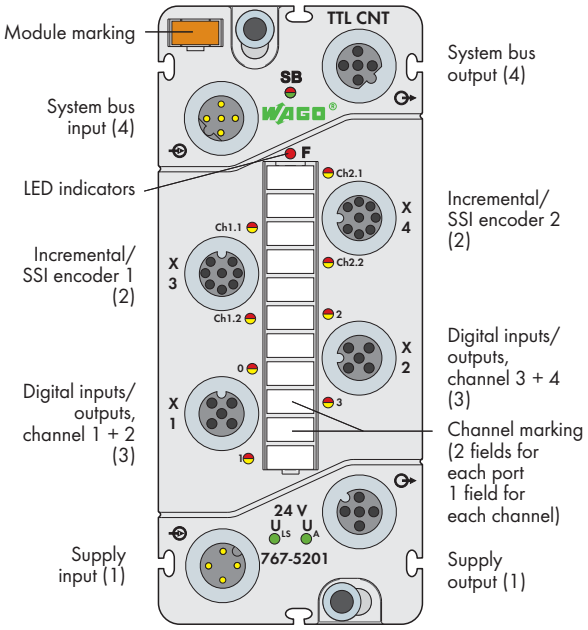
TTL Incremental/SSI Encoder Interface

Two encoder interfaces (2 x M12) + 4 digital inputs/outputs (2 x M12, two inputs/outputs per connector)



Short description:
The 767-5201 Module evaluates both incremental and absolute encoders with RS-422 signal levels. Integrated DIOs allow outputs to be directly set depending on counter states. Two of the four DIO channels can also be used as PWM outputs*.

Characteristics:
- Two incremental/SSI encoder interfaces
- Four digital inputs/outputs 24 VDC/0.1 A (incl. 2 PWM* outputs)
- Configurable (incremental/SSI encoder, DIOs)
- Diagnostic-capable (channel by channel/module by module)

Included:
- 1 x WMB marker, orange
- 1 x marking strip
- 2 x M12 protective cap

*Pulse-Width Modulated outputs

Description	Item No.	Pack. Unit
TTL Incremental/SSI Encoder	**767-5201**	1

Accessories

Marking strips, marking pen, spacer module and protective caps	see Full Line Catalog AUTOMATION 2012/2013
IP67 cables and connectors	

Technical Data

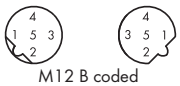
Module supply:	
Connection type (1)	M12 connectors, A coded, 4 poles
Current carrying capacity of supply connections	max. 8 A (U_{LS}: 4 A, U_A: 4 A)
Supply voltage	
Logic and sensor voltage UL_S	24 V DC (-25 % ... +30 %)
Actuator voltage U_A	24 V DC (-25 % ...+30 %)
Supply current	
Logic and sensor current I_{LS}	typ. 50 mA
Actuator current I_A	typ. 25 mA + actuators (max. 800 mA)
Protection	Reverse voltage protection for U_{LS} + U_A
	Short-circuit protection for sensor/actuator supply
Incremental encoder:	
Number of inputs (incremental)	2
Connection type (2)	M12 connectors, A coded, 8 poles, shielded
Sensor supply	5 V/24 V, max. 300 mA
Encoder connection (incremental)	A, A\, B, B\, C, C\

Technical Data

Signal input (incremental)	RS-422 differential signal
Counter	32 bits
Max. operating frequency	1 MHz
Zero impulse latch	32 bits
Type of cable, cable length	shielded, ≤ 30 m
SSI encoder:	
Number of inputs (SSI encoder)	2
Connection type (2)	M12 connectors, A coded, 8 poles, shielded
Sensor supply	5 V/24 V, max. 300 mA
Encoder connection (SSI)	D+, D-, CL+, CL-
Signal input (SSI encoder)	+D, -D: RS-422 differential signal
Signal output (SSI encoder)	CL+, CL-: RS-422 differential signal
Bit width	32 bits
Baud rate	62.5 kHz ... 2 MHz
Method of conversion	Binary/Gray
Type of cable, cable length	shielded, ≤ 30 m
Digital inputs:	
Number of inputs	4
Connection type (3)	M12 connectors, A coded, 5 poles, shielded
Wire connection	2- or 3-wire
Front-end cycle time (hardware)	max. 3 µs
Input characteristic	Type 3, acc. to IEC 61131-2
Signal voltage (0)	-3 V ... +5 V DC
Signal voltage (1)	+15 V ... +30 V DC
Input wiring	High-side switching
Input voltage	24 VDC (-3 VDC < U_{IN} < +30 VDC)
Connection of 2-wire BEROs	max. 1.5 mA admissible closed current
Type of cable, cable length (digital inputs)	shielded, ≤ 30 m

System bus

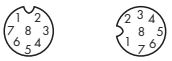
Input Output



M12 B coded

1: RD+/TD+
2: RD–/TD–
3: TD–/RD–
4: TD+/RD+
5: GND
Housing: Shield

Incremental/SSI encoder
X3 ... X4



M12 A coded

Incremental	SSI encoder
1: GND	1: GND
2: +5 V/24 V	2: +5 V/24 V
3: A	3: +CL
4: A\	4: -CL
5: B	5: +D
6: B\	6: -D
7: C	7: n.c.
8: C\	8: n.c.
Housing: Shield	

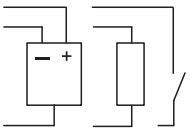
Digital Inputs/Outputs
X1 ... X2
(two inputs/outputs / connector)

M12 A coded

1: 24 V
3: 0 V U_A

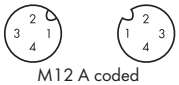
5: Shield

4: In-/Output A
2: In-/Output B
Housing: Shield



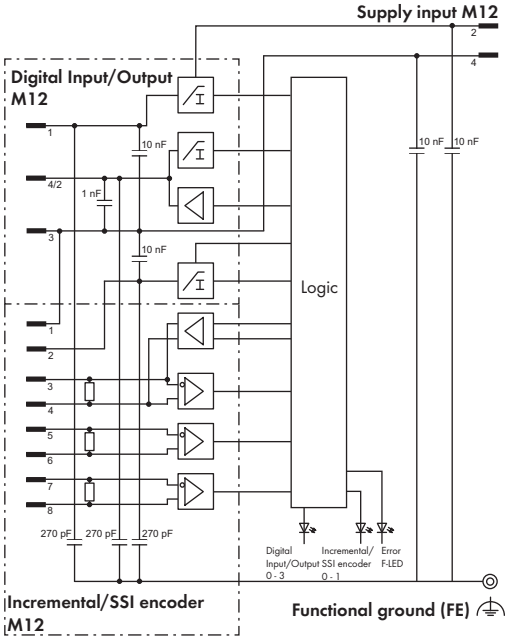
Supply

Input Output



M12 A coded

1: 24 V U_{LS}
2: 24 V U_A
3: 0 V U_{LS}
4: 0 V U_A



Technical Data

Input characteristic:	
Input voltage	Typical input current
0 V	0 mA
5 V	2.0 mA
15 V	2.5 mA
24 V	2.9 mA
30 V	3.2 mA
Digital outputs (see manual for actuator selection information)	
No. of outputs	4
Connection type (3)	M12 connectors, A coded, 5 poles, shielded
Wire connection	2- or 3-wire
Output voltage	≤ U_A
Output current (channel/module)	0.1 A/0.4 A
Output current, short time, 1s (channel)	0.2 A
Output protection	Short-circuit/overload protection, thermal shutdown
Response time	approx. 10 µs (output, 90 %)
Pulse width modulation (PWM)	
Pulse frequency	100 Hz ... 10 kHz
Pulse duty factor	0 ... 100 %
Resolution	16 bits (≤ 1 kHz), 12 bits (> 1 kHz)
Voltage drop against U_A	max. 1.7 V at 100 mA
Leakage current in OFF state	typ. 150 µA
Output circuit	push-pull
System bus:	
Connection type (4)	M12 connectors, B coded, 5 poles, shielded
Standards and approvals:	
cULus UL 508	
Conformity marking	CE
Isolation:	
Channel - Channel	no
U_{LS}, U_A, system bus	500 V DC each

Technical Data

Configurable functions:	
(see manual for configuration details)	
Incremental encoder (channel by channel)	Evaluation, filter
SSI encoder (channel by channel)	Data width/length, transmission rate, etc.
Cam (channel-by-channel)	Upper/lower value, output, etc.
Pulse-width modulation (channel-by-channel)	Pulse duty factor, frequency, etc..
DIOs (channel by channel/module by module)	Operating mode, filter, substitute value strategy, etc.
Configurable functions (channel by channel/module by module)	Online simulation and diagnostics
I/O diagnostics:	
I/O diagnostics (per channel)	**Encoder:** Over-/underflow, wire break, limit value violation (min./max.); **DIO:** Overtemperature (actuators)
I/O diagnostics (per module)	**Supply:** Short-circuit/Overload of sensor/actuator supply, undervoltage (U_{LS} + U_A)
Process image:	
Process data width	2 x 4-byte encoder value, 2 x 2-byte control data, 1-byte status DI/control DO
Synchronous diagnostics (optional)	2 bytes
LED indicators:	
SB: System bus status	LED (green/red/orange)
F: Error status	LED (red)
0 – 3: Signal status, inputs/outputs	LED (yellow/red)
Ch1 + Ch2: Encoder status	LED (green/yellow/red)
U_{LS} + U_A: Supply status	LED (green)
Indicators	Non-latching

General Specifications

Dimensions (mm) W x H x L	50 x 35.7 x 117
Weight	270 g