



## ISI222/x Positioning Modules

Especially designed for sophisticated motion control applications the ISI222 module offers compact equipment and optimum precision. Equipped for the total control of two motion axes, the module features a number of encoder interfaces for position acquisition, analog outputs for the application of manipulated variables, as well as digital inputs for the initiator or trigger. Furthermore, due to the central communication concept, all I/Os of the remaining M1 system can also be incorporated into the motion control (limit switches etc.).

Input frequencies up to 8 MHz and the integrated synchronization (IO-Bus-Sync) with the total system allow highly dynamic and precise movements.

Beside the full compatibility to the well proven controller modules M-SMC, M-CNC and M-SHAFT, also the user own programs and individually designed control tasks can utilize the extensive integrated functions of the module simply via the known standard interfaces (SVI, MIO). The extensive integrated error monitoring with ongoing checking of the encoder resolution identifies hard-to-see wiring or ESD problems and allows the application especially under difficult environmental conditions.

Item	Item-No.
ISI222	00013737-00
ISI222 CC	00016421-00
ISI222/8	00014127-00

- 2 input channels for incremental and SSI encoders
- Full 32 bit counter
- 2 analog outputs (14 bit)
- 4 fast digital input channels for initiator and trigger
- Position measurement/position storage can be initiated via triggers
- Virtual for use in applications: zero pulse, speed etc.
- Synchronization via SYNC / PreSYNC
- Encoder supply via module
- Monitoring of the encoder voltage
- Wire break monitoring (encoder)

ISI222 / x			
Encoder interface module			
Quantity	2		
Counter resolution	32 bit		
Input signals	A-, A+ / B-, B+ / N-, N+		
Signal evaluation	1- / 2- / 4-edge evaluation or pulse direction mode		
Input frequency	Max. 1 MHz (ISI222), max. 8 MHz (ISI222 / 8)		
Synchronization	By means of SYNC signal		
Modes	Reference value monitoring Conditional storage of counter value Conditional load / rest of counter value Speed measurement		
Error detection	Wire break, encoder resolution monitoring		
Galvanic isolation of channel <sup>1)</sup>	500 V		
SSI encoder interface <sup>1)</sup>			
Quantity	2		
Data word length	programmable up to 32 bits		
Input signals	D-, D+		
Output signals	T-, T+		
Data format	Graycode and binary format, others can be evaluated by SW		
Transfer clock rate	100 kHz to 2 MHz		
Synchronization	Via preSYNC function		
Encoder power supply			
Output voltage ranges	+5 V and +15 V selectable with jumper, 24 V looped through		
Output voltage	+5 V	+15 V	-1 V
Tolerance	±5 %	±3 %	like U <sub>ext</sub>
max. current / encoder	250 mA	100 mA	300 mA
Short circuit proof	Yes, permanent	Yes, permanent	Yes, permanent (PTC)
Ripple	< 150 mV <sub>SS</sub> at +5 V and +15 V		
Galvanic isolation of channels	500 V		
Analog outputs			
Quantity	2		
Output voltage	±10 V		
Resolution	14 bit		
Output current	Max. ±2 mA		
Conversion time	<40 µs		
Basic accuracy at 25 °C	0.025 %		
Error at the entire Temperature range	±0.1%		
Setting time of 1% of the output current range	Max. 500 µs		
Error detection	Wire break		
Short circuit proof	Yes, permanent		
Synchronization	By means of SYNC signal		

1) Only for ISI222

ISI222 / x		
<b>Digital inputs</b>		
Quantity	4 (2 INIT, 2 TRIG)	
voltage	18 to 34 VDC	
Input delay	30 µs default, filter adjustable	
Acc. to IEC 61131	Type 1	
Function	INIT: initiator, trigger for strobe register, digital input TRIG: trigger for strobe register, digital input	
<b>Connection type</b>		
Connection for analog and digital I / O	Phoenix Contact MINICOMBICON connector RM 3.5 with flange	
Connection type	Screw clamp, spring tension clamp plug codable, labeling by channels	
<b>Operating conditions</b>		
Supply voltage	18 to 34 VDC	
Mounting	Mountable on backplane BS2xx	
Mounting position	Horizontal (vertical at -20 to +55 °C operating temperature)	Horizontal (vertical at -30 to +55 °C operating temperature)
<b>Approvals / Certificates</b>		
General	CE, cULus, CCC	
Marine	DNV GL, LR, ABS, BV	
<b>Ambient conditions</b>	<b>Standard</b>	<b>ColdClimate (❄)</b>
Operating temperature	-30 to +60 °C	
Rel. humidity operation	5 to 95 % without condensation	5 to 95 % with condensation
Storage temperature	-40 to +85 °C	
Rel. humidity storage	5 to 95 % with condensation	
Pollution degree	2 (without condensation; according to IEC 60664-1)	2 (according to IEC 60664-1)

Order Codes		
Item	Item No.	Description
ISI222	00013737-00	Positioning module; 2x In INC/SSI; 1MHz; 32bit; RS422 level; INC A, A/B/N; position; gate time; period; velocity; encoder supply 5V / 15V / 24V; 2x Out ±10V; 14bit; 0.025 %; 40µs; synchronized; PreSYNC; 4x DI 24V; trigger; homing
ISI222 CC	00016421-00	Like ISI222; ColdClimate (❄)
ISI222 / 8	00014127-00	Positioning module; 2x In INC; 8MHz; 32bit; RS422 level; INC A, A/B/N; position; gate time; period; velocity; encoder supply 5V / 15V / 24V; 2x Out ±10V; 14bit; 0.025 %; 40µs; synchronized; PreSYNC; 4x DI 24V; trigger; homing; SSI-Encoder not supported
<b>Accessories</b>		
KZ-ISI222 B	00014277-30	Terminal set Phoenix cage clamp (1x KZ 51/02; 1x KZ 35/06; 1x KZ 35/07; 1x KZ 35/02) with labeling strip
KZ-ISI222 B+D	00014277-70	Terminal set Phoenix cage clamp (1x KZ 51/02; 1x KZ 35/06; 1x KZ 35/07; 1x KZ 35/02) with labeling strip + DSUB-Connector