

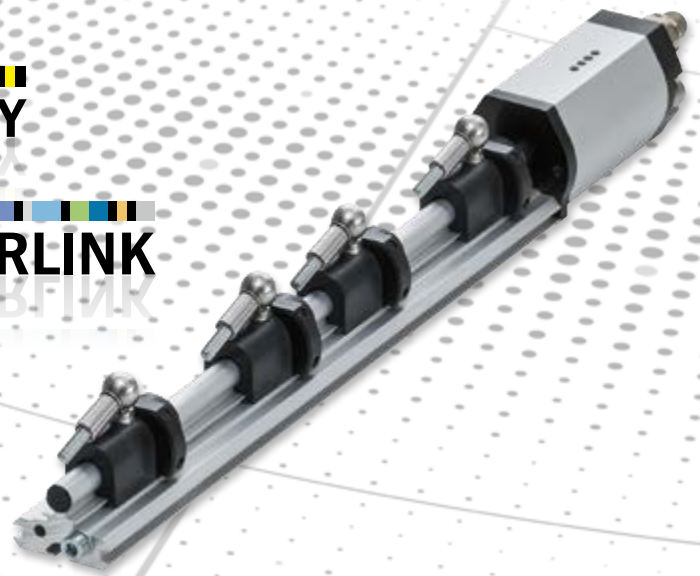
Ethernet POWERLINK sensors

Absolute rotary encoders and linear encoders



open 
SAFETY

ETHERNET 
POWERLINK



Product information
Ethernet POWERLINK

Release note

Please note that the information, measure values and tolerances in the drawings are not binding. Subject to Modification in technology and design. They serve only as a means to illustrate the product. Please contact our sales team if you would like a concrete offer and a binding drawing.

All information and data can be found at:
www.tr-electronic.com/s/S006848

Access information even faster:
by scanning the QR code.

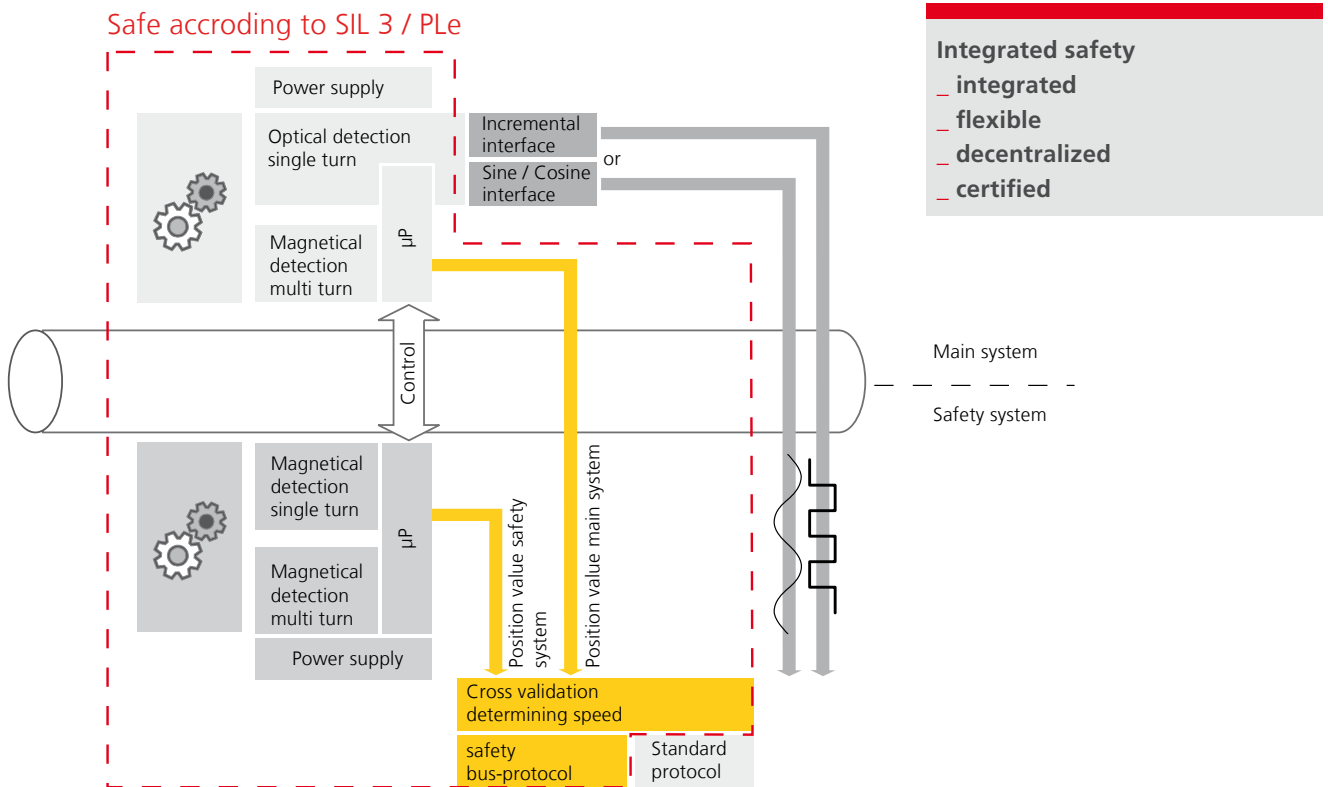


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Competence with integrated safety since 2009

Functional principle



optional – ATEX

- _ EX-protection zone 2/22
- _ Functional safety in accordance with DIN EN 61508: SIL 3 EN ISO 13849-1: PL e
- _ 13 Bit resolution, 32.768 revolutions

SIL3, PL e



- _ SIN / COS-signals or incremental signals to return to position
- _ CE EX II 3G Ex nAc IIC T6 X
- _ CE EX II 3D Ex tc IIIC T65°C IP 64 X

optional – stainless steel version

- _ robust design
- _ Non-tainting, no contamination and deposits
- _ High level of corrosion resistance

- _ High thermal and mechanical tolerance
- _ Light construction due to low weight
- _ Protection class IP 65

optional – saltwater-proof

- _ increased imperviousness IP 65
- _ Suitable on and offshore (salt-spray tested up to 672 hrs)

CDV 75 M and CDH 75 M



open SAFETY
ETHERNET POWERLINK

Advantages

- Solid and hollow shaft
- Absolute encoder SIL 3, PLe
- Secure communication
- Secure absolute position
- Secure speed
- Secure preset
- Diverse redundancy
- Reduced wiring complexity

General data

Rated voltage	
- Characteristic value	24 VDC
Number of steps per revolution	≤ 8.192
Number of revolutions	≤ 32.768
Functional safety	
- Safety principle	Redundancy with triangulation
Bearing life - coefficient	
- Speed	$3,000 \text{ min}^{-1}$
Cycle time	$\geq 400 \mu\text{s}$
Poll response time	$3 \mu\text{s}$

Ambient conditions

Relative humidity	98 %, no condensation
Protection class	
- Default	IP 54
- optional	IP 65/saltwater-proof

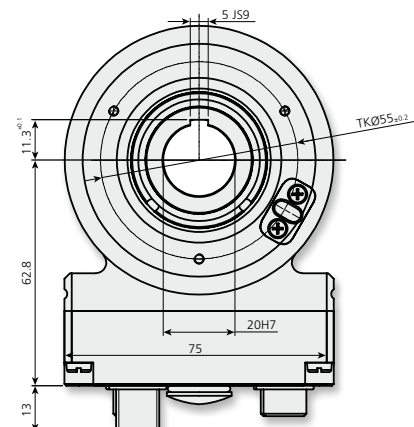
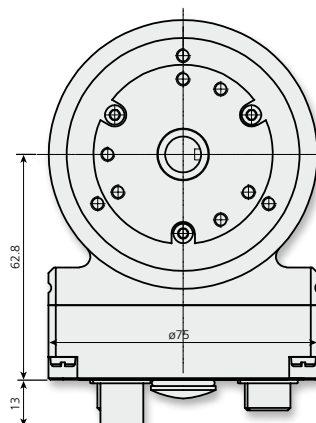
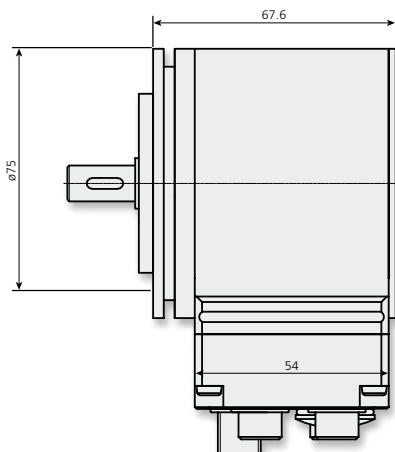
More information about

the devices can be found at

www.tr-electronic.com/s/S006864

Scale drawing

Example of CDV 75 M (solid shaft)



Please request detailed drawings for your configuration.

COV65/CEV65



Advantages

- Solid shaft version
- Flexible programming
- High-resolution measuring system
- Customer-specific solutions
- Modular mechanical construction
- Modular product range
- Additional interfaces
- Reduced wiring complexity
- Also available as wire-actuated encoder version

General data

Rated voltage	
- Characteristic value	11 ... VDC
Number of steps per revolution	≤ 8.192
Number of revolutions	≤ 256.000
Parameters/Functions can be changed	Resolution, preset-parameters, counting direction
Cycle time	$\geq 400 \mu\text{s}$
Poll response time	3 μs
Bearing life - coefficient	
- Speed	= 3,000 min^{-1}

Ambient conditions

Relative humidity	98 %, no condensation
Protection class	
- Default	IP 65

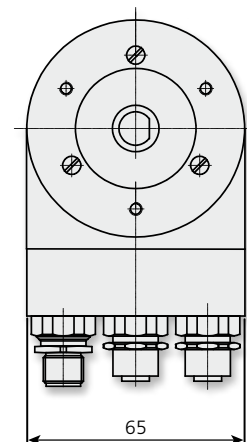
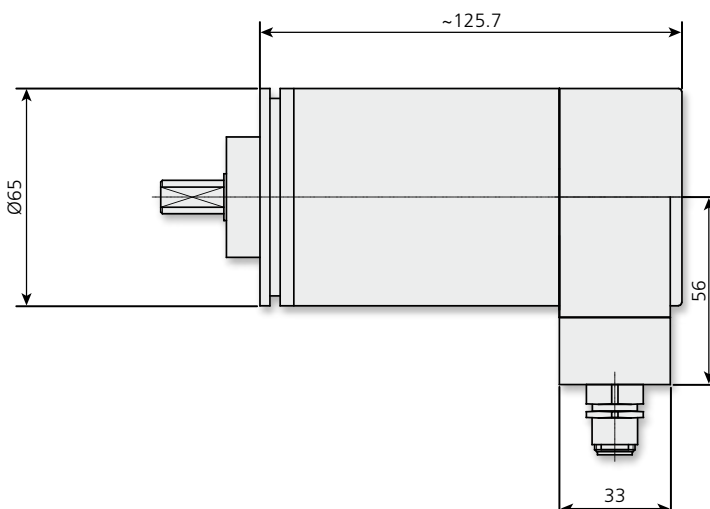
More information about

the devices can be found at

www.tr-electronic.com/s/S006869

Scale drawing

Example of COV 65 - EPL (solid shaft)



Please request detailed drawings for your configuration.

C__58



ETHERNET
POWERLINK
БОМБІТІК

Vorteile

- _ Customer-specific solutions
- _ Flexible programming
- _ Further interfaces available
- _ Modular mechanical design
- _ Modular product line
- _ Short lead times

General data

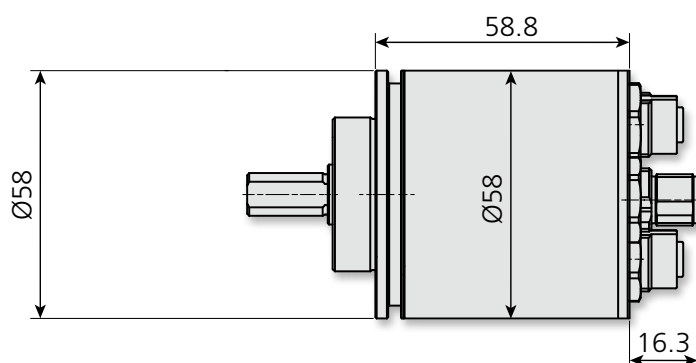
Rated voltage	
- Characteristic value	11 ... 27 VDC
Number of steps per revolution	≤ 33 Bit
Number of revolutions	≤ 32.768
Parameters/Functions can be changed	Resolution, preset-parameters, counting direction
Cycle time	$\geq 400 \mu\text{s}$
Poll response time	3 μs
Bearing life - coefficient	
- Speed	= 6,000 min ⁻¹

Ambient conditions

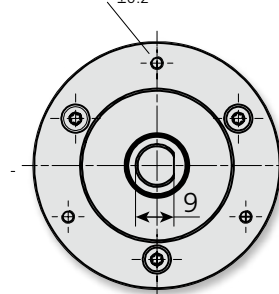
Relative humidity	98 %, keine Betaaung
Protection class	
- Default	IP65

Scale drawing

Example of CEV58 - EPL (solid shaft)



3×M3, 3deep
TKØ48_{±0.2}, (3×120°)



More information about the devices can be found at
www.tr-electronic.com/s/S007098

Accessories – wire-actuated encoder from 0.5 to 50 m

SL30

The SL30 is designed for many years of use with a high activity rate. It is the product of many years of experience and offers a wide range of measuring lengths. The measuring cable eye is completely plastic-coated and has a (removable) ball joint for flexible cable connection.

Available options include "cold grease" (-30 ... +80 °C), "bellows" at the cable outlet, single and double pulley, cable outlet on the left or right (or cable outlet sits on the left or right of the drum in relation to the encoder). The spring assembly is designed for an extremely long lifetime with a high number of duty cycles. High precision: The cable lies in an endless groove, the cable drum is shifted so that the run-off point is always positioned exactly beneath the cable outlet. The housing is made of aluminium and the spring assembly cover is plastic. Internal threads enable precise assembly.



SL30 ATEX

As SL, but approved for applications in explosive atmospheres, compatible with our AE_70.

WDS

The WDS is suitable for normal automation tasks. Once again the cable drum moves so that the run-off point is positioned beneath the cable outlet. Cable end with a cable hook (P60, P69) or a brass cable eye (P115). The cable outlet nozzle has a simpler design in comparison to the SL. Single pulley available. The complete cable drum including spring assembly is installed in an extruded aluminium housing. Grooves on three sides enable trouble-free mounting with sliding blocks.



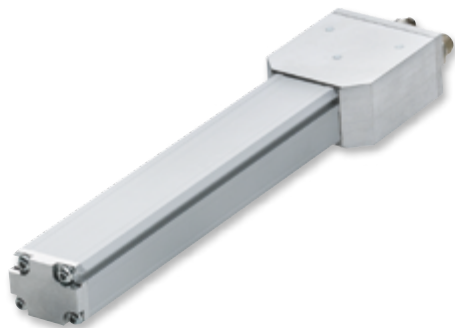
SL00

The SL00 is a cost-effective product for simple measuring applications with lower accuracy requirements.

In terms of precision it is compatible with our rotary encoders with magnetic scanning, but is also available with rotary encoders with optical scanning. The cable drum is narrow, so that even if it is not moved (as with the SL30 and WDS) only small deviations occur. The cable drum uses the bearing and shaft of the installed rotary encoder. The housing is made of plastic, the cable end with eye is brass.



LMP 30 - EPL



Advantages

- _ Easy to install
- _ Flexible programming
- _ Customer-specific solutions
- _ Measures linear movements
- _ Position value - adjustment
- _ Profile housing
- _ Wear-free scanning
- _ Additional interfaces

General data

Rated voltage	
- Characteristic value	24 VDC, -20 ... +10 %
Measurement length	50 ... 2,000 mm, in steps
Resolution	0.001 mm
Reproducibility	0.005 mm
Measuring body material	Aluminium extrusion
Magnet	T1-S3818, additional available on request
Internal cycle time	>= 400 µs
Poll response time	3 µs

Ambient conditions

Relative humidity	98 %, no condensation
Protection class	
- Default	IP 65

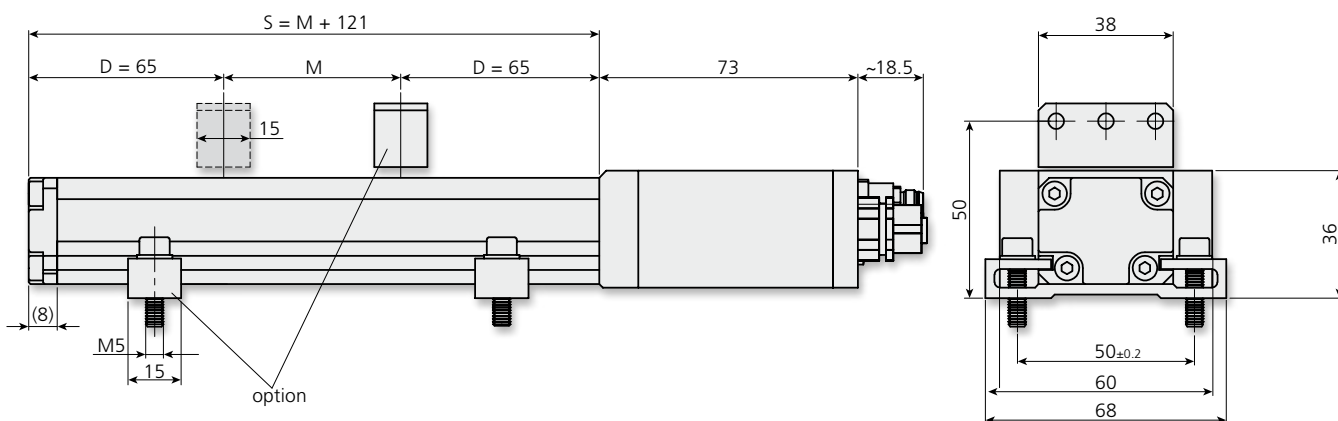
More information about

the device can be found at

www.tr-electronic.com/s/S006862

Scale drawing

Example of LMP 30 - EPL



Please request detailed drawings for your configuration.

LP 46 - EPL



Advantages

- Easy to install
- Flexible programming
- Measures linear movements
- Wear-free scanning
- Customer-specific solutions
- Position value – adjustment
- Additional interfaces are supported

General data

Rated voltage	
- Characteristic value	24 VDC, -20 ... +10 %
Measurement length	50 ... 2,000 mm, in steps
Resolution	0.001 mm
Reproducibility	0.005 mm
Measuring body material	Aluminium extrusion (LP46 - EPL)
Magnet	Slide (LP46 - EPL)
Internal cycle time	>= 400 µs
Poll response time	3 µs

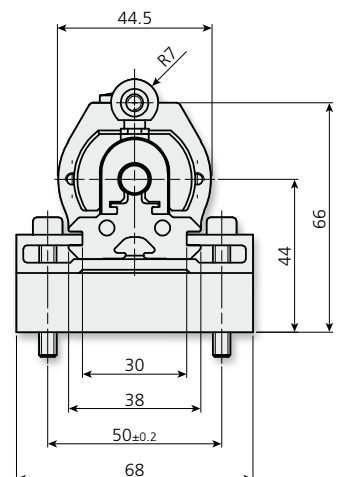
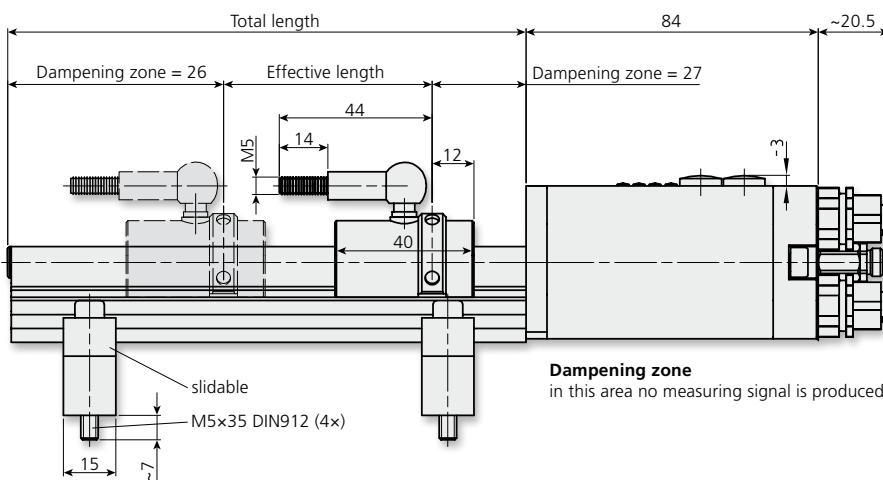
Ambient conditions

Relative humidity	98 %, no condensation
Protection class	
- Default	IP 65

More information about the device can be found at www.tr-electronic.com/s/S006861

Scale drawing

Example of LP 46 - EPL



Please request detailed drawings for your configuration.

LA 46 and LA 46/H - EPL



Advantages

- _ Easy to install
- _ Flexible programming
- _ Measures linear movements
- _ Wear-free scanning
- _ Customer-specific solutions
- _ Position value - adjustment
- _ Additional interfaces are supported
- _ Pressure-resistant tubular housing
- _ For installation directly inside cylinder
- _ Option: Sensor is replaceable

General data

Rated voltage	
- Characteristic value	24 VDC, -20 ... +10 %
Measurement length	50 ... 2,000 mm, in steps
Resolution	0.001 mm
Reproducibility	0.005 mm
Measuring body material	Cr/Ni-alloy
Rod tip bearing	Option
Magnet	T4-M33
Internal cycle time	>= 400 µs
Poll response time	3 µs

Ambient conditions

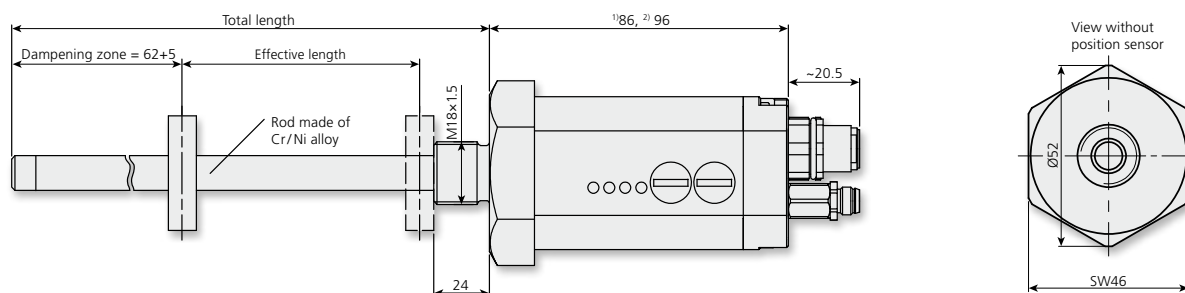
Relative humidity	98 %, no condensation
Protection class	
- Default	IP 65

More information about the devices can be found at

www.tr-electronic.com/s/S006861

Scale drawing

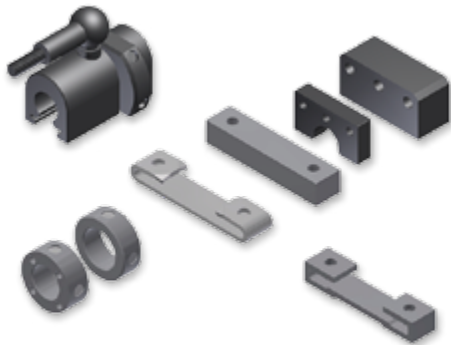
Example of LA 46 H - EPL



¹⁾LA-46-K - rigid casing duct, ²⁾LA-46K H, casing duct can be replaced. Please request detailed drawings for your configuration.

Overview – accessories*

Magnets and spacers



Products

- _ Round magnets
- _ Block magnets
- _ Open ring magnets
- _ Ball-joint arms
- _ Double clamping
- _ Spacer (extension to installation height available as follows 5/10/12 mm)

* When inquiring about suitable accessories, please always specify the encoder.

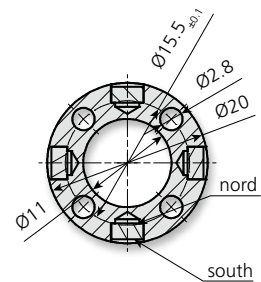
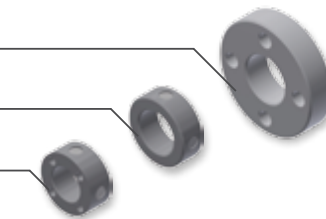
Type

Order number

Round magnets

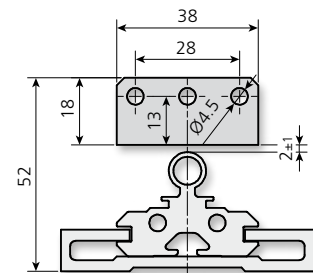
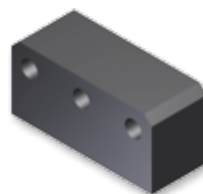
- T4-M33 (Ø 33 mm)
- T4-M22 (Ø 22 mm)
- T4-M20 (Ø 20 mm)

- 49-155-016
- 49-155-005
- 49-155-004



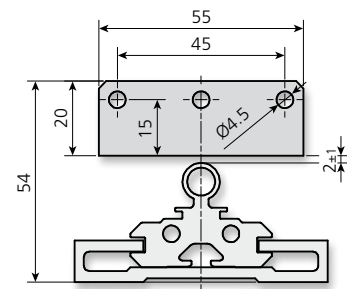
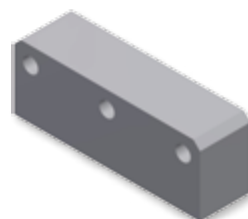
Block magnet
T1-S3818

49-155-015



Block magnet
T1-S5520

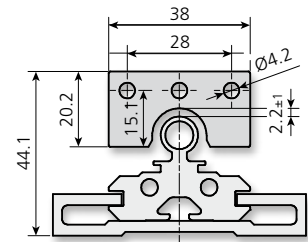
49-155-009



Please request detailed drawings for your configuration.

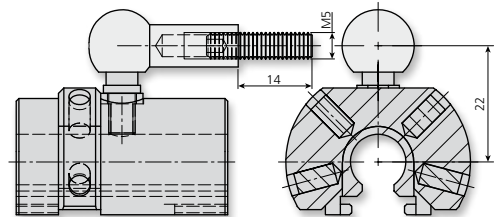
Open ring magnet
T4-U3820

49-155-003



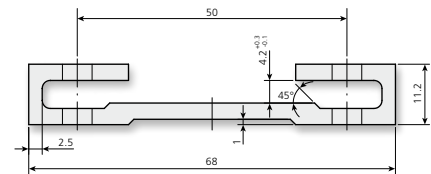
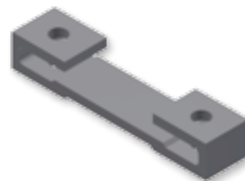
Ball-joint arm

85-917-013



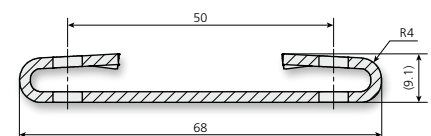
Double clamping
(aluminium)

49-917-001



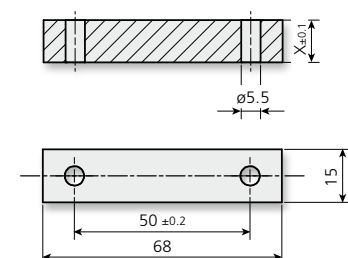
Double clamping (tainless steel, for vertical assembly)

49-917-057



Spacer

49-917-081 (X=05 mm)
49-917-082 (X=10 mm)
49-917-083 (X=12 mm)



TR-Electronic – your partner in automation

Rotary encoders

Absolute encoder, incremental rotary encoder, wire-actuated encoder

Rotary encoders with optical and magnetic scanning function register the precise position in a wide variety of applications and industries.

In medical engineering, miniature versions ensure correct positioning while SIL3-approved absolute rotary encoders provide the necessary safety. We offer not only high-quality rotary encoders (from Ø 22 to 160 mm) for almost any application but also comprehensive accessories.

Linear encoders

Linear absolute measuring systems, laser displacement measurement

Linear encoders register linear motions in machines, tools and systems according to specific requirements using different technologies.

Linear encoders allow measuring distances of max. 20 m almost without any wear. This value is max. 240 m for laser measuring systems. Machines and systems can be precisely controlled to reach their desired positions.

Motion

Servo drives, compact drives, process drives

Intelligent encoTRive drives are available with the current field bus systems, such as PROFIBUS, PROFINET and CANopen, within a power range of up to 300 watts. The drives are configured to meet customer requirements and can be freely combined with precision gear, holding brake and I/O. Values of up to 4,350 rpm and powerful 200 Nm are available to cope with demanding applications.



Components

**Industrial PC, field bus I/O,
PLC, HMI controller**

Industrial PCs are available in numerous variants and offer customized calculation power for PC-assisted automation. Programmable logic controllers (PLC) are the traditional means for automation. HMI controllers establish the interface to the user. Field bus nodes, I/O modules and cam controllers complete the range of automation components.

Automation

**Consulting and implementation
for new machines and retrofit**

You want to set up a largely automated new machine or retrofit and modernize your existing machine with automation systems? Then you just need our extensive expert knowledge and the more than 20 years of our experience.

Unidor

**Blanking and forming,
systems, controls and sensors**

Trendsetting blanking and forming technology for more than 30 years. We are your reliable partner in the world of blanking and pressing and can prove this with thousands of machines which we have successfully installed all over the world. Sensors, controls and systems ensure optimal results in machines, tools and retrofit projects.



photo background: "kras99/Fotolia.com"

TR-Electronic – the suitable solution for any industry

Printing technology and paper processing

Fast signal processing for printing machines allows high register control while decentralized compact drives provide for automated adjustment operations. Due to their stainless steel housings, our rotary encoders can even withstand aggressive media, such as groundwood in paper machines. Small-size absolute rotary encoders measure motions even in confined construction spaces.

- _ paper transfer between individual stations
- _ register control
- _ color density adjustment



Renewable energies

The adjustment of the blades and the nacelle of wind turbines is a safety-relevant task which can be solved with the rotary encoders by TR-Electronic – even according to tomorrow's safety standards.

Wind energy

- _ pitch and azimuth control
- _ rotor and generator speed control

Photovoltaics

- _ panel tracking

Solar heat

- _ inclination angle control for parabolic trough systems

Event technology

In the field of theater, musical, opera and ballet, people and automated stage machinery have to be accommodated in one and the same workroom. To ensure the safety of all those involved, the prime requirement is highest reliability in the detection of positions. We offer the solution that suits your customized concept, including our safety rotary encoder which is certified according to SIL3/PLe.

- _ stage curtain and flat pulls, stage portal and lighting bridges
- _ set wagons, lifting podiums, revolving stages
- _ flying gear for persons



Plastics processing

Plastics processing machines and systems are used for a great variety of measuring tasks which require fast signal processing and high precision. Such tasks include, for example, the monitoring of functions and belt travel velocities in hammer mills, fine grinding machines or washer systems.

- _ positioning of injection cylinders and dies
- _ monitoring of rotary motions of various applications in the field of materials handling and robotics
- _ early alerting to material loading
- _ distance measurement of profile cutting machines

Storage and logistics

In the field of modern storage equipment, such as rack feeders, transfer sections and crane systems, the technical measuring and controlling equipment must be particularly powerful and decentralized to ensure easy project planning. Storage and logistic systems can be commissioned as quickly as possible and are fully reliable at any time.

- _ rack feeders, transfer sections and crane systems
- _ powerful decentralized measuring & controlling technology
- _ automated guided transport systems, ground conveyors



Woodworking

Intelligent decentralized controls, powerful sensors which process signals on site, and components which are reliable despite strong temperature variations and vibrations form the basis for automation solutions in the woodworking industry. We specialize in the intelligent equipment and networking of transfer machines, machining centers and assembly cells, particularly if you need a platform for your special machine philosophy or special function.

- _ alignment of sawing and joining units
- _ EX rotary encoders for hazardous and dusty zones
- _ belt sanders, transport/process belts, etc.

Metal working

The world of presses and dies has been a special field of TR-Electronic for a long time. We develop our products for harsh environmental conditions from the very beginning. Our products withstand highest shock and vibration loads and are suitable for adverse conditions with strongly varying temperatures or chemical impacts.

- _ absorber modules hold off strongest vibrations
- _ particularly suited for harsh environments (high temperature)
- _ fill level monitoring in the cooling circuit, hydraulics, etc.



Packaging industry

Customized flexible automation solutions form the intelligent basis for successful machinery concepts. High processing speeds enable fast running times and high quantities. Our absolute measuring systems save complex reference motions, and our highly integrated intelligent sensor technology reduces the construction volume and relieves the higher-order controls. Particularly when increased precision is required, we offer solutions which could not be implemented before.

- _ format adjustment in packaging machines
- _ positioning of filling stations
- _ turntable control

Headquarter

TR-Electronic GmbH
Eglshalde 6

D-78647 Trossingen
Germany

Tel.: +49/7425 228-0
Fax: +49/7425 228-33

info@tr-electronic.de
www.tr-electronic.de

International

Argentina

AEA Aparátos Eléctricos
Automáticos
S.A.C.I.E./Asunción 2130
AR-1419 Buenos Aires
Tel.: +54/11 - 4574 1155
Fax: +54/11 - 4574 2400
servicioalcliente@aea.com.ar
www.aea.com.ar

Brazil

Grupo C+ Tecnologia
Rua dos Caetés
601 - Perdizes
BR - São Paulo – SP
CEP-05016-081
Tel.: +55/11-2168 6554
Fax: +55/11-2168 6555
info@ctecnologia.com.br
www.ctecnologia.com.br

Denmark

TR-Electronic Danmark ApS
Hustedgårdvej 22
DK-8722 Hedensted
Tel.: +45/75 89 06 03
Fax: +45/75 89 06 36
cbj@tr-electronic.dk
www.tr-electronic.dk

India

Global-Tech (India) Pvt Ltd
404 White House
1482 Sadashiv Peth
IND-Tilak Road, Pune - 411 030
Tel.: +91/20- 2447 00 85
Fax: +91/20- 2447 00 86
info@globaltechindia.com
www.globaltechindia.com

Australia

Sensor Measurement Pty Ltd.
Unit 8/26 Shields Crescent
P.O. Box 1079
AU-Booragoon
Western Australia 6154
Tel.: +61/8-93 17 25 52
Fax: +61/8-93 17 24 52
sales
@sensormeasurement.com.au
www.sensormeasurement.com.au

Canada

TR Electronic
P.O. Box 2543, Station B
CDN-London, Ontario Canada
N6A 4G9
Tel.: +1/519-452 1999
Fax: +1/519-452 1177
customercare@trelectronic.com
www.trelectronic.com

Finland

Sarlin Oy Ab
P.O. Box 750
FI-00101 Helsinki
Tel.: +358/10 - 550 4000
Fax: +358/10 - 550 4201
info@sarlin.com
www.sarlin.com

Israel

Dor Engineering
P.O.Box 6
ISR-4880500 Kibutz Einat
Tel.: +972/3 9007595
Fax: +972/3 9007599
info@doreng.co.il
www.doreng.co.il

Austria

TR-Electronic GmbH
Tragösserstraße 117
A-8600 Bruck/Mur
Tel.: +43/3862–55006 0
Fax: +43/3862–55006 33
info@tr-electronic.at
www.tr-electronic.at

China

TR-Electronic (Beijing) CO., LTD.
Rm. 1302, Side A, Lucky Tower
No. 3 Dongsanhuan North Road
Chaoyang District
CN-100027 Beijing, P.R. China
Tel.: +86/10 - 646 131 96
Fax: +86/10 - 646 135 51
lu.yu@tr-electronic.de
www.tr-electronic.com.cn

France

TR-Electronic France SARL
1 Av. Christian Doppler
Bâtiment 2
F-77700 Serris
Tel.: +33/1-64 63 68 68
Fax: +33/1-61 10 17 66
info@tr-electronic.fr
www.tr-electronic.fr

Italy

Telestar S.r.l.
Via Novara, 35
I-28010 Vaprio D'Agogna (NO)
Tel.: +39/03-21 966 768
Fax: +39/03-21 996 281
telestar@telestar-automation.it
www.telestar-automation.it

Belgium

Martek SPRL - BVBA
Rue du Broux 16
B-1320 Beauvechain
Tel.: +32/10 86 82 80
Fax: +32/10 86 82 89
info@martek.be
www.martek.be

Czech Republic, Slovakia

DEL a.s.
Strojírenská 38
CZ-59101 Ždár nad Sázavou
Tel.: +420/566 657 100
Fax: +420/566 621 657
zastoupeni.tr@del.cz
www.del.cz

Great Britain

TR-Electronic Limited
4 William House, Old St.
Michaels Drive, Braintree
GB-Essex CM7 2AA
Tel.: +44/1 371-876 187
Fax: +44/1 371-876 287
info@tr-electronic.co.uk
www.tr-electronic.co.uk

Japan

SANTEST CO. LTD.
1-60 Tsuneyoshi, 1-Chome
Konohanaku
J-Osaka 554-8691
Tel.: +81/6-6465 5561
Fax: +81/6-6465 5921
info@santest.co.jp
www.santest.co.jp

Mexico

TR Electronic
P.O. Box 2543, Station B
CDN-London, Ontario Canada
N6A 4G9
Tel.: +1/519-452 1999
Fax: +1/519-452 1177
customer@trelectronic.com
www.trelectronic.com

Russia

Sensotec LLC
Bolshoy Ovchinnikovskiy. per.16,
off. 508
RU-115184 Moscow
Tel.: +7/495-797-12-54
Fax: +7/495-797-12-24
info@sensotek.ru
www.sensotek.ru

Sweden

TR Electronic Sweden AB
Djupdalsvägen 10
S-192 51 Sollentuna
Tel.: +46/8-756 72 20
Fax: +46/8-756 76 80
mailbox@trelectronic.se
www.trelectronic.se

USA (TR-Electronic)

TR Electronic
P.O. Box 4448
US-Troy, MI 48099
Tel.: +1/248-244-2280
Fax: +1/248-244-2283
customer@trelectronic.com
www.trelectronic.com

Netherlands

TR-Electronic Nederland BV
Postbus 1682
NL-6201 BR Maastricht
Tel.: +31/43 352 3614
Fax: +31/43 352 3555
info@tr-electronic.nl
www.tr-electronic.nl

Singapore

Globaltec Electronics
(Far East) Pte. Ltd.
50 Bukit Batok Street 23
#06-27 Midview Building
SIN-659578 Singapore
Tel.: +65/6267 9188
Fax: +65/6267 8011
info@globaltec.com.sg
www.globaltec.com.sg

Switzerland

TR-Electronic SA
14, Ch. Pré-Fleuri
CH-1228 Plan-les-Ouates/Genève
Tel.: +41/22-7 94 21 50
Fax: +41/22-7 94 21 71
info@tr-electronic.ch
www.tr-electronic.ch

USA (TRsystems)

TRS Fieldbus Systems, Inc.
666 Baldwin Court
US-Birmingham, MI 48009
Tel.: +1/586 826-9696
Fax: +1/586 826-9697
support@trs-fieldbus.com
www.trs-fieldbus.com
trthailand@trelectronic.co.th
www.trelectronic.co.th

Norway

TR Electronic Norway AS
Fusdal Terrasse 3
N-1387 Asker
Tel.: +46 708 696 533
Fax: +46 875 676 80
info@trelectronic.no
www.trelectronic.no

Slovenia

S.M.M. d.o.o.
Jaskova 18
SI-2001 Maribor
Tel.: +386/2450 2300
Fax: +386/2450 2302
smm@siol.net
www.smm.si

Taiwan

TR-Electronic (Beijing) CO., LTD.
Rm. 1302, Side A, Lucky Tower
No. 3 Dongsanhuan North Road
Chaoyang District
CN-100027 Beijing, P.R. China
Tel.: +86/10 - 646 131 96
Fax: +86/10 - 646 135 51
lu.yu@tr-electronic.de
www.tr-electronic.com.cn

Poland

Stoltronic-Polska Sp. z o.o.
ul. Dabrowskiego 238C
PL - 93-231 Lodz
Tel.: +48/42-649 12 15
Fax: +48/42-649 11 08
stoltronic@stoltronic.pl
www.stoltronic.pl

South Africa

Angstrom Engineering (Pty) Ltd.
19 Tom Muller Road
P.O. Box 793
SA-Meyerton 1960
Tel.: +27/16 3620300
Fax: +27/16 3620725
info@angstromeng.co.za
www.angstromeng.co.za

Thailand

T+R Electronic (Thailand) Co., Ltd.
120/62 Moo 8 Bang Sare
TH - Sattahip, Chonburi 20250
Tel.: +66/38 737 487
Fax: +66/38 737 171
trthailand@trelectronic.co.th
www.trelectronic.co.th

Republic of Korea

MS Intech Co., Ltd.
B-306, Gasan Digital 1 Ro 119
Keumcheon-Gu
KOR-Seoul
Tel.: +82/2-334 0577
Fax: +82/2-862 1591
sales@msintech.com
www.msintech.com

Spain, Portugal

Intertronic Internacional, SL
C/Johannes Gutenberg, 4 y 6
P.I. Parque Tecnológico
E-46980 Valencia
Tel.: +34/96-375 8050
Fax: +34/96-375 1022
info@intertronic.es
www.intertronic.es

Turkey

Üniversa İç-Dis Tic. ve
Mak. San. Ltd. Sti.
Cemal Gürsel Caddesi
No: 11 D: 4
TR-35600 Karsiyaka-İZMİR
Tel.: +90/232 382 23 14
Fax: +90/232 382 23 24
info@universa.com.tr
www.universa.com.tr

TR-Electronic GmbH
Eglishalde 6
D - 78647 Trossingen

Tel. +49 7425 228-0
Fax +49 7425 228-33

info@tr-electronic.de
www.tr-electronic.de



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