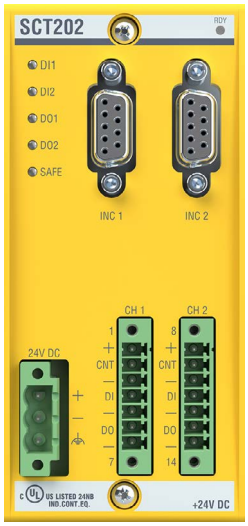

Safety

Item	Item-No.
SCT202	00022320-00
SCT202 CC	00024877-00

SCT202
Safety Counter Module

with Integrated Frequency Measuring

The SCT202 is a safety module for measuring safety-related rotations. For this it provides inputs and outputs which enable the implementation of safety applications up to SIL2 and PLd.

The module offers the following I/Os:

- Two safety input blocks that can be used as an incremental interface (each connectable with symmetrical A/B/N tracks). The measuring result is available to the user both as a frequency as well as in the form of a counter status.
- Two safety input blocks that can either be used as a counter input (connection of initiators) or latch or referencing inputs.
- Two safety digital inputs that can also be used as latch or referencing inputs.
- Two safety digital outputs as safety short response shutdown contacts which are ideal for overspeed detection (reaction time: ≤ 1 ms).

Other special features:

- Frequency measuring directly in the module
- Qualified for use as non-safety counter / speed measuring module
- Integrated referencing function (initiator, zero pulse and combination, as well as via software)
- High speed shutdown on overfrequency
- Zero speed monitoring
- Available as ColdClimate module

SCT202		
Incremental Encoder Inputs (INC)		
Number	2 single-channel; Inputs supply counter status and frequency	
Counter resolution	32 Bit	
Count direction	A/B sequence	
Input signals	A-, A+, B-, B+, N-, N+	
Signal evaluation	1 / 2 / 4-edge evaluation	
Max. input frequency	≤ 300 kHz	
Digital input filter	Adjustable via software	
Signal level	HTL (24 V) and TTL / RS422 on DSUB socket	
Counter Inputs (CNT)		
Number	2 channels exclusively as counter inputs (HTL only) Inputs supply counter status and frequency	
Counter resolution	32 Bit	
Count direction	Switchable via digital input or software (Pulse direction function)	
Signal evaluation	1/2-fold edge evaluation optional rising or falling edge	
Max. input frequency	5 kHz (CNT inputs)	
Sensor support	PNP	
Digital input filter	Programmable	
Signal level	HTL (24 V) – for the two counter channels (CNT)	
Digital Safety Inputs		
Number	2 single-channel, can be used up to SIL CL 2; PL d	
Trigger function	Edge adjustable (transfer of value)	
Input filter	1 ms	
Signal level for 0 status (inactive)	0 to +5 V	
Signal level for 1 status (active)	+15 to 34 V	
Encoder Power Supply	**+5 V**	**+24 V**
Voltage	+5 V	Uext[1] -1 V
Tolerance	±5 %	As Uext
Max. current / encoder	200 mA	300 mA
Ripple	< 150 mVss	As Uext
Short circuit proof	Yes, permanent	Yes, permanent

1) External power supply

SCT202	
Safety Functions of Incremental Encoder and Counter Inputs	
Overspeed function	Upper limit frequency exceeded (configurable and programmable)
Zero speed monitor function	Lower limit frequency configurable
Referencing function	Via - Switch (digital signal) - Zero track - Switch & zero track - Software (safety application)
Position function	In combination with the latch function or also referencing function
Error detection	Wire break, plausibility, undervoltage and overvoltage of the encoder supply
Cycle time	6 to 50 ms
Reaction time	SCT202 direct shutdown: 1 ms in association with safety application: ≤ 12 to 100 ms
Digital Safety Outputs	
Number	2 digital outputs, usable as single-channel up to SIL CL 2; PL d Configurable shutdown delay
Output voltage range	18 to 34 V DC
Output current per channel	0.5 A
0 to 1 delay	Max. 35 µs at full load
1 to 0 delay	Max. 155 µs at full load
Fault monitoring	Short circuit, overload, undervoltage, overvoltage of the power supply
Status Indication	
Status LED	Green LED (SAFE), compliant with other safety modules
Channel indication Digital inputs and outputs	One green LED per channel
M1 module status	Orange LED (RDY)
Internal Power Supply	
Galvanic isolation from the system	500 V
Internal power supply	BS2xx bus rails
Internal current consumption	5 V / < 150 mA via bus rail

SCT202		
External Power Supply		
Reverse polarity protection	Yes	
Input voltage	24 VDC (18 to 34 VDC)	
Current consumption	Typ. 70 mA at +24 VDC + Σ current consumption of actuators and sensors	
Connection Technology		
HTL incremental and counter inputs	D-SUB male socket 9-pin	
I/O connection	RM 3.5 connector with flange	
Power supply connection	RM 5.08 connector with flange	
Connection technology	Screw or spring terminal, writable and codable plug	
Standards and Approvals		
Machine safety	IEC 61508:2010: Functional safety of E/E/PE safety-related systems	
Approved for	ISO 13849: Safety of Machinery IEC 62061: Functional safety machine-related E/E/PE systems IEC 61511: Functional safety equipment and process industry	
Product standard	IEC 61131-2 GL IEC 61400-1	
Approvals / Certificates	**Standard**	**ColdClimate (❄)**
General	CE, cULus, CCC	
Marine	–	DNV GL, LR, ABS, BV, NK, KR, RINA
Ambient Conditions	**Standard**	**ColdClimate (❄)**
Operating temperature	-30 to +60°C fan-free	-30 to +60°C fan-free
Relative air humidity, operation	5 to 95 % no condensation	5 to 95 % with condensation
Storage temperature	-40 to +85°C	-40 to +85°C
Relative air humidity, storage	5 to 95 % no condensation	5 to 95 % with condensation
Maximum altitude[1)]	4,500 m above sea level	
Pollution degree	2 (without condesation; according to IEC 60664-1)	2 (according to IEC 60664-1)
Protection class	3	

1) For operation at an altitude of 2,000 m above sea level, a derating of -0.5 Kelvin per 100 m to a maximum altitude of 4,500 m above sea level must be taken into account.

Order Codes		
Item	**Item No.**	**Description**
SCT202	00022320-00	Safety counter module; SIL2/PLd: 2x DO 24V / 1 A: 2x DI 24V; 2x INC HTL/TTL 300kHz + 2x counter HTL 5kHz; HTL=24V; 32bit; INC A,A/B/N; position; frequency; trigger; isolated
SCT202 CC	00024877-00	Like SCT202; ColdClimate (❄)
Accessories		
KZ-SCT 202 B+C	00027026-00	Terminal set Phoenix cage clamp (1x KZ 51/03; 2x KZ 35/07) with labeling strips and coding elements