

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

GE VERSAMAX

IC676PBI016-EA

PROFIBUS NETWORK INTERFACE UNIT

Used with the applicable VersaMax IP modular I/O configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: GE official manufacturer documentation

VersaMax IP Input Module

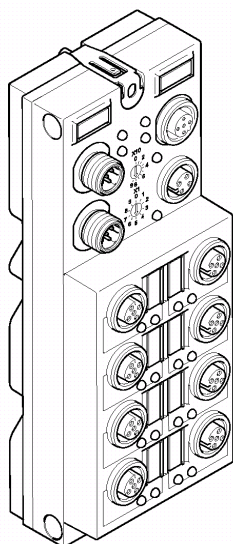
16 Point Input Module, Profibus

IC676PBI016

GFK-2293

January 2004

Module IC676PBI016 is used to accept digital input signals.



Features

- Connection to Profibus-DP using M12 connectors
- Baud rates up to 12 Mbaud autobaud
- Connection to digital sensors using M12 connectors
- Flexible voltage supply
- Diagnostic and status indicators
- Short-circuit and overload protection of sensor supply
- IP67 protection

Ordering Information

IC676PBI016	16 Point Input Module, Profibus
IC676ACC001	VersaMax IP Point Labels, qty 50
IC676ACC002	Protective Caps. Male, for unused I/O connectors and/or outgoing bus and power connectors, qty 5
IC676ACC003	Protective Caps, Female, for unused incoming power connections, qty 5
IC676ACC004	Profibus Network Terminating Resistor
IC676ACC005	Profibus Network Tee

Module Specifications

Housing dimensions (width x height x depth)	60mm x 160mm x 44.5mm (2.362in. x 6.299in. x 1.752in.)
Connection style	2-, 3-, and 4-wire
Operating temperature	-25°C to +60°C (-13°F to +131°F)
Storage temperature	-25°C to +85°C (-13°F to +185°F)
Operating/storage humidity	95%. Slight condensation is permitted occasionally on the outer housing, for short periods.
Degree of protection	IP67 according to IEC 60529
Class of protection	Class 3 according to VDE 0106, IEC 60536

Module Power

Nominal value	24VDC
Range	18VDC to 30VDC
Current consumption U_L at 24VDC	35mA typical, 100mA maximum
Current consumption U_S at 24VDC	8mA typical plus sensor current 1.2A maximum

VersaMax IP Input Module

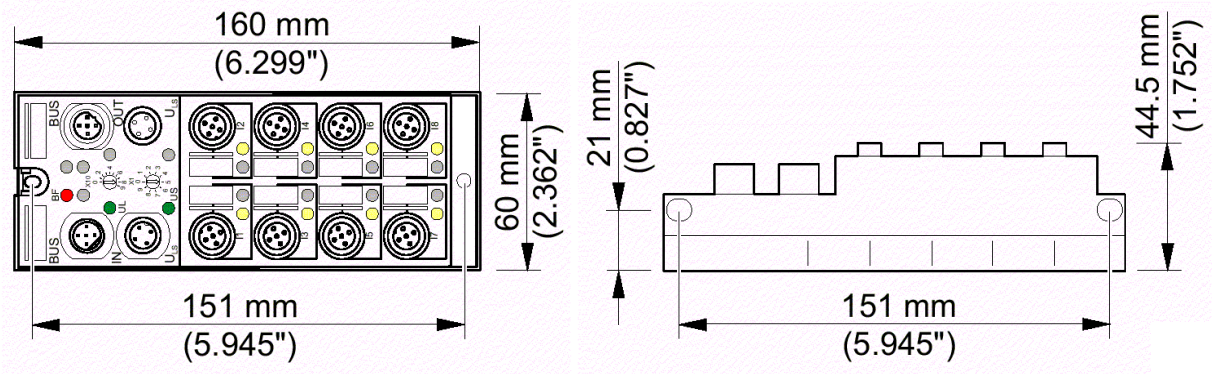
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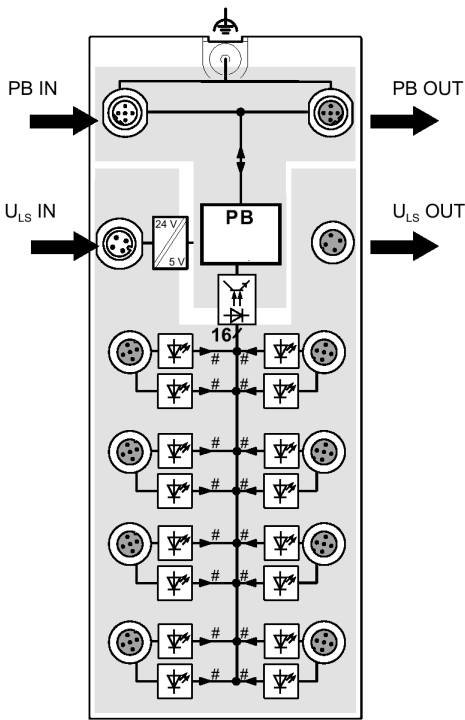
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Module Dimensions



Internal Circuit Diagram



	Isolating transformer
	LED (status indicators)
	Optocoupler
	Digital input
	Isolated area

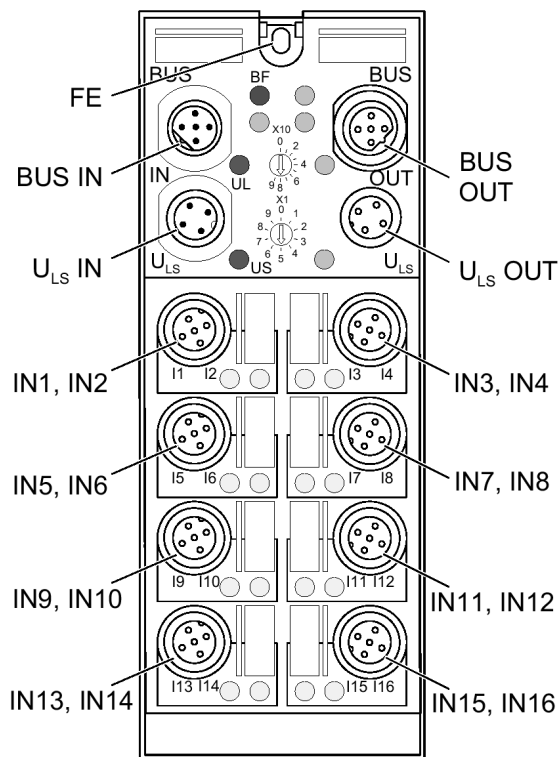
VersaMax IP Input Module

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Module Connectors

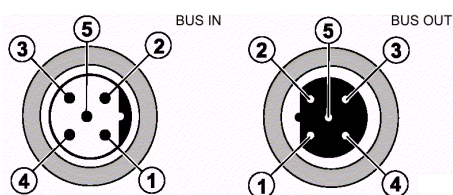


Connector	Function
FE	Functional earth ground
BUS IN	Profibus In
BUS OUT	Profibus Out
ULs IN	Voltage supply in
ULs OUT	Voltage supply out for additional modules
IN1 TO IN16	Inputs 1 to 16

Connection Guidelines

- **Meet Noise Immunity Requirements.** Connect FE using a mounting screw, or (when mounting the module on the side or on a non-conductive surface), using a cable connection to the FE connection point.
- **Ensure IP67 Protection.** Cover the unused sockets with protective caps (IC676ACC002 and ACC003).
- **Avoid Damage to the Electronics.** Supply the sensors with the appropriate voltage U_S at the connection points.
- **Avoid Polarity Reversal of the supply voltages U_L , U_S , and U_A** to avoid damage to the device.
- **Connect the sensors to the** correct points as shown on the next page.

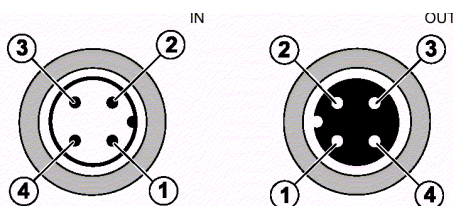
Profibus Pin Assignments



The thread is used for shielding.

Pin	In	Out
1	VP	VP
2	RxD/TxD-N (A)	RxD/TxD-N (A)
3	DGND	DGND
4	RxD/TxD-P (B)	RxD/TxD-P (B)
5	Shield	Shield

Pin Assignment of the Voltage Supply



Pin	In	Out
1	U_L +24V	U_L +24V
2	U_S GND	U_S GND
3	U_L GND	U_L GND
4	U_S +24V	U_S +24V

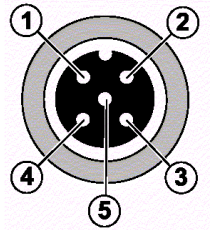
VersaMax IP Input Module

16 Point Input Module, Profibus IC676PBI016

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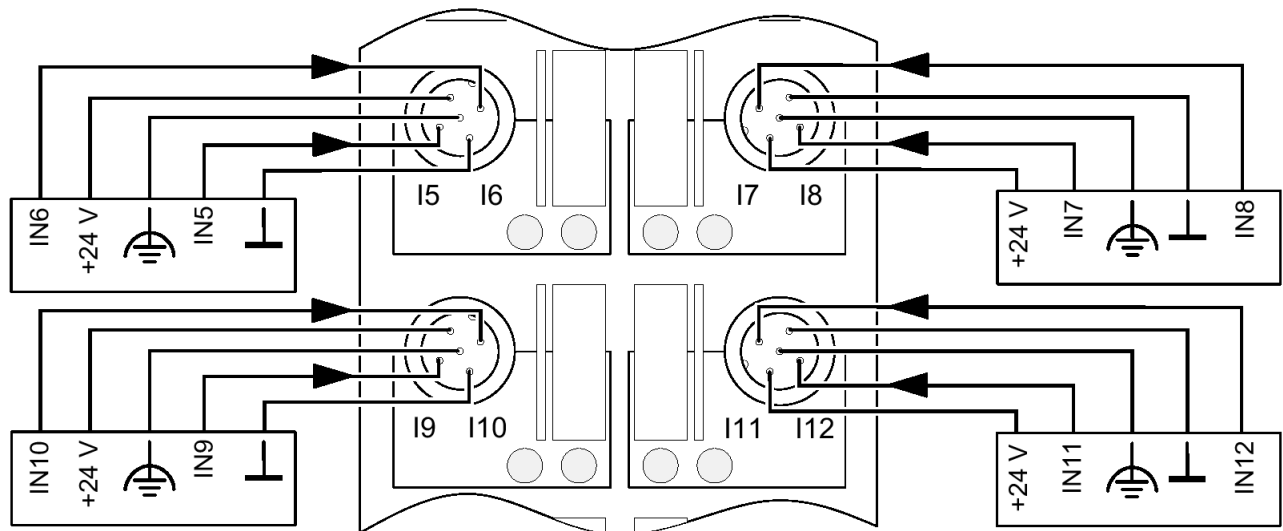
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Pin Assignment of the Inputs



1	US +24V
2	Input 2, 4, 6 ... 16
3	GND
4	Input 1, 3, 5 ... 15
5	FE

Connection Examples



VersaMax IP Input Module

16 Point Input Module, Profibus IC676PBI016

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Program Data

ID number	06FB hex
Input address area	16 bits

Process Input Data Format

This module provides 16 bits of process data. Connection points are assigned to these 8 bits as shown below:

Byte	0								1							
Bit Number	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Input	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Module Diagnostic Data

The module also provides 12 bytes of diagnostic data to the master, in the format shown below. Of this data, bytes 0 through 6 are Profibus standard data. Bytes 7 through 12 are specific to this module. If a diagnostic event occurs, the module generates a telegram containing the diagnostic data to the master. The module can read the current diagnostic data at any time.

Byte Number	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Diagnostic Data
Byte 0	X	X	X	X	X	X	X	X	Station Status 1
Byte 1	X	X	X	X	X	X	X	X	Station Status 2
Byte 2	X	X	X	X	X	X	X	X	Station Status 3
Byte 3	X	X	X	X	X	X	X	X	Master address diagnostics
Byte 4	0	0	0	0	0	1	1	0	High ID Number
Byte 5	0	1	1	0	1	0	1	1	Low ID Number
Byte 6	0	0	0	0	0	1	1	1	Diagnostic header
Byte 7	M.7	M.6	M.5	M.4	M.3	M.2	M.1	M.0	Module Diagnostics
Byte 8	0	0	0	0	0	0	0	0	Reserved
Byte 9	0	0	0	0	0	0	0	0	Reserved
Byte 10	0	0	0	0	0	0	0	0	Reserved
Byte 11	0	0	0	0	0	0	0	0	Reserved
Byte 12	X	X	0	0	0	0	0	0	Reserved

Byte 7, Format of the Module Diagnostics Data

Bit Number	Used For	Comment
M.0 - M.2	Reserved	0
M.3	Status of the US Sensor Supply	1 if the Sensor Supply is less than 18V
M.4 - M.5	Reserved	0
M.6	Status of the U _L Module Supply	1 if the Module Supply is less than 18V
M.7	Overload Status of the U _S sensor supply	1 if the Sensor supply is overloaded

Technical Data

Discrete Inputs	
Number	16
Switching thresholds	Maximum low level voltage less than 5V Minimum high level voltage greater than 11V
Nominal input voltage U_{IN}	24VDC
Permissible range	$-30V < U_{IN} < +30VDC$
Nominal input current U_{IN}	3mA
Characteristic curve of the current	Constant
Delay time	On: <1ms, typical Off: 2ms, typical
Permissible cable length to the sensor	100m (328ft))

Sensor Supply	
Minimum sensor voltage	$U_S - 1V$
Nominal current per channel	75mA
Nominal current per module	1.2A
Overload Protection	Electronic per module
Short-circuit protection	Electronic per module

Error Messages	
Short circuit of sensor supply	Yes. If an error is triggered by an overload or short circuit of the sensor supply, the module switches off the sensor supply of the channels and sends an error message to the master.
Overload of sensor supply	Yes. If the sensor supply U_S is too low, the module reports a peripheral fault to the master.

Profibus Interface	
Baud Rate, incoming and outgoing	12 Mbaud maximum. For transmission rates above 3 Mbaud, T-pieces with integrated series inductance must be used.
Shield connection, incoming and outgoing	Direct to FE

Electrical Isolation/Isolation of the Voltage Areas	
24V supply (bus logic) / bus connection 24V supply (bus logic) / FE 24V supply (bus logic) / digital inputs (sensor Supply) Bus Connection / FE Bus Connection / digital inputs (sensor supply) FE / digital inputs (sensor supply)	Test voltage: 500VAC, 50Hz, 1 minute