another
- An option for both standard secondary "optimal resolution" or primary units makes communications with SCADA/RTU more flexible
- Optional display port and IRIG-B port
- Optional configurable RS-232/RS-485 serial port

### Measurements
- Full basic measurement set with demand and harmonic values plus phase angle, voltage differential and slip frequency used in synchronizing applications
- 0.2% revenue accuracy
- .001Hz accuracy
- Updates every 1 cycle

### Built for the Substation
- Wide-range universal power supply
- Rugged aluminum case
- Reduce inventory cost as one model covers all wiring options
- Easy to mount with compact transducer footprint

### Applications
- Synchronizing, voltage control, power factor control, and load shedding
- Digital front-end to SCADA systems
- Intelligent Electronic Device (IED) interfacing to RTUs and PLCs
- Plant equipment, line, power & energy monitoring
- Breaker status, rack-in, rack-out in switchgear

### Environmental
- Operating temperature range -40° to 70°C, storage temperature -40° to 85°C
- Humidity 0-95% non-condensing
- Surge withstand to ANSI/IEEE C37.90.1: 2002
- UL/CSA Recognized, File Number E164178, CE Marked




### Specifications
**Dimensions:**
Standard chassis: 5.28" H x 5.60" W x 5.63" D – overall depth including handle is 5.75" D (134mm H x 142mm W x 143mm D – overall depth including handle is 146mm D).
Wide chassis (with I/O and serial port): 5.2" H x 8.5" W x 5.9" D (132mm H x 216mm W x 150mm D).
**Weight:**
Standard chassis: 2.3 lbs. (1.04 kg)
Wide chassis (with I/O and serial port: 3.5 lbs. (1.59 kg)
**Power Supply:** 12 – 40V dc nominal, intended to connect to 12 and 24V batteries or 48-250V dc/55-240V ac with built in monitoring
**Current Inputs:** 5A nominal to maximum of 10A (2x overload)
**Voltage Inputs:** 600V ac nominal, 45-65Hz
**Outputs:** Dual RJ45 10BaseT/100BaseTX ports (Ethernet switch) for service port functions, Modbus or DNP3 TCP/IP support; IEC 61850 support optional display and IRIG-B ports
**Digital Inputs:** Optional 4 or 8; High speed, suitable for 1ms SOE
- Nominal Input Range: 24V dc to 250V dc
- Threshold Voltage: 15V dc +/-1V or 80V dc +/-5V (at 25C)
- Input Resistance: 33kohm
- Input De-bounce Time: Selectable, from 1 ms to 2 s

**Digital Outputs:** Optional 4
- Tripping duty relay
- Resistive: 30A
- Continuous Carry: 5A
- Break Inductive @48V dc: 700mA
- Break Inductive @125V dc: 200mA
- Output Operate Time (time from command by Host, does not include protocol delays):
  - Assert (Close time with "N.O." jumper): 8ms
  - Release (Open time with "N.O." jumper): 3ms

**Isolation:** I/O Terminals to Case: 2000Vac, 1 min. I/O Terminals to Channel: 2000Vac, 1 min (channel 4 to other channels).

### IP Address Identity Tool
The PPX II supports the Inverse Address Recognition Protocol (InARP), a software utility program that requests the IP address for a specific MAC address on an Ethernet network and can also scan for a range of MAC addresses and print the IP address for any devices which respond.

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| Available Measurements | |
|---|---|
| Available Measurements | PPX II |
| Amps A, B, C, Residual | x |
| Average 3-Phase Amps | x |
| Average 3-Phase Volts (1& 2) | x |
| Average Volts AN, BN, CN, AB, BC, CA (Bus 1) | x |
| Average (Max.) Volts AN, BN, CN, AB, BC, CA (Bus 1) | x |
| Average (Min.) Volts AN, BN, CN, AB, BC, CA (Bus 1) | x |
| Average Watts A, B, C, Total | x |
| Average (Max.) Watts A, B, C, Total | x |
| Average (Min.) Watts A, B, C, Total | x |
| Average VARs A, B, C, Total | x |
| Average (Max.) VARs A, B, C, Total | x |
| Average (Min.) VARs A, B, C, Total | x |
| Average VAs A, B, C, Total | x |
| Average (Max.)  VAs A, B, C, Total | x |
| Average (Min.) VAs A, B, C, Total | x |
| Class 0 Response Setup | x |
| CT Scale Factor | x |
| CT Scale Factor Divisor | x |
| Demand (Max.) Amps A, B, C, Residual | x |
| Demand (Max.) Fund. Amps A, B, C, Residual | x |
| Demand Amps A, B, C, Residual | x |
| Demand Fundamental Amps A, B, C, Residual | x |
| Displacement Power Factor A, B, C | x |
| Displacement Power Factor Total | x |
| Factory Version Hardware | x |
| Factory Version Software | x |
| Frequency (System) | x |
| Frequency Volts A, B, C (1 & 2) | x |
| Fund. Amps A, B, C, Residual | x |
| Fund. Volts AN, BN, CN, AB, BC, CA (1 & 2) | x |
| Health | x |
| Heartbeat | x |
| K-factor Amps A, B, C, Residual | x |
| Meter Type | x |
| Phase Angle Amps A, B, C | x |
| Phase Angle Volts A, B, C | x |
| Phase Angle Volts AB, BC, CA | x |
| Phase Angle Volts A 1-2, B 1-2, C 1-2 | x |

| Available Measurements | |
|---|---|
| Power Factor A, B, C, Total | x |
| Protocol Version | x |
| PT Scale Factor | x |
| PT Scale Factor Divisor | x |
| Slip Frequency Volts A 1-2, B 1-2, C 1-2 | x |
| Symmetrical Components Bus 1 & 2 Volts (Magnitude and Angle) | x |
| Symmetrical Components Current (Magnitude and Angle) | x |
| Tag Register | x |
| TDD Amps A, B, C, Residual | x |
| TDD Denominator A, B, C | x |
| THD Volts AN, BN, CN, AB, BC, CA | x |
| Unbalance Amps | x |
| Unbalance Volts (1 & 2) | x |
| Uncompensated VARs, Total | x |
| Uncompensated Watts, Total | x |
| VA-Hrs | x |
| VAR-Hrs Lag | x |
| VAR-Hrs Lead | x |
| VARs A, B, C, Total | x |
| VAs A, B, C, Total | x |
| Volts AN, BN, CN, AB, BC, CA (1 and 2) | x |
| Volts Aux1-Aux2 | x |
| Watt-Hrs Net | x |
| Watt-Hrs Normal | x |
| Watt-Hrs Reverse | x |
| Watts A, B, C, Total | x |



The PowerPlex II Tethered Display (PPXIITD) provides local or detached indication of measured values.



PowerPlex II with added I/O and serial port in M571 case.

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DS_PowerPlexII_080316