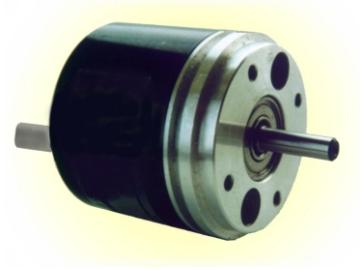


# A36 PHOTOELECTRIC ROTARY ENCODER

(A36-A, A36-AV, A36-F)



The encoder A36 is similar to the "Heidenhain" ROD 1000 (Minirod) type encoders in electrical parameters, mounting and overall dimensions.

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The photoelectric rotary encoder **A36** is used to establish an informational link between the key components of machines, industrial robots, comparators and DCC, NC or Digital Readout units. It gives information about the value and direction of the motion components. The encoder is used in automatic control, on-line gauging, in process monitoring systems, etc.

The encoder consists of three parts: mechanical, optical and electronic.

**The mechanical part** supports the rotation of the grating disc, fixes optical and electronic parts.

**The optical part** includes the light source, photosensitive diodes and grating elements.

**The electronic part** is made on the base of a specialized microchip.

The case of the encoder is fixed to an object by means of screws. The shaft of the encoder is connected with an object shaft by virtue of a compensating coupling.

The encoder has three versions by its output signals:

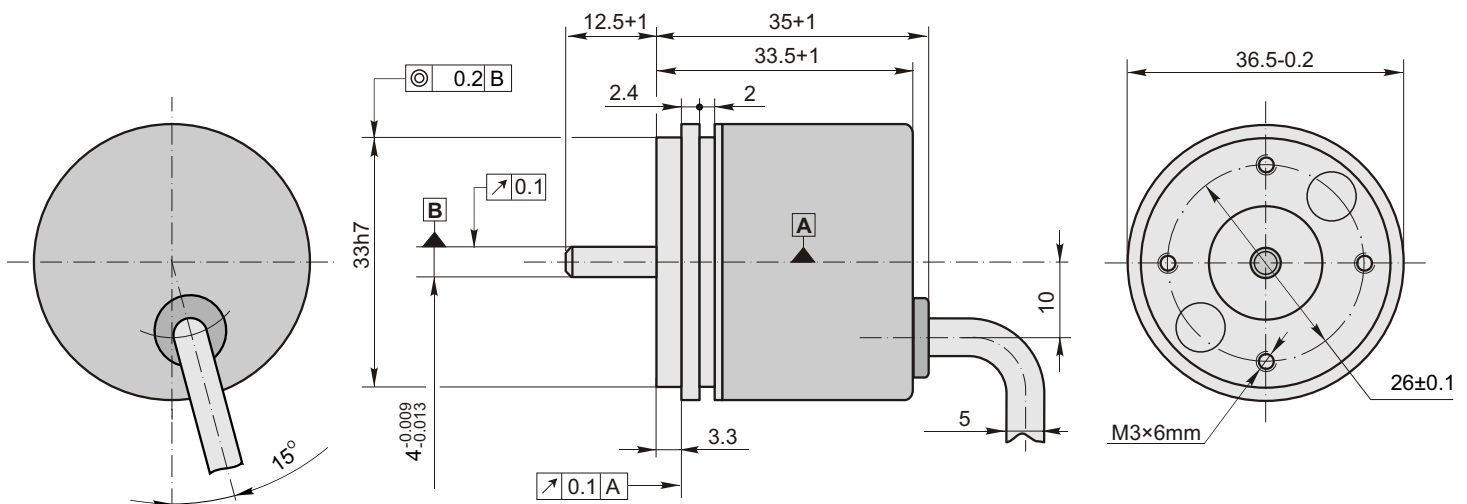
**A36-A** - sinusoidal signals, with amplitude approx.  $11 \mu\text{App}$ ;

**A36-AV** - sinusoidal signals, with amplitude approx.  $1 \text{Vpp}$ ;

**A36-F** - square-wave signals TTL or HTL.

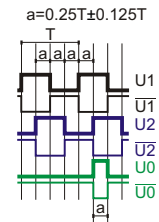
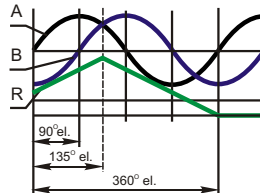
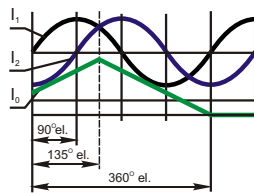
## Mechanical Data

Line number:		Starting torque at 20°C	$\leq 0.1 \text{ Ncm}$
- preferable	100 200 250	Moment of inertia of rotor	$< 2 \text{ gcm}^2$
	360 500 1000	Protection (IEC 529)	IP64
	1024 1500 2000	Maximum weight without cable	0.07 kg
	2500 3600	Operating temperature	$-10...+70 \text{ }^\circ\text{C}$
- possible	60 256 300	Storage temperature	$-30...+80 \text{ }^\circ\text{C}$
	400 512 600	Maximum humidity	
	720 800 900	(without condensation of moisture)	98 %
	1200	Permissible vibration (55 to 2000 Hz)	$\leq 100 \text{ m/s}^2$
Maximum shaft speed	10000 rpm	Permissible shock (11 ms)	$\leq 300 \text{ m/s}^2$
Maximum shaft load:			
- axial	5 N		
- radial (at shaft end)	10 N		
Accuracy (T-period of signal)	$\pm 0.1 \text{ T arc. sec}$		



## Electrical Data

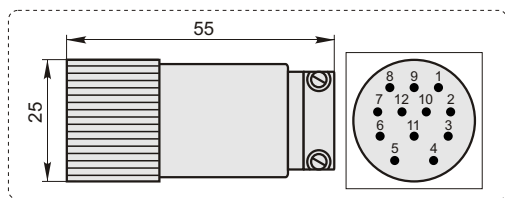
Version	A36-A $\sim 11 \mu A_{pp}$	A36-AV $\sim 1 V_{pp}$	A36-F $\square$ TTL; $\square$ HTL
Power supply ( $U_p$ )	+5 V $\pm 5\%$	+5 V $\pm 5\%$	+5 V $\pm 5\%$ ; +(10 to 30) V
Maximum consumed current (without load)	80 mA	120 mA	120 mA
Light source	LED	LED	LED
Incremental signals	Two sinusoidal $I_1$ and $I_2$ . Amplitude at 1 k load: - $I_1 = 7-16 \mu A$ - $I_2 = 7-16 \mu A$	Two sinusoidal A and B. Amplitude at 120 load: - A = 0.6-1.2 V - B = 0.6-1.2 V	Square-wave $U1$ , $U2$ and their inverted $\overline{U1}$ , $\overline{U2}$ . Signal levels at 20 mA load current: - low ("0" logic) $\leq 0.5$ V at $U_p = +5$ V - low ("0" logic) $\leq 1.5$ V at $U_p = 10$ to 30 V - high ("1" logic) $\geq 2.4$ V at $U_p = +5$ V - high ("1" logic) $\geq (U_p - 2)$ V at $U_p = 10$ to 30 V
Reference signal	One quasi-triangle $I_0$ peak per revolution. Signal magnitude at 1 k load: - $I_0 = 2-8 \mu A$ (usable component)	One quasi-triangle R per revolution. Signal magnitude at 120 load: - R = 0.2-0.8 V (usable component)	One square-wave $U0$ and its inverted $\overline{U0}$ per revolution. Signal levels at 20 mA load current: - low ("0" logic) $\leq 0.5$ V at $U_p = +5$ V - low ("0" logic) $\leq 1.5$ V at $U_p = 10$ to 30 V - high ("1" logic) $\geq 2.4$ V at $U_p = +5$ V - high ("1" logic) $\geq (U_p - 2)$ V at $U_p = 10$ to 30 V
Maximum operating frequency	(-3 dB) $\geq 160$ kHz	(-3 dB) $\geq 160$ kHz	160 kHz
Direction of signals	$I_2$ lags $I_1$ with clockwise rotation (viewed from shaft side)	B lags A with clockwise rotation (viewed from shaft side)	$U2$ lags $U1$ with clockwise rotation (viewed from shaft side)
Maximum rising and falling time			$< 0.5 \mu s$
Standard cable length	1 m, without connector	1 m, without connector	1 m, without connector
Cable diameter	5 mm	5 mm	5 mm
Maximum cable length	5 m	15 m	30 m



## Accessories

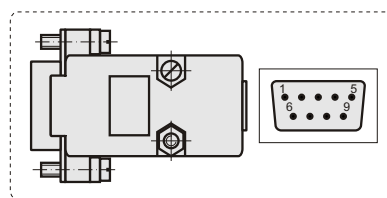
### C12

12-pin round connector for A36-AV and A36-F

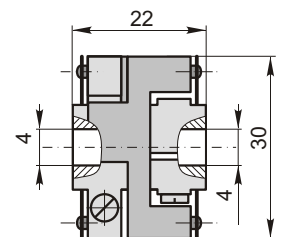


### D9

9-pin flat connector for all version of A36



### SC30 Coupling



## Order form

A36 - X - XXXXX - XXX - XX/X - X

Version by output signals:  
A, AV or F

Line number:  
100...  
3600

Power supply:  
05V - +5V  
30V - 10 to 30V\*  
\*only for A36-F with HTL output signals

Cable length:  
01 - 1m  
02 - 2m  
03 - 3m  
... ..

Type of connector:  
W - without connector  
D9 - flat, 9 pins  
C12 - round, 12 pins

Coupling:  
0 - without coupling  
1 - with coupling

