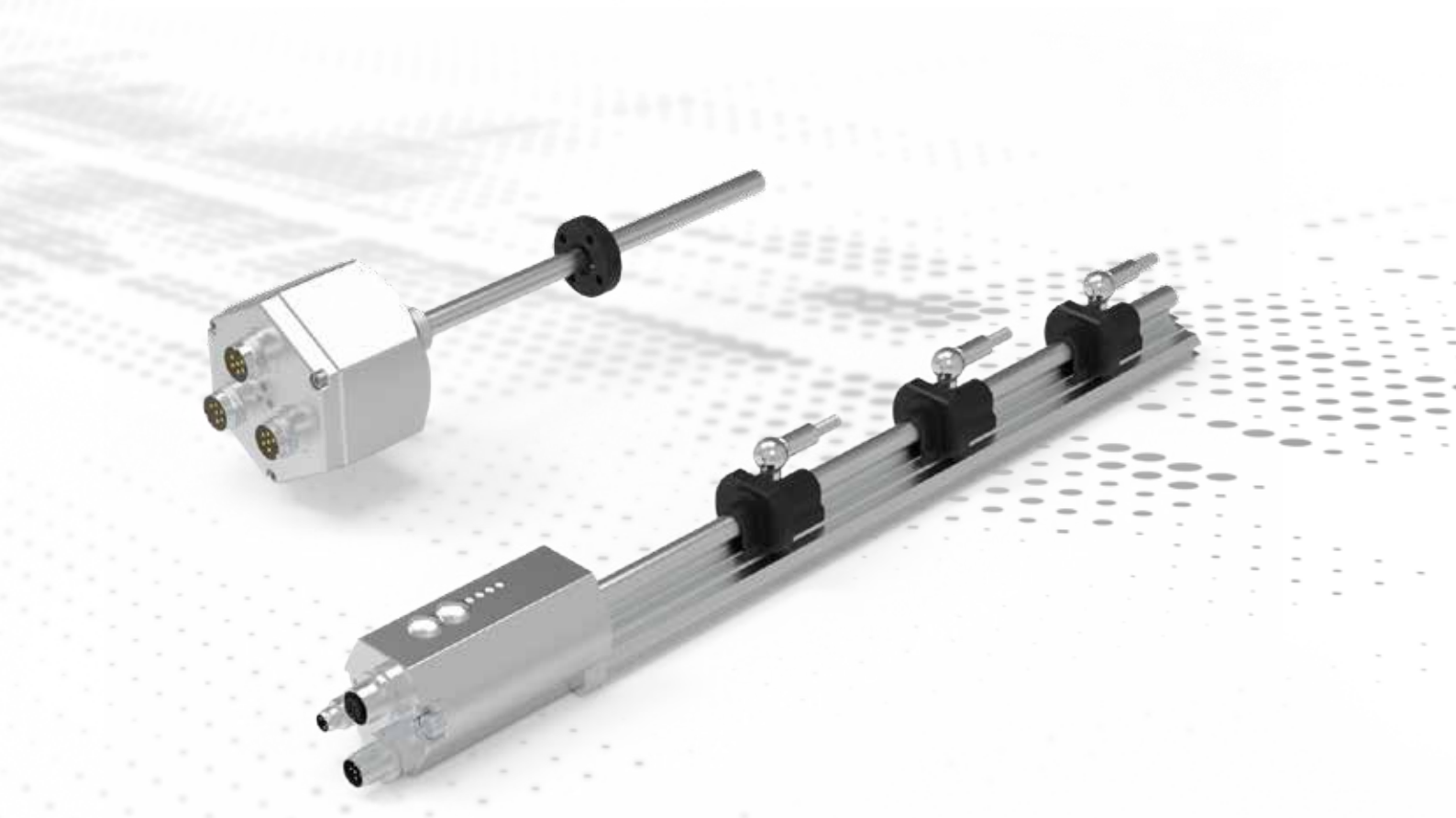
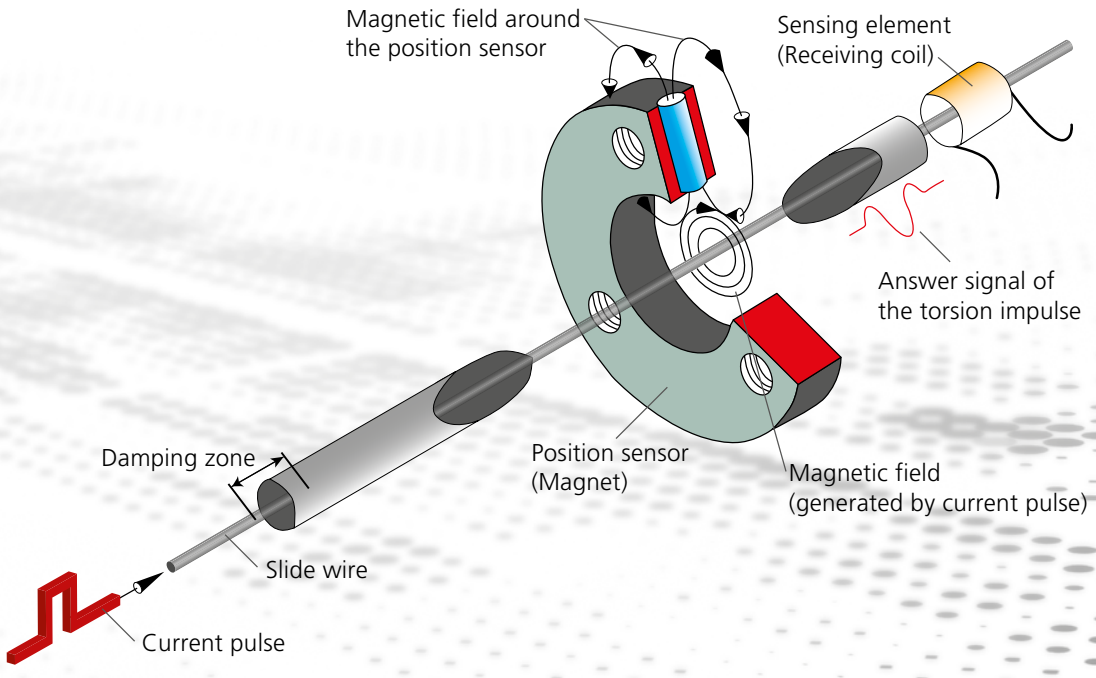
Linear Encoders
Overview



www.tr-electronic.com

Magnetostriction



Functional description

The magnostrictive linear encoders of TR capture linear movements and convert them into electrical output signals. This measuring principle is based on a travel time delay measurement.
Current pulses are sent through a magnetostrictive wire, positioned inside a protective tube, creating a ring-shaped magnetic field around the wire. A non-contact permanent magnet serves as a position sensor, touching the waveguide with its magnetic field. The magnetic field created by the current pulses generates a magnetostriction at the point of measurement due to the two differently aligned magnetic fields. The resulting torsion pulse spreads out from the position sensor with constant ultrasonic speed, moving along the waveguide in both directions.
The time difference between the transmission of the torsion pulse and its arrival at the sensing element at the detector head is converted electronically into a distance proportional signal, which is provided either as a digital or analog output signal.

LMPI46

LMR48

LMP30

Contents

Linear encoder with magnetostriction - how to find the perfect fit

The right type for your application

Linear absolute position measurement systems (magnetostriction) measure linear movements without tear or wear, even in aggressive media.

Direct integration into hydraulic cylinders by using pressure proof tube housings made from stainless steel.
e.g.: LMRI46

For use in chemical aggressive surroundings or for liquid level meausrement in food and beverage or galvanic industry, you find linear encoders in housings made of polypropylene. Linear encoders in profile housing can be easily mounted to machines and appliances. We have available versions with guided magnet and those with flat housing without guiding track. All systems are capable for detection of multiple magnets. That means that position of several magnets can be detected with one single measurement device.
e.g.: LMP30

Cascadeable linear-absolute position sensors in profile housing measure strokes of up to 20 m. They are used e.g. in roller cutters or as wear free vertical axis in automated storage systems.
e.g.: LMC55 (modular setup)

Power that fulfils your needs

Different basic detection units fulfil efficiently various requirements on resolution and precision.

Industrial

_Resolution 1 µ
_Stroke up to 4000 mm
_Direct interfaces, Fieldbus and Industrial Ethernet
e.g.: LMPI46

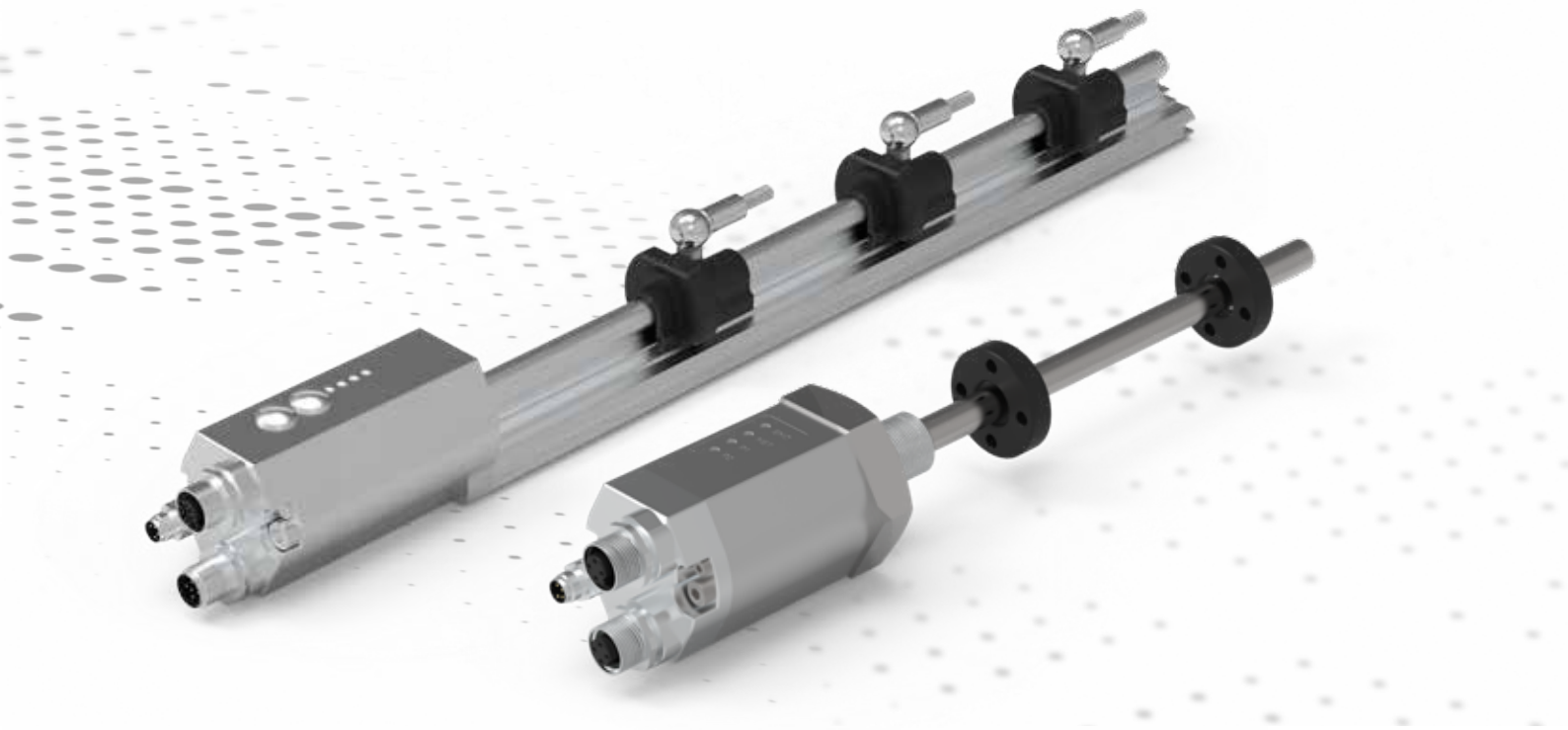
Standard

_Resolution 0,01 mm
_Stroke up to 3.000 mm
_Direct interfaces (SSI, Analog), CAN
e.g.: LMRS34

Basic

_Resolution 0,1 mm
_Stroke up to 2.500 mm
_Direct interfaces
e.g.: LMP48

Universal tool in linear encoders
LM_I46



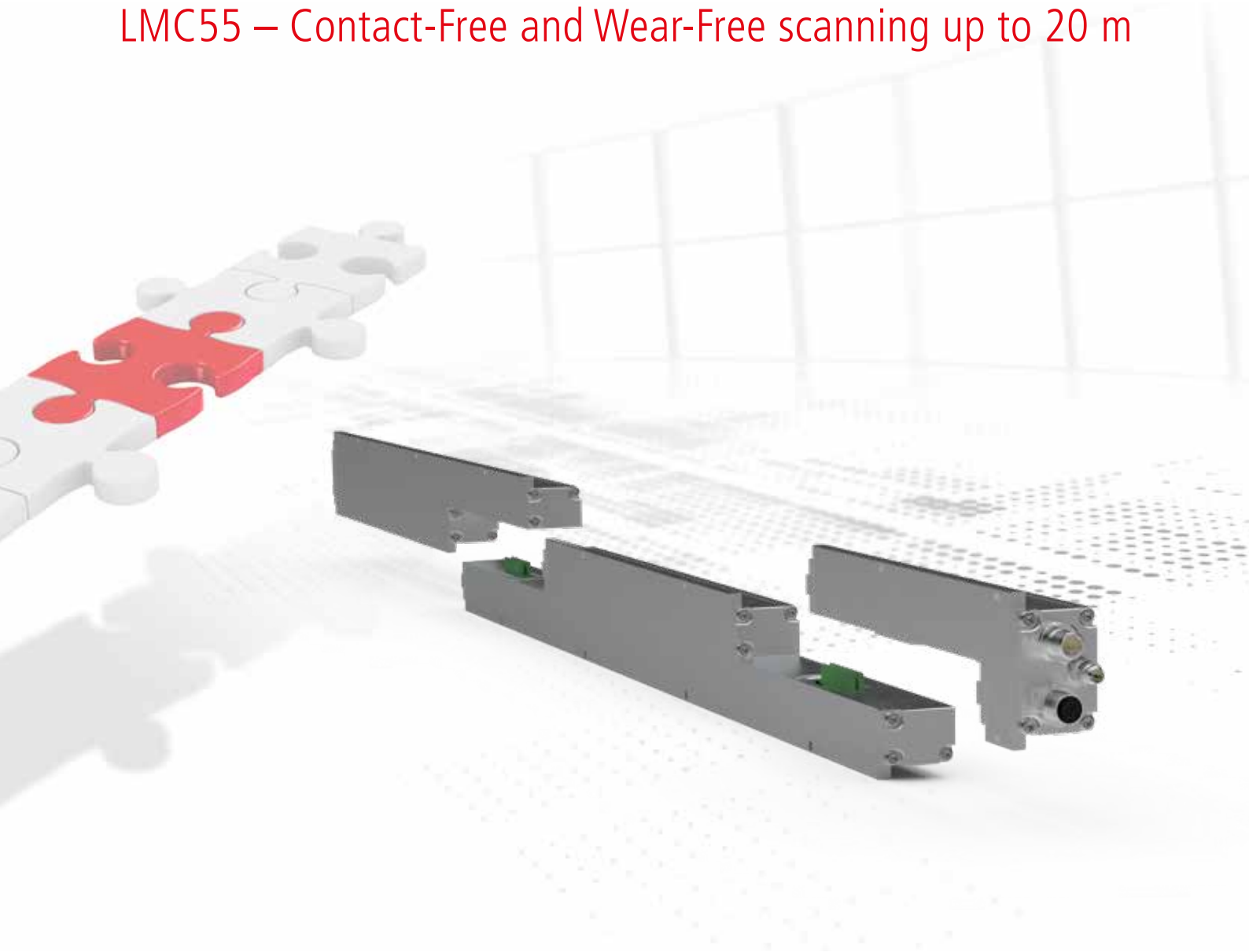
High-quality scanning, wide interface selection and many mounting options: The industrial-grade linear displacement encoders in profile or tube housing.s

Linear-absolute displacement and positioning measuring systems (magnetostriction) measure linear movements without contact and wear.
Pressure-resistant tubular housings housings made of stainless steel allow installation in hydraulic cylinders. For level measurement, the encoders can be combined with float magnets.
Linear encoders in profile housings can be mounted in a variety of ways in machines and systems.
Various magnets are available for transmitting the position to the measuring system. These are usually guided past the sensor without contact by the mechanics designed by the customer. Open magnets can be used with both types of mechanics, rings are used with tubular mechanics, especially when installed in hydraulic cylinders. For profile mechanics, there is also a guided magnet that is carried along by ball joint rods. This configuration allows greater tolerances in the mechanics, as the correct distance between magnet and sensor is ensured by the geometry of the magnet.
All systems are also available with multi-magnet sensing, meaning that the position of multiple magnets is sensed simultaneously.

Due to its modular design, the LM_I46 series offers the largest selection of interfaces for automation technology. From traditional analog and serial-synchronous interfaces to fieldbuses and state-of-the-art Industrial Ethernet variants, there is a suitable solution for most control systems.

PROFINET® PROFIBUS® EtherCAT® EtherNet/IP™ ETHERNET POWERLINK CANopen® DeviceNet™ IO-Link Analog SSI

LMC55 – Contact-Free and Wear-Free scanning up to 20 m



Measure reliably over long distances

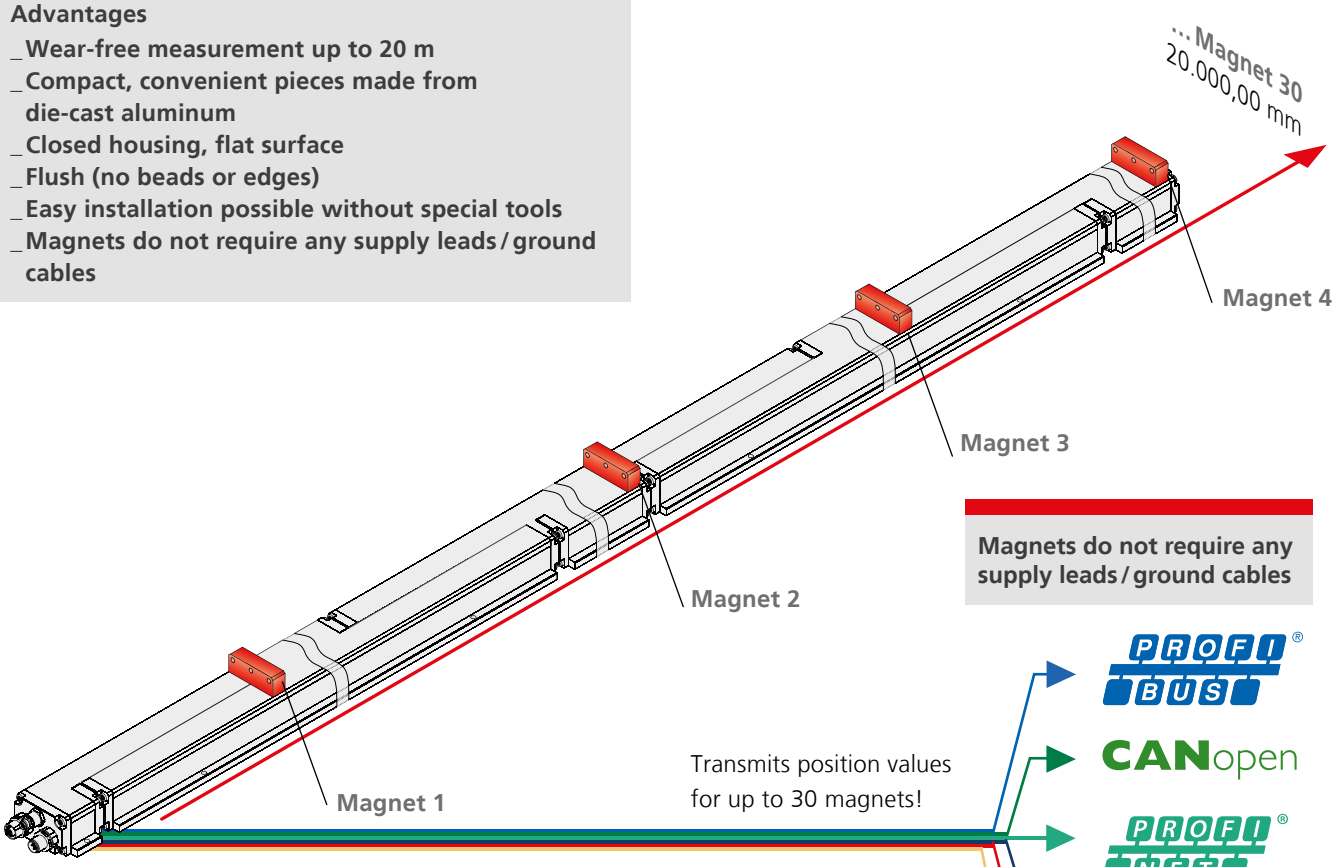
Wire-actuated encoders are subject to wear, and laser measuring systems cannot acquire several positions simultaneously in the same clear width. Magnetic tapes are susceptible to ferromagnetic chips, position marks read optically with readers can become soiled, magnetostrictive measuring systems are limited in their measuring length, and glass scales are unaffordable with increasing measurement lengths.

With LMC55 we have closed this gap: up to 30 positions are acquired simultaneously. The moving part is a passive magnet, which does not require power supply. The measuring system is only assembled to the full measuring length in the machine, and the individual parts are convenient (with a length of 2 m) to transport and store. The final measuring length is defined in situ by connecting the intermediate elements together to the desired overall length. Up to 20 m absolute position detection is supplied as standard (special lengths on request).

The flat housing of the actual measuring system can be installed flush with the floor. As it has no beads, product residues cannot stick to it. The actual positions are output to the control via PROFIBus, EtherCAT or CANopen. Quick activation is ensured with a little technical skill and standard tools. Other interfaces are available on request.

Advantages

_ **Wear-free measurement up to 20 m**
_ **Compact, convenient pieces made from die-cast aluminum**
_ **Closed housing, flat surface**
_ **Flush (no beads or edges)**
_ **Easy installation possible without special tools**
_ **Magnets do not require any supply leads / ground cables**



Magnets do not require any supply leads / ground cables

PROFIBUS
CANopen
PROFINET
EtherNet/IP
EtherCAT
ETHERNET POWERLINK

Features

_ 5/100 mm precise, absolute, contact-free position measurement
_ Short cycle time: 10 m ~ 4 ms
_ Multiple measurement of up to 30 positions simultaneously
_ Reliabe, tight system with protection class IP65
_ Can be installed in any position (automatic addressing)
_ Device foot for mounting using holes or clamping shoes

Fields of application

_ Pneumatic workstations
_ Reel cutter
_ Event technology
_ Transfer vehicles
_ Replaces easily soiled, optical axes e.g. in profile cutting machines
_ Wear-free Y-axis in high-rack warehouse (replaces wire-actuated encoder) and much more.

Reliably tight – easy installation

_ Flat surface without beads or edges, plane joint
_ Features stable extruded aluminium profile
_ Device foot for mounting using existing holes or clamping shoes

Explanation of the individual modules – LMC55

Explanation of the individual modules

Master
This contains the intelligence of the measuring system, manages the individual modules and offers connection options for the respective output interface.
Connection options: Slave type 1, or end element type 1.

Slave type 1
This is suitable for connection to a master system, or forms the intermediate element in conjunction with two type 2 slaves.

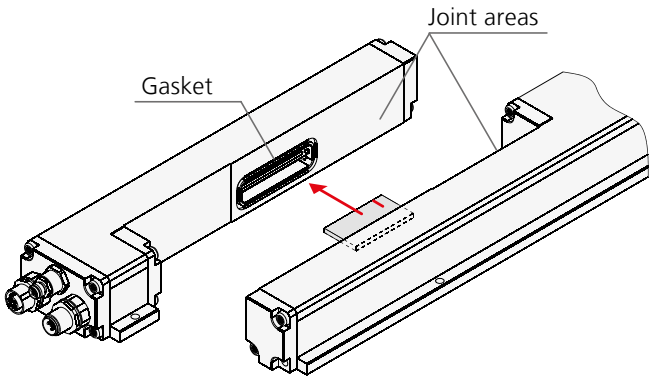
Slave type 2
This forms the intermediate element in conjunction with two type 1 slaves.

End element type 1
This is suitable for connection to a master system, or forms the end element in conjunction with a type 2 slave.

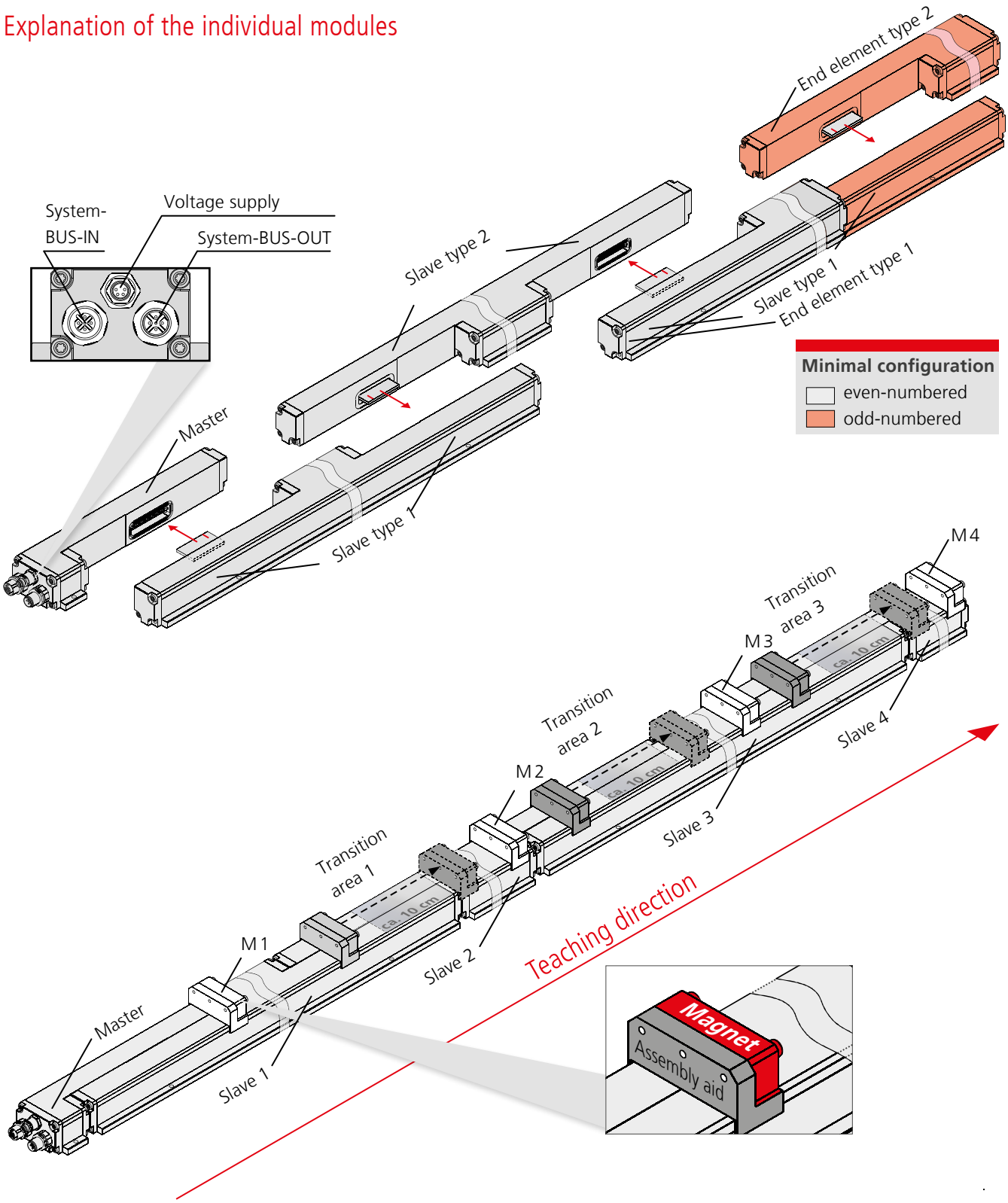
End element type 2
The type 2 end component forms the end element in conjunction with a type 1 slave.

Correct configuration before measurement

Before the measuring system can be operated, e.g. on PROFIBUS, the mechanically installed individual components, the so-called slaves, must first be detected using the teach-in function.
The slaves are mounted side by side to form transition areas, which form the basis for the detection. Each slave has two transition areas, one at the beginning and one at the end. An exception is formed by the slave after the master and the end elements (only one transition area).
At the time of teaching only one magnet may be located in the same transition area. The teaching procedure is performed starting from the master towards the end.
The teaching activity or end of the teaching process can be monitored via the status byte. The exact teaching status is indicated by the device-specific diagnosis.



Explanation of the individual modules



Linear Encoder - Magnetostriction - Tube Housing

The universal standard for absolute position detection.

Linear absolute encoders for touchless measurement (based on magnetostriction) sense linear absolute movements without wear or tear, even in aggressive media. Pressure-proof protection tubes made from stainless steel allow direct integration into hydraulic cylinders. For easy exchange of the sensing element, choose the version "H" with detached protective tube - the tube remains in the cylinder, the system stays pressurized. Depending on the interface, mutiple detection is possible. Depending on mechanical design, the measurement systems are fully integrated into hydraulic cylinders or are accessible from the outside. Linear encoders are available with a large number of interfaces beginning with direct analogue output up to high speed industrial ethernet.
A special device is the triple-redundant LMR70 - three independent measurement systems in one tube guarantee longterm availability for applications with difficult access.

Contents

LMRI46
LMRS34
LMR48

Product	LMRI46	LMRS34	LMR48
			
Mechanic execution	(R) Tube, (H) detachable tube	(R) Tube	(R) Tube
Range	50…4000 mm*, in steps	50…3000 mm, in steps	50…2500 mm*, in steps
Size	46	34	48
Supply voltage	24 VDC, -20…+10 %*	24 VDC, -20…+10 %*	12..24 VDC, +- 10%
Resolution	0,001 mm	0,01 mm	0,1 mm
Linearity defect	typical ± 30 µm ± 50 µm < 1000 mm ± 0,1mm 1000 mm-1500 mm ± 0,15 mm > 1500 mm	<= ± 0,015 % FS (min ± 50 µm)	± 0,04 % + 1 LSB
Reproducibility	0,005 mm	<= ± 0,005 % FS (min ± 10 µm)	
Hystheresis	typical < 10 µm < 20 µm < 1000 mm 0,1mm 1000 mm-1500 mm 0,15 mm > 1500 mm		0,1 mm
Temperature coefficient			
Ambient temperature	-20…+70 °C; 0…+70 °C	-40…+80 °C	-40…+85 °C
Protection class	IP65	IP67	IP65, option IP69K
Options	Multimagnet*, tube tip support		
Orientation	Any desired	Any desired	Any desired
Material	Cr/Ni-Alloy	Cr/Ni-Alloy	Cr/Ni-Alloy
Maximum pressure	600 bar, static	400 bar static, 450 bar peak	450 bar, static
Interface	SSI, PROFINET, Analog, EtherCAT, PROFIBUS, EtherNet/IP, CANopen, ETHERNET POWERLINK, DeviceNet	SSI, CANopen, Analog, IO-Link	SSI, CANopen, Analog
Weblink	www.tr-electronic.com/s/S011361	www.tr-electronic.com/s/S018151	www.tr-electronic.com/s/S007102
QR-Code			

*depends on interface

Can't find the right variant? Please contact us (info@tr-electronic.de)

LMR48/46
LMRS27
LMRB27

Product	LMR48/46	LMRS27	LMRB27	
				
Mechanic execution	(R) Tube	(R) Tube	(R) Tube	
Range	50…2500 mm, in steps	50…2000 mm, in steps	50…2000 mm, in steps	
Size	48	27	27	
Supply voltage	12..24 VDC, +- 10%	24 VDC, -20…+10 %	24 VDC, -20…+10 %	
Resolution	0,1 mm	0,1 mm	12 bit (> 0,1 mm)	
Linearity defect	± 0,04 % + 1 LSB	± 0,20 mm (ML <= 2000 mm)	± 0,20 mm (ML <= 2000 mm)	
Reproducibility		0,1mm	0,1mm	
Hystheresis	0,1 mm	0,1mm (ML <= 2000 mm)	0,1mm (ML <= 2000 mm)	
Temperature coefficient				
Ambient temperature	-40…+85 °C	-20…+70 °C; 0…+70 °C	-20…+70 °C; 0…+70 °C	
Protection class	IP65, option IP69K	IP65	IP65	
Options				
Orientation	Any desired	Any desired	Any desired	
Material	Cr/Ni-Alloy	Cr/Ni-Alloy	Cr/Ni-Alloy	
Maximum pressure	450 bar, static	600 bar, static	600 bar, static	
Interface	Analog	SSI PROFINET Analog EtherCAT PROFIBUS EtherNet/IP CANopen ETHERNET POWERLINK	Analog IO-Link	
Weblink	www.tr-electronic.com/s/S010986	www.tr-electronic.com/s/S011927	www.tr-electronic.com/s/S011928	
QR-Code				

* depends on interface

LMR70

	LMR70 
	(R) Tube
	50…2000 mm
	70 (triple redundant)
	24 VDC, -20…+20 %
	12 bit or 16 bit
	± 0,10 mm <= 1500 mm ± 0,15 mm > 1500 mm
	0,04mm
	0,02 mm <= 1500 mm 0,1 mm > 1500 mm
	-40…+85 °C
	IP65
	Tube tip support
	Any desired
	Cr/Ni-Alloy
	600 bar, static
	Analog ***SSI***
	www.tr-electronic.com/s/S008380

Can't find the right variant? Please contact us (info@tr-electronic.de)

Linear Encoder - Magnetostriction - Profile Housing

The universal standard for absolute position detection.

Linear absolute encoders for touchless measurement (based on magnetostriction) sense linear absolute movements without wear or tear. Depending on the interface, mutiple detection is possible. Families LP46 and LMP48 are suitable for magnet sliders and can guide the magnet. Family LMP30 is flat; magnets are to be guided by customer-side mechanics. Linear encoders are available with a large number of interfaces beginning with direct analogue output up to high speed industrial ethernet.

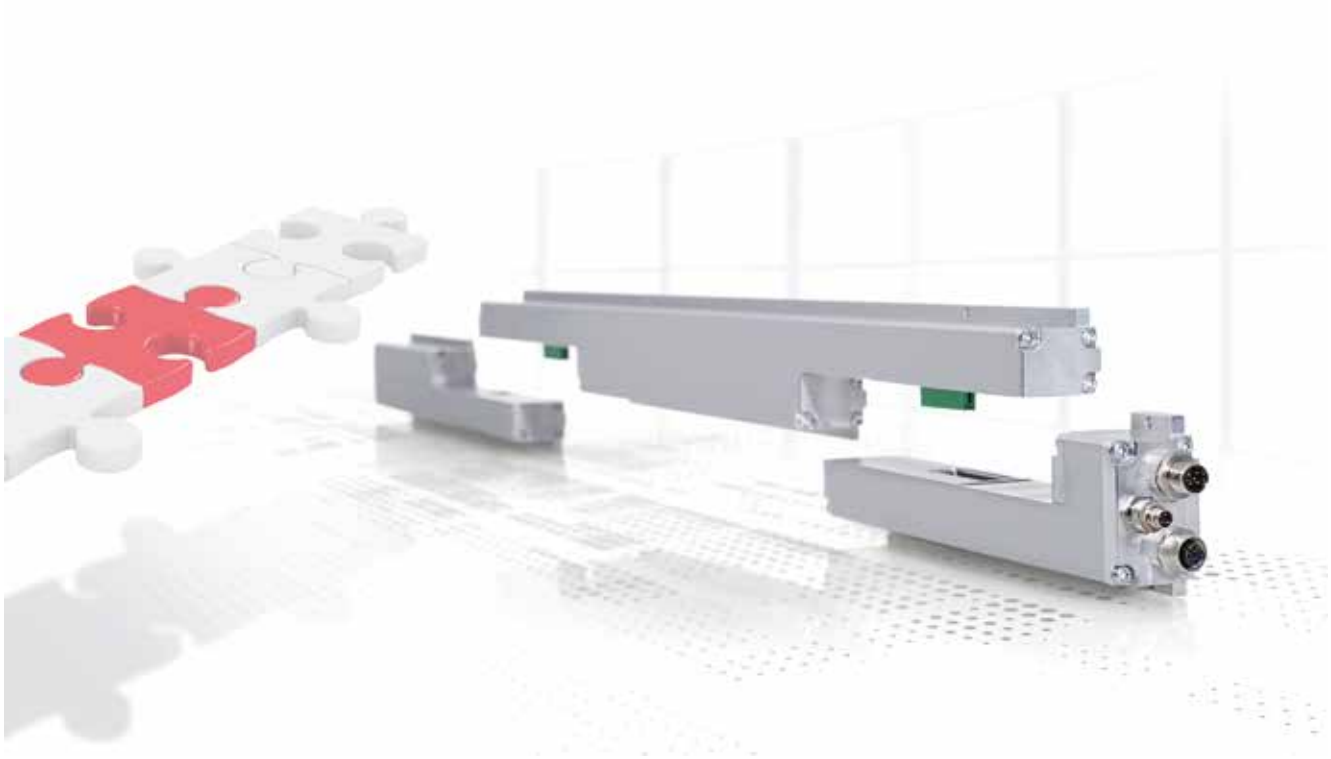
Contents

LMPI46
LMP30
LMP48

Product	LMPI46	LMP30	LMP48
			
Mechanic type	(P) Profile	(P) Profile	(P) Profile
Range	50…4000 mm*, in steps	50…4000 mm*, in steps	30…3000 mm*, in steps
Size	46	30	48
Supply voltage	24 VDC, -20…+10 %*	24 VDC, -20…+10 %*	24 VDC +- 20%; 9...36 VDC *
Resolution	0,001 mm	0,01mm *	0,1 mm
Linearity defect	typical± 15 µm ± 30 µm < 1000 mm ± 0,1mm 1000 mm-1500 mm ± 0,15 mm > 1500 mm	± 0,15 mm <= 1500 mm ± 0,20 mm > 1500 mm	< 0,01 % FS, >= 60 µm ± 0,1 % FS *
Reproducibility	0,005 mm	0,005 mm *	< 0,005 % FS >= 50 µm ± 0,1 % FS *
Hystheresis	typical < 6 µm < 15 µm < 1000 mm 0,1mm 1000 mm-1500 mm 0,15 mm > 1500 mm	0,02 mm <= 1500 mm 0,1 mm > 1500 mm	± 0,1 % FS *
Temperature coefficient	< 8µm/°C <= 500 mm < 15 ppm/°C > 500 mm *	< 8 µm/°C <= 500 mm < 15 ppm/°C > 500 mm *	100 ppm/°C
Ambient temperature	-20…+70 °C; 0…+70 °C	-20…+70 °C; 0…+70 °C	-40…+75 °C; -20…+75°C
Protection class	IP65	IP65	IP67
Options	Multimagnet*, ATEX-zone 2/22,	Multimagnet*	
Orientation	Any desired	Any desired	Any desired
Material	Aluminum extruded profile	Aluminum extruded profile	Aluminum extruded profile
Interface	SSI, PROFINET, Analog, EtherCAT, PROFIBUS, EtherNet/IP, CANopen, ETHERNET POWERLINK, DeviceNet	SSI, PROFINET, Analog, EtherCAT, ISI, EtherNet/IP, PROFIBUS, ETHERNET POWERLINK, CANopen	SSI, CANopen, Analog
Weblink	www.tr-electronic.com/s/S011362	www.tr-electronic.com/s/S008395	www.tr-electronic.com/s/S008396
QR-Code			

depends on interface

Cascadable Linear Encoders



Measure reliably over long distances

Wire-actuated encoders are subject to wear; laser measuring systems cannot acquire several positions simultaneously in the same clear width. Magnetic tapes are susceptible to ferromagnetic chips, position marks read optically with readers can become soiled, magnetostrictive measuring systems are limited in their measuring, and glass scales are unaffordable from certain measurement lengths. For those applications, TR-Electronic provides the patented cascadeable linear measurementsystem LMC55:

The final measuring length is defined in situ by connecting the intermediate elements together to the desired overall length. Up to 20 m absolute position detection is supplied as standard (special lengths on request).

_ Wear-free measurement up to 20 m
_ Compact, convenient pieces made fromstrand-cast aluminium
_ Closed housing, flat surface
_ Flush (no beads or edges)
_ Easy installation possible without special tools
_ Magnets do not require any supply leads

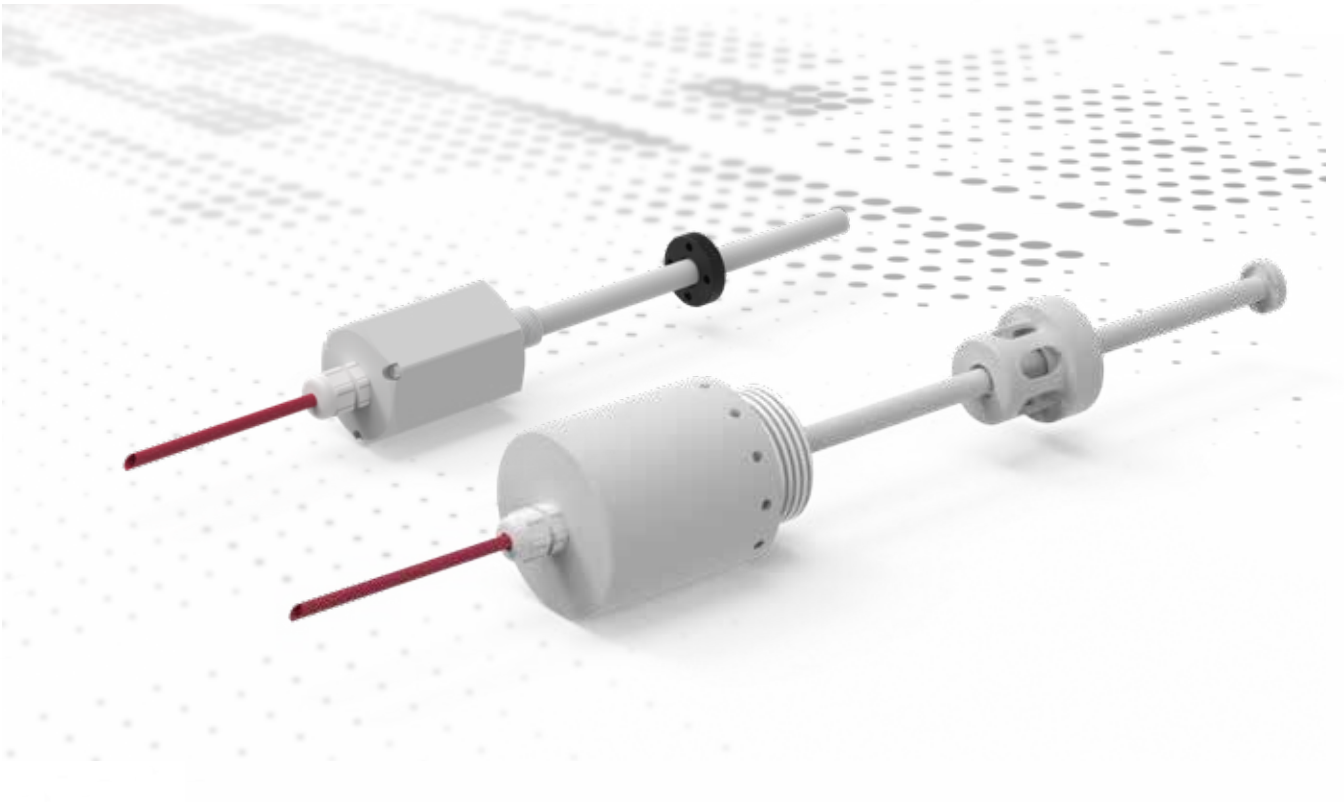
Contents

Cascadable, 20 m length

Product	LMC55 
Supply voltage	24 VDC, -20 … +10 %
Current consumption, no load	24 … 30 VDC
_ Master system	< 60 mA
_ Single component	< 90 mA
Measuring principle	magnetostrictive
Measuring length, standard	5 … 20 m
Resolution	0,05 mm
Linearity deviation	< 0,02 %, ±0,20 mm / modul
Reproducibility	0,05 mm
Hysteresis	0,1 mm
Material - Measuring body	Aluminium extruded profile
Cycle time, internal	<= 2 ms
Optional magnets	30
Magnet - Minimum distance	100 mm
Working temperature	0 … +70 °C
Working temperature optional	-20 … +70 °C
Storage temperature, dry	-30 … +85 °C
Protection class	IP65
Stray magnetic field	< 3 mT
Measuring reference	Measuring plane
Interface (others on request)	PROFIBUS, EtherCAT, CANopen, EtherNet/IP, PROFINET
Weblink	www.tr-electronic.com/s/S008458
QR-Code	

Can't find the right variant? Please contact us (info@tr-electronic.de)

Linear Encoder with Plastic Housing



For aggressive surroundings

Linear absolute encoders for touchless measurement (based on magnetostriction) sense linear absolute movements without wear or tear. For especially aggressive surroundings, TR provides the series LA 50 and 80 in plastic housing. The full measurement system is housed in Polypropylene (PP) or, on request, in Polytetrafluorethylene (PTFE). These materials withstand most liquids in industrial applications. Series LA 50 is optimized for liquid level measurement. It is mounted with a tube thread acc. DIN 259 (Size R2) inserted into process vessels. The float cannot be lost due to a mechanical block at the end of the tube. The Series LA 50 can be used similarly to the standard range LA 46. With different magnets available, it can be used for precise position measurement in aggressive surroundings.

Contents

LA50
LA80

Product	LA50	LA80
		
Mechanic type	(R) Tube (plastic)	(R) Tube (plastic)
Range	100 … 1000 mm (in steps)	100 … 1000 mm (in steps)
Size	50	80
Supply voltage	24 VDC, -20…+10 %	24 VDC, -20…+10 %
Resolution	0,001 mm	0,01 mm
Linearity deviation	± 0,10 mm	< 0,05 %
Reproducibility	0,005 mm	0,01 mm
Hystheresis	0,02 mm	0,1 mm
Temperature coefficient	< 8 µm/°C *	< 8 µm/°C *
Ambient temperature	-20…+70 °C; 0…+70 °C	-20…+70 °C; 0…+70 °C
Protection class	IP68	IP67
Options		
Orientation	Any desired	Any desired (when used as level sensor: vertical)
Material	PP (option PTFE)	PP (option PTFE)
Interface	***SSI*** ***Analog***	***SSI*** ***Analog***
Weblink	www.tr-electronic.com/s/S008501	www.tr-electronic.com/s/S008502
QR-Code		

*depends on Measurement Length and Interface

Can't find the right variant? Please contact us (info@tr-electronic.de)

Accessories for Linear Encoders

Linear encoders

TR-Electronic linear encoders can be integrated seamlessly into different environments. Magnet rings, floats, magnet sliders; clamps and spacers help to fit the magnetostrictive encoders into your application. Additional reflectors for our laser-based measurement systems allow bigger targets in case the vehicle does not moves only in measurement direction. We provide an overview in the following pages. We are confident that we will find the right accessory for your mounting task.

Content

Magnets

Product	Magnet ring LA/LMR	Open magnet ring LA/LMR	Magnet with cut
			
Group	Magnets for linear encoder	Magnets for linear encoder	Magnets for linear encoder
Description	Closed magnet rings for linear encoders for integration into hydraulic cylinders	Open magnet ring for LA/LMR	For LA, LMR, LP, LMP (except LMP30)
Dimensions	See drawings chapter	See drawings chapter	See drawings chapter
Ordering	Accessory or delivery option included with encoder	Accessory or delivery option included with encoder	Accessory or delivery option included with encoder
Weblink	www.tr-electronic.de/f/TR-V-TI-GB-0500	www.tr-electronic.de/f/TR-V-TI-GB-0500	www.tr-electronic.de/f/TR-V-TI-GB-0500
QR-Code			

Can't find the right variant? Please contact us (info@tr-electronic.de)

Magnets

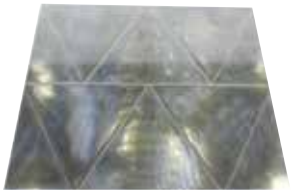
Product	Magnet slider	Block magnet	Float	
				
Group	Magnets for linear encoder	Magnets for linear encoder	Magnets for linear encoder	
Description	For LA46, LMP46	For LMP30, LMC 55, fits as well LA46, LMP48	For LA, LMR	
Dimensions	See drawings chapter	See drawings chapter	See drawings chapter	
Ordering	Accessory or delivery option included with encoder	Accessory or delivery option included with encoder	Accessory or delivery option included with encoder	
Weblink	www.tr-electronic.de/f/TR-V-TI-GB-0500	www.tr-electronic.de/f/TR-V-TI-GB-0500	www.tr-electronic.de/f/TR-V-TI-GB-0500	
QR-Code				

Installation

	Double clamping bracket 	Double clamping bracket, stainless steel 	Distance mounting bracket 	Connector LMC 
	Mounting accessories for linear encoders	Mounting accessories for linear encoders	Mounting accessories for linear encoders	Mounting accessories for linear encoders
	For LP, LMP	For LP, LMP	For LP46, LMP48 - raises the measurement level to fit different existing surroundings	For LMC 55
	See drawings chapter	See drawings chapter	See drawings chapter	
	Accessory or delivery option included with encoder	Accessory or delivery option included with encoder	Accessory or delivery option included with encoder	Spare
	www.tr-electronic.de/f/TR-V-TI-GB-0500	www.tr-electronic.de/f/TR-V-TI-GB-0500	www.tr-electronic.de/f/TR-V-TI-GB-0500	

Can't find the right variant? Please contact us (info@tr-electronic.de)

Installation Reflectors

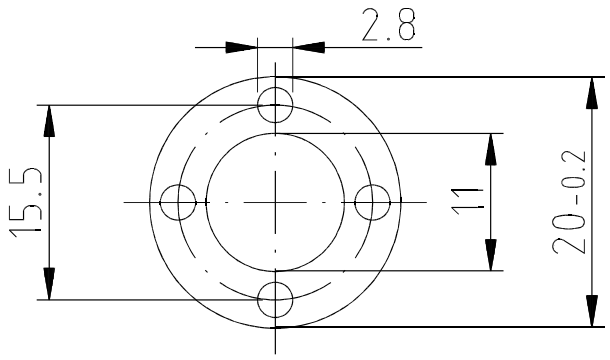
Product	Assembly aid	Reflector sheet	Reflector board	
				
Group	Mounting accessories for linear encoders	Laser range finders	Laser range finders	
Description	For LMC 55	For LE 200 with range up to 120 m	For LE 200 with range of 175 m and above	
Dimensions	Fits magnet T1-5520	200 x 200 mm - 749 x 914 mm	554 x 480 mm - 1108 x 960 mm	
Ordering	Accessory	Accessory / spare (1 sheet 200 x 200 is included with delivery)	Accessory / spare (1 board 554 x 480 is included with delivery)	
Weblink		www.tr-electronic.de/f/TR-ELE_BA_DGB-0018	www.tr-electronic.de/f/TR-ELE_BA_DGB-0018	
QR-Code				

	Reflector sheet	Deflection mirror 
	Laser range finders	Laser range finders
	For LLB 500 for use with ranges longer than 65 m	Deviates lightbeam 90°
	200 x 200 mm - 749 x 914 mm	80 x 145 x 76,5 mm
	Accessory (reflector is NOT included in LLB 500)	Accessory
	www.tr-electronic.de/f/TR-ELE-BA-DGB-0021	www.tr-electronic.de/f/TR-V-TI-GB-0550

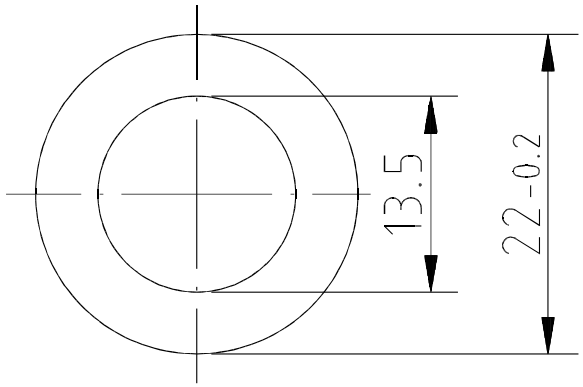
Can‘t find the right variant? Please contact us (info@tr-electronic.de)

Dimensional Drawings

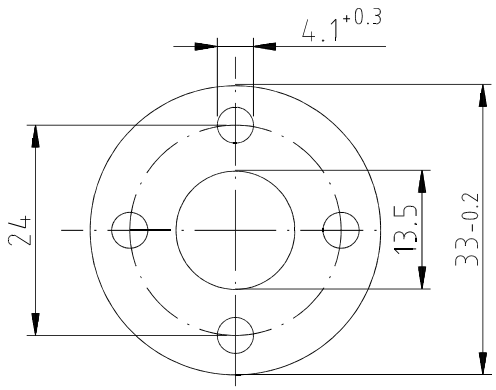
Magnet ring
49155004



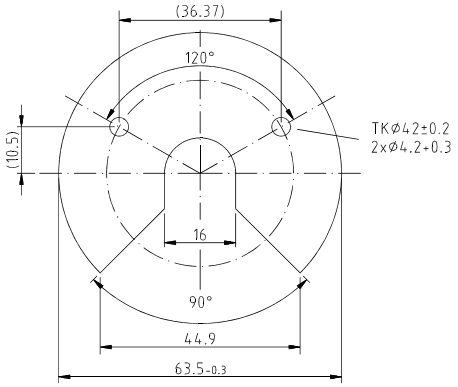
Magnet ring
49155005



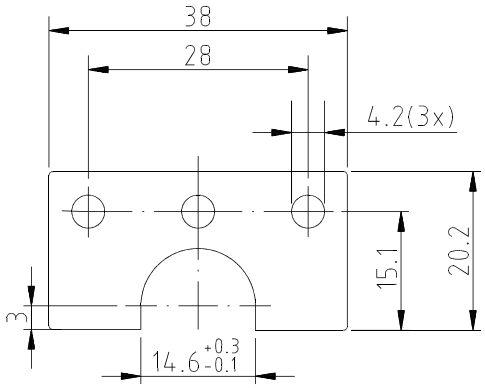
Magnet ring
49155016



Magnet ring, open
49155006



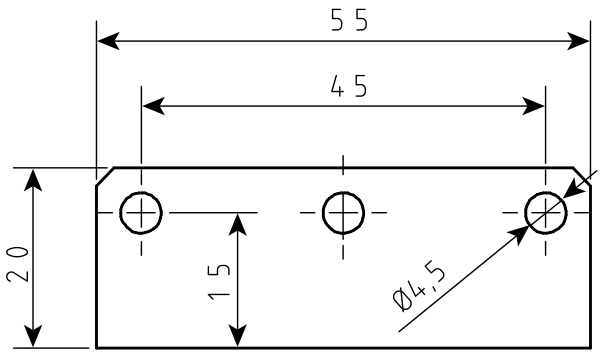
Magnet ring, open
49155003



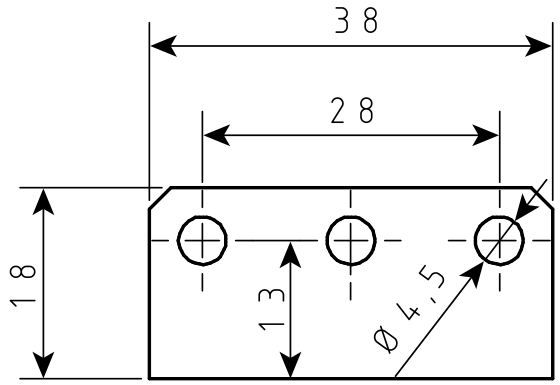
Illustrations are schematic diagrams. Binding dimension drawings and CAD data for specific order numbers at www.tr-electronic.com or on request.

Dimensional Drawings

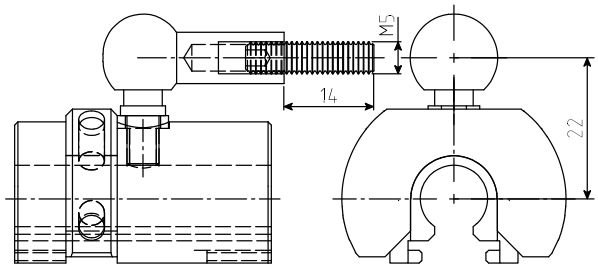
Block magnet
49155009 (distance 3 mm) / 49155032 (distance 8 mm)



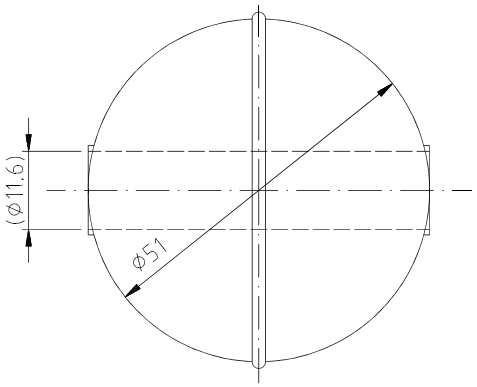
Block magnet
49155015



Magnet slider
85917013



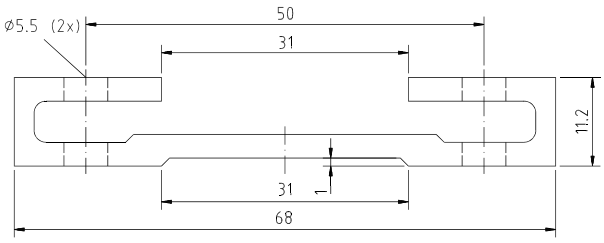
Float
49915080



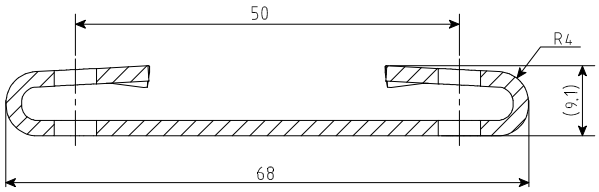
Illustrations are schematic diagrams. Binding dimension drawings and CAD data for specific order numbers at www.tr-electronic.com or on request.

Dimensional Drawings

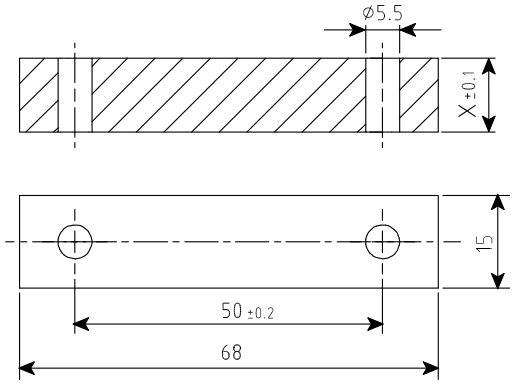
Clamping bracket
49917001, as kit incl. screws: 85917002



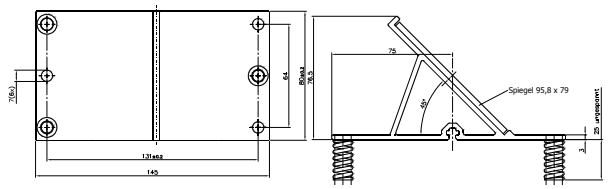
Clamping bracket
49917057



Spacer
49917081 (X=5mm), …82 (X=10mm), … 83 (X=12mm)



Deviation mirror for LE
49500033



Illustrations are schematic diagrams. Binding dimension drawings and CAD data for specific order numbers at www.tr-electronic.com or on request.

Headquarters

TR-Electronic GmbH
Eglishalde 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

Australia (New Zealand)
Sensor Measurement
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

Australia
Leuze electronic PTY Ltd.
Unit 2/843 Mountain Highway
Bayswater VIC 3153
Tel.: +61/1300 538 933
Fax: +61/3 9738 2677
sales@leuze.com.au
www.leuze.com.au

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

Belgium
TR-Electronic Benelux
Dorpstraat 18C
NL-5386AM Geffen
Tel.: +31/73 844 9600
Mobil: +31/6383 28 303
rene.verbruggen@tr-electronic.nl
www.tr-electronic.nl

Brazil
Grupo C+Tecnologia
Rua dos Caetés 601
CEP - 05419-000
BR-Perdizes - São Paulo - SP
Tel.: +55/11-2168 655-4
Fax: +55/11-2168 655-5
info@autron.com.br
www.autron.com.br

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

Chile
Allware
Casa Haverbeck
General Lagos 2060 2° Piso
Region de Los Rios Valdivia
CHL-Santiago Chile
Tel.: +56 63/239298
Sales@allware.cl
www.allware.cl

China
TR-Electronic (Beijing) CO., Ltd.
Building G3, Baiyiwen Park,
Jiu Xian Qiao Nan Road No. 9
Chaoyang District
CN-100027 Beijing, P.R. China
Tel.: +86/10 - 582 386 55
Fax: +86/10 - 582 372 10
lu.yu@tr-electronic.de
www.tr-electronic.com.cn

Czech Republic, Slovakia
DEL a.s.
Biskupský dvůr 1146/7
Nové Město
CZ-110 00 Praha 1
Tel.: +420/566 657 100
Fax: +420/566 621 657
tr-electronic@del.cz
www.del.cz

Denmark
TR-Electronic Danmark ApS
Skærvegyden 7
DK-8723 Løsning
Tel.: +45/75 89 06 03
cbj@tr-electronic.dk
www.tr-electronic.dk

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

Finland
TR Electronic Oy
Jaakonkatu 2
FI-01620 Vantaa
Tel.: +358/40 759 1853
info@trelectronic.fi
info@trelectronic.fi

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

Great Britain
TR-Electronic Ltd.
4 William House, Old St.
Michaels Drive
GB-Braintree 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

India
Spohn Burkhardt India
9th Main Road, 500,
33rd A Cross Road
7th Cross, 4th Block Jayanagar
IN-Bangaluru - 560 011, India
Mobile: +91/98451 46948
info@spobu-india.in
www.spobu-india.in

Israel
Dor Drives Systems 2020 Ltd.
6 Granite St.
IL-4951405 Petah Tikva
Tel.: +972/3 900 75 95
Fax: +972/3 900 75 99
info@doreng.co.il
www.doreng.co.il

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

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
CA-London, Ontario Canada
N6A 4G9
Tel.: +1/519-452 1999
Fax: +1/519-452 1177
customercare@trelectronic.com
www.trelectronic.com

Republic of Korea
MS Intech Co., Ltd.
B-306 SK Twintech Tower
345-9 Gasan-dong/
Geumcheon-gu
KR-08589 Seoul
Tel.: +82/2-334 0577
Fax: +82/2-862 1591
sales@msintech.com
www.msintech.com

South Africa
Angstrom Group (Pty) Ltd.
Sybrand van Niekerk
Business Park Meyerton
19 Tom Muller Road
ZA-1960 Meyerton
Tel.: +27/362 0300
info@angstromeng.co.za
www.angstromgroup.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

Netherlands
TR-Electronic Benelux
Dorpstraat 18C
NL-5386AM Geffen
Tel.: +31/73 844 9600
Mobil: +31/6383 28 303
rene.verbruggen@tr-electronic.nl
www.tr-electronic.nl

Russia
Sensotec LLC
Kievskoye highway 22 km
(Moskovskiy settlement)
housing estate 4, building 5,
office 505E
RU-108811 Moscow
Tel.: +7/495 181-56-67
Fax: +7/495 181-56-67
info@sensotek.ru
www.sensotek.ru

Spain, Portugal
Intertronic Internacional, SL
C/Johannes Gutenberg, 4 y 6
Parque Tecnológico Paterna
ES-46980 Valencia
Tel.: +34/963 758 050
Fax: +34/963 751 022
info@intertronic.es
www.intertronic.es

Turkey
ÜNİVERSA İÇ ve DIŞ TİC. MAK. SAN. LTD. ŞTİ.
Cemal Gürsel Caddesi No: 11/7
TR-35600 Karşıyaka-IZMIR
Tel.: +90/232 382 23 14
Fax: +90/232 382 23 24
info@universa.com.tr
www.universa.com.tr

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

Saudi-Arabia
Business Tribune Company Ltd.
4237 Ad Danah
King Abdulaziz Road
SA-32437–6887 Ad Dammam
Tel.: +966/3-832 72-17
Fax: +966/3-832 72-41
waleed@btc-ksa.com
www.btc-ksa.com

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

USA (TR-Electronic)
TR Electronic
200 East Big Beaver Road
Suite 164
US-Troy, MI 48083
Tel.: +1/248-244-2280
Fax: +1/248-244-2283
customercare@trelectronic.com
www.trelectronic.com

Peru
Grupo C+Tecnologia
Rua dos Caetés 601
CEP-05419-000
BR-Perdizes - São Paulo - SP
Tel.: +55/11-2168 6554
Fax: +55/11-2168 6555
info@autron.com.br
www.autron.com.br

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

Poland
Stoltronic-Polska Sp.z o.o. Sp.k.
Ul. Papiernicza 7e,
P - 92-312 Łód
Tel.: +48/42 649 12 15
Fax: +48/42 649 11 08
stoltronic@stoltronic.pl
www.stoltronic.pl

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

Taiwan
TR-Electronic (Beijing) CO., LTD.
Room 717 / 718, Building A2
Electronic City Science Park
Jiu Xian Qiao Dong Road No. 9
Chaoyang District
CN-100027 Beijing, P.R. China
Tel.: +86/10 - 582 386 55
Fax: +86/10 - 582 372 10
lu.yu@tr-electronic.de
www.tr-electronic.com.cn

28.06.2023

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

Last update: 10/2023
68-105-094 · TR-V-PR-GB-0002v14