General Specifications

A2LP131
PROFINET Communication Module
(for N-IO/FIO)

CENTUM VP

GS 33J60G90-01EN

[Release 6]

■ GENERAL

*This document describes about Model A2LP131 PROFINET Communication Module (for N-IO/FIO) which performs as the PROFINET IO-Controller (*1) to communicate and exchange data with PROFINET IO-Devices (*2). A2LP131 can be mounted on following field control units (FCU). It can also be mounted on the ESB bus node unit (ANB10□) and the optical ESB bus node unit (ANB11□) which are connected to the FCU.*

Applicable FCS:
AFV30S, AFV30D, AFV40S, AFV40D, A2FV50S, A2FV50D, A2FV70S, A2FV70D

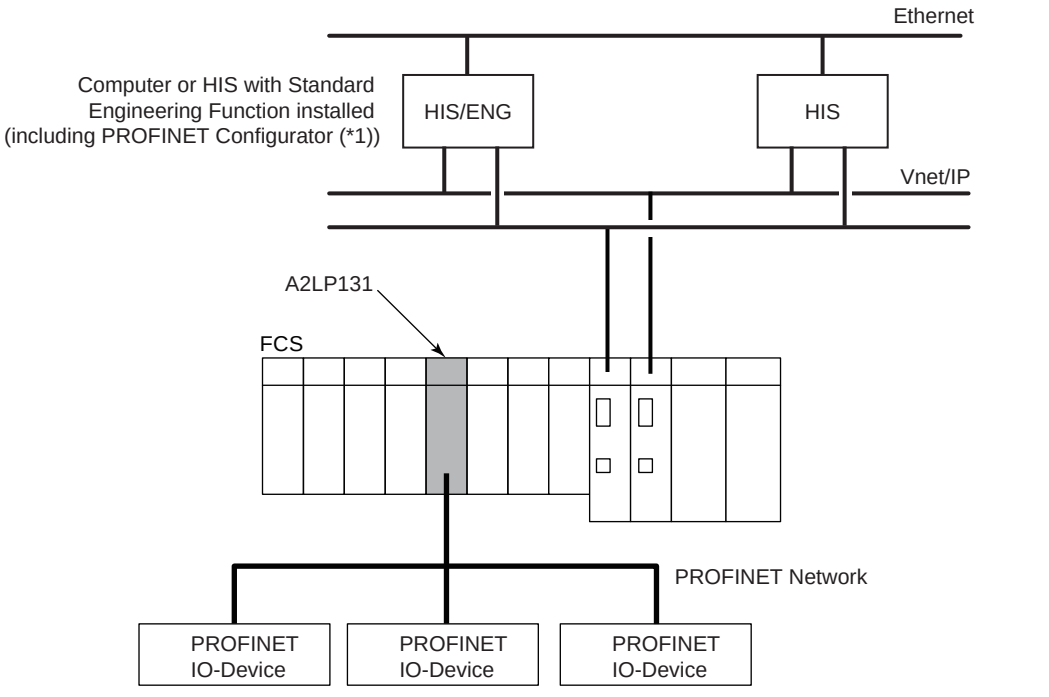
*A2LP131 has been certified by the certification body as complying with PROFINET Specification Version 2.35 CC-A (*3).*

AFV30□, AFV40□, A2FV50□, A2FV70□, ACB51, ANB10□, ANB11□, and ANT10U can also be constructed by combining the Base Plate and each module. Refer to "FIO System Overview" (GS 33J60A10-01EN), "N-IO System Overview" (GS 33J62A10-01EN) and "Field Control Unit" (GS 33J64E10-01EN).

*1: A PROFINET IO-Controller is a controller operated by a control program and is equivalent to the master device in PROFIBUS. For details, refer to the PROFIBUS Organization website.

*2: A PROFINET IO-Device is a field device that connects with the PROFINET IO-Controller and is equivalent to a slave device in PROFIBUS. For details, refer to the PROFIBUS Organization website.

*3: PROFINET has a structure in which its functions are described step-by-step as conformance classes (CC-A, CC-B, and CC-C), CC-A includes the basic PROFINET functions. A2LP131 can be connected to PROFINET IO-Device of CC-A, CC-B and CC-C.
(PROFINET IO-Devices of CC-B and CC-C can be used with a scope of CC-A functions.)
For details on CC-A, refer to the PROFIBUS Organization website.



*1: An engineering tool for PROFINET communication.

Figure System Configuration Example

■ HARDWARE SPECIFICATIONS

Hardware specifications for A2LP131 PROFINET communication module are as shown below.

Table PROFINET Communication Module Hardware Specifications

Item	Specifications
Model	**A2LP131**
Physical layer interface	IEEE 802.3 100BASE-TX
Connector	RJ-45 (*1)
Transmission speed	100 Mbps
Transmission route	2x2 twisted-pair shielded cable (symmetrical) (*1)
Transmission distance	1 segment, 100 m
Installation method	Mounted on ANB10☐, ANB11☐, AFV30☐, AFV40☐, A2FV50☐, or A2FV70☐ (*2)
No. of physical ports	One port
Maximum current consumption	0.8 A
Weight	Approx. 0.31 kg

*1: Complies with IEC61158-2 type10 (PROFINET).
*2: A2LP131 supports a single configuration with only 1 module.

■ OPERATING ENVIRONMENT

Hardware Requirements

This module runs on the following FCU.

AFV30S, AFV30D, AFV40S, AFV40D, A2FV50S, A2FV50D, A2FV70S, A2FV70D

Software requirements

This module runs on the following FCS control functions of the revision CENTUM VP R6.07 and later.

VP6F1700 Control Function for Field Control Station: for AFV30☐/AFV40☐
VP6F1800 Control Function for Field Control Station: for A2FV50☐
VP6F1900 Control Function for Field Control Station: for A2FV70☐
VP6F8100 Compressor Control for FCS : for A2FV50☐ (*1)

*1: The model for ordering is A2FVX1.

Engineering Requirements

Works on VP6E5100 Standard Engineering Function. Standard Builder Function contains PROFINET Configurator dedicated for A2LP131. Perform the engineering of the IOM definitions and communication IO definitions of A2LP131 in AD Organizer or VP Builder. In PROFINET Configurator, engineer PROFINET communication definition between A2LP131 and PROFINET IO-Device.

The PROFINET Configurator only supports the following data types for parameters.

Bit, BitArea, Integer8, Integer16, Integer32, Integer64, Unsigned8, Unsigned16, Unsigned32, Unsigned64, Float32, Float64, VisibleString, OctetString

Note that A2LP131 cannot be connected to PROFINET module that supports any other data type. If multiple PROFINET modules are mounted on PROFINET IO-Device, configure with PROFINET modules that support only the above data types.

■ INSTALLATION ENVIRONMENT

VP6F1700 Control Function for Field Control Station (for AFV30□/AFV40□)

No. of ALR111, ALR121, ALE111, ALP111, ALP121, A2LP131 modules	Max. 32 units/FCS (Max. 16 pairs for dual-redundant operation) (*1)
No. of ALF111 modules	Max. 64 units/FCS (Max. 32 pairs for dual-redundant operation)
No. of all the communication modules	Max. 64 modules/FCS (*1) (*2)
No. of ports	1 port/A2LP131
No. of connectable PROFINET IO-Devices	Max. 128 devices/A2LP131
I/O data capacity for communication	1000 words/A2LP131
No. of communication definitions	200 definitions/A2LP131
No. of communication functions	Max. 8 types/FCS (*1) (*3)
Communication I/O data capacity	Max. 8000 words/FCS (incl. data from other communication functions)

*1: ALP111 and ALP121 cannot be mounted on the same FCS together.
*2: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP111, ALP121, A2LP131, AGS813, and AGP813 modules.
*3: This is the sum of communication functions of ALR111, ALR121, ALE111, ALP111, ALP121, and A2LP131.

VP6F1800 Control Function for Field Control Station (for A2FV50□)

No. of ALR111, ALR121, ALE111, ALP121, A2LP131 modules	Max. 32 units/FCS (Max. 16 pairs for dual-redundant operation)
No. of ALF111 modules	Max. 64 units/FCS (Max. 32 pairs for dual-redundant operation)
No. of all the communication modules	Max. 64 modules/FCS (*1)
No. of ports	1 port/A2LP131
No. of connectable PROFINET IO-Devices	Max. 128 devices/A2LP131
I/O data capacity for communication	1000 words/A2LP131
No. of communication definitions	200 definitions/A2LP131
No. of communication functions	Max. 8 types/FCS (*2)
Communication I/O data capacity	Max. 8000 words/FCS (incl. data from other communication functions)

*1: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP121, and A2LP131 modules.
*2: This is the sum of communication functions of ALR111, ALR121, ALE111, ALP121, and A2LP131.

VP6F1900 Control Function for Field Control Station (for A2FV70□)

No. of ALR111, ALR121, ALE111, ALP121, A2LP131 modules	Max. 32 units/FCS (Max. 16 pairs for dual-redundant operation)
No. of ALF111 modules	Max. 64 units/FCS (Max. 32 pairs for dual-redundant operation)
No. of all the communication modules	Max. 64 modules/FCS (*1)
No. of ports	1 port/A2LP131
No. of connectable PROFINET IO-Devices	Max. 128 devices/A2LP131
I/O data capacity for communication	1000 words/A2LP131
No. of communication definitions	200 definitions/A2LP131
No. of communication functions	Max. 8 types/FCS (*2)
Communication I/O data capacity	Max. 8000 words/FCS (incl. data from other communication functions)

*1: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP121, and A2LP131 modules.
*2: This is the sum of communication functions of ALR111, ALR121, ALE111, ALP121, and A2LP131.

VP6F8100 Compressor Control for FCS (forA2FV50□) (*1)

No. of ALR111, ALR121, ALE111, ALP121, A2LP131 modules	Max. 32 units/FCS (Max. 16 pairs for dual-redundant operation)
No. of ALF111 modules	Max. 64 units/FCS (Max. 32 pairs for dual-redundant operation)
No. of all the communication modules	Max. 64 modules/FCS (*2)
No. of ports	1 port / A2LP131
No. of connectable PROFINET IO-Devices	Max. 128 devices/A2LP131
I/O data capacity for communication	1000 words/A2LP131
No. of communication definitions	200 definitions/A2LP131
No. of communication functions	Max. 8 types/FCS (*3)
Communication I/O data capacity	Max. 8000 words/FCS (incl. data from other communication functions)

*1: The model for ordering is A2FVX1.
*2: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP121,A2LP131, AGS813, and AGP813 modules.
*3: This is the sum of communication functions of ALR111, ALR121, ALE111, ALP121, and A2LP131.

■ PROFINET COMMUNICATION SPECIFICATIONS

● Communication with PROFINET IO-Devices

A2LP131 exchanges data with PROFINET IO-Devices and receives the alarms from PROFINET IO-Devices.The PROFINET I/O-Devices data is stored in the communication modules' I/O Image area. FCU accesses this module, refers to the data stored in the I/O Image of the module, and stores the data in the communication I/O data area. Also, FCU accesses this module and sets the data set in the communication I/O data area by the functional block to this module's I/O Image area.
This enables FCU to use the PROFINET IO-Devices data through the I/O terminals of the function block in the same way as the general analog and digital I/O signals.
The following PROFINET data types can be assigned directly to the CENTUM VP functional block when using A2LP131.
Boolean, Integer16, Integer32, Unsigned16, Unsigned32, Float32
In addition, A2LP131 receives the alarm from PROFINET IO-Devices and sends notifications to FCU.

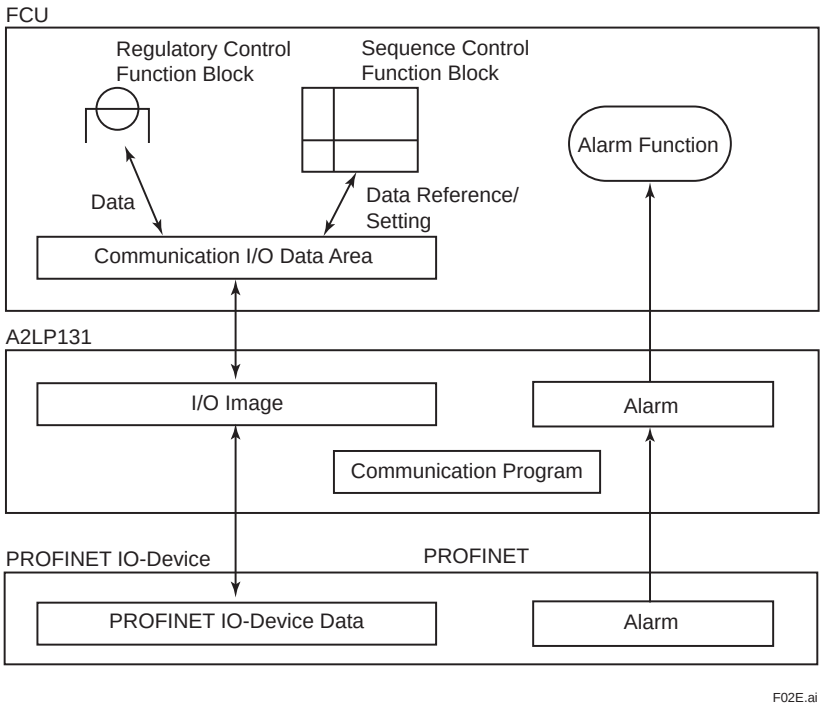


Figure Flow of PROFINET IO-Device Data

● Communication Path Dual Redundancy

In CENTUM VP, PROFINET network communication path dual redundancy is facilitated by connecting managed switches that have the Media Redundancy Manager (MRM) function, which is compliant with Media Redundancy Protocol (MRP), and the PROFINET IO-Devices that are the media redundancy clients (MRC) in a ring topology.

Media redundancy is a redundancy specification of PROFINET. For details, refer to the PROFIBUS Organization website. In CENTUM VP, dual redundancy of the communication path is achieved by making the PROFINET network a ring configuration. Consequently, even if communication with one communication path becomes impossible, communication can be continued by using the other communication path.

A2LP131 is placed outside of the media redundancy ring topology.

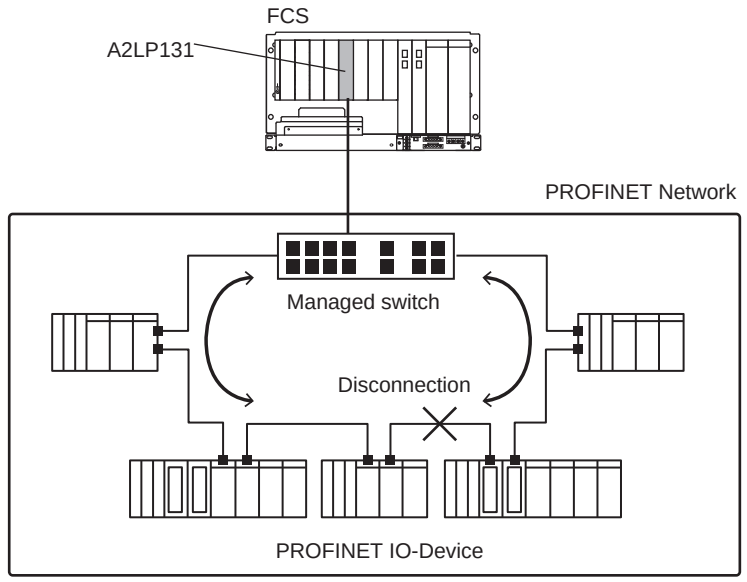
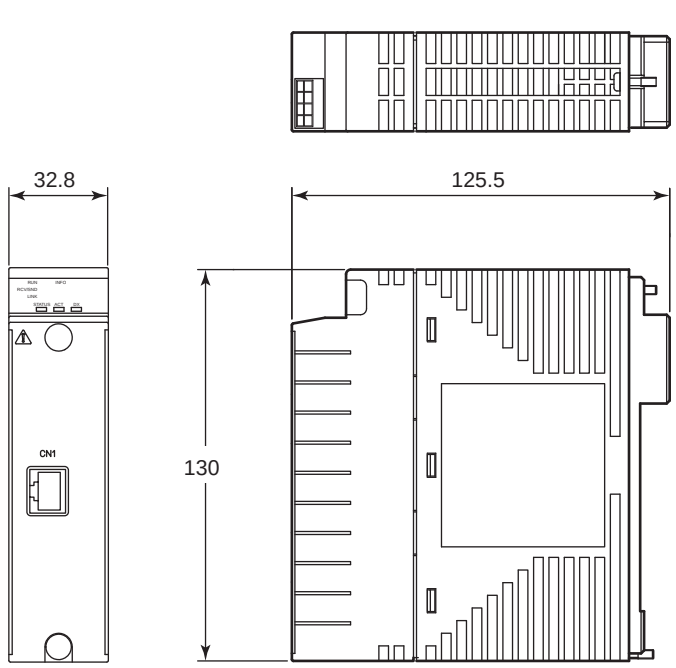


Figure Figure PROFINET Network Communication Path Dual Redundancy

■ External dimensions

Unit: mm



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Nominal tolerances :

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

■ MODEL AND SUFFIX CODES

PROFINET Communication Module (for N-IO/FIO)

		Description
Model	A2LP131	PROFINET Communication Module (for N-IO/FIO)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	1	With ISA Standard G3 option

■ APPLICABLE STANDARDS

Refer to the GS “Integrated Production Control System CENTUM VP System Overview” (GS 33J01A10-01EN).

■ ORDERING INFORMATION

Specify model and suffix codes when ordering.

■ TRADEMARK ACKNOWLEDGMENT

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