



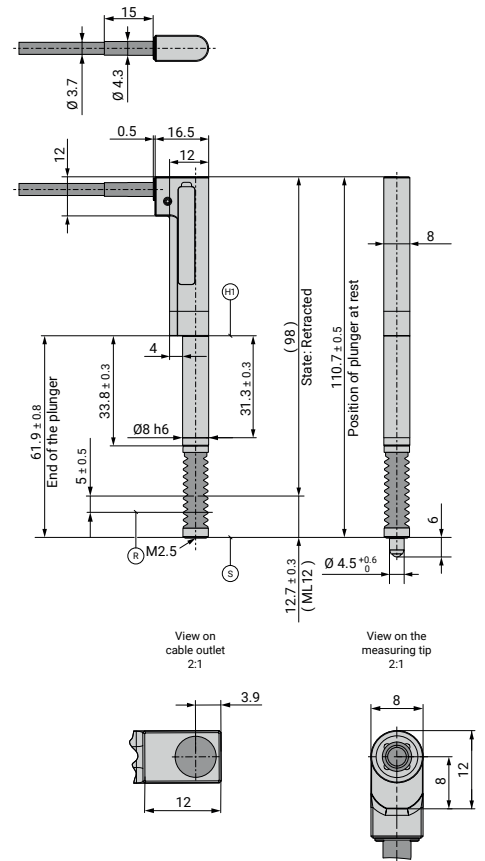
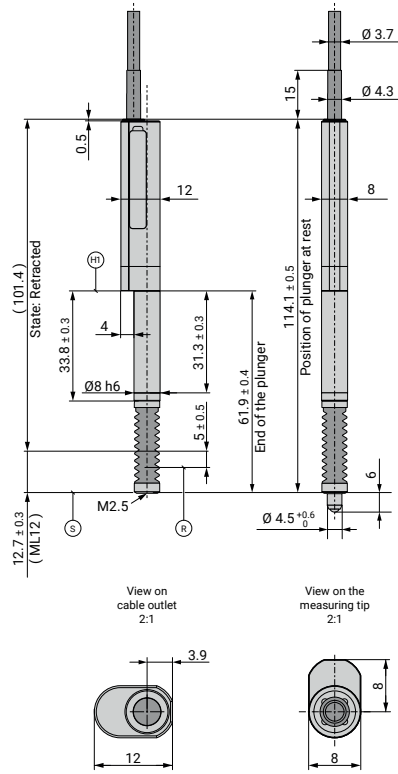
Product Information METRO

METRO

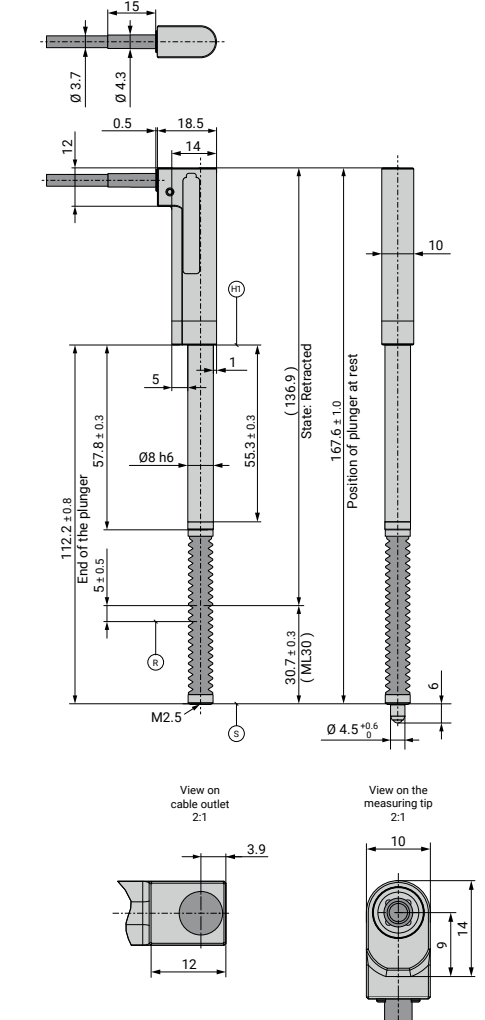
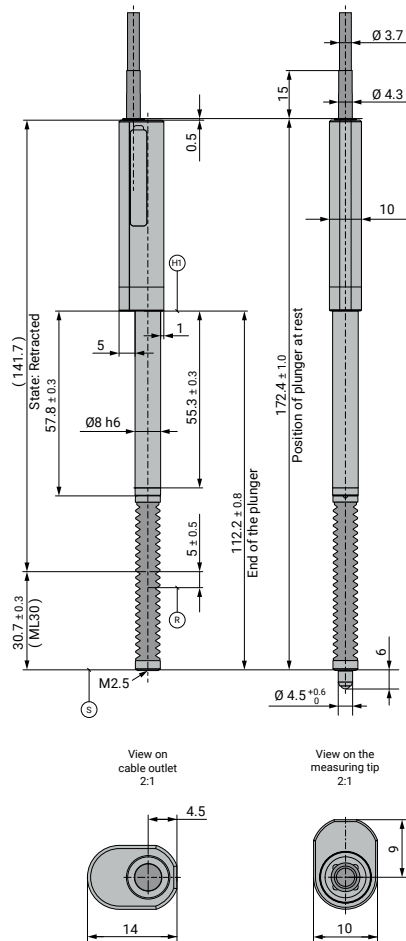
Incremental length gauges with $\pm 0.5 \mu\text{m}$ accuracy

- High repeatability
- Minimized add-on dimension
- Plunger actuation with spring force

METRO-12x8



METRO-30x8



Mechanical data	METRO-12x8				METRO-30x8
Plunger actuation	By spring force				
Position of plunger at rest	Extended				
Measuring standard	Grating period 20 µm				
System accuracy	±0.5 µm				
Position error per signal period	≤ ±0.1 µm				
Short-range accuracy typically	0.3 µm				
Reference mark	≈ 5.0 mm below upper stop				
Measuring range	12 mm				30 mm
Radial force	≤ 0.8 N (mechanically permissible)				
Fastening	Clamping shank Ø8 h6				
Operating orientation	Any				
Vibration 55 Hz to 2000 Hz	≤ 100 m/s² (EN 60068-2-6)				
Shock 11 ms	≤1,000 m/s² (EN 60068-2-27)				
Operating temperature	10 °C to 40 °C; reference temperature 20 °C				
Humidity level	≤93%				
Protection EN 60529	IP67				
Contamination level	3				
Mass without cable	40 g				50 g

Electrical data	METRO-1278 METRO-3078				METRO-1288 METRO-3088
Interface	TTL				1 V _{pp}
Integrated interpolation*	5-fold	10-fold	25-fold	50-fold	–
Signal period	4 µm	2 µm	0.8 µm	0.4 µm	20 µm
Edge separation a at scanning frequency*/traverse speed ²⁾					
100 kHz ≤ 72 m/min ¹⁾	≥ 0.45 µs	≥ 0.23 µs	≥ 0.09 µs	≥ 0.05 µs	–
50 kHz ≤ 60 m/min	≥ 0.90 µs	≥ 0.45 µs	≥ 0.18 µs	≥ 0.09 µs	
25 kHz ≤ 30 m/min	≥ 1.80 µs	≥ 0.90 µs	≥ 0.36 µs	≥ 0.18 µs	
Electrical connection	15-pin D-sub connector, male, cable outlet straight, 1.5 m, integrated interface electronics ³ 12-pin M23 connector, male, cable outlet straight, 1.5 m, integrated interface, electronics ³				
Cable outlet*	Axial or Radial				
Cable length	≤ 30 m with HEIDENHAIN cable				
Supply voltage	DC 5 V ±10%				
Current consumption	< 120 mA (without load)				< 110 mA (without load)

* Please select when ordering

¹⁾ Mechanically limited

²⁾ At a corresponding cutoff or scanning frequency

³⁾ HEIDENHAIN pin layout

(R) = Position of the reference mark
 (S) = Beginning of the measuring length
 (H) = Clamping area
 (H2) = Air connection 2 mm tube

mm

 Tolerancing ISO 8015
 ISO 2768-mK
 ≤ 6 mm: ±0.2 mm

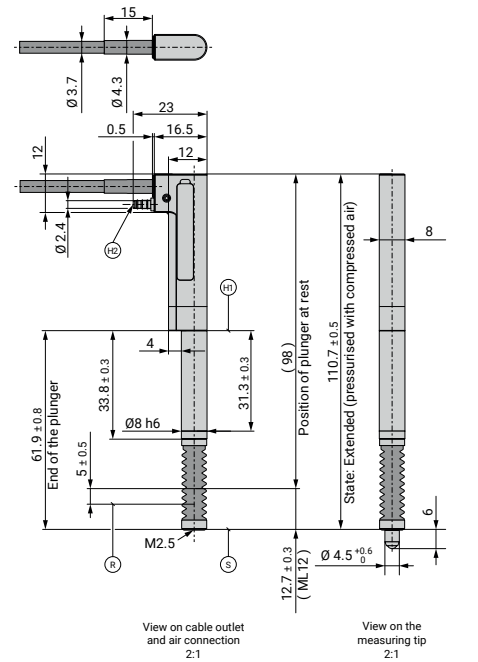
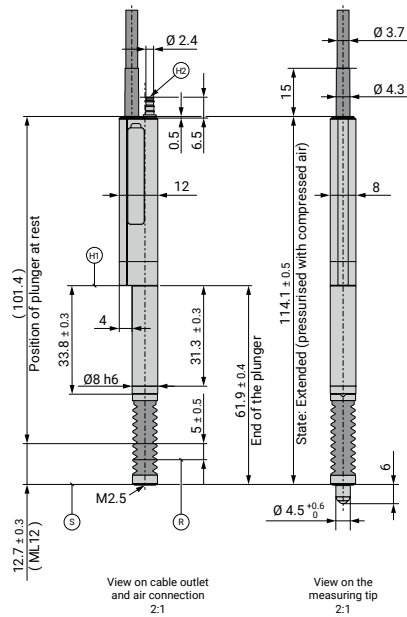
Use above sea level: **down to 5,000 m**

METRO

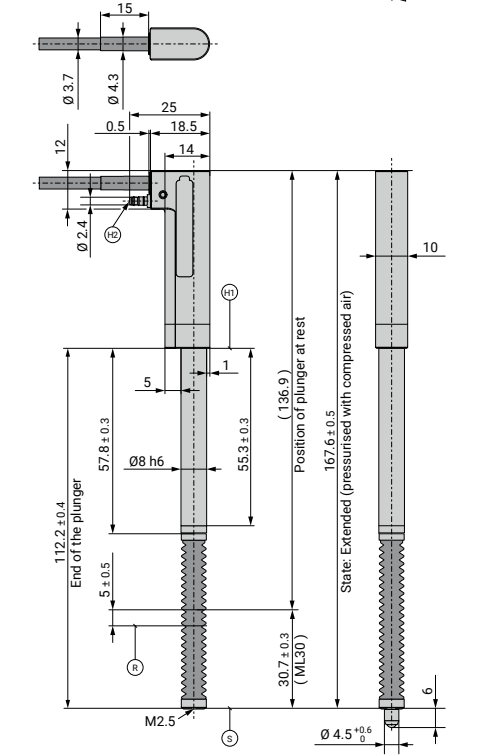
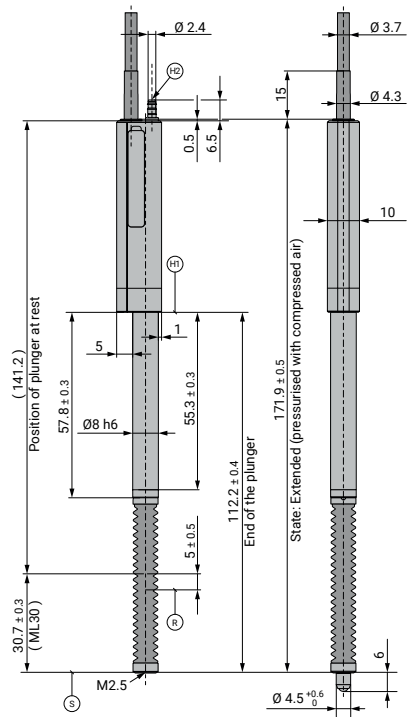
Incremental length gauges with $\pm 0.5 \mu\text{m}$ accuracy

- High repeatability
- Minimized add-on dimension
- Plunger actuation with compressed air

METRO-12x7



METRO-30x7



Mechanical data	METRO-12x7				METRO-30x7
Plunger actuation	By compressed air				
Position of plunger at rest	Retracted				
Measuring standard	Grating period 20 µm				
System accuracy	±0.5 µm				
Position error per signal period	≤ ±0.1 µm				
Short-range accuracy typically	0.3 µm				
Reference mark	≈ 5.0 mm below upper stop				
Measuring range	12 mm				30 mm
Working pressure	1.0 bar to 2.5 bar				
Radial force	≤ 0.8 N (mechanically permissible)				
Fastening	Clamping shank Ø8 h6				
Operating orientation	Any				
Vibration 55 Hz to 2000 Hz	≤ 100 m/s² (EN 60068-2-6)				
Shock 11 ms	≤ 1000 m/s² (EN 60068-2-27)				
Operating temperature	10 °C to 40 °C; reference temperature 20 °C				
Humidity level	≤93%				
Protection EN 60529	IP64 (with sealing air ≥ 0.2 bar IP67)				
Contamination level	3				
Mass without cable	40 g				50 g

Electrical data	METRO-1277 METRO-3077				METRO-1287 METRO-3087
Interface	TTL				1 V _{PP}
Integrated interpolation*	5-fold	10-fold	25-fold	50-fold	–
Signal period	4 µm	2 µm	0.8 µm	0.4 µm	20 µm
Edge separation a at scanning frequency*/traverse speed ²⁾					
100 kHz ≤ 72 m/min ¹⁾	≥ 0.45 µs	≥ 0.23 µs	≥ 0.09 µs	≥ 0.05 µs	–
50 kHz ≤ 60 m/min	≥ 0.90 µs	≥ 0.45 µs	≥ 0.18 µs	≥ 0.09 µs	
25 kHz ≤ 30 m/min	≥ 1.80 µs	≥ 0.90 µs	≥ 0.36 µs	≥ 0.18 µs	
Electrical connection	15-pin D-sub connector, male, cable outlet straight, 1.5 m, integrated interface electronics ³ 12-pin M23 connector, male, cable outlet straight, 1.5 m, integrated interface, electronics ³				
Cable outlet*	Axial or Radial				
Cable length	≤ 30 m with HEIDENHAIN cable				
Supply voltage	DC 5 V ±10%				
Current consumption	< 120 mA (without load)				< 110 mA (without load)

* Please select when ordering

¹⁾ Mechanically limited

²⁾ At a corresponding cutoff or scanning frequency

³⁾ HEIDENHAIN pin layout

- (R) = Position of the reference mark
 (S) = Beginning of the measuring length
 (H1) = Clamping area
 (H2) = Air connection 2 mm tube

mm

 Tolerancing ISO 8015
 ISO 2768-mK
 ≤ 6 mm: ±0.2 mm

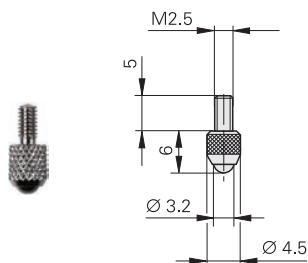
Use above sea level: **down to 5,000 m**

Accessories for Length Gauges

Measuring contacts

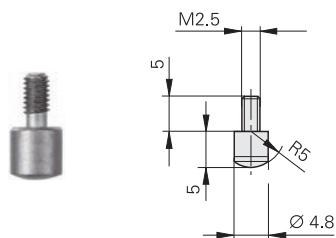
Ball-type contact

Steel ID 202504-01
Carbide ID 202504-02
Ruby ID 202504-03



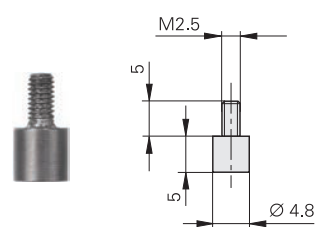
Domed contact

Carbide ID 229232-01



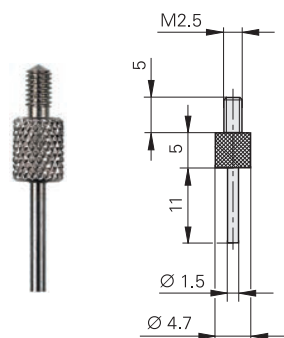
Flat contact

Steel ID 270922-01
Carbide ID 202506-01



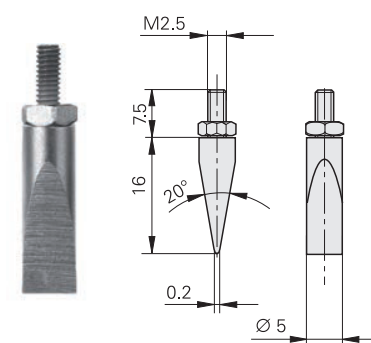
Pin-type contact

Steel ID 202505-01



Knife-edge contact

Steel ID 202503-01

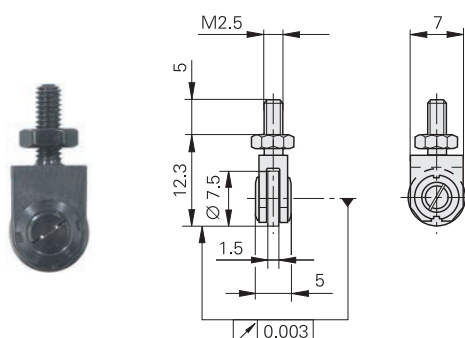


mm
Tolerancing ISO 8015
ISO 2768 - m H
≤ 6 mm: ±0.2 mm

Roller contact, steel

For a low-friction contact with moving surfaces

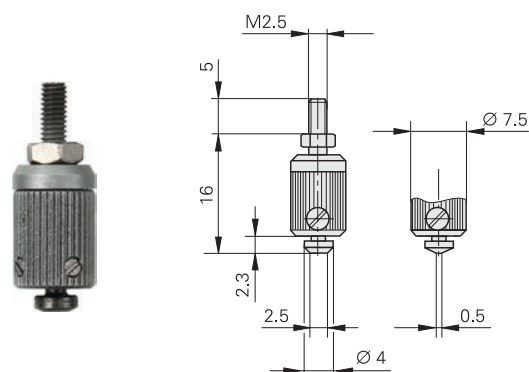
Crowned ID 202502-03
Cylindrical ID 202502-04



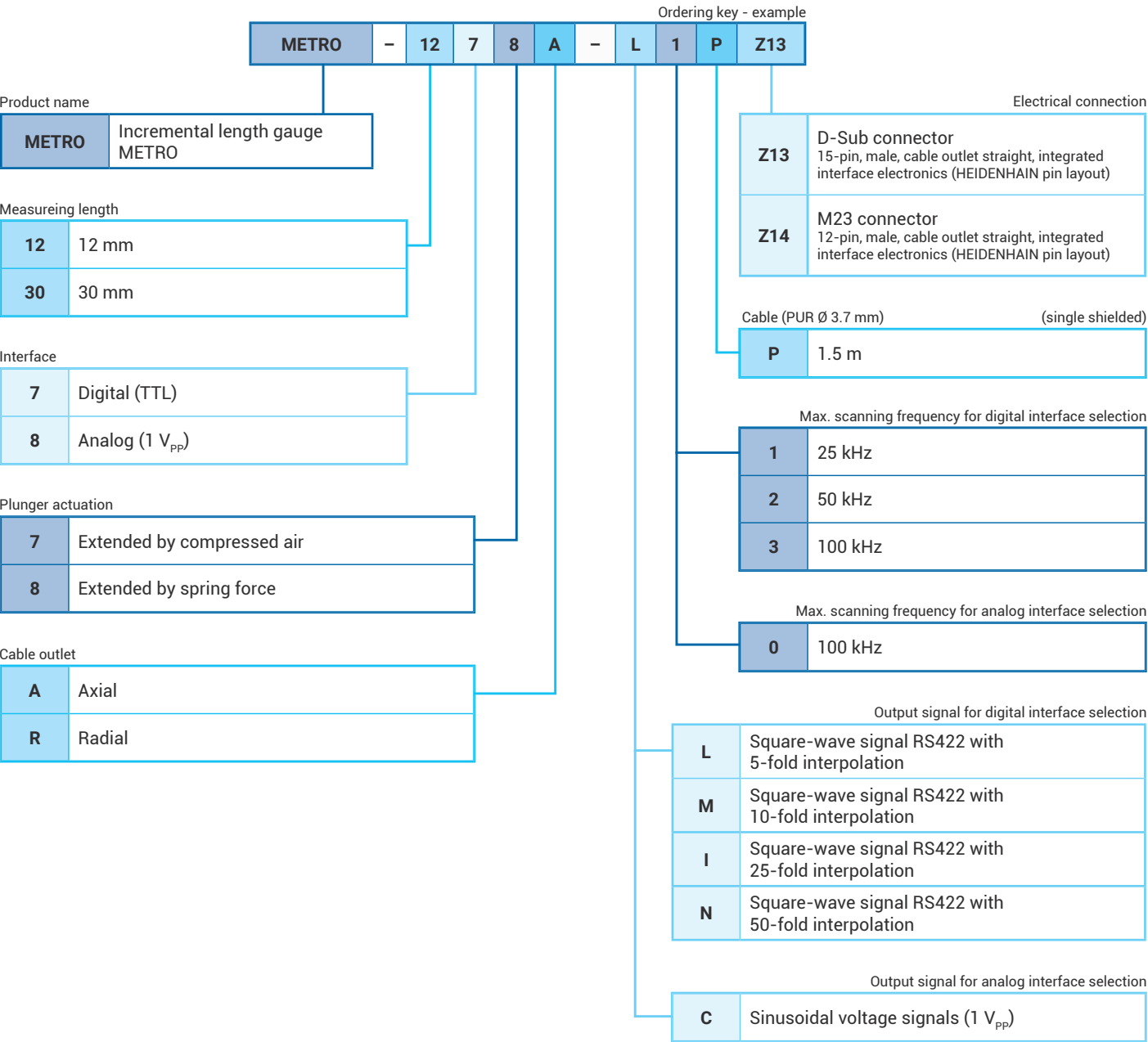
Adjustable contact, carbide

For exact parallel alignment to the measuring plate surface

Flat ID 202507-01
Knife-edged ID 202508-01



METRO Nomenclature



Product notes

- The encoders as well as the accessories are guaranteed to function if the mounting and operating conditions are maintained as stated in the respective original instructions and installation notes.
- Connect NUMERIK JENA encoders only to subsequent electronics whose power supply is generated from PELV systems (EN 50178).
- NUMERIK JENA encoders fulfill the requirements of standard IEC 61010-1 only if the power is supplied from a secondary circuit with current limitation as per IEC 61010 (3rd Ed.), Section 9.4 or with power limitation as per IEC 60950-1 (2nd Ed.), Section 2.5 or from a Class 2 secondary circuit as specified in UL1310. In place of IEC 61010-1 (3rd Ed.), Section 9.4, the corresponding sections of standards DIN EN 61010-1, EN61010-1, UL 61010-1 and CAN/CSA-C22.2 No. 61010-1 can be applied and in place of IEC 60950-1 (2nd Ed.), Section 2.5 the corresponding sections of standards DIN EN60950-1, EN60950-1, UL60950-1, CAN/CSA-C22.2 No. 60950-1 can be applied.



NUMERIK JENA GmbH
Im Semmicht 4
07751 Jena • Germany
info@numerikjena.com
www.numerikjena.com

