



CUBE20S

SMALL, SPEEDY, SAFE

- Extremely modular
- Up to 64 modules per bus node
- Quick reaction time: up to 20 μ s

A NEW MEMBER OF THE CUBE FAMILY

Murrelektronik's modular Cube20S I/O system expands the field-tested Cube family with another product line that is extremely useful. Designed in the same compact shape, it's highly flexible like all our Cube modules.

The small modules are only 12.9 millimeters wide and modularly designed, which saves space. Connections are also quick and easy to make thanks to the integrated backplane with power supply.

Bus nodes for Cube20S are available for all standard fieldbus protocols.



Cube20S I/O Modules



Bus Nodes / Power Modules

- IP20 protection

Page 4.3.1



Function Modules

- IP20 protection

Page 4.3.3



Digital Inputs

- IP20 protection

Page 4.3.4



Digital Outputs

- IP20 protection

Page 4.3.5



Analog Inputs

- IP20 protection

Page 4.3.7



Analog Outputs

- IP20 protection

Page 4.3.9



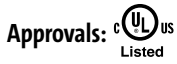
Accessories

Page 4.3.10

CUBE20S

Bus Nodes

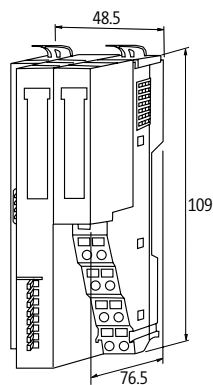
– Power module included



Cube20S



Order Data	Art-No.	Art-No.	Art-No.
PROFIBUS DP	57101		
DeviceNet		57107	
CANopen			57104
Fieldbus			
Operating modes	Sync- and freeze mode are supported		
Transfer rate	max. 12 Mbit/s	max. 500 kBit/s	max. 1 Mbit/s
Addressing	DIP switch		
Connector	SUB-D9	5 pin Open-Style Connector	SUB-D9
I/O capacity	with modular expandability by up to 64 Cube20S I/O modules and function modules		
Output			
Output voltage (I/Os / Backplane)	24 V DC / 5 V DC		
Output current (I/Os / Backplane)	10 A / 3 A		
Supply voltage			
Operating voltage	24 V DC (EN 61131-2)		
Sensor-system/actuator supply	via terminal		
Current consumption	max. 95 mA		
Diagnostic			
Communication status	via LED		
Diagnostic via LED	per module and channel		
Diagnostic via BUS	per module		
Monitoring - under voltage	no		
Monitoring - no voltage	yes		
Short circuit and overload	yes		
Actuator warning	no		
General data			
Protection	IP20		
Temperature range	0...+60 °C (storage temperature -25...+70 °C)		
Connection	Spring clamp plug-in terminals: max. 1.5 mm ² (max. 10 A)		
Mounting method	DIN-rail mountable (EN 60715)		
Dimension drawing			



Notes

CUBE20S

Bus Nodes

– Power module included



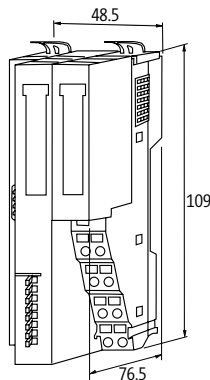
Cube20S



Cube20S

Order Data	Art-No.	Art-No.	Art-No.	Art-No.
PROFINET IO	57106			
EtherNet-IP		57105		
EtherCAT			57103	
Modbus TCP				57108

Fieldbus				
Operating modes	Sync- and freeze mode are supported			
Transfer rate	max. 100 Mbit/s			
Addressing	DIP/DCP	DIP/DHCP	automatic	
Connector	2 × RJ45			1 × RJ45
I/O capacity	with modular expandability by up to 64 Cube20S I/O modules and function modules			
Output				
Output voltage (I/Os /Backplane)	24 V DC /5 V DC			
Output current (I/Os /Backplane)	10 A/3 A			
Supply voltage				
Operating voltage	24 V DC (EN 61131-2)			
Sensor-system/actuator supply	via terminal			
Current consumption	max. 95 mA			
Diagnostic				
Communication status	via LED			
Diagnostic via LED	per module and channel			
Diagnostic via BUS	per module			
Monitoring - under voltage	no			
Monitoring - no voltage	yes			
Short circuit and overload	yes			
Actuator warning	no			
General data				
Protection	IP20			
Temperature range	0...+60 °C (storage temperature -25...+70 °C)			
Connection	Spring clamp plug-in terminals: max. 1.5 mm ² (max. 10 A)			
Mounting method	DIN-rail mountable (EN 60715)			
Dimension drawing				



Notes

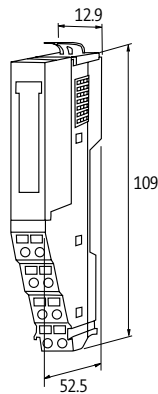
Power supplies

Cube20S Potential distributor



Approvals:  UL Listed

Order Data	Art-No.	Art-No.	Art-No.
8 × 24 V DC	57120		
8 × 0 V DC		57121	
4×24 + 4×0 V DC			57122
Supply voltage			
Operating voltage	max. 30 V DC	max. 0 V DC	max. 30 V DC
Total current	max. 10 A		
General data			
Protection	IP20		
Temperature range	0...+60 °C (storage temperature -25...+70 °C)		
Connection	Spring clamp terminals: 0.08...2.5 mm ² (AWG 28...12)		
Mounting method	DIN-rail mountable (EN 60715)		
Dimension drawing			



Notes

CUBE20S

Power supplies

Cube20S

for external voltage supply

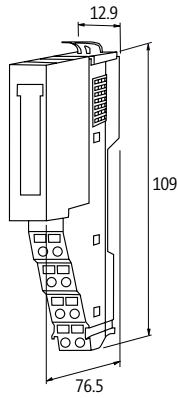


Cube20S

for external voltage supply and internal backplane

Approvals:  Listed

Order Data	Art-No.	Art-No.
Power module	57130	57131
Technical Data		
Operating voltage	–	max. 28.8 V DC
Total current	–	max. 10 A
Output		
Output current (I/Os / Backplane)	10/0 A	4 A/2 A
Output voltage (I/Os / Backplane)	24 V AC	24 V DC/5 V DC
Supply voltage		
Operating voltage	max. 28.8 V DC	
Total current	max. 10 A	max. 6 A
General data		
Protection	IP20	
Temperature range	0...+60 °C (storage temperature -25...+70 °C)	
Connection	Spring clamp terminals: 0.08...2.5 mm ² (AWG 28...12)	
Mounting method	DIN-rail mountable (EN 60715)	
Dimension drawing		




Notes

CUBE20S

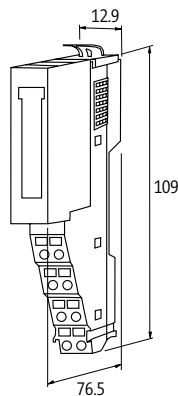
Digital inputs

Cube20S



Approvals:  UL US
Listed

Order Data		Art-No.
DI2 (E)		57220
DI4 - (E)		57240
DI8 - (E)		57280
Internal communication		
Module supply	via system connection	
Current consumption	max. 55 mA	
Input		
Sensor supply US	24 V DC, (EN 61131-2), max. 500 mA per module	
Type	n-switching (EN 61131-2)	
Input filter	3 ms	
Galvanic isolation	500 V DC between inputs and internal communication	
Diagnostic		
Communication status	via LED	
Diagnostic via LED	per module and channel	
Diagnostic via BUS	per module	
Monitoring - under voltage	no	
Monitoring - no voltage	yes	
Short circuit and overload	yes	
General data		
Protection	IP20	
Temperature range	0...+60 °C (storage temperature -20...+70 °C)	
Connection	Spring clamp plug-in terminals: max. 1.5 mm ² (AWG 16)	
Mounting method	DIN-rail mountable (EN 60715)	
Dimension drawing		



Notes	

CUBE20S

Digital outputs

Cube20S



Approvals:  UL US
Listed

Cube20S

Order Data	Art-No.
DO2 - (E)	57320
DO4 - (E)	57340
DO8 - (E)	57380

Internal communication

Module supply	via system connection
Current consumption	max. 55 mA

Output

Actuator supply UA	24 V DC, (EN 61131-2), max. 1 A
Switching current per output	max. 0.5 A (short-circuit and overload protected)
Galvanic isolation	500 V DC between outputs and internal communication
Lamp load	5 W
Output delay time	175 ns

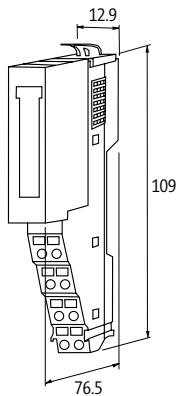
Diagnostic

Communication status	via LED
Diagnostic via LED	per module and channel
Diagnostic via BUS	per module
Monitoring - under voltage	yes
Monitoring - no voltage	no
Short circuit and overload	yes

General data

Protection	IP20
Temperature range	0...+60 °C (storage temperature -25...+70 °C)
Connection	Spring clamp plug-in terminals: max. 1.5 mm ² (AWG 16)
Mounting method	DIN-rail mountable (EN 60715)

Dimension drawing



Notes


CUBE20S

Digital outputs

Cube20S - 2A

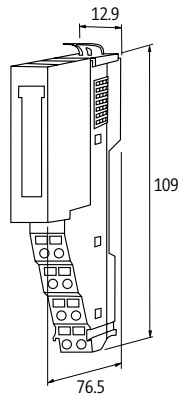
Cube20S - 230VAC (Relays)



Approvals:  UL Listed

Order Data	Art-No.	Art-No.
DO2 - (E)	57325	57327
DO4 - (E)	57345	
Internal communication		
Module supply	via system connection	
Current consumption	max. 60 mA	max. 130 mA
Output		
Actuator supply UA	24 V DC, (EN 61131-2), max. 4 A	max. 30 V DC / 230 V AC
Switching current per output	max. 2 A (short-circuit and overload protected)	max. 3 A (short-circuit and overload protected)
Galvanic isolation	500 V DC between outputs and internal communication	
Lamp load	10 W	-
Diagnostic		
Communication status	via LED	
Diagnostic via LED	per module and channel	
Diagnostic via BUS	per module	
Monitoring - under voltage	yes	
Monitoring - no voltage	no	
Short circuit and overload	yes	
General data		
Protection	IP20	
Temperature range	0...+60 °C (storage temperature -25...+70 °C)	
Connection	Spring clamp plug-in terminals: max. 1.5 mm ² (AWG 16)	
Mounting method	DIN-rail mountable (EN 60715)	

Dimension drawing



Notes

CUBE20S

Analog inputs

Cube20S

Voltage




Cube20S

Current

Cube20S

Voltage

Approvals:  Listed

Order Data	Art-No.	Art-No.	Art-No.
AI2 - (E)	57231	57232	57233
AI4 - (E)	57261		57263

Internal communication

Module supply via system connection

Current consumption	max. 60 mA from system, max. 25 mA externally (UI)	max. 60 mA from system, max. 15 mA externally (UI)	max. 60 mA from system, max. 25 mA externally (UI)
---------------------	--	--	--

Technical Data

Operating voltage 24 V DC (20.4...28.8 V DC) EN 61131-2

Input

Conversion time (analog) 480 ms (all channels)

Resolution (analog) 15 Bit + sign

Accuracy	max. $\pm 0.2\%$	max. 0.3 %	max. $\pm 0.2\%$
----------	------------------	------------	------------------

Connection	Differential voltage input	Differential current input	Differential voltage input
------------	----------------------------	----------------------------	----------------------------

Voltage inputs

Input resistor	200 kOhm	-	200 kOhm
----------------	----------	---	----------

Input range	0...10 V DC	-	-10 V DC...+10 V DC
-------------	-------------	---	---------------------

Current input signals

Load	-	max. 60 Ohm, (EN 61131-2)	-
------	---	---------------------------	---

Input range	-	0...20 mA, 4...20 mA	-
-------------	---	----------------------	---

Diagnostic

Communication status via LED

Diagnostic via LED per module and channel

Diagnostic via BUS per module

Monitoring - under voltage yes

Monitoring - no voltage no

Short circuit and overload yes

Wire break upper/lower limit overload per module via LED and BUS

General data

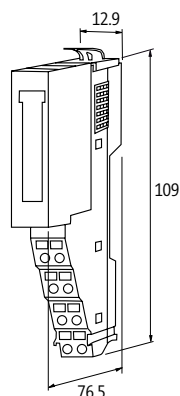
Protection IP20

Temperature range 0...+60 °C (storage temperature -25...+70 °C)

Connection Spring clamp plug-in terminals: max. 1.5 mm² (AWG 16)

Mounting method DIN-rail mountable (EN 60715)

Dimension drawing



Notes

Analog inputs

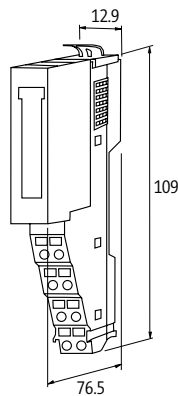
Cube20S (TH) for thermo elements

Cube20S (RTD) for resistors and temperature



Approvals: UL_{us}
Listed

Order Data	Art-No.	Art-No.
AI2 - (E)	57230	
AI4 - (E)		57265
Internal communication		
Module supply	via system connection	
Current consumption	max. 75 mA from the system, max. 30 mA externally (UI)	max. 75 mA
Technical Data		
Operating voltage	24 V DC (20.4...28.8 V DC) EN 61131-2	24 V DC (EN 61131-2)
Input		
Conversion time (analog)	max. 4.2...324.1 ms (per channel)	max. 330 ms (per channel)
Type	B, C, E, J, K, L, N, R, S, T	Pt100, Pt1000, Ni100, Ni1000, R 0...3000 Ohm
Resolution (analog)	15 Bit + sign	
Accuracy	max. ±0.3 %, cold junction compensation	0.7...1.4 %
Connection	2-wire input; TH+x, TH-x	2-wire (4 input); 3-, 4-wire (2 input)
Diagnostic		
Communication status	via LED	
Diagnostic via LED	per module and channel	
Diagnostic via BUS	per module	
Monitoring - under voltage	yes	
Monitoring - no voltage	no	
Short circuit and overload	yes	
Wire break upper/lower limit overload	per channel via LED and BUS	
General data		
Protection	IP20	
Temperature range	0...+55 °C (storage temperature -20...+85 °C)	0...+60 °C (storage temperature -25...+70 °C)
Connection	Spring clamp plug-in terminals: max. 1.5 mm ² (AWG 16)	
Mounting method	DIN-rail mountable (EN 60715)	
Dimension drawing		



Notes

CUBE20S

Analog outputs

Cube20S

Voltage



Approvals:  Listed

Cube20S

Order Data	Art-No.	Art-No.	Art-No.	Art-No.
AO2 - (E)	57331		57333	
AO4 - (E)		57361		57363

Internal communication

Module supply	via system connection
Current consumption	max. 60 mA from system, max. 25 mA externally (UI), idle load

Technical Data

Operating voltage	24 V DC (20.4...28.8 V DC) EN 61131-2
-------------------	---------------------------------------

Output

Conversion time (analog)	200 ms (all channels)	
Resolution (analog)	15 Bit + sign	
Accuracy	max. 0.5 %	max. 0.2 %
Galvanic isolation	500 V DC between inputs and internal communication	

Voltage output signals

Load	5 kOhm	
Input range	0...10 V DC	-10 V DC...+10 V DC

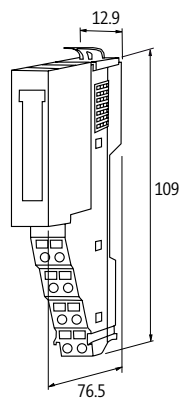
Diagnostic

Communication status	via LED
Diagnostic via LED	per module and channel
Diagnostic via BUS	per module
Monitoring - under voltage	yes
Monitoring - no voltage	no
Short circuit and overload	yes
Actuator warning	per module via LED and BUS
Wire break upper/lower limit overload	per module via LED and BUS








General data

Protection	IP20
Temperature range	0...+60 °C (storage temperature -25...+70 °C)
Connection	Spring clamp plug-in terminals: max. 1.5 mm ² (AWG 16)
Mounting method	DIN-rail mountable (EN 60715)

Dimension drawing



Notes

Connection accessories			Art-No.
	Bus cover		57190
	Black plastic		
	Shield bus carrier		57191
	Black plastic	Quantity: 10 pcs.	
	Bus Connection Plug 90°		
	SUB-D9 (male), screw terminals	PROFIBUS	55762
	SUB-D9 (female), screw terminals	CANopen	55760
	Bus Connection Plug 180°		
	SUB-D9 (male), cut clamps, rigid cable	PROFIBUS	55584
	SUB-D9 (male), cut clamps, flexible cable	PROFIBUS	55583
	Bus Connection Plug 90°		
	SUB-D9 (male), cut clamps, rigid cable	PROFIBUS	55585
	SUB-D9 (male), cut clamps, flexible cable	PROFIBUS	55587
	Bus Connection Plug 90°		
	SUB-D9 (male), cut clamps, rigid cable, programming device conn.	PROFIBUS	55586
	SUB-D9 (male), cut clamps, flexible cable, programming device conn.	PROFIBUS	55588
	Bus Connection Plug 90°		
	SUB-D9 (male); M12 × 1, B-coded	PROFIBUS	7000-99441-000000