NUMERIK JENA

OPTICAL ENCODERS

PRODUCT RANGE

OPTICAL **ENCODERS** FOR **LINEAR** AND **ROTARY** APPLICATIONS

SIMPLY PRECISE

ADDITIONAL INFORMATION

This product range has been made for an overview and a better understanding of our products. If you like to know more details please visit our website or contact us directly.

WWW.**NUMERIKJENA**.DE

NOTES

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ABOUT US

NUMERIK JENA develops, produces and distributes optical linear and rotary encoders of the highest resolution and precision. Our products set benchmarks and do not only impress with their particularly small dimensions. Due to their versatility they are universally applicable. Our EPIFLEX sensor modules outstanding features allow their integration into nearly every high-tech application.

We draw on over 30 years of experience in development, manufacturing and sale of position encoders.

The roots of production metrology and its associated technology for the manufacturing of precision scales go back to Carl Zeiss and Ernst Abbe.

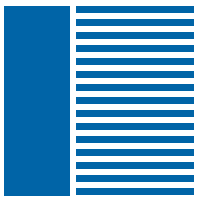
NUMERIK JENA

WHAT WE DO

NUMERIK JENA measuring systems are basically characterized by the following main features:

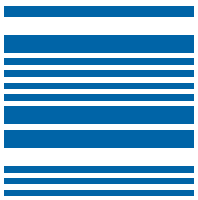
- High resolution for precise dynamics of drives and customizable encoder designs
- Easy integration due to compact size and customer friendly mounting tolerances
- Smooth movement and high reliability due to stable signal quality
- Integrated online compensation of the counting signals
- High accuracy for accurate repeatable positioning
- High traversing speed for efficient motion control
- High acceleration due to low mass

PRODUCT OVERVIEW



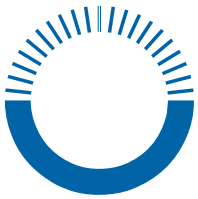
LINEAR INCREMENTAL

- LIKgo
- LIK 41
- KIT L2
- KIT L4
- LIA 20
- LIA 21



LINEAR ABSOLUTE

- KIT LA
- LAK



ROTARY INCREMENTAL

- KIT R4
- RIK 4

ACCESSORY

- ADJUSTMENT TOOL
- EPIFLEX Adapter
- EPIFLEX PRO Software
- ABSOFLEX Adapter
- ABSOFLEX Software
- SCM Module

LINEAR INCREMENTAL ENCODER

Property	LIKgo	LIK41	KITL*		LIA	
Version	1	41	2	4	20	21
Sensor size	13 mm x 8 mm	13 mm x 8 mm	20 mm x 8 mm	13 mm x 8 mm	20 mm x 8 mm	
Scanning fields	2	1	2	1	2	
Grating period	20 µm	20 µm	20 µm		20 µm	
Max. resolution	78.125 nm	50 nm	50 µm		50 nm	
Output signals / interfaces	1 V_{PP}, RS 422	1 V_{PP}, RS 422	1 V_{PP}, RS 422		1 V_{PP}, RS 422	
Max. traversing speed	10 m/s	10 m/s	10 m/s		10 m/s	
Working distance (air gap)	1.4 mm	0.6 mm	0.6 mm		0.6 mm	
No. of switch sensors	-	-	-		0	1
Vacuum version available	No	Yes	Yes		Yes	

LINEAR ABSOLUTE ENCODER

Property	KITLA*	LAK
Version	1	1
Sensor size	18.7 mm x 9 mm	24 mm x 9 mm
Scanning fields	2	2
Grating period	20 µm + PRC	20 µm + PRC
Max. resolution	10 nm	10 nm
Output signals / interfaces	EnDat 2.2, SSI, HIPERFACE compatible[1], *BiSS* C (unidirectional)[2]	EnDat 2.2, SSI, HIPERFACE compatible[1], *BiSS* C (unidirectional)[2]
Max. traversing speed	10 m/s	10 m/s
Working distance (air gap)	0.85 mm	0.85 mm
Vacuum version available	No	No

ROTARY INCREMENTAL ENCODER

Property	KITR*	RIK
Version	4	4
Sensor size	13 mm x 8 mm	13 mm x 8 mm
Scanning fields	1	1
No. of increments	variable (see page 27)	variable (see page 27)
Max. resolution	0.135 arc seconds	0.135 arc seconds
Output signals / interfaces	1 V_{PP}, RS 422	1 V_{PP}, RS 422
Max. rotational speed	22,200 rpm	22,200 rpm
Working distance (air gap)	variable (see page 27)	variable (see page 27)
Vacuum version available	Yes	Yes

* Kit-systems are special encoder versions without standard housings. They are ultra flat and highly customizable.
[1] HIPERFACE is a trade mark of SICK Stegmann GmbH
[2] *BiSS* is a trade mark of iC-Haus GmbH

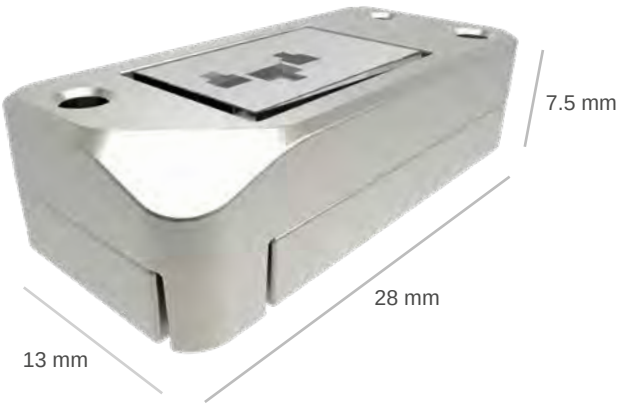
LINEAR INCREMENTAL

NEW!

LIKgo

With the all new linear encoder ***LIKgo*** NUMERIK JENA launches a completely new designed product which was especially developed to fit customer demands in a better way. The brand new 2-field scanning module brings several improvements and eases the mounting procedure for the users.

The ***LIKgo*** is the new entry-level exposed optical encoder with outstanding features and establishes the base for several upcoming products. This new design also unifies the well known strenghts of the NUMERIK JENA‘s products in a new way. Usability, a wide range of application possibilities and high quality standard are the objectives of the new LIK series.



- Very small and lightweight encoder head
- 20 µm grating period and measuring steps up to 78.125 nm
- New 2-field scanning technology with extremely high signal quality
- No phase and offset errors
- Less interpolation errors
- Very low power consumption and heat development
- Interpolated TTL signals from sensor head w/o additional electronics
- Possibility of an electronic adjustment after mounting to reduce static mounting errors
- Improved ADJUSTMENT TOOL connection

LIKgo

Parameter	LIKgo
Dimensions of encoder head (in mm)	28 x 13 x 7.5 mm
Weight of encoder head (w/o cable)	10 g
Number of scanning fields	1
Scanning frequency	Max. 500 kHz
Supply voltage	5 V ±10%
Max. traversing speed	10 m/s (without interpolation)
Resolution	Up to 78.125 nm
Working distance (air gap)	1.4 (±0.2) mm
Operating temperature	0°C to +55°C (+32°F to +131°F)

Output interfaces	
Voltage output	1 V_{PP}
Square wave output	RS 422 with interpolation up to 64-times

Current consumption	
Voltage output	≤50 mA[1]
Square wave output	≤150 mA[1]

SINGLEFLEX scale tape	
Material	Stainless Steel
Grating period (TP)	20 µm
Reference marks	• In the middle of the measuring length (ML) • Others on request
Measuring lenght (ML)	up to 2480 mm (others on request)
Accuracy classes (a)	• ±3 µm • ±5 µm

Cable	
Diameter	3.7 mm
Length from scan head to D-Sub connector	• 0.3 m • 1.0 m • 3.0 m

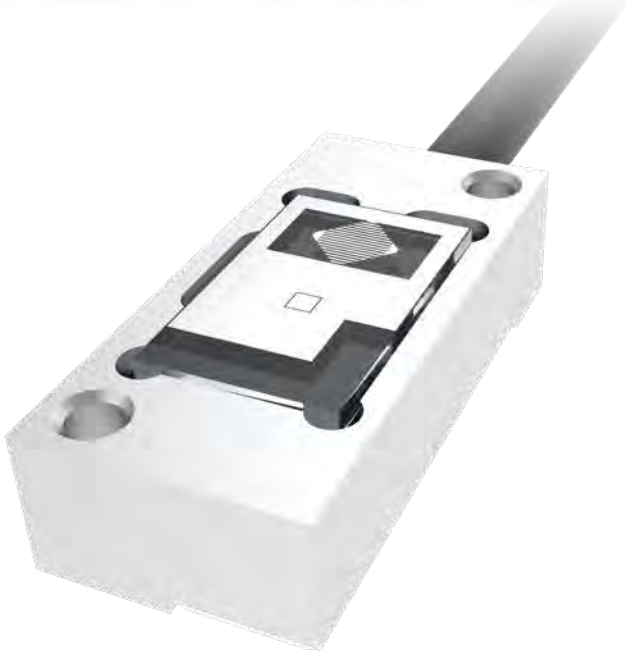
[1] With 120 Ω load resistance

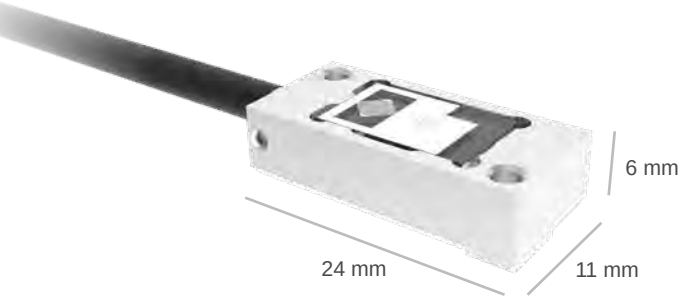
LINEAR INCREMENTAL

LIK 41

The LIK 41 is a very compact 1-field scanning unit for applications with very limited space conditions. This design combines the outstanding features of the EPIFLEX sensor module and the very robust SINGLEFLEX scale tape made of stainless steel.

- Very small dimensions for limited installation conditions
- Resolution up to 50 nm
- Signal interfaces: 1 V_{PP} and RS 422
- Signal processing in a 15 pin D-Sub connector
- Integrated online compensation of the counting signals





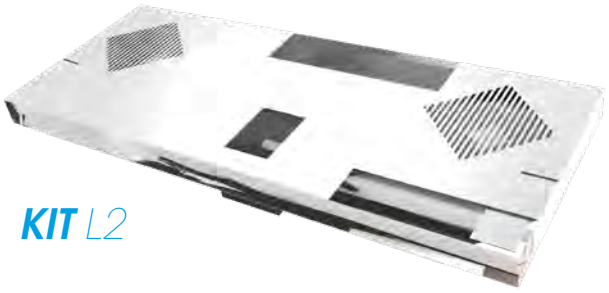
- Traversing speed up to 10 m/s
- Automatic electronic signal adjustment possible
- Non-magnetic scanning head available
- Reference signal(s) with repeatability accurate to one specific increment
- Vacuum versions up to 10^{-9} mbar (UHV) available

Parameter	LIK 41
Dimensions of encoder head (in mm)	24 x 11 x 6
Weight of encoder head (w/o cable)	3 g
Number of scanning fields	1
Scanning frequency	Max. 500 kHz
Supply voltage	5 V ±10%
Max. traversing speed	10 m/s (without interpolation)
Resolution	Up to 50 nm
Working distance (air gap)	0.6 (±0.15) mm
Operating temperature	0°C to +55°C (+32°F to +131°F)
Output interfaces	
Voltage output	1 V_{PP}
Square wave output	RS 422 with interpolation up to 100-times
Current consumption	
Voltage output	≤80 mA[1]
Square wave output	≤210 mA[1]
Scale tape	
Material	Stainless steel
Grating period (TP)	20 µm
Reference marks	• In the middle of the measuring length (ML) • Others on request
Measuring lenght (ML)	
SINGLEFLEX scale tape	up to 0.4 m
DOUBLEFLEX scale tape[2]	up to 0.4 m
Accuracy classes (a)	
SINGLEFLEX and DOUBLEFLEX[2] scale tape	• ±1 µm • ±2 µm • ±3 µm • ±5 µm
Cable	
Diameter	3.7 mm
Length from scan head to D-Sub connector	• 0.3 m • 0.5 m • 1.0 m • 1.5 m • 2.0 m • 3.0 m • Others on request

[1] With 120 Ω load resistance

[2] Not suitable for vacuum applications

LINEAR INCREMENTAL



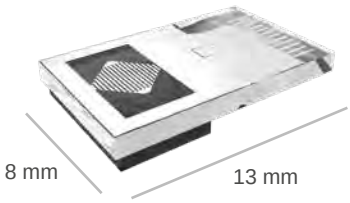
KIT L2

KIT L Series

The Kit L Series is designed for applications with customer-specific requirements. These encoder systems are not only extremely small, they are also particularly configurable. Your ideas won't hardly be limited with this series.

The Kit L encoder heads are available in two versions. Kit L4 with a shorter 1-field scanning unit and Kit L2 for higher contamination resistance.

- 2 sensor variants available
- Customer-specific housings and frames available
- Resolution up to 50 nm
- Signal interfaces: 1 V_{PP} and RS 422
- Integrated online compensation of the counting signals
- Traversing speed up to 10 m/s
- Automatic electronic signal adjustment possible
- Reference signal(s) with repeatability accurate to one specific increment
- Vacuum versions up to 10^{-9} mbar (UHV) available



KIT L4

Parameter	KIT L2	KIT L4
Dimensions of sensor w/o frame (mm)	20 x 8 x 2	13 x 8 x 2
Weight of sensor (w/o frame & cable)	2.5 g	2 g
Number of scanning fields	2	1
Scanning frequency	Max. 500 kHz	
Supply voltage	5 V ±10%	
Max. traversing speed	10 m/s (without interpolation)	
Resolution	Up to 50 nm	
Working distance (air gap)	0.6 (±0.15) mm	
Operating temperature	0°C to +55°C (+32°F to +131°F)	

Output interfaces	
Voltage output	1 V_{PP}
Square wave output	RS 422 with interpolation up to 100-times

Current consumption		
Voltage output	≤90 mA[1]	≤80 mA[1]
Square wave output	≤220 mA[1]	≤210 mA[1]

Scale tape	
Material	Stainless Steel
Grating period (TP)	20 µm
Reference marks	• In the middle of the measuring length (ML) • Periodic at a distance of 50 mm[2] • Distance coded at 1,000 x TP[2] • Others on request
Measuring lenght (ML)	
SINGLEFLEX scale tape	For Kit L2 up to 30 m / for Kit L4 up to 0.4 m
DOUBLEFLEX scale tape[3]	For Kit L2 up to 5 m / for Kit L4 up to 0.4 m
Accuracy classes (a)	
SINGLEFLEX and DOUBLEFLEX[3] scale tape	• ±1 µm • ±2 µm • ±3 µm • ±5 µm

Cable	
Diameter	3.7 mm or 5.1 mm (double-shielded)
Length from scan head to D-Sub connector	• 0.3 m • 0.5 m • 1.0 m • 1.5 m • 2.0 m • 3.0 m • Others on request

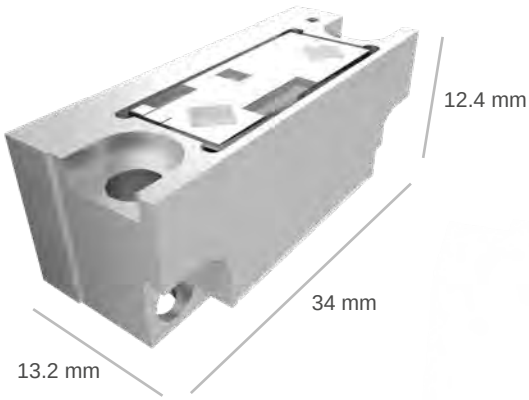
[1] With 120 Ω load resistance
[2] Not for Kit L4
[3] Not suitable for vacuum applications

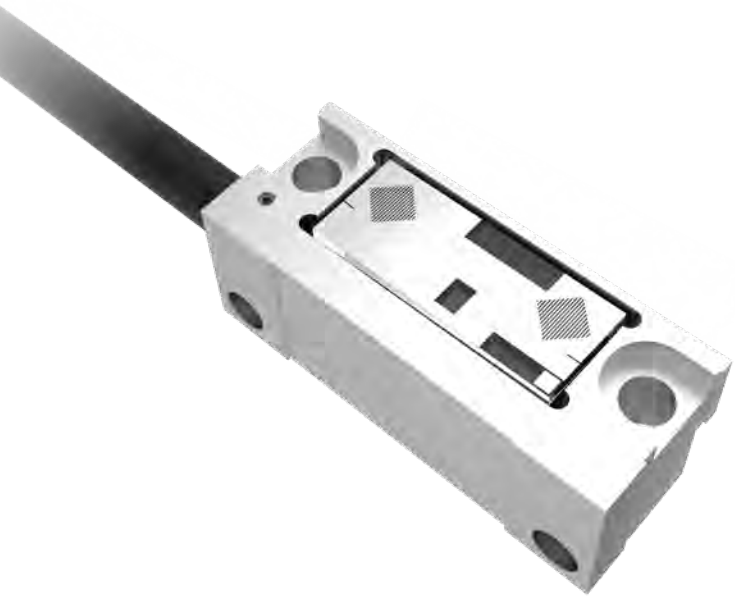
LINEAR INCREMENTAL

LIA Series

The LIA Series combines precision and ease of use in one device. With its integrated 2-field EPIFLEX sensor module it is geared up for rough applications.

The LIA 21 comes with an additional switch sensor which offers several application possibilities.





- Resolution up to 50 nm
- Signal interfaces: 1 V_{PP} and RS 422
- Integrated online compensation of the counting signals
- Traversing speed up to 10 m/s
- High resistance to contamination
- Automatic electronic signal adjustment possible
- Reference signal(s) with repeatability accurate to one specific increment
- Non-magnetic scanning head available
- Vacuum versions up to 10^{-6} mbar (HV) available

Parameter	LIA 20	LIA 21
Dimensions of encoder head (in mm)	34 x 13.2 x 12.4	
Weight of encoder head (w/o cable)	≤20 g	
Number of switch sensors	0	1
Scanning frequency	Max. 500 kHz	
Supply voltage	5 V ±10%	
Max. traversing speed	10 m/s (without interpolation)	
Resolution	Up to 50 nm	
Working distance (air gap)	0.6 (±0.2) mm	
Operating temperature	0°C to +55°C (+32°F to +131°F)	
Output interfaces		
Voltage output	1 V_{PP}	
Square wave output	RS 422 with interpolation up to 100-times	
Current consumption		
Voltage output	≤90 mA[1]	≤100 mA[1]
Square wave output	≤220 mA[1]	≤230 mA[1]
Scale tape		
Material	Stainless Steel	
Grating period (TP)	20 µm	
Reference marks	• In the middle of the measuring length (ML) • Periodic at a distance of 50 mm • Distance coded at 1,000 x TP • Others on request	
Measuring lenght (ML)		
SINGLEFLEX scale tape	Up to 30 m	
DOUBLEFLEX scale tape[2]	Up to 5 m	
Accuracy classes (a)		
SINGLEFLEX and DOUBLEFLEX[2] scale tape	• ±1 µm • ±2 µm • ±3 µm • ±5 µm	
Cable		
Diameter	3.7 mm or 5.1 mm (double-shielded)	
Length from scan head to D-Sub connector	• 0.3 m • 0.5 m • 1.0 m • 1.5 m • 2.0 m • 3.0 m (others on request)	

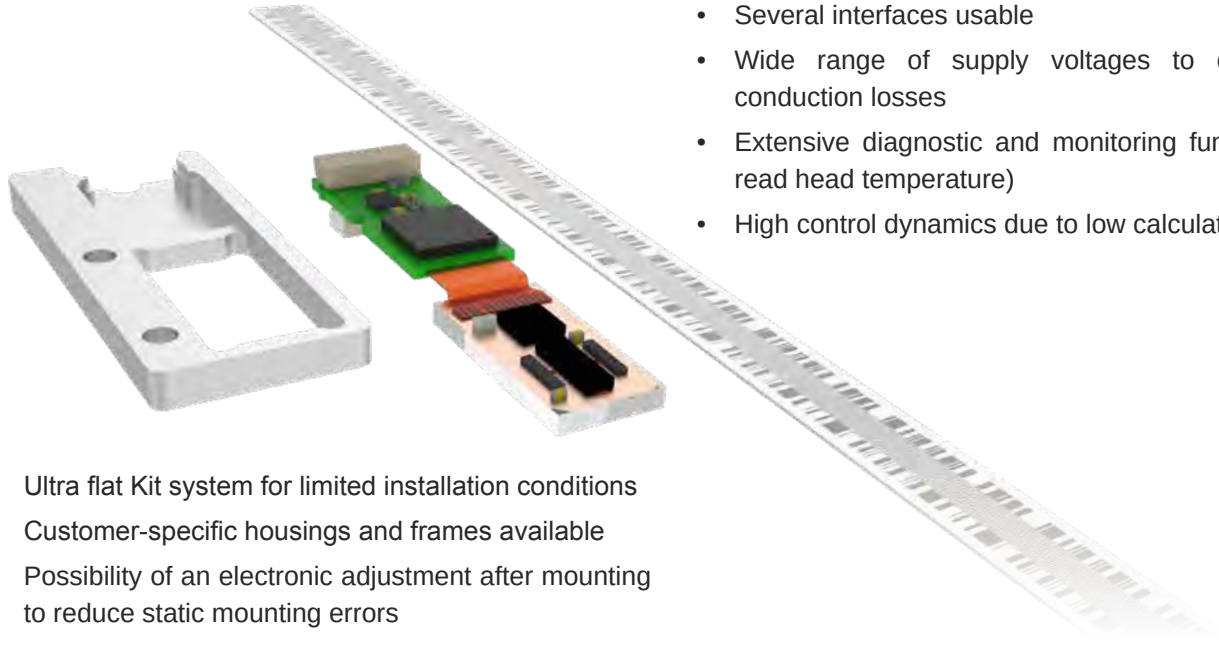
[1] With 120 Ω load resistance

[2] Not suitable for vacuum applications

LINEAR ABSOLUTE

KIT LA

The Kit LA Series catapults absolute measuring into a new dimension. This series is designed for applications with special requirements - not only extremely small, but also particularly configurable.



- Ultra flat Kit system for limited installation conditions
- Customer-specific housings and frames available
- Possibility of an electronic adjustment after mounting to reduce static mounting errors
- Free intuitive software for automatic electronic adjustment available
- Two absolute tracks and two incremental sensors ensure high immunity to contamination
- Individual measuring lengths of the scales available
- Several interfaces usable
- Wide range of supply voltages to compensate conduction losses
- Extensive diagnostic and monitoring functions (e.g. read head temperature)
- High control dynamics due to low calculation time

KIT LA

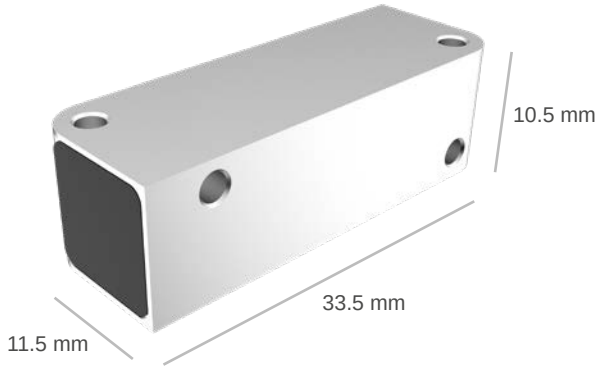
Parameter	**KIT** LA
Dimensions of sensor (in mm)	18.7 x 9 x 2.8
Dimensions of PCB (in mm)	20 x 9.8 x 5.1
Supply voltage	3.5 V ... 5.5 V
Current consumption[1]	100 mA (max. 125 mA)
Power consumption[1]	500 mW (max. 687.5 mW)
Calculation time	Approx. 1 µs
Boot time at power-on	300 ms
Resolution	Up to 78.125 (up to 10 nm with EnDat 2.2)
Interpolation error	30 nm_{rms} (ideal)
Max. traversing speed	10 m/s
Working distance (air gap)	0.85 (±0.2) mm
Operating temperature	0°C to +55°C (+32°F to +131°F)
Output interfaces	
Serial	EnDat 2.2, SSI, HIPERFACE compatible[4], *BiSS* C (unidirectional)[5]
Usable simultaneously	USB 2.0 (diagnostics and user interface), 1 V_{PP} (SIN+, COS+, SIN-, COS-)[3]
Interface position word length	24 bit / 32 bit
Scale tape	
Material	Stainless Steel
Absolute track	Pseudo Random Code (PRC)
Grating period (TP) incremental track	20 µm
Measuring lenght (ML)	
SINGLEFLEX scale tape	Up to 1.2 m
DOUBLEFLEX scale tape[2]	Up to 1.2 m
Accuracy class (a)	
SINGLEFLEX and DOUBLEFLEX[2] scale tape	±3 µm
Cable	
Diameter	3.7 mm
Length from scan head to the D-Sub connector	• 0.3 m • 0.5 m • 1.0 m • 1.5 m • 2.0 m • 3.0 m (others on request)

[1] Current and power consumption are dependent on used interfaces due to load variation on internal driver modules
[2] Not suitable for vacuum applications
[3] Not in combination with EnDat 2.2
[4] HIPERFACE is a trade mark of SICK Stegmann GmbH
[5] *BiSS* is a trade mark of iC-Haus GmbH

LINEAR ABSOLUTE

LAK

The LAK Series catapults absolute measuring into a new dimension. The fusion of incremental and absolute technology in combination with the EPIFLEX sensor module provide this encoder its outstanding features.



- Possibility of an electronic adjustment after mounting to reduce static mounting errors
- Free intuitive ABSOFLEX software for automatic electronic adjustment available
- Individual measuring lengths of the scales available
- Several interfaces usable
- Extensive diagnostic and monitoring functions (e.g. read head temperature)
- High control dynamics due to low calculation time
- Resistant scales made of stainless steel
- Two absolute tracks and two incremental sensors ensure high immunity to contamination

Parameter	*LAK*
Dimensions of encoder head (in mm)	33.5 x 11.5 x 10.5
Weight of encoder head (w/o cable)	7 g
Supply voltage	3.5 V ... 5.5 V
Current consumption[1]	100 mA (max. 125 mA)
Power consumption[1]	500 mW (max. 687.5 mW)
Calculation time	Approx. 1 µs
Boot time at power-on	300 ms
Resolution	Up to 78.125 (up to 10 nm with EnDat 2.2)
Interpolation error	30 nm_{rms} (ideal)
Max. traversing speed	10 m/s
Working distance (air gap)	0.85 (±0.2) mm
Operating temperature	0°C to +55°C (+32°F to +131°F)
Protection type	IP64

Output interfaces	
Serial	EnDat 2.2, SSI, HIPERFACE compatible[4], *BiSS* C (unidirectional)[5]
Usable simultaneously	USB 2.0 (diagnostics and user interface), 1 V_{PP} (SIN+, COS+, SIN-, COS-)[3]
Interface position word length	24 bit / 32 bit

Scale tape	
Material	Stainless Steel
Absolute track	Pseudo Random Code (PRC)
Grating period (TP) incremental track	20 µm
Measuring lenght (ML)	
SINGLEFLEX scale tape	Up to 1.2 m
DOUBLEFLEX scale tape[2]	Up to 1.2 m
Accuracy class (a)	
SINGLEFLEX and DOUBLEFLEX[2] scale tape	±3 µm

Cable	
Diameter	3.7 mm
Length from scan head to the D-Sub connector	• 0.3 m • 0.5 m • 1.0 m • 1.5 m • 2.0 m • 3.0 m (others on request)

[1] Current and power consumption are dependent on used interfaces due to load variation on internal driver modules
[2] Not suitable for vacuum applications
[3] Not in combination with EnDat 2.2
[4] HIPERFACE is a trade mark of SICK Stegmann GmbH
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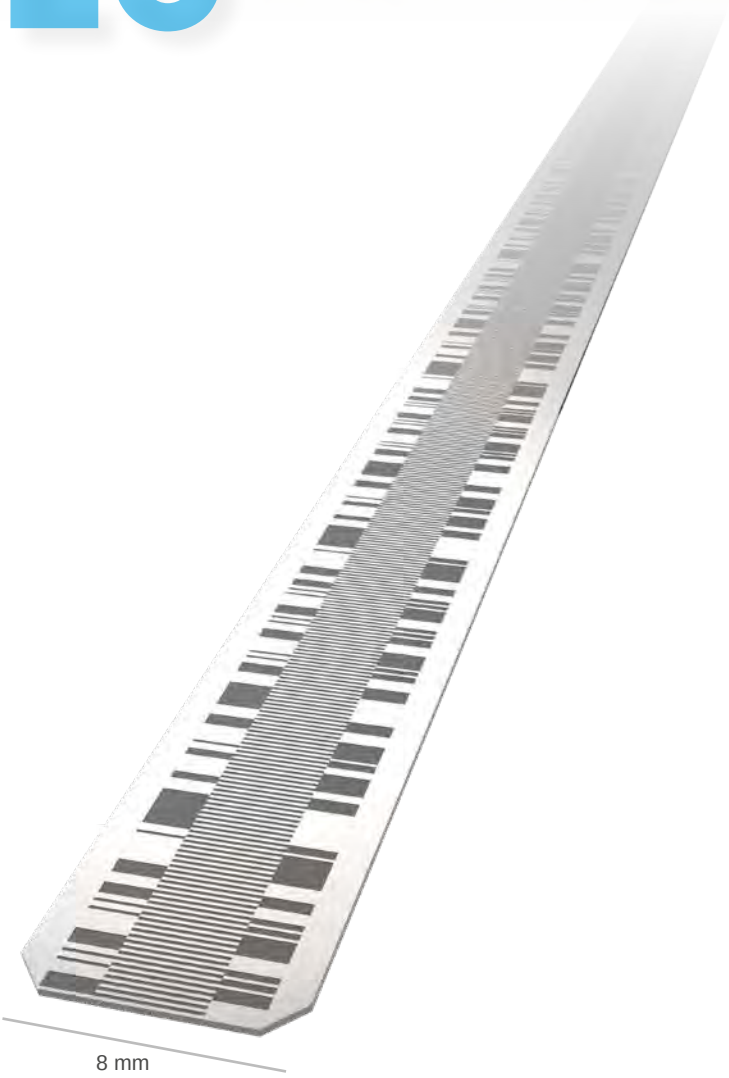
SCALE TAPES

SCALE Tapes

The component responsible for the accuracy of a linear encoders is its measuring standard. The measuring standard for NUMERIK JENA linear encoders is a graduated scale on a stainless steel tape. The graduation is etched into the polished steel surface, which makes it resistant to wiping and abrasion. Depending on the requirements of the application, exposed linear encoders are available with our SINGLEFLEX or DOUBLEFLEX scales.

For applications with special environmental conditions (e.g. magnetic fields, heat sources, vacuum, etc.) or for special demands on the dimensions we also offer scales made of glass.



SINGLEFLEX SCALE Tape

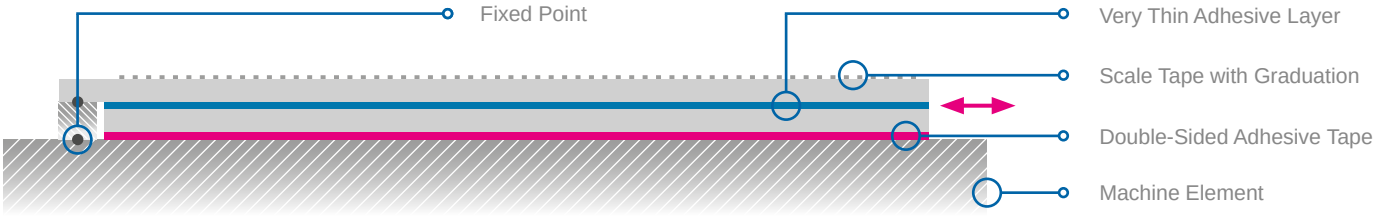
The SINGLEFLEX scale tape consists of a single steel tape with an applied incremental track, one or more reference marks or an absolute track. The scale tape is equipped with a double-sided adhesive tape and can be mounted easily on the machine element.

Width Scale Tape = 8.00 mm Thickness Scale Tape = 0.25 mm Thickness Adhesive Tape = 0.20 mm

DOUBLEFLEX SCALE Tape

The DOUBLEFLEX scale tape consists of two superimposed steel tapes. Both of them are divided by a tension uncoupled sheen of oil, which ensures the adhesion between the steel tapes. The incremental track with one or more reference marks or an absolute track is applied on the upper steel tape. The lower steel tape is equipped with a double-sided adhesive tape and can be mounted easily on the machine element.

The two steel tapes are uncoupled mechanically. This ensures that the upper steel tape can expand independently of the lower steel tape due to thermal variations of the ambient temperature. By reference of the ambient temperature and the expansion coefficient of the steel tape it is possible to determine occurring length deviation of the increments. This allows to compensate the deviation of the measurement results.



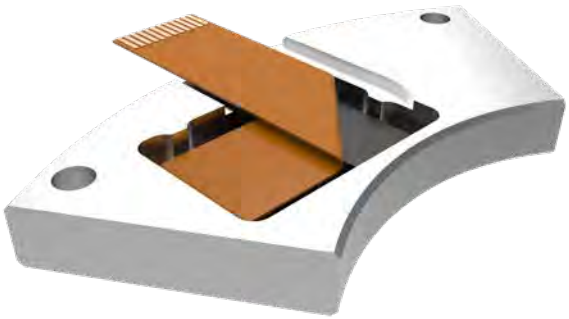
Width Scale Tape = 8.00 mm Thickness Scale Tape = 0.50 mm Thickness Adhesive Tape = 0.20 mm

Please note: The DOUBLEFLEX scale tape is not suitable for vacuum applications!

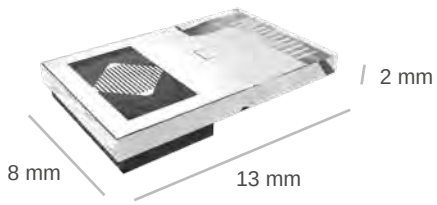
ROTARY INCREMENTAL

KIT R4

The Kit R4 Series was especially designed for applications with customized requirements. These systems are not only extremely small, they are also particularly configurable. Your ideas won't be hardly limited with this series.

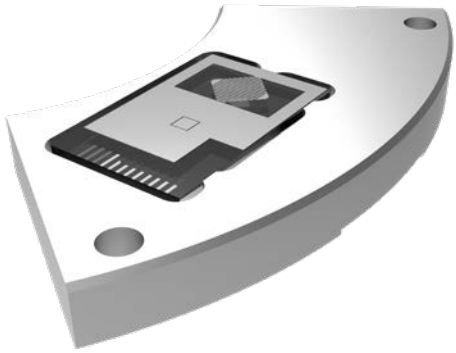


- Very small dimensions for limited installation conditions
- Low mass moment of inertia of the graduated disks (made of Aluminum)
- Disks with up to 24,000 lines/rev
- Grating diameters from 13 to 192 mm
- Signal interfaces 1 V_{PP} and RS 422



- Integrated online compensation of the counting signals
- Signal interpolation up to 100 times
- Rotational speed up to 16,000 rev/min (500 kHz scanning frequency)
- Automatic electronic signal adjustment possible
- Customer-specific housings and frames available
- Precise gluing service of graduated disks on customized hubs available
- Vacuum versions up to 10^{-9} mbar (UHV) available

KIT R4



Parameter	KIT R4
Dimensions of encoder head (in mm)	Depending on the size of the graduated disk
Weight of encoder head (w/o cable)	3 - 6 g
Number of scanning fields	1
Scanning frequency	Max. 500 kHz
Supply voltage	5 V ±10%
Max. rotational speed	22,200 rpm
Max. resolution	0.135 arc seconds
Working distance (air gap)	0.4 - 1.2 mm
Operating temperature	0°C to +55°C (+32°F to +131°F)
Output interfaces	
Voltage output	1 V_{PP}
Square wave output	RS 422 with interpolation up to 100-times
Current consumption	
Voltage output	≤80 mA[1]
Square wave output	≤210 mA[1]
Graduated disk	
Material	Aluminum
No. of increments	Variable (see chart on page 27)
Reference marks	• One at 0° • Others on request
Diameter	Variable (see chart on page 27)
Cable	
Diameter	3.7 mm
Length from scan head to D-Sub connector	• 0.3 m • 0.5 m • 1.0 m • 1.5 m • 2.0 m • 3.0 m (others on request)

[1] With 120 Ω load resistance

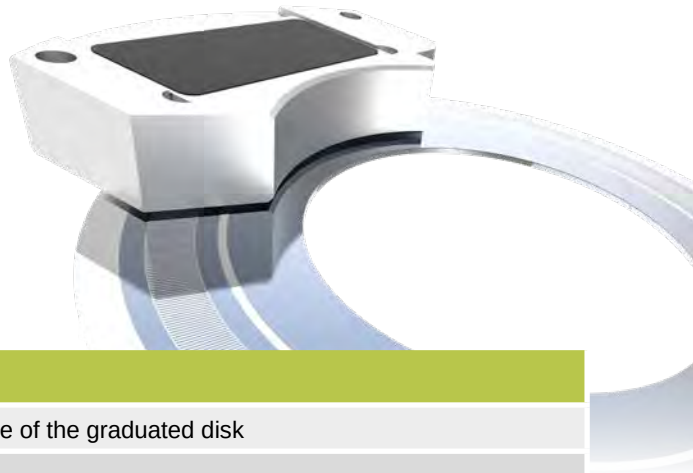
ROTARY INCREMENTAL

RIK 4

The RIK 4 was especially designed for applications with limited installation space. The very flat and light design of the encoder enables the user a wide range of applications.

- Low mass moment of inertia of the graduated disks (made of Aluminum)
- Disks with up to 24,000 lines/rev
- Grating diameters from 19 to 192 mm
- Signal interfaces 1 V_{PP} and RS 422
- Integrated online compensation of the counting signals
- Signal interpolation up to 100 times
- Rotational speed up to 16,000 rev/min (500 kHz scanning frequency)
- Automatic electronic signal adjustment possible
- Non-magnetic scanning head available
- Index signals with repeatability accurate to one specific increment
- Precise gluing service of graduated disks on customized hubs available
- Vacuum versions up to 10^{-9} mbar (UHV) available

RIK 4



Parameter	RIK 4
Dimensions of encoder head (in mm)	Depending on the size of the graduated disk
Weight of encoder head (w/o cable)	3 - 6 g
Number of scanning fields	1
Scanning frequency	Max. 500 kHz
Supply voltage	5 V ±10%
Max. rotational speed	22,200 rpm
Max. resolution	0.135 arc seconds
Working distance (air gap)	0.4 - 1.2 mm
Operating temperature	0°C to +55°C (+32°F to +131°F)
Output interfaces	
Voltage output	1 V_{PP}
Square wave output	RS 422 with interpolation up to 100-times
Current consumption	
Voltage output	≤80 mA[1]
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No. of increments	Variable (see chart on page 27)
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Cable	
Diameter	3.7 mm
Length from scan head to D-Sub connector	• 0.3 m • 0.5 m • 1.0 m • 1.5 m • 2.0 m • 3.0 m (others on request)

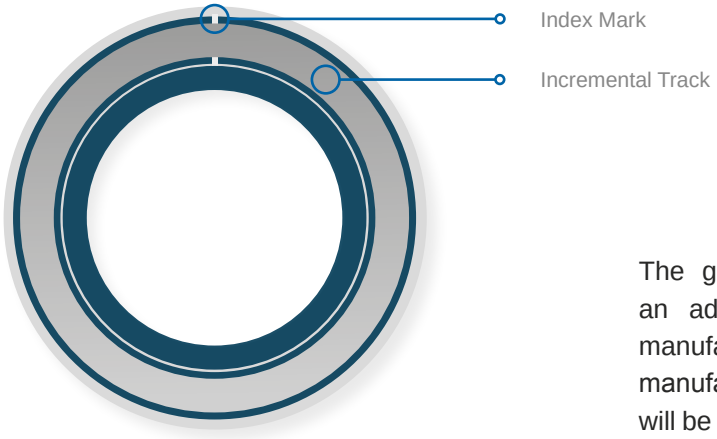
[1] With 120 Ω load resistance

GRADUATED DISKS

GRADUATED DISKS

The graduated disks from NUMERIK JENA are available in different sizes and versions. Therefore, we offer a big selection of graduated disks, but on request we also manufacture at customer‘s option. Our disks are suitable for vacuum applications.

Our standard disks are made of aluminum, but different types of glass are also available on request.



The graduated disks can be glued to a hub with an adhesive. We offer to do this highly precise manufacturing step as a service. We are also able to manufacture customer specific hubs. Every glued disk will be adjusted and measured. We deliver an additional accuracy chart if requested.

GRADUATED DISKS

d_i	Inside diameter of the graduated disk
d_a	Outside diameter of the graduated disk
d_t	Center diameter of the incremental track
Z	Number of lines of the graduated disk
x	Working distance (air gap)

Type	d_i [mm]	d_a [mm]	d_t [mm]	Z	x
RS 13/5.5/2048*	5.5 + 0.1	19 $^{-0}_{-0.5}$	13	2,048	0.5 ± 0.03
RS 19/6/3600	6 + 0.1	26 $^{-0.2}_{-0.5}$	19	3,600	0.5 ± 0.02
RS 19/9/3600	9 + 0.1	26 $^{-0.2}_{-0.5}$	19	3,600	0.5 ± 0.02
RS 29/16/900	16 + 0.1	36 $^{-0.2}_{-0.5}$	29	900	0.6 ± 0.10
RS 29/16/1000	16 + 0.1	36 $^{-0.2}_{-0.5}$	29	1,000	0.7 ± 0.05
RS 29/16/4500	16 + 0.1	36 $^{-0.2}_{-0.5}$	29	4,500	0.6 ± 0.05
RS 29/20/900	20 + 0.1	36 $^{-0.2}_{-0.5}$	29	900	0.6 ± 0.10
RS 39/9.97/3600	9.97 + 0.1	46 $^{-0.2}_{-0.5}$	39	1,800	0.4 ± 0.05
RS 39/25/1800	25 + 0.1	46 $^{-0.2}_{-0.5}$	39	1,800	0.5 ± 0.10
RS 39/25/2048	25 + 0.1	46 $^{-0.2}_{-0.5}$	39	2,048	0.7 ± 0.10
RS 39/25/3600	25 + 0.1	46 $^{-0.2}_{-0.5}$	39	3,600	0.4 ± 0.05
RS 39/25/6000	25 + 0.1	46 $^{-0.2}_{-0.5}$	39	6,000	0.6 ± 0.05
RS 39/30/3600	30 + 0.1	46 $^{-0.2}_{-0.5}$	39	3,600	0.4 ± 0.05
RS 45/30/9000	30 + 0.1	54 $^{-0.2}_{-0.5}$	45	9,000	0.4 ± 0.02
RS 64/48.5/2048	48.5 + 0.1	71 $^{-0.2}_{-0.5}$	64	2,048	0.8 ± 0.05
RS 64/48.5/4096	48.5 + 0.1	71 $^{-0.2}_{-0.5}$	64	4,096	0.6 ± 0.05
RS 64/48.5/9000	48.5 + 0.1	71 $^{-0.2}_{-0.5}$	64	9,000	0.9 ± 0.05
RS 64/48.5/10000	48.5 + 0.1	71 $^{-0.2}_{-0.5}$	64	10,000	0.7 ± 0.05
RS 92/70/3600	70 + 0.1	100 $^{-0.2}_{-0.5}$	92	3,600	0.5 ± 0.10
RS 92/70/9000	70 + 0.1	100 $^{-0.2}_{-0.5}$	92	9,000	0.4 ± 0.05
RS 92/70/18000	70 + 0.1	100 $^{-0.2}_{-0.5}$	92	18,000	0.4 ± 0.05
RS 92/76/3600	76 + 0.1	100 $^{-0.2}_{-0.5}$	92	3,600	0.5 ± 0.10
RS 92/80/3600	80 + 0.1	105 $^{-0.2}_{-0.5}$	92	3,600	0.5 ± 0.10
RS 142/120/5400	120 + 0.2	150 $^{-0.2}_{-0.5}$	142	5,400	0.8 ± 0.05
RS 142/120/8192	120 + 0.2	150 $^{-0.2}_{-0.5}$	142	8,192	0.6 ± 0.05
RS 142/120/18000	120 + 0.2	150 $^{-0.2}_{-0.5}$	142	18,000	1.2 ± 0.05
RS 142/122/5400	122 + 0.2	150 $^{-0.2}_{-0.5}$	142	5,400	0.8 ± 0.05
RS 142/128/18000	128 + 0.2	150 $^{-0.2}_{-0.5}$	142	18,000	1.2 ± 0.05
RS 192/160/24000	160 + 0.2	200 $^{-0.2}_{-0.5}$	192	24,000	1.1 ± 0.05

* Not for RIK 4

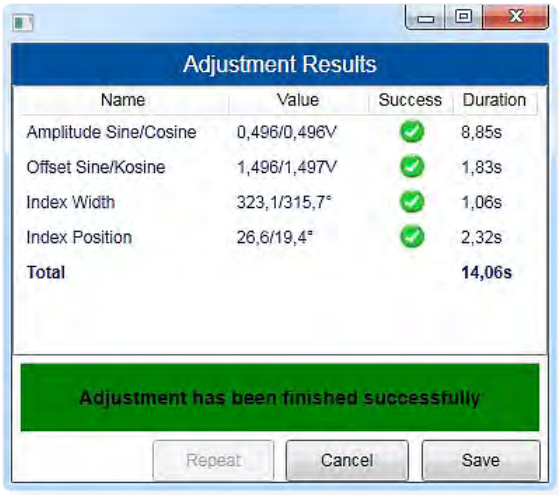
Material of the disk: Aluminium, Thickness: 0.5 mm, Other sizes and materials on request

ACCESSORY

ADJUSTMENT TOOL

The measuring systems supplied by NUMERIK JENA are tested and adjusted under ideal mounting conditions. The sensor modules offer the possibility of an electronic adjustment. That way it is possible to adapt the encoder optimally to the customers surroundings after it has been mounted.

The ADJUSTMENT TOOL hardware works in combination with the EPIFLEX Software.



- Programming of incremental sensor modules from NUMERIK JENA
- Automatic adjustment function
- Representation of the sinusoidal counting signals with amplitude, offset and phase position
- Representation of the position and width of the reference signal
- Evaluation of the mechanical mounting conditions
- Electronic readjustment of the amplitude and offset of the sensor signals
- Adjustment of the position and width of the reference signal

Please note: The EPIFLEX Software is available for free on our website www.numerikjena.de

EPIFLEX Pro Software

The EPIFLEX Pro Software is necessary to run the ADJUSTMENT TOOL. The software controls the hardware of the tool and displays the encoder signals for the user in a very intuitive way.

With the shown Lissajous Figure the user is able to interpret the outputted counting signals of the encoder head and analyze the existing mounting conditions of the measuring system.

By running the automatic adjustment procedure provided by the EPIFLEX Pro Software the user is able to improve the signal quality which is influenced by the mounting tolerances from encoder head and scale tape.

Consequently it adjusts the index signal to one specific increment of the scale. Therefore the index position is fixed and always in the same position.

EPIFLEX Adapter

The EPIFLEX Adapter allows to connect NUMERIK JENA's new generation of encoders to the ADJUSTMENT TOOL. With this adapter it is no longer necessary to open any connector or housing for signal adjustment with the ADJUSTMENT TOOL. It can be connected direktly to the 15 pin D-Sub connector of the encoder head.

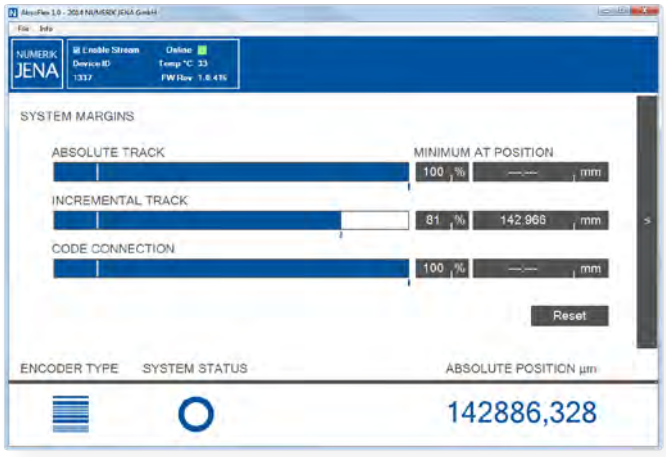
- Presentation of the counting signals with Amplitude, offset and phase shift
- Demonstration and adjustment of the position and width of the index mark
- Investigation of mechanical mounting conditions
- Automatic adjustment and programming of the new *LIKgo* encoder
- Electronic readjustment of signal amplitude and offset
- Offers support during installation and helps with the optimization of the measuring system

ACCESSORY

ABSOFLEX Software

The absolute encoders from NUMERIK JENA provide a USB 2.0 interface which allows the user to connect it to a PC and use the ABSOFLEX software.

The ABSOFLEX USB-Adapter allows to connect the encoders D-Sub connector directly to a USB port.[1]



ABSOFLEX Adapter

Functions of the ABSOFLEX Software:

- Programming of absolute sensor modules from NUMERIK JENA
- Evaluation of the signal quality (absolute and incremental track)
- Evaluation of the mechanical mounting conditions
- Diagnostics of internal read head signal via system margins
- Automatic adjustment of the signals to reduce the effects of static mounting errors
- Programming of the sensor module (zero position and counting direction)
- Retrieval of position information (position indicator)
- Diagnostics and monitoring

[1] Not in combination with EnDat 2.2

SCM Module

The SCM enables the flexible, cost-effective integration of ACANTO length gauges into an existing network infrastructure, eases maintenance processes through the transmission of valuation numbers and provides additional ambient environment information (e.g. temperature or air pressure) for reliable measured value interpretation.

Customer benefits

- Cost-effective extension of networks, systems and applications
- Flexibility to integrate new devices into an existing network infrastructure
- Improved usability through wireless data transmission
- Improved IT security through a sophisticated communication concept, protecting against unauthorized data access
- Improved data availability and data security through a robust data architecture with reliable communication mechanisms
- Reduction of downtimes due to predictive maintenance processes

Essential characteristics of the SCM

- Conversion of EnDat 2.2 into the platform-independent OPC UA standard
- Wireless data transmission at a range of up to 50 m
- Reception and transmission of additional ambient environment information (incl. humidity, temperature, and air pressure)
- Available for all ACANTO length gauges

CONTACT

Pour plus d'informations sur les produits, n'hésitez pas à nous contacter :

475 rue Saint Eloi
73100 Grésy sur Aix
FRANCE

contact@ratmo.com
04 50 36 81 18

www.ratmo.com

INTERNATIONAL CONTACTS

Please note: If you like to contact us and you are not a german customer, please check our subsidiary contacts first. Please contact the respective subsidiary in your country. If there is no subsidiary in your country, contact us directly. Thank you!

Europe

Belgium

HEIDENHAIN NV/SA

Pamelse Klei 47
1760 ROOSDAAL
Belgium

Web: www.heidenhain.be
E-Mail: sales@heidenhain.be
Phone: +32 54 34 3158

France

HEIDENHAIN FRANCE sarl

2 Avenue de la Cristallerie
92310 Sèvres
France

Web: www.heidenhain.fr
E-Mail: info@heidenhain.fr
Phone: +33 1 41 14 30 00

Great Britain

HEIDENHAIN (G.B.) Limited

200 London Road, Burgess Hill
West Sussex RH15 9RD
United Kingdom

Web: www.heidenhain.co.uk
E-Mail: sales@heidenhain.co.uk
Phone: +44 1444 247711

Italy

HEIDENHAIN ITALIANA S.r.l.

Via Asiago 14
20128 Milano
Italy

Web: www.heidenhain.it
E-Mail: info@heidenhain.it
Phone: +39 02 27075-1

Netherlands

HEIDENHAIN NEDERLAND B.V.

Copernicuslaan 34
6716 BM Ede
Netherlands

Web: www.heidenhain.nl
E-Mail: service@heidenhain.nl
Phone: +31 318 58 18 00

Romania

DR. JOHANNES HEIDENHAIN GmbH

Reprezentanta Romania
Str. Zizinului, nr. 110, etaj 2,
Braşov, 500407
Romania

Web: www.heidenhain.ro
E-Mail: info@heidenhain.ro
Phone: +40 268 318476

Switzerland

RSF Elektronik (Schweiz) AG

Vieristrasse 14
8603 Schwerzenbach
Switzerland

Web: www.rsf.ch
E-Mail: info@rsf.ch
Phone: +41 44 95510 50

Scandinavia

HEIDENHAIN Scandinavia AB - Sweden

Storsätragränd 5
127 39 SKÄRHOLMEN
Sweden

Web: www.heidenhain.se
E-Mail: sales@heidenhain.se
Phone: +468 531 93 350

HEIDENHAIN Scandinavia AB - Norway

Orkdalsveien 15
7300 Orkanger
Norway

Web: www.heidenhain.no
E-Mail: info@heidenhain.no
Phone: +47 72 4800-48

HEIDENHAIN Scandinavia AB - Finland

Nuolitie 2 a 10
01740 Vantaa
Finland

Web: www.heidenhain.fi
E-Mail: info@heidenhain.fi
Phone: +358 9 867 64 76

Hungary

HEIDENHAIN Kereskedelmi Képviselet

Grassalkovich út 255
1239 Budapest
Hungary

Web: www.heidenhain.hu
E-Mail: info@heidenhain.hu
Phone: +36 1 421 09 52

Czech Republic

HEIDENHAIN s.r.o.

Dolnoměcholupská 12b
102 00 Praha 10- Hostivař
Czech Republic

Web: www.heidenhain.cz
E-Mail: heidenhain@heidenhain.cz
Phone: +420 272 65 81 31

North America

Canada

HEIDENHAIN CORPORATION

Canadian Regional Office
11 - 335 Admiral Blvd.
Mississauga, Ontario L5T2N2
Canada

Web: www.heidenhain.ca
E-Mail: InfoCanada@heidenhain.com
Phone: +1 905 670 8900

Mexico

HEIDENHAIN CORPORATION MEXICO

Carolina Villanueva de Garcia No. 206
CD. Industrial
Aguascalientes AGS
CP 20290
Mexico

Web: www.heidenhain.com.mx
E-Mail: info@heidenhain.com
Phone: +52 449 913.0870

USA

HEIDENHAIN CORPORATION

333 State Parkway
Schaumburg, IL 60173-5337
USA

Web: www.heidenhain.com
E-Mail: info@heidenhain.com
Phone: +1 847 490-1191

South America

Brasil

DIADUR Indústria e Comércio Ltda.

Rua Servia, 329
04763-070 Sao Paulo - SP
Brasil

Web: www.heidenhain.com.br
E-Mail: vendas@diadur.com.br
Phone: +55 11 5696 67 77

Asia

China

DR. JOHANNES HEIDENHAIN (CHINA) Co., Ltd.
No. 6, Tian Wei San Jie, Area A,
Beijing Tianzhu Airport Industrial Zone
Shunyi District
Beijing 101312
China

Web: www.heidenhain.com.cn
E-Mail: sales@heidenhain.com.cn
Phone: +86 10 8042-0000

Hong Kong

HEIDENHAIN LIMITED
Unit 2008-2010 Apec Plaza
49 Hoi Yuen Road
Kwun Tong
Kowloon, Hong Kong

Web: www.heidenhain.com.hk
E-Mail: service@eidenhain.com.hk
Phone: +852 27 59 19 20

Japan

HEIDENHAIN K.K.
Hulic Kojimachi Bldg.,9F
3-2 Kojimachi,Chiyoda-ku
Tokyo
102-0083
Japan

Web: www.heidenhain.co.jp
E-Mail: sales@heidenhain.co.jp
Phone: +81 3 3234 7781

India

HEIDENHAIN Optics & Electronics India Private Limited
Citilights Corporate Centre
No. 1, Vivekanandan Street,
Off Mayor Ramanathan Road
Chetpet, Chennai – 600 031
India

Web: www.heidenhain.in
E-Mail: info@heidenhain.in
Phone: +91 44 3023-4000

INNOVATIVE AUTOMATION PRODUCTS
B/24. M.I.D.C.,
Industrial Estate Satara - 415004.
Maharashtra
India

Web: www.innovativedro.com
E-Mail: yogesh@innovativedro.com
Phone: +91 2162-245966 / 246509

Israel

KINEMATICS LTD
1 Abba Hillel Silver St.
71294 LOD
Israel

Web: www.kinematics.co.il
E-Mail: optics@kinematics.co.il
Phone: +972 8 9200802

Singapore
(incl. Malaysia, Phillippines)

HEIDENHAIN PACIFIC PTE LTD.
51, Ubi Crescent
408593 Singapore

Web: www.heidenhain.com.sg
E-Mail: info@heidenhain.com.sg
Phone: +65 67 49 32 38

South Korea

HEIDENHAIN KOREA Ltd.
2F, 130, Digital-ro, Geumcheon-gu,
Seoul, Korea 08589

Web: www.heidenhain.co.kr
E-Mail: info@heidenhain.co.kr
Phone: +82 2 2028-7430

Taiwan

HEIDENHAIN CO., LTD.
No. 29, 33rd Road;
Taichung Industrial Park
Taichung 40768
Taiwan R.O.C.

Web: www.heidenhain.com.tw
E-Mail: info@heidenhain.tw
Phone: +886 4 2358 89 77

Thailand

HEIDENHAIN (THAILAND) LTD
88, 90, 4th Floor Anek-Vunnee Building,
Chaloem Phra Kiat Rama 9 Road,
Nongbon, Pravate, Bangkok 10250
Thailand

Web: www.heidenhain.co.th
E-Mail: info@heidenhain.co.th
Phone: +66 (0) 2396 1840

Australia

Australia

MOTION TECHNOLOGIES PTY Ltd.
24/22-30 Northumberland Road
Caringbah 2229 NSW
Australia

Web: www.motiontech.com.au
E-Mail: jcunningham@motiontech.com.au
Phone: +61 2 9524-4782

LIKgo

NUMERIK JENA GmbH
Im Semmicht 4
07751 Jena
Germany

Phone: +49 3641 4728-0
E-Mail: info@numerikjena.de
www.numerikjena.de

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