



- **New:** connection with integrated T-manifold: Connector 2-fold or bus terminal box (3-fold PG)
- **New:** Loop 2
- **New:** stainless steel version see type RA 59
- **New:** interbus-Loop see type RA 58-P
- **New:** hollow shaft version see type RA 58 with hollow shaft
- single turn up to 12 bit (RA 58-S)
- multi turn up to 24 bit (RA 58-M)
- ENCOM-profile K2
- ENCOM-profile K3 (programmable)
- EX-version see type RX 70

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 the bus main string is connected directly in the encoders bus terminal box

Ordering code: **Connection Z**



Connector

Loop

Connector 2-fold, 9 pole, radial, clockwise (integrated T-manifold)

- an end of bus connection (stub line) is avoided, because 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**

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 64), ≤ 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	-10 ... +60 °C
Storage temperature	-25 ... +85 °C
Vibration proof (IEC 68-2-6)	100 m/s ² (10 - 500 Hz) ³⁾
Shock resistance (IEC 68-2-27)	1000 m/s ² (6 ms) ³⁾
Connection, axial or radial	1.5 m cable ²⁾ axial/radial with 12 pole connector clockwise, connector 2-fold, bus terminal box
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

¹⁾ IP 67 on request²⁾ other cable lengths possible on request³⁾ For applications with higher vibration and shock values, see section „Accessories:
Encoder with shock module“

see section "Absolute Encoders – dimensioned drawings"

DIMENSIONED DRAWINGS

TECHNICAL DATA
electrical
for RA 58-S/M
with INTERBUS K2

General design	as per DIN EN 61010- part 1, protection class III contamination level 2, overvoltage class II
Output	INTERBUS (ENCOM profile K2)
Resolution	360 pulses (9 Bit) ¹⁾ 512 pulses (9 Bit) 720 pulses (10 Bit) ²⁾ 1024 pulses (10 Bit) 4096 pulses (12 Bit) 4096 pulses / 4096 revolutions (24 Bit)
Linearity	± ½ LSB
Type of code	binary
Sense of direction	ascending code values when turning clockwise
Supply voltage (SELV)	10...30 VDC with pole protection
Power consumption	max. 0.2 A
Recommended external fuse	T 0.25 A
Baud rate	500 KB
Output load	RS 485
Max. cable length	50 m

¹⁾ With offset 76 (value range 76 ... 435)²⁾ With offset 76 (value range 152 ... 871)TECHNICAL DATA
electrical for RA 58-P
with INTERBUS K3

Interface	RS 485 for remote installation bus
Protocol	INTERBUS with ENCOM profile K3 (parameterizable)
Baud rate	500 kbits/s, according to ENCOM
Data update	every 600 µs
Resolution ¹⁾ physical	1024 pulses (10 Bit) singleturn 4096 pulses (12 Bit) singleturn 1024 pulses / 4096 revolutions (22 Bit) multiturn 4096 pulses / 4096 revolutions (24 Bit) multiturn
Programmable functions	code sequence (Direction), scaling factor, Preset, Offset
Max. cable length	50 m

¹⁾ Resolution can be reduced by programming the scaling factor (≤ 1) accordingly

TECHNICAL DATA electrical for RA 58-P with INTERBUS Loop

Absolute Encoders

Type RA 58

Interbus

General design	as per DIN VDE 0160, protection class III contamination level 2, overvoltage class II
Supply voltage	19.2 ... 30 V DC (SELV) with pole protection (as per Loop 2 spec.)
Power consumption typical max	70 mA (28 V) ... 80 mA (19 V) 90 mA
EMC	noise emission as per EN 50081-2 noise immunity as per EN 50082-2
Type of code	Binary
Interbus loop interface	2 fold with supply voltage via data cable 500 k baud
Connection	2 QUICKON-connectors (PG11) green
Protocol	ENCOM profile K3 (programmable), binary, 32 bit data in and out
ID code	179dez = B3hex
Word	02
Physical resolution ¹⁾	1024 counts (10 Bit) Singleturn 4096 counts (12 Bit) Singleturn 1024 counts/4096 revolutions (22 Bit) Multiturn 4096 counts/4096 revolutions (24 Bit) Multiturn
Linearity	± ½ LSB
Functions (progr.)	direction, scaling factor, Preset, Offset
Dagnostic LED	
on	interbus active
slow blinking (0.5 Hz)	logic voltage okay, bus not active
fast blinking (2 Hz)	periphery problem
off	no logic voltage
Reset pushbutton	external 0 position

¹⁾ The resolution can be reduced as required by programming the parameters

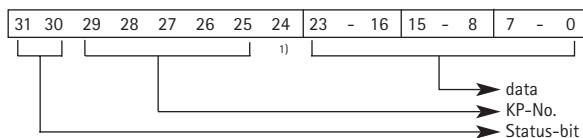
DATA FORMAT INTERBUS K2 (RA 58-S/M)

	5 V differential signals (RS 485)				
	ENCOM profile K2, 32 Bit binary process data				
	right adjust, readable only, without control/status bit				
Data format	Supi-address	0	1	2	3
(as per Phoenix)	Byte-No.	3	2	1	0
ID-Code	36H (= 54 decimal)				

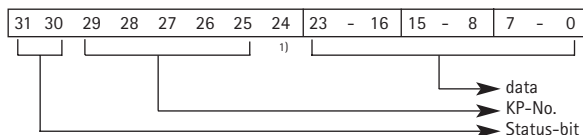
DATA FORMAT INTERBUS
K3/LOOP (RA 58-P)

	5 V differential signals (RS 485)			
	ENCOM profile K3, 32 Bit			
	binary process data			
Data format	Supi-address	0	1	2 3
(as per Phoenix)	Byte-No.	3	2	1 0
ID-Code K3	37H (=55 decimal)			
ID Code INTERBUS Loop	B3H (=179 decimal)			

Host at RA 58-P



RA 58-P at Host

¹⁾ Bit 24 not usedPROGRAMMABLE FUNCTIONS
FOR INTERBUS K3/LOOP

Function (Programming directly via the bus through transfer of configuration parameters)	Preset values (manufacturer's standard settings)	Customer-specific parameters
Code sequence for clockwise (cw) rotation	ascending	
Offset (CP-No. 05)	0	
Preset value (CP-No. 04)	0	
Scaling factor (CP-No. 08)	1 ¹⁾	

¹⁾ maximum resolutionCONNECTION DIAGRAM
INTERBUS K2/K3

Pin	Cable with plug (A/B)	Connector (2-fold) IN (Pins)	9 pole (internal T-manifold) (I) OUT (Socket)
1	D02	D01	D02
2	$\overline{D02}$	$\overline{D01}$	$\overline{D02}$
3	DI 2	DI 1	DI 2
4	$\overline{DI 2}$	$\overline{DI 1}$	$\overline{DI 2}$
5	D01	0 VS ^{1) 3)}	0 VS ^{1) 3)}
6	$\overline{D01}$	PE ²⁾	PE ²⁾
7	DI 1	10 ... 30 VDC	10 ... 30 VDC
8	$\overline{DI 1}$	0 V (supply voltage)	0 V (supply voltage)
9	$\overline{RBST}$ ³⁾	N.C.	$\overline{RBST}$ ³⁾
10	0 V (supply voltage)		
11	0 VS (signal output) ^{1) 3)}		
12	10 ... 30 VDC		

¹⁾ Signal output; due to the electrical isolation not identical with 0 V (supply voltage)²⁾ Functional earthing; connected with the encoder housing³⁾ If further devices follow in the same busline, a bridge between RBST and 0 VS (signal output) must be made in the mating connector of continuing bus line.CONNECTION DIAGRAM
Loop

Pin	Signal
1	+
2	-

Absolute Encoders

Type RA 58

Interbus

ACCESSORIES

For INTERBUS	Ordering code
Technical manual K3 German	2 543 003
Technical manual K3 English	2 543 030
Technical manual Loop German	2 543 068
Technical manual Loop English	2 543 078
Flange connector 2 fold:	
Connector input (9 pole, socket contact)	3 539 294
Connector output (9 pole, pins)	3 539 293
Cable with plug (-C):	
Plug for encoder (12 pole, clockwise)	3 539 186

Mounting	Ordering code
Synchro flange	0 070 655
spring washer adapter coupling (hub 6/6 mm)	3 520 081
spring washer adapter coupling (hub 10/10 mm)	3 520 088

ORDERING DATA INTERBUS K2

Version	Supply voltage	Mounting	Protection	Shaft diam.	Interface
S Singleturn M Multiturn	E 10 ... 30 VDC	K Clamping flange (10 mm-shaft) S Synchro flange (6 mm-shaft)	4 IP 64 ²⁾	1 6 mm (S) 2 10 mm (K)	I INTERBUS
Type RA 58 Standard					Plug ³⁾ C Conin 12-pol.
Resolution ¹⁾ 0360 360 Incr. (S) 0009 9 Bit (S) 0720 720 Incr. (S) 0010 10 Bit (S) 0012 12 Bit (S) 1212 24 Bit (M) Output T RS 485 Connection A cable, axial ³⁾ B cable, radial ³⁾ I connector 2-fold 9 pole, radial, clockwise (integrated T-manifold) Z bus terminal box (3-fold PG), radial (integrated T-manifold) Code B Binary					
1) S=singleturn, M=multiturn with 4096 (12 Bit) revolutions 2) IP 67 on request 3) generally for connection A/B: 1.5 m cable including plug (12 pole, turning right)					

ORDERING DATA INTERBUS (K3)

Note for first ordering:
- User Manual IB (K3) English,
ordering code 2 543 030
Or download from
www.hengstler.com

Version	Supply voltage	Mounting	Protection	Shaft diam.	Interface
P Programmable	E 10 ... 30 VDC	K Clamping flange (10 mm-shaft) S Synchro flange (6 mm-shaft) Q Square flange 63,5 x 63,5 (10 mm-shaft)	4 IP 64 ²⁾	1 6 mm (S) 2 10 mm (K)	I INTERBUS
Type RA 58 Standard					Plug ³⁾ C Conin 12-pole
Resolution ¹⁾ 0010 10 Bit (S) 0012 12 Bit (S) 1210 22 Bit (M) 1212 24 Bit (M) Output T RS 485 Connection A cable, axial ³⁾ B cable, radial ³⁾ I connector 2-fold 9 pole, radial, clockwise (integrated T-manifold) Z bus terminal box (3-fold PG), radial (integrated T-manifold) Code B Binary					
1) S=singleturn, M=multiturn with 4096 (12 Bit) revolutions 2) IP 67 on request 3) generally for connection A/B: 1.5 m cable including plug (12 pole, turning right)					

ORDERING DATA INTERBUS LOOP

Note for first ordering:
Please include in your order:
– User Manual IB Loop English,
ordering code. 2 543 078
Or download from
www.hengstler.com

