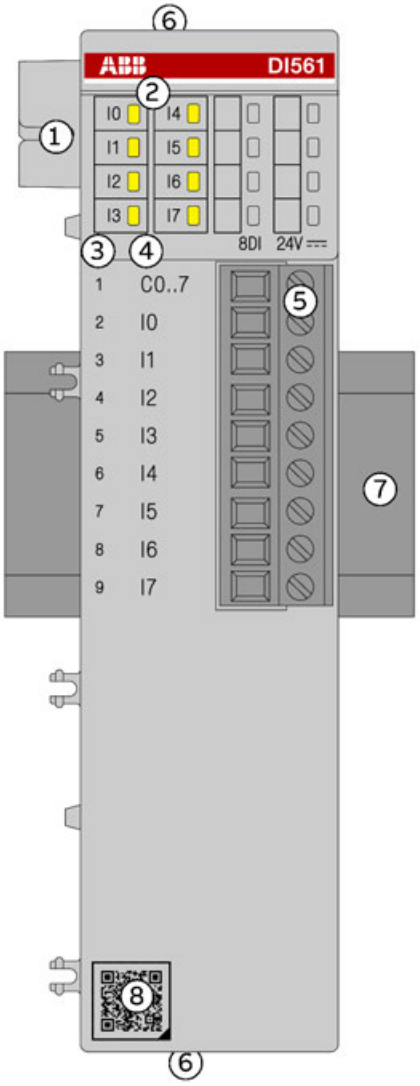
*) Modules in lifecycle Classic are available from stock but not recommended for planning and commissioning of new installations.

1.6.1.1.2 DI561 - Digital input module

- 8 digital inputs 24 V DC / 24 V AC (I0 ... I7) in 1 group
- Module-wise galvanically isolated



1 I/O bus
2 8 yellow LEDs to display the signal states of the inputs I0 to I7
3 Terminal number
4 Allocation of signal name
5 Terminal block for input signals (9-pin)
6 2 holes for wall-mounting with screws
7 DIN rail
8 QR code for datasheet

Intended purpose

The device can be used as a decentralized I/O extension module for S500 communication interface modules (e.g. CI592-CS31, CI50x-PNIO, CI51x-ETHCAT, CI52x-MODTCP, CI54x-DP, CI58x-CN) or as a centralized extension module for AC500 CPUs.

The inputs are group-wise galvanically isolated from each other.

All other circuitry of the module is galvanically isolated from the inputs.



The I/O module must not be used as a decentralized I/O module with CI590-CS31-HA communication interface modules.

Functionality

Parameter	Value
LED displays	For signal states
Internal power supply	Via I/O bus
External power supply	Not necessary

Connections



For a detailed description of the mounting, disassembly and connection of the module, please refer to the installation instructions.

The connection is carried out by using a removable 9-pin terminal block. These terminal blocks differ in their connection system (spring terminals or screw terminals, cable mounting from the front or from the side). The terminal blocks are not included in the module's scope of delivery and must be ordered separately.

Chapter 1.9.2.1 “TA563-TA565 - Terminal blocks” on page 1136

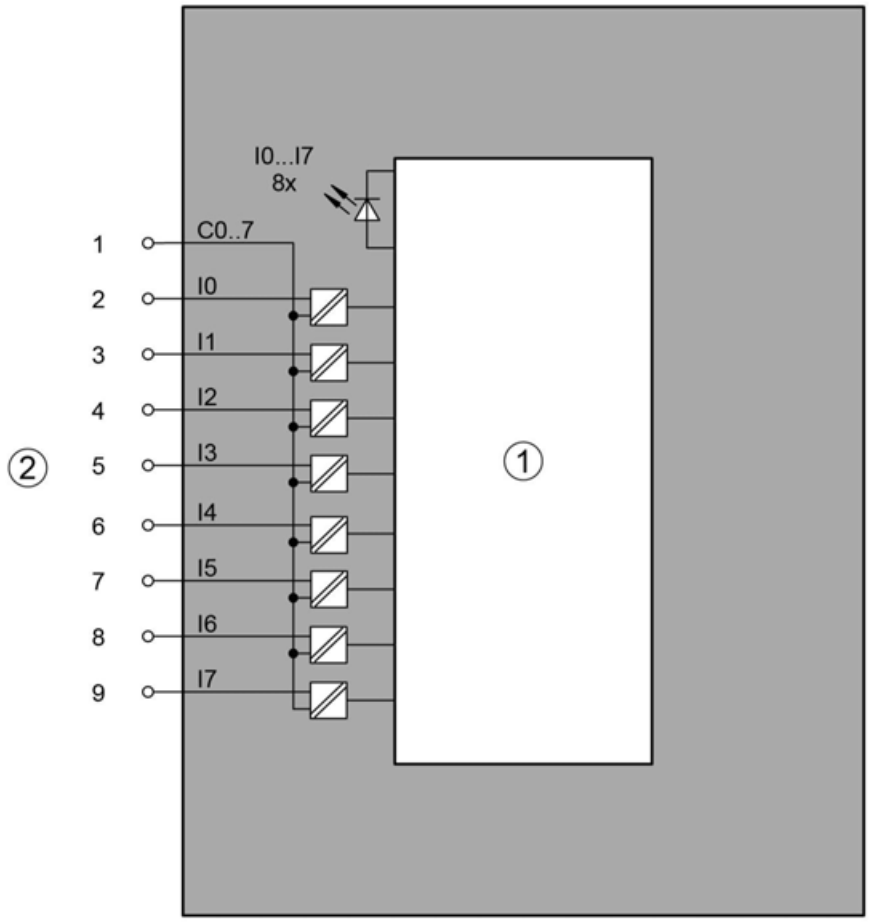


Fig. 15: Internal construction of the digital inputs

1 Logic - I/O bus interface
2 Digital inputs

Table 39: Assignment of the terminals:

Terminal	Signal	Description
1	C0 ... 7	Input common for signals I0 to I7
2	I0	Input signal I0
3	I1	Input signal I1
4	I2	Input signal I2
5	I3	Input signal I3
6	I4	Input signal I4
7	I5	Input signal I5
8	I6	Input signal I6
9	I7	Input signal I7

The internal power supply voltage for the module's circuitry is carried out via the I/O bus (provided by a communication interface module or a CPU). Thus, the current consumption from 24 V DC power supply at the terminals L+/UP and M/ZP of the CPU/communication interface module increases by 5 mA per DI561.

An external power supply connection is not needed.

WARNING!

Removal/Insertion under power

The devices are not designed for removal or insertion under power. Because of unforeseeable consequences, it is not allowed to plug or unplug devices with the power being ON.

Make sure that all voltage sources (supply and process voltage) are switched off before doing the following:

– Connect or disconnect any signal or terminal block.
– Remove, mount or replace a module.

Disconnecting any powered devices while energized in a hazardous location could result in an electric arc, which could create a flammable ignition resulting in fire or explosion.

Make sure that power is removed and that the area has been thoroughly checked to ensure that flammable materials are not present prior to proceeding.

The devices must not be opened when in operation. The same applies to the network interfaces.

NOTICE!

Risk of damaging the PLC modules!

Overvoltages and short circuits might damage the PLC modules.

– Make sure that all voltage sources (supply voltage and process supply voltage) are switched off before you begin with operations on the system.
– Never connect any voltages or signals to reserved terminals (marked with ---). Reserved terminals may carry internal voltages.

The digital inputs can be used as source inputs or as sink inputs.

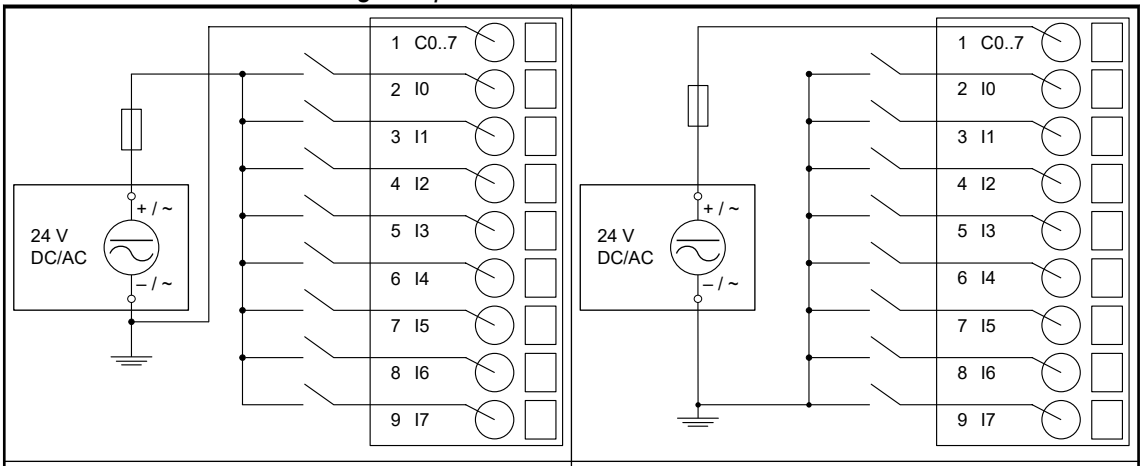
NOTICE!

Risk of malfunctions in the plant!

A ground fault, e. g. caused by a damaged cable insulation, can bridge switches accidentally.

Use sink inputs when possible or make sure that, in case of error, there will be no risks to persons or plant.

Table 40: Connection of the digital input module DI561



Connection of DI561 - sink inputs	Connection of DI561 - source inputs

The module provides several diagnosis functions *Chapter 1.6.1.1.2.6 “Diagnosis” on page 161*.

The meaning of the LEDs is described in the section State LEDs *Chapter 1.6.1.1.2.7 “State LEDs” on page 162*.

I/O Configuration

The module itself does not store configuration data. It receives its parameterization data from the master device of the I/O bus (CPU or communication interface module) during power-up of the system.

Hence, replacing I/O modules is possible without any re-parameterization via software.

If the external power supply voltage via UP/ZP terminals fails, the I/O module loses its configuration data. The whole station has to be switched off and on again to re-configure the module.

Parameterization

The arrangement of the parameter data is performed with Automation Builder software.

The parameter data directly influences the functionality of modules.

For non-standard applications, it is necessary to adapt the parameters to your system configuration.

Name	Value	Internal Value	Internal Value, Type	Default	Min.	Max.	EDS Slot Index
Module ID	Internal	6105 [1])	WORD	6105 0x17D9	0	65535	xx01
Ignore module	No Yes	0 1	BYTE	No (0x00)			
Parameter length [2])	Internal	1 - CPU	BYTE	0	0	255	xx02 [3])

[1]) with CS31 and addresses smaller than 70, the value is increased by 1

[2]) the module has no additional user-configurable parameters

[3]) Value is hexadecimal: HighByte is slot (xx: 0 ... 7), LowByte is index (1 ... n)

GSD file:

Ext_User_Prm_Data_Len =	0x03
Ext_User_Prm_Data_Const(0) =	0xDA, 0x17, 0x00;

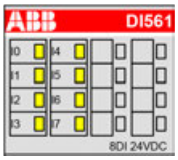
Diagnosis

E1 ... E4	**d1**	**d2**	**d3**	**d4**	**Identifier 000 ... 063**	**AC500-Display**	**<− Display in**	
Class	**Comp**	**Dev**	**Mod**	**Ch**	**Err**	**AB SW**		
Byte 6 Bit 6 ... 7	**-**	**Byte 3**	**Byte 4**	**Byte 5**	**Byte 6 Bit 0 ... 5**	**PNIO diagnosis block**		
Class	**Interface**	**Device**	**Module**	**Channel**	**Error Identifier**	**Error message**		**Remedy**
	[1])	**[2])**	**[3])**	**[4])**				
Module error								
3	14	1 ... 10	31	31	19	Checksum error in the I/O module		Replace I/O module
	11 / 12	ADR	1 ... 10					
3	14	1 ... 10	31	31	43	Internal error in the module		Replace I/O module
	11 / 12	ADR	1 ... 10					
3	14	1 ... 10	31	31	9	Overflow diagnosis buffer		Restart
	11 / 12	ADR	1 ... 10					
3	14	1 ... 10	31	31	26	Parameter error		Check master
	11 / 12	ADR	1 ... 10					

Remarks:

[1])	In AC500 the following interface identifier applies: 14 = I/O bus, 11 = COM1 (e.g. CS31 bus), 12 = COM2. The PNIO diagnosis block does not contain this identifier.
[2])	With "Device" the following allocation applies: 31 = module itself, 1 ... 10 = decentralized communication interface module 1 ... 10, ADR = hardware address (e. g. of the DC551-CS31)
[3])	With "Module" the following allocation applies depending on the master: Module error: I/O bus or PNIO: 31 = module itself; COM1/COM2: 1 ... 10 = expansion 1 ... 10
[4])	In case of module errors, with channel "31 = module itself" is output.

State LEDs

LED		State	Color	LED = OFF	LED = ON
	Inputs I0...I7	Digital input	Yellow	Input is OFF	Input is ON

In the undefined signal range, the state LED for the inputs can be ON although the input state detected by the module is OFF.

Technical data

Technical data of the module

The system data of AC500-eCo apply.

Chapter 2.5.1 “System data AC500-eCo” on page 1165

Only additional details are therefore documented below.

Parameter	Value
Galvanic isolation	Yes, between the input group and the rest of the module
Isolated groups	1 (8 channels per group)
Current consumption from 24 V DC power supply at the L+/UP and M/ZP terminals of the CPU/communication interface module	Ca. 5 mA
Max. power dissipation within the module	1.6 W
Weight	Ca. 110 g
Mounting position	Horizontal or vertical
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the control cabinet.

Technical data of the digital inputs

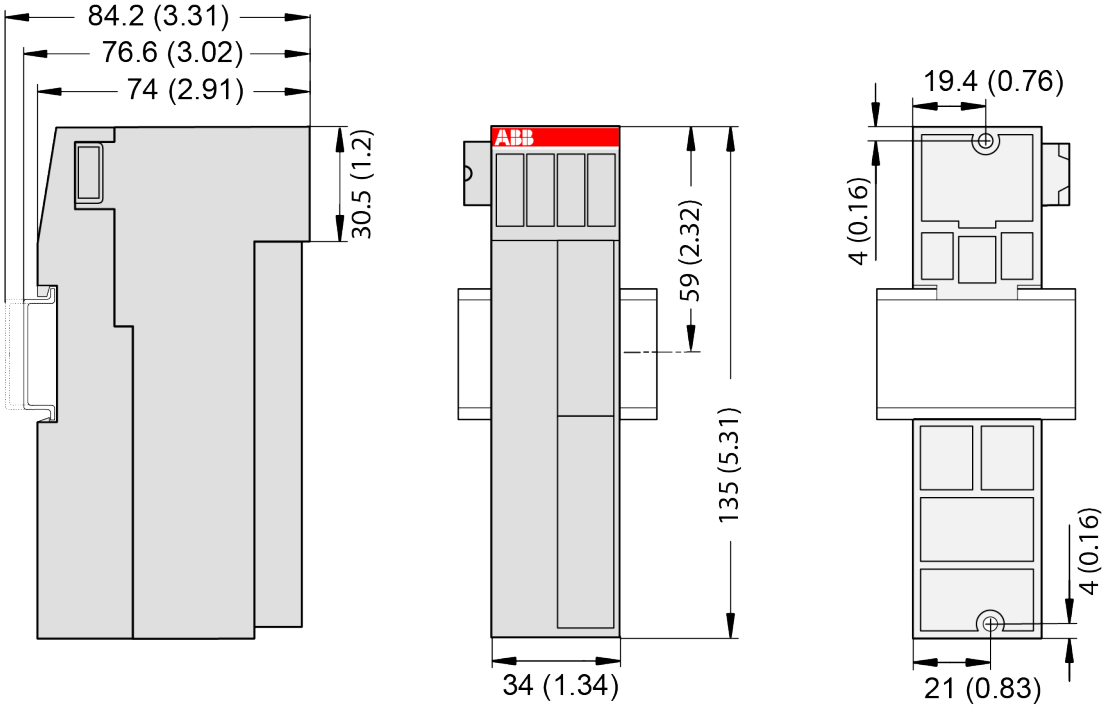
Parameter	Value
Number of channels per module	8 inputs (24 V DC / 24 V AC)
Distribution of the channels into groups	1 (8 channels per group)
Connections of the channels I0 to I7	Terminals 2 ... 9
Reference potential for the channels I0 to I7	Terminal 1 (plus or negative pole of the process supply voltage, signal name C0 .. 7)
Indication of the input signals	1 yellow LED per channel; the LED is ON when the input signal is high (signal 1). The module is powered through the I/O bus.

Parameter		Value		
Monitoring point of input indicator		LED is part of the input circuitry		
Input type according to EN 61131-2		Type 1 source	Type 1 sink	Type 1 AC [1])
Input signal range		-24 V DC	+24 V DC	24 V AC 50/60 Hz
	Signal 0	-5 V ... +3 V	-3 V ... +5 V	0 V AC ... 5 V AC
	Undefined signal	-15 V ... -5 V	+5 V ... +15 V	5 V AC ... 14 V AC
	Signal 1	-30 V ... -15 V	+15 V ... +30 V	14 V AC ... 27 V AC
Input current per channel				
	Input voltage 24 V	Typ. 5 mA		Typ. 5 mA r.m.s.
	Input voltage 5 V	Typ. 1 mA		Typ. 1 mA r.m.s.
	Input voltage 14 V			Typ. 2.7 mA r.m.s.
	Input voltage 15 V	> 2.5 mA		
	Input voltage 27 V			Typ. 5.5 mA r.m.s.
	Input voltage 30 V	< 8 mA		
Max. permissible leakage current (at 2-wire proximity switches)		1 mA		Typ. 1 mA r.m.s.
Input delay (0->1 or 1->0)		Typ. 8 ms		
Input data length		1 byte		
Max. cable length				
	Shielded	500 m		
	Unshielded	300 m		

[1]) For version before E0, when inputs are used with 24 V AC, external surge limiting filters are required.

Refer to 'System data AC500-eCo' for details *Chapter 2.5.1 “System data AC500-eCo” on page 1165*.

Dimensions



The dimensions are in mm and in brackets in inch.

Ordering data

Part no.	Description	Product life cycle phase *)
1TNE 968 902 R2101	DI561, digital input module, 8 DI, 24 V DC / 24 V AC	Active
1TNE 968 901 R3101	Terminal block TA563-9, 9 pins, screw front, cable side, 6 pieces per unit	Active
1TNE 968 901 R3103	Terminal block TA564-9, 9 pins, screw front, cable front, 6 pieces per unit	Active
1TNE 968 901 R3105	Terminal block TA565-9, 9 pins, spring front, cable front, 6 pieces per unit	Active

**) Modules in lifecycle Classic are available from stock but not recommended for planning and commissioning of new installations.*

1.6.1.1.3 DI562 - Digital input module

- 16 digital inputs 24 V DC / 24 V AC (I0 ... I15) in 2 groups
- Group-wise galvanically isolated