3. Nodal modules with communication protocol CANopen

3.1 Digital input/output module DDC 71x/-T/-TH

- DDC 71x /-T: 8 digital inputs rated at 24 Vdc and 8 digital outputs 24 Vdc/0.5 A.
- DDC 71x-TH: 8 digital inputs rated at 36 Vdc and 8 digital outputs 36 Vdc/0.5 A.

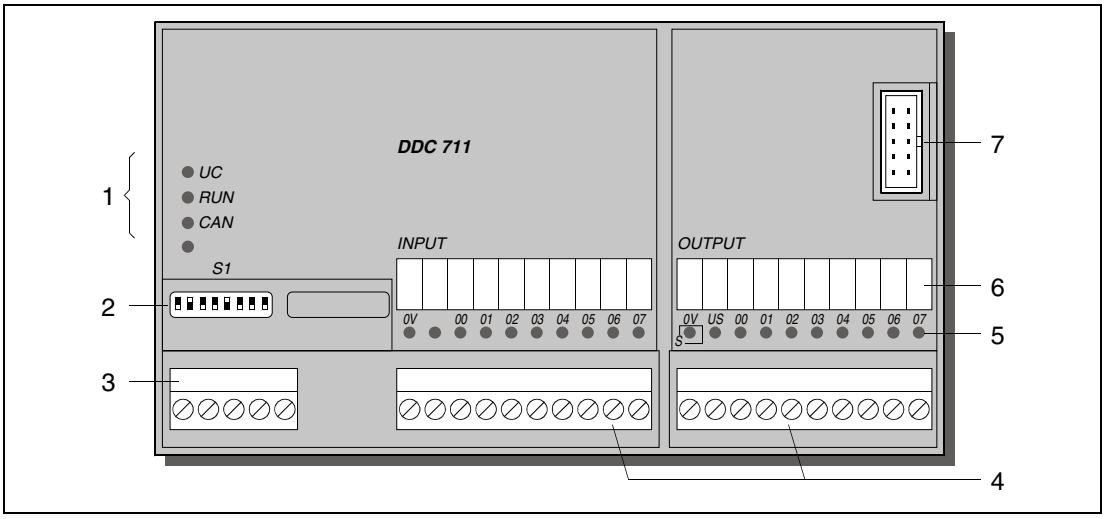


Fig. 8.35: Digital input/output module DDC 71x/-T/-TH

Legend:

1:	LEDs	UC:	Supply voltage
		RUN:	Logic supply
		CAN:	Communication status
2:	DIP switch S1 for CAN bus		
3:	Connection for CAN bus and supply voltage (UC)		
4:	Terminal strip		
5:	LED indicators		
6:	Labeling strips		
7:	Link connector for expansion module		

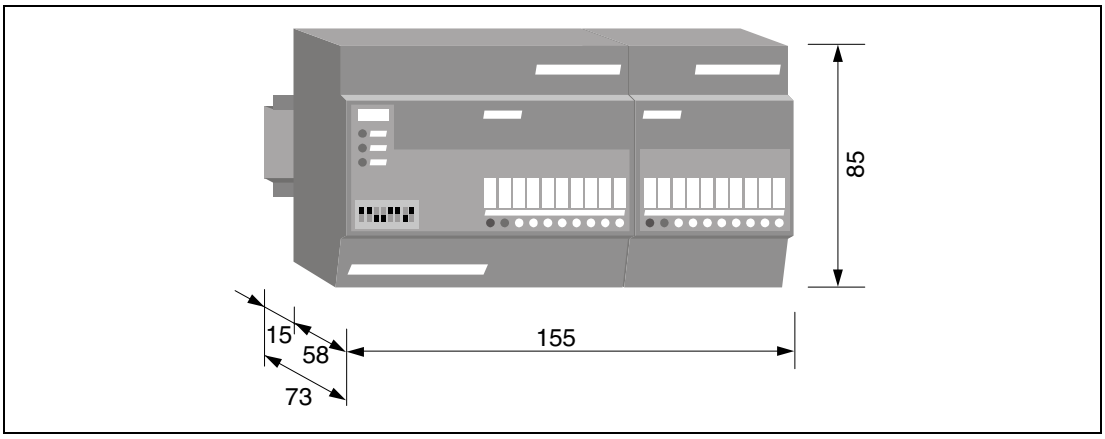


Fig. 8.36: Dimensions DDC 71x/-T/-TH

3.1.1 Terminal block assignment digital inputs

The DDC 711 module is wired to two 10-pole terminal block.

All the inputs are referred back to a common 0 V connection. The inputs are electrically isolated from the logic circuitry of the module.

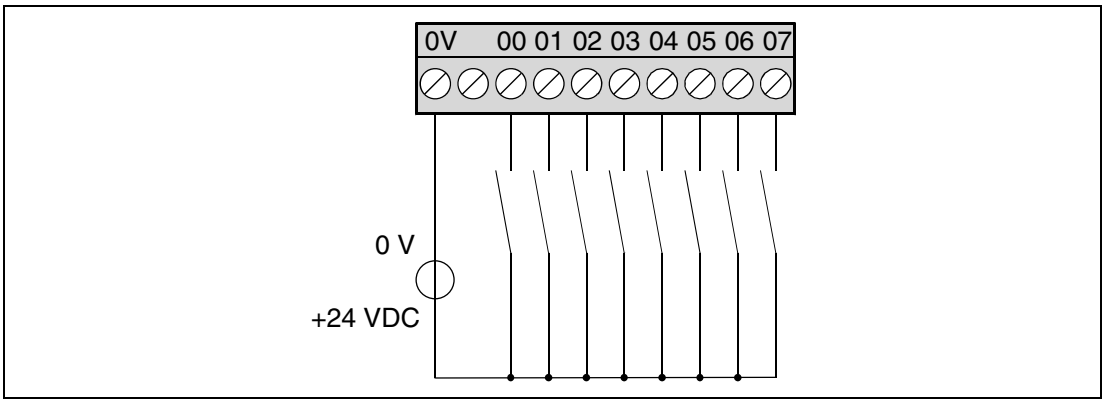


Fig. 8.37: Digital inputs 0…7

3.1.2 Basic circuit digital inputs DDC 71x/-T/-TH

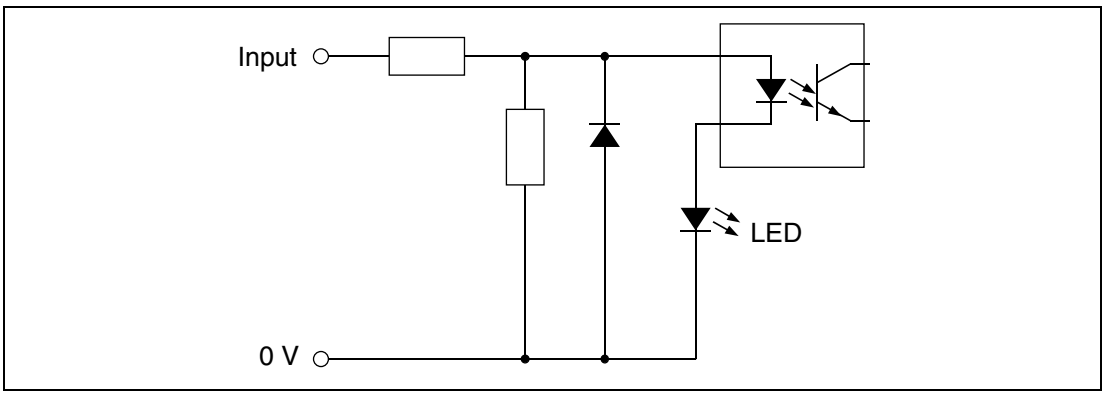


Fig. 8.38: Basic circuit digital inputs DDC 71x/-T/-TH

3.1.3 Terminal block assignment digital outputs

All the outputs are taken back to a common 0 V connection and a common power supply connection. The outputs are electrically isolated from the logic circuitry of the module.

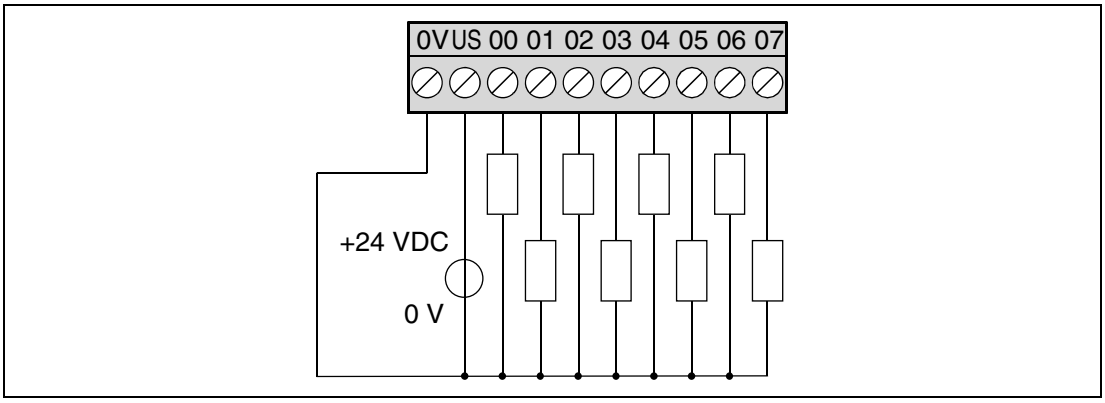


Fig. 8.39: Digital outputs 0…7

3.1.4 Basic circuit digital outputs DDC 71x/-T/-TH

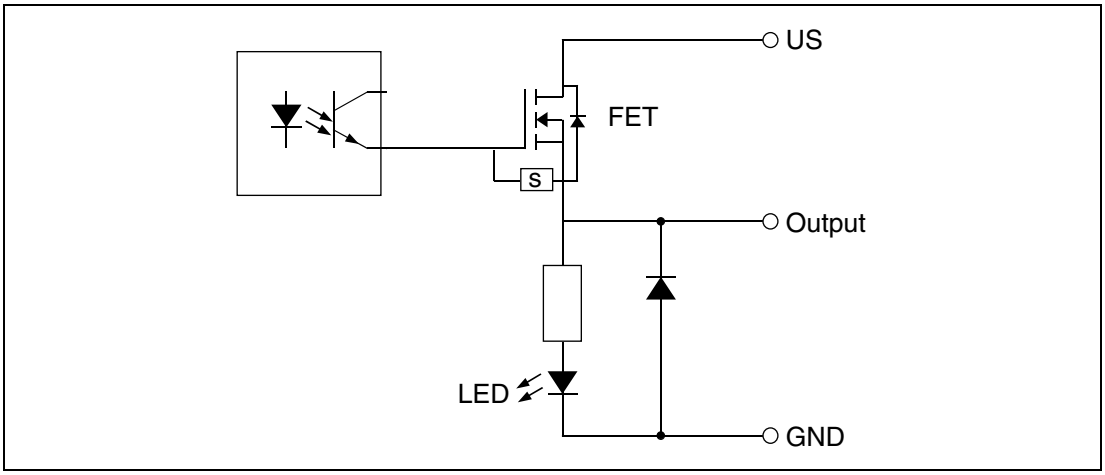


Fig. 8.40: Basic circuit digital outputs DDC 71x/-T/-TH

3.1.5 Technical data DDC 71x/-T/-TH

General data	DDC 71x	DDC 71x-T	DDC 71x-TH
Bus-connection	CAN (ISO 1898)	CAN (ISO 1898)	CAN (ISO 1898)
Communication Profile:			
DDC 711/-T/-TH	CiA-DS301 / V3	CiA-DS301 / V3	CiA-DS301 / V3
DDC 712/-T/-TH	CiA-DS301 / V4	CiA-DS301 / V4	CiA-DS301 / V4
Supply voltage (UC)			
Nominal value	24 Vdc	24 Vdc	36 Vdc
Limits	18…30 Vdc	16.8…30 Vdc	25…45 Vdc
Power consumption max.	2.6 W	2.6 W	2.6 W
Ambient temperatures:			
operating	0…+55 °C	-25…+70 °C	-25…+70 °C
storage	0…+ 70 °C	-40…+ 85 °C	-40…+ 85 °C
Protection mode	IP 40	IP 40	IP 40
Dimensions (W x H x D) [mm]	155 x 85 x 58	155 x 85 x 58	155 x 85 x 58
Weight	360 g	360 g	360 g
Art. No.			
DDC 711/-T/-TH	44120080	44120200	44120300
DDC 712/-T/-TH	44120084	44120210	44120310

Digital inputs	DDC 71x	DDC 71x-T	DDC 71x-TH
Digital inputs	8	8	8
Input type as per IEC 61131-2	Type 1	Type 1	Type 1
Display	Green LEDs, lights on at signal =1		
Power consumption logic typ.	100 mW	100 mW	100 mW
Input voltage	0…24 Vdc	0…24 Vdc	0…36 Vdc
Limits	-30…+30 Vdc	-30…+30 Vdc	-45…+45 Vdc
for signal = 0	< 5 Vdc	< 5 Vdc	< 7.5 Vdc
for signal = 1	> 14 Vdc	> 14 Vdc	> 19 Vdc
Input resistance typ.	3.9 kΩ	3.9 kΩ	6.8 kΩ
Input current at signal = 1 typ. [1)]	6 mA	6 mA	5.3 mA
Input delay time typ.	0.6 ms typ. (input filter)	0.6 ms typ. (input filter)	0.6 ms typ. (input filter)
settable under software control	5.6 ms	5.6 ms	5.6 ms
Electrical insulation			
Input ↔ logic	yes	yes	yes
Input ↔ input	no	no	no
Test voltage	560 Vac, 800 Vdc	560 Vac, 800 Vdc	560 Vac, 800 Vdc
Signal evaluation	static or dynamic (Edge detection)		
Effect at change of input polarity	no destruction, no high currents		
Sensor connecting cable	max. 100 m not screened		

Digital outputs	**DDC 71x**	**DDC 71x-T**	**DDC 71x-TH**
Digital outputs	8	8	8
Type of output	FE-transistor, pulse connecting		
Output indicator	LED orange, lights on at signal = 1		
Supply voltage (US)			
Nominal value	24 Vdc	24 Vdc	36 Vdc
Limits	18…30 Vdc	16.8…30 Vdc	25…45 Vdc
Output voltage [1)]	≥ 23 Vdc	≥ 23 Vdc	≥ 35 Vdc
Electrical insulation [2)]			
Output ↔ logic	yes	yes	yes
Output ↔ Output	no	no	no
Power consumption logic typ.	200 mW	200 mW	200 mW
Output current for signal = 1	0.5 A max.	0.5 A max.	0.5 A max.
Short-circuit current Is typ.	5 A, switch off time 1.5 ms typ.		
Switch on time after cancel the short-circuit	≤ 5 s	≤ 5 s	≤ 5 s
Total loading	4 A	4 A	4 A
Min. switching current	100 µA	100 µA	100 µA
Inductive spike suppr.	Protection diode	Suppressor diode	Suppressor diode
Output delay time			
for signal 0 → 1	600 µs	600 µs	600 µs
for signal 1 → 0	800 µs	800 µs	800 µs
Switching rate			
Resistive load	100 Hz	100 Hz	100 Hz
Inductive load	2 Hz	2 Hz	2 Hz
Open circuit level			
Signal = 0	max. 2 Vdc	max. 2 Vdc	max. 2 Vdc
Signal = 1	18…30 Vdc	16.8…30 Vdc	25…45 Vdc
Short-circuit indicator	LED red	LED red	LED red
Output indicator	LED orange	LED orange	LED orange
Supply voltage indicator (US)	LED green	LED green	LED green
Effect at overload	Outputs are switched off		
Output behaviour if CAN communication is interrupted	Outputs keep the actual state or are set to 0 (depending on the application)		

[1)] at US = Nominal value

[2)] Test voltages see appendix

Further technical data valid for all modules is given in the appendix under 'Test standards'.