

# A36

## PHOTOELECTRIC ROTARY ENCODER



Small size

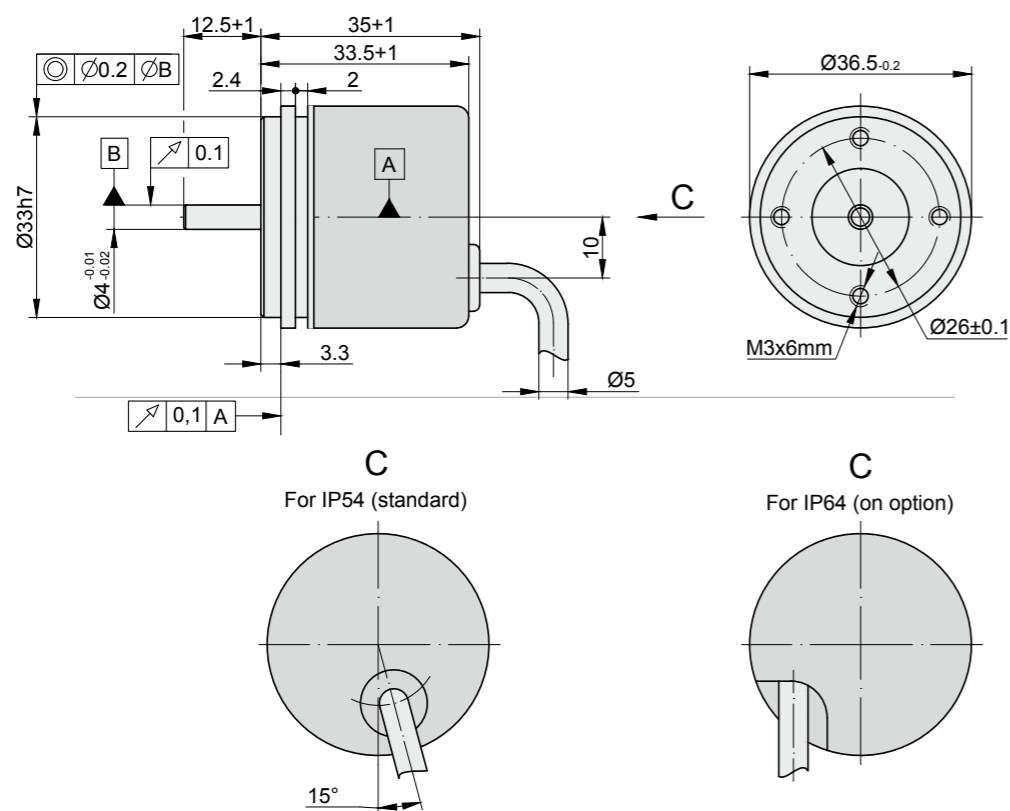


Analog output signals



Photoelectric rotary encoder A36 is an incremental encoder that is available in digital or analog output signal versions depending on customer preferences. It can have up to 36.000 output pulses per revolution and, because of its quite small diameter, can be fitted in narrow areas.

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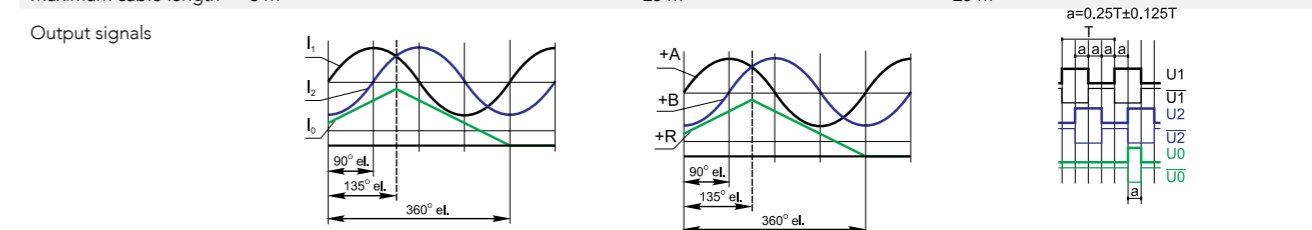


### MECHANICAL DATA

Line number on disc (z)	100; 200; 250; 360; 500; 1000; 1024; 1500; 2000; 2500; 3600	Rotor moment of inertia	< 2 gcm <sup>2</sup>
Number of output pulses per revolution	Z x k, where k=1,2,3,4,5,8,10	Protection (IEC 529) - for axial cable outlet - for axial cable outlet through gland and for radial cable outlet	IP54 IP64
Maximum shaft speed	10000 rpm	Maximum weight without cable	0.07 kg
Maximum shaft load: - axial - radial (at shaft end)	5N 10N	Operating temperature	-10...+70 °C
Accuracy (T <sub>1</sub> -period of lines on disc in arc. sec)	±0.1T <sub>1</sub> arc. sec	Storage temperature	-30...+80 °C
Starting torque at 20°C	≤ 0.002 Nm	Maximum humidity (non-condensing)	98 %
		Permissible vibration (55 to 2000 Hz)	≤ 100 m/s <sup>2</sup>
		Permissible shock (11 ms)	≤ 300 m/s <sup>2</sup>

### ELECTRICAL DATA

VERSION	A36-A ~ 11 μApp	A36-AV ~ 1 μApp	A36-F TTL; HTL
Supply voltage	+5 V ± 5%	+5 V ± 5%	+5 V ± 5%; +(10 to 30) V
Max. supply current (without load)	80 mA	120 mA	120 mA
Light source	LED	LED	LED
Incremental signals	Two sinusoidal I <sub>1</sub> and I <sub>2</sub> Amplitude at 1 kΩ load: - I <sub>1</sub> = 7-16 μA - I <sub>2</sub> = 7-16 μA	Differential sine +A/-A and +B/-B Amplitude at 120 Ω load: - A = 0.6-1.2 V - B = 0.6-1.2 V	Differential square-wave U1/U1 and U2/U2. Signal levels at 20 mA load current: - low (logic "0") ≤ 0.5 V at U <sub>p</sub> =+5 V - low (logic "0") ≤ 1.5 V at U <sub>p</sub> =10 to 30 V - high (logic "1") ≥ 2.4 V at U <sub>p</sub> =+5 V - high (logic "1") ≥ (U <sub>p</sub> -2) V at U <sub>p</sub> =10 to 30 V
Reference signal	One quasi-triangular I <sub>0</sub> peak per revolution. Signal magnitude at 1 kΩ load: - I <sub>0</sub> = 2-8 μA (usable component)	One quasi-triangular +R and its complementary -R per revolution. Signals magnitude at 120Ω load - R = 0.2-0.8 V (usable component)	One differential square-wave U0/U0 per revolution. Signal levels at 20 mA load current: - low (logic "0") < 0.5 V at U <sub>p</sub> =+5 V - low (logic "0") < 1.5 V at U <sub>p</sub> =10 to 30 V - high (logic "1") > 2.4 V at U <sub>p</sub> =+5 V - high (logic "1") > (U <sub>p</sub> -2) V at U <sub>p</sub> =10 to 30 V
Maximum operating frequency	(-3 dB) ≥ 160 kHz	(-3 dB) ≥ 160 kHz	(160 x k) kHz, k-interpolation factor
Direction of signals	I <sub>2</sub> lags I <sub>1</sub> for clockwise rotation (viewed from shaft side)	+B lags +A for clockwise rotation (viewed from shaft side)	U2 lags U1 with clockwise rotation (viewed from shaft side)
Maximum rise and fall time	-	-	< 0.5 μs
Standard cable length	1 m, without connector	1 m, without connector	1 m, without connector
Maximum cable length	5 m	25 m	25 m



- Note:
- Maximum working rotation speed (with proper encoder counting) is limited by maximum operating frequency and maximum mechanical rotation speed.
  - If cable extension is used, power supply conductor cross-section should not be smaller than 0.5 mm<sup>2</sup>

### ACCESSORIES

<b>CONNECTORS FOR CABLE</b>	B12 12-pin round connector	C9 12-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>DIGITAL READOUT DEVICES</b>	CS3000			CS5500			
<b>COUPLING</b>				SC30			
<b>EXTERNAL INTERPOLATOR</b>				NK			

### ORDER FORM

A36 - X - XXXX/XXXX - XXX - XXX / X - X

OUTPUT SIGNAL VERSION:	PULSE NUMBER PER REVOLUTION:	(OPTIONAL) LINE NUMBER ON DISC (Z):	SUPPLY VOLTAGE:	CABLE LENGTH AND OUTLET:	CONNECTOR TYPE:	COUPLING:
A	100	100	05V - +5V	A01 - 1m (A-axial)	W - without connector	0 - without coupling
AV	...	...	30V - 10 to 30V*	A02 - 2m	B12 - round, 12 pins	1 - with coupling
F	36000	3600		...	C9 - round, 9 pins	
				...	C12 - round, 12 pins	
		*only for A36-F	*only for A36-F with HTL output signals	R01 - 1m (R-radial)	D9 - flat, 9 pins	
				R02 - 2m	D15 - flat, 15 pins	
				...	RS10 - round, 10 pins	
					ONC - round, 10 pins	

ORDER EXAM- PLES: 1) A36-F-2500-05V-A01/W-0 / 2) A36-F-36000/3600-05V-A02/C12-1