

# BK MIKRO LIN.B



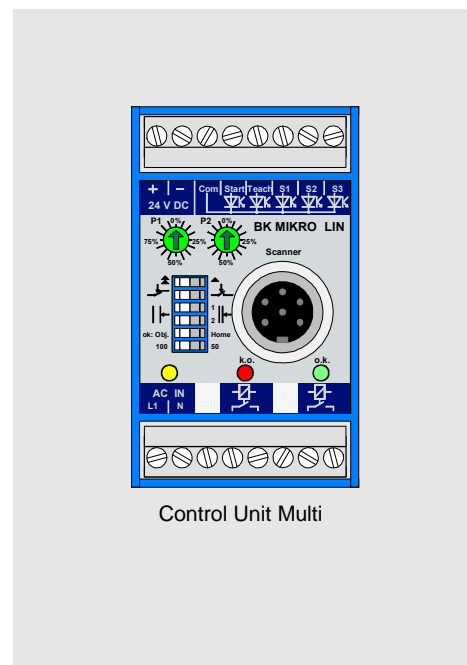
## Tool Monitoring System for Linear Scanning – Scanners with maximum Stroke of 50 mm or 100 mm –

This system monitors geometries which require longitudinal scanning, especially in cases where rotary scanning is inappropriate or impossible, for example cavities, bore holes, limited space arrangements or critical coolant pressure.

The two control units "Multi" and "Single" have different features of monitoring:

- Monitoring of the scanning position whose precise location has been previously entered by "Teach-in", e.g. to carry out a tool check before each working cycle (tool monitoring). Especially for "Multi", 8 scanning positions can be coded.
- Monitoring a scanning range freely selectable via two adjusting switches, e.g. to check cavities with varying depth (object monitoring) or to check bore holes (free space monitoring), only for "Multi".

For installing the scanner no aids are necessary.



## Operating Mode

The wand of the scanner scans tools, objects or critical process spaces free of potential, in line with machine cycles.

A control unit equipped with a micro-computer triggers the movement of the wand upon an external signal and passes the scanning result to the machine control via relay contacts.

The galvanically isolated inputs and outputs guarantee a high degree of operational safety and protection against interferences.

### Further Features

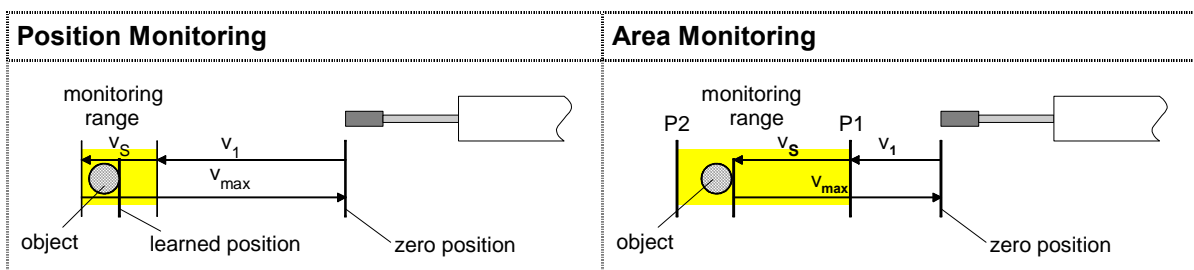
- Different variants for the tip of the wand are available (also project-specific)
- Two steps for scanning intensity
- Output relay contacts selectable as NCC or NOC
- Various ranges of tolerance for "O.K." message
- Indication of the scanning result by two LEDs for "O.K." and "K.O." at the control unit
- Detection of cable breaks

### Connection Cable

- 6-wire PUR-cable
- Small circular connector to DIN 45322 at the control unit end
- Molded plug at the scanner end
- Length 5 m, can be extended to a maximum length of approximately 25 m with extension cables

### Longitudinal Scanning

After each starting pulse, the wand travels towards the control position in linear motion with a stroke of up to 50 mm or up to 100 mm. An error is present, if the wand impinges on an object either in front or behind the position stored during "teach-in" or if the wand has completed the stroke without stopping.



### Example: Tool monitoring in teach mode

- $V_{max}$  = max. speed of scanner  
 $V_1$  = max. speed in forward direction  
 $V_s$  = speed of scanner preset by "scanning intensity" toggle switch  
 $P_1$  = start position  
 $P_2$  = end position

$$V_{S(low)} < V_{S(high)} < V_1 < V_{max}$$

# Scanner

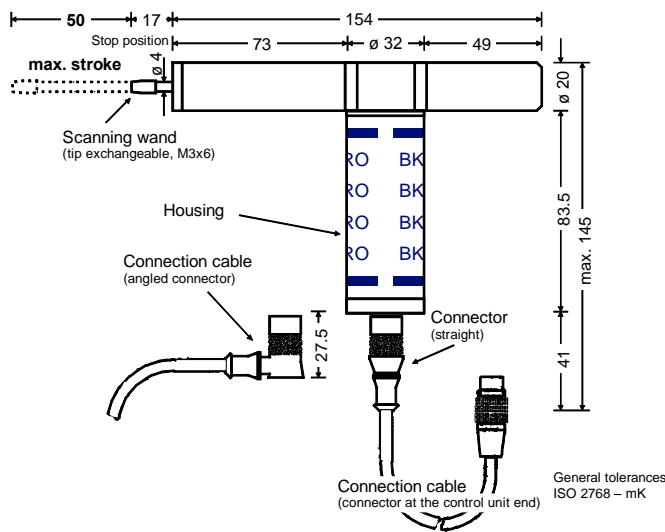
## Technical Data

Housing	Anodized aluminum
Protection type	IP 64
Scanning tip	Exchangeable, thread M3x6
Connection	Small circular connector M12x1, 6 pin
Ambient temperature	0°C to +80°C
Storage temperature	-25°C to +80
Scanning cycles	> 5 million at minimum scanning intensity

### Scanner TK50-LIN.B

**"50 mm maximum stroke"**

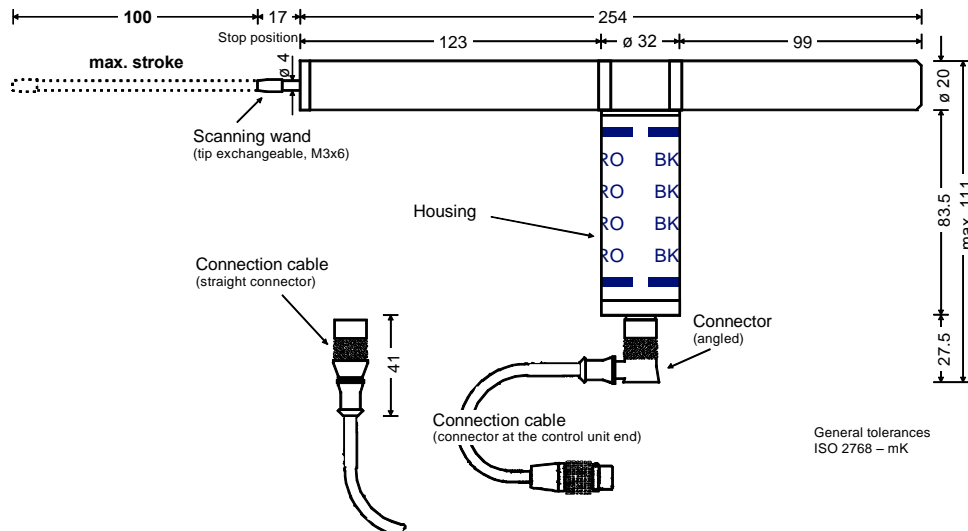
Requirement for correct monitoring: **"Scanner" switch at control unit set to "50" !**



### Scanner TK100-LIN.B

**"100 mm maximum stroke"**

Requirement for correct monitoring: **"Scanner" switch at control unit set to "100" !**

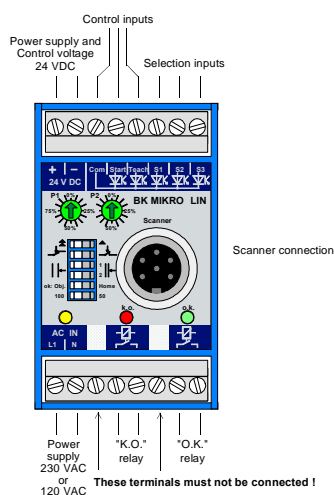


## Control Unit

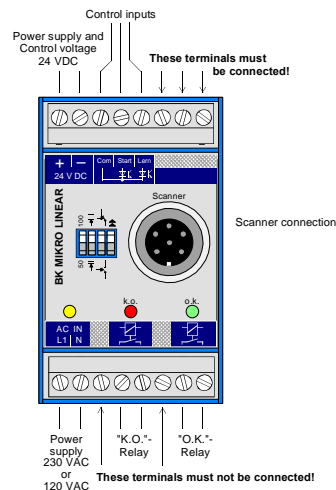
### Technical Data

Housing / protection type	Insulating material housing, protection class II, built-in unit, IP 20
Dimensions (WxHxD)	40 x 75 x 107.5 mm
Case mountings	Sectional rail, 35 mm, to DIN EN 50022
Power supply voltage	230 VAC, 120 VAC, 24 VDC (depending on model)
Power consumption	6 VA max.
Control voltage	24 VDC (internal/external)
Inputs	Galvanically isolated, Input current 5 mA approx., Pulse duration 6 ms min.
Switched outputs	2 x 250 VAC / 30 VDC, 2 A max.
Making/breaking capacity	500 VA / 60 W (max.) – 10 mA min. at 10 V
Operational life of relay	5 x 10 <sup>7</sup> switching cycles
Connections	Plug-in screw terminals for connecting – power supply, control inputs, selection inputs (only for "Multi"), relay outputs Scanner socket to DIN 45322, 6 pin
Climatological conditions	Classification 3K3 under EN 50178
Ambient temperature	0°C to +50°C
Storage temperature	-25°C to +80°C

### Control Unit: BK MIKRO LIN.B Multi



### BK MIKRO LIN.B Single



### Characteristics

Features (due to the different control units)	"Multi"	"Single"
Number of toggle switches	6	4
Ranges of tolerance for "O.K." (referred to the learned position)	4	2
"O.K." message at "Object"	X	–
Rotary switches P1, P2	X	–
Selection inputs S1, S2, S3	X	–
<b>Teach-Mode:</b> Tool monitoring / Object monitoring	P1=0, P2=0	Standard
Number of learned positions, that can be stored	8	1
<b>Monitoring of a preset range:</b> <b>Switch mode</b>	P1 ≥ 0, P2 > 0	–
Object monitoring: "O.K.", if an object is detected.	S1=0	–
Free space monitoring: "O.K.", if no object is detected.	S1=1	–

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