PROGRAMMABLE ABSOLUTE ROTARY ENCODER

"Single Turn Absolute Encoder, Magnetic Measurement"

SAS S 50



GENERAL FEATURES

- Absolute measurement with magnetic principle
- 50 mm body diameter
- 6 mm or 8 mm shaft diameter
- 14 bit angular resolution
- Analog, CANopen or parallel output option
- Redundant output
- Analogue output signal forms can be selected according to 3 selected points
- High sensitivity
- IP67 Protection class



The SAS series encoders operate absolute. In other words, unlike the incremental systems, they do not lose their positions in power outages and continue to measure from where they left off.
The SAS series single turn absolute rotary encoders offer highly flexible solutions in use, with different output signals, shaft diameters and user-adjustable measuring range. The SAS single turn absolute rotary encoder with integrated reference provides high quality feedback. With its IP67 high protection class, it is resistant to harsh environmental conditions.

APPLICATION AREAS

Speed and position accuracy in one application; If it is more important than fault tolerance and system simplicity, absolute encoders should be used. Absolute encoders provide precise operation in applications.

- Identifying multi-axis orientation in CNC machines used in component manufacturing
- Automatically determine the height of the scissor bearings used in hospitals
- Correct placement of multiple stabilizers for large vehicles such as cranes or air lifts
- Automatic doors or slots to move without limiting key
- Continue robotic movement even after a power failure



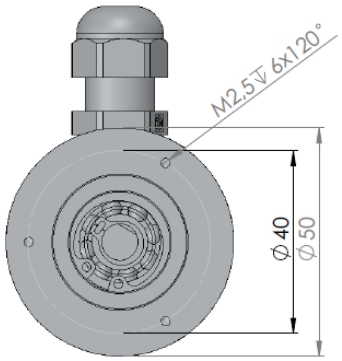
MECHANICAL SPECIFICATIONS

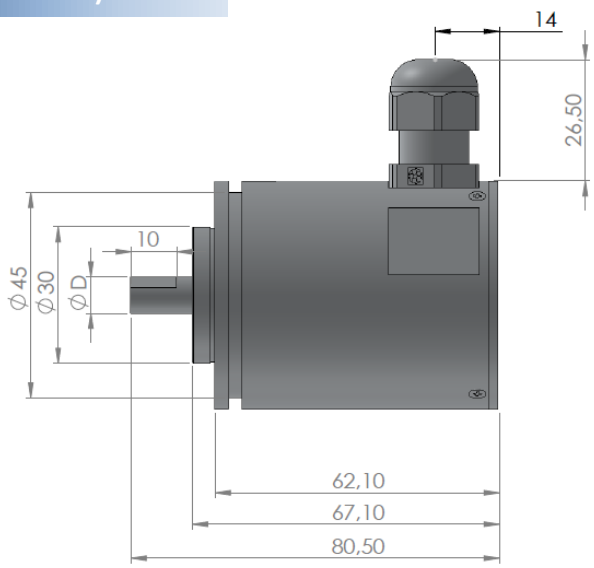
Maximum Speed	3000 rpm
Body Diameter	50 mm
Shaft Diameter	6 mm, 8 mm
Weight	~350 gr
Protection Class	IP 67
Operating Temperature	-20°C … +85°C
Relative Humidity	%10 … %90
Material	Shaft: Stainless Steel
	Body: Aluminium

کانون ابزار
تلفن :
021 66 39 39 00
0912 147 3023
ali5.ir

MECHANICAL DIMENSIONS (mm)

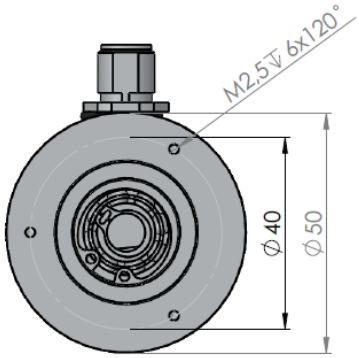
WITH CABLE (For Analog or Parallel versions)

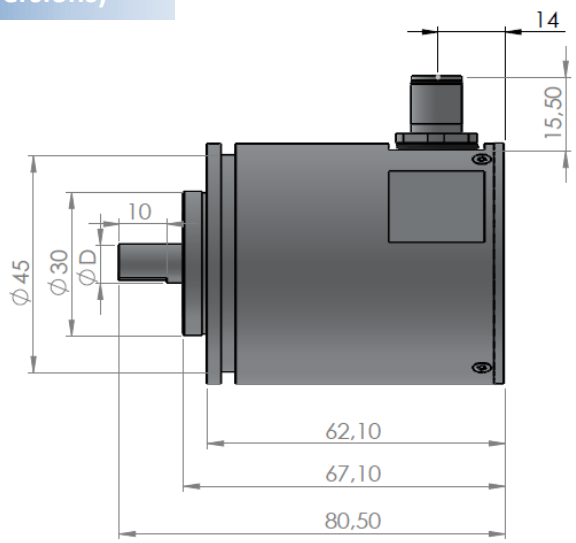




ØD	6	8

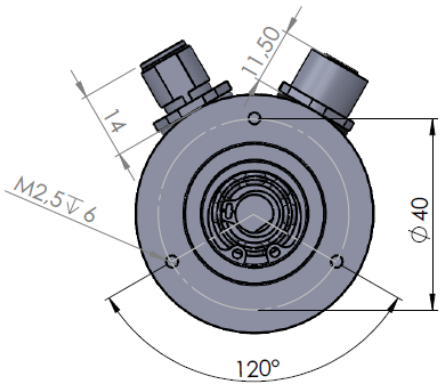
WITH 1 x M12 CONNECTOR (For Analog versions)

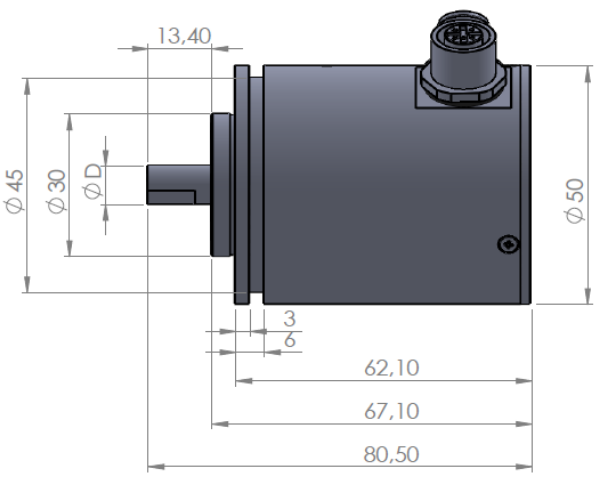




ØD	6	8

WITH 2 x M12 CONNECTOR (For CANopen versions)





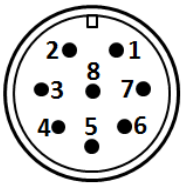
ØD	6	8

ANALOG VERSION

Electrical Specifications	
Working Principle	Hall Effect
Supply Voltage	15 … 26 VDC
Current Consumption	40 mA
Reverse Polarity Protection	Var
Measuring Range	0° ... 360°
Accuracy	±0,1°
Repeatability	0,1°
Angular Resolution	14 Bit
Response Frequency	333 Hz
Electrical Interface	4-20 mA, 0-10 V, 0.5- 4.5 V, 0-5 V 20-4 mA, 10-0 V, 4.5-0.5 V, 5-0 V
Electrical Connection	8 x 0,14 mm^2 shielded cable or 1 x M12/8 pin male connector
Output Load	For current output model; min 250 Ω For voltage output model; min 1 KΩ

ELECTRICAL CONNECTION

Signal	Cable	M12 / 8 Pin Male Connector
U+ (+15…+26 VDC)	Red	Pin 1
Output 1: 0.5-4.5 / 0-10VDC / 0-5VDC / 4-20mA	Gray	Pin 2
GND (0V)	Black	Pin 3
Output 2: 0.5-4.5 / 0-10VDC / 0-5VDC / 4-20mA (optional)	White	Pin 4
Direction Change	Pink	Pin 5
Reset	Green	Pin 6
Programming Tips (these ends should not touch each other and should not be connected anywhere)	Yellow, Blue	Pin 7 (N/C)
-	-	Pin 8 (N/C)

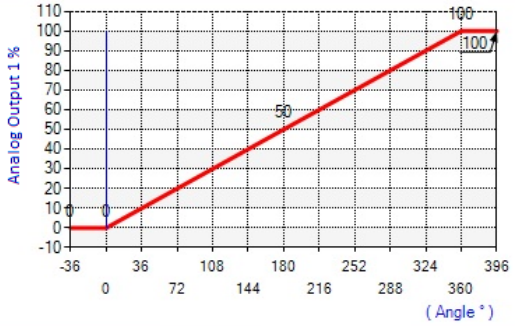


RESET: With the reset function you can set the desired location to 0. The reset terminal and GND are short-circuited for about 5 seconds and then disconnected. The sensor then accepts the current position as zero.
DIRECTION CHANGE: You can change the angle increase direction with the direction change function. The direction changing terminal and GND are short-circuited for about 5 seconds and then disconnected.Thus, the sensor reverses the angle direction (CW is CCW and CCW is CW).

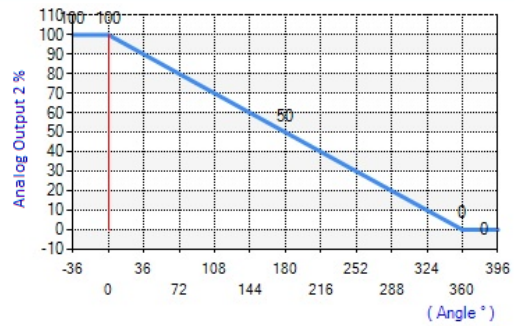
DETERMINATION OF OUTPUT SIGNAL FORM

Analog output signal forms can be specified according to request for 3 points as low point, middle point and high point. The requested signal form must be specified at the order stage. Examples of output signal forms are shown below.
Note: The diagrams shown below are for illustrative purposes. Scale value can be selected between 0 ° - 360 ° and Output value between 0% and 100%.

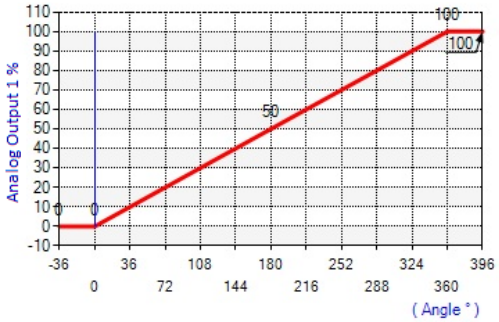
Analog Output 1		
Point	**Scale**	**Output**
Low Point	0°	%0
Middle Point	180°	%50
High Point	360°	%100



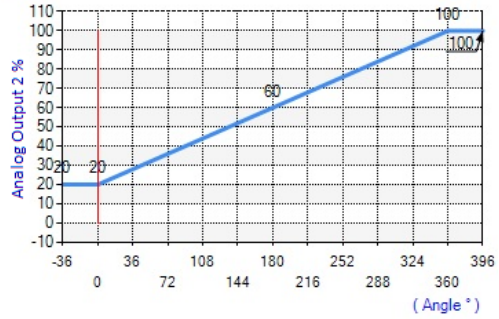
Analog Output 2		
Point	**Scale**	**Output**
Low Point	360°	%0
Middle Point	180°	%50
High Point	0°	%100



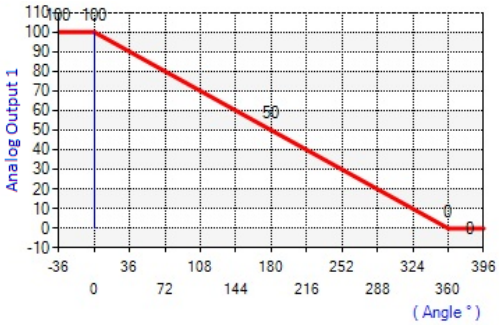
Analog Output 1		
Point	**Scale**	**Output**
Low Point	0°	%0
Middle Point	180°	%50
High Point	360°	%100



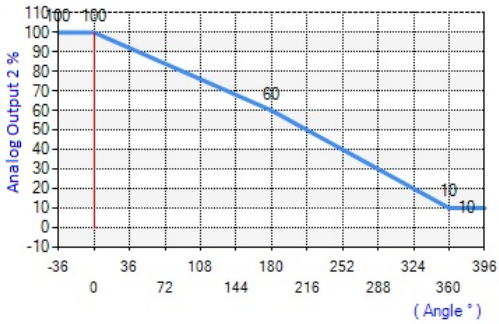
Analog Output 2		
Point	**Scale**	**Output**
Low Point	0°	%20
Middle Point	180°	%60
High Point	360°	%100



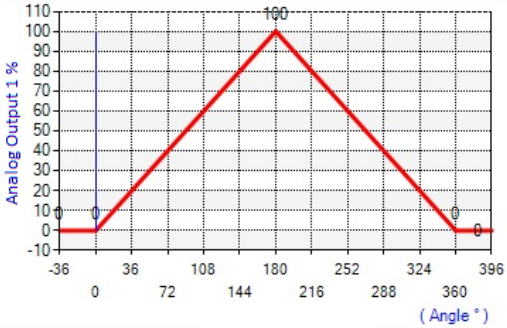
Analog Output 1		
Point	**Scale**	**Output**
Low Point	0°	%100
Middle Point	180°	%50
High Point	360°	%0



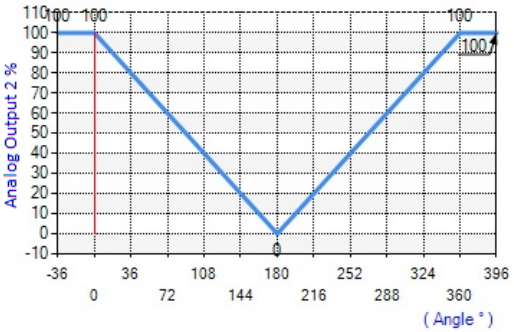
Analog Output 2		
Point	**Scale**	**Output**
Low Point	0°	%100
Middle Point	180°	%60
High Point	360°	%10



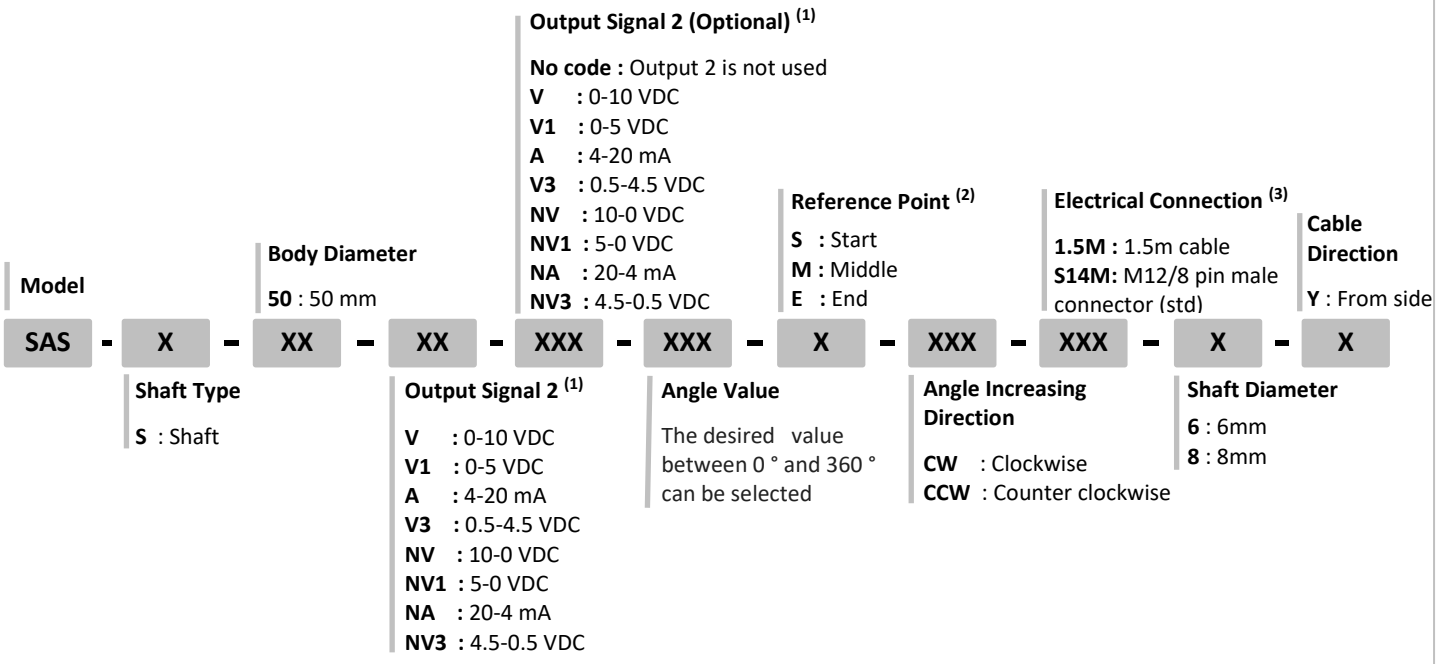
Analog Output 1		
Point	**Scale**	**Output**
Low Point	0°	%0
Middle Point	180°	%100
High Point	360°	%0



Analog Output 2		
Point	**Scale**	**Output**
Low Point	0°	%100
Middle Point	180°	%0
High Point	360°	%100



ORDER CODE FOR ANALOG VERSIONS



(1) The direction of the output signals can be changed optionally. In the coding, when 'N' is placed at the beginning of the normal signal, it refers to the opposite. For example; in case of **V:** 0-10 VDC, then **NV:** 10-0 VDC
The Output 2 is optional. If not requested, the code part is left blank.

(2) Reference point; refers to the selection of one of the starting, middle, or end points used for the scale of the analog outputs.

(3) Optionally different cable lengths or connectors can be requested.

CANOPEN VERSION

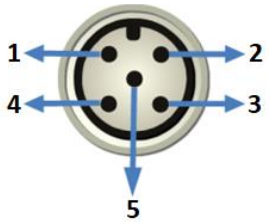
Electrical Specifications	
Working Principle	Hall Effect
Supply Voltage	12 … 30 VDC
Current Consumption	40 mA
Reverse Polarity Protection	Yes
Measuring Range	0° ... 360°
Accuracy	±0,1°
Repeatability	0,1°
Angular Resolution	14 Bit
Response Frequency	333 Hz
Electrical Interface	CANopen
Electrical Connection	6x0,34 mm^2 twisted shielded cable or 2xM12/5 pin connector

CANopen Specifications	
Communication Profile	CiA 301
Device Type	CANopen, CiA DS406
Node ID	Between 1 and 127, configurable via LSS or SDO.
Baud Rate	10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 Mbit/s
PDO Data Rate	100 ms
Error Check	Heartbeat, Emergency Message
PDO	3 Tx PDO
PDO Modes	Event/Time triggered, Synch/Asynch
SDO	1 server
Position data	Object Dictionary 0x6020
Terminating Resistor	Optional

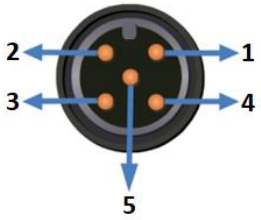
ELECTRICAL CONNECTION

Signal	Cable	M12 Connector
CAN SHIELD	Shield	Pin 1
V+ (12…30 VDC)	Red	Pin 2
GND (0V)	Black	Pin 3
CAN H	Yellow	Pin 4
CAN L	Green	Pin 5

M12 5 PIN FEMALE CONN.



M12 5 PIN MALE CONN.



ORDER CODE FOR CANOPEN VERSIONS

Model

Body Diameter
50 : 50 mm

Supply Voltage
PP : 12…30VDC

Angle Increasing Direction
CW : Clockwise
CCW : Counter clockwise

Connector Direction
Y : From side

Flange Type
C: Clamping

SAS	-	X	-	XX	-	XX	-	XX	-	X	-	XXX	-	XXX	-	X	-	X	-	X

Shaft Type
S : Shaft

Resolution
Max 14 bit

Output Signal
C : CANopen

Electrical Connection
S13FM: M12 5 pin male + M12 5 pin female connector

Shaft Diameter
6 : 6 mm
8 : 8 mm

***Please contact us for non-standard product requests.**

PARALLEL VERSION

Electrical Specifications	
Supply Voltage	5 … 30 VDC
Current Consumption	≤60 mA
Protection	Reverse & over voltage Output short circuit
Code	Binary, Gray or BCD
Resolution (per turn)	Up to 14 bit (1…16384 pulse)
Accuracy	±0,1°
Measuring Principle	Magnetic
Inputs	Preset (Zero Setting) Changing direction (CW / CCW)
Output Signals	Push-Pull, PNP Open Collector, NPN Open Collector
Output Logic	Positive Logic (Active High) Negative Logic (Active Low)
Response Frequency	333 kHz
Output Capacity	20 mA/channel
Electrical Connection	18 x 0,22 mm^2 shielded cable

ELECTRICAL CONNECTION

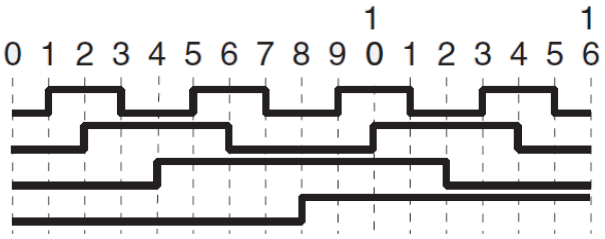


Cable Color	Function	Maximum Resolution	
Red	+V		
Black	0V (GND)		
Yellow	Reset		
Yellow/Brown	Changing Direction	**Gray / Binary**	**BCD**
Pink	Bit 0	2	2
Pink/Brown	Bit 1	4	4
Green	Bit 2	8	8
Green/White	Bit 3	16	10
Blue	Bit 4	32	20
Purple	Bit 5	64	40
Grey	Bit 6	128	80
Pink/Grey	Bit 7	256	100
Brown	Bit 8	512	200
Green/Brown	Bit 9	1024	400
White	Bit 10	2048	800
Black/White	Bit 11	4096	1000
Yellow/White	Bit 12	8192	2000
Red/Blue	Bit 13	16384	4000

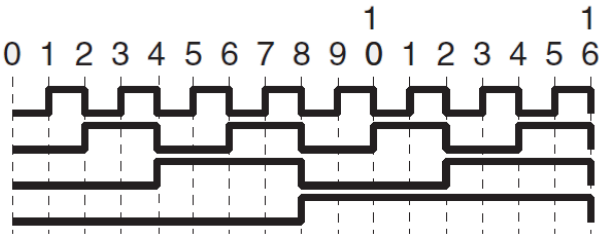
RESET: With the reset function you can set the desired location to 0. The reset end is shorted and released with GND. The sensor accepts the position where it is located after two seconds.
DIRECTION CHANGE: You can change the direction increase direction with the direction change function. The direction switch is shorted and released with GND. After two seconds, the sensor reverses the angle direction (CW is CCW and CCW is CW).

CODE EXAMPLES

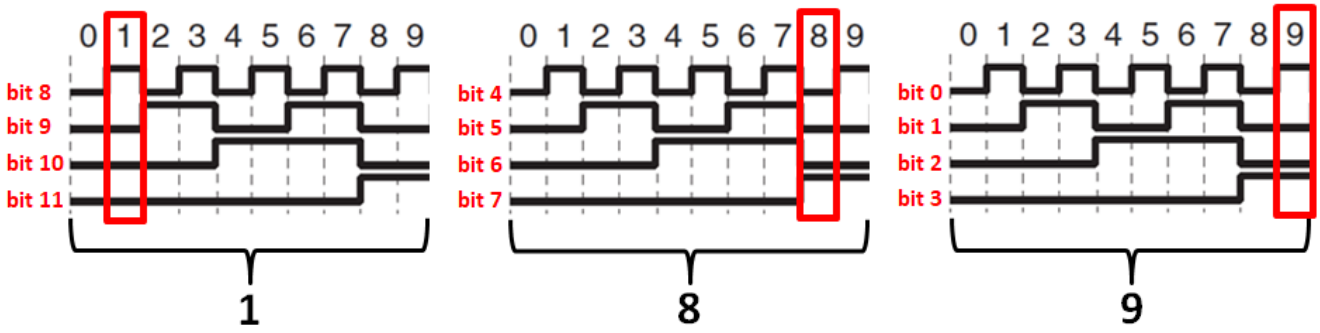
GRAY CODE



BINARY CODE



BCD CODE



BCD Code (Binary-Coded Decimal Code)
For example; to convert the decimal 189 to BCD code:

Number	189	0 0 0 1	1 0 0 0	1 0 0 1
Bit		↑↑↑↑	↑↑↑↑	↑↑↑↑
Weight		8 4 2 1	8 4 2 1	8 4 2 1
Digit		hundreds	tens	units

ORDER CODE FOR PARALLEL VERSIONS

Model		Body Diameter		Output Signal		Output Logic		Electrical Connection	Shaft Diameter	
SAS	X	XXX	XX	XXX	XXX	XX	XX	XX	X	X
	Shaft Type **S** : Shaft		**Resolution / turn** 1 … 16384 pulse		**Output Code** **BIN:** Binary **GRY:** Gray **BCD:** BCD		**Direction of Rotation** **CW :** Clockwise **CCW :** Counter clockwise	**Cable Direction** **Y:** From side		**Flange Type** **C :** Clamping

Body Diameter
050 : 50 mm

Output Signal
OCP : PNP OCL
OCL : NPN OCL
HPL : 5…30 VDC

Output Logic
PL: Positive Logic (Active High)
NL: Negative Logic (Active Low)

Electrical Connection
3M : 3 meters cable

Shaft Diameter
6 : 6 mm
8 : 8 mm

***Please contact us for non-standard product requests.**

کانون ابزار
تلفن :
021 66 39 39 00
0912 147 3023
ali5.ir