

# Absolute encoders - parallel

Hollow shaft  $\varnothing 14$  mm

Optical singleturn encoders 13 bit, 1024 cams

## RXA1H



RXA1H with hollow shaft

### Features

- Encoder singleturn / parallel
- Optical sensing
- Resolution: 13 bit
- Hollow shaft  $\varnothing 14$  mm
- Integrated programmable cams unit
- Dead time compensation, rotation speed control
- Encoder programming by Windows software
- RS232 encoder programming interface
- 16 outputs with 1024 cams
- High-side performance driver 1.5 A

### Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	$\leq 50$ mA (24 VDC)
Initializing time (typ.)	250 ms after power on
Interface	Parallel (cams)
Function	Singleturn
Number of cams	1024
Steps per turn	$\leq 8192$ / 13 bit
Absolute accuracy	$\pm 0.025^\circ$
Sensing method	Optical
Code	Binary
Code sequence	CW default, programmable
Inputs	TxD, RxD (RS232) Control signals start and zero Program selection 1-16
Output circuit	Highside performance driver with 2 x 1.5 A
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Programming interface	RS232
Programmable parameters	Steps per revolution Rotational direction CW/CCW Cams program Rotation speed monitoring
Diagnostic functions	Self-diagnosis Code continuity check
Status indicator	DUO-LED integrated in bus cover

### Technical data - mechanical design

Dimensions (flange)	$\varnothing 75$ mm
Shaft	$\varnothing 14$ mm hollow shaft
Protection DIN EN 60529	IP 54
Operating speed	$\leq 6000$ rpm (mechanical) $\leq 6000$ rpm (electric)
Starting torque	$\leq 0.05$ Nm (IP 54)
Rotor moment of inertia	20 gcm <sup>2</sup>
Materials	Housing: steel Flange: aluminium
Operating temperature	-25...+85 °C -40...+85 °C (optional)
Relative humidity	95 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 16-2000 Hz DIN EN 60068-2-27 Shock 200 g, 6 ms
Weight approx.	700 g
Connection	Cable 1 m, connector D-SUB, 37-pin

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#### Part number

RXA1H. 

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Terminal significance	
UB	Encoder voltage supply.
GND	Ground connection of encoder and output drivers relating to UB.
Outputs 1-16	16 programmable cams outputs. Each output enables optionally alternative configuration as special output.
Zero setting	Input for setting a zero point anywhere within the programmed encoder resolution. The zero setting operation is released by a High impulse and has to be in line with the selected counting direction (UP/DOWN). Connect to GND after reset operation for maximum interference immunity. Impulse duration $\geq 100$ ms. For safety reasons any reset operation will immediately stop a running cams program.
Start	Program start input. Applying a High potential (UB) for at least 100 ms will start the selected cams program. If the start input is firmly connected to UB, the cams program selected at the programming inputs will immediately start after encoder power on.
Programs	Inputs for program selection 1-16. Preset of the cams program in binary code. Program 1 is selected by code 0-0-0-0 program 16 by 1-1-1-1. Input „Program 1“: Valence „1“ Input „Program 2“: Valence „2“ Input „Program 4“: Valence „4“ Input „Program 8“: Valence „8“ After encoder power on and upon every alteration at the programming inputs the cams program selection by the four programming inputs will be valid. A later selection by serial programming interface will overwrite the selection made at the four programming inputs. Every alteration of the program inputs will immediately stop a running cams program.
VPOS1 VPOS2	Separate voltage supply of output driver (outputs 1-8: pin 32, outputs 9-16: pin 33).
GND-PRG	Separate ground of programming interface RS232.
RxD	Encoder receiver input for RS232 programming interface.
TxD	Encoder transmitter output for RS232 programming interface.

Terminal assignment		
Connector	Core colour	Assignment
Pin 1	white	Output 1
Pin 2	brown	Output 2
Pin 3	green	Output 3
Pin 4	yellow	Output 4
Pin 5	grey	Output 5
Pin 6	pink	Output 6
Pin 7	black	Output 7
Pin 8	violet	Output 8
Pin 9	grey/pink	Output 9
Pin 10	red/blue	Output 10
Pin 11	white/green	Output 11
Pin 12	braun/green	Output 12
Pin 13	white/yellow	Output 13
Pin 14	yellow/brown	Output 14
Pin 15	white/grey	Output 15
Pin 16	grey/brown	Output 16
Pin 17	yellow/blue	–
Pin 18	green/blue	–
Pin 19	yellow/pink	–
Pin 20	–	–
Pin 21	–	–
Pin 22	–	–
Pin 23	–	–
Pin 24	–	–
Pin 25	white/pink	Start
Pin 26	pink/brown	Zero setting
Pin 27	white/red	Program 1
Pin 28	brown/red	Program 2
Pin 29	white/black	Program 4
Pin 30	brown/black	Program 8
Pin 31	pink/green	GND-PRG
Pin 32	grey/green	VPOS1
Pin 33	yellow/grey	VPOS2
Pin 34	white/blue	TxD
Pin 35	brown/blue	RxD
Pin 36	red	UB
Pin 37	blue	GND

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#### Terminal assignment programming cable

Encoder function	D-SUB connector 37-pins	PC connector D-SUB, 9-pins
UB	Pin 36	–
RxD	Pin 35	Pin 3
GND	Pin 37	Pin 5
TxD	Pin 34	Pin 2
		Jumper 4-6 and Jumper 7-8

Connect encoder to supply voltage (UB/red and GND/blue) using the supplementary connections.

#### Trigger level

Control inputs	Input circuit
Input level High	$>0.7 U_B$
Input level Low	$<0.3 U_B$
Input resistance	10 k $\Omega$

#### Parallel outputs

Control inputs	Output circuit
	High-Side linedriver circuit-proof
Output level High	$>U_B - 1 V$ ( $I = -500$ mA)
Load High	$<500$ mA / Output
Load for each output 1-8 and 9-16 in sum	$<1.5$ A

#### Dimensions

