PACSystems™ RX3i
IC695PBS301-AA
PROFIBUS Slave Module

The IC695PBS301 provides slave communications on a PROFIBUS DP network. The slave module automatically exchanges data with a master device. The slave module has no bus access rights. It can only acknowledge received messages or transmit messages to a master upon request.

The PROFIBUS Slave module provides the following PROFIBUS communications features:

- Ability to read up to 244 bytes of input data from the network, and send up to 244 bytes of output data

- Support for all standard PROFIBUS data rates

- Support for DP-V1 Read, Write and Alarm messages

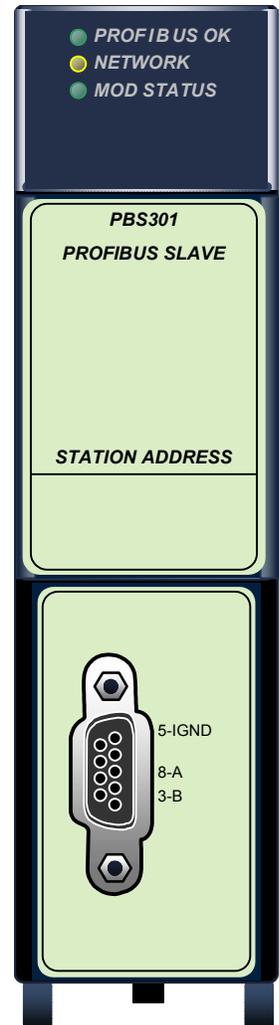- PROFIBUS-compliant module and network status LEDs

The PROFIBUS Slave module requires an RX3i CPU with firmware version 3.0 or later. This module must be located in an RX3i Universal Backplane.

The Slave module requires Machine Edition Logic Developer-PLC, version 5.0 Service Pack 3 or later for configuration.

The PROFIBUS module receives its firmware upgrades indirectly from the host controller CPU using the WinLoader software utility. WinLoader is supplied with any updates to the PROFIBUS module software.

Release History

Catalog Number	Board Version	Firmware Version
IC695PBS301-AA	1.00	1.02

PROFIBUS OK
NETWORK
MOD STATUS

PBS301
PROFIBUS SLAVE

STATION ADDRESS

5-IGND
8-A
3-B

PBS301 Functional Compatibility

Subject	Description
Series 90™-30 PROFIBUS	Customers using existing Series 90™-30 PROFIBUS products should review the *PACSystems Rx3i PROFIBUS User's Manual*, GFK-2301A or later. Changes have been made in items such as CommReq status words and data fields. This module reports additional information in some instances, and less information in other instances. This product also supports PROFIBUS DP-V1 functionality.
Programmer Version Requirements	The IC695PBS301 can be configured and programmed with Machine Edition Logic Developer PLC version 5.0 Service Pack 3 or later.
Data Sizes	The amount of data that can be configured on the IC695PBS301 PROFIBUS network provides up to 2048 bytes input and 2048 bytes output.
DOIO Functionality	DOIO functionality is not supported to the embedded PROFIBUS interface at this time. The DOIO function block returns an error if it is executed using the PROFIBUS module as a target.
PLC C Toolkit Version Requirements	Version 4.00 Build 50A1 or later of the PLC C Toolkit must be used for C programming.

Specifications: IC695PBS301

Environment	Storage temperature = –40°C to 85°C Operating temperature = 0°C to 60°C
Backplane Compatibility	RX3i PCI
Backplane current consumption	440mA @ 3.3VDC
Data rates	Supports all standard data rates (9.6 KBit/s, 19.2 KBit/s, 93.75 KBit/s, 187.5 KBit/s, 500 KBit/s, 1.5 MBit/s, 3 MBit/s, 6 MBit/s and 12 MBit/s)
Status information available	Slave Status Word

For product standards and general specifications, refer to the *PACSystems RX3i System Manual,* GFK-2314.

LEDs

The slave module provides three PROFIBUS-compliant LEDs that indicate module and network status.

LED	*Color*	*State*	*Frequency*	*Meaning*
PROFIBUS OK	Green	Static	NA	Module has power and backplane reset complete.
		Off	NA	Module does not have power or backplane reset not complete.
NETWORK	Yellow	Static On	NA	Module is able to transmit PROFIBUS telegrams.
		Off	NA	No exchange of PROFIBUS telegrams.
	Red	Static On	NA	A critical problem, such as handshake timeout, was encountered.
MOD STATUS	Green	Flashing, Cyclic	5 Hz	No error in configuration found; module is ready for configuration; it tries to open a connection, but is not connected yet.
		Flashing, Non-cyclic	Three times fast at 5 Hz, Eight times between 0.5 Hz and 1 Hz	Powerup: Configuration missing. For details on hardware configuration, refer to Chapter 4. Runtime: Firmware has found a critical problem, such as a watchdog timeout.
		Static On	NA	Module has established a connection to the network master.
	Yellow	Flashing, Cyclic	1 Hz	Module is in boot-loader mode and is waiting for firmware download.
		Flashing, Cyclic	5 Hz	Firmware download is in progress.
		Flashing, Non-cyclic	Three times fast at 5 Hz, Eight times between 0.5 Hz and 1 Hz	Hardware or non-recoverable runtime error detected. Module needs to be replaced.
	Off	NA	NA	No power

Module Status Information

For details on using the Communication Request function to communicate with the PROFIBUS slave module, refer to the *PACSystems RX3i PROFIBUS Modules User's Manual,* GFK-2301.

Slave Status

The starting reference address for this two-word array is set in the PROFIBUS slave software configuration. For details, refer to the *PACSystems RX3i PROFIBUS Modules User's Manual,* GFK-2301.

Word	Name	Description
1	Slave Status	This word contains the slave status code. The status can be read using the Get Slave Status COMMREQ (task 3).
2	Reserved	Always 0.

Word 1 – Slave Status Word

Bits	Meaning	Value
15—12	Baud Rate (bps)	0=12MBit/s, 1=6MBit/s, 2=3MBit/s, 3=1.5MBit/s, 4=500Kbit/s, 5=187.5Kbit/s, 6=93.75Kbit/s, 8=19.2Kbit/s, 9=9.6Kbit/s **Note:** Baud rate value is valid only if module is connected to the PROFIBUS network.
11—10	Module State	0=Module is waiting for parameters from master 1=Module is waiting for configuration from master 2=Data Exchange is occurring – normal operation 3=Error (either configuration error or module watchdog timeout)
9	On-line	1=Online module firmware is running 0=Offline
8	PLC Cfg	0= Module configuration from CPU is bad 1=Module configuration from CPU is good
7	Run/Stop	This is the state of the PROFIBUS Master. 0=Stop or Clear mode 1=Operate (Run) mode
6—0	Error Info	Contains the Slave Last Error code, which is the same as that returned in word 2 of the Get Slave Status COMMREQ reply data. For error code definitions, see "Slave Last Error Codes" on page 4.

Slave Last Error Codes

The following error codes may be returned in word 2 of the Get Slave Status COMMREQ reply data or word 6 of the Read Module Header COMMREQ reply data.

Value Dec (Hex)	Name	Definition
0 (0000)	No error	Slave is running properly.
52 (0034)	DPS_ERR_INIT_BUS_ADDRESS	Invalid bus address configured, valid addresses are 1 ... 125
53 (0035)	DPS_ERR_INIT_WAIT_FOR_WARMSTART	Application has not made a warm start to the slave yet.
54 (0036)	DPS_ERR_INIT_MODULE_TYPE	Invalid module type configured. The configured module type code is unknown.
55 (0037)	DPS_ERR_INIT_MODULE_LENGTH	Invalid module length. The code for the parameter module length is not defined.
70 (0046)	DPS_ERR_INIT_IO_LEN	Invalid length of I/O data. The maximum length of I/O data has been exceeded or no I/O modules were specified.
72 (0048)	DPS_ERR_INIT_DPV1_C1_BUF_LEN	Illegal DP-V1 class 1 buffer length.
73 (0049)	DPS_ERR_INIT_DPV1_C2_BUF_LEN	Illegal DP-V1 class 2 buffer length.
74 (0050)	DPS_ERR_INIT_SPC3_NOFF	PROFIBUS slave chip not in offline mode during initialization.
75 (0051)	DPS_ERR_INIT_SPC3_LESS_MEM	Not enough memory in SPC3 for all buffers.
76 (0052)	DPS_ERR_INIT_DIN_DOUT_BUF_LEN	Illegal I/O data buffer length.
77 (0053)	DPS_ERR_INIT_DIAG_BUF_LEN	Illegal diagnostic buffer length.
78 (0054)	DPS_ERR_INIT_PRM_BUF_LEN	Illegal parameter buffer length.
79 (0055)	DPS_ERR_INIT_CFG_BUF_LEN	Illegal configuration buffer length.
80 (0056)	DPS_ERR_INIT_SSA_BUF_LEN	Illegal SSA buffer length.

DP-V1 Status

This two-word array is used at the beginning of a scan to monitor the DP-V1 master messages. Its starting address is set in the PROFIBUS slave software configuration. For details refer to the *PACSystems RX3i PROFIBUS Modules User's Manual,* GFK-2301.

DPV1 Read Indication

DP-V1 Status Register 1			DP-V1 Status Register 2	
Bit 15	Bit 14—8	Bit 7—0	Bit 15—8	Bit 7—0
0	Master Address	Data Size	Slot	Index

DPV1 Write Indication

DP-V1 Status Register 1			DP-V1 Status Register 2	
Bit 15	Bit 14—8	Bit 7—0	Bit 15—8	Bit 7—0
1	Master Address	Data Size	Slot	Index

Connecting the Slave Module to the PROFIBUS Network

The module contains a standard female DB9 connector, labeled "PROFIBUS," that can be connected to a PROFIBUS bus terminal that complies with EN 50170.

The PROFIBUS module has no built-in termination. If termination is required, you must use a bus terminal that has built-in selectable termination.

- PROFIBUS DB-9 connector recommendation: Siemens 6ES7-972-OBB50-OXAO (12MB)

Caution

Do not connect any devices to the +5V pin (pin 6). It is to be used for termination purposes only. Doing so could damage equipment or cause erratic behavior.