

PHOTOELECTRIC ROTARY ENCODER

# AK58



Absolute Encoder



High Resolutions



BiSS protocol



SSI protocol



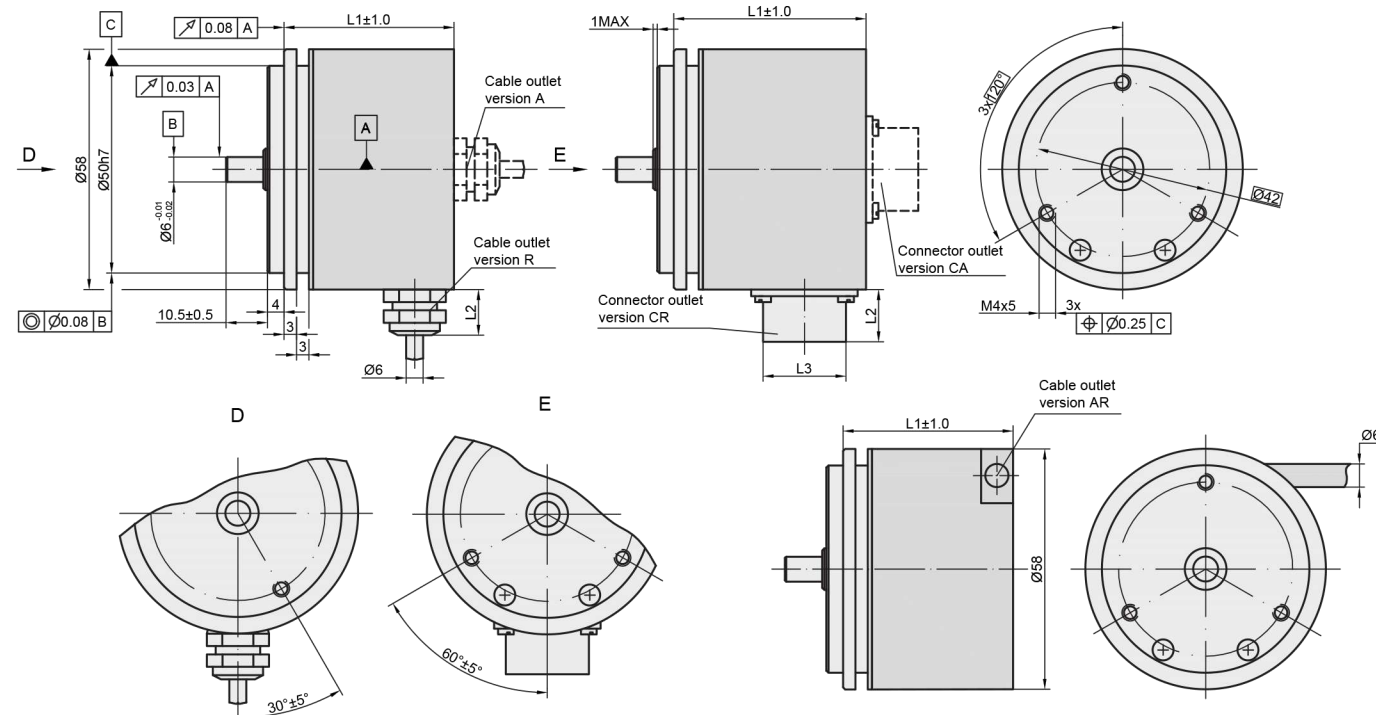
Multiturn Encoder



Photoelectric absolute singleturn and multiturn rotary encoder series AK58 is constituted of 6 different models - AK58M, AK58B, AK58C, AK58C2, AK58C3 and AK58D. Encoders use SSI and BiSS

output signal interfaces and output up to 24 bit singleturn and 40 bit multiturn resolutions through binary or Gray codes.

## AK58M



OTHER MOUNTING VERSIONS CAN BE FOUND IN THE NEXT PAGES

	Connector type / cable outlet	ONC axial	PC10 axial	C12, C9 axial	ONC radial	PC10 radial	C12, C9 radial	Cable axial (ver. A)	Cable radial (ver. R)	Cable axial-radial (ver. AR)
Singleturn	L1	41 mm	41 mm	41 mm	63 mm	55 mm	58 mm	41 mm	41 mm	43 mm
Multiturn	L1	62 mm	62 mm	62 mm	63 mm	55 mm	58 mm	62 mm	63 mm	55
Singleturn/multiturn	L2	16 mm	9 mm	22 mm	16 mm	9 mm	22 mm	12 mm	12 mm	-
Singleturn/multiturn	L3	M24	M14	M23	M24	M14	M23	-	-	-

## MECHANICAL DATA

Maximum shaft speed	12000 rpm	Maximum weight without cable	0.35 kg
Maximum shaft load: - axial	10 N (40 N for AK58C2, AK58C3, AK58D)	Operating temperature - singleturn version - multiturn version	-20...+80 °C -10...+70 °C
- radial (at shaft end)	20 N (60 N for AK58C2, AK58C3, AK58D)	Storage temperature - singleturn version - multiturn version	-30...+90 °C -20...+80 °C
Starting torque at 20°C	≤ 0.01 Nm	Maximum humidity (non-condensing)	98 %
Rotor moment of inertia	<15 gcm <sup>2</sup>	Permissible vibration (55 to 2000 Hz)	≤ 100 m/s <sup>2</sup>
Protection (IEC 529):	IP65	Permissible shock (11 ms)	≤ 1000 m/s <sup>2</sup>

## ACCESSORIES

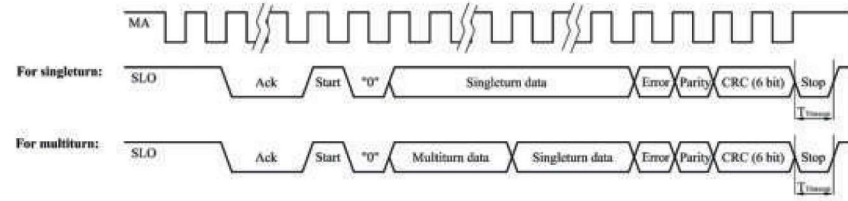
<b>CONNECTORS FOR CABLE</b>	B12 12-pin round connector	C9 9-pin round connector	C12 12-pin round connector	D9 9-pin flat connector	D15 15-pin flat connector	RS10 10-pin round connector	ONC 10-pin round connector
<b>CONNECTORS ON HOUSING</b>	C9 9-pin round connector		C12 12-pin round connector	RS10 10-pin round connector		ONC 10-pin round connector	
<b>COUPLING</b>	SC30						

## ELECTRICAL DATA

Resolution: Singleturn version: - with interface BiSS C - with interface SSI	9 ... 21 bit 9 ... 21 bit	Periods number of signals 1Vpp	4096
Multiturn version: - single turn resolution with BiSS C - multiturn resolution with BiSS C - single turn resolution with SSI - multiturn resolution with SSI	9 ... 21 bit 12/16/20/24 bit 9 ... 21 bit 9 ... 40 bit	Accuracy	± 30 arc sec
Output code	Gray, binary	Supply voltage	+5V ± 5%; +(10 to 30) V
Data interface	SSI, BiSS C	Light source	LED
Incremental signals	sine wave (sin, cos) 1 Vpp* (optional) *only for singleturn version	Maximum operating frequency - with interface BiSS C - with interface SSI	up to 10 MHz up to 4 MHz
		Cable length (standard)	1 m

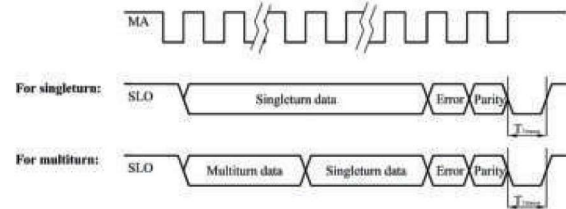
# ELECTRICAL SIGNALS

## BiSS C serial interface



Interface	BiSS C
$T_{trans}$	1,2 $\mu$ s - 26 $\mu$ s
Clock frequency	62,5 kHz ÷ 10 MHz

## SSI serial interface



Interface	SSI
$T_{trans}$	1,2 $\mu$ s - 26 $\mu$ s
Clock frequency	62,5 kHz - 4 MHz

Interface	BiSS C
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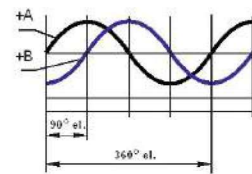
$T_{TD}$	1,2 $\mu$ s - 26 $\mu$ s
Clock frequency	62,5 kHz ÷ 10 MHz

Interface	SSI
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$T_{TD}$	1,2 $\mu$ s - 26 $\mu$ s
Clock frequency	62,5 kHz ÷ 4 MHz

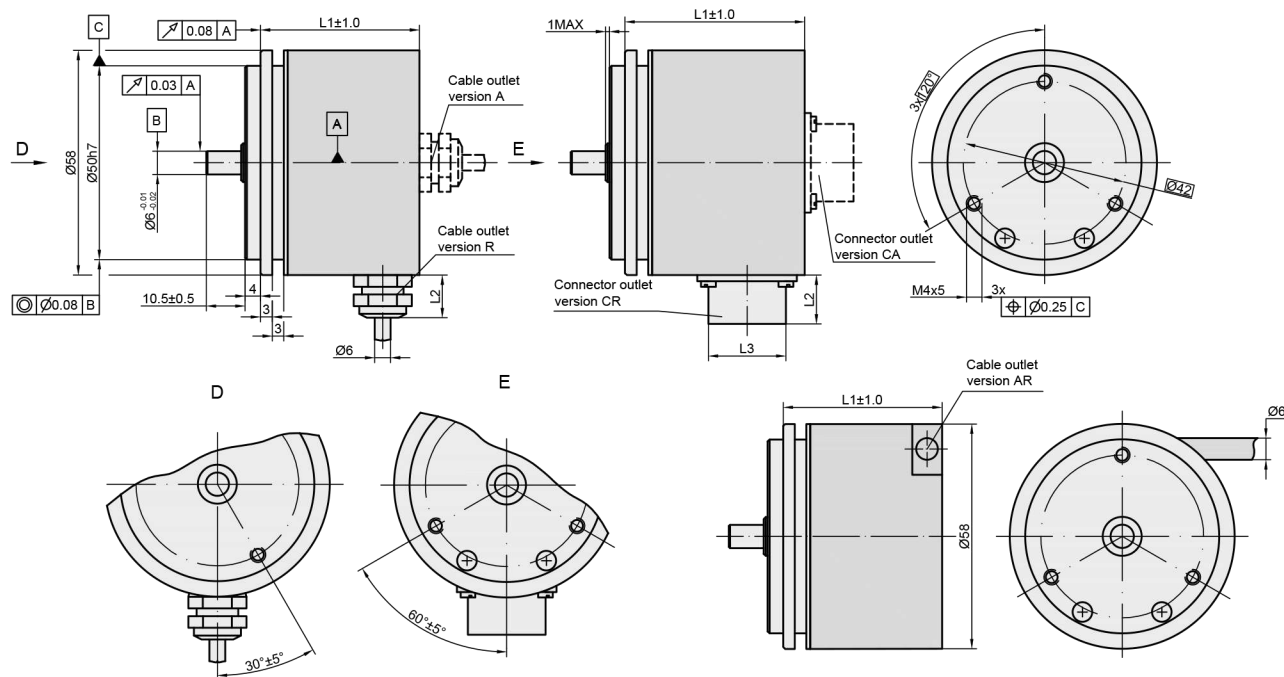
Note: Error and/or parity bits should be determined during order

## Sine wave 1 Vpp signals



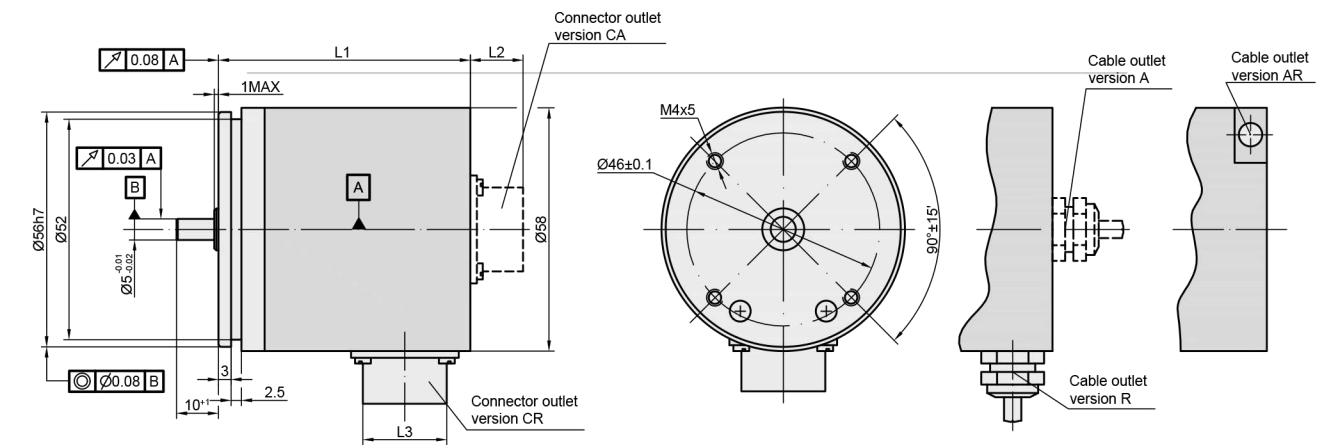
Complementary signals are not shown

# AK58M



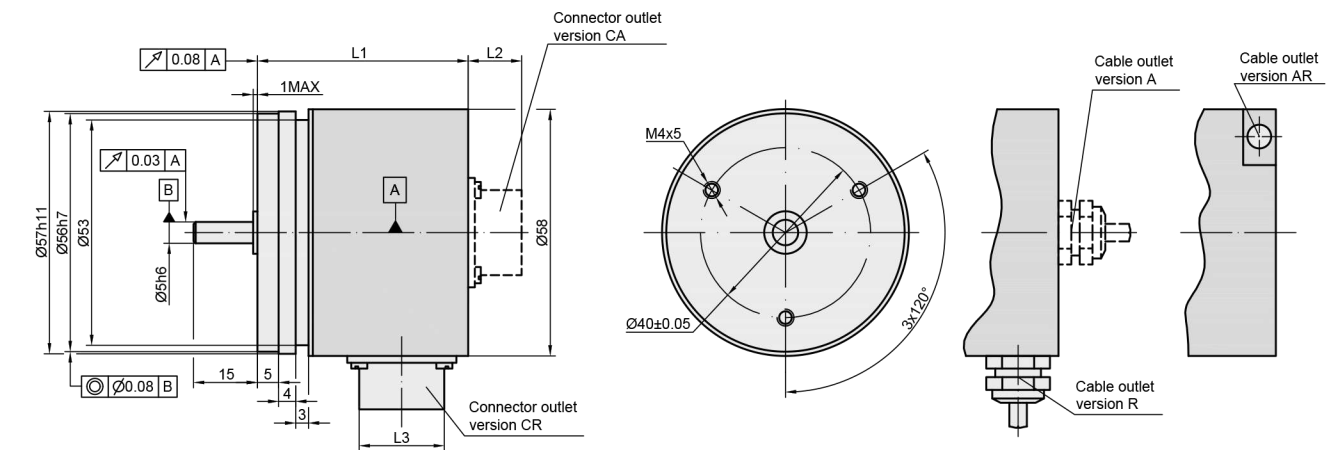
	Connector type / cable outlet	ONC axial	PC10 axial	C12, C9 axial	ONC radial	PC10 radial	C12, C9 radial	Cable axial (ver. A)	Cable radial (ver. R)	Cable axial-radial (ver. AR)
Singleturn	L1	41 mm	41 mm	41 mm	63 mm	55 mm	58 mm	41 mm	41 mm	43 mm
Multiturn	L1	62 mm	62 mm	62 mm	63 mm	55 mm	58 mm	62 mm	53 mm	55
Singleturn/multiturn	L2	16 mm	9 mm	22 mm	16 mm	9 mm	22 mm	12 mm	12 mm	-
Singleturn/multiturn	L3	M24	M14	M23	M24	M14	M23	-	-	-

# AK58B



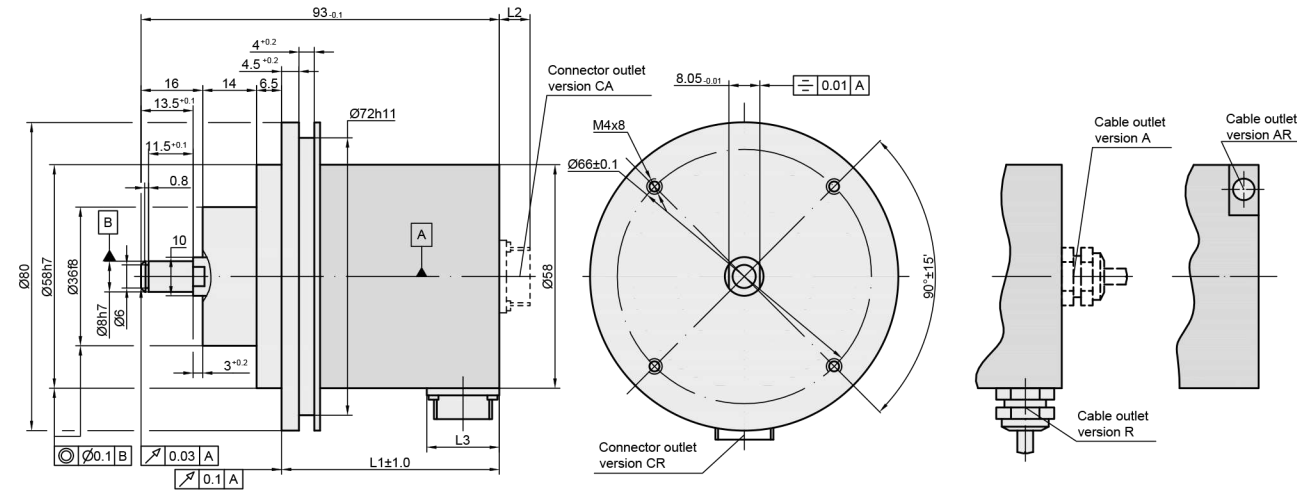
	Connector type / cable outlet	ONC axial	PC10 axial	C12, C9 axial	ONC radial	PC10 radial	C12, C9 radial	Cable axial (ver. A)	Cable radial (ver. R)	Cable axial-radial (ver. AR)
Singleturn	L1	44.5 mm	44.5 mm	44.5 mm	66.5 mm	58.5 mm	61.5 mm	44.5 mm	47.5 mm	46.5 mm
Multiturn	L3	65.5 mm	65.5 mm	65.5 mm	66.5 mm	58.5 mm	61.5 mm	65.5 mm	56.5 mm	58.6
Singleturn/multiturn	L2	16 mm	9 mm	22 mm	16 mm	9 mm	22 mm	12 mm	12 mm	-
Singleturn/multiturn	L3	M24	M14	M23	M24	M14	M23	-	-	-

# AK58C



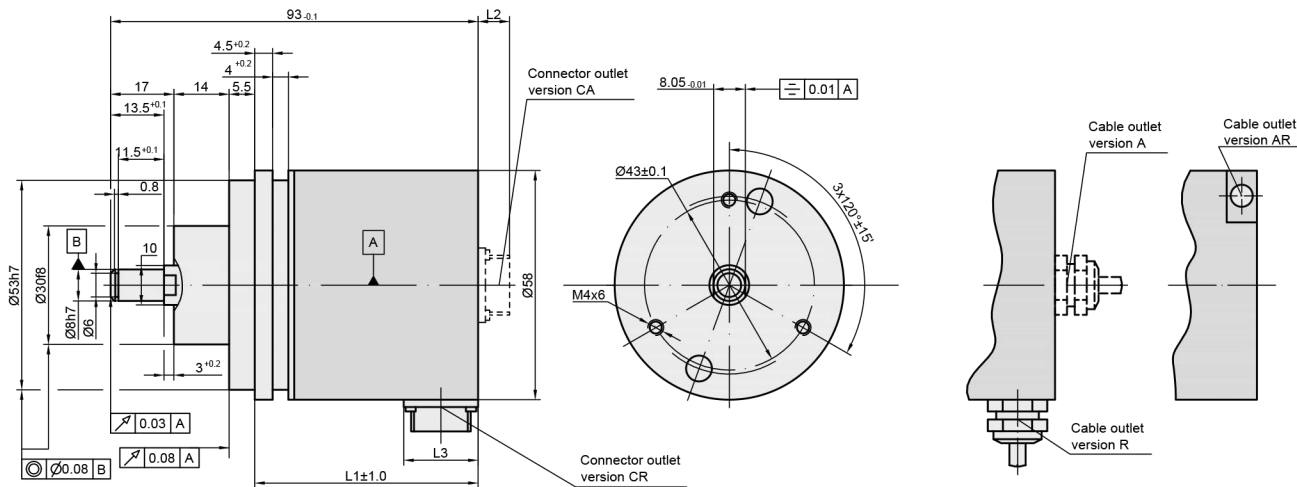
	Connector type / cable outlet	ONC axial	PC10 axial	C12, C9 axial	ONC radial	PC10 radial	C12, C9 radial	Cable axial (ver. A)	Cable radial (ver. R)	Cable axial-radial (ver. AR)
Singleturn	L1	47 mm	47 mm	47 mm	69 mm	61 mm	64 mm	47 mm	50 mm	49 mm
Multiturn	L3	68 mm	68 mm	68 mm	69 mm	61 mm	64 mm	68 mm	59 mm	61
Singleturn/multiturn	L2	16 mm	9 mm	22 mm	16 mm	9 mm	22 mm	12 mm	12 mm	-
Singleturn/multiturn	L3	M24	M14	M23	M24	M14	M23	-	-	-

# AK58C2



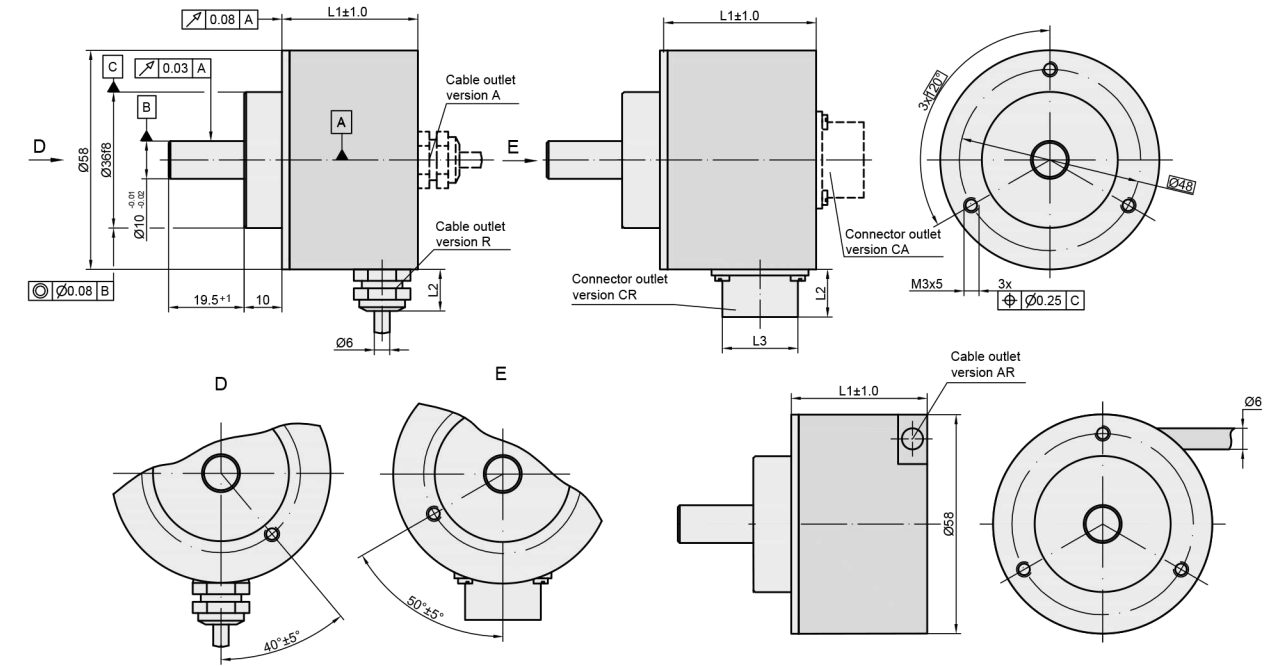
	Connector type / cable outlet	ONC axial	PC10 axial	C12, C9 axial	ONC radial	PC10 radial	C12, C9 radial	Cable axial (ver. A)	Cable radial (ver. R)	Cable axial-radial (ver. AR)
Singleturn	L1	44,5 mm	44,5 mm	44,5 mm	no	58,5 mm	61,5 mm	44,5 mm	47,5 mm	46,5 mm
Multiturn	L3	65,5 mm	65,5 mm	65,5 mm	no	58,5 mm	61,5 mm	65,5 mm	58,5 mm	58,5 mm
Singleturn/multiturn	L2	16 mm	9 mm	22 mm	16 mm	9 mm	22 mm	12 mm	12 mm	-
Singleturn/multiturn	L3	M24	M14	M23	M24	M14	M23	-	-	-

# AK58C3



	Connector type / cable outlet	ONC axial	PC10 axial	C12, C9 axial	ONC radial	PC10 radial	C12, C9 radial	Cable axial (ver. A)	Cable radial (ver. R)	Cable axial-radial (ver. AR)
Singleturn	L1	44,5 mm	44,5 mm	44,5 mm	no	58,5 mm	61,5 mm	44,5 mm	47,5 mm	46,5 mm
Multiturn	L3	65,5 mm	65,5 mm	65,5 mm	no	58,5 mm	61,5 mm	65,5 mm	58,5 mm	58,5 mm
Singleturn/multiturn	L2	16 mm	9 mm	22 mm	16 mm	9 mm	22 mm	12 mm	12 mm	-
Singleturn/multiturn	L3	M24	M14	M23	M24	M14	M23	-	-	-

# AK58D



	Connector type / cable outlet	ONC axial	PC10 axial	C12, C9 axial	ONC radial	PC10 radial	C12, C9 radial	Cable axial (ver. A)	Cable radial (ver. R)	Cable axial-radial (ver. AR)
Singleturn	L1	37,5 mm	37,5 mm	37,5 mm	no	51,5 mm	54,5 mm	37,5 mm	40,5 mm	39,5 mm
Multiturn	L3	58,5 mm	58,5 mm	58,5 mm	no	51,5 mm	54,5 mm	58,5 mm	49,5 mm	51,5 mm
Singleturn/multiturn	L2	16 mm	9 mm	22 mm	16 mm	9 mm	22 mm	12 mm	12 mm	-
Singleturn/multiturn	L3	M24	M14	M23	M24	M14	M23	-	-	-

## ORDER FORM

AK58 X1 - X2 - X3 - X4/X5 - X6 - X7 - X8 - X9/X10

Type (X1):	Version (X2):	Output signal interface (X3):	Singleturn Number* (X4):	Multiturn Number* (X5):	Code (X6):	Incremental Signals (X7):	Supply Voltage (X8):	Cable length and outlet or flange socket on case outlet (X9):	Connector (X10):
<b>M</b> - AK58M <b>B</b> - AK58B <b>C</b> - AK58C <b>C2</b> - AK58C2 <b>C3</b> - AK58C3 <b>D</b> - AK58D	<b>ST</b> - singleturn <b>MT</b> - multiturn	<b>S</b> - SSI <b>B</b> - BiSS C	<b>B9</b> - 9 <b>B10</b> - 10 <b>B11</b> - 11 <b>B12</b> - 12 ... <b>B20</b> - 21	<b>M0</b> - 0 (for single turn version) <b>M9</b> - 9 <b>M10</b> - 10 <b>M11</b> - 11 ... <b>M40</b> - 40	<b>B</b> - Binary <b>G</b> - Grey	<b>V</b> - 1Vpp* <b>N</b> - no incremental signal *only for singleturn version	<b>05V</b> - +5V <b>30V</b> - +(10 to 30V)	<b>A01</b> - 1m (A-axial cable) ... <b>R01</b> - 1m (R-radial cable) ... <b>AR01</b> - 1m (AR-universal cable outlet) ... <b>CA</b> - flange socket axial <b>CR</b> - flange socket radial	<b>W</b> - without connector <b>D9</b> - flat, 9 pins <b>C9</b> - round, 9 pins <b>C12</b> - round, 12 pins <b>RS10</b> - round, 10 pins <b>ONC</b> - round, 10 pins

ORDER EXAMPLES: 1) AK58M-ST-S-B9/M0-B-N-05V-AR01/W  
2) AK58D-MT-B-B20/M12-G-N-05V-AR01/W