WAGO I/O SYSTEM 755

IP 67 I/O Module

Technical Information

755-121
DeviceNet Slave 16DI 24 V DC

Version 1.0.0

WAGO®
INNOVATIVE CONNECTIONS

WAGO Kontakttechnik GmbH
Hansastraße 27
D-32423 Minden

Phone: +49 (0) 571/8 87 – 0
Fax: +49 (0) 571/8 87 – 1 69

E-Mail: info@wago.com

Web: http://www.wago.com

Technical Support
Phone: +49 (0) 571/8 87 – 5 55
Fax: +49 (0) 571/8 87 – 4 30

E-Mail: support@wago.com

Every conceivable measure has been taken to ensure the correctness and completeness of this documentation. However, as errors can never be fully excluded we would appreciate any information or ideas at any time.

We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally trademark or patent protected.

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1 Important comments

To ensure fast installation and start-up of the units described in this manual, we strongly recommend that the following information and explanation is carefully read and adhered to.

1.1 Legal principles

1.1.1 Copyright

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1.1.2 Personnel qualification

The use of the product detailed in this manual is exclusively geared to specialists having qualifications in PLC programming, electrical specialists or persons instructed by electrical specialists who are also familiar with the valid standards. WAGO Kontakttechnik GmbH declines all liability resulting from improper action and damage to WAGO products and third party products due to non-observance of the information contained in this manual.

1.1.3 Intended use

For each individual application, the components supplied are to work with a dedicated hardware and software configuration. Modifications are only admitted within the framework of the possibilities documented in the manuals. All other changes to the hardware and/or software and the non-conforming use of the components entail the exclusion of liability on part of WAGO Kontakttechnik GmbH.

Please direct any requirements pertaining to a modified and/or new hardware or software configuration directly to WAGO Kontakttechnik GmbH.

1.2 Representation of numeric systems

Numeric system	Example	Remark
Decimal	100	normal notation
Hexadecimal	0x64	C-notation
Binary	'100' '0110.0100'	with inverted comma, 4 bits (Nibble) seperated with a point

2 Device description

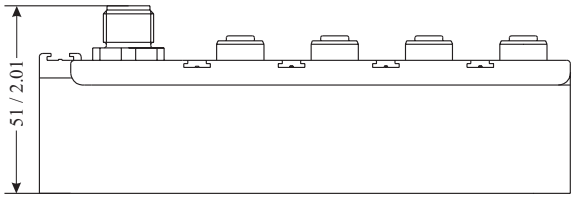
2.1 Features

- DeviceNet Group 2 only Server
- 16 digital inputs for standard sensors
  (8 x 2-channel M12-coupling; 2 sensors/coupling
  only with being used 755-881/887)
- Capable of 125-, 250-, 500- kBaud
- Address preset 63
- Protection IP 67

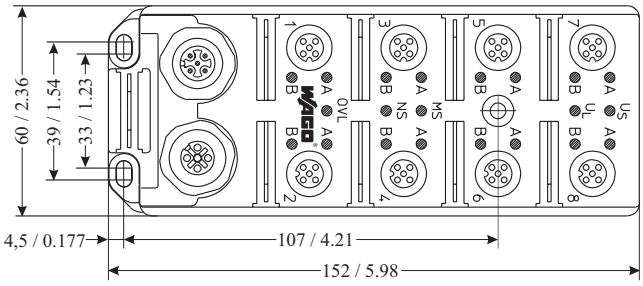
2.2 Mounting

Attention
Depending on the kind of addressing chosen by you you have to assign addresses either before or after the mounting. (see addressing)

- Mount the module on a plain surface by means of 3 M4x35 screws.



Dimensions (mm / in)



- Ground connection via fastening screws at the bottom.
- Bus / supply connection via M12 coupling / connector (5-pin).

Attention, risk of destruction
Never connect power supply (DC 24 V) to data lines
(CAN_H → Pin4, CAN_L → Pin5)

- Sensor connection via M12 coupling (5-pin).

2.3 Addressing

Addressing from DeviceNet master (scanner):

- via DeviceNet manager or RS Networx made by Allen Bradley
- via the suitable software of the manufacturer (configurator, commissioningtool etc.)

a) addressing before the mounting

Directly connect the module to the scanner (CAN_H, CAN_L) and power supply unit. Assign the address via the above mentioned software and record it on the module (nameplate).

b) addressing after the mounting

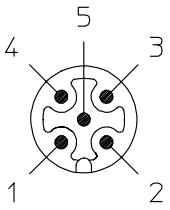
Fasten modules, connect sensors, if applicable. Connect bus cabel (CAN_H, CAN_L from scanner + supply from power supply unit) to the first module, assign addresses. Repeat action, assign addresses after each module integrated into the line (bus cabel connected).

2.4 Diagnostic indication

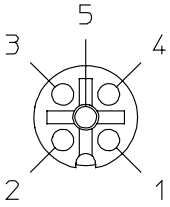
LED	Indication	Requirement
1A/B ... 8A/B	yellow	channel active
U_S	green	sensor supply active
U_L	green	module supply active
MS (module status)	1) green	module ready
	2) red blinking	none-critical error
	3) red	critical error
NS (network status)	1) green	online, connected with master
	2) green blinking	online, no connection with master
	3) red blinking	time-out status for the last I/O-connection
	4) red	BUS-Off status, multiple node address
OVL	red	sensor short circuit

2.5 Pin assignment

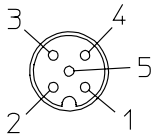
2.5.1 DeviceNet In

DeviceNet In		Connector	Pin	Function
	M12	DeviceNet	1 2 3 4 5	Drain V + V - CAN_H CAN_L

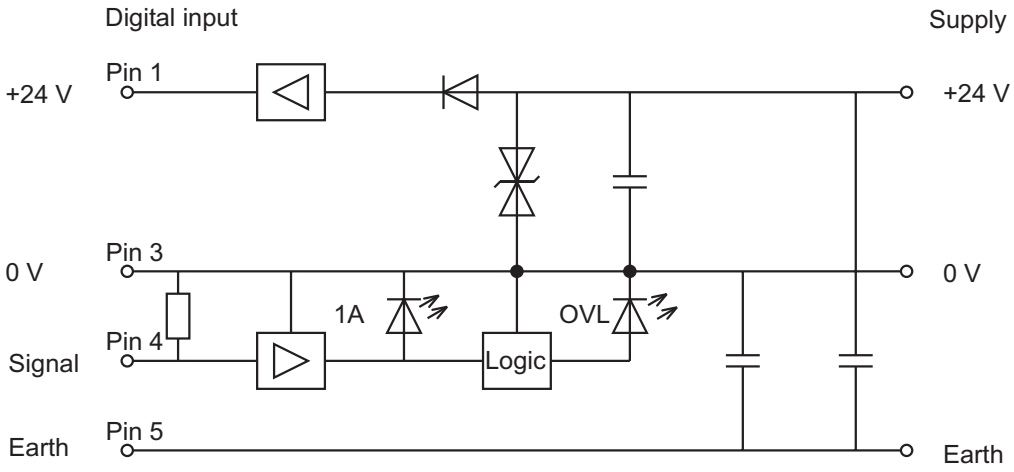
2.5.2 DeviceNet Out

DeviceNet Out		Connector	Pin	Function
	M12	DeviceNet	1 2 3 4 5	Drain V + V - CAN_H CAN_L

2.5.3 Sensor

Sensor connection		Connector	Pin	Function
	M12	Input	1 2 3 4 5	+24 V Signal B 0 V Signal A Earth

2.6 Basic wiring diagram of an input



3 Technical data

General data	
Potential barrier	no potential barrier
Degree of protection	IEC IP 67 (NEMA Type 4-6 P)
Operating temperature	0 °C ... +60 °C
Storage temperature	0 °C ... +60 °C
Weight	550 g

DeviceNet system data	
Interface	ISO 11898
Transmission medium	certified DeviceNet cable twisted two-wire circuit with power supply
Baud rate programable via DeviceNet-Master	0 = 125kBaud / 1 = 250kBaud / 2 = 500kBaud
MAC ID programable via DeviceNet-Master	0 ... 63
DeviceNet profile	General Purpose Discret I/O Device Type: 0x07
Total length	max. 500 m trunk cable(depends on Baudrate) max. 6 m drop cable
Topology	Line structure with drop cables
Addressing	via master
Communication	Explicit Message Connection Polled I/O Message Connection Bit Strobed I/O Message Connection Change of State / Cyclic Message Connection
User hierachy	Multi-Master
Cycle time	depends on number of devices and baud rate
Terminating resistor	yes

Power supply - electronics	
Nominal voltage	DC 24 V
Voltage range	DC 15 V ... 30 V
Current consumption	max. 80 mA
Reverse voltage protection	yes
Operating indicator (U_L)	LED green

Inputs	
Number of digital channels	16
Nominal input voltage	DC 24 V
Signal voltage (0)	DC 0 V ... +5 V
Signal voltage (1)	DC 12 V ... 30 V
Turn-on time	max. 1 ms
Turn-off time	max. 1 ms
Input current per channel	max 8 mA
Chanel status indicator	LED yellow, illuminated when ON

Power supply - sensors	
Nominal voltage U_S	> fieldbus voltage – 1,5 V
Current consumption / sensor	max. 800 mA
Total current consumption (all sensors)	max. 800 mA
Short circuit current limited to	< 3 A
Short circuit protection	yes
Sensor overload indication (OVL)	LED red
Sensor supply indication U_S	LED green

4 DeviceNet

4.1 Object model 755-121

4.1.1 Class 0x01, Identity Object

Instance 0
no Class Attributes

Instance 1			
Attribute ID	**Access Rule**	**Name**	**Default Value**
1	Get	Vendor ID	40 (0x28)
2	Get	Device Type	07 (0x07)
3	Get	Product Code	121 (0x79)
4	Get	Revision	current version
5	Get	Status	
6	Get	Serial Number	
7	Get	Product name	“755-121, 16DI 24 VDC“

4.1.2 Class 0x02, Message Router Object

Instance 0
no Class Attributes

Instance 1
no Instance Attributes

4.1.3 Class 0x03, DeviceNet Object

Instance 0			
Attribute ID	**Access Rule**	**Name**	**Default Value**
1	Get	Revison	02

Instance 1			
Attribute ID	**Access Rule**	**Name**	**Default Value**
1	Get/Set	MAC ID	63
2	Get/Set	Baud Rate	0 = 125 kBaud
3	Get	BOI	
4	Get	Bus-Off Counter	
5	Get	Allocation Information	

4.1.4 Class 0x04, Assembly Object

Instance 0
no Class Attributes

Instance 15			
Attribute ID	**Access Rule**	**Name**	**Default Value**
3	Get	Data	

I/O Assembly Data Attribute Format								
Byte	**.7**	**.6**	**.5**	**.4**	**.3**	**.2**	**.1**	**.0**
0	Input 8A	Input 7A	Input 6A	Input 5A	Input 4A	Input 3A	Input 2A	Input 1A
1	Input 8B	Input 7B	Input 6B	Input 5B	Input 4B	Input 3B	Input 2B	Input 1B
2	OVL Status	res.	res.	res.	res.	res.	res.	res.

4.1.5 Class 0x05, Connection Object

Instance 0
no Class Attributes

Description of the Instance IDs	
Instance ID	**Description**
1	Explicit Message Connection
2	Polled I/O Message Connection
3	Bit–Strobed I/O Message Connection
4	Change of State / Cyclic I/O Message Connection

Instance Attributes		
Attribute ID	**Access Rule**	**Name**
1	Get	state
2	Get	instance_type
3	Get	transportclass_trigger
4	Get	produced_connection_id
5	Get	consumed_connection_id
6	Get	initial_comm_characteristics
7	Get	produced_connection_size
8	Get	consumed _connection_path_length
9	Get / Set	expected_packed_rate
12	Get	watchdog_timeout_action
13	Get	produced_connection_path_length
14	Get	produced_connection_path
15	Get	consumed _connection_path_length
16	Get	consumed _connection_path
17	Get	production_inhibit_time

4.1.6 Class 0x1D, Digital Input Group (DIG)

Instance 0
no Class Attributes

Instance 1			
Attribute ID	**Access Rule**	**Name**	**Default Value**
5	Get	Status	Sensor Overload Status

4.1.7 Class 0x08, Digital Input Point (DIP)

Instance 0			
Attribute ID	**Access Rule**	**Name**	**Default Value**
1	Get	Revision	

Description of the Instance IDs	
Instance ID	**Description**
1	Input 1A
2	Input 2A
3	Input 3A
4	Input 4A
5	Input 5A
6	Input 6A
7	Input 7A
8	Input 8A
9	Input 1B
10	Input 2B
11	Input 3B
12	Input 4B
13	Input 5B
14	Input 6B
15	Input 7B
16	Input 8B

Instance Attributes		
Attribute ID	**Access Rule**	**Name**
3	Get	value

WAGO Kontakttechnik GmbH
Postfach 2880 • D-32385 Minden
Hansastraße 27 • D-32423 Minden
Phone: +49 (0) 5 71/8 87 – 0
Fax: +49 (0) 5 71/8 87 – 1 69
E-Mail: info@wago.com

Internet: http://www.wago.com