

Model Number

CVM58S

Features

- **Integrated functional safety with twin processor structure and dual sensing for extra security**
- **For systems up to SIL3 and PLe**
- **Industrial standard housing Ø58 mm**
- **30 Bit multiturn**
- **Galvanically isolated CAN interface**
- **DSP 406/301/304, CLASS 1 and 2**
- **Servo or clamping flange**
- **2 limit switches**
- **CANopen and CANopen Safety interface**

Description

This absolute rotary encoder with Safety CANopen interface fulfills through its mechanical and electrical concept with twin-microcontroller structure and double sampling all safety function requirements of modern functional safe control systems. It is suitable for the use in machines and plants with safety categories up to:

- SIL3 acc. to EN 62061
- PLe acc. to IEC 13849
- Category 4 acc. to IEC 13849

The bus electronics is integrated in the removable housing cover. Due to this the encoder and the bus electronics can be installed or replaced separately in case of maintenance and service. This device is made for shaft mounting and comes with a clamping-flange.

Technical data

General specifications

Detection type	photoelectric sampling
Device type	Multiturn absolute encoder

Functional safety related parameters

MTTF _d	100 a
Mission Time (T _M)	10 a
PFH _d	6.2 E-9
PFD	2.7 E-4
L _{10h}	1.9 E+11 at 6000 rpm and 20/40 N axial/radial shaft load
Diagnostic Coverage (DC)	98.9 %

Electrical specifications

Operating voltage U _B	12 ... 30 V DC
No-load supply current I ₀	max. 100 mA
Linearity	Non Safety; ± 4 LSB at 16 Bit, ± 0,5 LSB at 12 Bit Safety Value: 10 bit ± 0 LSB
Output code	binary code
Code course (counting direction)	cw ascending (clockwise rotation, code course ascending) cw descending (clockwise rotation, code course descending)

Interface

Interface type	CANopen / CANopen Safety
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Resolution	
Single turn	CANopen: up to 16 Bit CANopen Safety: 10 Bit

Multiturn	14 Bit
Overall resolution	up to 30 Bit
Transfer rate	max. 1 MBit/s
Standard conformity	DSP 406/301/304, CLASS 1 and 2

Output

Output type	DSP 406/301/304, CLASS 1 and 2
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Connection

Terminal compartment	in removable housing cover
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Standard conformity

Degree of protection	DIN EN 60529, shaft side: IP64 (without shaft seal)/IP66 (with shaft seal) housing side: IP65
Climatic testing	DIN EN 60068-2-3, no moisture condensation
Emitted interference	EN 61000-6-4:2007
Noise immunity	EN 61000-6-2:2005
Shock resistance	DIN EN 60068-2-27, 100 g, 6 ms
Vibration resistance	DIN EN 60068-2-6, 10 g, 10 ... 1000 Hz
Functional safety	IEC 62061:2005 ISO 13849-1:2006

Ambient conditions

Operating temperature	-30 ... 70 °C (-22 ... 158 °F)
Storage temperature	-30 ... 70 °C (-22 ... 158 °F)

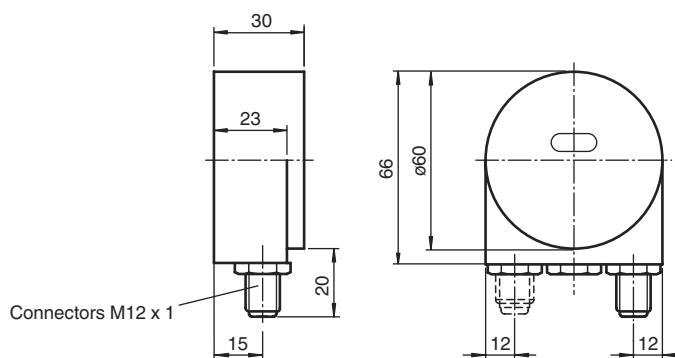
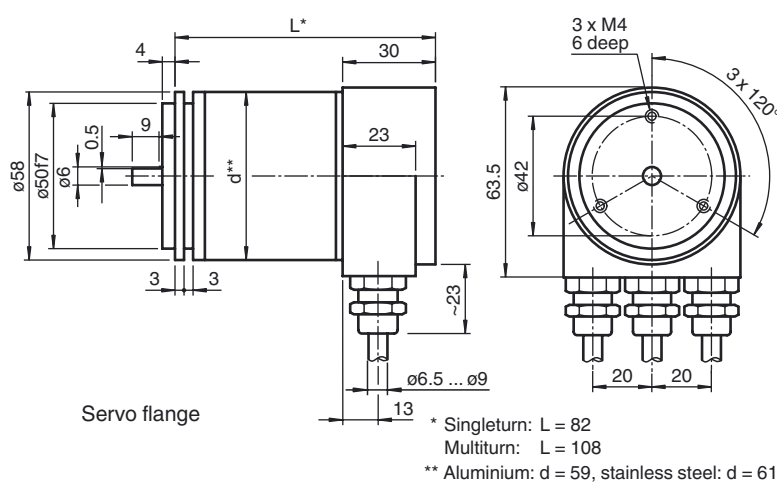
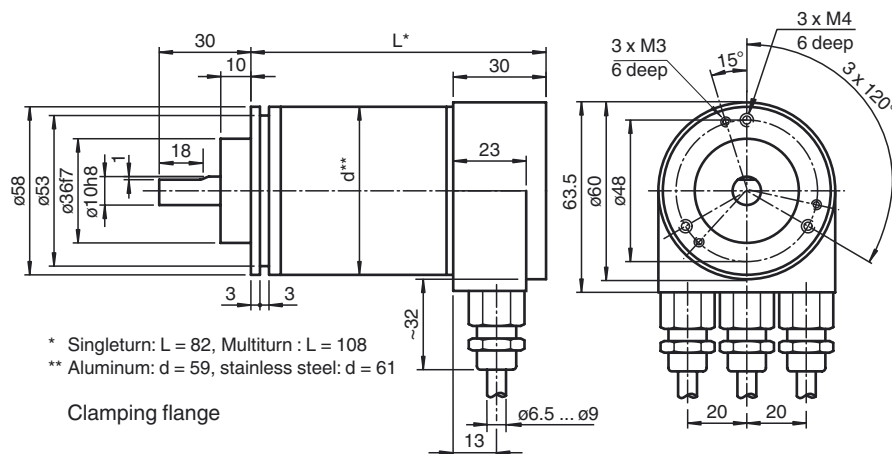
Mechanical specifications

Material	
Combination 1	housing: powder coated aluminum flange: aluminum shaft: stainless steel
Combination 2 (Inox)	housing: stainless steel flange: stainless steel shaft: stainless steel
Mass	approx. 800 g (combination 1) approx. 1300 g (combination 2)
Rotational speed	max. 12000 min ⁻¹
Moment of inertia	30 gcm ²
Starting torque	≤ 3 Ncm (version without shaft seal)
Shaft load	
Axial	40 N
Radial	110 N

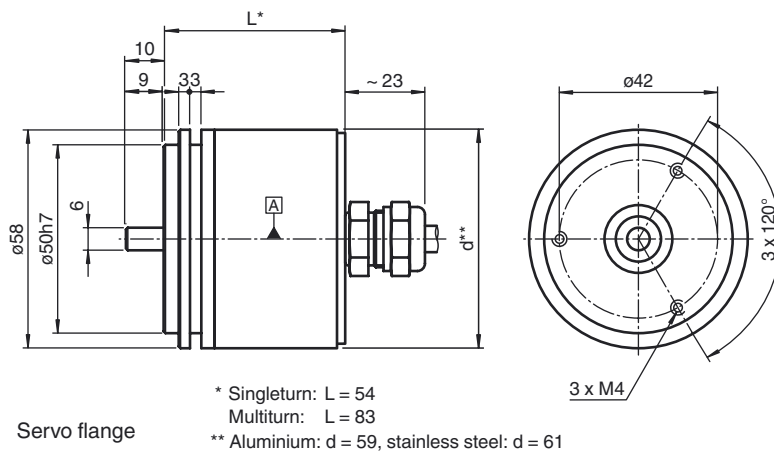
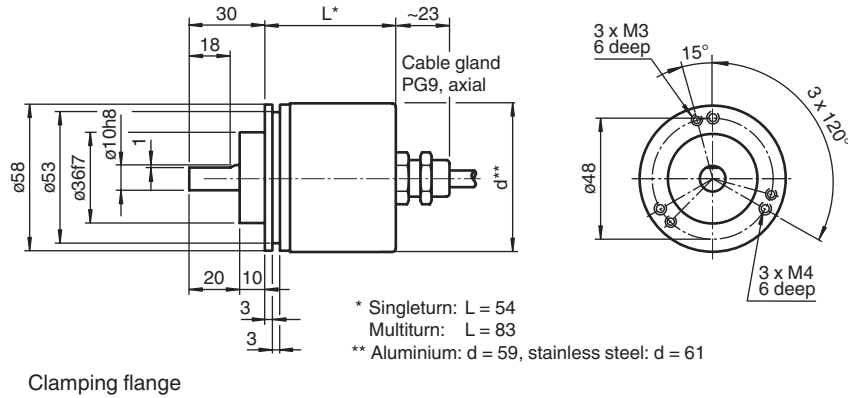
Approvals and certificates

UL approval	cULus Listed, General Purpose, Class 2 Power Source
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Dimensions



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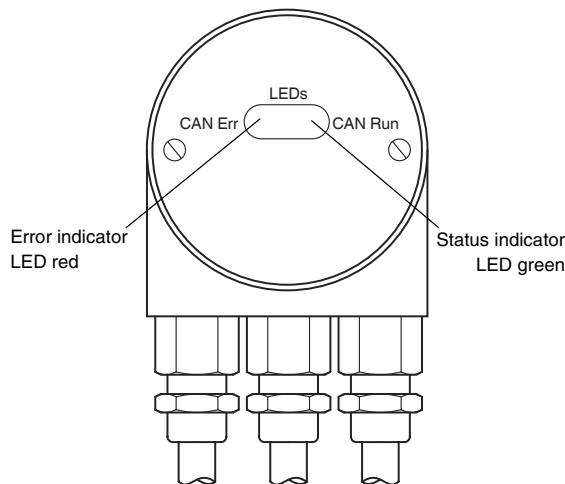
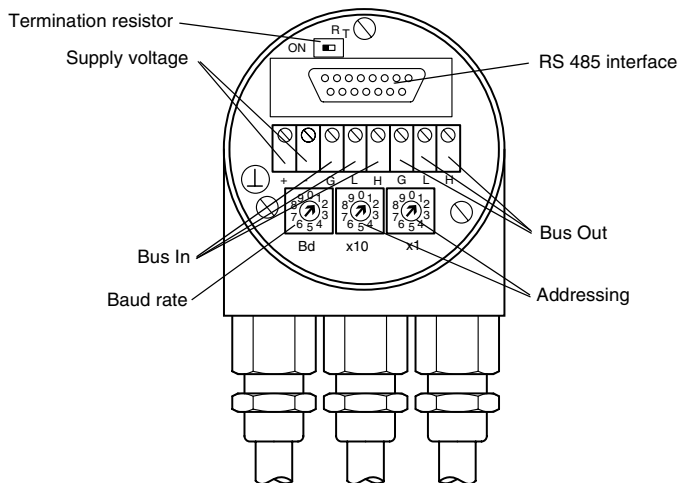


Electrical connection

Terminal	Cable	Connector(s)	Explanation
⊥	-	-	Ground connection for power supply
(+)	Red	2	Power supply, +12 ... +30 VDC
(-)	Black	3	Power supply, 0 VDC
CG	-	1	CAN Ground (Bus In)
CL	Blue	5	CAN Low (Bus In)
CH	White	4	CAN High (Bus In)
CG	-	1	CAN Ground (Bus Out)
CL	Blue	5	CAN Low (Bus Out)
CH	White	4	CAN High (Bus Out)

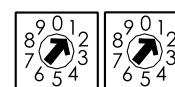
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Indicating and operating elements



Adjusting the participant address

The participant address can be adjusted with the rotary switches. The address can be defined between 1 and 64, and may only be assigned once.



x10

x1

member X

last participant



Adjusting the termination resistor

The terminating resistor R_T (121 Ω) can be connected to the circuit by means of the switch:

Baud rate adjustment

Baud rate [kBit/s]	Switch position	Value Object 3001h	Baud rate [kBit/s]	Switch position	Value Object 3001h
20	0	0	500	5	5
50	1	1	800	6	6
100	2	2	1000	7	7
125	3	3	reserved	8	-
250	4	4	reserved	9	-

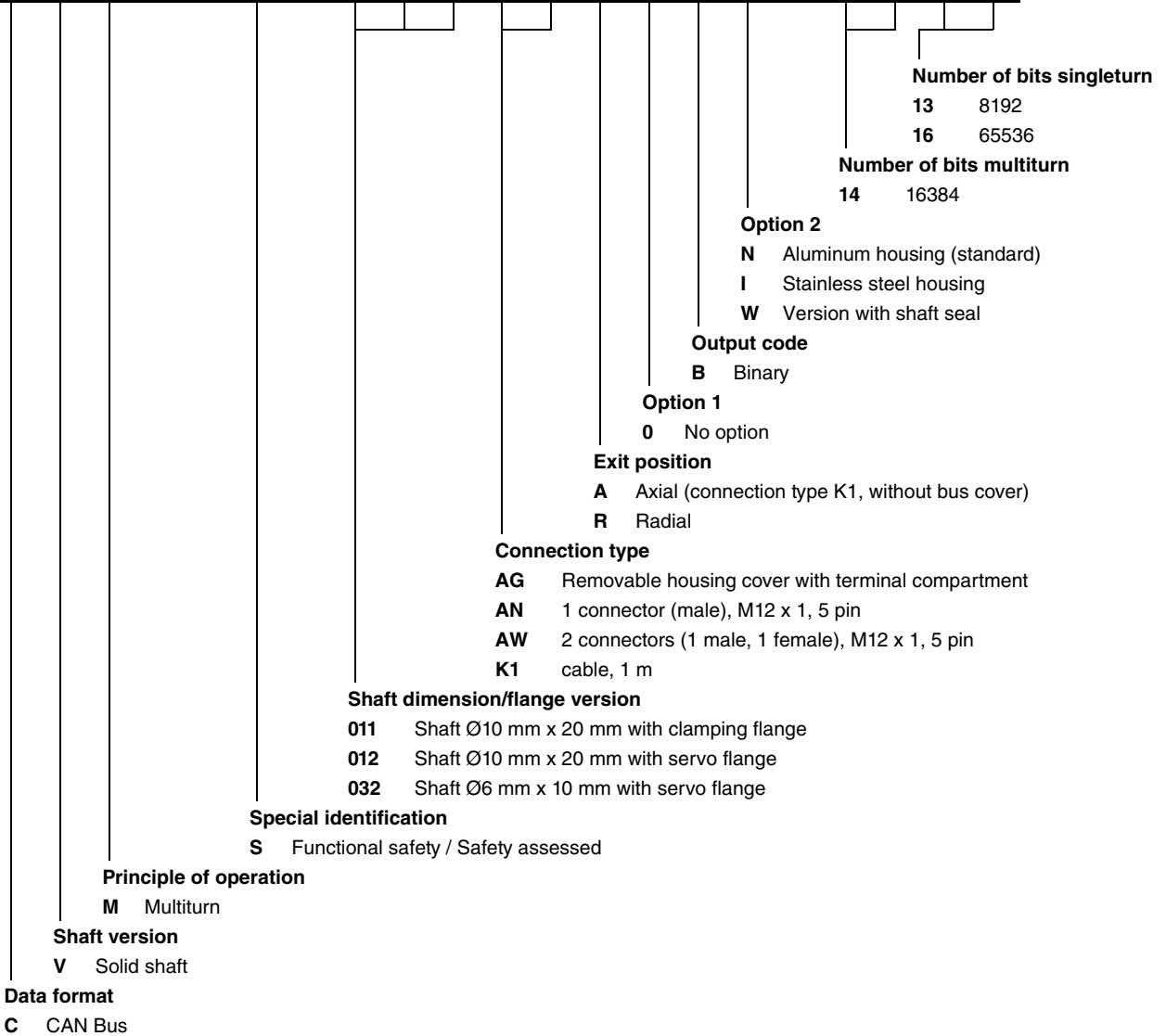
LED-Indicators

LED CAN Err (rot)	Status	Meaning
off	No error	Device operates in normal mode.
single flash	Warning limit reached	At least one of the CAN controllers error counter has reached or crossed the warning limit (too many error frames).
double flash	Error event	NMT error monitor event or heartbeat error has happened.
flashing continuously	Invalid configuration	General configuration fault.
on	Bus off	The CAN controller has disconnected from the bus
LED CAN Run (grün)	Status	Meaning
off	Reset	Devive is performing a reset.
single flash	STOPPED	The devices status is STOPPED.
flashing continuously	PRE-OPERATIONAL	The devices status is PRE-OPERATIONAL.
on	OPERATIONAL	The devices status is OPERATIONAL.

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Order code

C	V	M	5	8	S	-						0	B		-	1	4		
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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".