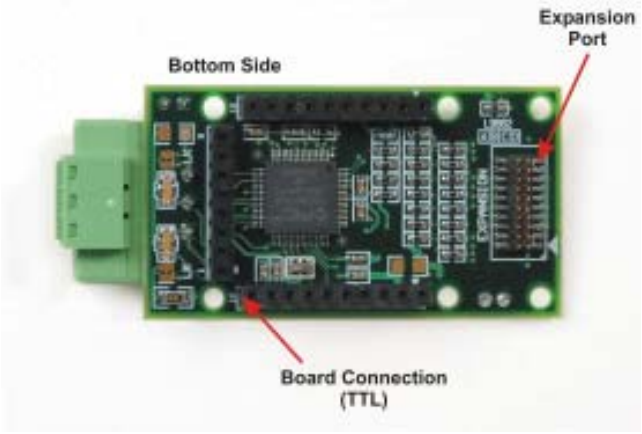
ProtoCessor ASP
Low Cost OEM Industrial Protocol Module
RS-485

A Sierra Monitor Company

ProtoCessor *– A family of cost-effective, small form-factor protocol conversion modules that enables equipment manufacturers to rapidly implement many Building and Industrial Automation protocols including BACnet MSTP, JCI Metasys N2 and others.*

Application Specific ProtoCessor (ASP) – Provides the lowest cost solution for OEM's that have high-volume/cost sensitive products that require quick protocol support. These solutions have been designed for ease of installation and support by the OEM and their customers. The DIP switches provide the OEM's with plug-and-play solutions. There is no software required to install the ProtoCessors on the various protocol networks.

The OEM puts a ProtoCessor Serial TTL (2x10 pin headers) Socket footprint on their PCB hardware and they get instant access to FieldServer Technologies' extensive library of protocols, providing the manufacturer with a more complete solution and greater flexibility not found anywhere else.



Features	Benefits
♦ Lowest cost BACnet, Metasys N2, and Modbus solution on the market.	Lower cost, high volume devices can justify to have Automation protocols.
♦ Easy to provide specific protocol needed by each customer in multiple industries	Penetrate new markets – increase sales
♦ Minimal in-house development costs	Development and protocol support costs reduced
♦ Minimal changes to current OEM design	Rapid time-to-market
♦ Only single socket needed on OEM design	Minimal impact on hardware and software design
♦ Compliant to established protocol specifications	Trusted proven interface
♦ Add ProtoCessor only to specific orders requiring protocol conversion	Avoids delivery of unnecessary capability and costs
♦ No need to purchase costly source code or expense engineering time	No NRE

FieldServer Technologies, 1991 Tarob Court, Milpitas, California 95035 USA **Web:** www.protocessor.com
Tel: 408-262-2299, **FAX:** 408-262-9042, **Toll-Free**: 800-317-8319 **Email:** sales@protocessor.com

Typical applications:

Application	ProtoCessor Solution
♦ A low cost, high volume power meter manufacturer with no serial host protocol needed BACnet MSTP and Modbus RTU support to penetrate some new markets.	Implement the ProtoCessor TTL socket on the OEM hardware and the ProtoCessor Simple Protocol driver (PSP ASCII driver).
♦ A high volume HVAC rooftop company with Modbus RTU capability as the serial host protocol needed BACnet MSTP and JCI's Metasys N2 Open protocol support. They have four different chillers with slightly different profiles.	Implement a serial TTL ProtoCessor socket and had instant support for BACnet MSTP, Metasys N2 and Modbus RTU protocols desired. Utilizing the 4 special functions on the DIP switches, they can implement the same ProtoCessor solution in each chiller model and simply use the DIP switch to select the specific model.
♦ A manufacturer of convenience and grocery store coolers needed to be able to connect their systems to various energy management systems. They needed BACnet MSTP and Modbus RTU support and the ability to connect some digital temperature sensors into the energy management system via General Purpose I/O.	They implemented a ProtoCessor Socket. They had a propriety Serial host protocol driver that was implemented on the ProtoCessor. They attached four temperature sensors to a ribbon cable that was connected to ProtoCessor expansion slot.

The ProtoCessor ASP has expanded upon the proven ProtoCessor concept, with the addition two new features, DIP switches and Expansion I/O Interface.

The two banks of DIP switches enable the users to quickly configure the serial protocol settings without the need for any 3rd party software. Settings available via the DIP switches include:

- √ MAC address
- √ Baud rate (including auto-baud setting for BACnet MSTP)
- √ Node ID
- √ The OEM has the ability to select 4 special functions via DIP switches. These functions could be either protocol or device related. For example, the same ProtoCessor ASP can be used on four different chillers models. The DIP switches can be used to select the specific profile used on a specific model of chiller.

The optional Expansion I/O Interface is a 20-pin expansion socket that includes:

- √ Twelve GPIO pins that can support any combination of 12 Digital I/O or Analog Inputs.
- √ Eight power pins (four ground and four 3.3V pins) can be used to power an external device up to 500 mA at 3.3V such as LEDs.
- √ To access the 20 pins, OEM's can either lay the 20-pin socket or pin header on their hardware or use a ribbon cable (purchased separately)..

ProtoCessor ASP modules are factory pre-programmed allowing easy plug-and-play end-user installation.

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Specifications

Supported Hardware Versions of ASP ProtoCessor:

Part Number	Voltage Span	Host Port	Field Port	Expansion Connector	GPIO
FPC-AD2	4.5V-7.5VDC	Non-Isolated TTL	RS-485 Galvanic Isolated	No	No
FPC-AD3	3.0V-3.6VDC	Non-Isolated TTL	RS-485 Galvanic Isolated	No	No
FPC-AD4	4.5V-7.5VDC	Non-Isolated TTL	RS-485 Galvanic Isolated	Yes - 20 pin	12 GPIO - Digital I/O or Analog Inputs
FPC-AD5	3.0V-3.6VDC	Non-Isolated TTL	RS-485 Galvanic Isolated	Yes - 20 pin	12 GPIO - Digital I/O or Analog Inputs

Recommended Connectors and Cables for the Host port and the Expansion Socket:

ProtoCessor Socket Header Pins for FPC-AD2, FPC-AD3, FPC-AD4 and FPC-AD5:
Manufacturer: SAMTEC
Part Number: TLW-110-05-G-S
Data Sheet: www.samtec.com/ftppub/pdf/TLW_TH.pdf

Expansion Connector for FPC-AD4 and FPC-AD5
Manufacturer: SAMTEC
Part Number: FTS-110-01-F-DV and FTSH-110-01-F-DV
Data Sheet: www.samtec.com/ftppub/pdf/FTS.pdf and www.samtec.com/ftppub/pdf/FTSH.pdf

Expansion Cable:
Manufacturer: SAMTEC
Part Number: FFSD-10-S-10.00-01-N (Single Ended Ribbon), FFSD-10-D-10.00-01-N (Double Ended Ribbon)
Data Sheet: www.samtec.com/ftppub/pdf/FFSD.pdf

Connections on ASP ProtoCessor:

Field Connections
RS-485 3 way Phoenix connector
No terminating resistors for RS485

20 Pin expansion12 pin GPIO
20 pin header layed out for Board-to-Board or Board-to-Wire or use a ribbon cable.
Optional - 20 Socket expansion port designed to plus into 20-pin port on OEM board

Host connections
Standard Serial TTL Interface-TX and RX
ProtoCessor Socket on Board: 2 x 10
Expansion Connector: 20 Pin .

Power:
FPC-AD2 and FPC-AD3: 5VDC @ 120 mA
Upon request: supported range 4.5.V – 15VDC.
FPC-AD3 and FPC-AD5: 3.3VDC @ 110 mA

Temperature:
Ambient: -40º to 185º F (-40º to 85º C)
Storage: -40º to 257º F (-40º to 125º C)
Humidity: 5 to 90% RH

Dimensions:
2.20 x 1.20 x 0.54 (LxWxH)

ProtoCessor (Host and Field) Supported Protocols:
BACnet MSTP (our code base has gone through BTL testing).
Metasys N2
Modbus RTU
Modbus ASCII
Allen Bradley DF1
DNP 3.0
J-Bus
ProtoCessor PSP ASCII driver (For OEMs with no host protocol)
OEM's custom Serial Driver

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