PLX51-DNPS

Modbus®/EtherNet/IP™ to DNP3 Slave Gateway

What is DNP3?

DNP stands for Distributed Network Protocol. It is used for remote communications, primarily by utilities – water, wastewater, oil & gas and power.

Does the gateway support Secure Authentication (SA)?

Yes, the gateway supports SAv5 (version 5). The gateway also supports Aggressive mode of SA.

What is the difference between Secure Authentication (SA) and Aggressive mode SA?

Let's take an example of turning on a DO.
- With Standard DNP3 communication between Master and Outstation – 2 steps
- With SAv5 communication between Master and Outstation – 4 steps
- With Aggressive mode SA communication between Master and Outstation – 2 steps

Aggressive mode is a more efficient way of achieving SA – useful for slow speed communication networks. Refer to the manual (chapter 8, Security) for more information. The manual can be downloaded from https://www.prosoft-technology.com/

Does the gateway support Unsolicited Reporting?

Yes. Please refer to the PLX51-DNPS DNP3 device profile document for a through listing of all functionalities supported by the gateway. The device profile document is available in XML and PDF format and can be downloaded from https://www.prosoft-technology.com/

For Public Use.

Does the gateway support Report-By-Exception?

Yes. Please refer to the PLX51-DNPS DNP3 device profile document for a through listing of all functionalities supported by the gateway. The device profile document is available in XML and PDF format and can be downloaded from https://www.prosoft-technology.com/

What is the difference between Unsolicited Reporting and Report-By-Exception?

Unsolicited Reporting is when an outstation (or remote site) initiates a message to the DNP3 master on the occurrence of a configured alarm condition. So, for example, if the pump goes from OK to FAULT, then the remote site will trigger an unsolicited report to the DNP3 SCADA Master – prompt notification of an alarm condition, a key advantage for customers using DNP3 protocol for telemetry communications.

Report-By-Exception is when a DNP3 Master sends a request to a DNP3 outstation (ore remote) for data on specific DNP3 points. So, for example, a DNP3 Master may initiate a message to the DNP3 outstation for information on binary inputs (BI).

Report-By-Exception is different to a Class 0 (Static Data) poll or a Class 1/2/3 (Event Data) poll or an Integrity poll. The poll messages are initiated by the DNP3 Master, but they are a request for all information from the outstation. So, for example, a Class 0 poll request from the DNP3 Master will bring back all static data from the outstation.

What is the Device Profile Document?

The DNP3 device profile document is like the characteristic and compatibility document for the gateway. It can be used to check if the gateway will be compatible in an existing DNP3 system. The document can also be used to check all of the features supported by the gateway down to the supported DNP3 object types and variation.

What is the DNP3 compliance level supported by the gateway?

The PLX51-DNPS is Level 3 compliant.

Does the PLX51-DNPS replace existing DNP3 solutions from ProSoft Technology?

Yes and no. ProSoft has a rich history in DNP3 solution. There is no change to or Rockwell in-chassis DNP3 solutions for both the CompactLogix and the ControlLogix platforms. For additional information on our in chassis DNP3 solutions, please visit https://www.prosoft-technology.com/

The PLX51-DNPS is a replacement for the following DNP3 gateway solutions from ProSoft.

Product Number	Product Description	Current Status	Status Change To:
5102-DNPS-MCM3	DNP3 Slave to Modbus Master/Slave 3 ports	Released	**Limited Availability**
5201-DFNT-DNPS	EtherNet/IP to DNP3 Slave	Released	Discontinued
5201-DFNT-DNPSNET	EtherNet/IP to DNP3 over Ethernet	Released	Discontinued
5201-DNPSNET-MCM	DNP3 Ethernet to Modbus Master/Slave	Released	Discontinued
5201-MNET-DNPS	Modbus TCP/IP to DNP3 Slave	Released	**Limited Availability**
5201-MNET-DNPSNET	Modbus TCP/IP to DNP over Ethernet	Released	**Limited Availability**

The PLX51-DNPS will also be the replacement solution for ProSoft's MVI46-DNP and MVI-DNPSNET modules.

Does the gateway support Modbus to EtherNet/IP protocol conversion?

No, the PLX51-DNPS gateway will translate:
- Modbus Master TCPIP to DNP3 (TCP, UDP or Serial)
- Modbus Slave TCPIP to DNP3 (TCP, UDP or Serial)
- Modbus Master RTU (RS232, RS485) to DNP3 (TCP, UDP or Serial)
- Modbus Slave RTU (RS232, RS485) to DNP3 (TCP, UDP or Serial)
- EtherNet/IP to DNP3 (TCP, UDP or Serial)

Can you connect multiple field device to the gateway?

Yes, one can connect up to 3 controllers (PLCs or RTUs) to the gateway. All device must support the same protocol – Modbus or EtherNet/IP. The PLX51-DNPS will then convert to DNP3 (TCP, UDP or Serial).

How many events can the gateway store?

The PLX51-DNPS can store over 900,000 events. Limited to 100,000 of each type. Refer to the manual for more information.

Will the gateway respond to an integrity poll?

Yes, the gateway will respond to an integrity poll from a DNP3 master device.

What is the USB port used for?

The USB port on the PLX51-DNPS gateway can be used to create a CIP connection to Logix (Compact and Control) controllers like the L85.

How does the gateway connect to Rockwell's Micro800 family?

The gateway connects to the Micro800 family using EtherNet/IP protocol

How can I tell if the gateway is responding correctly?

The PLX51-DNPS includes a user friendly packet capture tool. This will show the "bits & bytes" of the protocol message. Please refer to the user manual for more information.

Does the gateway include a webserver?

Yes, the PLX51-DNPS includes a webserver for diagnostics purposes. It is read only – meaning no action can be initiated. Please refer to the user manual for more information.

How is the gateway configured?

The PLX51-DNPS is configured using the PLX50 configuration tool. This can be download from our website, https://www.prosoft-technology.com/

What DNP3 groups and variations are supported?

Here is a listing of some of the groups and variations supported:

Groups	Function	Variation
1- Binary Inputs	Read	1,2
10- Binary Outputs	Read	1,2
12- Binary Output Command	Select-op, Direct-op, Direct-op No Ack.	1
20- Counters	Read, Freeze Clear	1,2,5,6
30- Analog Inputs	Read	1,2,3,4,5
41- Analog Outputs	Select-op, Direct-op, Direct-op Ack.	1,2,3
102 – Unsigned Integer	Read/Write	1

For a full listing, please refer to the user manual and DNP3 Device Profile Document. These document are available at https://www.prosoft-technology.com/

What is the total number DNP3 objects supported for each type?

The DNP3 object address range is 0 to 65535. This range is fully supported.
The gateway supports a maximum of 1000 mapped items and each item supports a maximum of 50 elements (DNP3 objects) of the same type. That is, the gateway can support a maximum of 50,000 DNP3 objects.

Think of each mapped item as a memory block and the elements as the data in the memory block. The user can configure multiple mapped items to be of the same type.

So for example, a user can configure as follows:

Mapped Item Number	Type (DNP3 Group)	Element (DNP3 Object Address Range)
1	Binary Input	BI Object 0 to BI Object 49
2	Analog Input	AI Object 101 to AI Object 150
27	Binary Input	BI Object 1001 to BI Object 1050
999	Analog Output	AO Object 767 to AO Object 816

Typically, most users will not have to bring back a single DNP3 object – they will likely bring back multiple objects in a contiguous range.