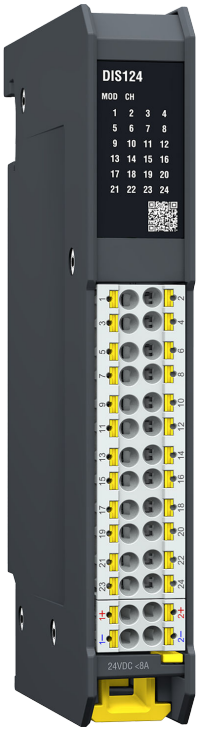

DIS108, DIS112, DIS124

Digital Input Modules

24 V DC standard signal types in accordance with IEC 61131-2 have become established worldwide for connecting digital sensors in harsh industrial environments. Automation technicians have a wide range of proven standard products at their disposal in any required price or quality category. The modules of the DIS100 series provide the ideal interface for the link to the PLC/controller level. They combine an extremely wide range of functions with outstanding robustness and a wide range of connection options for sensors.

Features

- 8-/12-/24-channel digital input module
- Interface according to IEC 61131-2 type 1 and 3
- 3-/2-/1-wire connection
- Time stamp / synchronous clocks
- Configurable digital spike filter
- Integrated counter function
- Oversampling
- Direct module-to-module communication

Part type designation	Part number
DIS108	00030579-00
DIS108 EC	00039165-00
DIS112	00030578-00
DIS112 EC	00039166-00
DIS124	00028973-00
DIS124 EC	00038807-00

Common properties	DIS108	DIS112	DIS124
Basic function	8x digital input 24 V DC type 1/3 standard (sink)	12x digital input 24 V DC type 1/3 standard (sink)	24x digital input 24 V DC type 1/3 standard (sink)
	4x counter function 4x time stamp 4x pulse extension 4x oversampling 8x module-to-module communication		
System	Bachmann system M100		
Digital Inputs – 24 V	**DIS108**	**DIS112**	**DIS124**
Number of digital inputs	8	12	24
Signal standard	IEC 61131-2 type 1 / type 3 sink (P-reading)		
Voltage category, nominal	24 V DC		
Signals per supply group	8 (1 group)	12 (1 group)	24 (1 group)
Connections per input	3 (signal, +24 V, GND)	2 (signal, +24 V)	1 (signal)
Signal supply voltage range	18 V DC to 32 V DC		
Operating voltage range (high/on)	11 V DC to 32 V DC		
Off-state voltage (low/off)	-32 V DC to +5 V DC		
Overvoltage protection	-32 V DC to +32 V DC		
Input current, on-state, nominal	2.3 mA		
Input current, off-state, max.	1.5 mA		
Signal on delay, max.	3 µs + digital spike filter setting time		
Signal off delay, max.	3 µs + digital spike filter setting time (when the input is actively discharged) 12 µs + digital spike filter setting time (without active discharge)		
Digital spike filter	0 µs, 10 µs to 500 ms in 15 increments		
Internal scan rate, max.	No internal cycle		
Maximum input frequency	100 kHz (when the input is actively discharged) 30 kHz (without active discharge)		
Signal inversion	8x	12x	24x
Impulse extension	Up to 1 s (4x)		
Oversampling	Up to 128 values per cycle (4x)		
Time stamps	Rising/falling edge (4x)		
Signal state indication	Yes, green numeric LED per channel		
Signal cable length, shielded, max.	1000 m		
Signal cable length, unshielded, max.	600 m		
Counter	**DIS108**	**DIS112**	**DIS124**
Number of counters	0 to 4 configurable		
Selectable input interfaces	Digital inputs – 24 V		
Edge evaluation	4x		
Edge counter including frequency reduction	No		
Counter latch	Via DI (4x) Via SW (4x)		
Conditional counting (gate)	Via DI (4x) Via SW (4x)		
Selectable counting direction	Via DI (4x) Via SW (4x)		
Frequency measurement	No		

Counter	DIS108	DIS112	DIS124
Set/reset counter	Via DI (4x) Via SW (4x)		
Automatic compare function	No		
Maximum input frequency	100 kHz (when the input is actively discharged) 30 kHz (without active discharge)		

Sensor supply 24 V DC	DIS108	DIS112	DIS124
Number of supply points 24 V DC	8	12	Not relevant
Output current per channel, nominal, continuous	0.5 A	0.5 A	Not relevant
Short-circuit protected, supply	No	No	Not relevant
Overvoltage protection	-32 V DC to +32 V DC	-32 V DC to +32 V DC	Not relevant

Sensor supply GND	DIS108	DIS112	DIS124
Number of supply points GND	8	Not relevant	Not relevant

Module-to-module communication	DIS108	DIS112	DIS124
Signal propagation to neighbour	DI (8x)		
Signal receiver from neighbor modules	No		

Module bus interface	DIS108	DIS112	DIS124
System	M100		
Slot type	IO (1/E, 2, 3, 4, ...31)		
Module data rate	Typ.: 0 Mbit/s to 33.6 Mbit/s depending on the configuration		
Bus cycle time, min.	4.5 µs [1)]		

[1)] *Depending on the fieldbus used and the respective configuration, lower data rates and longer cycle times can be expected.*

Synchronization/clocks	DIS108	DIS112	DIS124
Distributed clocks	Yes		
Time stamp format	64 bit in ns		
Time resolution	10 ns		
Time precision	25 ns within the station 100 ns via network (typ.) 1 µs via network (max.)		
Synchronization functions	DI CNT		
Latch input	Yes		
Field bus cycle time, min.	100 µs [1)]		

[1)] *Depending on the fieldbus used and the respective configuration, lower data rates and longer cycle times can be expected.*

Diagnostics	DIS108	DIS112	DIS124
Electronic type plate	Yes (application interface and in the engineering tool)		
Machine readable type plate	Yes (QR code with type and part information and internet link)		
Environmental conditions sensor	Integrated (temperature)		
Operational indications	LED "MOD" (red/green) module status LED "CH" (red/green) channel status summary Numeric LED per channel (green) digital level of the channel		
Error indications	Module temperature		
Powerfail, logic supply	No		
Powerfail, signal supply	No		
Open circuit	No		

Energy supply	DIS108	DIS112	DIS124
Supply voltage, nominal	24 V DC		

Energy supply	DIS108	DIS112	DIS124
Supply voltage, range	18 V DC to 32 V DC		
Supply voltage, short-term overload	40 V for 100 ms		
Power consumption from 24 V signal supply	0 W plus sensor supply	0 W plus sensor supply	0 W
Maximum residual ripple 24 V signal supply	±2.4 V		
Overcurrent protection required	No internal protection External protection with circuit breaker characteristic: B, C, D, Z or K Max. nominal current 8 A DC		
Power dissipation, typ./max.	0.8 W / 1.2 W	0.9 W / 1.6 W	1.5 W / 2.8 W
Reverse polarity protection signal supply	Yes, continuously (up to -32 V)		
Power consumption from backplane	440 mW	540 mW	910 mW
Supply terminal block bridge	Yes, internal connection from 1+ to 2+, and from 1- to 2-		

Product safety	DIS108	DIS112	DIS124
Galvanic isolation	850 V AC		
Galvanic isolation between inputs	No		
Permitted potential difference between digital channels	40 V		
Degree of protection acc. IEC 60529	IP40, terminal block IP30		
Protection class acc. IEC 61010-1, IEC 61010-2-201	III		
Overvoltage category acc. IEC 61010-1	II		
Rated impulse withstand voltage acc. IEC 61000-4-5	Supply DC: • 500 V DM • 1000 V CM		
Keying of terminal block	Yes (6-fold per 4 contacts)		

Environmental conditions	DIS108	DIS112	DIS124
Temperature range, operating	-30 °C to +70 °C		
Temperature range, transport and storage	-40 °C to +85 °C		
Installation altitude, max.	Up to 2000 m without temperature derating 2000 m to 4500 m: Reduction of the max. ambient temperature by 0.1 °C per 100 m elevation		
Air pressure	106 kPa to 58 kPa (0 m to 4500 m)		
Relative humidity, operation	Standard: 0 % to 100 % noncondensing Extended Climate: 0 % to 100 % with temporary condensation		
Pollution degree acc. IEC 61010-1	Standard: 2, noncondensing Extended Climate: 2		
Vibration	6 g (14.1 Hz to 500 Hz) 7.5 mm amplitude (2 Hz to 14.1 Hz) Test duration: 15 h		
Shock	45 g max. (test scope 18 shocks) 20 g permanently (test scope 6000 shocks)		

Approvals/certificates	DIS108	DIS112	DIS124
Product safety	CE, UKCA cULus (NRAQ, NRAQ7)		
Hazard area operation	ATEX: Ex II 3G Ex ec IIC Gc		
Maritime	ABS, BV, DNV, KR, LR, NK, RINA: in preparation		
Hazardous substances and waste treatment	RoHS, RoHS China, REACH, WEEE		
Quality management	ISO 9001 for development and production		

Engineering	DIS108	DIS112	DIS124
Configuration tool	SolutionCenter (≥ V2.75)		
Firmware package update	Yes (via SolutionCenter or console interface on the head module)		
Mounting/installation	**DIS108**	**DIS112**	**DIS124**
Mounting type	Inserting and screwing onto the backplane with integrated M4 screw		
Dimensions	**DIS108**	**DIS112**	**DIS124**
Number of slots	1		
Size unpacked W × H × D	23.3 mm × 152.5 mm × 95.7 mm		
Mass unpacked	269 g		267 g

Order data

Part type designation	Part number	Description
DIS108	00030579-00	Digital input module system M100 8x 24 V DC, type 1/3 sink, 3-wire technology (signal, 24 V, GND), filter 10 µs to 500 ms, 1 group, synchronization, 4x time stamp, 4x pulse extension, 4x oversampling, 4x counter function, module-to-module communication provider, isolated from system, without terminal block
DIS108 EC	00039165-00	Like DIS108 with Extended Climate Range
DIS112	00030578-00	Digital input module system M100 12x 24 V DC, type 1/3 sink, 2-wire technology (signal, 24 V), filter 10 µs to 500 ms, 1 group, synchronization, 4x time stamp, 4x pulse extension, 4x oversampling, 4x counter function, module-to-module communication provider, isolated from system, without terminal block
DIS112 EC	00039166-00	Like DIS112 with Extended Climate Range
DIS124	00028973-00	Digital input module system M100 24x 24 V DC, type 1/3 sink, 1-wire technology, filter 10 µs to 500 ms, 1 group, synchronization, 4x time stamp, 4x pulse extension, 4x oversampling, 4x counter function, module-to-module communication provider, isolated from system, without terminal block
DIS124 EC	00038807-00	Like DIS124 with Extended Climate Range

Accessories

Part type designation	Part number	Description
BPR1nn	00039235-nn	Backplane for DIN-rail mounting Active backplane system M100: BPR1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for DIN-rail mounting; delivery without backplane slot covers and without mounting rail
BPR1nn EC	00039236-nn	Like BPR1nn; Extended Climate Range
BPS1nn	00039237-nn	Backplane for direct screw mounting Active backplane system M100: BPS1nn with nn = 04 to 16 slots in increments of 1, as well as 20, 24, 28, 32 slots, for direct screw mounting; delivery without backplane slot covers and without screws
BPS1nn EC	00039238-nn	Like BPS1nn; Extended Climate Range
TPI100_W24_P5.0_Cgy_L1to24		Signal terminal block Completely removable terminal block, push-in spring connector for system M100, 24-way/contacts, pitch 5.0 mm, female, conductors flexible 0.2 mm² to 2.5 mm² (24 to 14 AWG), solid 0.2 mm² to 1.5 mm² (24 to 16 AWG), with wire end ferrules 0.25 mm² to 1.5 mm² (24 to 16 AWG), stripping length: 10 mm, rating: 300 V / 8 A per contact, connector color: gray, push-release: yellow, labeling: 1 to 24
TPI100_W4_P5.0_Cgy_Lsup		Supply terminal block Completely removable terminal block, push-in spring connector for system M100, 4-way/contacts, pitch 5.0 mm, female, conductors flexible 0.2 mm² to 2.5 mm² (24 to 14 AWG), solid 0.2 mm² to 1.5 mm² (24 to 16 AWG), with wire end ferrules 0.25 mm² to 1.5 mm² (24 to 16 AWG), stripping length: 10 mm, rating: 300 V / 8 A per contact, connector color: gray, push-release: yellow, labeling: 1+/1-/2+/2-
TKP106		Keying element Keying element for signal terminal blocks and supply terminal blocks TPI100 for system M100, plastic ring with 6 keying elements
TPI100_W24_W4_Set [1)]	00042412-00	Terminal block set for M100 standard modules: • 1x TPI100_W24_P5.0_Cgy_L1to24 • 1x TPI100_W4_P5.0_Cgy_Lsup • 2x TKP106

[1)] *All components of the set are also available in bulk packages.*