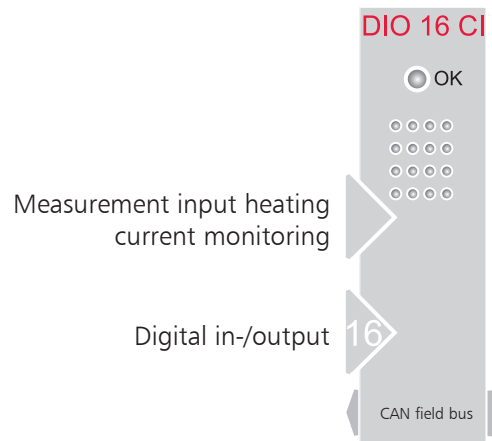


## Digital In-/Output Interface, Current Input

flexotemp®

### DIO 16 CI & DIO 16 CI SPL



#### Features

- Module for 16 without and/or 15 with Smart Power Limitation SPL digital in-/outputs (function configurable)
- Analog input for registration of heating current by external current transformers (three phases)
- CANopen norm slave based on DS-401
- Applicable with flexotemp® MCU and flexotemp® PCU, in I/O nodes by flexotemp® CANBC
- Model ME-Bus (connectable)
- Status-LED
- Control LED's for digital in-/outputs
- Compact design

#### Function

- Application of digital in- and -outputs as control outputs and function in- / outputs (also for Soft-PLC)
- For DIO16CI SPL use of one digital input for receive of SYNC signals from flexotemp® ZCD for SPL
- For heating/cooling outputs output of proportional, pulse width modulated control signal
- Heating current monitoring of control zones in heating mode (independent from control or manual mode)
- Switching behavior can be adapted to the actuator type
- Functional integration in flexotemp® PCU and flexotemp® MCU

#### Benefits

- Easy, peripheral configuration of flexotemp® control system with remote I/O's
- Peripheral signal processing
- Easy expandability and integration in own applications
- Compact housing
- Little for installation

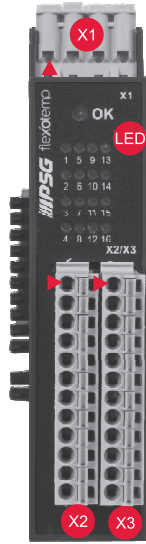
#### Ordering designations

	Order number
flexotemp® DIO 16 CI	RR 2200/DIO16CI
flexotemp® DIO 16 CI SPL	RR 2200/DIO16CI/SPL

## Technical Data

<b>Digital inputs (DI)</b>	Number: 16 and/or 15 (for SPL), configurable by flexotempMANAGER	
Type	Logic input, direct-coupled	
Rated input voltage	0...30 VDC; $U_E$ (at X1 1, X1 2) $\leq$ +U1 (at X2 1) and/or +U2 (at X3 1); $U_E$ (at X1 1, X1 2) $>$ 0	
Rated input current	$<$ 2.5 mA at 24 VDC	
Digital inputs	According to norm IEC 61131-2	
<b>Digital outputs (DO)</b>	Number: 16 and/or 15 (for SPL), configurable by flexotempMANAGER	
Type	Logic output, directly coupled, internal freewheeling diode, short circuit proof	
Rated output voltage	10...30 VDC	
Rated output current	Per output 500 mA at $T_A = 25^\circ\text{C}$	
<b>Connection data In-/outputs</b>	Conductor cross section solid, stranded min/max 0.2 mm <sup>2</sup> /1.5 mm <sup>2</sup> ; Conductor cross section stranded with ferrule without plastic sleeve min/max 0.25 mm <sup>2</sup> /1.5 mm <sup>2</sup> ; Conductor cross section stranded with ferrule with plastic sleeve min/max 0.25 mm <sup>2</sup> /0.75 mm <sup>2</sup> ;	
Measurement input Heating Current Monitoring	3-phase, summation current measurement; by external current transformers (refer to accessories - heating current monitoring) Input voltage 42 mV <sub>EFF</sub> /A Input resistance 2 kOhm	
<b>Protection equipment</b>	Reversed polarity of power supply: diode, over voltage of power supply: varistor	
<b>Data interfaces</b>		
	CAN	Field bus for I/O - and bus coupler modules
	Address range	CANopen norm slave based on DS401, address range 1...127 automatically
	Transfer rate	250 KByte fixed
	Max. tolerable bus length (m)	250
	Device internal terminating resistor	Automatic
	Protocol	CANopen
<b>Power supply</b>		
Rated voltage / max. power consumption	Electronics: 18...30 VDC / 2W (internal by system bus)	
Fuse protection	Electronics: external by PCU and/or CANBC Outputs: 8 A M	
Supply	Outputs: external mains supply 24 V Class 2	
Connection data	Conductor cross section solid, stranded min/max 0.2 mm <sup>2</sup> /1.5 mm <sup>2</sup> ;	
<b>Ambient temperature limit</b>	Operation: 0...55 °C, transport, storage: -20...60 °C, operation limit: 0...60 °C	
<b>Atmospheric humidity limit</b>	Operation: 0..90 % relative atmospheric humidity, no condensation Transport, storage: 0...95 % relative atmospheric humidity, no condensation	
<b>Mounting</b>	Installation on DIN rail (DIN 50022); horizontal installation position; see installation	
<b>Dimensions (H x W x D in mm)</b>	99 x 22.5 x 114.5	
<b>Housing</b>	Phoenix ME 22.5 Bus 10/2	
<b>Weight</b>	0.3 kg	
<b>Electrical security</b>	Class 3, safety extra-low voltage; complies with EN 61010	
<b>Protection type</b>	Housing and terminal IP 20	
<b>Standards</b>	Complies with EN 61326-1	
<b>CE marking</b>	The device complies with the European Directives for electromagnetic compatibility (complies with EN 61326-1).	
<b>General</b>		
LED displays	Refer to status display of LED's	
Data backup	Data backup of all parameters in EEPROM (power failure save)	
Software update	By CAN interface	

## Connection overview



X1	Power supply
X2	Digital in-/outputs D1...D8, Heating current monitoring pin C1, C2
X3	Digital in-/outputs D9...16, Heating current monitoring pin C3, C0V
LED OK	Operation display
LED 1...16	Signalizes the status of the digital in-/outputs

## Pin assignment

### X2 Digital in-/outputs

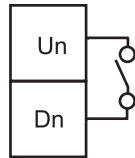
#### Heating Current Monitoring

12-pole spring-force terminal

Pin	X2	Function and/or signal
1	U1	Auxiliary voltage max. 0.5 A for ext. inputs D1...D8
2	0V1	Ground auxiliary voltage
3	C1	Heating current input
4	C2	Heating current input
5	D1	Digital in-/output 1
6	D2	Digital in-/output 2
7	D3	Digital in-/output 3
8	D4	Digital in-/output 4
9	D5	Digital in-/output 5
10	D6	Digital in-/output 6
11	D7	Digital in-/output 7
12	D8	Digital in-/output 8

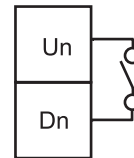
### DIO16CI

#### Digital input 1...16



### DIO16CI SPL

#### Digital input 1...15

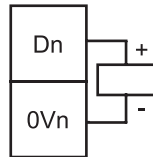


### Digital input 16

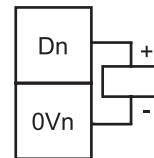
← SYNC signal from flexotemp® ZCD for SPL



### Digital output 1...16



### Digital output 1...15



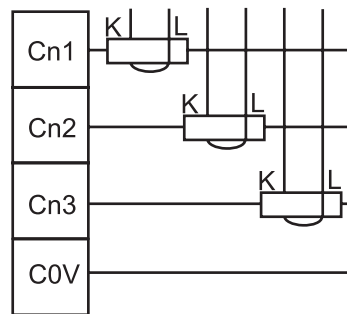
### X3 Digital in-/outputs

#### Heating Current Monitoring

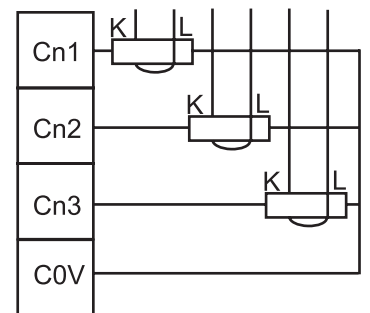
12-pole spring-force terminal

Pin	X3	Function and/or signal
1	U2	Auxiliary voltage max. 0.5 A for ext. inputs D9...D16
2	0V2	Ground auxiliary voltage
3	C3	Heating current input
4	C0V	Ground heating current input
5	D9	Digital in-/output 9
6	D10	Digital in-/output 10
7	D11	Digital in-/output 11
8	D12	Digital in-/output 12
9	D13	Digital in-/output 13
10	D14	Digital in-/output 14
11	D15	Digital in-/output 15
12	D16	Digital in-/output 16

### Heating current input



### Heating current input



## X1 Power supply

### Digital in- / - outputs

4-pole spring-force terminal

Pin	X1	Function and/or signal
1	U1	Power supply *)
2	U2	Power supply *)
3	0V1	Ground Power supply
4	0V2	Ground Power supply

\*) External fuse protection necessary

Notice: X1/U1/U2, X2/U1, X3/U2 are internal bridged.

## Status display of LED's

LED-OK (green)	
flashing (1 Hz)	Boot mode
flashing (2 Hz)	Pre operational mode
Continuous light	Operational mode

## Installation

