

Draw-wire system SZG93 - WDGA RS485



- Exceptionally rugged length sensor
- Measuring range: 0 - 2.500 mm
- Interface: RS485
- IP65 absolute encoder WDGA RS485 ready-mounted (K1 IP40)

www.wachendorff-automation.com/szg93wdgars485

The draw-wire encoder SZG93 WDGA RS485 was developed for use in harsh environments. The various methods of installation mean high flexibility. It can be used even where space is tight, thanks to its compact dimensions. The SZG93 WDGA RS485 can be mounted quickly and with its highly precise mechanics provides reliable accurate length measurement, with all advantages, which result from an absolute length measurement. e. g. The position-value is saved, if supply breaks down and is available immediately if supply gets recovered. Doing a reference run isn't necessary. The intelligent spring-suspension and the nylon-coated stainless-steel wire cable guarantee long-service life, even in difficult operating conditions. The encoder is already installed.

Typical areas of application include:

lift/elevators, lifting platforms, theatre stages, fork lifts and cranes.

Measurement ranges: 0 mm up to 2,500 mm

Resolution measurement ranges:

Position per mm at 2500 mm	Bit per revolution
1.3	8
2.5	9
5.1	10
10.2	11
20.4	12
40.9	13

Deviation: Less than 0.02 % of the final value.
Measuring wire: 0.48 mm of thick nylon coated high-grade steel wire. (incl. coating)
Wire connection: eye, see drawing
max. wire speed: 7.5 m/sec.
Pull out strength: approx. 0.5 kg
System-unit housing: Glass fiber reinforced ABS plastic
Weight: SZG incl. encoder 0,815 kg
Life expectancy: at least 10 million cycles
Operating temperature: -20 °C up to +80 °C
Storage temperature: -30 °C up to +80 °C

Sensor data

Singleturn technology: innovative hall sensor technology
 Singleturn resolution: up to 16,384 steps/360° (14 bit)
 Singleturn accuracy: < ± 0.35°
 Singleturn-repeat accuracy: < ± 0.20°
 Intern cycle time: ≤ 600 µs
 Multiturn technology: patented based EnDra® technology no battery and no gear
 Multiturn resolution: up to 32 bit

Electrical Data:

Supply voltage: 10 VDC up to 30 VDC;
 4.75 VDC up to 5.5 VDC
 max. 80 mA
 Power consumption: max. 0.8 W

Configuration inputs:

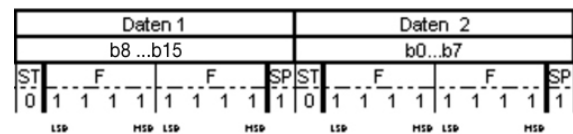
Positive direction of counting: DIR = GND ⇔ cw
 DIR = +Ub ⇔ ccw
 (View on shaft)
 Set to zero: Preset = apply +Ub for 2 s

Example RS485-Protocol: (other Protocol variants on request)

Baudrate: selectable 500 bit/s up to 1 Mbit/s
 Standard: 9600 bit/s
 Polling cycle: automatic sending selectable
 1 ms up to 1000 ms
 Standard: 20 ms (Tolerances: +/- 2 ms)
 Telegram length: 6 Byte Singturn, 8 Byte Multiturn
 Telegram composition: 2 Byte Präambel, 2/4 Byte user data, 2 Byte CRC
 Byte composition: Startbit (0) and Stopbit (1), Bytes are Big-Endian and LSB-first, no Paritybit
 CRC-Definition :
 • Code: CRC-CCITT 16 bit ($X^{16}+X^{12}+X^5+1$)
 • Startvalue 0x1021,
 • Start/Stopbits aren't included,
 • Präambel (0xABCD) is included,
 • Byte-wise orientation: per CRC-Refresh there is used 1 Byte

Protocol malfunction behaviour:

If encoder recognizes that it's impossible to send a right positionvalue (e.G.: Magnet-loss), there will be send out a telegram with maximum value user Data at normal cycle time and normal Baudrate:



LED-behaviour:

At Start / while booting: - red gleam (< 2,3 s)
 Malfunction: - constant red gleam (> 2,3 s)
 Normal function: - constant green gleam
 No supply: - No gleam

Order No.:

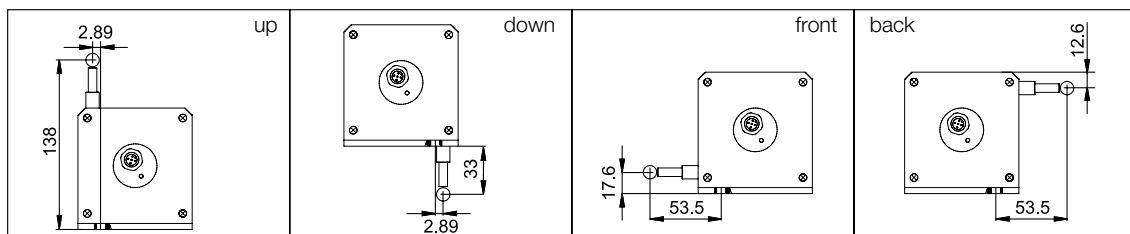
UP

DN

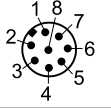
FR

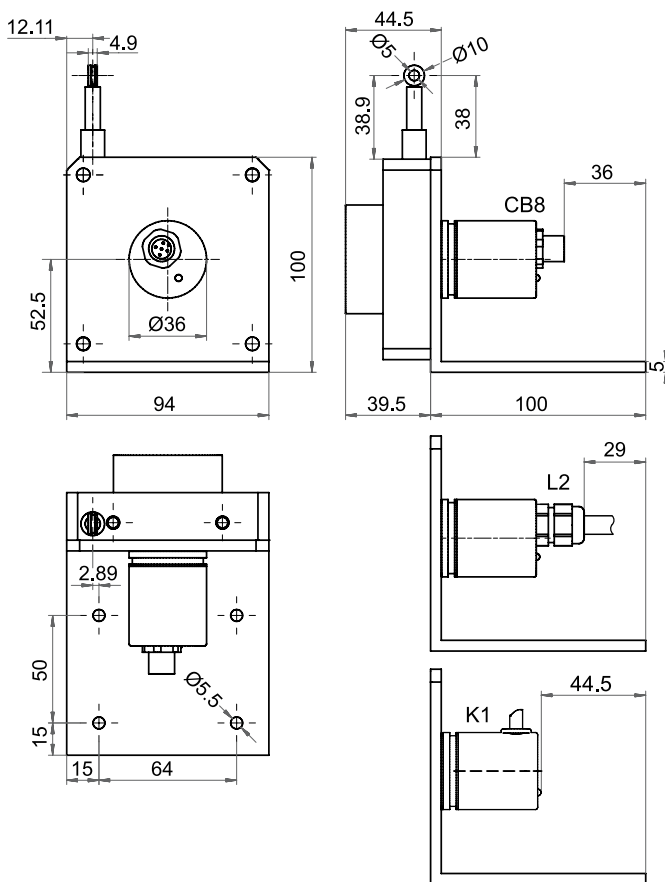
BK

Direction:



Connection configuration for encoder WDGA RS485:

		
Connector/ cable	M12 x1	cable outlet
Description	CB8 axial, 8-pin	K1, radial L2, axial
S- (GND)	1	wh
S+ (DCin)	2	bn
A (DATA+)	5	gy
B (DATA-)	6	pk
PRESET	7	bu
DIR	8	rd
Shield	housing	housing K1 n. c.



All details in mm and dependent on the encoder configuration.

Ordering information:

Measurement range:
2500 = 2,500 mm

Measurement wire:
N = 0.48 mm of thick nylon coated high-grade steel wire

Mounting direction:
UP = Wire exit up
DN = Wire exit down
FR = Wire exit front
BK = Wire exit back

Single turn resolution in bit per revolution:
(2500 mm measurement ranges)
8 => 8 bit (= approx. 1,3 Position/mm)
9 => 9 bit (= approx. 2,5 Position/mm)
10 => 10 bit (= approx. 5,1 Position/mm)
11 => 11 bit (= approx. 10,2 Position/mm)
12 => 12 bit (= approx. 20,4 Position/mm)
13 => 13 bit (= approx. 40,9 Position/mm)

Multi turn resolution
18 (example) = 1 bit up to 32 bit

Interface
EI = RS485

Software:
A = up to date release

Code
B = binary

Power supply
0 = 10 V up to 30 V
1 = 4,75 V up to 5,5 V

Galvanic isolation
0 = no

Connection: Cable outlet:
(K1= shield not connected,
L2, = shield conn. to encoder housing)
radial, with 2 m cable, IP40 = K1
axial, with 2 m cable = L2
Connector:
M12 x 1, 8-pin, axial conn. = CB8

Example of
your system

SZG93 2500 N UP 12 18 EI A B 0 1 CB8

Montageanleitung Absolutgeber WDGA EnDra® SSI,

Assembly instructions for WDGA EnDra® SSI absolute encoder, Instructions de montage, capteur angulaire WDGA EnDra® SSI, Istruzioni per l'uso trasduttore assoluto WDGA EnDra® SSI, Instrucciones de montaje codificador absoluto WDGA EnDra® SSI.

	-40 °C ... +80 °C (-40 °F ... +176 °F)	WDGA58V: -20 °C ... +80 °C (-4 °F ... 176 °F)
	-40 °C ... +100 °C (-40 °F ... +212 °F)	-20 °C ... +80 °C (-4 °F ... 176 °F)

Montage nur qualifiziertes Personal
 Assembly only qualified personnel
 Montage par un personnel qualifié
 Montaggio solo personale qualificato
 Montaje solamente personal cualificado

DIN EN 100015-1

Sicherheitsmassnahmen/safety instructions:
 Die Produkte dürfen nur in industrieller Umgebung und im NICHT sicherheitsrelevanten Bereich eingesetzt werden. The products are only designed and produced for use in industrial environments and NOT for use in safety related applications.

WDGA58B WDGA58S WDGA58V		M3 (8.8) Ma = 1 Nm
WDGA58A WDGA58B WDGA58S WDGA36A		M4 (8.8) Ma = 2 Nm

WDGA58A WDGA58B WDGA58S WDGA36A		M3 (8.8) Ma = 1 Nm
		M4 (8.8) Ma = 2 Nm

WDGA58A WDGA58B WDGA58S WDGA58V WDGA36A		M3 (8.8) Ma = 1 Nm	M4 (8.8) Ma = 2 Nm
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max. Kabellänge* max. cable length Longueur max du Câble Lunghezza massima Cable Longitud máx. de cable	Übertragungsrate Transmission rate Taux de transfert Velocità di trasferimento Velocidad de transmisión
20 m **	≤ 500 kHz
* 5 VDC max. 2 m ** >20 m auf Anfrage, on request, sur demande, su richiesta, a solicitud	

Ausgangsschaltung
 Output Circuit,
 Couplage de sortie,
 Circuito d'uscita,
 Circuito de salida
RS485

Eingangsschaltung, Input Circuit,
 Couplage d'entrée, circuito d'ingresso,
 Circuito de entrada

Einschaltzeit, System start-up Time,
 Temps de commutation, Tempo di commutazione,
 tiempo de conmutación: <1,5 s

Positive Zählrichtung: (Blick auf Welle)
 Complement = nc ⇔ cw
 Complement = +Ub ⇔ ccw
 Preset = +Ub für 2 s

Standard	F _r max.	F _a max.
WDGA58A WDGA58B Ø 6 mm Ø 10 mm	125 N 220 N	120 N 120 N
WDGA58S WDGA58V Ø 10 mm	100 N	100 N
WDGA36A	80 N	50 N
WDGA36E WDGA58E	80 N 80 N	50 N 50 N

WDGA36E **Artikelnr., Item number, Numéro d'article, Número de artículo :**
 WDGDS10016

d/mm	Lmin.	Lmax.	D	
WDGA 36E	6	8	17	42

M3 (8.8)
 Ma = 1 Nm

WDGA58E **Artikelnr., Item number, Numéro d'article, Número de artículo :**
 WDGDS10001

d/mm	Lmin	Lmax	D
6, 6.35 (1/4"), 7, 8, 9.525 (3/8"), 10, 12, 14	11	15	56

M5 (8.8), Ma=3Nm
 M3 (8.8), Ma=1Nm

	Stecker, connector, Fiche, Conector, spina			Kabel, cable, Câble, Cable, cavo	
	CB8/CC8 (M12, 8-pin)	C5 (M23 12-pin)	CH8 (M16 8-pin)	K1/K6 L2/L3	L3 58V
GND	1	12	2	wh	og
Plus U+	2	11	1	bn	bn
SSI CLK+	3	2	6	gn	gn
SSI CLK-	4	1	5	ye	ye
SSI DATA+	5	3	4	gy	gy
SSI DATA-	6	4	3	pk	pk
PRESET	7	9	8	bu	bu
DIR	8	8	7	rd	rd
Schirm Shield Ecran Pantalla Schermo	Gehäuse housing boîte carcasa contenitore	Gehäuse housing boîte carcasa contenitore	Gehäuse housing boîte carcasa contenitore	K1,K6: offen, open, ouvert, aperto, abierto L2/L3: Gehäuse, housing, boîte, carcasa, contenitore	