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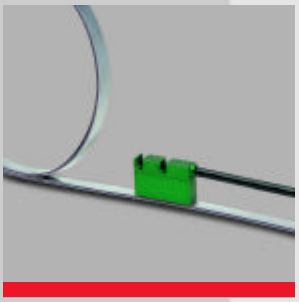
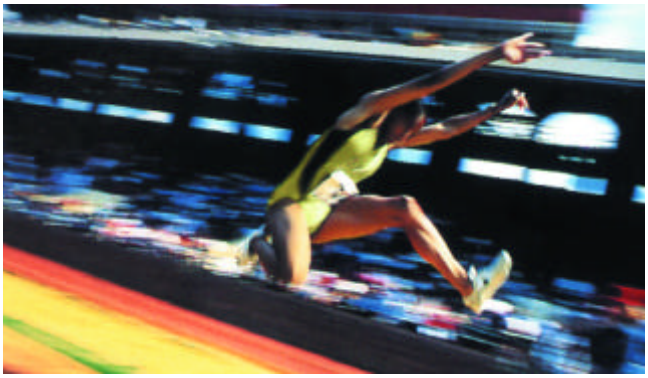


Absolute and Incremental Encoders

THE MOVEMENT OF AUTOMATION

Lika Electronic develops successfully innovative and effective solutions to automation since 1982. In the new and enlarged headquarter in Carrè (VI) works a staff of about 50 people made up of technicians, engineers and employees to design and manufacture absolute and incremental encoders for the measurement of linear and angular movement.



MOVEMENT IS THE MECHANISM

Lika Electronic is the Italian leader in the field of:
- production of rotative and linear position encoders
- production of axis controls and positioning systems
- analogue and digital electronic design
- mechanical design of parts and systems

MOVEMENT IS EXECUTION RAPIDITY

Our target is to meet the customers' requirements in the shortest time. Our technical staff is able to carry out rapidly all procedures, from the recognition of the customers' requirements to the final inspection.

MOVEMENT IS A PLAY OF CONTINUOUS MOVING

We have chosen to focus the attention on products purposely studied for the customer, which place performance and multi-functonality before serialization and volume. Lika's commitment is to accept but also to issue the most exciting challenges to its customers, offering the following array of services:
- systems analysis and feasibility studies
- systems design and plan development with the supplying of technical, mechanical and software documentation in accordance with a regular or an arranged standard
- training courses for the use and maintenance of the produced systems/equipment
- supplying of spare parts
- assistance for qualifications and type-approval of equipment and components

MOVEMENT IS INNOVATION

Innovation and research are our pride. It's our custom to cooperate with the most prestigious Italian Universities, like those of Padua, Pavia and Trieste and with the most accredited Institutes for research, with which we work out plans and establish permanent links.

MOVEMENT IS GOING FAR

After many applications in the military field, in the presence of vacuum and radiation, we are actively part of an international project in the space sector and we have established a profitable collaboration with the CISAS (Interdepartmental Centre of Space Studies and Activities) at the University of Padua.

Lika is actually one of the few companies in the world able to produce ESA certified encoders for the space. An incremental encoder will be employed in the mechanism of the WAC and NAC telescopes forming the OSIRIS payload in the ROSETTA-ESA mission. Our encoders are more accurate and lighter, they absorb less power and are able to work at wide ranges of temperature. The most interesting applications in the space sector are:

- the angle measure in laying systems (telescopes), communication links among satellites
- the introduction of integrated measurement systems in trim sensors (sun, horizon)
- the angle measurement of various mechanisms like filter cases, photographic shutters etc.
- the angle measurement within the action of robots

MOVEMENT IS A QUALITATIVE LEAP

Our whole production of Lika is certified by a SIT centre and product samples are periodically tested by qualified centres. We apply the following standard procedure on every component:
- quality control of parts delivered by our suppliers
- conformity inspection and control during the production process
- control of the automatic assembly line
- final inspection

ROTAPULS incremental encoders




Series	I28	I40, I41	I58, I58S	I58C
Features			standard size	
Housing (mm)	28	40	58	58
Shaft ø (mm)	4, 5	4, 6, 6.35, 8	6, 8, 9.52, 10, 12	6, 8, 10, 12
Connections	•	•	•	•
			•	•
Resolution	1024 max.	3600 max.	10000 max.	10000 max.
Output freq. (kHz)	100 max.	100 max.	300 max.	300 max.
Output	NPN, PNP, Push-Pull, Line Driver	Push-Pull, Line Driver	Push-Pull, Line Driver, 1 Vpp	Push-Pull, Line Driver
Operating temperature	-20 °C +70 °C	-20 °C +70 °C	-40 °C +100 °C max.	-40 °C +100 °C max.
Protection	IP54	IP54	IP65 max.	IP65 max.

ROTACOD absolute encoders




Series	AS58, AS58S, AM58, AM58S	ASC58, AMC58	AS5, AM5	ASR58
Features	standard size		small size	Programmable cam encoder
Housing (mm)	58	58	50	58
Shaft ø (mm)	6, 8, 9.52, 10, 12	14, 15	6, 8, 9.52, 10, 12	6, 8, 9.52, 10, 12
Connections	•	•	•	
	•	•		•
Resolution	17 bit, 17x12 bit max.	17 bit, 17x12 bit max.	11 bit, 11x8 bit max.	3600/0,1°
Output	Push-Pull, SSI, NPN, PNP	Push-Pull, SSI, NPN, PNP	Push-Pull, SSI, NPN, PNP	16 x Push-Pull, 100 mA
Operating temperature	-40 °C +100 °C max.	-40 °C +100 °C max.	-40 °C +100 °C max.	-20°C + 70 °C
Protection	IP65	IP65	IP65	IP65

ROTAPULS incremental encoders

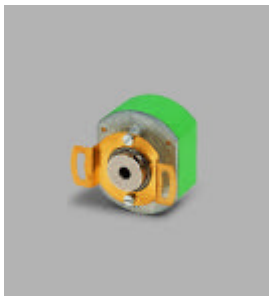



Seies	I65, IT65	CK46	C50	C58, CK58
Features	standard size		for motor applications	
Housing (mm)	65	46	50	58
Shaft ø (mm)	6, 8, 9.52, 10, 12	6, 6.35	6, 6.35, 8, 9.52, 10	14, 15
Connections	•	•	•	•
	•			•
Resolution	10000 max.	3600 max.	2500 max.	1000 max., 10000 max.
Output freq. (kHz)	300 max.	50 max.	100 max.	50 max., 300 max.
Output	NPN, PNP, Push-Pull, Line Driver	Push-Pull, Line Driver	Push-Pull, Line Driver	NPN, PNP, Push-Pull, Line Driver
Operating temperature	-40°C +100°C max.	-40°C +100°C max.	-40°C +100°C max.	-40°C +100°C max.
Protection	IP66 max.	IP54	IP65 max.	IP65 max.

ROTACOD absolute encoders

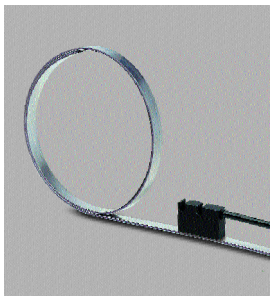
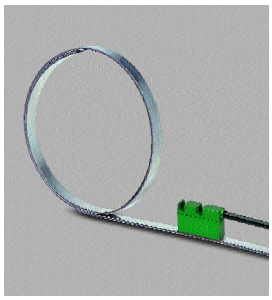
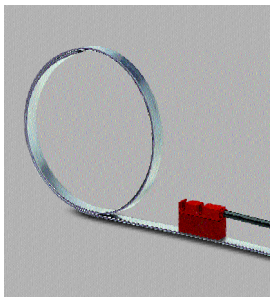



Series	AS58 A	AS58, AM58 ISI	AM58 BUS	AM58 P
Features	Analogue output	Incremental serial interface	Fieldbus encoders	Programmable
Housing (mm)	58	58	58	58
Shaft ø (mm)	6, 8, 10, 12	6, 8, 9.52, 10, 12	6, 8, 9.52, 10, 12	6, 8, 9.52, 10, 12
Connections	•	•	•	•
	•	•	•	•
Resolution	12 bit	13 bit, 13x12 bit max.	13x12 bit max.	13x12 bit max.
Output	0-5V, 0-10V, 4-20 mA	ISI	ProfiBus, Interbus-S DeviceNet, CAN Bus	Push-Pull, SSI
Operating temperature	-20°C +70°C	-20°C +70°C	-20°C +70°C	-20°C +70°C
Protection	IP65	IP65	IP65	IP65

	ROTAPULS incremental encoders		LINEPULS
			
Series	**C80, C81**	**CB50**	**EBOX**
Features	for lift motors	feedback encoder for brushless motors	
Housing (mm)	80	50	
Shaft ø (mm)	6 ÷ 30, 20 ÷ 43.97	6, 6.35, 8, 9.52, 10	55 x 75 x 20
Connections	•		•
		•	-
Resolution	2500 max.	2500 max.	0,1 – 0,01 mm
Output freq. (kHz)	300 max.	200	
Output	Push-Pull, Line Driver	Push-Pull, Line Driver	Push-Pull, Line Driver
Operating temperature	-40°C +100°C max.	-20°C +100°C max.	-10°C +70°C
Protection	IP65 max.	IP20	IP40

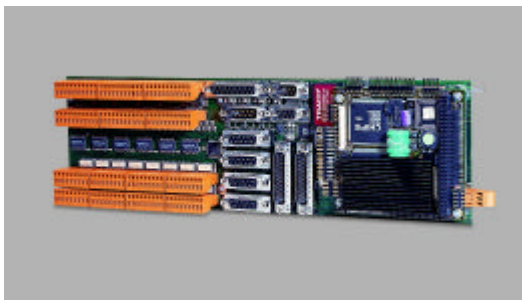
	LINEPULS		Digital Displays	
				
Series	**LD120**	**LD140**	**MC150**	**PV1-V**
Features				
Display	LED 5 digit	LCD 6 digit	LED 6 digit	LCD 240x180 pixel
Nr. of axis	1	1	1	1 - 4
Dimensions (mm)	72 x 36	96 x 72	96 x 72	280 x 110
Sensor input	Magnetic Sensor SM	Magnetic Sensor SM	PP, LD, SSI, Magnetic Sensor SM	PP, LD
Speed	< 10 m/s	< 10 m/s	330 kHz max.	1,5 MHz max.
Supply	+10 +30 Vdc	Battery	24 Vdc, 24, 115, 230 Vac	24 Vdc
Interface	RS485	RS232	RS232	RS232
Outputs	-	-	2x 24 V @ 500 mA	12x 24 V @ 500 mA ± 10 V

LINEPULS Magnetic Measurement System

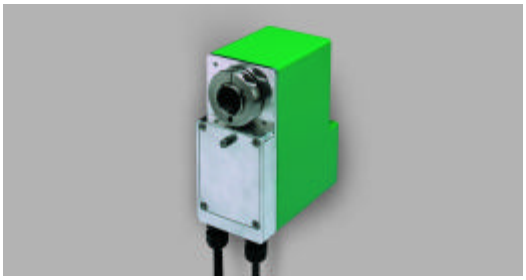

Series	SME	SMS	SMK, SML, SMH	SMB
Features		sin / cos version		
Housing (mm)	25 x 40 x 10	25 x 40 x 10	25 x 40 x 10	
Shaft ø (mm)	-	-	-	-
Connections	•	•	•	•
Resolution	5 µm max.		50 µm max.	5 µm max.
Output freq. (kHz)	16 m/s max.	16 m/s max.	5 m/s max.	16 m/s max.
Output	Push-Pull, Line Driver	1 Vpp	Push-Pull, Line Driver	Push-Pull, Line Driver
Operating temperature	-10°C +70°C	-10°C +70°C	-10°C +70°C	-10°C +70°C
Protection	IP67	IP67	IP67	IP67

NC's & axis cards



Series	LCN 4001	SA4
Nr. of axis	from 4 to 12 axes simultaneously	from 4 to 12 axes simultaneously
Interpolation	6 axes linear/2 axes circ./helic.max.	6 axes linear/2axes circ./helic. max.
Auxiliary axis	independent, coupled, electrical, threading axes	independent, coupled, electrical, threading axes
Output	192 IN optoins./192 OUT 4A optoins. max.	192 IN optoins./192 OUT 4A optoins. max.
Analogue output	± 10 V (servo drive control)	± 10 V (servo drive control)
Programming	EIA/ISO with macro, expressions, functions	EIA/ISO with macro, expressions, functions
Display	TFT 10,4" colour	-

DRIVECOD



Series	RD1	SAM3
Features	Positioning unit with integrated gear motor, drive, positioner and encoder	Intelligent 3 axes drive with integrated positioner
Nr. of axis	1	3
Output power (W)	70	380 max.
Torque (Nm)	5 max.	–
Supply	24 Vdc	+24 +48 Vdc
Interface	RS485, CANopen, Profibus	RS232, CANopen, Profibus
Feedback	incremental or absolute encoder integrated	3 x AB0, 3 x SSI
Drive	integrated	for DC motors
Dimensions (mm)	58 x 125 x 105	145 x 210 x 45

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SHAFT ENCODERS

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Mounting instructions 78

ROTAPULS
Incremental encoders

series **I28**

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP54

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 4, 5 mm
Shaft loading (axial and radial):	20 N max.
Shaft rotational speed:	3000 rpm max.
Starting torque at 20°C:	≤ 0,3 Ncm (typical)
Moment of inertia:	~10 gcm²
Bearings life:	10^9 rev. min.
Weight:	~ 0,1 kg (3,5 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate (other PPR upon request):	100-200-250-360-500-1024
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	30 kHz max.
Input current:	50 mA max.
Protection:	against inversion of polarity (except +5V version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 100 kHz max.

MATERIALS

Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

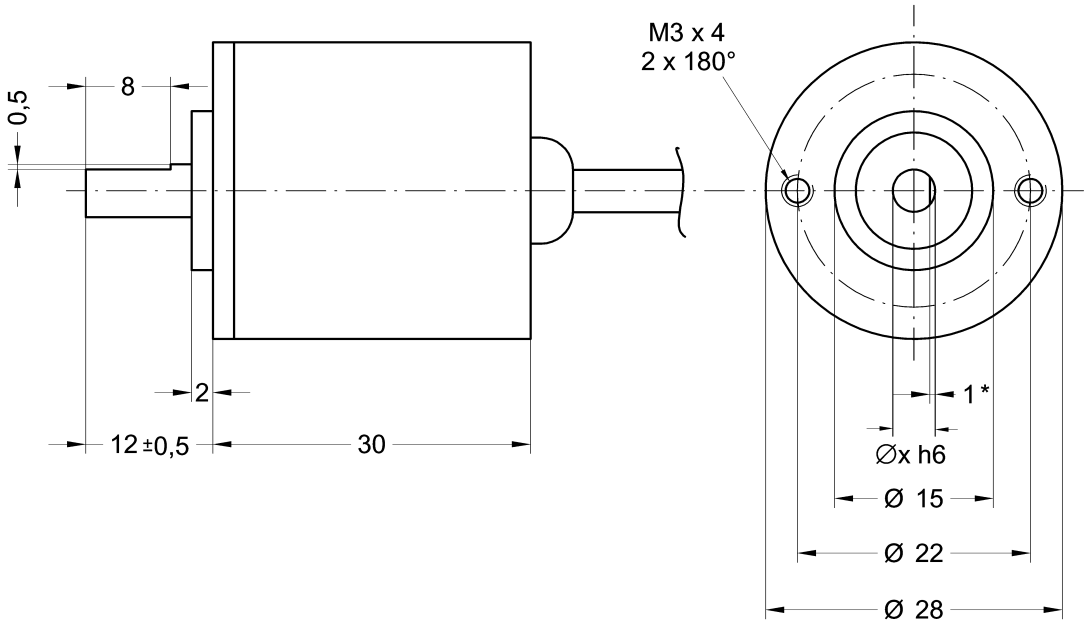
ELECTRICAL CONNECTIONS

8 wires cable	
red-black	A
blue	/A
green	B
orange	/B
white	0
white-black	/0
red	+Vdc
black	0 Vdc

ACCESSORIES

PAN/PGF:	flexible couplings

Specifications subject to changes without prior notice



I28

ORDERING CODE

XXXX - X - XXXX X X X X X X

SERIES

I28

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1m (3.3 ft)

SHAFT DIAMETER

4	4 mm
5	5 mm

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuit)	2
+5V÷+30V (PP/LD universal circuit)	4

ADDITIONAL CODE (indicate only if necessary)

X X

Lx	Cable length on request Ex.: L4 = 4 meters (13.2 ft) L7 = 7 meters (23.0 ft)

V	Output frequency up to 100 kHz

ROTAPULS
Incremental encoders

series **I40 • I41**

I40

I41

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F, +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP54
Options:	• IP65 Protection (only I41) • IP66 Protection shaft end (only I41)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 4, 6, 6.35, 8 mm
Shaft loading (axial and radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 0,3 Ncm (typical)
Moment of inertia:	~20 gcm²
Bearings life:	10^9 rev. min.
Weight:	~ 0,1 kg (3,5 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate (other PPR upon request):	1-5-8-10-15-20-25-30-32-40-50-60-64-72-84 90-100-125-127-150-176-180-200-250-300-314 320-360-400-500-540-600-625-635-720-900 1000-1021-1024-1080-1200-1250-1500-1600 2000-2500-3000-3600
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	NPN o.c., PNP o.c., Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	50 kHz max.
Input current:	50 mA max.
Protection:	against inversion of polarity (except +5V version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 100 kHz max.

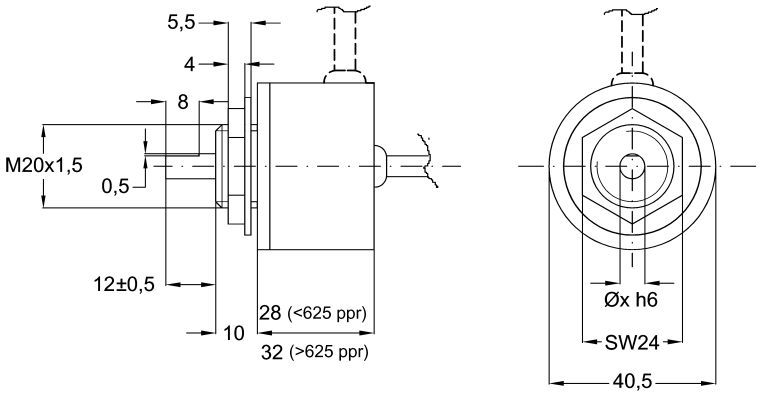
MATERIALS

Flange:	non corroding
Housing:	fibre glass epoxy resin
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

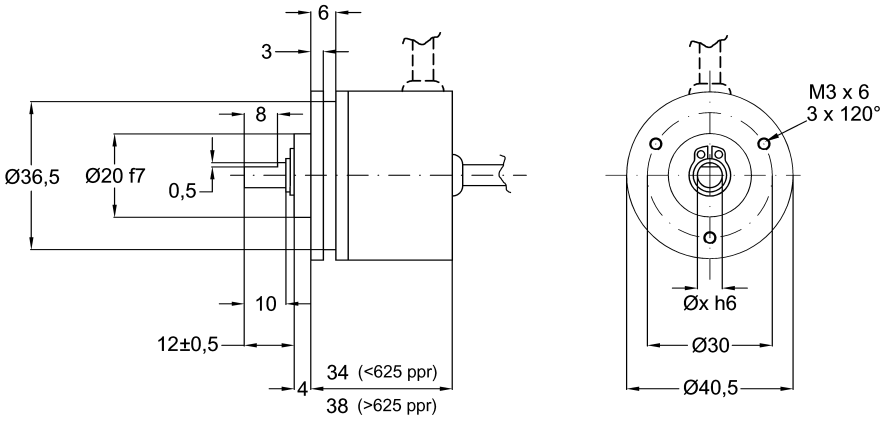
EDE9S:	9 pin DSub mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



Ø4 without flat on shaft

I40



Ø4 without flat on shaft

I41

ORDERING CODE

XXXX - X - XXXX X X X X X X

SERIES

I40 - I41	

OUTPUT CIRCUITS

NPN o.c.	N
PNP o.c.	P
Push-Pull	Y
Line Driver AD26LS31 or equiv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)

see on page 59-60

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (N, P and Y output circuits)	2
+5V÷ +30V (PP/LD universal circuit)	4

SHAFT DIAMETER

4	4 mm
6	6 mm
635	6.35 mm / 1/4"
8	8 mm

ADDITIONAL CODE (indicate only if necessary)

X X X X X

C	Inline connector DSub 9 pin
Lx	Cable length on request Ex.: L4 = 4 meters (13.2 ft) L7 = 7 meters (23.0 ft)
V	Output frequency up to 100 kHz
P	IP65 Protection (only I41)
Q	IP66 Protection shaft end (only I41)
R	Side mount cable

ROTAPULS
Incremental encoders

series **I58 • I58S**

I58

I58S

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Options:	• Operating temperature range: -40°C +100°C (-40°F, +212°F) • IP65 Protection

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial and radial):	20 N max I58 40 N max I58S
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1 Ncm (typical)
Moment of inertia:	~15 gcm^2
Bearings life:	10^9 rev. min.
Weight:	~ 0,3 kg (10,6 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate (other PPR upon request):	2-4-5-6-10-12-15-16-18-20-24-25-30-35-36-39 40-45-50-60-64-70-80-90-100-120-122 125-127-142-150-180-200-216-236-240 250-254-256-267-270-300-314-360-375 400-410-433-435-471-500-512-600-625 628-635-720-750-784-800-875-900-946 1000-1068-1099-1200-1250-1270-1440-1500 1800-2000-2250-2400-2500-3000-3600-4000 4096-5000-6000-9000-10000
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	NPN o.c., PNP o.c., Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 300 kHz max.

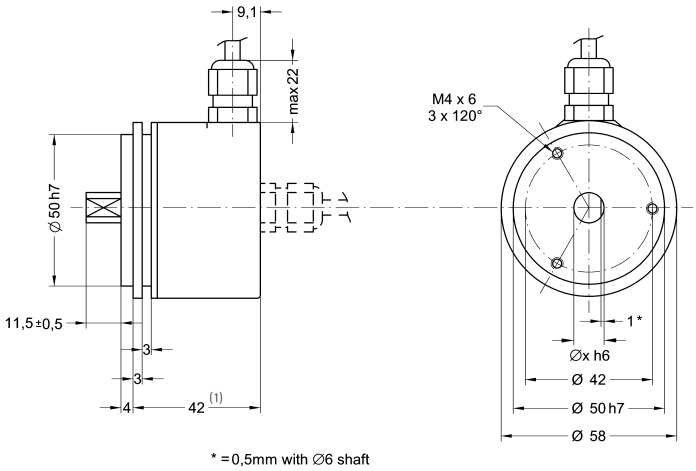
MATERIALS

Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

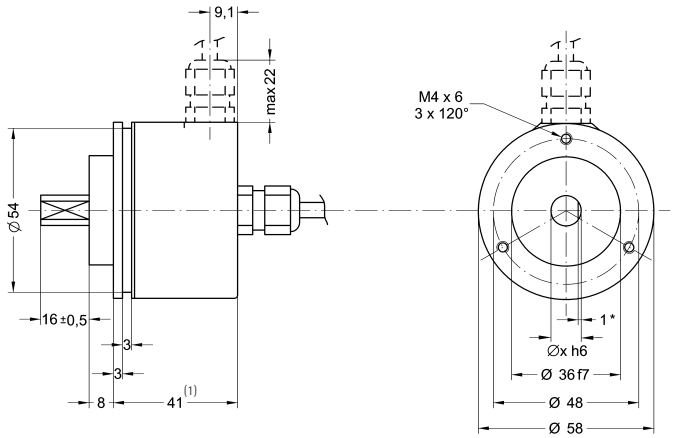
ACCESSORIES

E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
T3475001:	7 pin TUCHEL mating connector
T3635000:	12 pin TUCHEL mating connector
EPFL 121:	12 pin CONNEI mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



I58



I58S

(1) Mechanical dimensions with connector output see page 64

ORDERING CODE

XXXX - X - XXXX X | X X X X

SERIES

I58 - I58S	

OUTPUT CIRCUITS

NPN o.c.	N
PNP o.c.	P
Push-Pull	Y
Line Driver AD26LS31 or equiv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SHAFT DIAMETER

6	6 mm
8	8 mm
9.52	9.52 mm / 3/8"
10	10 mm
12	12 mm

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
		C	7 pin TUCHEL connector
		D	7 pin IP65 MIL connector
C	Complementary outputs	U	8 wires cable, 1 meter (3.3 ft)
		V	12 pin TUCHEL connector
		P	10 pin IP65 MIL connector
		Z	12 pin CONNEI connector

see on page 59-60

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V ÷ +30V (N, P and Y output circuits)	2
+5V ÷ +30V (PP/LD universal circuit)	4

ADDITIONAL CODE (indicate only if necessary)

X X X X X

Lx	Cable length on request Ex.: L4 = 4 meters (13.2 ft) L7 = 7 meters (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
W	Output frequency up to 300 kHz
P	IP65 Protection
R	Side mount cable or connector

ROTAPULS

Incremental Encoders with sinusoidal outputs

series **I58A • I58V**

I58A-I58V

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Option:	• IP65 Protection

MECHANICAL SPECIFICATIONS

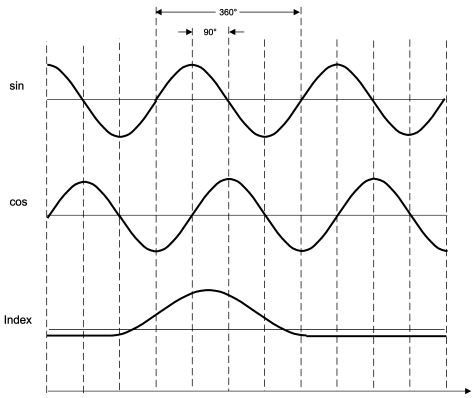
Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial and radial):	20 N max I58
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1 Ncm (typical)
Moment of inertia:	~15 gcm^2
Bearings life:	10^9 rev. min.
Weight:	~ 0,3 kg (10,6 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate (other PPR upon request):	500-512-1000-1024-1250-2000-2048-2500
Power supply:	5V ± 5%
Output signals I58A:	A,B: 11 µApp - Index: 5,5 µA (load 1 kΩ)
I58V:	A,B: 1 Vpp - Index: 0,4 V (load 120 kΩ)
Output frequency:	50 kHz max.
Input current (without load):	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except +5V version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 100 kHz max.

MATERIALS

Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes



ELECTRICAL CONNECTIONS

with normal outputs

5 wires cable (1 m, 3,3ft)

black	0 Vdc	blue	COS
red	+ Vdc	white	Index
brown	SIN		

with complementary outputs

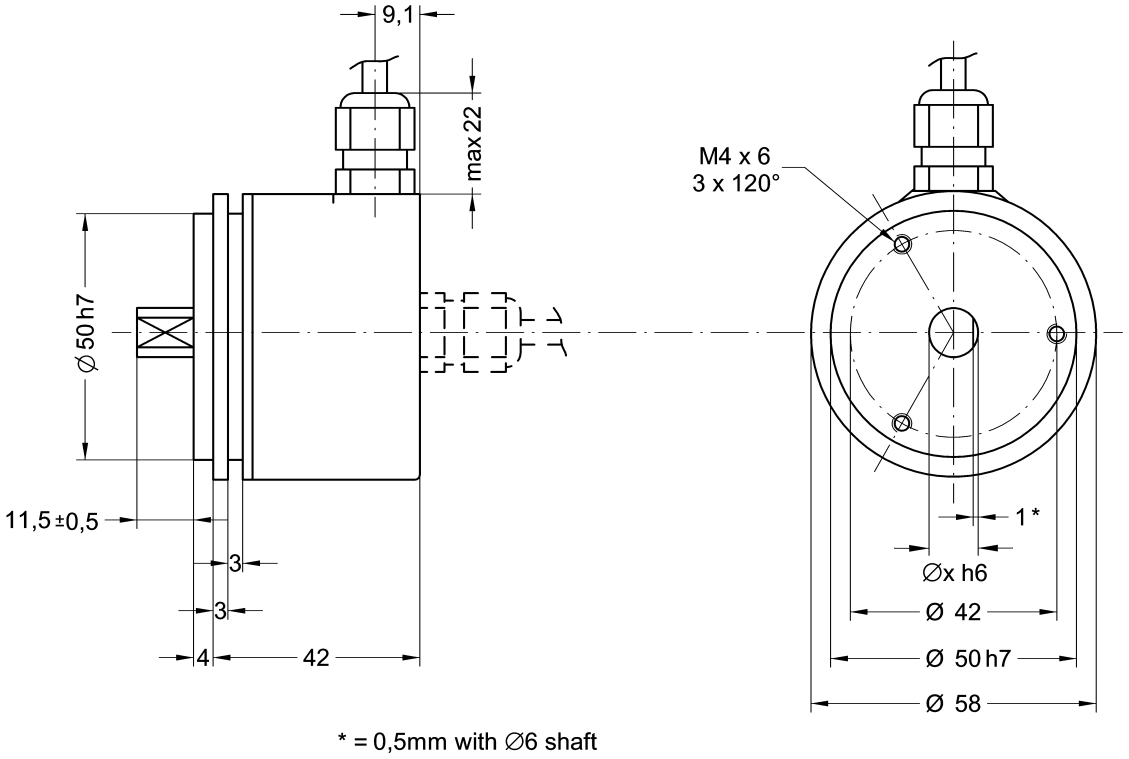
8 wires cable (1 m, 3,3ft)

yellow	SIN+	white	Index+
blue	SIN-	grey	Index-
green	COS+	red	+ Vdc
orange	COS-	black	0 Vdc

ACCESSORIES

PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



I58A-I58V

ORDERING CODE

XXXX - X - XXXX X X X X X X

SERIES

I58	

OUTPUT CIRCUITS

11 µApp (current)	A
1 Vpp (voltage)	V

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SHAFT DIAMETER

6	6 mm
8	8 mm
952	9.52 mm / 3/8"
10	10 mm
12	12 mm

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1 m. (3.3 ft)

see on page 59-60

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5 Vdc ±5%	1

ADDITIONAL CODE (indicate only if necessary)

X X X X

Lx	Cable length on request Ex.: L4 = 4 m (13.2 ft) L7 = 7 m (23.0 ft)
V	Output frequency up to 100 kHz
P	IP65 Protection
R	Side mount cable

ROTAPULS
Incremental encoders

series **I58C**

I58C

www.lika.biz
- mounting instructions

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection

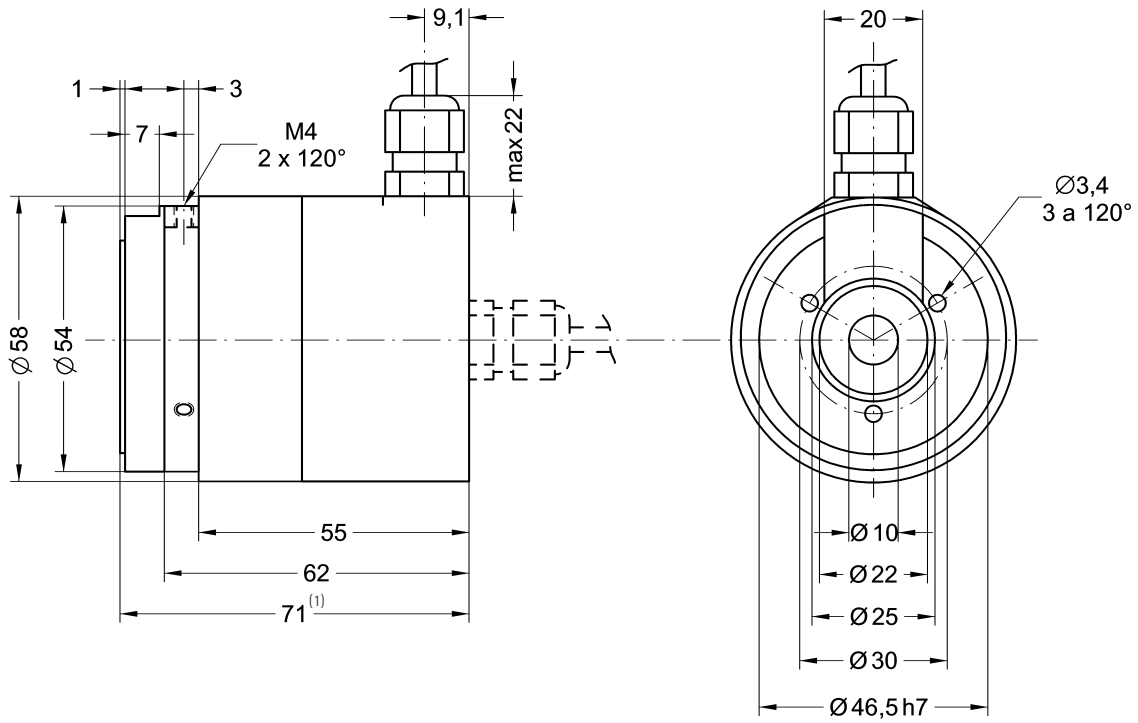
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft hollow:	Ø 6, 8, 10, 12 mm
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1 Ncm (typical)
Moment of inertia:	~15 gcm²
Bearings life:	10^9 rev. min.
Weight:	~ 0,3 kg (10,6 oz)

ELECTRICAL SPECIFICATIONS	
STD pulse rate: (other PPR upon request)	2-4-5-6-10-12-15-16-18-20-24-25-30-35-36-39 40-45-50-60-64-70-80-90-100-120-122 125-127-142-150-180-200-216-236-240 250-254-256-267-270-300-314-360-375 400-410-433-435-471-500-512-600-625 628-635-720-750-784-800-875-900-946 1000-1024-1068-1099-1200-1250-1270 1440-1500-1800-2000-2048-2250-2400-2500 3000-3600-4000-4096-5000-6000-9000-10000
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	NPN o.c., PNP o.c., Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 300 kHz max.

MATERIALS	
Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES	
E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
T3475001:	7 pin TUCHEL mating connector
T3635000:	12 pin TUCHEL mating connector
EPFL 121:	12 pin CONNEI mating connector
PAN/PGF:	flexible couplings

Specifications subject to changes without prior notice



I58C

(1) Mechanical dimensions with connector output see on page 64

ORDERING CODE

XXXX - X - XXXX X | X X X X

SERIES

I58C

OUTPUT CIRCUITS

NPN o.c.	N
PNP o.c.	P
Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SHAFT DIAMETER

6	6 mm
8	8 mm
10	10 mm
12	12 mm

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
		C	7 pin connector TUCHEL
		D	7 pin IP65 MIL connector
C	Complementary outputs	U	8 wires cable, 1 m. (3.3 ft)
		V	12 pin TUCHEL connector
		P	10 pin IP65 MIL connector
		Z	12 pin CONNEI connector

see on page 59-60

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (N, P and Y output circuits)	2
+5V÷+30V (PP/LD universal circuit)	4

ADDITIONAL CODE (indicate only if necessary)

X X X X X

Lx	Cable length on request Ex.: L4 = 4 m (13.2 ft) L7 = 7 m (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
W	Output frequency up to 300 kHz
P	IP65 Protection
R	Side mount cable or connector

ROTAPULS
Incremental encoders

series **I65 • IT65**

I65

IT65

ENVIROMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C+70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP66 Protection shaft end (torque 2,5 Ncm and 3000 rpm max.)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial and radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1,5 Ncm (typical)
Moment of inertia:	~ 50 gcm^2
Bearings life:	400x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max)
Weight:	~ 0,3 kg (10,6 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate: (other PPR upon request)	2-4-5-6-10-12-15-16-18-20-24-25-30-35-36-39 40-45-50-60-64-70-80-90-100-120-122 125-127-142-150-180-200-216-236-240 250-254-256-267-270-300-314-360-375 400-410-433-435-471-500-512-600-625 628-635-720-750-784-800-875-900-946 1000-1024-1068-1099-1200-1250-1270 1440-1500-1800-2000-2048-2250-2400-2500 3000-3600-4000-4096-5000-6000-9000-10000
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	NPN o.c., PNP o.c., Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 300 kHz max.

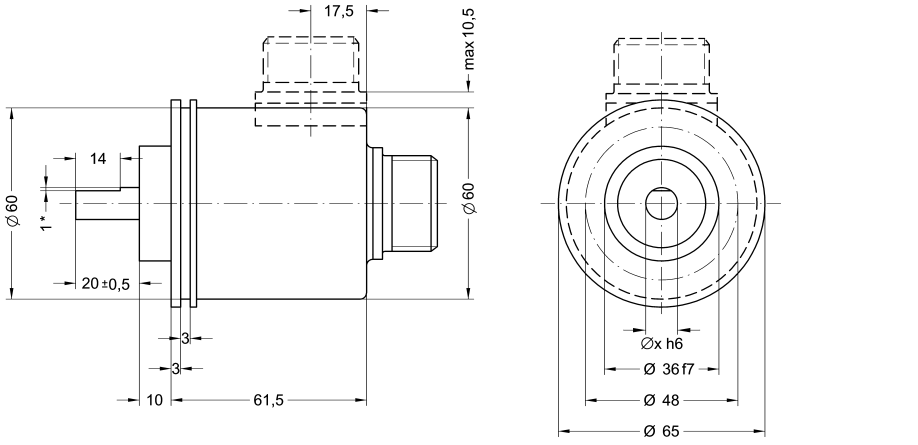
MATERIALS

Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

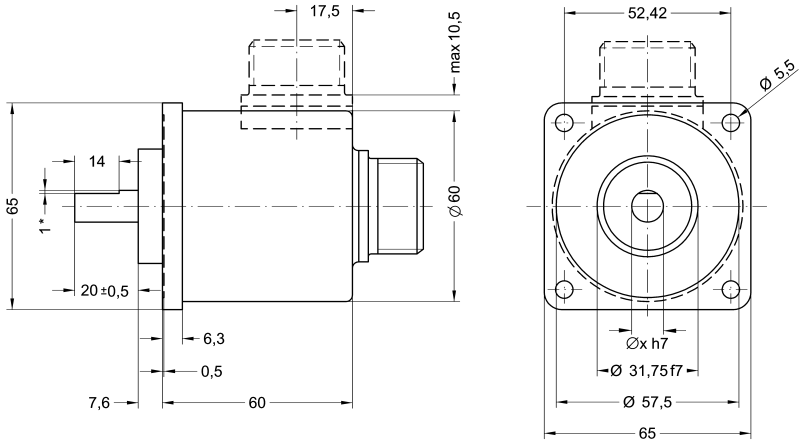
E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



* = 0,5mm with Ø6 shaft

I65



* = 0,5mm with Ø6 shaft

IT65

ORDERING CODE

XXXX - X - XXXX X X X X X X

SERIES

I65 - IT65	

OUTPUT CIRCUITS

NPN o.c.	N
PNP o.c.	P
Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (N, P and Y output circuits)	2
+5V÷+30V (PP/LD universal circuit)	4

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
		D	7 pin IP65 MIL connector
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)
		P	10 pin IP65 MIL connector

see on page 59-60

SHAFT DIAMETER

B	6 mm
C	8 mm
D	9.52 mm / 3/8"
E	10 mm
F	12 mm

ADDITIONAL CODE (indicate only if necessary)

X X X X X

Lx	Cable length on request Ex.: L4 = 4 m (13.2 ft) L7 = 7 m (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
W	Output frequency up to 300 kHz
Q	IP66 Protection shaft side
R	Side mount cable or connector

ROTAPULS
Incremental encoders

series **I105**

I105

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C+70°C (-4°F +158°F)
Storage temperature range:	-20°C+80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 protection

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 10 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1 Ncm (typical
Moment of inertia:	~25 gcm^2
Bearings life:	10^9 rev. min.
Weight:	~ 0,9 kg (31,7 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate: (other PPR upon request)	16384-18000
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	100 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 300 kHz max.

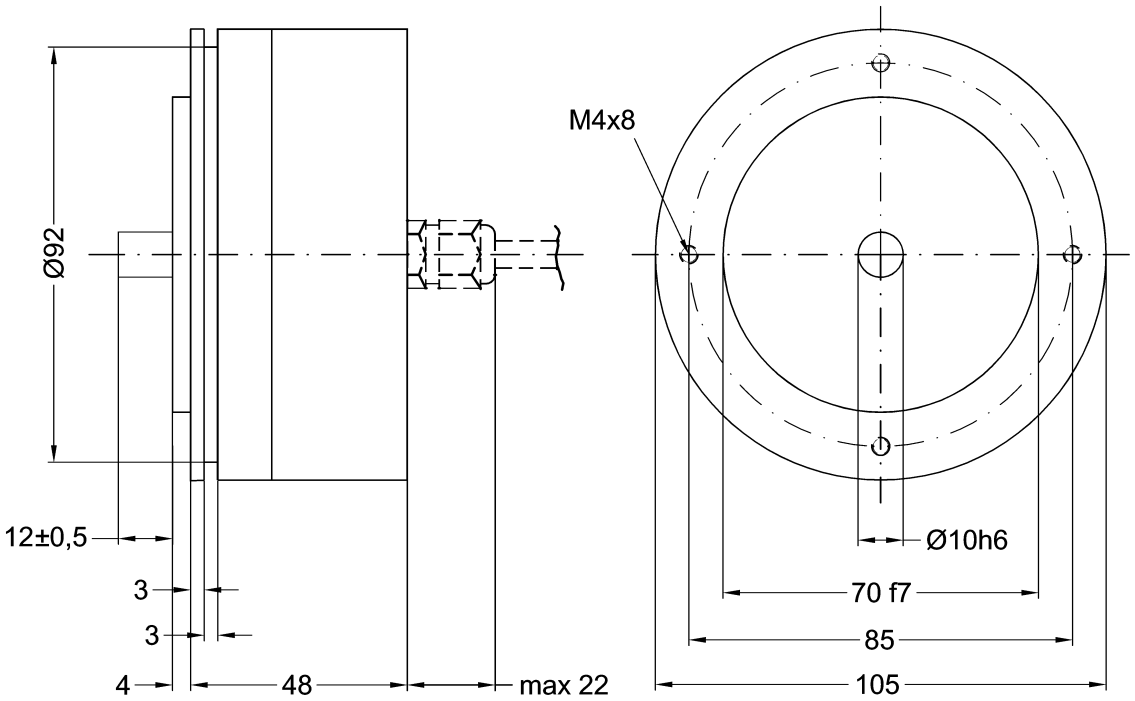
MATERIALS

Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

EPFL 121:	12 pin CONNEI mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



I105

ORDERING CODE

XXXX - X - XXXXX X | X X X X

SERIES

I105	

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

SHAFT DIAMETER

10	10 mm

ELECTRICAL CONNECTIONS

C	Complementary outputs	U	8 wires cable, 1 m. (3.3 ft)
		Z	12 pin CONNEI connector

see on page 59-60

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuit)	2
+5V÷ +30V (PP/LD universal circuit)	4

ADDITIONAL CODE (indicate only if necessary)

X X X X

Lx	Cable length on request Ex.: L4 = 4 m (13.2 ft) L7 = 7 m (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
W	Output frequency up to 300 kHz
P	IP65 Protection

ROTAPULS
Incremental encoders

series **ICS**

ICS

www.lika.biz
- application info
- pinion + rack drawing

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65

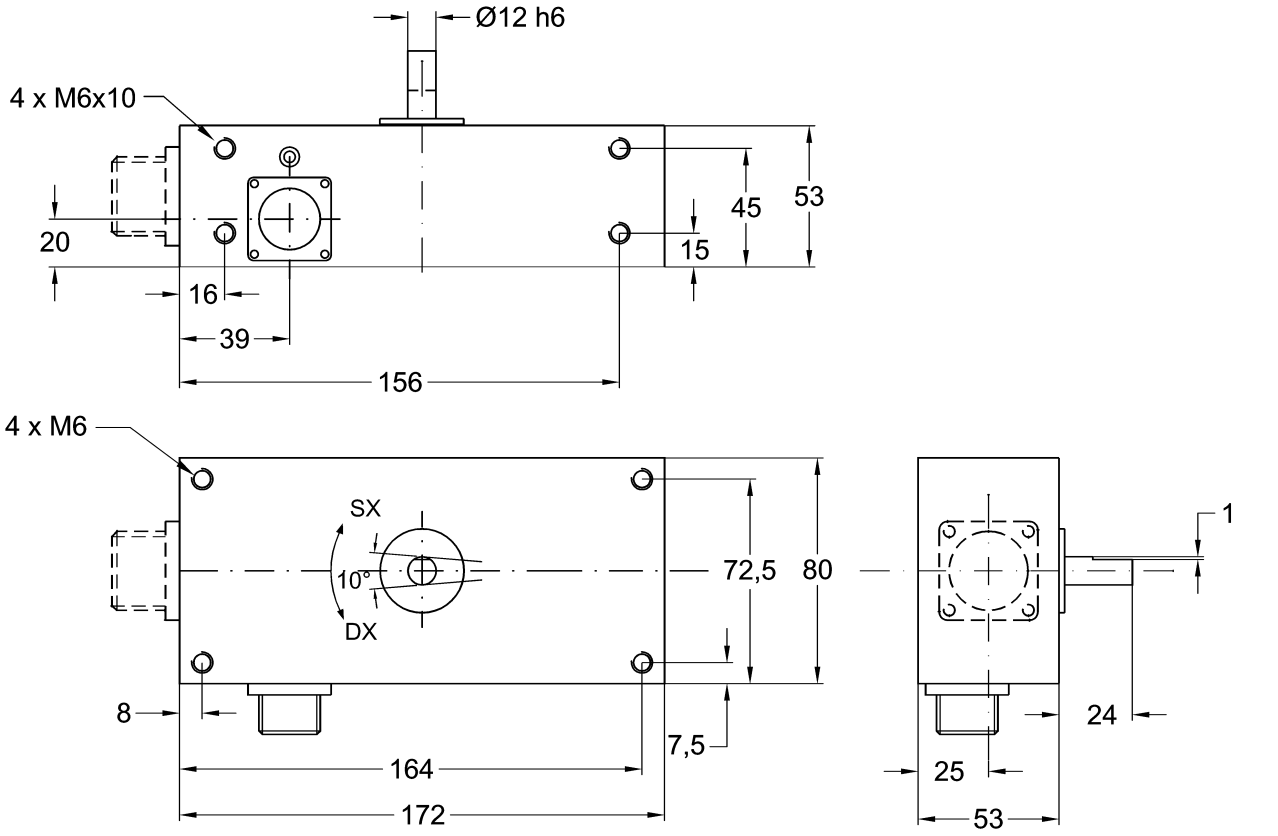
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft:	Ø 12 mm
Shaft loading (axial and radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 3 Ncm (typical)
Moment of inertia:	~250 gcm^2
Bearings life:	400x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max)
Weight:	~ 1,2 kg (42,3 oz)

ELECTRICAL SPECIFICATIONS	
STD pulse rate (other PPR upon request):	2-4-5-6-10-12-15-16-18-20-24-25-30-35-36-39 40-45-50-60-64-70-80-90-100-120-122-125-127 142-150-180-200-216-236-240-250-254-256 267-270-300-314-360-375-400-410-433-435 471-500-512-600-625-628-635-720-750-784 800-875-900-946-1000-1024-1068
Pulses/mm:	to be result of pinion and rack ratio
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	NPN o.c., PNP o.c., Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	60 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.

MATERIALS	
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES	
E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
LKM-1225:	Z40 pinion
LKM-1224:	M0,79 rack

Specifications subject to changes without prior notice



ICS

ORDERING CODE

ADDITIONAL CODE (indicate only if necessary)

XXXX - X - XXXX X X X X X X X X

SERIES

ICS	

OUTPUT CIRCUITS

NPN o.c.	N
PNP o.c.	P
Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

SHAFT DIAMETER

F	12 mm

ELECTRICAL CONNECTIONS

N	Normal output	D	7 pin IP65 MIL connector
C	Complementary outputs	P	10 pin IP65 MIL connector (only radial)

see on page 59-60

R	Side mount connector

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (N, P and Y output circuits)	2
+5V÷ +30V (PP/LD universal circuit)	4

AT REST POSITION

DX	Right (see drawing)
SX	Left (see drawing)

ROTAPULS
Incremental encoders

series **CK46**

CK46

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (3000 rpm max, torque 1 Ncm)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft hollow:	Ø 6, 6.35 mm
Shaft loading (axial and radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 0,5 Ncm (typical)
Moment of inertia:	~20 gcm^2
Bearings life:	10^9 rev. min.
Weight:	~ 0,2 kg (7,0 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate (other PPR upon request):	1-5-8-10-15-20-25-30-32-40-50-60-64-72-84-90 100-125-127-150-176-180-200-250-300-314-320 360-400-500-540-600-625-635-720-900-1000 1021-1024-1080-1200-1250-1440-1500-1600 2000-2500-3000-3600
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	60 kHz max.
Input current:	50 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.

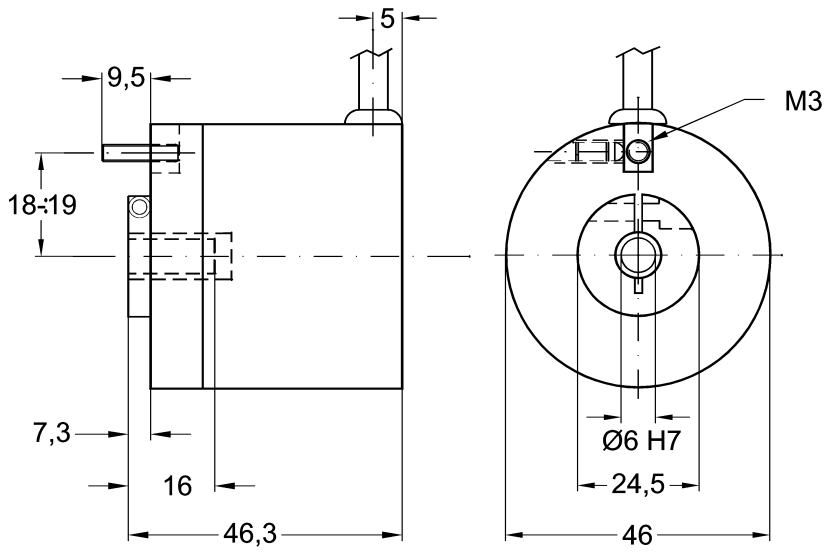
MATERIALS

Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

EDE9S:	9 pin DSub mating connector

Specifications subject to changes without prior notice



CK46

ORDERING CODE

XXXX - X - XXXX X X X X X X

SERIES

CK46	

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SHAFT DIAMETER

6	6 mm
6.35	6.35 mm / 1/4"

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)

see on page 59-60

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuit)	2
+5V÷ +30V (PP/LD universal circuit)	4

ADDITIONAL CODE (indicate only if necessary)

X X X X

C	Inline connector DSub 9 pin
Lx	Cable length on request Ex.: L4 = 4 m (13.2 ft) L7 = 7 m (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
P	IP65 Protection

ROTAPULS
Incremental encoders

series **C50**

C50

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP54
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft hollow:	Ø 6, 6.35, 8, 9.52, 10 mm
Shaft loading (axial and radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 0,8 Ncm (typical)
Moment of inertia:	~ 20 gcm²
Bearings life:	10^9 rev. min.
Weight:	~ 0,1 kg (3,5 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate: (other PPR upon request)	6-10-12-15-25-36-40-45-50-60-80-90-100-180 200-250-256-300-360-400-500-512-900-1000 1024-1500-2000-2048-2500
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version)
Optoelectronic life:	100.000 hrs min.

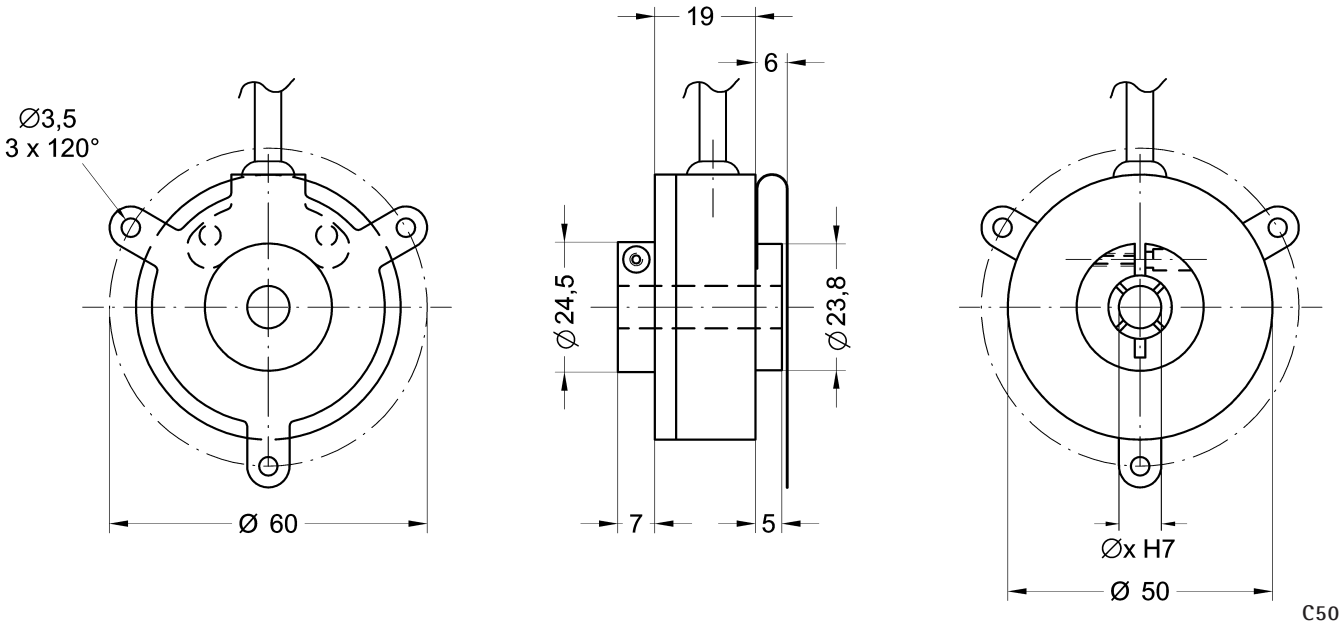
MATERIALS

Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

EDE9S:	9 pin DSub mating connector

Specifications subject to changes without prior notice



C50

ORDERING CODE

XXXX - X - XXXX X | X X X X

SERIES

C50	

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SHAFT DIAMETER

6	6 mm
6.35	6.35 mm / 1/4"
8	8 mm
9.52	9.52 mm / 3/8"
10	10 mm

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)

see on page 59-60

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuit)	2
+5V÷+30V (PP/LD universal circuit)	4

ADDITIONAL CODE (indicate only if necessary)

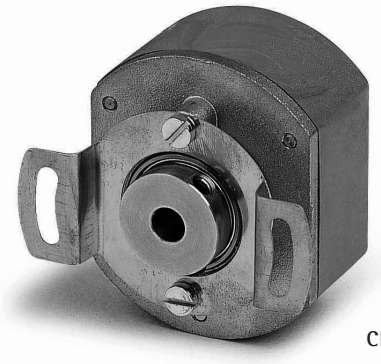
X X X X

C	Inline connector DSub 9 pin
Lx	Cable length on request Ex.: L4 = 4 m (13.2 ft) L7 = 7 m (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
P	IP65 Protection

ROTAPULS

Feedback encoders for brushless motors

series **CB50**



CB50

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +100°C (-4°F + 212°F)
Storage temperature range:	-25°C+100°C (-13°F + 212°F) (98% R.H.without condensation)
Protection:	IP20

MECHANICAL SPECIFICATIONS

Dimension:	see drawing
Shaft hollow:	Ø 6, 6.35, 8, 9.52, 10 mm
Shaft loading (axial and radial):	20 N max.
Shaft rotational speed:	6000 rpm
Weight:	0,1 Kg (3,5 oz)
Starting torque at 20°C	0,8 Ncm (typical)
Moment of inertia	~20 gcm^2
Misalignment	± 0,3 mm axial ± 0,06 mm radial ± 0,2° mm angular
Bearings life:	$2x10^9$ rev/min.
Weight:	~ 0,1 Kg (3,5 oz)

ELECTRICAL SPECIFICATIONS

Pulse rate - Poles (other PPR upon request):	1024/8-2000/4-2000/6-2048/6-2048/8-2500/8
With U, V, W commutations signals	4 - 6 - 8 poles
Power supply:	+5V ±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Input current:	70 mA max.
Frequency response:	200 kHz max.
Protection:	against inversion of polarity (except +5Vdc version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.

MATERIALS

Flange:	non corroding
Housing:	plastic
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ELECTRICAL CONNECTIONS

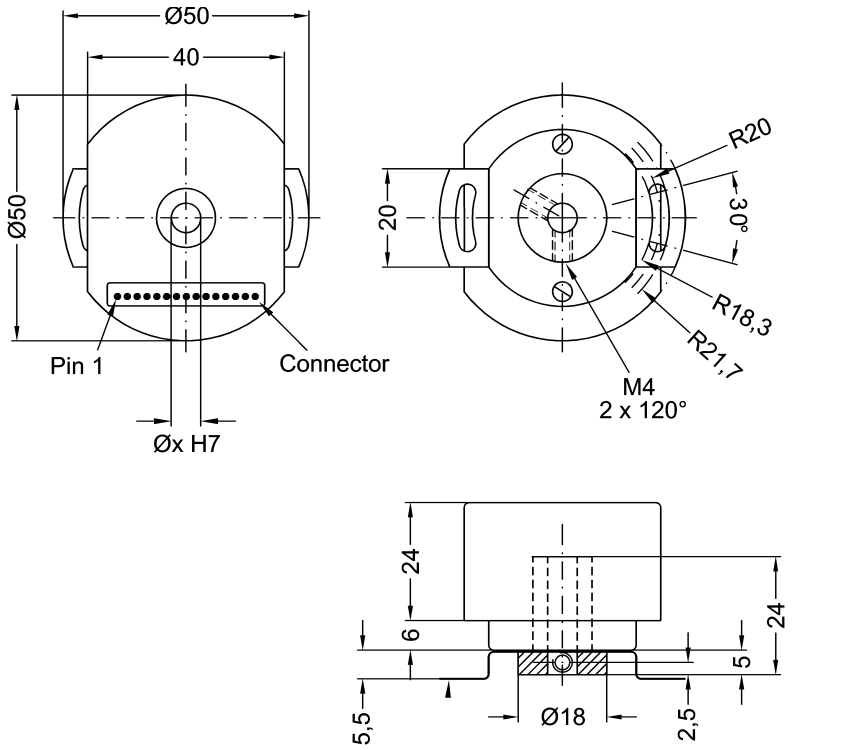
15 pin PCB connector

1	0 Vdc	9	U
2	+ Vdc	10	V
3	A	11	W
4	B	12	/U
5	0	13	/V
6	/A	14	/W
7	/B	15	CASE
8	/0		

ACCESSORIES

EC-CB50:	mating connector with cable (30 cm/11.8 in.)

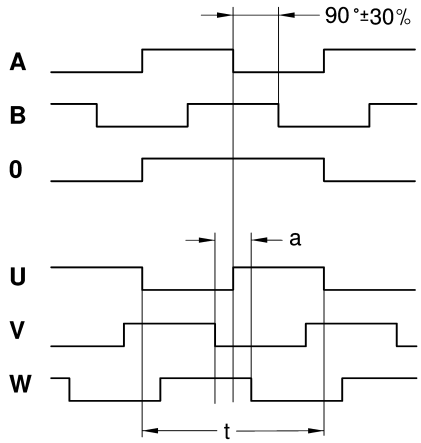
Specifications subject to changes without prior notice



CB50

OUTPUT PHASE SHIFT

CCW ROTATION (seen from shaft side)



MECHANICAL ANGLES

N° of poles	a	t
4	30° ± 1°	180°
6	20° ± 1°	120°
8	15° ± 1°	90°

ORDERING CODE

XXXX - X - XXXX / X X X

SERIES

CB50

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

N° POLES

4	4 poles
6	6 poles
8	8 poles

SHAFT DIAMETER

6	6 mm
6.35	6.35 mm / 1/4"
8	8 mm
9.52	9.52 mm / 3/8"
10	10 mm

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuit)	2
+5V÷ +30V (PP/LD universal circuit)	4

PULSE RATE (PPR)

See electrical specifications

ROTAPULS
Incremental Encoders

series C58 • C59 • C60

C58-C59-C60

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Option:	• IP65 Protection (3000 rpm max, torque 1 Ncm)

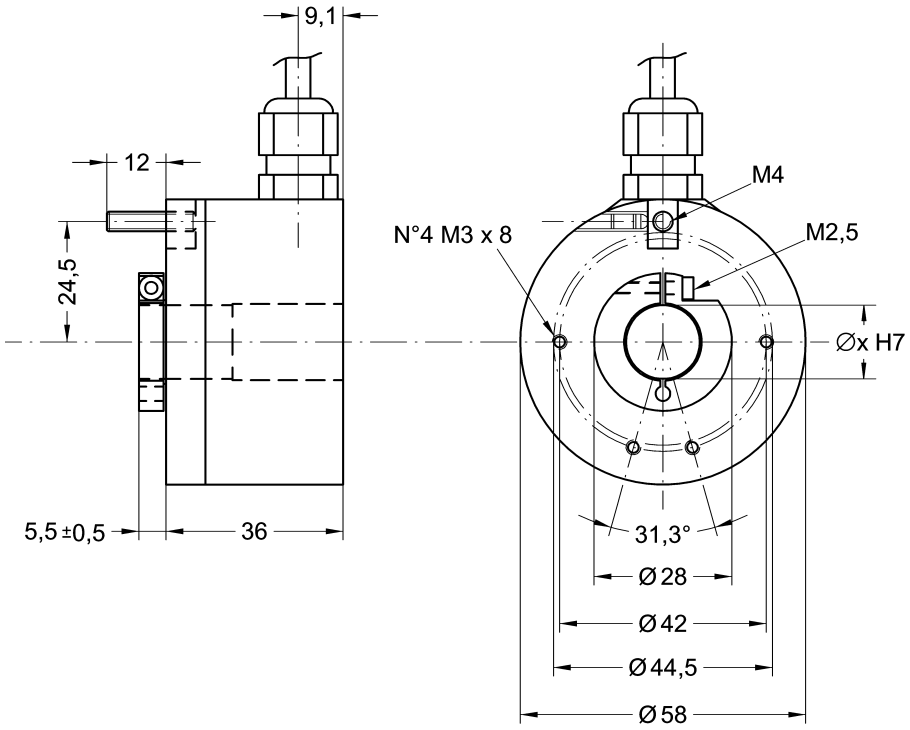
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft hollow:	Ø 14, 15 mm
Shaft loading (axial and radial):	30 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1,5 Ncm (typical)
Moment of inertia:	~30 gcm²
Bearings life:	10^9 rev. min.
Weight:	~ 0,3 kg (10,6 oz)

ELECTRICAL SPECIFICATIONS	
STD pulse rate: (other PPR upon request)	2-4-5-10-12-15-16-18-20-24-25-30-35-36-39-40 45-50-60-64-70-80-90-100-120-122-125-142 150-180-200-236-250-267-270-300-314-360-400 410-433-435-471-500-600-625-628 635-720-784 800-875 900-946-1000-1024
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	60 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.

MATERIALS	
Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES	
EDE9S:	9 pin DSub mating connector
BR1:	Reducing sleeves

Specifications subject to changes without prior notice



C58

ORDERING CODE

XXXX	-	X	-	XXXX	X	X	X	X	X

SERIES

C58 - C59* - C60*

* Dimensional drawing on page 65

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuits)	2
+5V÷ +30V (PP/LD universal circuit)	4

SHAFT DIAMETER

14	14 mm
15	15 mm

Reducing sleeves see on page 75

ADDITIONAL CODE (indicate only if necessary)

X	X	X

C	Inline connector DSub 9 pin
Lx	Cable length on request Ex.: L4 = 4 meters (13.2 ft) L7 = 7 meters (23.0 ft)
P	IP65 Protection

ROTAPULS
Incrementals Encoders

series **C58A • C58R**

C58A - C58R

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C+70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Options:	• IP65 Protection (3000 rpm max, torque 1 Ncm)

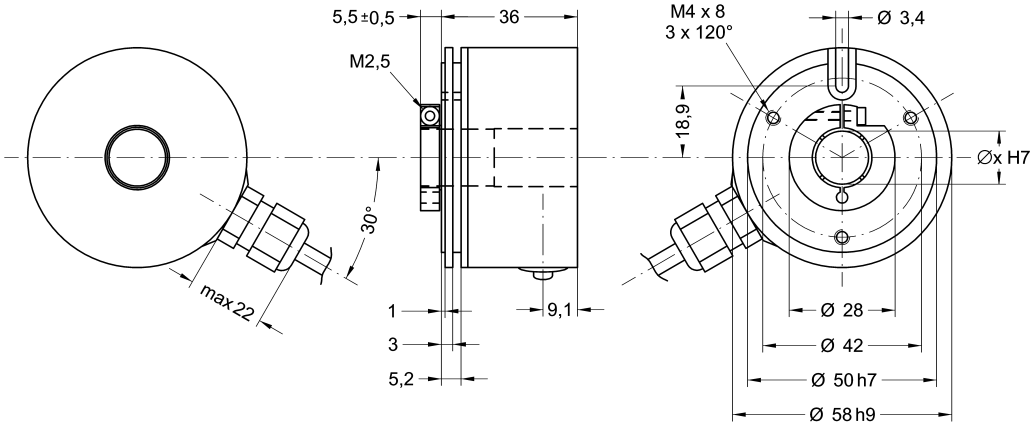
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft hollow:	Ø 14, 15 mm
Shaft loading (axial and radial):	30 N max
Shaft rotational speed:	6000 rpm max
Starting torque at 20°C:	≤ 1,5 Ncm (typical)
Moment of inertia:	~30 gcm^2
Bearings life:	10^9 rev. min.
Weight:	~ 0,4 kg (14,1 oz)

ELECTRICAL SPECIFICATIONS	
STD pulse rate (other PPR upon request):	6-10-12-15-25-36-40-45-50-60-80-90-100-180 200-250-256-300-360-400-500-512-900-1000 1024-1500-2000-2048-2500
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.
Option:	output freq. up to 300 KHz

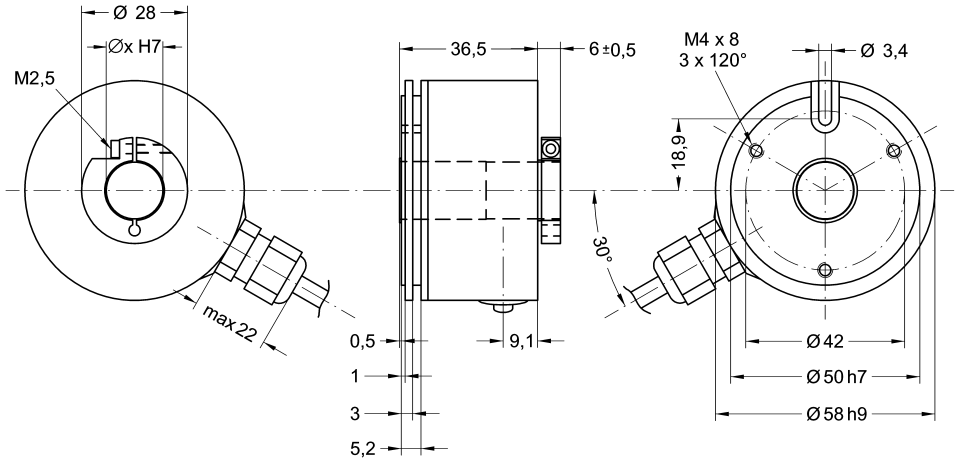
MATERIALS	
Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES	
EDE9S:	9 pin DSub mating connector
BR1:	Reducing sleeves

Specifications subject to changes without prior notice



C58A



C58R

ORDERING CODE

XXXX - X - XXXX X X X X X X

SERIES

C58A - C58R	

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuits)	2
+5V÷+30V (PP/LD universal circuit)	4

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)

see on page 59-60

SHAFT DIAMETER

14	14 mm
15	15 mm

Reducing sleeves see on page 75

ADDITIONAL CODE (indicate only if necessary)

X X X X X

C	Inline connector DSub 9 pin
Lx	Cable length on request Ex.: L4 = 4 m (13.2 ft) L7 = 7 m (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
W	Output frequency up to 300 KHz
P	IP65 Protection

ROTAPULS
Incrementals Encoders

series **CK58 • CK59 • CK60**

CK58-CK59-CK60

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C+70°C (-4°F +158°F)
Storage temperature range:	-20°C+80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (3000 rpm max, torque 1 Ncm)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft hollow:	Ø 14, 15 mm
Shaft loading (axial and radial):	30 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1,5 Ncm (typical)
Moment of inertia:	~30 gcm²
Bearings life:	10^9 rev. min.
Weight:	~ 0,4 kg (14,1 oz)

ELECTRICAL SPECIFICATIONS

STD pulse rate (other PPR upon request):	2-4-5-6-10-12-15-16-18-20-24-25-30-35-36-39 40-45-50-60-64-70-80-90-100-120-122 125-127-142-150-180-200-216-236-240-250 254-256-267-270-300-314-360-375-400-410 433-435-471-500-512-600-625-628-635-720 750-784-800-875-900-946-1000-1024-1068 1099-1200-1250-1270-1440-1500-1800-2000 2048-2250-2400-2500-3000-3600-4000-4096 5000-6000-9000-10000
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	NPN o.c., PNP o.c., Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 300 kHz max.

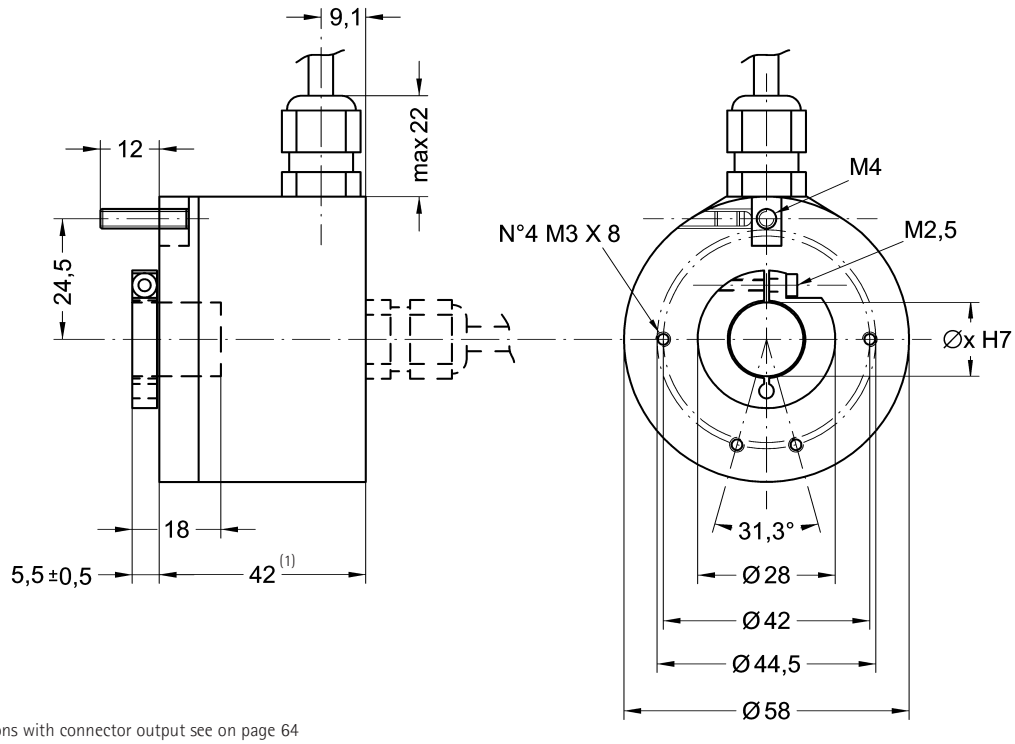
MATERIALS

Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
EDE9S:	9 pin DSub mating connector
BR1:	Reducing sleeves

Specifications subject to changes without prior notice



(1) Mechanical dimensions with connector output see on page 64

CK58

ORDERING CODE

XXXX - X - XXXX X X X X X X

SERIES

CK58 - CK59* - CK60*

* Dimensional drawing on page 75

OUTPUT CIRCUITS

NPN o.c.	N
PNP o.c.	P
Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SHAFT DIAMETER

14	14 mm
15	15 mm

Reducing sleeves see on page 75

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
		D	7 pin IP65 MIL connector
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)
		P	10 pin IP65 MIL connector

see on page 59-60

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (N, P and Y output circuits)	2
+5V÷ +30V (PP/LD universal circuit)	4

ADDITIONAL CODE (indicate only if necessary)

X X X X X X

C	Inline connector DSub 9 pin
Lx	Cable length on request Ex.: L4 = 4 meters (13.2 ft) L7 = 7 meters (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
W	Output frequency up to 300 kHz
P	IP65 Protection
R	Side mount cable or connector

ROTAPULS
Incrementals Encoders

series **C80**

C80

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP64
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (3000 rpm max, torque 2 Ncm)

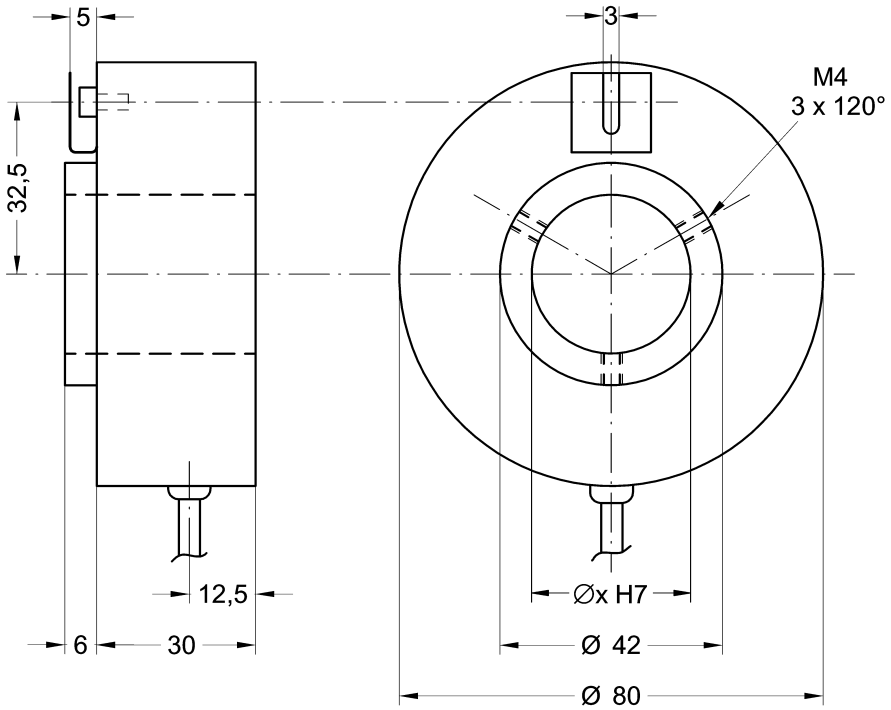
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft hollow:	Ø 6 ÷ 30 mm
Shaft loading (axial and radial):	30 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1,5 Ncm (typical)
Moment of inertia:	~30 gcm²
Bearings life:	10^9 rev. min.
Weight:	~ 0,4 kg (14,1 oz)

ELECTRICAL SPECIFICATIONS	
STD pulse rate: (other PPR upon request)	12-100-200-360-400-500-1000-1024-2000-2048 (2000 and 2048 without index pulse)
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	70 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.

MATERIALS	
Flange:	non corroding
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES	
EDE9S:	9 pin DSub mating connector

Specifications subject to changes without prior notice



C80

ORDERING CODE

XXXX - X - XXXX X X X X X X

SERIES

C80	

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications	

SHAFT DIAMETER

6	6 mm
...	...
30	30 mm

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)

see on page 59-60

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuit)	2
+5V÷ +30V (PP/LD universal circuit)	4

ADDITIONAL CODE (indicate only if necessary)

X X X X

C	Inline connector DSub 9 pin
Lx	Cable length on request Ex.: L4 = 4 m (13.2 ft) L7 = 7 m (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
P	IP65 Protection

ROTAPULS
Incremental Encoders

series **C81**

C81

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP54
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (2000 rpm max, torque 2 Ncm)

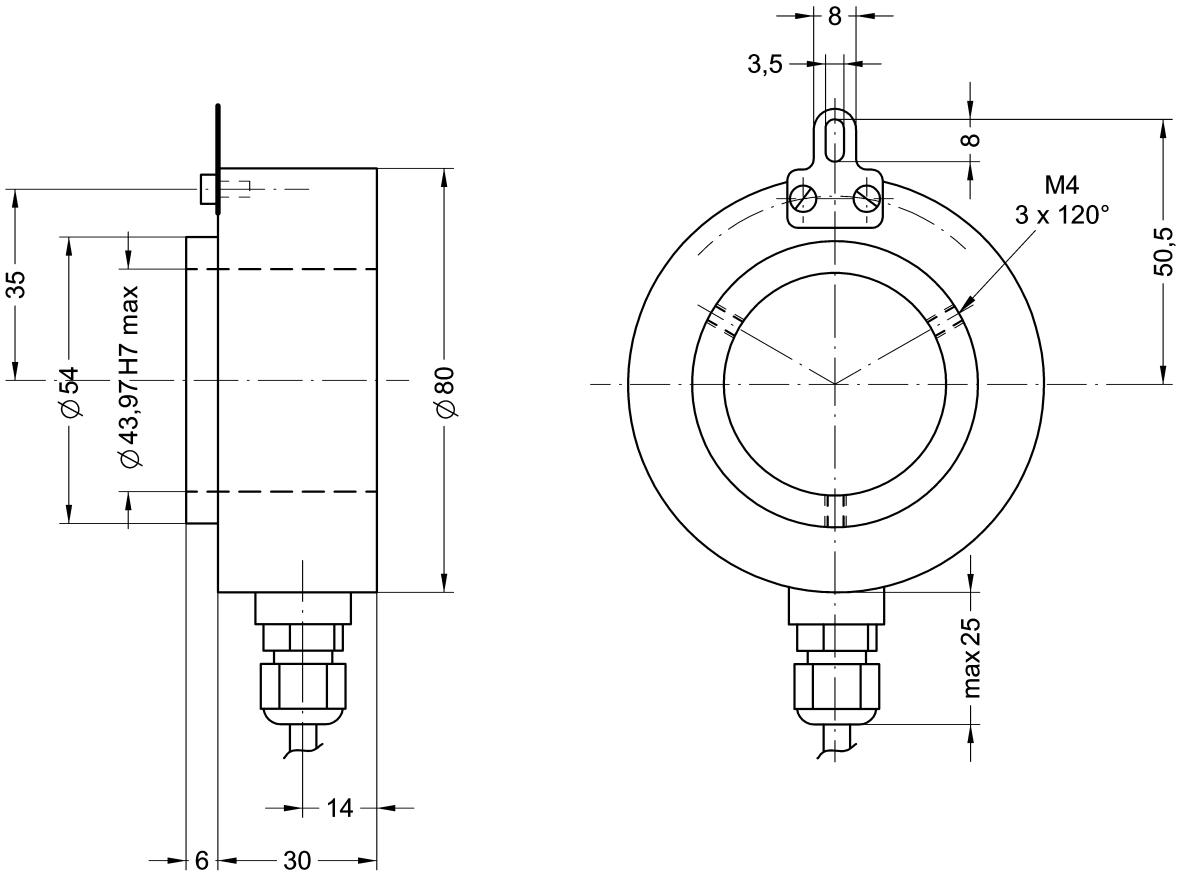
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft hollow:	Ø 20 ÷ 43,97 mm
Shaft loading (axial and radial):	60 N max.
Shaft rotational speed:	2000 rpm@70°C (158°F)/IP54 3000 rpm@100°C (212°F)/IP54 1500 rpm@70°C (158°F)/IP65 2000 rpm@100°C (212°F)/IP65
Starting torque at 20°C:	4 ÷12 Ncm (typical)
Moment of inertia:	100 ÷ 450 gcm^2
Misalignment:	± 0,3 mm radial ± 0,2 mm axial
Bearings life:	10^9 rev. min.
Weight:	0,3 ÷ 0,6 kg (10,6-21,2 oz)

ELECTRICAL SPECIFICATIONS	
STD pulse rate (other PPR upon request):	12-300-500-1024-2000-2048-2500
Power supply:	+5V±5%, +10V +30V,+5V +30V
Output circuits:	Push-Pull, Line Driver, PP/LD
Output current (per channel):	40 mA max.
Output frequency:	100 kHz max.
Input current:	40 mA max.
Protection:	against inversion of polarity (except +5V version) outputs are protected against short-circuit (except Line Driver version)
Optoelectronic life:	100.000 hrs min.
Option:	• Output freq. 200 kHz max.

MATERIALS	
Flange:	steel
Housing:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES	
EDE9S:	9 pin DSub mating connector

Specifications subject to changes without prior notice



C81

ORDERING CODE

XXXX	-	X	-	XXXX	X	X	X	X	X

SERIES

C81

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver AD26LS31 or eqv.	L
PP/LD universal circuit	H

PULSE RATE (PPR)

See electrical specifications

OUTPUT SIGNALS CONFIGURATION

Bidirectional	B
Bidirectional with index pulse	Z

SUPPLY VOLTAGE VS OUTPUT CIRCUIT

+5V±5% (L output circuit)	1
+10V÷ +30V (Y output circuits)	2
+5V÷+30V (PP/LD universal circuit)	4

ELECTRICAL CONNECTIONS

N	Normal output	F	5 wires cable, 1m. (3.3 ft)
C	Complementary outputs	U	8 wires cable, 1m. (3.3 ft)

see on page 59-60

SHAFT DIAMETER

20	20 mm
...	...
44	43,97 mm

ADDITIONAL CODE (indicate only if necessary)

X	X	X	X	X

C	Inline connector DSub 9 pin
Lx	Cable length on request Ex.: L4 = 4 m. (13.2 ft) L7 = 7 m. (23.0 ft)
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
W	Output frequency up to 200 kHz
P	IP65 Protection

ROTACOD
Absolute single turn encoders

series **AS5**

AS5

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

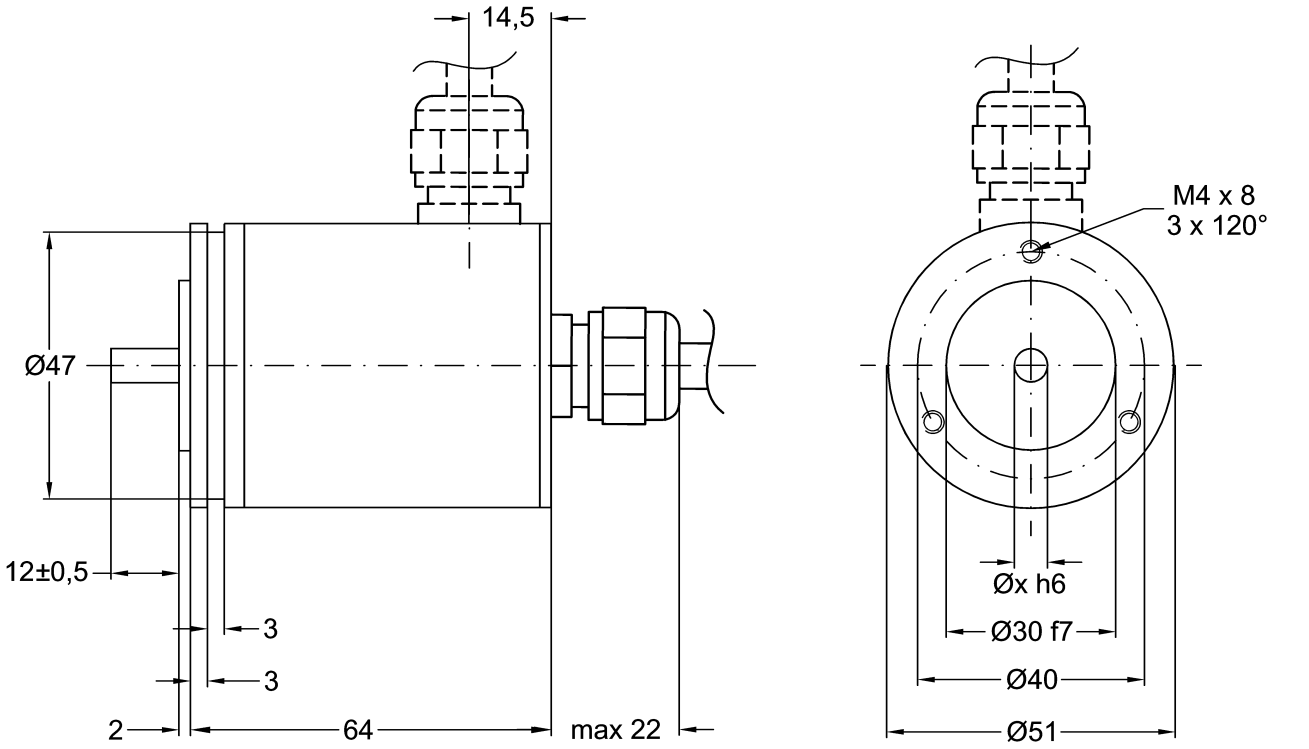
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft:	Ø 6, 8, 10, 12 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Moment of inertia:	~80 gcm^2
Bearing life:	400x10^{6}rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Weight:	~0,3 kg (10,6 oz)
Electrical connections:	16 wires cable, 1 m. (3.3 ft)
Option:	• Inline connector EDA 15P, EDB 25P, ES19MLPV

ELECTRICAL SPECIFICATIONS	
STD codes	Gray, Binary
Power supply:	+10V +30V
Power consumption:	1,2 W
Output circuits:	NPN o.c., PNP o.c., Push-Pull
Output current:	40 mA max.
Output frequency:	60 kHz max.
Accuracy:	± 40% LSB
Protection:	Protected against inversion of polarity, Push-Pull protected against short-circuit
Optoelectronic life:	100.000 h min.
Options:	• LATCH output • TRI-STATE output • Electronic parity bit

MATERIALS	
Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES	
E19MLS:	19 pin MIL mating connector
EDB 25S:	25 pin DSub mating connector
EDA 15S:	15 pin DSub mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



AS5

ORDERING CODE

XXX	XX	/	X	X	-	XX

SERIES

AS5

CODE

Counts per revolution 1 - 2048 (see on page 66)

OUTPUT CODE

Binary	B
Gray	G

OUTPUT CIRCUITS

N	NPN o.c.
P	PNP o.c.
Y	Push-Pull
	on request
L	LATCH (NPN)
M	LATCH (PNP)
H	LATCH (Push-Pull)
T	TRI-STATE (NPN)
U	TRI-STATE (PNP)
E	LATCH+TRI-STATE (PNP)
F	LATCH+TRI-STATE (NPN)

SHAFT DIAMETER

6	6 mm
8	8 mm
10	10 mm
12	12 mm

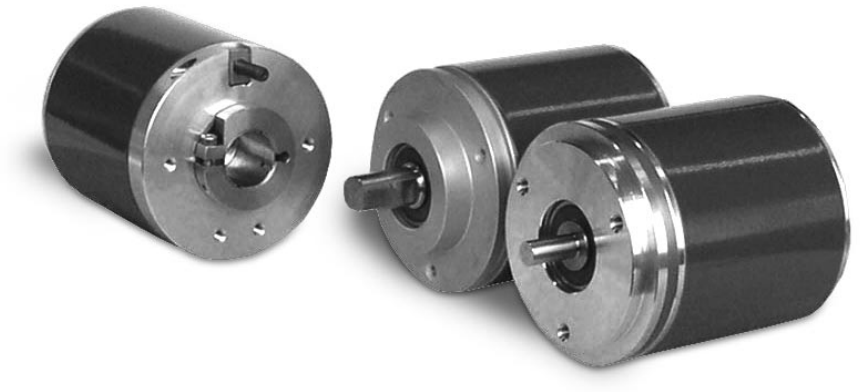
ADDITIONAL CODE (indicate only if necessary)

-	X	X	X	X	X

Z	EDA 15P inline connector
W	EDB 25P inline connector
P	ES19MLPV inline connector
Lx	Cable length on request
R	Side mount cable
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
B	Parity Bit

ROTACOD
Absolute single turn encoders

series **AS58 • AS58S • ASC58**



AS58-AS58S-ASC58

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12, 14, 15 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Moment of inertia:	~95 gcm^2
Bearing life:	400x10^{6}rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Weight:	~0,3 kg (10,6 oz)
Electrical connections (see on page 62):	E19MLP, E10MLP, E7MLP MIL connector
Options: (see on page 62)	• EDA 15P connector • EDB 25P connector • cable output 1 m

ELECTRICAL SPECIFICATIONS

STD codes	Gray, Binary
Power supply:	+10V +30V
Power consumption:	1,2 W
Output circuits:	NPN o.c., PNP o.c., Push-Pull, SSI
Output current:	40 mA max.
Output frequency:	60 kHz max.
Accuracy:	± 30% LSB
Protection:	Protected against inversion of polarity, Push-Pull protected against short-circuit.
Optoelectronic life:	100.000 h min.
Options:	• LATCH output • TRI-STATE output • Electronic parity bit • Electronic zero setting

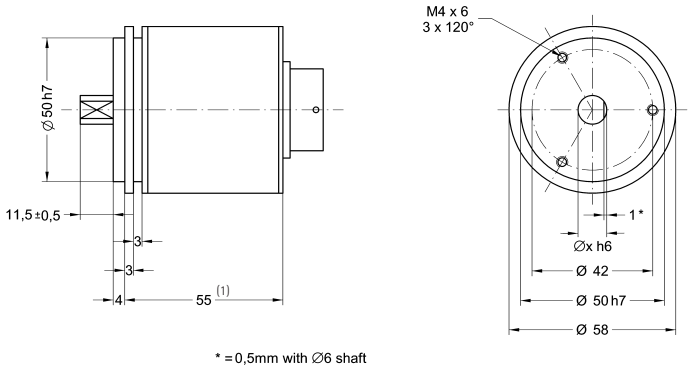
MATERIALS

Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

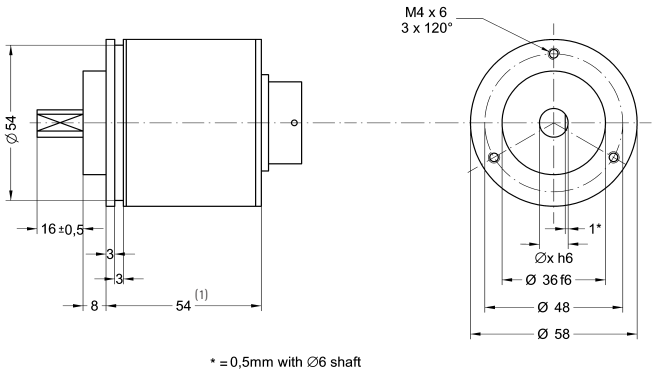
ACCESSORIES

E19MLS:	19 pin MIL mating connector
E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
EDB 25S:	25 pin DSub mating connector
EDA 15S:	15 pin DSub mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

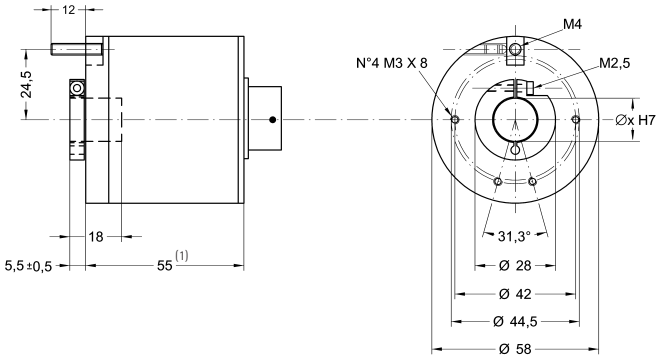
Specifications subject to changes without prior notice



AS58



AS58S



ASC58

(1) Mechanical dimensions with connector output see on page 64

ORDERING CODE

XXX XX / X X - XX

SERIES

	AS58 - AS58S - ASC58 ASC59* - ASC60*

* Dimensional drawing on page 65

CODE

	Counts per revolution 1 - 131072 (see on page 66)

OUTPUT CODE

Binary	B
Gray	G

SHAFT DIAMETER

6	6 mm
8	8 mm
9.52	9.52 mm /3/8"
10	10 mm
12	12 mm

AS58 - AS58S

SHAFT DIAMETER

14	14 mm
15	15 mm

ASCxx

Reducing sleeves see on page 75

OUTPUT CIRCUITS

N	NPN o.c.
P	PNP o.c.
Y	Push-Pull
S	SSI serial output RS422 tree format (connector)
R	SSI serial output RS422 tree format (cable)
A	SSI serial output RS422 LSB alligned (connector)
B	SSI serial output RS422 LSB alligned (cable)
	on request
L	LATCH (NPN)
M	LATCH (PNP)
H	LATCH (Push-Pull)
T	TRI-STATE (NPN)
U	TRI-STATE (PNP)
E	LATCH+TRI-STATE (PNP)
F	LATCH+TRI-STATE (NPN)

* see notes on pag. 69

ADDITIONAL CODE (indicate only if necessary)

- X X X X X X

Lx	Cable length on request
Z	15 pin DSub connector
W	25 pin DSub connector
R	Side mount cable or connector
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
B	Parity Bit
E	Electronic zero setting

ROTACOD
Absolute single turn encoders

series **AST6**

AST6

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP66 protection shaft side (with IP65 conn.)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial and radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Moment of inertia:	~80 gcm^2
Bearing life:	400x10^6rev. min. (10^9rev. min. with shaft loading of 20 N max.)
Weight:	~0,3 kg (10,6 oz)
Electrical connections (see on page 62):	E19MLP, E10MLP, E7MLP MIL connector
Options: (see on page 62)	• EDA 15P DSub connector • cable output 1 m

ELECTRICAL SPECIFICATIONS

STD codes	Gray, Binary, BCD
Power supply:	+10V +30V
Power consumption:	1,2 W
Output circuits:	NPN o.c., PNP o.c., Push-Pull, SSI
Output current:	40 mA max.
Output frequency:	60 kHz max.
Accuracy:	± 30% LSB
Protection:	Protected against inversion of polarity, Push-Pull protected against short-circuit.
Optoelectronic life:	100.000 h min.
Options:	• LATCH output • TRI-STATE output • Electronic parity bit • Electronic zero setting

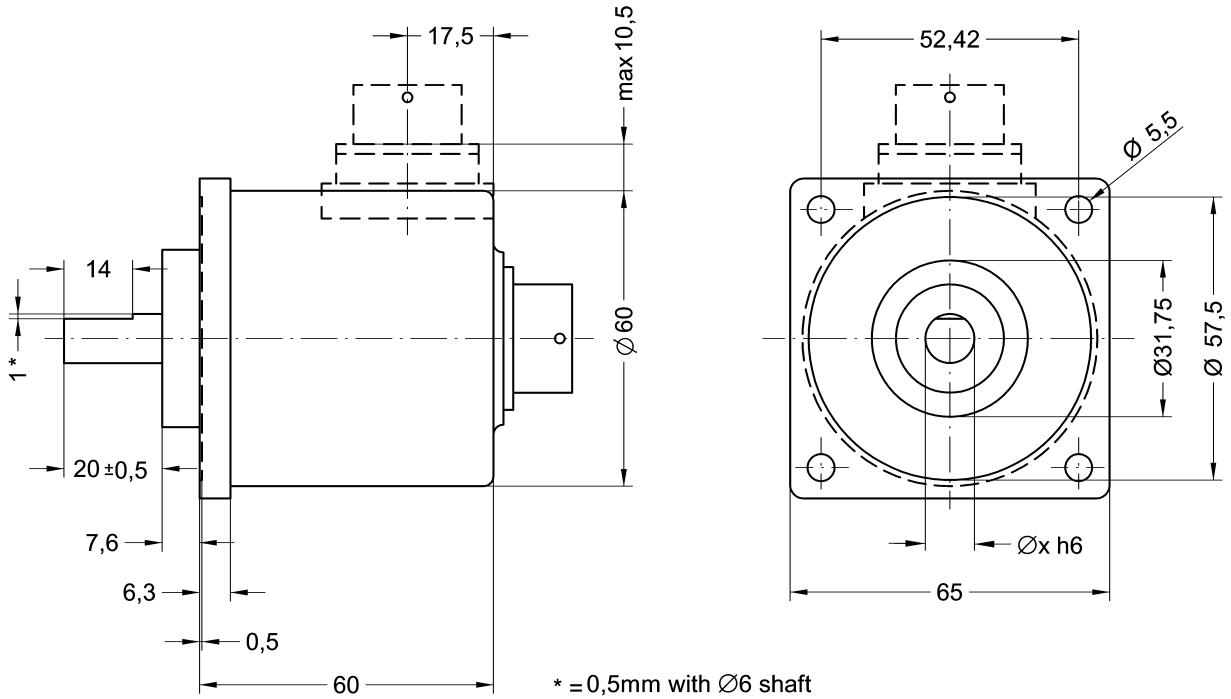
MATERIALS

Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

E19MLS:	19 pin MIL mating connector
E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
EDA 15S:	15 pin DSub mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves

Specifications subject to changes without prior notice



AST6

ORDERING CODE

XXX	XX	/	X	X	-	XX	-	X	X	X	X	X	X	X

SERIES

AST6

CODE

Counts per revolution 1 - 131072 (see on page 66)

OUTPUT CODE

Binary	B
Gray	G
BCD	D

OUTPUT CIRCUITS

N	NPN o.c.
P	PNP o.c.
Y	Push-Pull
S	SSI serial output RS422 tree format (connector)
R	SSI serial output RS422 tree format (cable)
A	SSI serial output RS422 LSB alligned (connector)
B	SSI serial output RS422 LSB alligned (cable)
	on request
L	LATCH (NPN)
M	LATCH (PNP)
H	LATCH (Push-Pull)
T	TRI-STATE (NPN)
U	TRI-STATE (PNP)
E	LATCH+TRI-STATE (PNP)
F	LATCH+TRI-STATE (NPN)

* see notes on pag. 69

SHAFT DIAMETER

6	6 mm
8	8 mm
9.52	9.52 mm / 3/8"
10	10 mm
12	12 mm

ADDITIONAL CODE (indicate only if necessary)

Lx	Cable length on request
Z	15 pin DSub connector
Q	IP66 protection shaft side
R	Side mount cable or connector
K	Operating temperature range: -40°C + 100°C (-40°F +212°F)
B	Parity Bit
E	Electronic zero setting

ROTACAM
Encoder with integrated cam programmer

series **ASR58**


ASR58

www.lika.biz
- manual
- software
- datasheet

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max (up to 6000 rpm for short periods)
Starting torque at 20°C:	< 0,2 Ncm (typical)
Moment of inertia:	~95 gcm^2
Bearing life:	400x10^6 rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Weight:	~0,3 kg (10,6 oz)
Electrical connections: (see on page 62)	EDA 15P and EDB 25P DSub connectors

ELECTRICAL SPECIFICATIONS

Information/rev.:	3600
Resolution:	0,1°
Nr. of cams per program:	120
Nr. of programs:	16
Power supply:	+10V +30V
Power consumption:	2 W
Output:	Push-Pull
Output current (per channel):	100 mA max.
Output frequency:	100 kHz max.
Cam delay:	1µsec
Supplementary output:	Pulse output for speed testing (LSB Binary) Fault signal indicating output status
Protection:	Protected against inversion of polarity and short-circuit.
Optoelectronic life:	100.000 h min.
Option:	• Analog output (programmable on output nr.1) 0V +10V , 0V +5V , -5V +5V

MATERIALS

Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ELECTRICAL CONNECTIONS

25 pin DSub mating connector

1	OUT1	14	OUT14
2	OUT2	15	OUT15
3	OUT3	16	OUT16
4	OUT4	17	Load Prg
5	OUT5	18	Sel. Prg 2^0
6	OUT6	19	Sel. Prg 2^1
7	OUT7	20	Sel. Prg 2^2
8	OUT8	21	Sel. Prg 2^3
9	OUT9	22	Zero setting
10	OUT10	23	Complementary
11	OUT11	24	+10Vdc +30Vdc
12	OUT12	25	0 Vdc
13	OUT13		

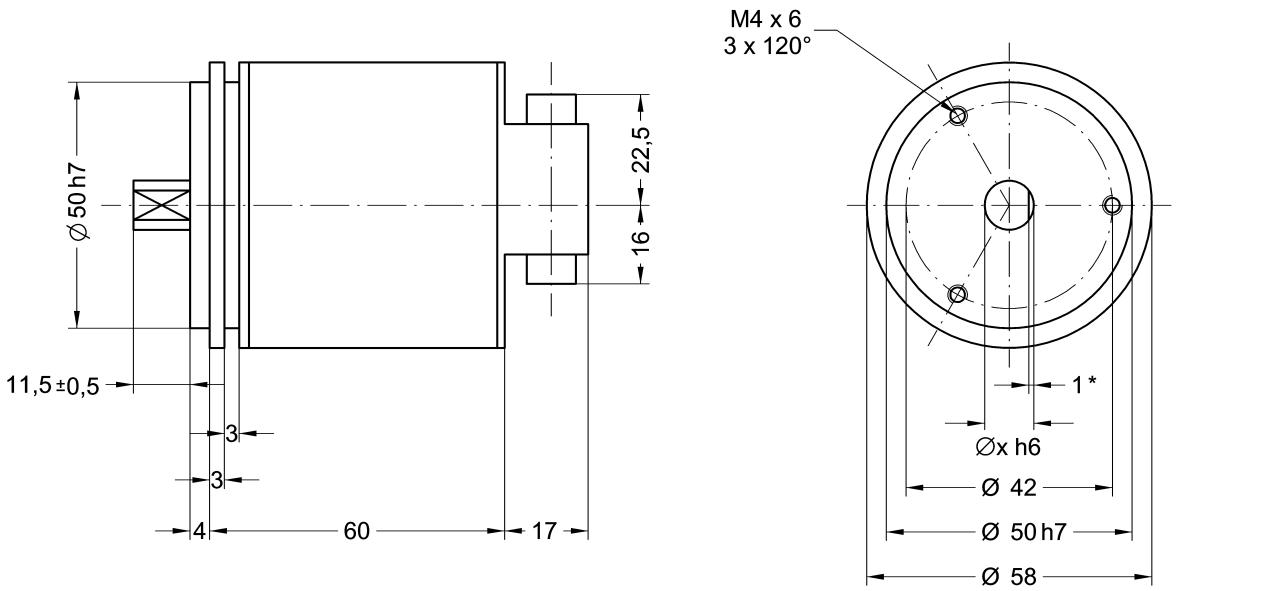
15 pin DSub mating connector

1	N.C.	9	N.C.
2	N.C.	10	N.C.
3	N.C.	11	GND
4	Analogue output	12	RXD (RS232)
5	Speed	13	TXD (RS232)
6	GND	14	+10Vdc +30Vdc
7	Fault	15	0 Vdc
8	GND (RS232)		

ACCESSORIES

EDB 25S:	25 pin DSub mating connector
EDA 15S:	15 pin DSub mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



* = 0,5mm with ∅6 shaft

ASR58

ORDERING CODE

XXXXX	XX	-	X

ADDITIONAL CODE (indicate only if necessary)

X

SERIES

ASR58

COUNTS PER REV.

3600 CPR	**81**

SHAFT DIAMETER

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm

A1	Analogue output 0-10V
A2	Analogue output 0-5V
A3	Analogue output -5V +5V

ROTACOD

Absolute single turn encoder with analogue output

series **AS58 A**

AS58 A

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	< 1 Ncm (tipico/typical)
Moment of inertia:	~95 gcm^2
Bearing life:	400x10^6 rev. min. (10^9rev. min. with shaft loading of 20 N max.)
Weight:	~ 0,3 kg (10,6 oz)
Electrical connections (see on page 62):	E7MLP MIL connector

ELECTRICAL SPECIFICATIONS

Resolution of current analog output AI1 (4-20mA):	3,9 x 10^{-6}A
Resolution of voltage analog output AV1 (0-5V):	1,22 x 10^{-3}V
Resolution of voltage analog output AV2 (0-10V):	2,44 x 10^{-3}V
Power supply:	+15V +30V
Power consumption:	1,2 W
Output frequency:	40 kHz max.
Protection:	against inversion of polarity
Optoelectronic life:	100.000 h min.

MATERIALS

Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ELECTRICAL CONNECTIONS

with analog output AI1

7 pin MIL mating connector			
A	- Iout (4-20mA)	E	Fault
B	+ Iout (4-20mA)	F	GND
C	Complementary	G	+15V +30V
D	Hold		

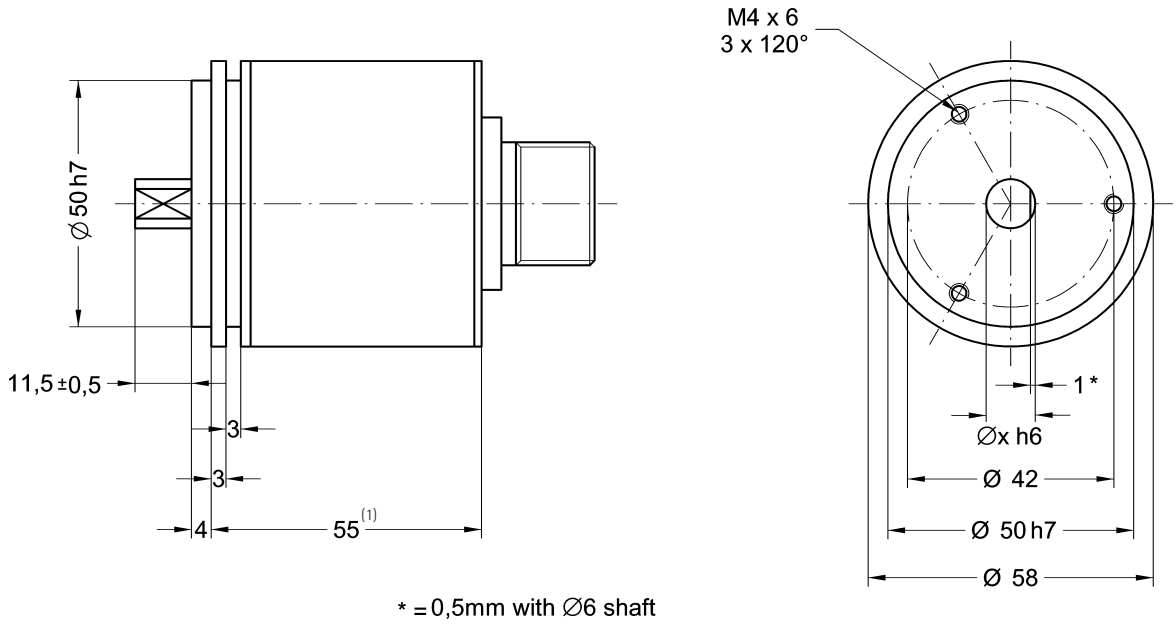
with analog output AV1, AV2

7 pin MIL mating connector			
A	GND	E	n.c.
B	+ Vout	F	GND
C	Complementary	G	+15V +30V
D	Hold		

ACCESSORIES

E7MLS:	7 pin MIL mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



AS58 A

(1) Mechanical dimensions with connector output see on page. 64

Description:
Output AI1: Quote 0 = 4mA, Quote 4095 = 20mA
Output AV1: Quote 0 = 0V, Quote 4095 = 5V
Output AV2: Quote 0 = 0V, Quote 4095 = 10V
"-Iout" signal is internally connected to GND.
Hold = Data latch in memory (active high +10V +30V).
Fault = Open collector signal (i.e. to be connected to a LED see fig.1) for cable integrity check (only AI1 output).

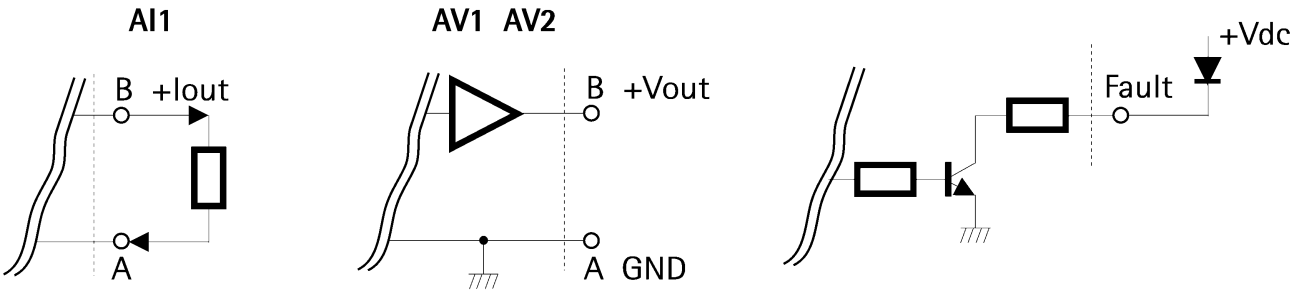


figura 1/figure1

ORDERING CODE

XXXXXX	/	XXX	-	X

SERIES

AS5812

OUTPUT CIRCUITS

Current analog output (4-20mA)	AI1
Voltage analog output (0-5V)	AV1
Voltage analog output (0-10V)	AV2

SHAFT DIAMETER

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm

ADDITIONAL CODE (indicate only if necessary)

-	X

R	Side mount connector

ROTACOD

Absolute encoder with incremental serial interface

series **Ax58 ISI**

AS58 ISI

www.lika.biz
- application info
- datasheet

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	< 1 Ncm (typical)
Moment of inertia:	~95 gcm^2
Bearing life:	400x10^{6}rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Peso/Weight:	~0,3 kg (10,6 oz)
Electrical connections:	EML 121 CONNEI connector

ELECTRICAL SPECIFICATIONS	
STD pulse rate (other PPR upon request):	720 - 1024 - 2048
Power supply:	+10V +30V
Input current:	250 mA max.
Output current (per channel):	40 mA max.
Output frequency:	50 kHz max.
Protection:	against inversion of polarity
Optoelectronic life:	100.000 h min.

MATERIALS	
Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ELECTRICAL CONNECTIONS

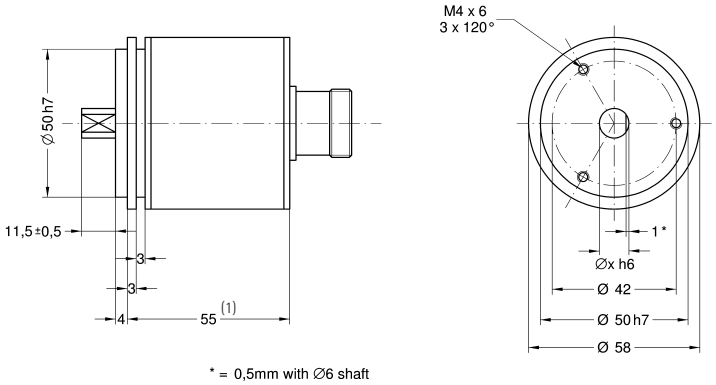
12 pin IP65 mating connector

1	A	7	n.c.
2	/A	8	Error output
3	B	9	Zero setting
4	/B	10	Complementary
5	0	11	+10Vdc +30Vdc
6	/0	12	0 Vdc

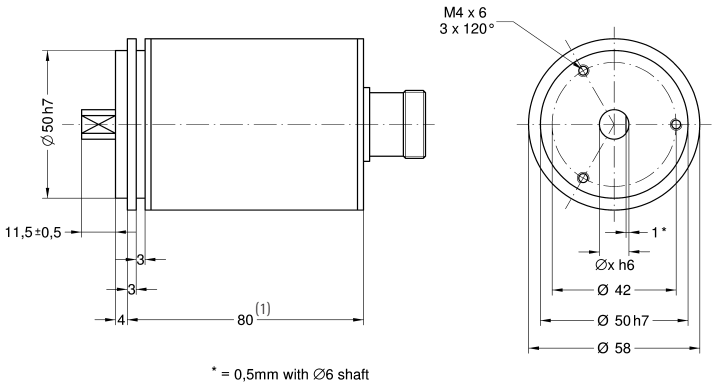
ACCESSORIES

EPFL 121:	12 pin CONNEI mating connector
PAN/PGF:	flexible couplings
LKM-386:	finxing clamps

Specifications subject to changes without prior notice



AS58 ISI



AM58 ISI

(1) Mechanical dimensions with connector output see on page 64

ISI - Incremental serial interface
The absolute encoder with ISI interface, supplies an incremental output with A and channel (90° shifted) and index pulse.
When switched on and enabled the encoder gives out a pulse train corresponding to the current absolute position.
This allows to measure absolute positions even if the following electronics has only an incremental encoder input.
Encoders with ISI interface are available as single turn and multi turn.

ORDERING CODE

XXXX	/	XX	-	X	X	-	X	-	X

SERIES
AS58

PULSE RATE (PPR)
80 = 720 PPR
12 = 1024 PPR
13 = 2048 PPR

OUTPUT CODE

ISI incremental serial interface	S

OUTPUT CIRCUITS

Push-Pull	Y
Line Driver	L

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm

ADDITIONAL CODE (indicate only if necessary)

R	Side mount connector

ORDERING CODE

XXXX	X	X	X	-	X	-	X

SERIES
AM58

PULSE RATE

12/4096 = 1024 PPR x 4096 rev.
13/4096 = 2048 PPR x 4096 rev.

OUTPUT CODE

ISI incremental serial interface	S

OUTPUT CIRCUITS

Y	Push-Pull
L	Line Driver

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm

ADDITIONAL CODE (indicate only if necessary)

R	Side mount connector

ROTACOD
Absolute multi turn encoders

series **AM5**

AM5

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

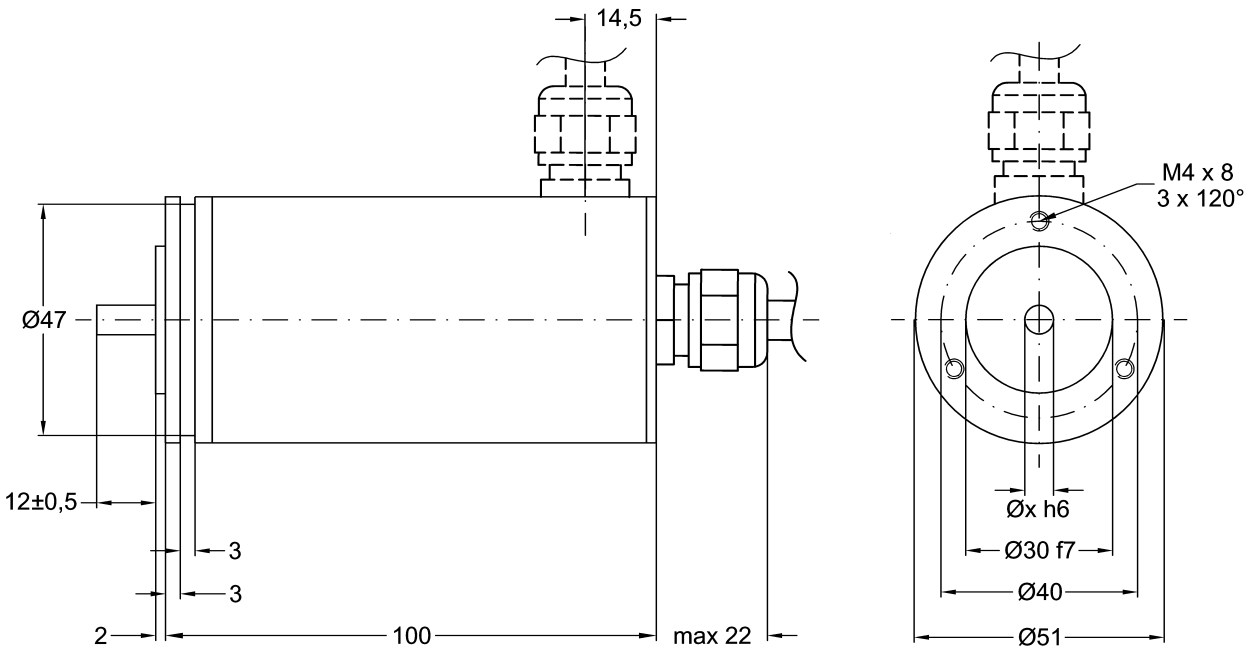
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft:	Ø 6, 8, 10, 12 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Moment of inertia:	80 gcm^2
Bearing life:	$400x10^6$rev. min. (10^9rev. min. with shaft loading of 20 N max.)
Weight:	~0,3 kg (10,6 oz)
Electrical connections:	cable 1 m (3.3 ft)
Options (see on page 62):	• Inline connector E32MLP, EDB 25P

ELECTRICAL SPECIFICATIONS	
STD codes:	Gray, Binary
Power supply:	+10V +30V
Power consumption:	1,5 W
Output circuits:	NPN o.c., PNP o.c., Push-Pull
Output current:	40 mA max.
Output frequency:	60 kHz max.
Accuracy:	± 40% LSB
Protection:	Protected against inversion of polarity, Push-Pull protected against short-circuit
Optoelectronic life:	100.000 h min.
Options:	• LATCH output • TRI-STATE output • Electronic parity bit

MATERIALS	
Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES	
E32MLS:	32 pin MIL mating connector
EDB 25S:	25 pin DSub mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



AM5

ORDERING CODE

XXX	XX	/	XXX	X	X	-	XX

SERIES

AM5

CODE

Counts per revolution 1 - 2048 (see on page 66)

REVOLUTIONS

16, 64, 256

OUTPUT CODE

Binary	B
Gray	G

OUTPUT CIRCUITS

N	NPN o.c.
P	PNP o.c.
Y	Push-Pull
	on request
L	LATCH (NPN)
M	LATCH (PNP)
H	LATCH (Push-Pull)
T	TRI-STATE (NPN)
U	TRI-STATE (PNP)
E	LATCH+TRI-STATE (PNP)
F	LATCH+TRI-STATE (NPN)

SHAFT DIAMETER

6	6 mm
8	8 mm
10	10 mm
12	12 mm

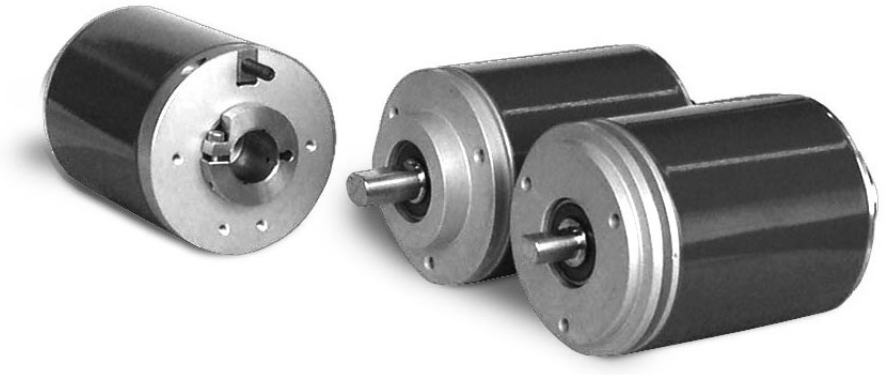
ADDITIONAL CODE (indicate only if necessary)

-	X	X	X	X	X

V	Inline connector E32MLP
W	Inline connector EDB 25P
Lx	Cable length on request
R	Side mount cable
K	Operating temperature range -40°C +100°C (-40°F +212°F)
B	Parity Bit

ROTACOD
Absolute multi turn encoders

series **AM58 • AM58S • AMC58**



AM58-AM58S-AMC58

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12, 14, 15 mm
Shaft loading (axial and radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Moment of inertia:	80 gcm^2
Bearing life:	$400x10^6$rev. min. (10^9rev. min. with shaft loading of 20 N max.)
Weight:	~0,3 kg (10,6 oz)
Electrical connections (see on page 62):	E32MLP, E10MLP, E7MLP MIL connector
Options: (see on page 62)	• EDB 25P DSub connector • Cable output 1 m

ELECTRICAL SPECIFICATIONS

STD codes:	Gray, Binary
Power supply:	+10V +30V
Power consumption:	1,5 W
Output circuits:	NPN o.c., PNP o.c., Push-Pull, SSI
Output current:	40 mA max.
Output frequency:	60 kHz max.
Accuracy:	± 30% LSB
Protection:	Protected against inversion of polarity, Push-Pull protected against short-circuit
Optoelectronic life:	100.000 h min.
Options:	• LATCH output • TRI-STATE output • Electronic parity bit • Electronic zero setting

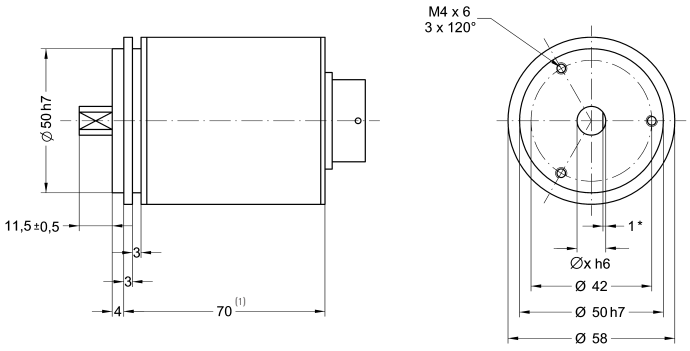
MATERIALS

Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

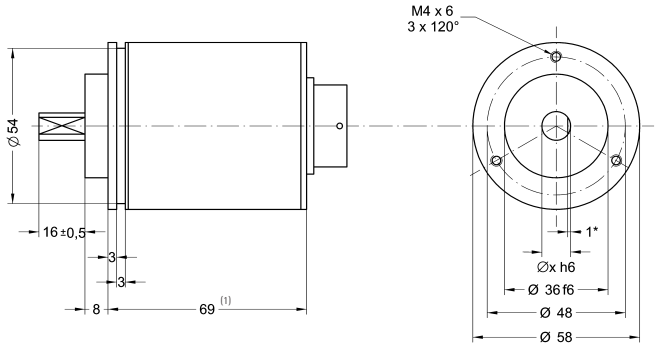
E32MLS:	32 pin MIL mating connector
E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
EDB 25S:	25 pin DSub mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



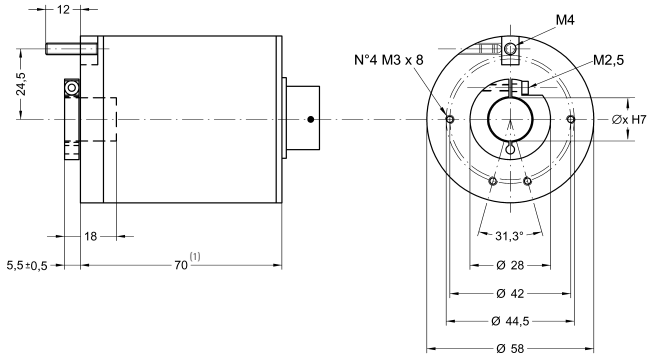
* =0,5mm with Ø6 shaft

AM58



* =0,5mm with Ø6 shaft

AM58S



AMC58

(1) Mechanical dimensions with connector output see on page 64

ORDERING CODE

XXX XX / XXXX X X - XX

SERIES

AM58 - AM58S - AMC58	
AMC59* - AMC60*	

* Dimensional drawing on page 65

CODE

Counts per revolution	
1 - 131072	
(see on page 66)	

REVOLUTIONS

16, 256, 4096	

OUTPUT CODE

Binary	B
Gray	G

OUTPUT CIRCUITS

N	NPN o.c.
P	PNP o.c.
Y	Push-Pull
S	SSI serial output RS422 tree format (connector)
R	SSI serial output RS422 tree format (cable)
A	SSI serial output RS422 LSB alligned (connector)
B	SSI serial output RS422 LSB alligned (cable)
	on request
L	LATCH (NPN)
M	LATCH (PNP)
H	LATCH (Push-Pull)
T	TRI-STATE (NPN)
U	TRI-STATE (PNP)
E	LATCH+TRI-STATE (PNP)
F	LATCH+TRI-STATE (NPN)

* see notes on pag. 69

SHAFT DIAMETER

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm

AM58 - AM58S

SHAFT DIAMETER

14	14 mm
15	15 mm

AMCxx

Reducing sleeves see on page 75

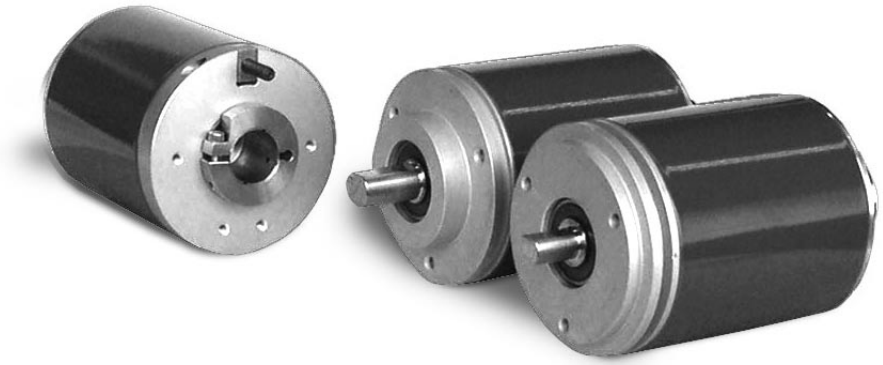
ADDITIONAL CODE (indicate only if necessary)

- X X X X X X

Lx	Cable length on request
W	DSub 25 pin connector
R	Side mount cable or connector
K	Operating temperature range -40°C +100°C (-40°F +212°F)
B	Parity Bit
E	Electronic zero setting

ROTACOD
Absolute programmable Encoder

series AM58 P • AM58S P • AMC58 P



AM58 P-AM58S P-AMC58 P

www.lika.biz
- manual
- datasheet
- suppl. information

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000 Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12, 14, 15 mm
Shaft loading (axial and radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Moment of inertia:	80 gcm^2
Bearing life:	400x10^{6}rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Weight:	~0,3 kg (10,6 oz)
Electrical connections (see on page 62):	E41MLP MIL connector, EML 121 CONNEI connector
Options: (see on page 62)	• E32MLP MIL connector • Cable output 1 m

ELECTRICAL SPECIFICATIONS

Programmable parameters:	• Output code: Gray, Binario, BCD • Resolution: 8192 inf./rev. x 4096 rev. max • Parity bit: even, odd • Complementary, Zero setting, Offset • Latch, Tri-state • Teach-in of resolution
Power supply:	+10V +30V
Power consumption:	1,5 W
Output circuits:	NPN, PNP, Push-Pull, SSI
Output current:	40 mA max.
Output frequency:	50 kHz max.
Accuracy:	± 30% LSB
Protection:	Protected against inversion of polarity, Push-Pull protected against short-circuit
Optoelectronic life:	100.000 h min.

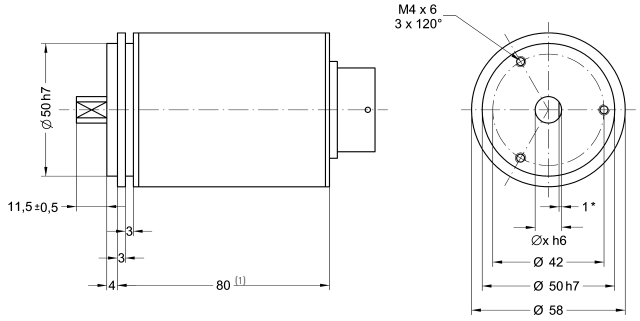
MATERIALS

Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ACCESSORIES

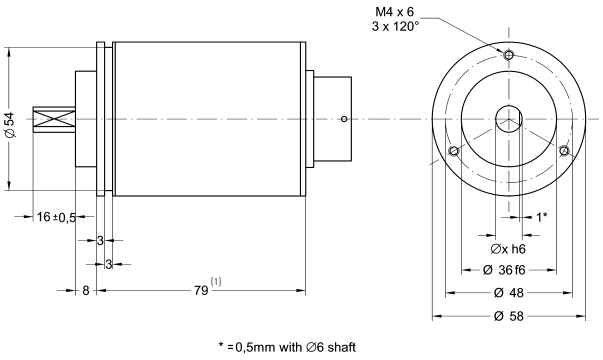
E41MLS:	41 pin MIL mating connector
E32MLS:	32 pin MIL mating connector
EPFL 121:	12 pin CONNEI mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

Specifications subject to changes without prior notice



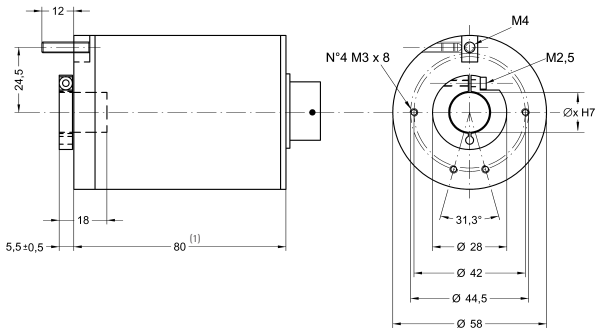
* = 0,5mm with Ø6 shaft

AM58



* = 0,5mm with Ø6 shaft

AM58S



AMC58

(1) Mechanical dimensions with connector output see on page 64

ORDERING CODE

XXX	XX / XXXX	X	X	-	XX

SERIES

AM58 - AM58S - AMC58
AMC59* - AMC60*

* Dimensional drawing on page 65

COUNTS PER REV.

4096	12
8192	13

REVOLUTIONS

4096

Programmable P

SHAFT DIAMETER

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm

AM58 - AM58S

SHAFT DIAMETER

14	14 mm
15	15 mm

AMCxx

Reducing sleeves
see on page 75

OUTPUT CIRCUITS

N	NPN
P	PNP
Y	Push-Pull
S	SSI serial output RS422 tree format (connector)
R	SSI serial output RS422 tree format (cable)

* see notes on pag. 69

ADDITIONAL CODE (indicate only if necessary)

-	X	X	X	X

Lx	Cable length on request
V	32 pin MIL connector
R	Side mount cable or connector
K	Operating temperature range -40°C +100°C (-40°F + 212°F)

ROTACOD
Absolute encoders with Profibus-DP output

series **Ax58 PB • Ax58S PB • AxC58 PB**

Ax58x PB

www.lika.biz
- manual
- GSD file
- datasheet

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12, 14, 15 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm
Starting torque at 20°C:	< 1 Ncm (typical)
Moment of inertia:	~95 gcm^2
Bearing life:	400x10^{6}rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Weight:	~0,5 kg (17,6 oz)

ELECTRICAL SPECIFICATIONS

STD codes:	binary
Power supply:	+10V +30V
Power consumption:	2,6W max.
Output frequency:	60 kHz max.
Accuracy:	30% LSB
Programmable parameters:	• counting direction • resolution up to 8192 counts/rev. and 4096 rev. • preset value • offset value
Baudrate:	max 12 Mbit/sec.
Device address:	programmable by Dip-switches
Bus connection:	galvanically separated by opto-couplings
Interface:	Siemens Profibus controller SPC3
Class:	2 (PNO, order 3.062)
Output circuit:	Transceiver RS485
EMC:	electro-magnetic emission (EN 50081-2) electro-magnetic compatibility (EN 50082-2)
Protection:	against inversion of polarity against short circuit against over voltage
Optoelectronic life:	100.000 h min.

MATERIALS

Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

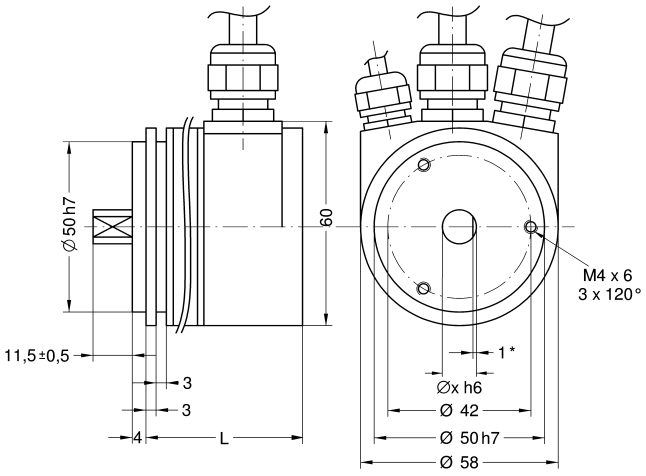
ELECTRICAL CONNECTIONS

CLAMP	
+	+10Vdc +30Vdc
-	0 Vdc
A	Receive/Transmit data negative
B	Receive/Transmit data positive

ACCESSORIES

CC-PB:	connection cap 3xPG
CC-PB-C:	connection cap with connectors
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

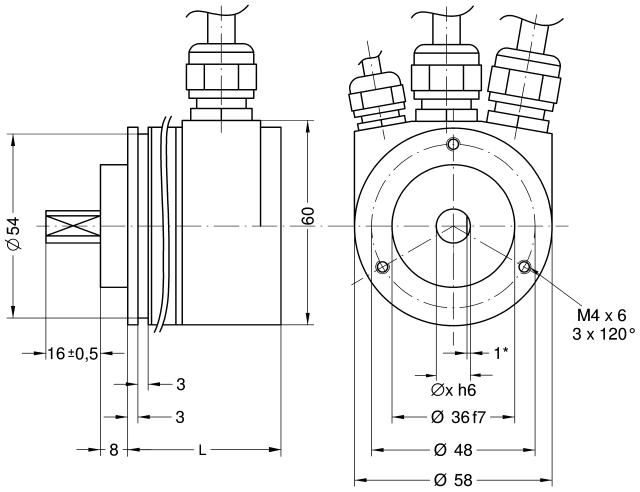
Specifications subject to changes without prior notice



* =0,5 with Ø6 shaft

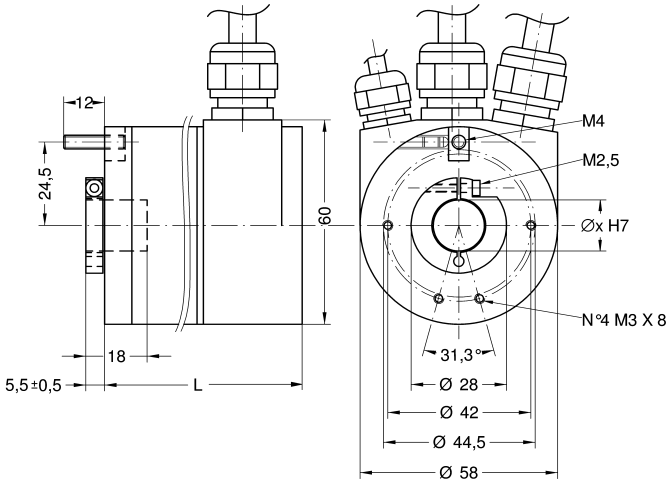
AS58/AM58

Series	L	D
AS58	83	6-10 h6 8-12 g6
AM58	98	
AS58S	82	6-8-10 h6 12 g6
AM58S	97	
ASC58	83	14-15 H7
AMC58	98	



* = 0,5mm with Ø6 shaft

AS58S/AM58S



ASC58/AMC58

ORDERING CODE SINGLE TURN VERSION

XXX XX / PB - X

SERIES

AS58 - AS58S - ASC58
ASC59* - ASC60*

* Dimensional drawing on page 65

INF. REV

4096	12
8192	13

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52mm/ 3/8"
10	10 mm
12	12 mm
14	14 mm*
15	15 mm*

* only ASCxx

Reducing sleeves see on page 75

Accessories (to be ordered separately)
CC-PB Connection cap
CC-PB-C Connection cap with connectors

ORDERING CODE MULTI TURN VERSION

XXX XX / 4096 - PB - X

SERIES

AM58 - AM58S - AMC58
AMC59* - AMC60*

* Dimensional drawing on page 65

INF. REV

4096	12
8192	13

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52mm/ 3/8"
10	10 mm
12	12 mm
14	14 mm*
15	15 mm*

* only AMCxx

Reducing sleeves see on page 75

ROTACOD
Absolute encoders with InterBus-S output

series **AX58 IB • AX58S IB • AXC58 IB**

Ax58x IB

www.lika.biz
- manual
- datasheet

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12, 14, 15 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm
Starting torque at 20°C:	< 1 Ncm (typical)
Moment of inertia:	~95 gcm^2
Bearing life:	400x10^{6}rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Weight:	~0,5 kg (17,6 oz)
Connection:	2 x 9 pin IP65 connector

ELECTRICAL SPECIFICATIONS

STD codes:	binary
Power supply:	+10V +30V
Power consumption:	3W max.
Output frequency:	60 kHz max.
Accuracy:	±1/2 LSB
Programmable parameters:	• counting direction • Resolution up to 8192 counts/rev. and 4096 rev. • Preset and offset value • Zero setting • Reset to default value
Baudrate:	500 Kbit/s
Device address:	programmable
Bus connection:	galvanically separated by opto-couplings
Interface:	InterBus-S IB8052 Supi 3
Class:	K3
Output:	RS485
Diagnostics:	see profile Encom-DIN 19258
EMC:	electro-magnetic emission (EN 50081-2) electro-magnetic compatibility (EN 50082-2)
Protection:	against inversion of polarity against short circuit
Optoelectronic life:	100.000 h min.

MATERIALS

Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

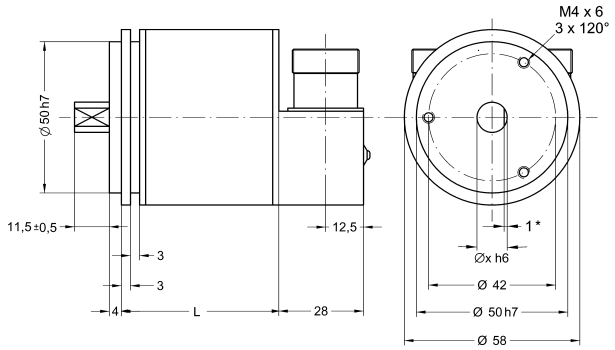
ELECTRICAL CONNECTIONS

CC-IB mating connectors	
1	D01
2	/D01
3	DI1
4	/DI1
5	GND
6	PE
7	+10Vdc +30Vdc
8	0 Vdc
9	/RBST

ACCESSORIES

CC-IB:	mating connectors
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

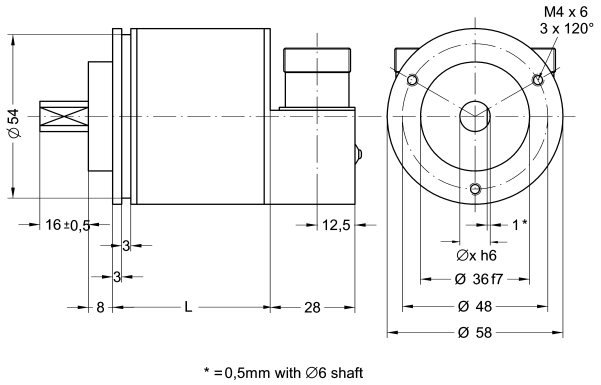
Specifications subject to changes without prior notice



* = 0,5mm with Ø6 shaft

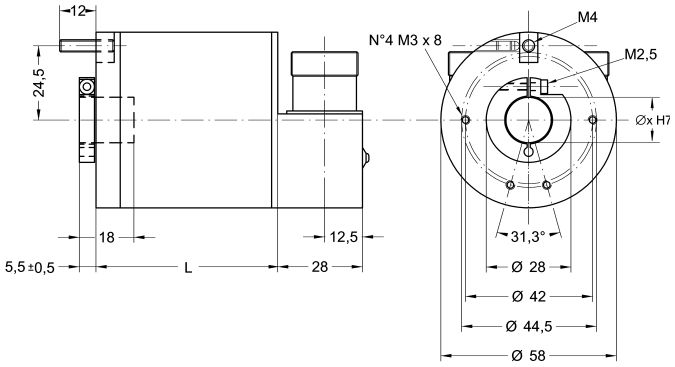
AS58/AM58

Series	L	D
AS58	60	6-10 h6 8-12 g6
AM58	70	
AS58S	69	6-8-10 h6 12 g6
AM58S	79	
ASC58	60	14-15 H7
AMC58	70	



* =0,5mm with Ø6 shaft

AS58S/AM58S



ASC58/AMC58

ORDERING CODE SINGLE TURN VERSION

XXX XX / IB - X

SERIES

AS58 - AS58S - ASC58	
ASC59*- ASC60*	

* Dimensional drawing on page 65

COUNTS PER REV.

4096	12
8192	13

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52mm/ 3/8"
10	10 mm
12	12 mm
14	14 mm*
15	15 mm*

* only ASCxx

Reducing sleeves see on page 75

Accessories (to be ordered separately)
CC-IB InterBus-S mating connectors

ORDERING CODE MULTI TURN VERSION

XXX XX / 4096 - IB - X

SERIES

AM58 - AM58S - AMC58	
AMC59* - AMC60*	

* Dimensional drawing on page 65

INF. REV

4096	12
8192	13

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52mm/ 3/8"
10	10 mm
12	12 mm
14	14 mm*
15	15 mm*

* only AMCxx

Reducing sleeves see on page 75

ROTACOD
Absolute encoders with DEVICE NET output

series Ax58 FD • Ax58S FD • AxC58 FD

Ax58x FD

www.lika.biz
- manual
- EDS file
- datasheet

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12, 14, 15 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	< 1 Ncm (typical)
Moment of inertia:	~95 gcm^2
Bearing life:	400x10^{6}rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Weight:	~0,5 kg (17,6 oz)

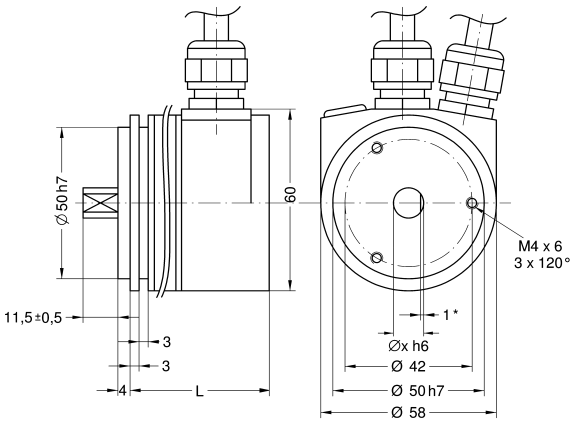
ELECTRICAL SPECIFICATIONS	
STD codes:	binary
Power supply:	+10V +30V
Power consumption:	3W max.
Output frequency:	60 kHz max.
Accuracy:	±1/2 LSB
Programmable parameters:	• counting direction • Resolution up to 8192 counts/rev. and 4096 rev. • Preset value
Baudrate:	programmable by Dip-switches
Device address:	programmable by Dip-switches
Bus connection:	galvanically separated by opto-couplings
Interface:	CAN transceiver (ISO/DIS 11898)
Class:	2 (CIA DSP 406)
EMC:	electro-magnetic emission (EN 50081-2) electro-magnetic compatibility(EN 50082-2)
Protection:	against inversion of polarity against short circuit
Optoelectronic life:	100.000 h min.

MATERIALS	
Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ELECTRICAL CONNECTIONS	
CLAMP	
⊥	GND
+	+10Vdc +30Vdc
-	0 Vdc
CG	Reserved
CL	CAN Low
CH	CAN High
CG	Reserved
CL	CAN Low
CH	CAN High

ACCESSORIES	
CC-FD:	connection cap 2xPG
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

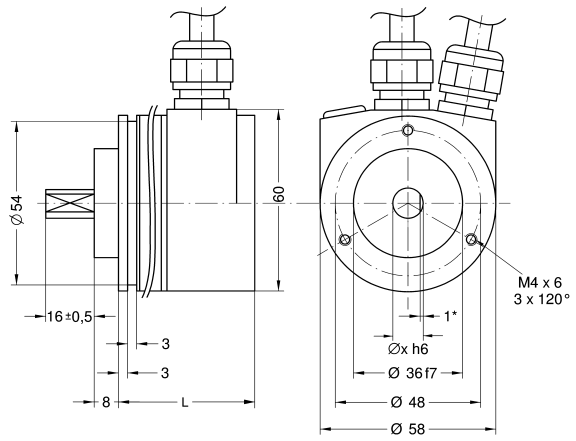
Specifications subject to changes without prior notice



* = 0,5 with Ø6 shaft

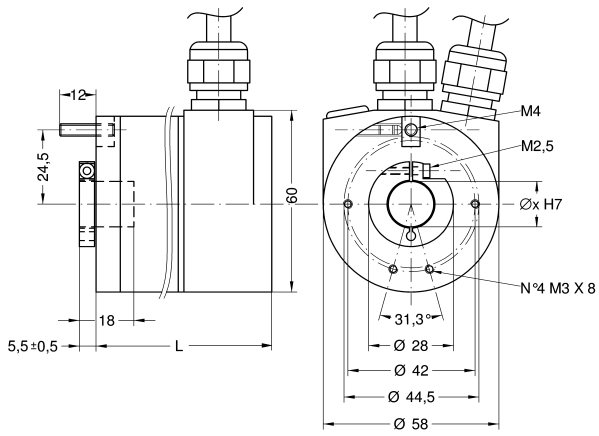
Series	L	D
AS58	83	6-10 h6 8-12 g6
AM58	98	
AS58S	82	6-8-10 h6 12 g6
AM58S	97	
ASC58	83	14-15 H7
AMC58	98	

AS58/AM58



* = 0,5mm with Ø6 shaft

AS58S/AM58S



ASC58/AMC58

ORDERING CODE SINGLE TURN VERSION

XXX XX / FD - X

SERIES

AS58 - AS58S - ASC58
ASC59 *- ASC60 *

* Dimensional drawing on page 65

COUNTS PER REV.

4096	12
8192	13

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm
14	14 mm*
15	15 mm*

* only ASCxx

Reducing sleeves see on page 75

Accessories (to be ordered separately)
CC-FD Connection cap

ORDERING CODE MULTI TURN VERSION

XXX - XX / 4096 - FD - X

SERIES

AM58 - AM58S - AMC58
AMC59* - AMC60*

* Dimensional drawing on page 65

COUNTS PER REV.

4096	12
8192	13

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm
14	14 mm*
15	15 mm*

* only AMCxx

Reducing sleeves see page 75

ROTACOD
Absolutes encoders with CANopen output

series Ax58 CB • Ax58S CB • AxC58 CB

AX58x CB

www.lika.biz
- manual
- EDS file
- datasheet

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms (acc. to MIL STD 202F)
Vibrations:	10 g, 5-2000Hz (acc. to MIL STD 202F)
Operating temperature range:	-20°C +70°C (-4°F +158°F)
Storage temperature range:	-20°C +80°C (-4°F +176°F) (98% R.H.without condensation)
Protection:	IP65

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft:	Ø 6, 8, 9.52, 10, 12, 14, 15 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	< 1 Ncm (typical)
Moment of inertia:	~95 gcm^2
Bearing life:	400x10^{6}rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Weight:	~0,5 kg (17,6 oz)

ELECTRICAL SPECIFICATIONS

STD codes:	binary
Power supply:	+10V +30V
Power consumption:	3W max.
Output frequency:	60 kHz max.
Accuracy:	±1/2 LSB
Programmable parameters:	• counting direction • Resolution up to 8192 counts/rev. and 4096 rev. • Preset value • Two software limit switches • Transmission mode: Polled, Cyclic, Sync
Baudrate:	programmable by Dip-switches
Device address:	programmable by Dip-switches
Bus connection:	galvanically separated by opto-couplings
Interface:	CAN transceiver (ISO/DIS 11898)
Class:	2 (CIA DSP 406)
EMC:	electro-magnetic emission (EN 50081-2) electro-magnetic compatibility (EN 50082-2)
Protection:	against inversion of polarity against short circuit
Optoelectronic life:	100.000 h min.

MATERIALS

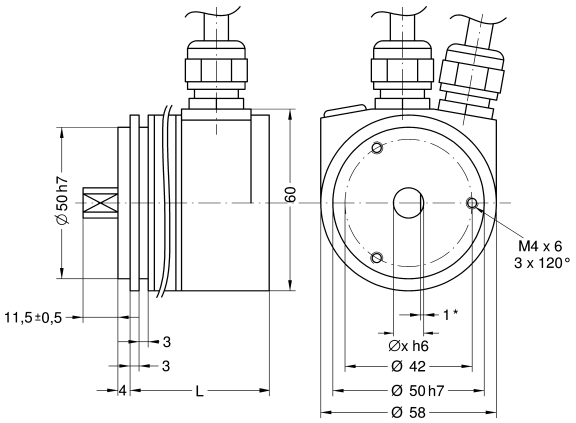
Housing:	non corroding
Flange:	non corroding
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic
Light source:	GaAl diodes

ELECTRICAL CONNECTIONS

CLAMP	
⊥	GND
+	+10Vdc +30Vdc
-	0 Vdc
CG	CAN GND
CL	CAN Low
CH	CAN High
CG	CAN GND
CL	CAN Low
CH	CAN High

ACCESSORIES

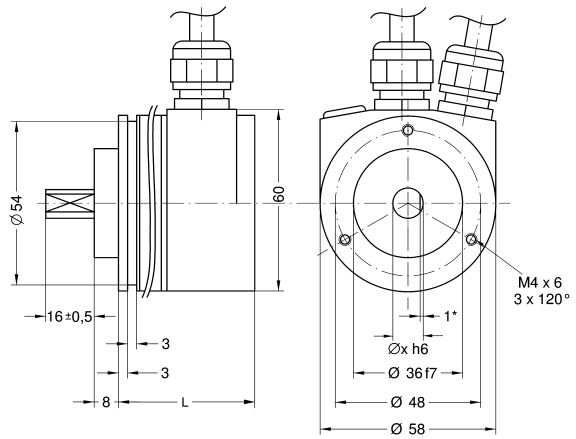
CC-CB:	connection cap 3xPG
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps



* =0,5 with Ø6 shaft

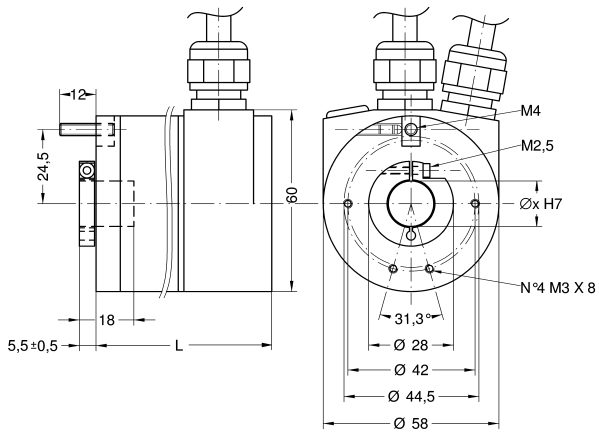
AS58/AM58

Series	L	D
AS58	83	6-10 h6 8-12 g6
AM58	98	
AS58S	82	6-8-10 h6 12 g6
AM58S	97	
ASC58	83	14-15 H7
AMC58	98	



* = 0,5mm with Ø6 shaft

AS58S/AM58S



ASC58/AMC58

ORDERING CODE SINGLE TURN VERSION

XXXX XX / CB - X

SERIES

AS58 - AS58S - ASC58 ASC59 *- ASC60 *	

* Dimensional drawing on page 65

COUNTS PER REV.

4096	12
8192	13

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm
14	14 mm*
15	15 mm*

* only ASCxx

Reducing sleeves see page 75

Accessories (to be ordered separately)
CC-CB Connection cap

ORDERING CODE MULTI TURN VERSION

XXX XX / 4096 - CB - X

SERIES

AM58 - AM58S - AMC58 AMC59 * - AMC60 *	

* Dimensional drawing on page 65

COUNTS PER REV.

4096	12
8192	13

SHAFT Ø

6	6 mm
8	8 mm
9.52	9.52 mm/ 3/8"
10	10 mm
12	12 mm
14	14 mm*
15	15 mm*

* only AMCxx

Reducing sleeves see page 75

CONNECTIONS WITH NORMAL OUTPUTS

1	2	function
A	1	A
B	2	n.c.
C	3	B
D	4	n.c.
E	5	0
F	6	0 Vdc GND
G	7	+Vdc

1 = E7 MLS 7 pin MIL mating connector
2 = T 3475001 7 pin TUCHEL mating connector

CONNECTIONS WITH COMPLEMENTARY OUTPUTS

1	2	3	function
A	C	1	A
B	D	2	/A
C	E	3	B
D	F	4	/B
E	G	5	0
F	H	6	/0
G	M	11	n.c.
H	B	12	n.c.
I	J	8	0 Vdc GND
J	A	7	+Vdc
	K	9	n.c.
	L	10	n.c.

1 = E10MLS 10 pin MIL mating connector
2 = T 3635000 12 pin TUCHEL mating connector
3 = EPFL 121 12 pin CONNEI mating connector

CONNECTIONS WITH CABLE OUTPUT

1	2	function
brown	yellow	A
-	blue	/A
blue	green	B
-	orange	/B
white	white	0
-	grey	/0
red	red	+Vdc
black	black	0 Vdc GND

1 = cable LIKA 5x0,25 mm² (LIYCY)
2 = cable LIKA 8x0,25 mm² (LIYCY)

CABLE SPECIFICATIONS

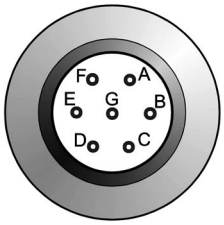
Screening:	Copper
External Ø:	5 leads 5 mm
	8 leads 6,2 mm
Conductors resistance:	79Ω/Km
Bending radius:	fixed Ø x 5 mm
	in motion Ø x 15 mm

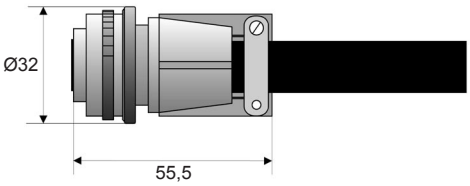
ELECTRICAL CONNECTIONS WITH 9 PIN DSUB INLINE CONNECTOR

1	function
1	A
2	/A
3	B
4	/B
5	0
6	/0
7	n.c.
8	+Vdc
9	0 Vdc GND

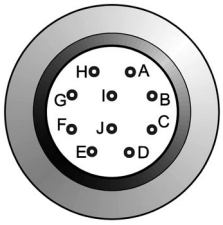
1 = EDE 9S 9 pin DSub inline connector

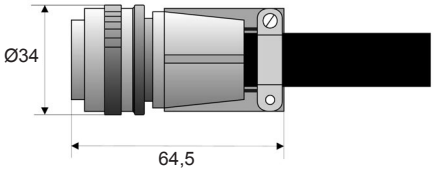
For long distances and/or environments with electric noise, LIKA 3x2x0,25 mm² + 2x1x0,5 mm² cable is suggested.



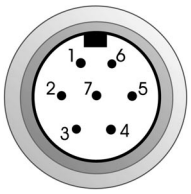


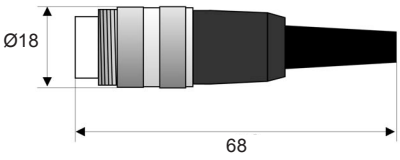
7 pin MIL mating connector
Ordering code: **E7MLS**



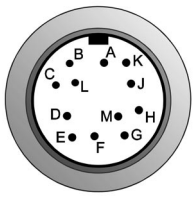


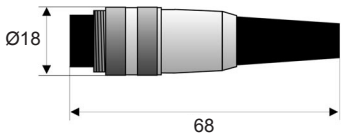
10 pin MIL mating connector
Ordering code: **E10MLS**



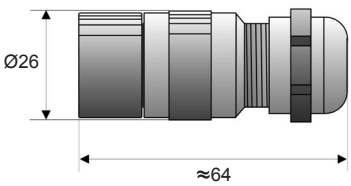


7 pin TUCHEL mating connector
Ordering code: **T3475001**

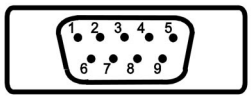


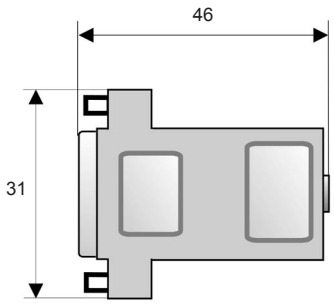


12 pin TUCHEL mating connector
Ordering code: **T3635000**



12 pin CONNEI mating connector
Ordering code: **EPFL 121**





9 pin DSub mating connector
Ordering code: **EDE9S**

ABSOLUTE SINGLE TURN ENCODER CONNECTIONS

1	2	3	G/B	BCD
A	1	brown	**1LSB**	**1**
B	2	red	**2**	**2**
C	3	pink	**3**	**4**
D	4	yellow	**4**	**8**
E	5	green	**5**	**10**
F	6	blue	**6**	**20**
G	7	violet	**7**	**40**
H	8	grey	**8**	**80**
J	9	white	**9**	**100**
K	10	black	**10**	**200**
L	11	white/green	**11**	**400**
M	12	brown/green	**12**	**800**
N			**13**	**1000**
P			**zero setting***	
R			**latch***	
S		red/blue	**tri-state***	
U	13	grey/pink	**complementary**	
V	14	white/yellow	**+10Vdc +30Vdc**	
T	15	yellow/brown	**0Vdc**	

***on request**
1 = E19MLS 19 pin MIL connector
2 = EDA 15S 15 pin DSUB connector
3 = cable LIYCY 16 x 0.14 mm²

ABSOLUTE MULTI TURN ENCODER CONNECTIONS

1	2	3	G/B
A	1	brown	**1LSB**
B	2	red	**2**
C	3	pink	**3**
D	4	yellow	**4**
E	5	green	**5**
F	6	blue	**6**
G	7	violet	**7**
H	8	grey	**8**
J	9	white	**9**
K	10	black	**10**
L	11	brown/red	**11**
M	12	white/red	**12**
N	13	blue/red	**13**
P	14	pink/grey	**14**
R	15	white/yellow	**15**
S	16	brown/green	**16**
T	17	white/green	**17**
U	18	yellow/brown	**18**
V	19	white/blue	**19**
W	20	brown/blue	**20**
X		white/pink	**21**
Y		white/grey	**22**
Z		pink/brown	**23**
a		grey/brown	**24**
b		brown/black	**25**
c		white/black	**parity bit ***
d		grey/green	**zero setting ***
e	21	yellow/grey	**latch ***
f	22	pink/green	**tri-state ***
g	23	yellow/pink	**complementary**
h	24	green/blue	**+10Vdc +30Vdc**
i	25	yellow/blue	**0Vdc GND**

***on request**
1 = E32MLS 32 pin MIL connector
2 = EDB 25S 25 pin DSUB connector
3 = cable LIYCY 32 x 0.14 mm²

SSI SERIAL CONNECTIONS

1	2	funzione/function
A	white	clock in +
B	brown	clock in -
C	green	data out +
D	yellow	data out -
E	blue	complementary
F	black	0 Vdc GND
G	red	+10Vdc +30Vdc

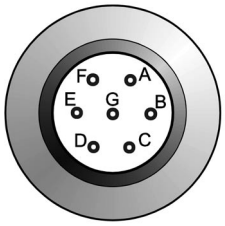
1 = E7MLS 7 pin MIL mating connector
2 = cable LIKA 3x2x0,25 mm² + 2x1x0,5 mm²

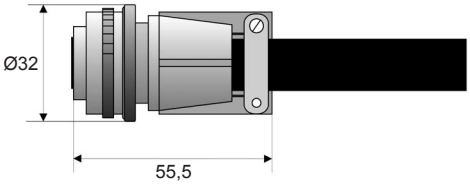
SSI SERIAL CONNECTIONS

1	2	funzione/function
A	white	clock in +
B	brown	clock in -
C	green	data +
D	yellow	data -
E		
F	blue	complementary
G		
H	pink	zero setting
I	black	0 Vdc GND
J	red	+10 Vdc +30 Vdc

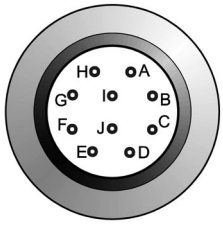
1 = E10MLS 10 pin MIL mating connector
2 = cable LIKA 3x2x0,25 mm² + 2x1x0,5 mm²

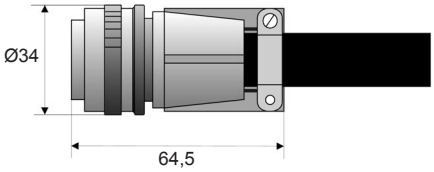
For long distances and/or environments with electric noise, LIKA 3x2x0,25 mm² + 2x1x0,5 mm² cable is suggested.



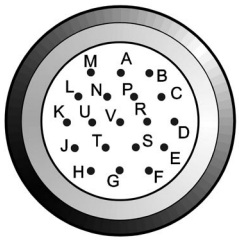


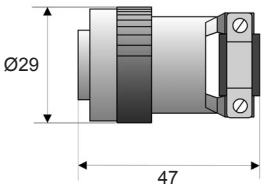
7 pin MIL mating connector
Ordering code: **E7MLS**



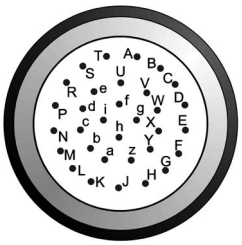


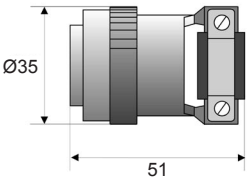
10 pin MIL mating connector
Ordering code: **E10MLS**



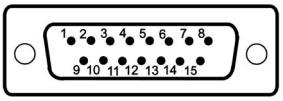


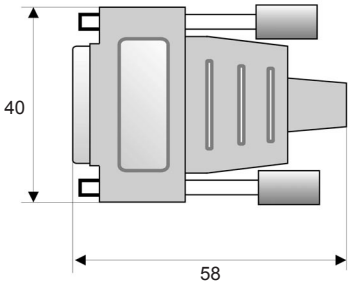
19 pin MIL mating connector
Ordering code: **E19MLS**



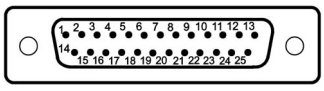


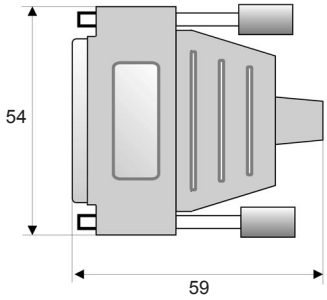
32 pin MIL mating connector
Ordering code: **E32MLS**





15 pin DSub mating connector
Ordering code: **EDA15S**





25 pin DSub mating connector
Ordering code: **EDB25S**

AM58 P CONNECTIONS

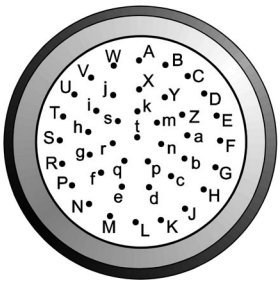
1	2	3	OUT
A	A	brown	1 LSB
B	B	red	2
C	C	pink	3
D	D	yellow	4
E	E	green	5
F	F	blue	6
G	G	violet	7
H	H	grey	8
J	J	white	9
K	K	black	10
L	L	brown/red	11
M	M	white/red	12
N	N	blue/red	13
P	P	pink/grey	14
R	R	white/yellow	15
S	S	brown/green	16
T	T	white/green	17
U	U	yellow/brown	18
V	V	white/blue	19
W	W	brown/blue	20
X	X	white/pink	21
Y	Y	white/grey	22
Z	Z	pink/brown	23
a	a	grey/brown	24
b	b	brown/black	25MSB
c	c	white/black	Parity bit
d	d	grey/green	zero setting
e	e	yellow/grey	Latch
f	f	pink/green	TxD
g	g	yellow/pink	RxD
h		green/blue	Gnd RxD/TxD
i		yellow/blue	Tri-State
j		green/red	External reset
k		yellow/red	Preset 1
m		green/black	Preset 2
n		yellow/black	
p		pink/blue	
q			
r		grey/red	complementary
s	h	pink/red	10Vdc 30Vdc
t	j	grey/blue	0 Vdc GND

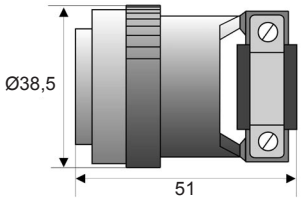
1 = E41MLS 41 pin MIL connector
2 = E32MLS 32 pin MIL connector
3 = Cable 40 x 0,14 mm²

SSI SERIAL CONNECTIONS

1	Clock -	7	Zero Setting
2	Clock +	8	External Reset
3	Data +	9	Preset 1
4	Data -	10	Preset 2
5	TxD	11	10Vdc 30Vdc
6	RxD	12	0 Vdc GND

EPFL 121 12 pin CONNEI mating connector



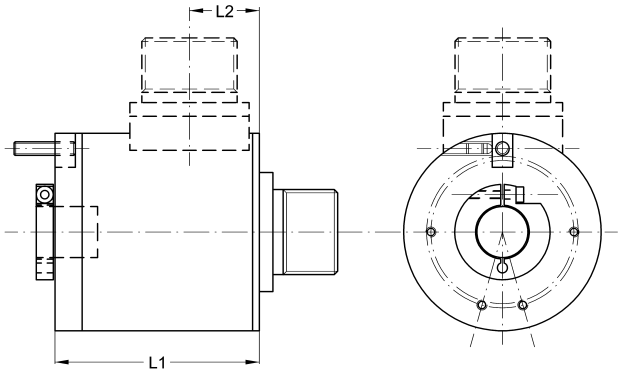


41 pin MIL mating connector
Ordering code: **E41MLS**

For long distances and/or environments with electric noise, LIKA 3x2x0,25 mm² + 2x1x0,5 mm² cable is suggested.

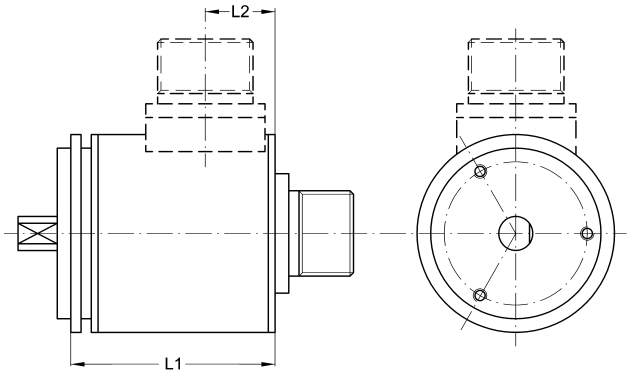
MECHANICAL DIMENSIONS WITH OUTPUT CONNECTOR

CONNECTOR	AXIAL	RADIAL	
	L1	L1	L2
7 pin MIL	55 mm	60 mm	21,5 mm
10 pin MIL	55 mm	60 mm	21,5 mm



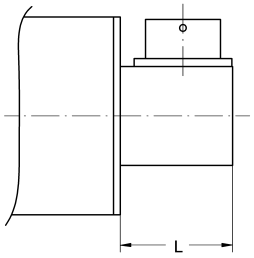
CK58

CONNECTOR	AXIAL	RADIAL	
	L1	L1	L2
7 pin MIL	55 mm	60 mm	21,5 mm
10 pin MIL	55 mm	60 mm	21,5 mm
12 pin CONNEI	55 mm	50 mm	16,5 mm
7 pin TUCHEL	55 mm	55 mm	16 mm
12 pin TUCHEL	55 mm	55 mm	16 mm



I58 - I58S

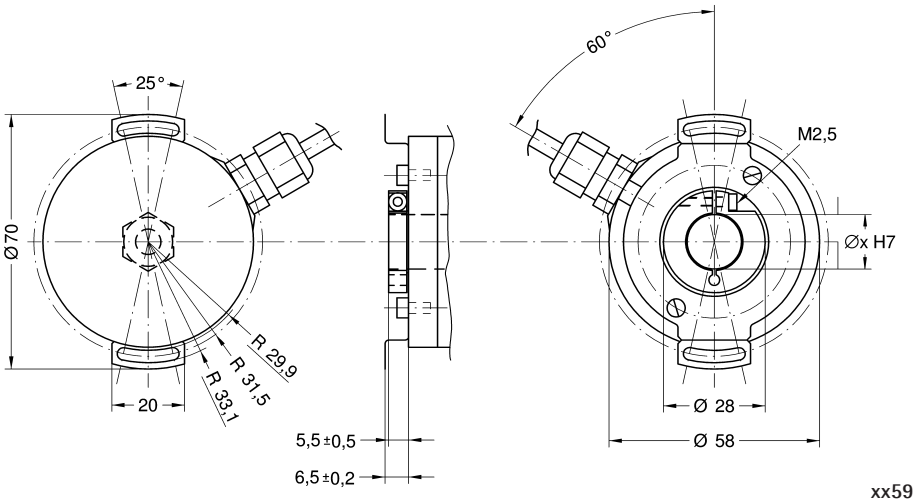
RADIAL OUTPUT R



Ax58x

CONNECTOR	L
7 pin MIL	36 mm
10 pin MIL	38 mm
12 pin MIL	25 mm
19 pin MIL	33 mm
32 pin MIL	38 mm

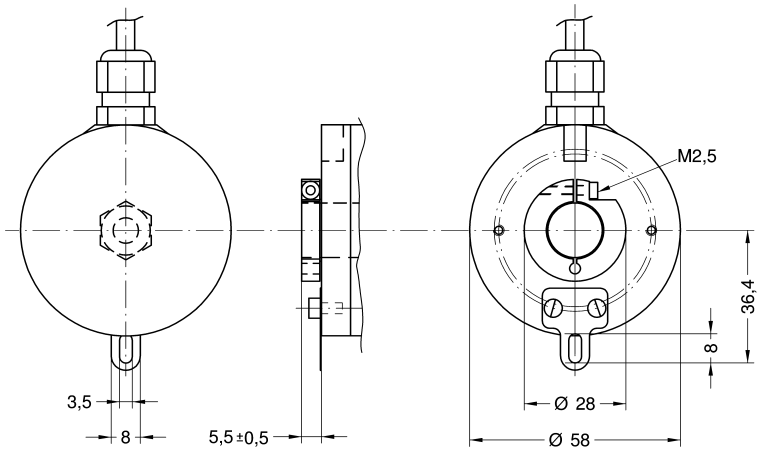
ENCODER'S DIMENSIONS SERIES xx59



xx59

Fixing variation for hollow shaft encoders series: C59, CK59, ASC59 and AMC59.
See the data-sheet for any other information required.

ENCODER'S DIMENSIONS SERIES xx60



xx60

Fixing variation for hollow shaft encoders series: C60, CK60, ASC60 and AMC60.
See the data-sheet for any other information required.

SCHEDULE COUNTS/REV. ABSOLUTE SINGLE TURN ENCODERS

ORD. CODE	COUNTS REV.	REVOLUTIONS	TOT. COUNTS
ASxx 04	16	1	16
ASxx 05	32	1	32
ASxx 06	64	1	64
ASxx 07	128	1	128
• ASxx 18	180	1	180
ASxx 08	256	1	256
• ASxx 36	360	1	360
ASxx 09	512	1	512
• ASxx 72	720	1	720
• ASxx 90	900	1	900
ASxx 10	1024	1	1024
• ASxx 40	1440	1	1440
• ASxx 50	1800	1	1800
ASxx 11	2048	1	2048
• ASxx 80	2880	1	2880
• ASxx 81	3600	1	3600
ASxx 12	4096	1	4096
ASxx 13	8192	1	8192
ASxx 14	16384	1	16384
ASxx 15	32768	1	32768
ASxx 16	65536	1	65536
ASxx 17	131072	1	131072

• Shifted Gray code (see on page 70)

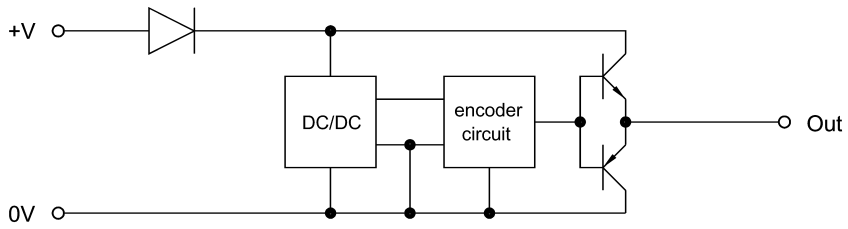
SCHEDULE COUNTS/REV. ABSOLUTE MULTI TURN ENCODERS

ORD. CODE	COUNTS REV.	REVOLUTIONS	TOT. COUNTS
AMxx 04/16	16	16	256
AMxx 05/16	32	16	512
AMxx 06/16	64	16	1024
AMxx 07/16	128	16	2048
AMxx 08/16	256	16	4096
AMxx 09/16	512	16	8192
AMxx 10/16	1024	16	16384
AMxx 11/16	2048	16	32768
AMxx 12/16	4096	16	65536
AMxx 13/16	8192	16	131072
AMxx 04/64	16	64	1024
AMxx 05/64	32	64	2048
AMxx 06/64	64	64	4096
AMxx 07/64	128	64	8192
AMxx 08/64	256	64	16384
AMxx 09/64	512	64	32768
AMxx 10/64	1024	64	65536
AMxx 11/64	2048	64	131072
AMxx 12/64	4096	64	262144
AMxx 13/64	8192	64	524288
AMxx 04/256	16	256	4096
AMxx 05/256	32	256	8192
AMxx 06/256	64	256	16384
AMxx 07/256	128	256	32768
AMxx 08/256	256	256	65536
AMxx 09/256	512	256	131072
AMxx 10/256	1024	256	262144
AMxx 11/256	2048	256	524288
AMxx 12/256	4096	256	1048576
AMxx 13/256	8192	256	2097152
AMxx 04/4096	16	4096	65536
AMxx 05/4096	32	4096	131072
AMxx 06/4096	64	4096	262144
AMxx 07/4096	128	4096	524288
AMxx 08/4096	256	4096	1048576
AMxx 09/4096	512	4096	2097152
AMxx 10/4096	1024	4096	4194304
AMxx 11/4096	2048	4096	8388608
AMxx 12/4096	4096	4096	16777216
AMxx 13/4096	8192	4096	33554432
AMxx 14/4096	16384	4096	67108864
AMxx 15/4096	32768	4096	13421772
AMxx 16/4096	65536	4096	26843544
AMxx 17/4096	131072	4096	53687088

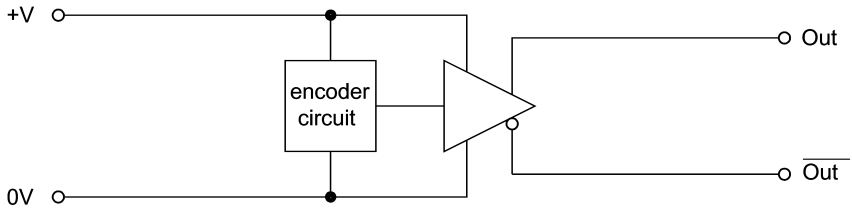
NOTES ON THE OUTPUT CIRCUITS

Output	Push-Pull	Line Driver	Universal circuit	Unit
Iout max	40	40	100	mA
Zout (impendance)	60+30%		30	Ω
Vout low@40mA	≤ 0,5	≤ 0,5	≤ 0,4	Vdc
Vout high@40mA	(Vin - 1,25)	≥ 2,5	(Vin - 1,25)	Vdc

PUSH-PULL



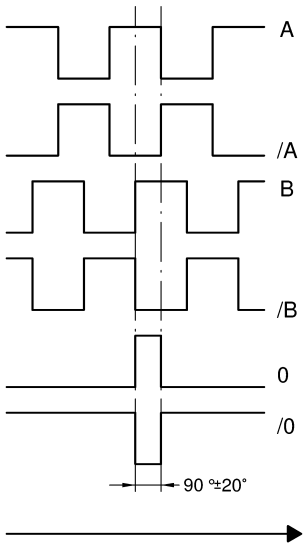
LINE DRIVER TTL/UNIVERSAL CIRCUIT



- For the transmission of signals for distances > 10 m is it advisable to use Push-Pull or universal circuit outputs or Line Driver. The Push-Pull output is suitable for interface connection even with circuits which have NPN or PNP inputs.

- For the connection between the encoder and the control unit, it is advised to use a screened cable with screening connected to ground.

OUTPUT SIGNALS



CW counting direction, seen from shaft side

SSI OUTPUT

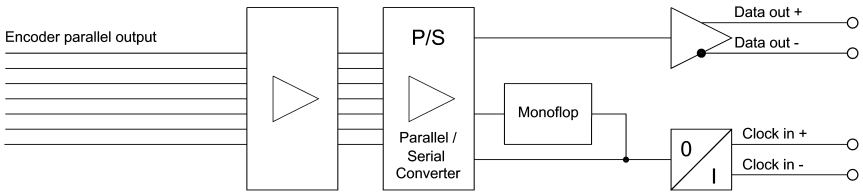
DESCRIPTION

The standard of transmission SSI "serial sincronous interface" is worldwide diffused and available for a large range of commercial transducers and control devices. Compared to parallel or asincronous transmission it has the following advantages:

- less conductors;
- less electronic components;
- encoder is galvanically separated by means of optocouplers;
- transmission rate up to 1,5 Mbps;
- hardware interface indipendent from absolute encoder resolution (nr. of transmitted data).

The interface works with only one 6 wire cable. Balanced transmission provides a high noise immunity. The possibility of working in multiplexing with a high number of encoders allows reliable process checks a simplicity of the system and of data managment.

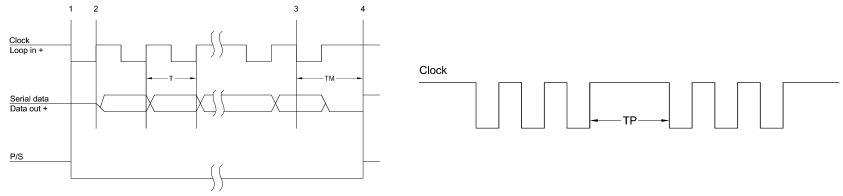
BLOCK DIAGRAM



OPERATION SYSTEM

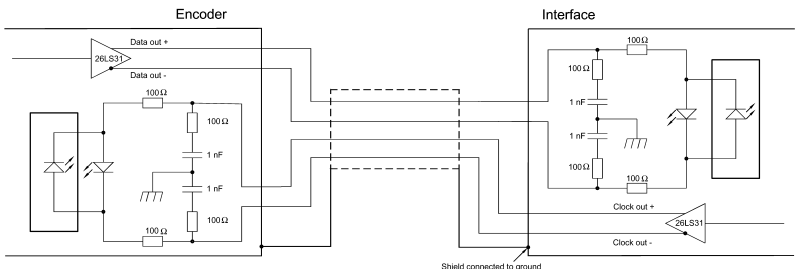
When the Clock is changed for the first time from high to low (1) instruction is given to the monoflop, the period (Tm) of which has to be longer than the period of the Clock T. The output of the monoflop controls the serial/parallel converter PS. When the Clock changes from low to high (2), the most significant bit MSB is sent to the serial output. With every other change of the Clock the data is transmitted to the serial output of the encoder until the least significant bit LSB. The interfaces works with encoders up to 25 bits.

TIMING



With the last change of the Clock (3) form low to high, the data transmission cycle is terminated. After the time Tm the encoder is ready for the next transmission.

ADVISED INTERFACE

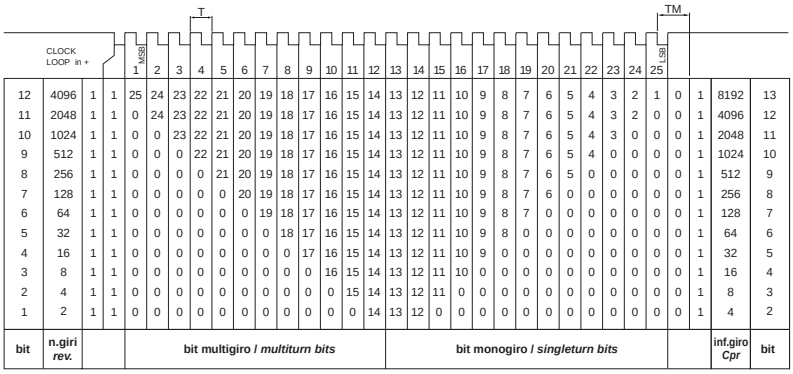


TRANSMISSION PROTOCOLS

The difference between the data transmission of a single turn encoder and a multi turn encoder is only given by the number of bits and Clocks. The single turn version allows max. 13 bits (8192 Counts/rev.), while the multi turn version allows max. 25 bits (8192 Counts/rev. x 4096 rev.).

"TREE FORMAT" PROTOCOL (STANDARD)

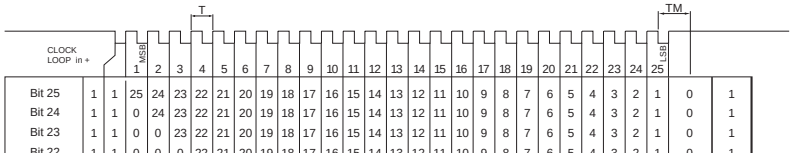
The most common protocol divides the transmitted data into 12 "nr. of rev. bits", on the left side of the central axes and 13 "steps per rev. bits" on the right side of the axes (see diagram). If less than 13 +12 bits are required, the transmitted data is filled up with "zeroes" in order to obtain always the length of 25 bits.



12	4096	1	1	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1	8192	13
11	2048	1	1	0	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	0	0	1	4096	12
10	1024	1	1	0	0	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	0	0	0	1	2048	11
9	512	1	1	0	0	0	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	0	0	0	0	1	1024	10
8	256	1	1	0	0	0	0	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	0	0	0	0	0	1	512	9
7	128	1	1	0	0	0	0	0	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	0	0	0	0	0	0	1	256	8
6	64	1	1	0	0	0	0	0	0	19	18	17	16	15	14	13	12	11	10	9	8	7	0	0	0	0	0	0	0	1	128	7
5	32	1	1	0	0	0	0	0	0	0	18	17	16	15	14	13	12	11	10	9	8	0	0	0	0	0	0	0	0	1	64	6
4	16	1	1	0	0	0	0	0	0	0	0	17	16	15	14	13	12	11	10	9	0	0	0	0	0	0	0	0	0	1	32	5
3	8	1	1	0	0	0	0	0	0	0	0	0	16	15	14	13	12	11	10	0	0	0	0	0	0	0	0	0	0	1	16	4
2	4	1	1	0	0	0	0	0	0	0	0	0	0	15	14	13	12	11	0	0	0	0	0	0	0	0	0	0	0	1	8	3
1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	14	13	12	0	0	0	0	0	0	0	0	0	0	0	0	1	4	2
bit	n.giri *rev.*		bit multigiro / *multiturn bits*													bit monogiro / *singleturn bits*													inf.giro *Cpr*	bit		

"LSB RIGHT ALLIGNED" PROTOCOL

A variation of the "tree format" consists of the right allignment of the bits, beginning form MSB to LSB. The "nr. of rev. bits" are placed before the "counts per rev. bits" (see diagram). If less than 13 +12 bits are required, the transmitted data is filled up with leading "zeroes" in order to obtain the length of 25 bits.



Bit 25	1	1	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 24	1	1	0	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 23	1	1	0	0	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 22	1	1	0	0	0	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 21	1	1	0	0	0	0	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 20	1	1	0	0	0	0	0	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 19	1	1	0	0	0	0	0	0	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 18	1	1	0	0	0	0	0	0	0	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 17	1	1	0	0	0	0	0	0	0	0	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 16	1	1	0	0	0	0	0	0	0	0	0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 15	1	1	0	0	0	0	0	0	0	0	0	0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 14	1	1	0	0	0	0	0	0	0	0	0	0	0	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 13	1	1	0	0	0	0	0	0	0	0	0	0	0	0	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1
Bit 12	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	12	11	10	9	8	7	6	5	4	3	2	1	0	1
bit	n.giri *rev.*		bit multigiro / *multiturn bits*													bit monogiro /*singleturn bits*													inf.giro *Cpr*	bit		

RECOMMENDED TRANSMISSION RATES

The SSI interface has a frequency of data transmission from 100 kHz to 1 MHz with a clock signal which has a typical logic level of 5 V. The output signal is given, in the standard version, with level 5 V. The transmission rate (baudrate) depends on the length of cables.

Cable length	Baudrate
< 50 m	< 400 kHz
< 100 m	< 300 kHz
< 200 m	< 200 kHz
< 400 m	< 100 kHz

SHIFTED CODES

It is sometimes necessary to have a quantity of output information which is different from the values expressed by powers of 2 (2^n). These cases are commonly referred to as "shifted" Gray and Binary codes. It is useful to note that in these cases:
- the initial count value is not zero.
- the final count value does not coincide with the max. value of the information requested.

To calculate the initial and final values of the output information, it is necessary to use the following algorithm:

Example
a shifted Gray code of 360 counts/rev. is required

$$\Delta = \frac{\text{integral Gray - shifted Gray}}{2}$$

where:
Integral Gray: represents the standard value of the information (expressed by 2^n) immediately superior to the max. value desired.

shifted Gray: represents the max. value of the information in shifted code desired.

Δ: represents the initial count value (first output information).

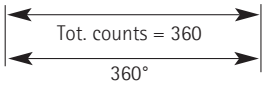
Δ-1: represents the quantity to be added to the max. value of information required to obtain the final count value (last output information).

therefore:

$$\Delta = \frac{512 - 360}{2} = 76;$$

$$\Delta\text{-}1 = 75;\ 360 + 75 = 435$$

First position 76 — Last position 435



Shifted code encoders can only be supplied in single-turn version.

LATCH

The LATCH circuit allows the storage of the information value which the encoder shows in output at a particular moment.
The above-mentioned information value will remain present in output until the LATCH signal is deactivated. In this way it is possible, if for instance the data transmission speed of the encoder is fast in comparison to the data aquisition time of the interface electronics, to freeze the information for the amount of time necessary for the data to be acquired.

TRI-STATE

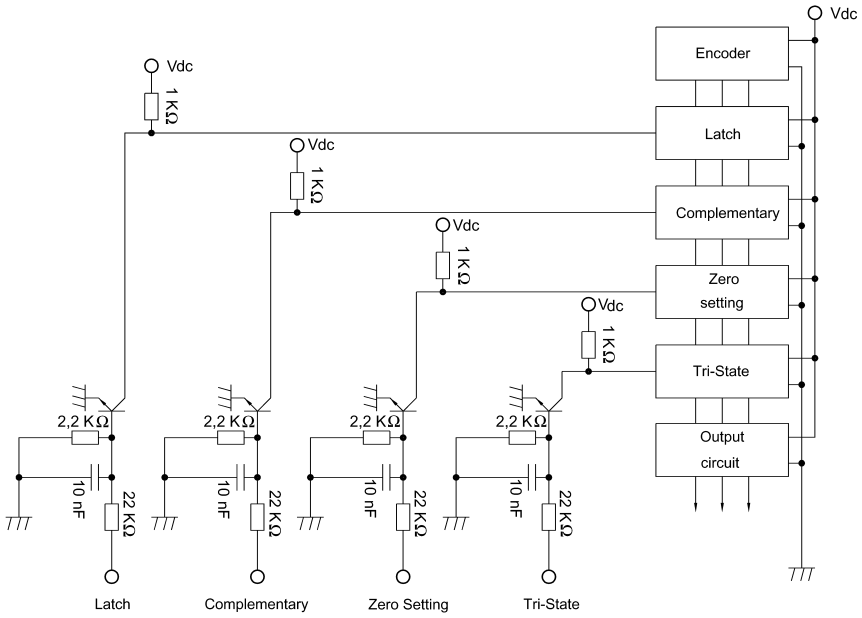
The TRI-STATE circuit allows the transmission of output information from the encoder to be blocked.
In this way, it is possible for instance to work with several encoders in parallel (multiplexing) using a single control unit, acquiring the information values relative to the angular position of each encoder with an updating time equal to the duration of the multiplexing cycle.

COMPLEMENTARY

The COMPLEMENTARY circuit allows the count up also if the shaft turn ccw. This feature is standard on all models.

ZERO SETTING

The output value is set to zero (reset) with a signal from PLC or other device. The internal microprocessor use this signal to perform reset of information value.
The encoder reset is possible for a frequency count ranging from zero to 2,5 kHz.
The reset signal has to bee logic level HIGH (from 10V. to 30V.) for 100 µsec. minimum.



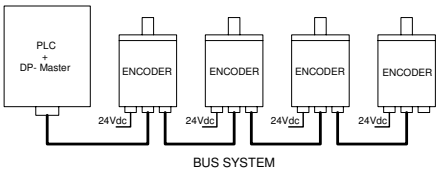
Function	1 (high) ≥ 10 Vdc	0 (low) ≤ 8 Vdc
TRI-STATE	Active outputs	Encoder disabled
LATCH	Data in memory	Latch deactivated
COMPLENTARY	CCW count	CW count
ZERO SETTING	Zero active	Zero deactivate

ELECTRONIC PARITY BIT

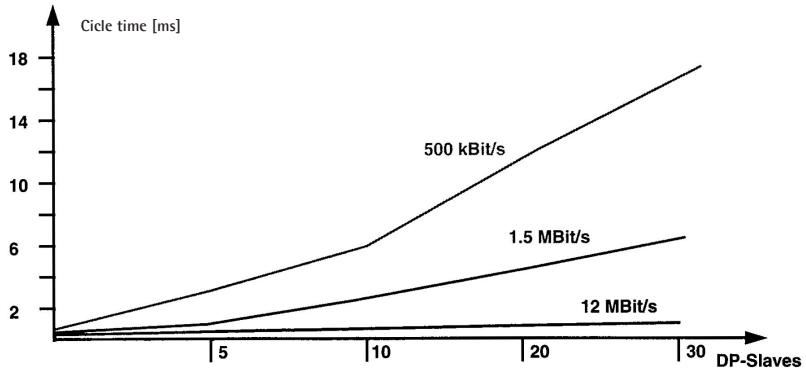
Electronic Parity Bit is active when the sum of output bits, logic level 1, is even.

PROFIBUS-DP

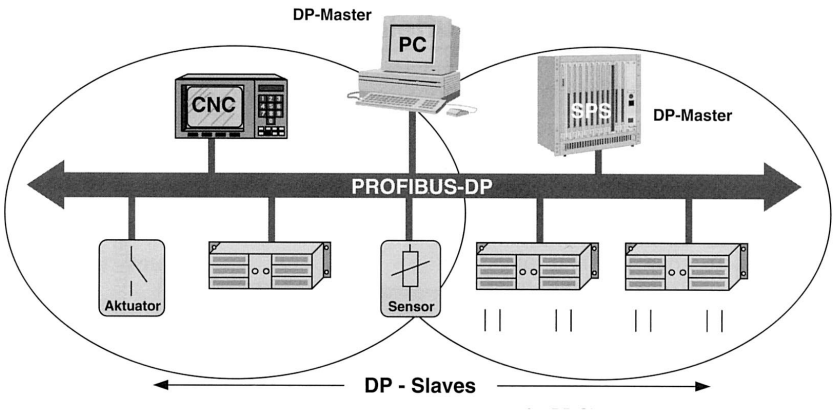
Profibus-DP is a communication system which consist of a Master or system manager, slave units and a two wire cable for data transmission.



The Master can connect up to 125 Slaves, divided into groups of 32, through a special two wire cable designed for high speed transmission up to 12 Mbits.



Slave units can be installed and recognized by the Master by means of the configuration file .GSE (or .GSD, .GSI depending upon the used language). This file contains all the information which are necessary for the identification and the communication with the Master. The information are e.g. vendor ID of the unit, supported transmission rates, dimensions of the exchanged data fields, set-up parameters, available diagnostic messages.

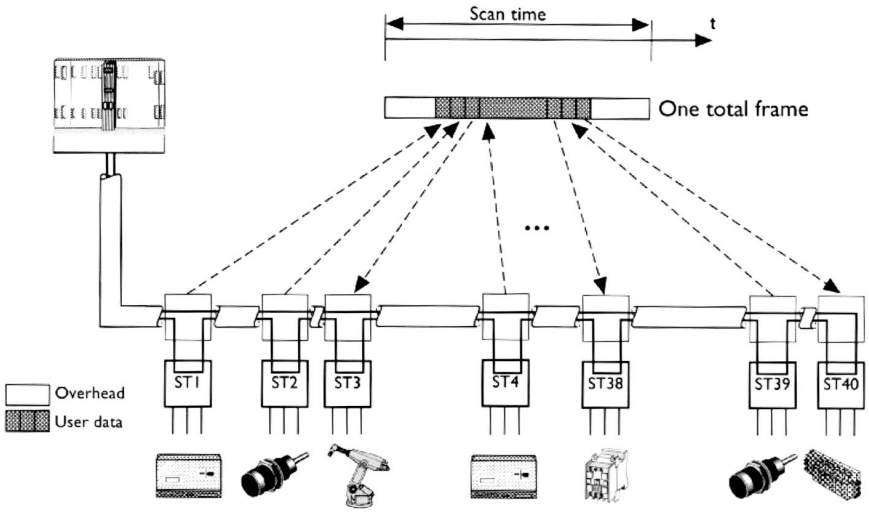


The PROFIBUS-DP network has a tree structure and the main branches are represented by the units and/or sub-networks managed by other Masters.
In order to indentify a unit of the network, users can assign a "DA" address to each unit which is communicated to the Master during it's initialization.

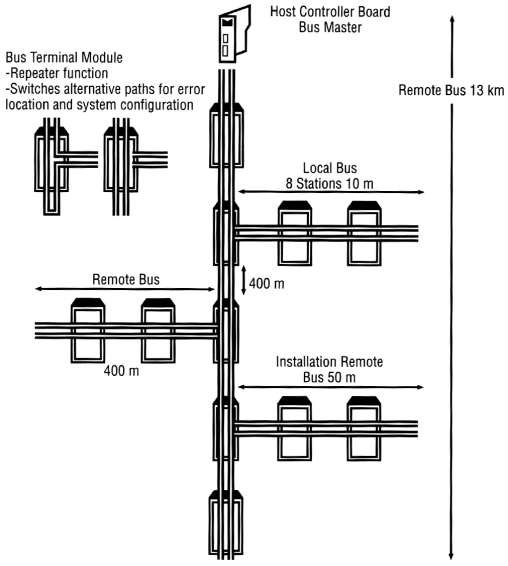
www.lika.biz
- manual
- GSD file
- datasheet
- more info & links

INTERBUS-S

This fieldbus has been worked out as a non proprietary sensor and actuator fieldbus. InterBus-S is a Master-Slave system where communication between the devices is done by means of a single-message containing information for/from all devices (added messages telegram).



In this way a very high efficiency is obtained because the part of the message which doesn't contain information but only data for transmission control is reduced to the minimum.
A network can connect up to 512 devices on a max. length of 400 mt. or up to 13 km by using a signal repeater. The typical transmission rate (baudrate) is 500 Kbit/s.



InterBus-S devices are distinguished in 4 different profiles, from 1 to 4. The differences are the length of transmitted data (1 and 2) and the possibility both to receive and to transmit data (3 and 4).
Profibus for example distinguishes only between programmable and not programmable devices (class 2 and 1).

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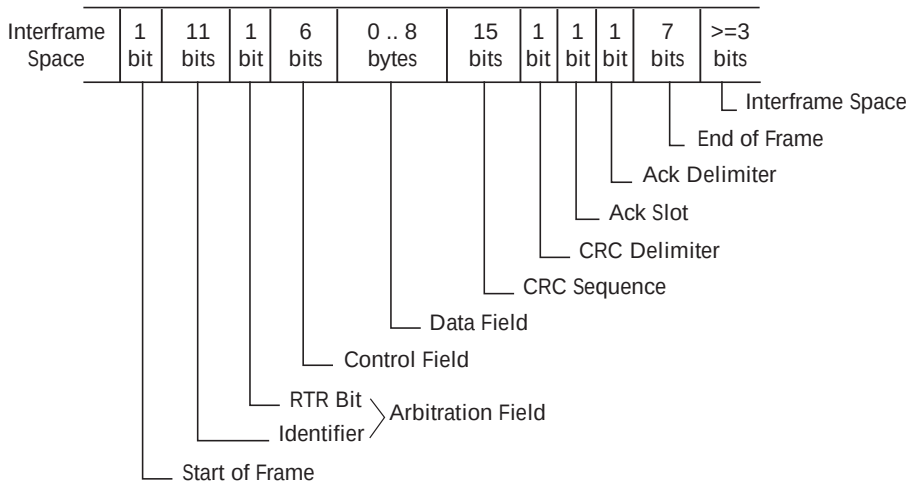
CAN AND DEVICENET

The CAN protocol was originally developed by Bosch and Intel for the automotive industry and is now largely diffused in the industrial automation market as well.
CAN is a multi-master system that allows messages to be delivered to multiple devices simultaneously. An identifier field in the data provides the means for multiple priority levels (used in arbitration), more efficient transfer of I/O data and multiple consumers.
CAN is used as the basis of the DeviceNet standard and defines the base level communications protocol and the hardware. The table shows the relative levels of CAN and DeviceNet protocols. CAN is a basic data link protocol while DeviceNet is an application-level protocol.

DeviceNet Protocol	ISO Application (Layer 7)
CAN Protocol	ISO Data Link (Layer 2)
Physical Layer	ISO Physical (Layer 1)
Transmission Media	ISO Media (Layer 0)

As shown in the diagram, the data contained in each frame can be up to 8 byte long. In case two or more nodes try to access the network simultaneously, CAN uses a unique non-destructive bit-wise arbitration mechanism. This CAN-specific feature allows resolution of collisions without loss of bandwidth or resending of data by the higher priority node.



DeviceNet is a network with up to 64 nodes (CAN max. 32) and a baudrate depending on the networks length of max. 500 kbit/s (CAN max. 1 Mbit/s). The system can be set up as peer-to-peer, master/slave or both. Data is accessible to every component of the system simultaneously in order to provide a very efficient use of the network bandwidth.

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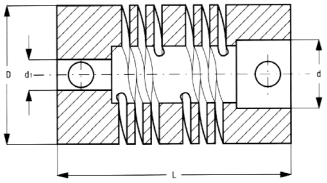
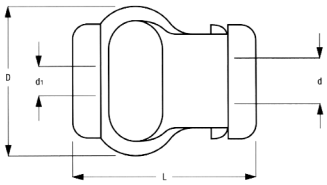
FLEXIBLE COUPLINGS

Complete range of couplings avaiable on www.lika.biz

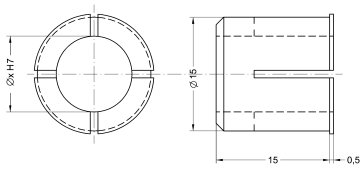


PAN COUPLINGS				
Mod.	L	D	d	d1
PAN 6	22	19	6	6
PAN 8	24	25	8	8
PAN 10	24	25	10	10
PAN 12	24	25	12	12



PGF COUPLINGS				
Mod.	L	D	d	d1
PGF 6	29	22	6	6
PGF 8	29	22	8	8
PGF 10	29	22	10	10

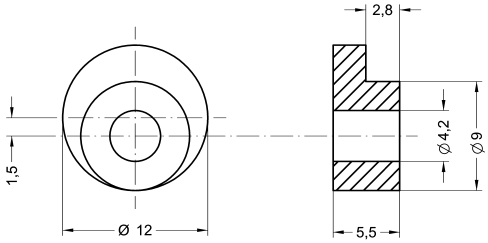
REDUCING SLEEVES



BR1 REDUCING SLEEVES	
BR1-12	Ø 12mm h7
BR1-10	Ø 10mm h7
BR1-9.52	Ø 9.52mm h7
BR1-8	Ø 8mm h7
BR1-6	Ø 6mm h7

FIXING CLAMPS

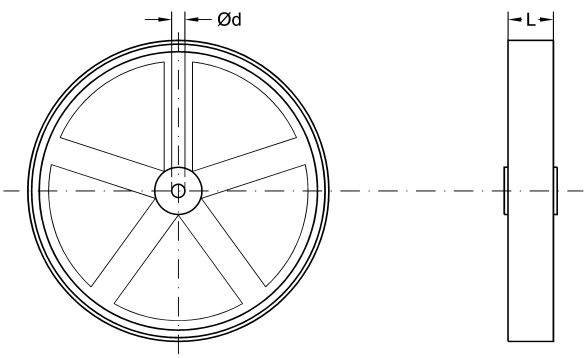
See mounting instructions on page 78



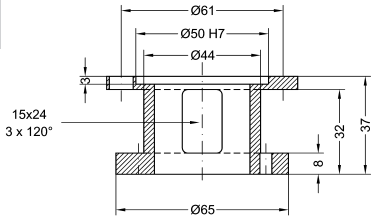
KIT LKM-386 is supplied as a set of 3 clamps, screws and nuts.

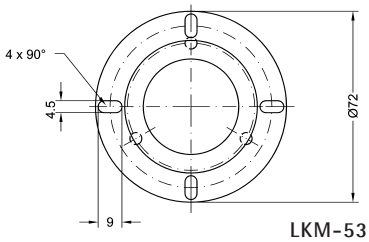
METRIC WHEELS

METRIC WHEELS				
Mod.	Circ.	Superficie/Surface	Ø d	L
RM200GZ	200 mm	rubber (knurled)	6 mm	12 mm
RM500G	500 mm	rubber (smooth)	8 mm	24 mm
RM500Z	500 mm	metal (knurled)	8 mm	24 mm



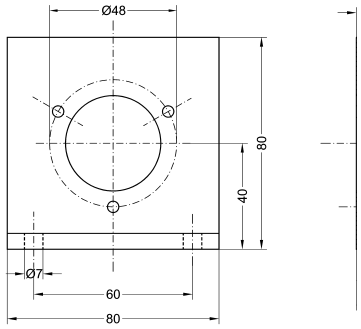
MOUNTING BELLS - BRACKETS

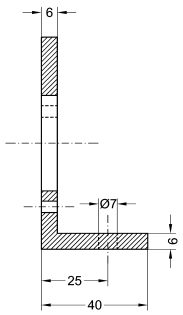




LKM-531

Combine with I58S, I65 and Ax58S

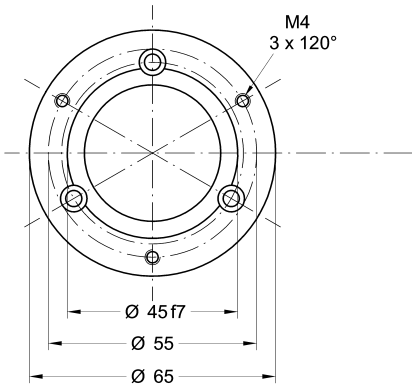


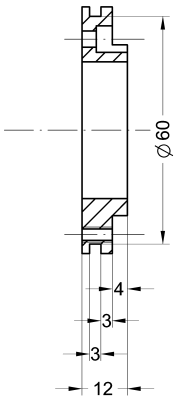


LKM-391

Combine with I58S, I65 and Ax58S

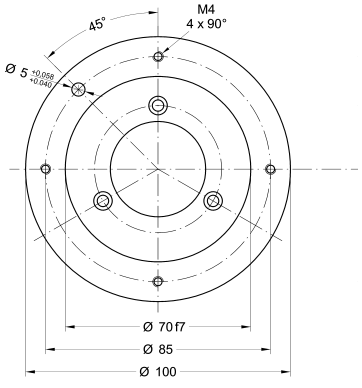
ADAPTING FLANGES

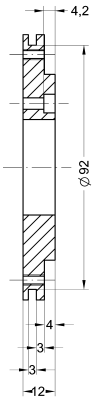




LKM-949

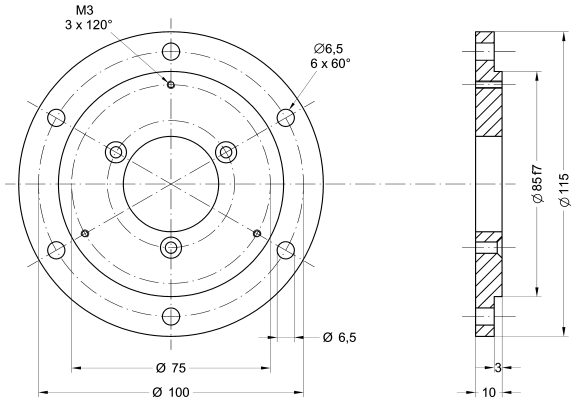
Adapts the Ax58S series to the old AS6, AM6 series





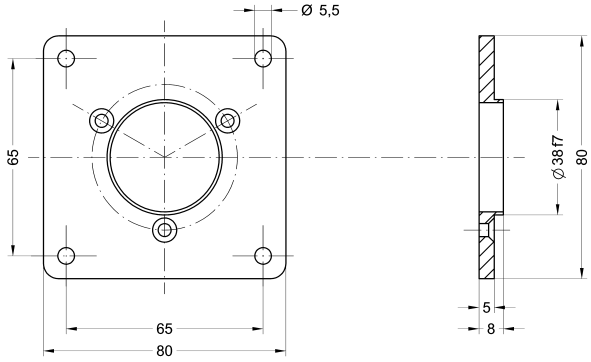
LKM-963

Adapts the Ax58S series to the old AS1, AM1 series



LKM-458

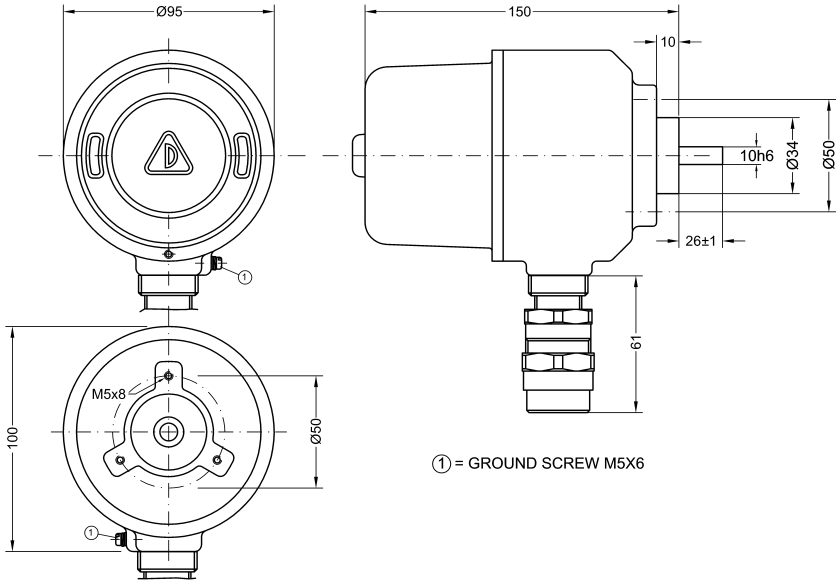
RE0444 adapting flange



LKM-205

Combine with I58S, I65, Ax58S

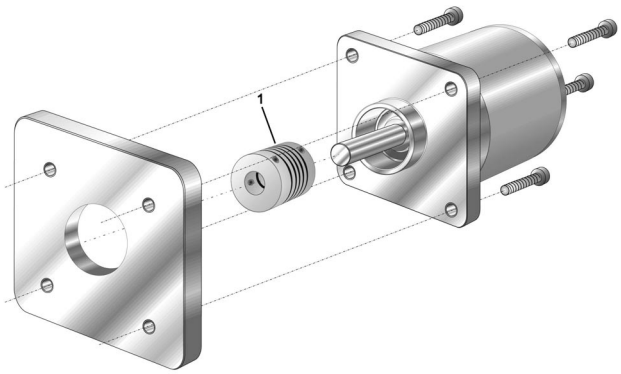
EEx HOUSING



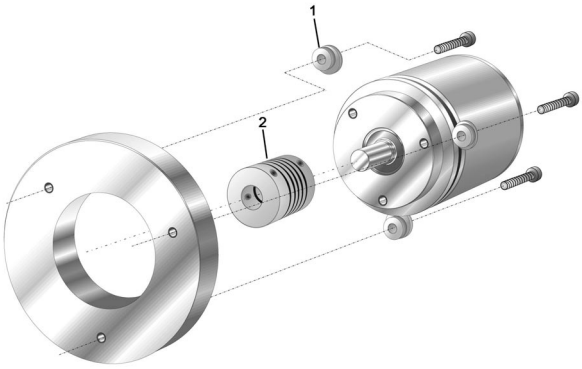
Encoder housing according to EEx d IIB + H2T6

MOUNTING OF SOLID SHAFT ENCODERS

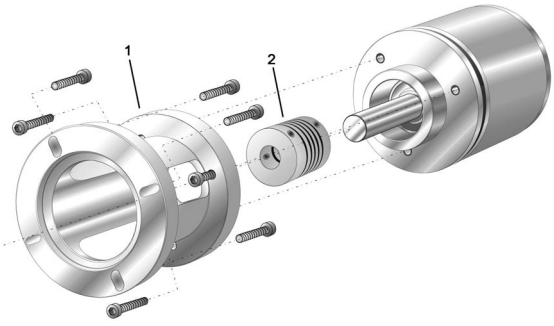
a) with screws
(1) flexible coupling



b) with fixing clamps (ordering code LKM 386)
(1) fixing clamps kit (LKM 386, supplied with screws)
(2) flexible coupling



c) with mounting bell
(1) mounting bell (ordering code LKM 531)
(2) flexible coupling

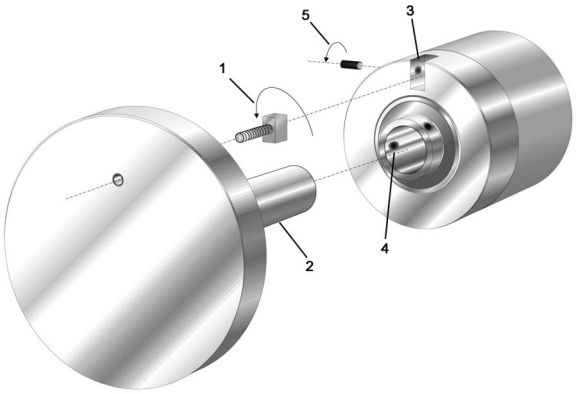


MOUNTING OF C58, CK46 AND CK58 SERIES

Hollow shaft encoders for direct mounting on motor shafts.

- Fix antirotation pin (1) on the back side of the motor (lock nut fixing is suggested);
- Put encoder on motor shaft (2);
- Place antirotation pin in the milling on encoder flange (3);
- Fix grub screws/collar (4) of encoder shaft (glueing of screws is suggested).

The antirotation pin (spring loaded) must allow encoder to move radially in order to absorb misalignment between motor shaft and encoder shaft.
Encoders are supplied with adjusted and glued grub screw (5).

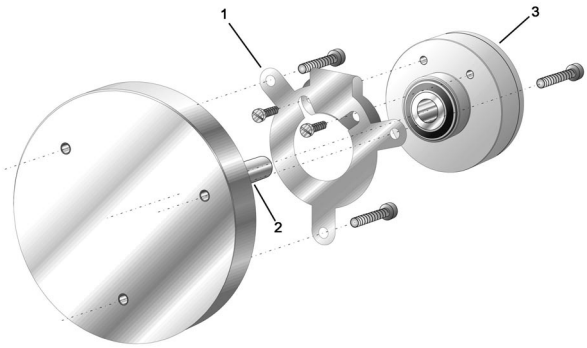


MOUNTING OF C50, Cx59, Cx60 AND C8x SERIES

Through hollow shaft encoders with fixing plate for direct mounting on motor shafts.

- Screw fixing plate (1) on the back side of the motor;
- Put encoder on motor shaft (2);
- Place encoder at a correct distance from the motor in order to avoid deformation of the fixing plate;
- Fix grub screws/collar (3) of encoder shaft (glueing of screws is suggested).

The fixing plate must allow encoder to move radially in order to absorb misalignment between motor shaft and encoder shaft. Fixing plates (1) are assembled on encoders.



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Contact...

Headquarters & Plant
Lika Electronic
Via S. Lorenzo, 25
36010 Carré (VI) ITALY
Tel. +39 0445 382814
Fax +39 0445 382797
eMail info@lika.it
www.lika.it

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eMail info@lika.it

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Fax 02 93901522
eMail info@lika.it

Ufficio Torino
Tel. 011 9032762
Fax 011 9020282
eMail info@lika.it

German Branch
Lika Electronic GmbH
Fritz-Reichle-Ring, 18
78315 Radolfzell (D)
Tel. +49 (0) 7732 9423713
Fax +49 (0) 7732 9423718
eMail info@lika-electronic.de
www.lika-electronic.de

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Edition 0703ENC-E