

Rotary Position Technology

Absolute Encoders, Multiturn

Absolute, Multiturn Type RM-116 Series

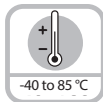
Analog



Bearing-Lock



High rotational speed



Temperature range
-40 to 85 °C



High IP



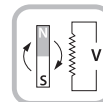
High shaft load capacity



Shock/vibration resistant



Reverse polarity protection



Energy harvesting

Highest Robustness

- Sturdy bearing construction in Bearing-Lock design for particularly high resistance.
- Extra large bearings.
- Mechanically protected shaft seal.
- Wide temperature range -40 °C to +85 °C.
- Without gear and without battery, thanks to the Energy Harvesting technology.



Absolute



Application Oriented

- Current output 4 - 20 mA.
- Voltage output 0 - 10 V or 0 - 5 V.
- Measuring range scalable.
- Limit switch function.

Compact Housing

- Can be used where space is tight: 39 mm housing with 58 mm flange.

Mechanical Characteristics:

Max. speed:	4000 RPM 2000 RPM (continuous)
Starting torque (68 °F 20 °C):	< 1.4 oz - in (0.01 Nm)
Shaft load capacity:	
Radial:	18 lbs (80 N)
Axial:	9 lbs (40 N)
Weight:	approx. 0.44 lbs (0.2 kgs)
Protection acc. to EN 60529/ DIN 40050-9:	IP65
Working temperature range:	-40 to +185 °F (-40 to +85 °C)
Materials:	
Shaft:	stainless steel: V2A(304)
Flange:	aluminum
Housing:	zinc die-cast
Cable:	PVC
Shock resistance acc. to EN 60068-2-27:	500 g (5000 m/s²), 4 ms
Vibration resistance acc. to EN 60068-2-6:	30 g (300 m/s²), 10 - 2000 Hz

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Electrical Characteristics Interface 4 - 20mA:

Power supply:	10 - 30 VDC
Current consumption (no load):	max. 30 mA
Reverse polarity protection at power supply (+V):	yes
Short-circuit protected outputs:	yes ¹⁾
Measuring range:	
Factory setting:	2 ⁴ revolutions
Optionally scalable:	up to 2 ¹⁶ revolutions
DA converter resolution:	12 bit
Singleturn accuracy, at 77 °F 25 °C:	±1 °
Temperature coefficient:	< 100 ppm/K
Repeat accuracy at 77 °F 25 °C:	±0.2 °
Output load:	max. 200 0hm at 10 VDC max. 900 0hm at 24 VDC max. 1200 0hm at 30 VDC
Setting time:	< 1 ms, R _{Load} = 900 0hm, 77 °F 25 °C
LEDs (green/red):	• system status • current loop interruption—input load too high • reference point display (only with factory settings) at cw: betw. 0 ° and 1 ° at ccw: betw. 0 ° and -1 ° • status in teach mode
Options:	• output signal scalable via the teach inputs • output signal scalable via the teach inputs + limit switch function
Teach inputs:	level= +V for 1 s minimum
PowerON time:	< 1 s
Update rate:	1 ms
UL approval:	file E356899
CE compliant acc. to:	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

Characteristics Voltage Interface:

Power supply:	output 0 - 5 V 10 - 30 VDC output 0 - 10 V 15 - 30 VDC
Current consumption (no load):	max. 30 mA
Reverse polarity protection at power supply (+V):	yes
Short-circuit protected outputs:	yes ¹⁾
Measuring range:	
Factory setting:	2 ⁴ revolutions
Optionally scalable:	up to 2 ¹⁶ revolutions
DA converter resolution:	0 - 10 V 12 bit 0 - 5 V 11 bit
Singleturn accuracy, at 25 °C 77 °F:	±1 °
Temperature coefficient:	< 100 ppm/K
Repeat accuracy at 25 °C 77 °F:	±0.2 °
Current output:	max. 10 mA
Setting time:	< 1 ms, R _{Load} = 900 0hm, 77 °F 25 °C
LEDs (green/red):	• system status • reference point display (only with factory settings) at cw: betw. 0 ° and 1 ° at ccw: betw. 0 ° and -1 ° • status in teach mode
Options:	• output signal scalable via the teach inputs • output signal scalable via the teach inputs + limit switch function
Teach inputs:	level= +V for 1 s minimum
PowerON time:	< 1 s
Update rate:	1 ms
UL approval:	file E356899
CE compliant acc. to:	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

¹⁾ = when the power supply is correctly applied.

Measuring Range 'AL' or 'AR':

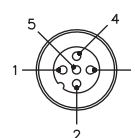
Connection Type:	Common (0 V)	+V	Output	Set 1	Set 2
Cable:	BU	BN	WH	N/C	N/C
M12 pin:	3	1	2	N/C	N/C

Measuring Range 'S*NS' or 'S*WL':

Connection Type:	Common (0 V)	+V	Output	Set 1	Set 2
Cable:	BU	BN	WH	BK	GY
M12 pin:	3	1	2	4	5

Wiring Diagram:

5-pin M12 Eurofast Connection



Mating Cordset: **RKC 4.5T-*/S618**
Teaching Adapter: **VB2-SP6**

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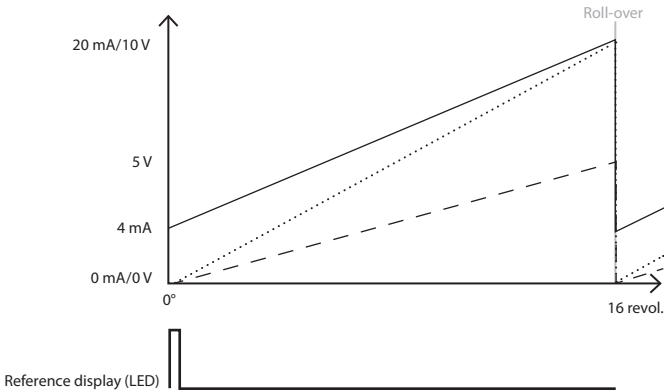
Analog

Note: Encoders must be ordered with a clockwise or counterclockwise profile. This determines whether the analog output increases or decreases in the given direction.

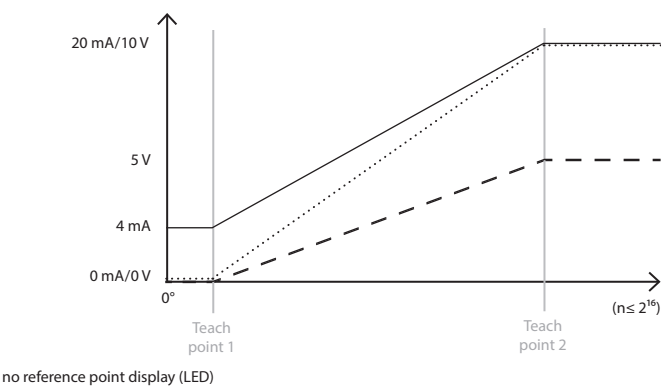
Example (output signal profile):

- version 4 - 20 mA
- version 0 - 10 V
- version 0 - 5 V

Clockwise (CW) version



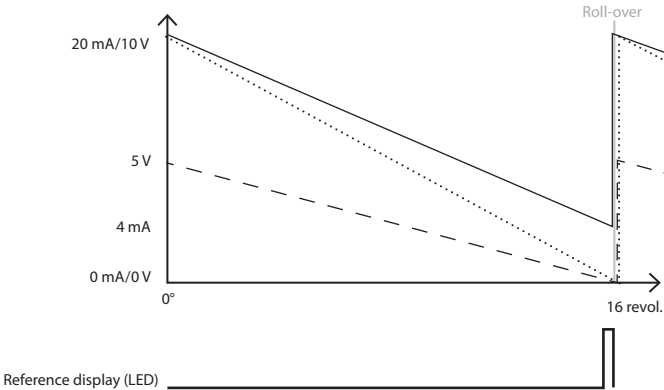
Scalable version without limit switch function



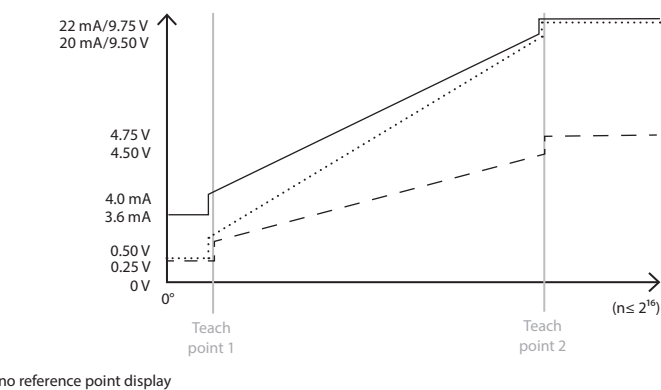
Example (output signal profile):

- version 4 - 20 mA
- version 0 - 10 V
- version 0 - 5 V

Counter clockwise (CCW) version



Scalable version with limit switch function



Note: Factory-set measuring range: 2⁴ revolutions with roll-over

Note: Limit switch function:

version:	0 - 10 V	0 - 5 V	4 - 20 mA
limit switch low:	0.25 V	0.25 V	3.60 mA
limit switch high:	9.75 V	4.75 V	22.00 mA

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Analog

Part Number Key: RM-116 Shaft Version

A	B	C		D	E		F
RM-116T	6	C	-	7A	AL	-	H1151

A	Type
RM-116T	Ø 39 mm, Shaft w/Flat, IP65 Shaft Seal

B	Shaft (Ø × L)
6	Ø 6 mm × 12.5 mm
10	Ø 10 mm × 20 mm

C	Flange
C	Ø 58 mm Clamping Flange
S	Ø 58 mm Servo Flange

D	Voltage Supply and Output Type
7A	10 - 30 VDC, 4 - 20 mA
8B	15 - 30 VDC, 0 - 10 V
BA	10 - 30 VDC, 0 - 5 V

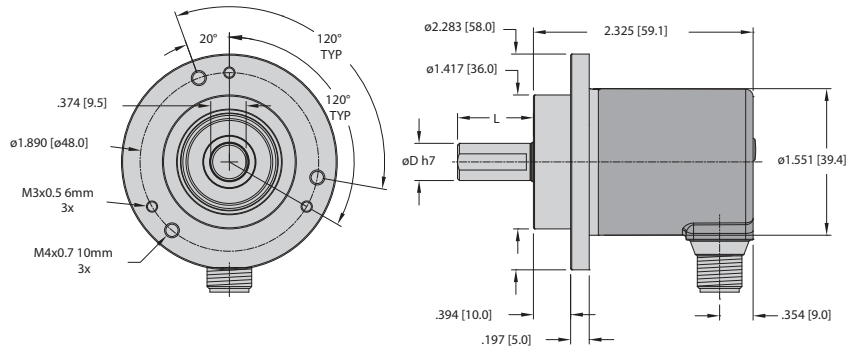
E	Measuring Range
AL	16 Turns, Count Direction CCW*
AR	16 Turns, Count Direction CW*
SALNS	Scalable to 65,536 Turns, CCW*, w/o Limit Switch
SALWL	Scalable to 65,536 Turns, CCW*, w/ Limit Switch
SARNS	Scalable to 65,536 Turns, CW*, w/o Limit Switch
SARWL	Scalable to 65,536 Turns, CW*, w/ Limit Switch

* = increasing code values when shaft turning in direction listed. Top view on shaft.

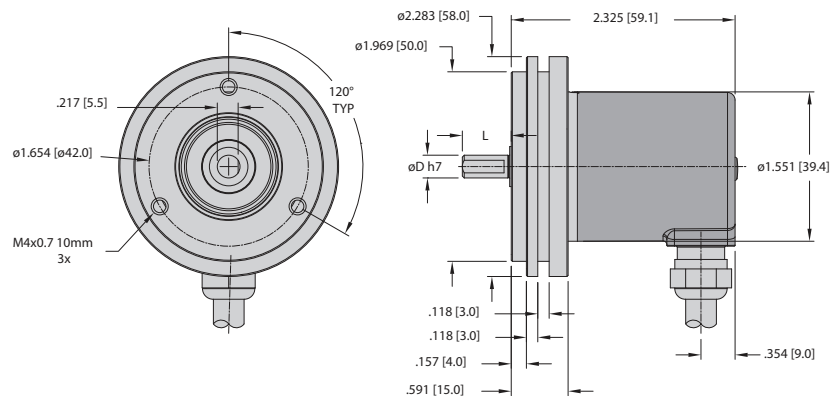
F	Type of Connection
H1151	Radial 5-pin M12 Eurofast Connector
C1M	Radial Cable (1m PVC)

Dimensions: RM-116 Shaft Version

RM-116 Flange C Connection H1151



RM-116 Flange S Connection C1M



Mounting advice:

The flanges and shafts of the encoder and drive should not be rigidly coupled together at the same time. We recommend the use of suitable couplings (see page G1, Accessories).