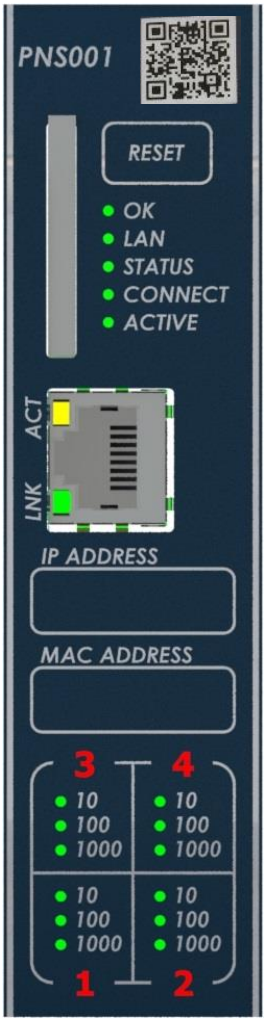
Important Product Information

PACSystems RX3i*

IC695PNS001-BBBC
IC695PNS001CA-BBBC
RX3i PROFINET Scanner

IC695PNS101-AAAA
IC695PNS101CA-AAAA
RX3i Advanced PROFINET Scanner

GFK-2738Q
August 2018



The PNS001 & PNS101 share the same front panel markings except for the catalog number and QR code.

The PACSystems* IC695PNS001 RX3i PROFINET Scanner and IC695PNS101 RX3i Advanced PROFINET Scanner modules connect a remote universal RX3i I/O rack of Series 90-30 or RX3i modules to a PROFINET I/O Controller. The PROFINET Scanner scans the modules in its rack, retrieving input data and providing output data, and exchanges that data on the PROFINET I/O LAN at the configured production rate.

The PNS manages PROFINET communication and module configuration between an I/O Controller and modules in the remote rack. If network communications are lost, the PNS manages I/O states according to the individual module configurations.

The PNS001 and PNS101 support 10/100/1000 Mbps Copper, 100/1000 Mbps Multi-mode Fiber, and 100/1000 Mbps Single-mode Fiber. PROFINET communications on the network require 100 or 1000 Mbps link speed. Although 10 Mbps cannot be used for PROFINET communications, 10 Mbps can be used for other types of Ethernet traffic such as PING.

Features of the RX3i PNS001 PROFINET Scanner include:

- Configuration services for all supported Series 90-30 and RX3i I/O Modules using Proficy* Machine Edition (PME). For a list of currently supported I/O modules, refer to *Supported Modules, Power Supplies and Backplanes*.
- Support for daisy-chain/line, star, or ring (PROFINET Media Redundancy Protocol (MRP)) topologies.
- Four switched Ethernet ports - two 8-conductor RJ-45 shielded twisted pair 10/100/1000 Mbps copper interfaces and two Small Form-factor Pluggable (SFP) cages for user-supplied SFP devices.
- The network can include media interfaces of more than one type.
- Support for transfer of I/O Device Name to another PNS module using an SD card. This eliminates the need to connect a configuration tool, such as Proficy Machine Edition when replacing a module.
- A front panel Ethernet RJ-45 port for field firmware updates.

The RX3i PNS101 Advanced PROFINET Scanner includes all features of the PNS001 PROFINET Scanner and adds:

- Support for Sequence of Events recording with IRIG-B time synchronization of events accurate to 1ms. The PNS101 buffers up to 4000 events from up to four IC694MDL660 32 Circuit Discrete Input modules at a maximum rate of 400 events per second. Unmodulated IRIG B time signals are decoded using either an IC695HSC304 or IC695HSC308 High Speed Counter Module. The PNS101 may also be used as a standard PROFINET scanner when Sequence of Events is disabled.

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Ordering Information

IC695PNS001	PACSystems RX3i PROFINET Scanner Module 10/100/1000 with four Ports (two SFP connections, two RJ45 connections) Includes a blank SD card
IC695PNS001CA	Conformal Coated PACSystems RX3i PROFINET Scanner Module 10/100/1000 with four Ports (two SFP connections, two RJ45 connections) Includes a blank SD card
IC695PNS101	PACSystems RX3i Advanced PROFINET Scanner Module 10/100/1000 with four Ports (two SFP connections, two RJ45 connections) Includes a blank SD card
IC695PNS101CA	Conformal Coated PACSystems RX3i Advanced PROFINET Scanner Module 10/100/1000 with four Ports (two SFP connections, two RJ45 connections) Includes a blank SD card
IC695SPC100	RX3i 10/100/1000Base-T copper SFP
IC695SPF002	RX3i 100Base-FX (fiber 2 km) SFP (Multi-mode fiber - MMF)
IC695SPF550	RX3i 1000Base-SX (fiber 550 m) SFP (MMF)
IC695SPF010	RX3i 1000Base-LX (fiber 10 km) SFP (Single-mode fiber - SMF)

Specifications

PROFINET Support	PROFINET Version 2.3 Class A I/O Device Redundantly controlled operation implements PROFINET V2.3 Type S-2 System Redundancy	
Proficy Machine Edition Version Required	PNS001 & PNS101: Version 8.50 SIM 2 or later	
Power Requirements	PNS001-Bxxx or later: PNS101-Axxx or later: 3.3 Vdc 0.6 A with no SFP devices installed 1.3 A maximum (two SFP devices installed, 0.35A per SFP)	PNS001-Axxx: 3.3 Vdc 1.2 A with no SFP devices installed 1.9 A maximum (two SFP devices installed, 0.35A per SFP)
	PNS001-Bxxx or later: PNS101-Axxx or later: 5Vdc: 0.7 A maximum	PNS001-Axxx: 5Vdc: 1.1 A maximum
Operating Temperature Range	PNS001-Bxxx or later: PNS101-Axxx or later: -25°C to 60°C Derated to 57°C: • If 100MB Fiber SFPs installed, or • If Copper SFPs operating at 1GB	PNS001-Axxx: 0°C to 60°C Derated to 57°C: • If 100MB Fiber SFPs installed, or • If Copper SFPs operating at 1GB
Number of Port Connectors	Two RJ-45 and Two SFP Cages (SFP devices not included, available separately)	
FW Upgrade Connector	PNS001-Bxxx & PNS101-Axxx: One RJ-45 Ethernet connector on front panel	PNS001-Axxx: One USB connector on front panel
SD Card	Supports SD and SDHC cards.	
PNS001 Status and Control Bits	32 input status bits and 32 output control bits	
PROFINET I/O production rate (I/O Update Rate)	Configurable selections: 1ms, 2ms, 4ms, 8ms, 16ms, 32ms, 64ms, 128ms, 256ms or 512ms	
Number of IP addresses	PNS001-Bxxx & PNS101-Axxx: Two One for PROFINET ports. One for front panel port. Supports Classless Inter-Domain Routing (CIDR)	PNS001-Axxx: One One for PROFINET ports.
Number of MAC Addresses	PNS001-Bxxx & PNS101-Axxx: Six One front panel port, one for each of the four external ports, and one internal port.	PNS001-Axxx: Five One for each of the four external ports, and one internal port.
I/O Station Maximum Limits	Number of I/O Modules per station	Number of backplane slots minus one for the PNS and at least one for a power supply
	I/O data per station	2880 bytes total 1440 bytes of input data 1440 bytes of output data
Configuration	V2.3 GSDML file is available on the Support website http://support.ge-ip.com for download and import into Proficy Machine Edition. The GSDML supporting a firmware release is part of the firmware upgrade kit available on the Support website.	

For installation and maintenance requirements, refer to *PACSystems RX3i/Series 90-30 Installation and Maintenance Requirements,* GFK-2975.

PROFINET Scanner Status and Control Data

The RX3i PROFINET Scanner provides 32 bits of input status data and receives 32 bits of output control data. The application program in the I/O Controller system can monitor the input status bits for the PNS module. The output control bits are reserved for future use and have no function at this time.

Output Control Bits:

PNS001 -Axxx hardware: The 32 bits of control output assigned to the PNS module are reserved for future use.

PNS001-Bxxx or later and PNS101-Axxx hardware: The 32-bits of control output assigned to the PNS module allow the IO Controller to dynamically control aspects of the scanner's operation. All control bits are active high. Bit 1 is the least significant bit.

Bit #	Name	Description
1	FW Update in Run	A value of 1 allows the webpage firmware update to continue (and restart the PNS disrupting IO) while the PNS IO is actively controlled.
2–32	Reserved	Set to 0

Input Status Bits:

The PROFINET Scanner's 32 bits of input status provide information about the scanner. All status bits are active high. Bit 1 is the least significant bit.

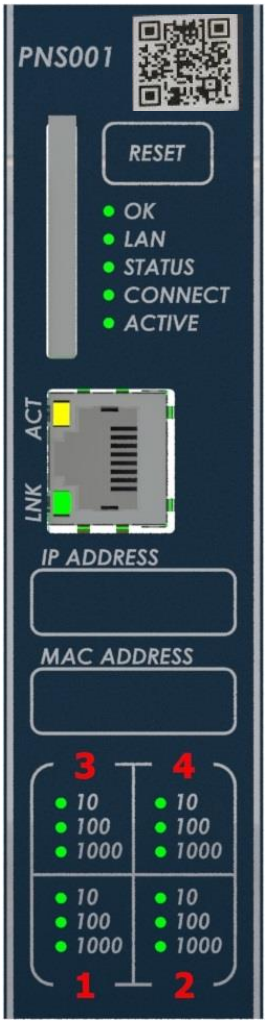
Status Bits	*Name*	*Description*
1	Module OK	Indicates the health of the module. A value of 0 indicates the module is powering up or has failed. A value of 1 indicates the module is functioning properly.
2	Reserved	Set to 0
3	Port1 Link Up	1 = port is connected to another device and is communicating. 0 = port is not connected to another device, or the port has some sort of error preventing communications.
4	Port2 Link Up	
5	Port3 Link Up	
6	Port4 Link Up	
7-10	Reserved	Set to 0
11	MRP Enabled	Indicates whether MRP has been enabled or not. A value of 0 indicates that MRP is not enabled. A value of 1 indicates that MRP is enabled.
12	MRP Role	Indicates the MRP role the PNS is operating as when MRP is enabled. A value of 0 indicates that the PNS is currently an MRP Client. A value of 1 indicates that the PNS is currently an MRP Manager, however the PNS does not currently support MRP Manager configuration. If MRP is not enabled, then this bit will be set to zero.
13	Clock Sync'd	PNS101: The internal clock has been sync'd to the IRIG-B clock source. This bit may take up to 90 seconds to turn on after the IRIG-B clock is available. PNS001: Set to 0
14	SoEs Avail	PNS101: SoE Records are available for upload. PNS001: Set to 0
15-32	Reserved	Set to 0

LEDs on the PROFINET Scanner Module

Power-Up LED Patterns

At power-up, the LEDs show the patterns described in the following table. The LEDs also blink diagnostic patterns for certain operating errors and for module identification.

Step	***LED/ Blink pattern***	***Description***
1	All LEDs off	Initial state
2	ACTIVE LED solid green	Normal operation
3	CONNECT LED solid green	Normal operation
4	STATUS LED solid green	Normal operation
5	LAN LED solid green	Normal operation
	OK LED blinks amber with special blink code	Fatal initialization or diagnostics failure; H/W Module Identity Information not available
	STATUS LED blinks amber with special blink code	Fatal initialization failure.
	STATUS and LAN LEDs blink green in unison (0.5 seconds ON/ 0.5 seconds OFF)	Internal update in process following a firmware update. Unit should complete update and restart automatically.
6	OK LED solid green	Normal operation. Power-up completed.



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Note: Under certain ambient operating temperatures, the PROFINET Scanner could momentarily display the over temperature pattern during power up, while it is calibrating its thermal protection functions. This indication can be ignored. For details, refer to the section entitled *Microprocessor Over-Temperature* in *PACSystems RX3i PROFINET Scanner Manual,* GFK-2737.