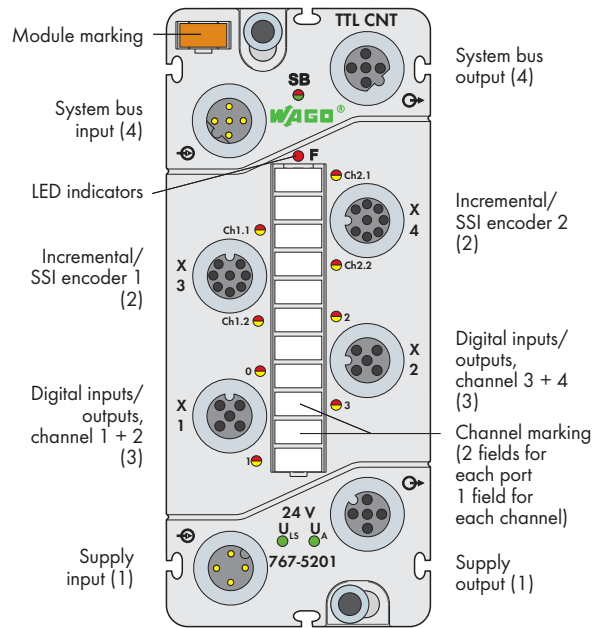


# TTL Incremental/SSI Encoder Interface

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)

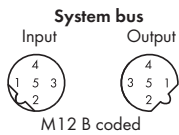
### Included:

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

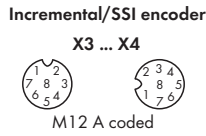
\*Pulse-Width Modulated outputs

Description	Item No.	Pack. Unit
TTL Incremental/SSI Encoder	767-5201	1
<b>Product discontinuation</b>	<b>Last Call: 30.09.2018</b>	
Accessories	Item No.	
Marking strips, marking pen, spacer module and protective caps	see pages 520 ... 521	
IP67 cables and connectors	see pages 502 ... 517 + Section 11	
Technical Data		
<b>Module supply:</b>		
Connection type (1)	M12 connectors, A coded, 4 poles	
Current carrying capacity of supply connections	max. 8 A (U <sub>IS</sub> : 4 A, U <sub>A</sub> : 4 A)	
Supply voltage		
Logic and sensor voltage U <sub>IS</sub>	24 V DC (-25 % ... +30 %)	
Actuator voltage U <sub>A</sub>	24 V DC (-25 % ... +30 %)	
Supply current		
Logic and sensor current I <sub>IS</sub>	typ. 50 mA	
Actuator current I <sub>A</sub>	typ. 25 mA + actuators (max. 800 mA)	
Protection	Reverse voltage protection for U <sub>IS</sub> + U <sub>A</sub>	
	Short-circuit protection for sensor/actuator supply	

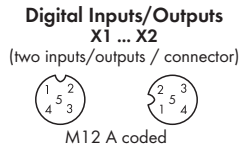
Technical Data	
<b>Incremental encoder:</b>	
Number of inputs (incremental)	2
Connection type (2)	M12 connectors, A coded, 8 poles, shielded
Sensor supply	5 V/24 V, max. 300 mA
Encoder connection (incremental)	A, A\, B, B\, C, C\
Signal input (incremental)	RS-422 differential signal
Counter	32 bits
Max. operating frequency	1 MHz
Zero impulse latch	32 bits
Type of cable, cable length	shielded, ≤ 30 m
<b>SSI encoder:</b>	
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
<b>Digital inputs:</b>	
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



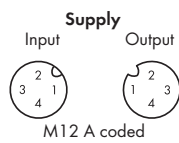
- 1: RD+/TD+
- 2: RD-/TD-
- 3: TD-/RD-
- 4: TD+/RD+
- 5: GND
- Housing: Shield



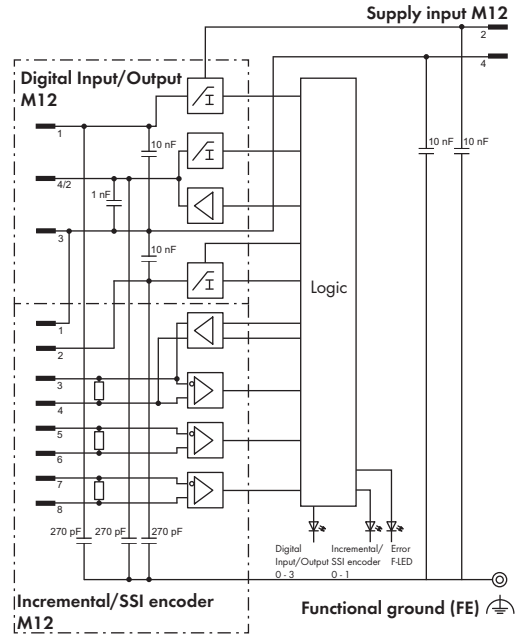
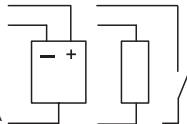
- Incremental
  - 1: GND
  - 2: +5 V/24 V
  - 3: A
  - 4: A\
  - 5: B
  - 6: B\
  - 7: C
  - 8: C\
  - Housing: Shield
- SSI encoder
  - 1: GND
  - 2: +5 V/24 V
  - 3: +CL
  - 4: -CL
  - 5: +D
  - 6: -D
  - 7: n.c.
  - 8: n.c.



- 1: 24 V
- 3: 0 V U<sub>A</sub>
- 5: Shield
- 4: In-/Output A
- 2: In-/Output B
- Housing: Shield



- 1: 24 V U<sub>IS</sub>
- 2: 24 V U<sub>A</sub>
- 3: 0 V U<sub>IS</sub>
- 4: 0 V U<sub>A</sub>



## Technical Data

### Digital inputs:

Input wiring	High-side switching
Input voltage	24 VDC (-3 VDC < U <sub>IN</sub> < +30 VDC)
Connection of 2-wire BEROs	max. 1.5 mA admissible closed current
Type of cable, cable length (digital inputs)	shielded, ≤ 30 m

### 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 <sub>A</sub>
Output current (channel/module)	0.1 A/0.4 A
Short-Term output current, 1 s (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 <sub>A</sub>	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
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### Standards and approvals:

Conformity marking	CE
UL 508	
BVS 15 ATEX E 098 X	II 3G Ex nA IIC T5 Gc, II 3D Ex tc IIIB T90°C Dc
IECEx BVS 15.0083X	Ex nA IIC T5 Gc, Ex tc IIIB T90°C Dc

## Technical Data

### Isolation:

Channel - Channel	no
U <sub>IS</sub> , U <sub>A</sub> system bus	500 V DC each

### 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)	<b>Encoder:</b> Over-/underflow, wire break, limit value violation (min./max.); <b>DIO:</b> Overtemperature (actuators)
I/O diagnostics (per module)	<b>Supply:</b> Short-circuit/Overload of sensor/actuator supply, undervoltage (U <sub>IS</sub> + U <sub>A</sub> )

### 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 <sub>IS</sub> + U <sub>A</sub> : 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