Absolute Encoder — Type RA 58

CAN

- **New:** option stainless steel version RA 59
- **New:** option hollow shaft RA 58 with hollow shaft
- CAN (layer 2)
- CANopen
- Singleturn or multiturn
- Resolution up to 14 resp. 26 Bit
- Opto-ASIC
- Microprocessor technology
- New connection technology with integrated T-manifold:
  - connector 2-fold or
  - bus terminal box (3-fold PG)

CONNECTION VARIANTS

Bus terminal box

Bus terminal box (3-fold PG) for cable connection, radial (integrated T-manifold)
- easy connection even in field use with cage clamps
- an end of bus connection (stub line) is avoided, because of the bus main string is connected directly in the encoders bus terminal box

Ordering code: **Connection Z**

Connector

Connector 2-fold, 9 pole, radial, clockwise (integrated T-manifold)
- an end of bus connection (stub line) is avoided, because of the bus mainstring is carried through the encoder

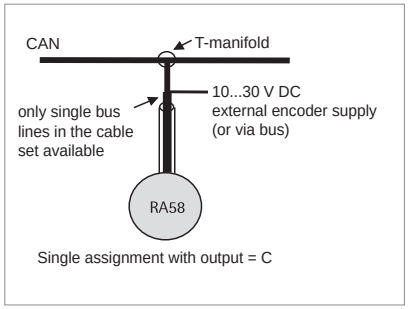
Ordering code: **Connection I**

Cable

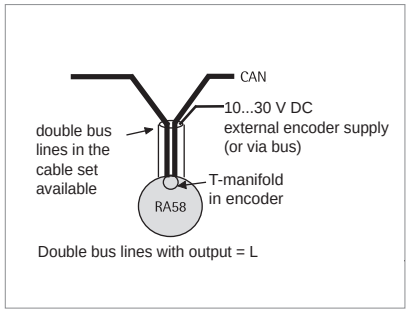
- **Cable** axial or radial; ordering code, **connection A, B**
- **Flange connector** axial or radial; ordering code **connection C, D, G, H**

Only for CAN: Version !bus feeder carried out double" (ordering code: output = L) with connection cable (A/B) or flange connector (C/D/G/H):
- with connection "double" a spur line is not created, as the throughgoing bus feeder is carried through the encoder

Connector



Single assignment with output = C



Double bus lines with output = L

TECHNICAL DATA
mechanical

Shaft diameter	RA 58: 6 mm (synchro flange), 10 mm (clamping flange) RA 59: 10 mm (square flange)
Absolute max. shaft load	diam. 6 mm: axial 60 N (13 lbs), rdial 110 N (24 lbs) diam. 10 mm: axial 107 N (24 lbs), radial 160 N (35 lbs)
Absolute maximum speed	10,000 RPM (short term), 6,000 RPM (continuous duty)
Torque	£ 0.5 Ncm (IP 65), £ 1 Ncm (IP 67)
Moment of inertia	synchro flange: 14 gcm^2, clamping-/square flange: 20 gcm^2
Protection class (EN60529)	Housing IP 65 [1] bearings IP 64 [1]
Operating temperature	-25 ... +85 °C (CAN, Profibus DP) -10 ... +60 °C (InterBus)
Storage temperature	-25 ... +85 °C
Vibration proof (IEC 68-2-6)	100 m/s^2 (10 - 500 Hz) [2]
Shock resistance (IEC 68-2-27)	1000 m/s^2 (6 ms) [2]
Connection	see connection variants
Housing	RA 58: aluminium, RA 59: stainless steel
Flange	RA 58: S = synchro flange, K = clamping flange RA 59: Q = square flange, 63.5 x 63.5 mm
Weight	Singleturn: RA 58-S approx. 300 g, RA 59-S approx. 620 g Multiturn: RA58-M approx. 350 g
Bearing life	1 x 10^{10} revolutions (typ.) at 35 % of full rated shaft load 1 x 10^9 revolutions (typ.) at 75 % of full rated shaft load 1 x 10^8 revolutions (typ.) at 100 % of full rated shaft load For example 30,000 h at 6,000 RPM with a 13 lb radial load (10 mm shaft)

[1] for singleturn IP 67 is also available on request
[2] For applications with higher vibration and shock values, see section "Accessories: Encoder with shock module"

DIMENSIONED DRAWINGS

see section "Absolute Encoders – dimensioned drawings"

TECHNICAL DATA
electrical

General design	as per DIN EN 61010- part 1, protection class III contamination level 2, overvoltage class II
Supply voltage	10 ... 30 V DC (SELV)
Power consumption	max. 0.23 A
Recommended external fuse	T 0.25 A
EMC	Interference emission according to EN 50081-2
	Interference resistance accordng to EN 50082-2
Linearity	± ½ LSB (± 1 LSB with resolution 13, 14, 25, 26 Bit)
Type of code	Binary; with SSI: Binary and Gray (programmable)
Interface	CAN High Speed according to ISO / DIS 11898, basic and full CAN, CAN specifications 2.0 B (11 and 29 Bit identifer)
Protocol	layer 2 or CANopen according to profile DSP 406 with additional functions
Baud rate	settable with DIP switches from 10 to 1000 Kbits/s
Base identifier/ Node number	settable with DIP switches
Resolution [1] physical	360 pulses (9 Bit) singleturn (only for CAN layer 2) 512 pulses (9 Bit) singleturn (only for CAN layer 2) 720 pulses (10 Bit) singleturn (only for CAN layer 2) 1024 pulses (10 Bit) singleturn 4096 pulses (12 Bit) singleturn 8192 pulses (13 Bit) singleturn 16384 pulses (14 Bit) singleturn 4096 pulses / 4096 revolutions (24 Bit) multiturn 8192 pulses / 4096 revolutions (25 Bit) multiturn 16384 pulses / 4096 revolutions (26 Bit) multiturn
Programmable functions	CANopen: poll mode or auto mode with adjustable cycle time, code sequence (Direction) resolution per revolution, total resolution, Preset, Offset, up to 4 warning positions, additional output of speed / acceleration CAN shift 2: poll mode or auto mode with adjustable cycle time, code sequence (Direction), up to 4 warning positions

[1] with CANopen the resolution can be reduced as required by programming the parameters

CONNECTION DIAGRAM CAN
Cable or connector

TPE cable Colour	Flange connector Pin	Assignment with output = C	Assignment with output = L
	1	N.C.	N.C.
green	2	CAN-	CAN- IN
blue	3	CAN GND	CAN GND IN
pink	4	N.C.	CAN+ OUT
grey	5	N.C.	CAN- OUT
	6	N.C.	N.C.
yellow	7	CAN+	CAN+ IN
	8	N.C.	N.C.
	9	N.C.	N.C.
brown (0.5 mm²)	10	0 V (supply voltage)	0 V (supply voltage)
brown	11	CAN GND	CAN GND OUT
white (0.5 mm²)	12	10 ... 30 VDC	10 ... 30 VDC
screen	screen	screen [1]	screen [1]

CONNECTION DIAGRAM CAN
Connector 2-fold 9 pole (integrated T-manifold)

Plug-	Connector with	
Pin	pin insert	socket insert
1	CAN+	CAN+
2	CAN-	CAN-
3	CAN GND	CAN GND
4	N.C.	N.C.
5	N.C.	N.C.
6	N.C.	N.C.
7	10 ... 30 VDC	10 ... 30 VDC
8	0 V (supply voltage)	0 V (supply voltage)
9	N.C.	N.C.
screen	screen [1]	screen [1]

[1] screen connected to encoder housing

ACCESSORIES

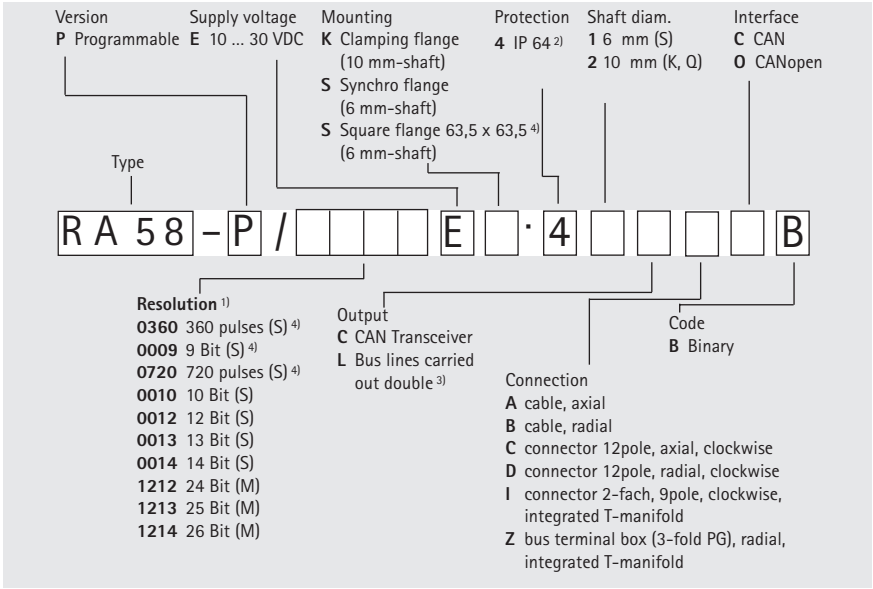
	Ordering code
Clamping eccentric	0 070 655
Diaphragm coupling (hub diam. 6/6 mm)	1 076 013
Diaphragm coupling (hub diam. 10/10 mm)	1 076 014
Mating connector (9 pole, socket, clockwise) for bus input [1]	3 539 294
Mating connector (9 pole, pins, clockwise) for bus output [1]	3 539 293
Mating connector for connector, 12 pole clockwise (connection C, D)	3 539 202
Mating connector for connector, 12 pole, counter clockwise (connection G, H)	3 539 229
Technical Manual CAN layer 2, German or English	2 542 051 or 2 542 052
Technical Manual CANopen, German or English	2 542 092 or 2 542 093

[1] matching with connection I (twin flange connector with integrated T-manifold) with CAN and INTERBUS

ORDERING DATA CAN

Note for first ordering:
Please include in your order:
- **Technical manual, German or English ordering code 2 542 051 or 2 542 052 for CAN resp. 2 542 092 or 2 542 093 for CANopen**
- **disc with EDS file ordering code 1 543 061 for CANopen**

Or download from www.hengstler.com



1) S = singleturn, M = multiturn with 4096 (12 Bit) revolutions
2) IP 67 on request
3) not with connection with integrated T-manifold (for description see „Connection versions"
4) not with interface CANopen (0)