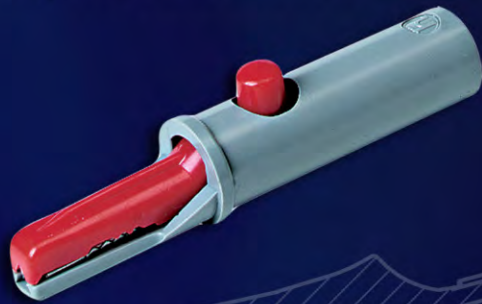


# Altech Corp.®

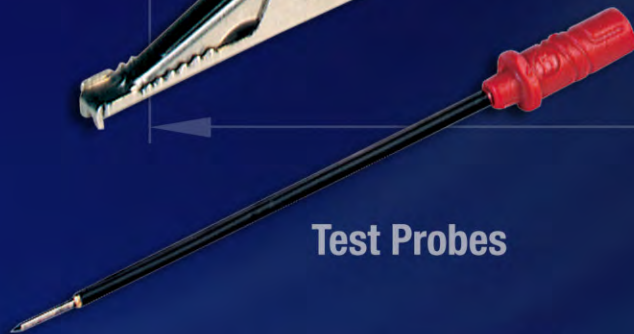
Serving the Automation & Control Industry since 1984



Alligator Clips



Plunger Style Test Clips



Test Probes



Test Jacks



Test Plugs



Sets

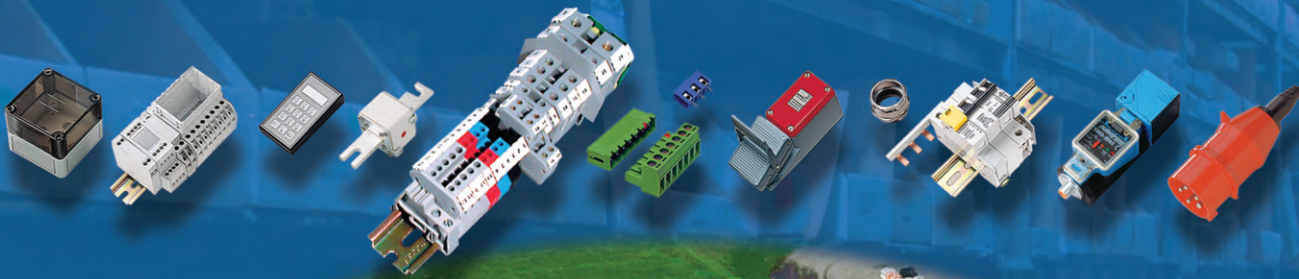


## Test & Measurement

# Test and Measurement

Since 1984, Altech Corporation has grown to become a leading supplier of automation and industrial control components. Headquartered in Flemington, NJ, Altech a supplier of electronic components has an experienced staff of engineering, manufacturing and sales personnel to provide the highest quality products with superior service. This is the Altech Commitment!

Our well trained technical experts welcome the opportunity to answer your technical questions and provide solutions to your automation and control needs. Give us a call or visit [www.altechcorp.com](http://www.altechcorp.com).



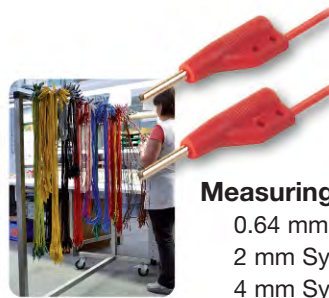
## Quality Commitment

Altech's control components meet diverse national and international standards such as UL, NEC, CSA, IEC, VDE and more. Altech provides superior customer service and delivery through Total Quality Management and Continuous Process Improvement. Altech is ISO 9001 approved. We perform these services with honesty and integrity and are committed to achieve these goals.





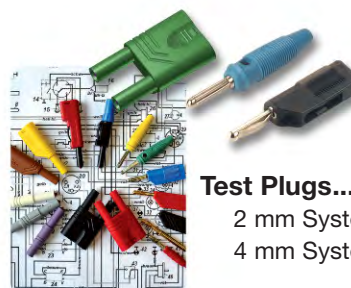
**Plunger Style Test Clips.....4**  
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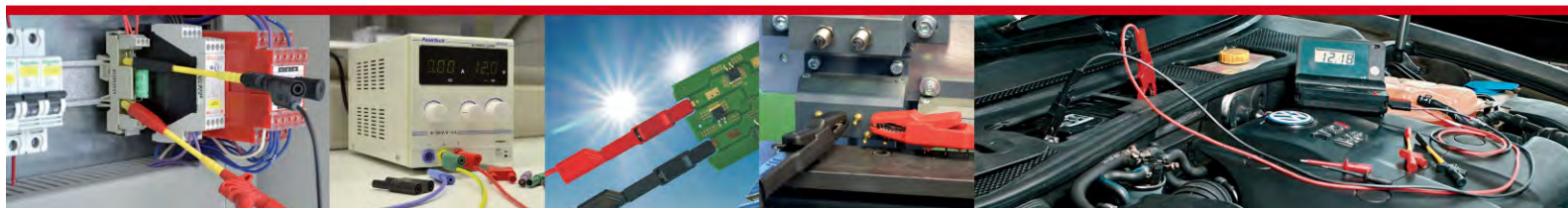


**Alligator Clips .....20**  
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**Sets**  
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**Glossary .....80-81**  
**Index by Type No. ....82-83**  
**Index by Part No. ....84-85**  
**Terms & Conditions.....86**

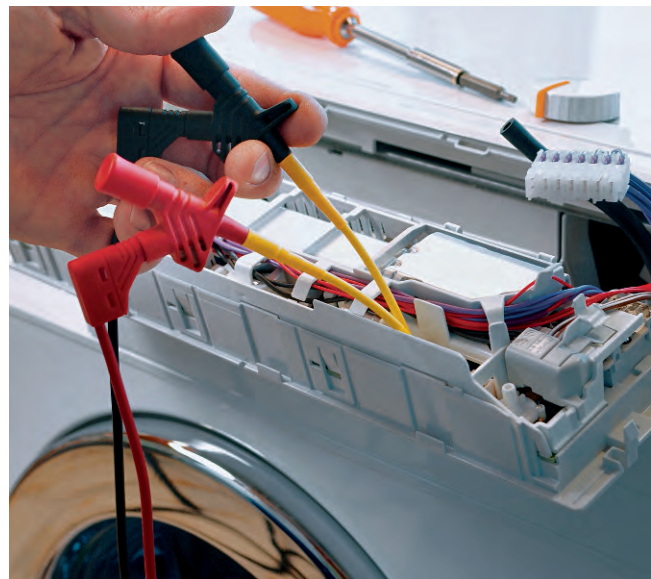
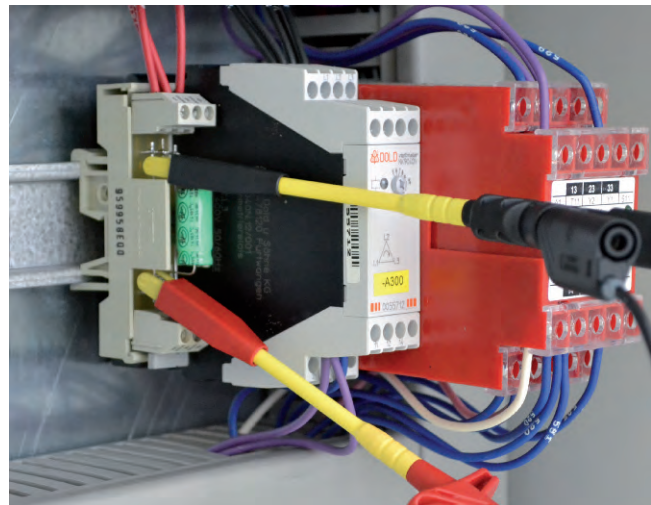


## Plunger Style Test Clips



Altech Plunger Style Test clips are easy to work with Test & Measurement Tools. They can handle high voltages, allow accessing difficult to reach areas and keep your hands free for other tasks. The grabber can access every measurement point even on the smallest Device or PCB Board circuit. The KLEPS 2700 is patented and its stainless steel piercing tip allows access to the wire without stripping.

- Measuring “difficult to access” testing points
- Various designs for different applications
- Handle with multiple connection points
- Patented KLEPS 2700 with special design steel tip for accessing connected wire



# Plunger Style Test Clips

## 0.64 mm System



### Type

#### MICRO-KLEPS

Mini plunger style test probe with rotating pincers, insulated shaft bendable up to 35°, suitable for very thin wires and densely packed contact points, fits MKL and MAL leads.

#### KLEPS 3 ST

Mini plunger style test probe with rotating pincers, suitable for very thin wires and densely packed contact points, fits MKL and MAL leads.

Clamping range 2 mm (0.079")  
Clamp type Rotating Pincers

Clamping range 3.5 mm (0.138")  
Clamp type Rotating Pincers

PART NO. / Housing color

973972100 ●  
973972101 ●

973592100 ●  
973592101 ●

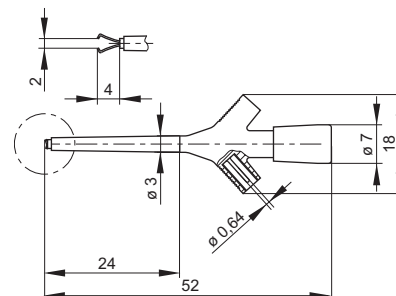
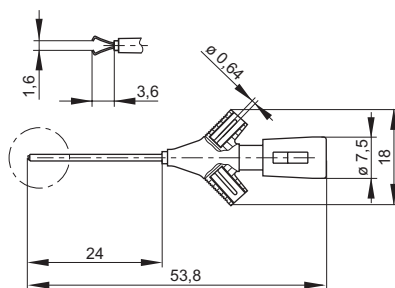
### Technical Data

Connection Type	2x pin Ø 0.64 mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	2 A
Contact Resistance	10 mOhm
<b>Material Specifications</b>	
Pincers/ hook	tin plated spring steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PBT
<b>Environmental Conditions</b>	
Temperature Range	-25 °C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

Connection Type	pin Ø 0.64 mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	2 A
Contact Resistance	10 mOhm
<b>Material Specifications</b>	
Pincers/ hook	tin plated spring steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PBT
<b>Environmental Conditions</b>	
Temperature Range	-25 °C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Plunger Style Test Clips

## 0.64 mm System



Type



**KLEPS FP 2B**

For connecting to QFPIC's 0.5-0.8mm lead pitch. Slim design allows to test QFPIC's with several clips simultaneously, delivered in pairs of 2.

Clamping range  
Clamp type

0.5 - 0.8 mm (0,020" - 0.031")  
Micro grip jaws

**PART NO.** / Housing color

**974101188** ● ●



**KLEPS 064 PCH**

Compact design allows usage with very small components up to 1mm, fits MKL and MAL leads.

Clamping range  
Clamp type

1 mm (0.039")  
contact hook

**974201100** ●  
**974201101** ●  
**974201102** ●  
**974201103** ●  
**974201104** ●  
**974201106** ●  
**974201107** ○

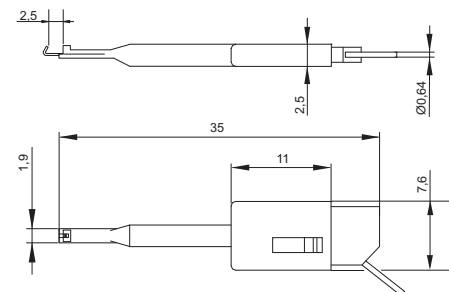
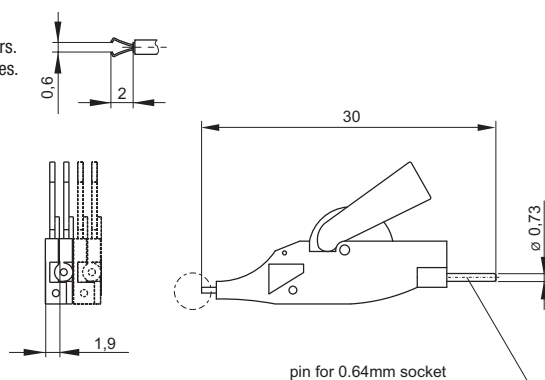
### Technical Data

Connection Type	pin Ø0.73mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	-
Contact Resistance	-
<b>Material Specifications</b>	
Pincers/ hook	nickel plated spring steel
Connection pin/ socket	-
Contact Spring	-
Housing	ABS
<b>Environmental Conditions</b>	
Temperature Range	0°C to +60 °C (32°F to 140°F)
<b>Flamability Rating</b>	
Housing	

Connection Type	pin Ø0.64mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	-
Contact Resistance	-
<b>Material Specifications</b>	
Pincers/ hook	gold plated copper-beryllium phosphor bronze
Connection pin/ socket	-
Contact Spring	-
Housing	-
<b>Environmental Conditions</b>	
Temperature Range	0°C to +70 °C (32°F to 158°F)

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Plunger Style Test Clips

## 0.64 mm/4mm System



### Type

#### KLEPS 2

Mini plunger style test probe with solder connection, gold plated phosphorus bronze contact hook for wires up to 2mm.

Clamping range 2 mm (0.079")  
Clamp type contact hook

**PART NO. / Housing color** **931467100** ●  
**931467101** ●



#### KLEPS 2 BU

Mini plunger style test probe with 2mm socket terminals, gold plated phosphorus bronze contact hook for wires up to 2mm, gold plated contact spring.

Clamping range 2 mm (0.079")  
Clamp type contact hook

**PART NO. / Housing color** **973501100** ●  
**973501101** ●

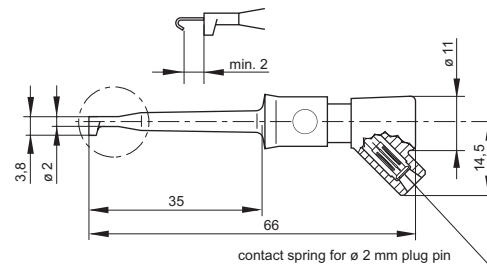
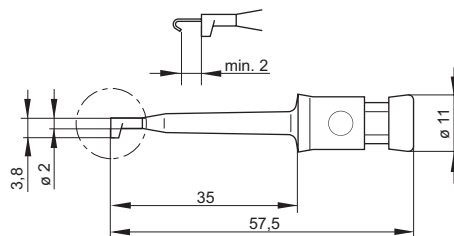
### Technical Data

Connection Type	Solder Terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6 A
Contact Resistance	15 mOhm
<b>Material Specifications</b>	
Pincers/ hook	gold plated phosphorous bronze
Connection pin/ socket	-
Contact Spring	-
Housing	Polyamide
<b>Environmental Conditions</b>	
Temperature Range	-25 °C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

Connection Type	Spring-loaded socket Ø 2 mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6 A
Contact Resistance	15 mOhm
<b>Material Specifications</b>	
Pincers/ hook	gold plated phosphorous bronze
Connection pin/ socket	-
Contact Spring	gold plated copper-beryllium
Housing	Polyamide
<b>Environmental Conditions</b>	
Temperature Range	-25 °C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Plunger Style Test Clips 2 mm/4mm System



Type



## KLEPS 1600

Safety plunger style test probe with rotating pincers and flexible shaft. Special design of pincers allows clamping wires up to 4mm, 2mm gold plated brass socket terminal.



## KLEPS 30

Plunger style test probe with rotating pincers and flexible shaft. Special design of pincers allows clamping wires up to 4mm, 4mm brass socket and screw terminals.



## KLEPS 60

Plunger style test probe with rotating pincers and flexible shaft. Special design of pincers allows clamping wires up to 4mm, 4mm brass socket and screw terminals.

Clamping range  
Clamp type

3 mm (0.118")  
rotating pincers

4 mm (0.157")  
rotating pincers

4 mm (0.157")  
rotating pincers

PART NO. / Housing color

975106100 ●  
975106101 ●

930113100 ●  
930113101 ●

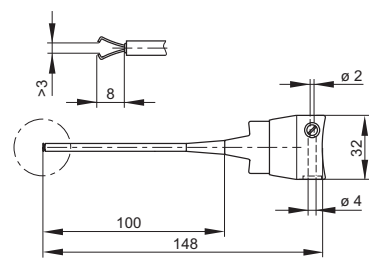
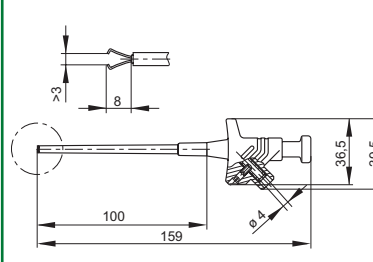
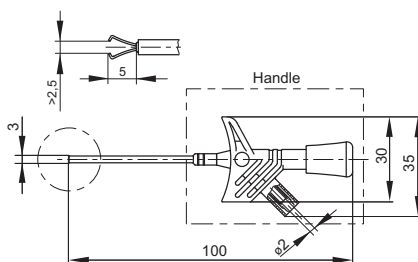
973053100 ●  
973053101 ●

### Technical Data

Connection Type	Socket Ø2 mm	Socket Ø 4 mm, screw terminal	Socket Ø 4 mm, screw terminal
Voltage Rating	AC/DC 1000V	30 VAC / 60 VDC	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT III	CAT I	CAT I
Current Rating*	3 A	4 A	4 A
Contact Resistance	50 mOhm	50 mOhm	50 mOhm
<b>Material Specifications</b>	CE		
Pincers/ hook	nickel plated spring steel	nickel plated spring steel	nickel plated spring steel
Connection pin/ socket	gold plated brass	brass	brass
Contact Spring	-	-	-
Housing	Polyamide	PF	PP, PS
<b>Environmental Conditions</b>			
Temperature Range	-25 °C to +70 °C (13°F to 158°F)	-25 °C to +80 °C (13°F to 176°F)	-25 °C to +60 °C (13°F to 140°F)
<b>Flammability Rating</b>			
Housing	UL 94 V-2	UL 94 V-0	UL 94 HB

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

For the latest on Altech Test & Measurement specifications please visit [www.altechcorp.com/test-equipment](http://www.altechcorp.com/test-equipment)



# Plunger Style Test Clips 4mm System



## Type

### KLEPS 250

Touch proof plunger style test probe with rotating pincers and flexible shaft, allows to clamp wires up to 4mm, 4mm brass socket, fits MLN and MLB leads.

Clamping range 4 mm (0.157")  
 Clamp type rotating pincers  
 PART NO. / Housing color **973528100** ●  
**973528101** ●



### KLEPS 2600

Safety plunger style test probe with rotating pincers and flexible shaft, allows to clamp wires up to 4mm, 4mm brass socket.

Clamping range 4 mm (0.157")  
 Clamp type rotating pincers  
 PART NO. / Housing color **972306100** ●  
**972306101** ●

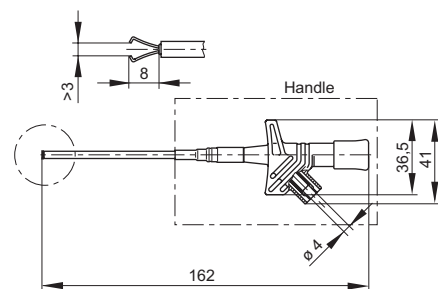
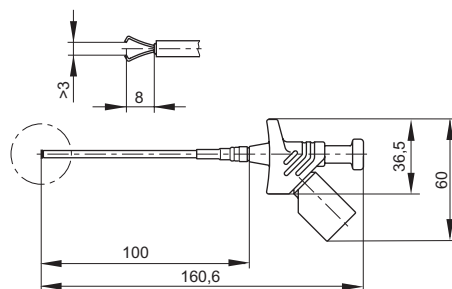
## Technical Data

Connection Type	socket Ø 4 mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	4 A
Contact Resistance	100 mOhm
<b>Material Specifications</b>	
Pincers/ hook	nickel plated spring steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PF
<b>Environmental Conditions</b>	
Temperature Range	-25 °C to +80 °C (13°F to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-0

Connection Type	socket Ø 4 mm
Voltage Rating	AC/DC 1000 V
Measurement Category (IEC61010)	CAT III
Current Rating*	4 A
Contact Resistance	50 mOhm
<b>Material Specifications</b>	
Pincers/ hook	nickel plated spring steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PBT
<b>Environmental Conditions</b>	
Temperature Range	-25 °C to +80 °C (13°F to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

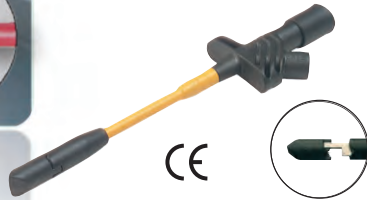
## Drawing

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Plunger Style Test Clips 4 mm Safety System



## KLEPS 2700

Safety plunger style test probe with spring loaded stainless steel tip, for wires up to 3.5mm, no stripping necessary, 4mm brass socket.



## KLEPS 2800

Safety plunger style test probe with wide opening alligator clip, for wires and areas with large cross sections, fits safety measurement leads.



## KLEPS 2900

Safety plunger style test probe with stationary contact hook, fits safety measurement leads.

### Type

Clamping range 3.5 mm (0.138")  
Clamp type spring-loaded stainless steel tip

PART NO. / Housing color **972307100** ●  
**972307101** ●

Clamping range 10 mm (0.394")  
alligator clips

PART NO. / Housing color **972308100** ●  
**972308101** ●

Clamping range 5.5 mm (0.217")  
contact hook

PART NO. / Housing color **972309100** ●  
**972309101** ●

### Technical Data

Connection Type socket Ø 4 mm  
Voltage Rating AC/DC 1000 V  
Measurement Category (IEC61010) CAT III  
Current Rating\* 10 A  
Contact Resistance 100 mOhm

### Material Specifications

Pincers/ hook stainless steel  
Connection pin/ socket nickel plated brass  
Contact Spring -  
Housing PBT

### Environmental Conditions

Temperature Range -25 °C to +80 °C (13°F to 176°F)

### Flamability Rating

Housing UL 94 HB

Connection Type socket Ø 4 mm  
Voltage Rating AC/DC 1000 V  
Measurement Category (IEC61010) CAT III  
Current Rating\* 20 A  
Contact Resistance 100 mOhm

Pincers/ hook nickel plated spring steel  
Connection pin/ socket nickel plated brass

Housing PBT

Temperature Range -25 °C to +80 °C (13°F to 176°F)

Housing UL 94 HB

Connection Type socket Ø 4 mm  
Voltage Rating AC/DC 1000 V  
Measurement Category (IEC61010) CAT III  
Current Rating\* 20 A  
Contact Resistance 50 mOhm

Pincers/ hook nickel plated brass  
Connection pin/ socket nickel plated brass

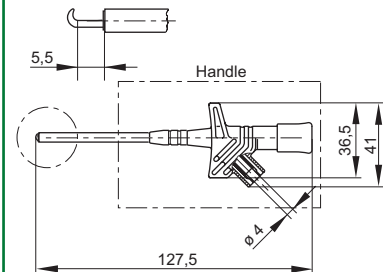
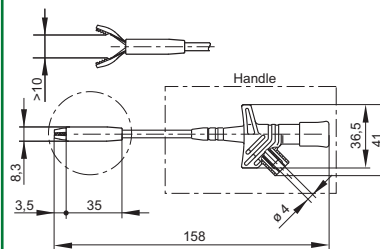
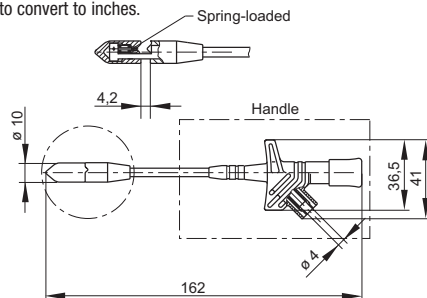
Housing PBT

Temperature Range -25 °C to +80 °C (13°F to 176°F)

Housing UL 94 HB

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

For the latest on Altech Test & Measurement specifications please visit [www.altechcorp.com/test-equipment](http://www.altechcorp.com/test-equipment)

## Altech Digital Panel Meters



### Digital Multi Function Meters

MFM Series (Power, Energy, Voltage, Current, Frequency, Power Factor)  
VAF Series (Voltage, Current, Frequency)  
EM Series (Power, Energy)

### Digital Ampere Meters

MA12 Series (LED Display)  
MA Series (LCD Display)

### Digital Voltage Meters

MV15 Series (LED Series)  
MV Series (LCD Display)

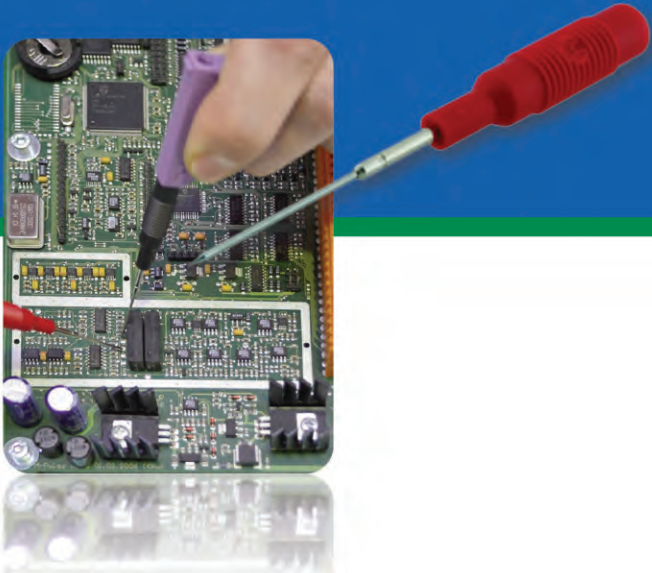
### Digital Frequency Meter

MF16 Series

### Digital Power Factor Meter

MP14 Series

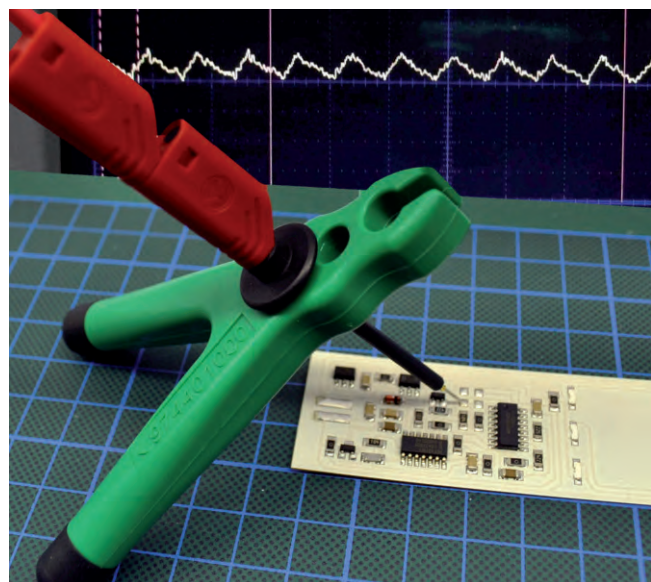
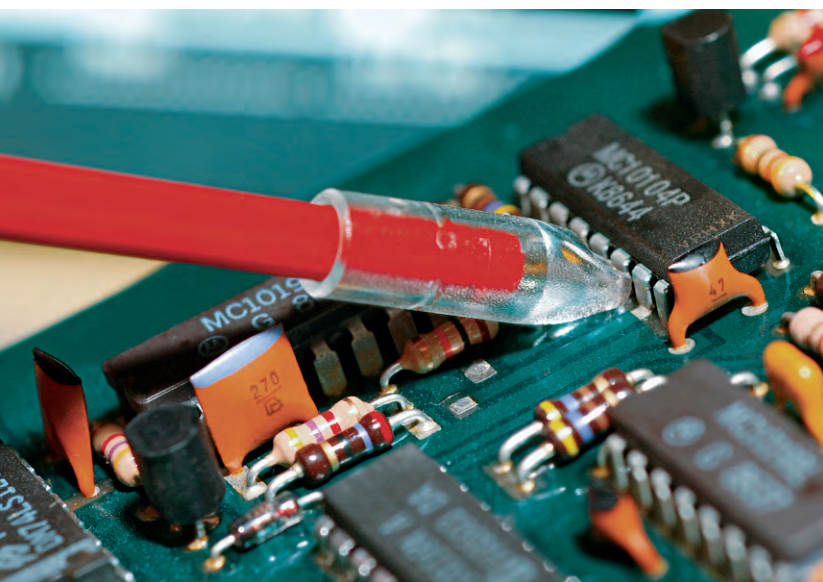
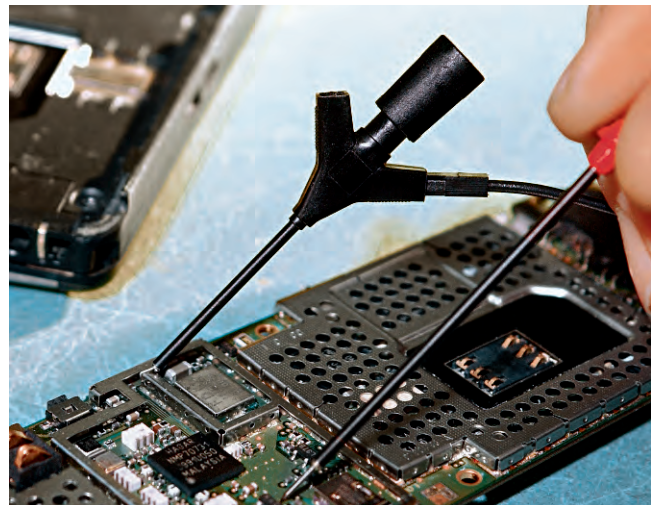
**Disconnect and Test Terminal Block**  
For Meter Circuits



## Test Probes

Altech offers the proper test probe for every specific application. Due to small dimensions in electronic devices, test probes need to be very precise. The Test probes on the following pages meet these high standards.

- Slim and compact body for easy access
- Stainless steel tips
- Spring-loaded tips guarantee contact without damaging test object
- Suitable for testing through oxidation and insulation layers



# Test Probes 2 mm System



## Type

### MICRO-PRUEF MPS 2 0,64 FT

Miniature test probe with spring loaded stainless steel probe tip for sampling extremely small measuring points and SMD components. Because the probe tip is sprung, it cannot slip off and provides constant pressure. Connects with MKL 0.64/25-0.25 and MAL N 4-0.64/100-0.25.

Tip diameter 0.75 mm (0.029 in.)

**PART NO. / Housing color**  
**973995100** ●  
**973995101** ●



### PRUEF 1

Miniature test probe for sampling extremely small measuring points. Shatter-proof grip, may be unscrewed. The stainless steel tip easily penetrates insulation and oxide layers. Solder connection up to 0.5 mm<sup>2</sup>.

1 mm (0.039 in.)

**931376100** ●  
**931376101** ●

#### Technical Data

Connection Type	spring-loaded tip
Voltage Rating	fixed pin Ø 0.64 mm
Measurement Category (IEC61010)	30 VAC / 60 VDC
Current Rating*	CAT I
Contact Resistance	1 A
<b>Material Specifications</b>	
Tip	stainless steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PBT
<b>Environmental Conditions</b>	
Temperature range	-25 °C to +80 °C (13°F to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

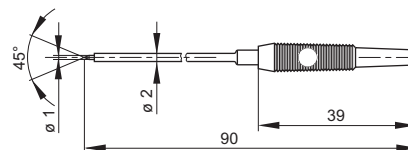
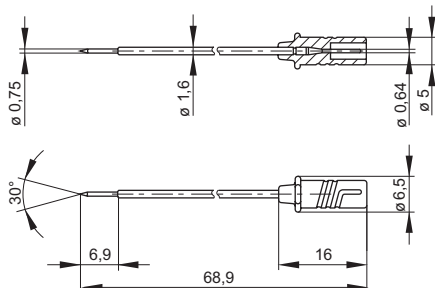
stationary tip
solder connection up to 0.5 mm <sup>2</sup>
30 VAC / 60 VDC
CAT I
1 A

stainless steel
nickel plated brass
-
PVC-P

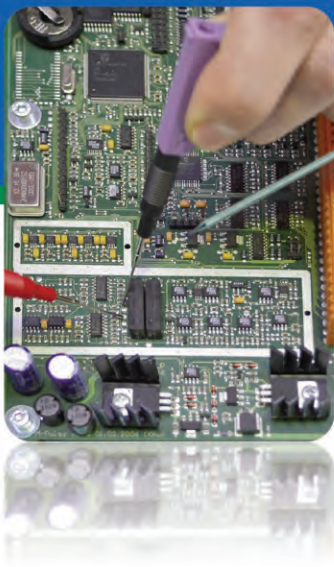
-25 °C to +60 °C (13°F to 140°F)

#### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Probes 2 mm System



## Type

### MPS 1

Miniature test probe for sampling very small measuring points. The stainless steel tip easily penetrates insulation and oxide layers. Socket connection through a 2 mm diameter gold-plated socket with contact spring.

### PRUEF 1610 FT Au

Safety test probe with shatter-proof insulated sleeve, spring-loaded and slender stainless steel tip. 2 mm diameter gold-plated brass socket connection, stackable with 2 mm safety measuring lead MVL S WS. Insulation and oxide layers can be penetrated by this test probe.

### PRUEF 1600 Au

Safety test probe with shatter-proof insulated sleeve and slender stainless steel tip. 2 mm diameter gold-plated brass socket connection, stackable with 2 mm safety measuring lead MVL S WS. Insulation and oxide layers can be penetrated by this test probe.

Tip diameter

1 mm (0.039 in.)

0.75 mm (0.029 in.)

1.4 mm (0.055 in.)

PART NO. / Housing color

**973531100** ●  
**973531101** ●

**975018700** ●  
**975018701** ●

**975017700** ●  
**975017701** ●

## Technical Data

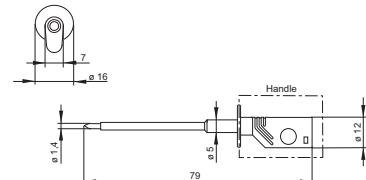
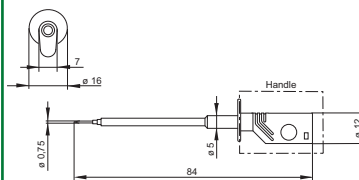
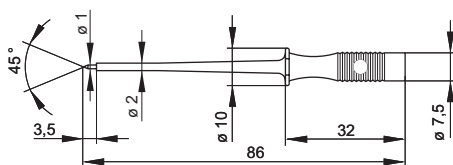
Connection Type	stationary tip
Voltage Rating	spring-loaded socket Ø 2 mm
Measurement Category (IEC61010)	30 VAC / 60 VDC
Current Rating*	CAT I
Contact Resistance	1 A
<b>Material Specifications</b>	100 mOhm
Tip	stainless steel
Connection pin/ socket	gold plated copper-beryllium
Contact Spring	-
Housing	PE
<b>Environmental Conditions</b>	
Temperature range	-25 °C to +60 °C (13°F to 140°F)
<b>Flamability Rating</b>	
Housing	-

Connection Type	spring-loaded tip
Voltage Rating	fixed socket Ø 2mm
Measurement Category (IEC61010)	AC/DC 1000V
Current Rating*	CAT II
Contact Resistance	10 A
<b>Material Specifications</b>	20 mOhm
Tip	stainless steel
Connection pin/ socket	gold plated copper-beryllium
Contact Spring	-
Housing	PA
<b>Environmental Conditions</b>	
Temperature range	-25°C to +70°C (13°F to 158°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

Connection Type	stationary tip
Voltage Rating	fixed socket Ø 2 mm
Measurement Category (IEC61010)	AC/DC 1000V
Current Rating*	CAT III
Contact Resistance	10 A
<b>Material Specifications</b>	20 mOhm
Tip	stainless steel
Connection pin/ socket	gold plated brass
Contact Spring	-
Housing	PA
<b>Environmental Conditions</b>	
Temperature range	-25°C to +70°C (13°F to 158°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Probes 4 mm System



## Type

### MZS 1 - PRUEF

Needle-shaped, long stainless steel test probe with shatter-proof insulated sleeve and unsprung 4 mm connecting socket. During state of connection or operation of test leads, it is possible to measure with the test probe from the back side of the closed connector.

Tip diameter

1 mm (0.039 in.)

PART NO. / Housing color

**973601100** ●  
**973601101** ●



### PRUEF 2

Test probe with shatter-proof insulated sleeve. Insulation and oxide layers can be penetrated by the slender stainless steel tip. 4 mm diameter brass socket connection. Accessory (optional): tip protector / IC tap SS 260

2 mm (0.079 in.)

**973368100** ●  
**973368101** ●

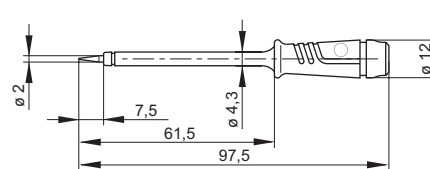
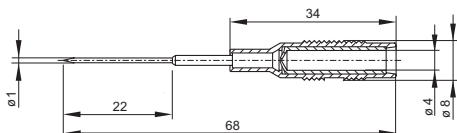
## Technical Data

Connection Type	stationary tip
Voltage Rating	fixed socket Ø 4 mm
Measurement Category (IEC61010)	30 VAC / 60 VDC
Current Rating*	CAT I
Contact Resistance	1 A
<b>Material Specifications</b>	10 mOhm
Tip	stainless steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PP
<b>Environmental Conditions</b>	
Temperature range	-20°C to + 60°C (-4°F to 140°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

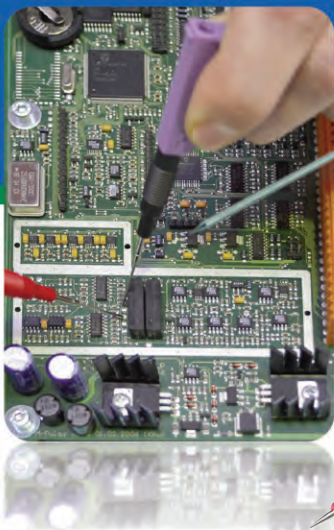
stationary tip
fixed socket Ø 4 mm
30 VAC / 60 VDC
CAT I
1 A
50 mOhm
stainless steel
nickel plated brass
-
PP
-25 °C to +80 °C (13°F to 176°F)
UL 94 HB

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Probes 4 mm Safety System



CE



CE



## Type

### PRUEF 2600 C2

Test probe shatter - proof insulating sleeve and slender stainless steel tip. Tip for penetration of insulation and oxide layers. 4mm diameter brass socket connection. Connection with safety measuring leads. Accessory (optional): protector and IC - tap SS 260

### SS 260

Tip protection and IC tap. Clipping onto the PRUEF 2, PRUEF 2 S and PRUEF 2600 C2 test probe covers the needle tip and provides protection against injury. Contact is made with ICs without short circuiting or slipping off.

### PRUEF 2610 FT

Test probe with insulated sleeve and slender, sprung stainless steel tip. This allows a constant pressure to be applied without the tip slipping off the component, even in the smallest measuring points. 4 mm diameter brass socket connection.

Tip diameter

2 mm (0.079 in.)

-

0.75 mm (0.029 in.)

PART NO. / Housing color

972327100 ●  
972327101 ●

973865001 ○

972318100 ●  
972318101 ●

## Technical Data

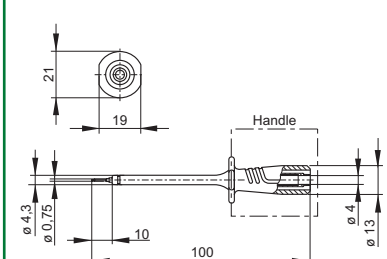
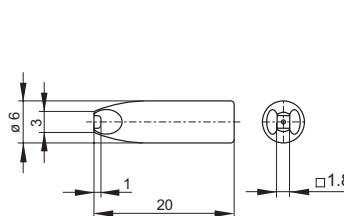
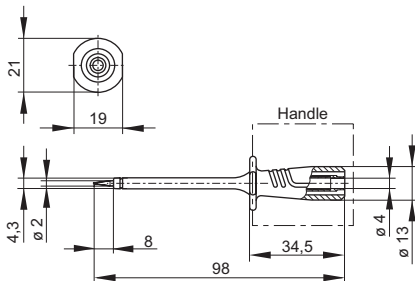
Connection Type	stationary tip
Voltage Rating	fixed socket Ø 4 mm
Measurement Category (IEC61010)	AC/DC 1000V
Current Rating*	CAT II
Contact Resistance	1 A
<b>Material Specifications</b>	50 mOhm
Tip	stainless steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PP
<b>Environmental Conditions</b>	
Temperature range	-20°C to +60°C (-4°F to 140°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

-  
-  
-  
-  
-  
-  
-  
-  
-  
-  
-  
-

Connection Type	spring-loaded tip
Voltage Rating	fixed socket Ø 4 mm
Measurement Category (IEC61010)	AC/DC 1000 V
Current Rating*	CAT II
Contact Resistance	1 A
<b>Material Specifications</b>	50 mOhm
Tip	stainless steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PP
<b>Environmental Conditions</b>	
Temperature range	-25 °C to +80 °C (13°F to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Probes 4 mm Safety System



CE

**Type**

**PRUEF 2700**

Safety test probe with dual function. Tip for penetrating insulation and oxide layers and 4 mm diameter pin for insertion in sockets. 4 mm diameter brass socket connection. Connects with safety measuring leads.

Tip diameter

4 mm (0.157 in.)

**PART NO. / Housing color**

**972319100** ●  
**972319101** ●



CE

**PRUEF 2600**

Test probe with elastic, shatter-proof insulated sleeve and slender stainless steel tip. Tip for penetration of insulation and oxide layers. 4 mm diameter brass socket connection. Connects with safety measuring leads. Accessory tip protector and IC tap SS 260.

2 mm (0.78 in.)

**972317100** ●  
**972317101** ●

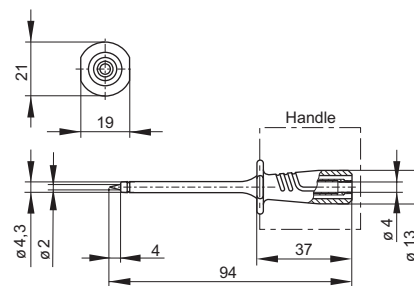
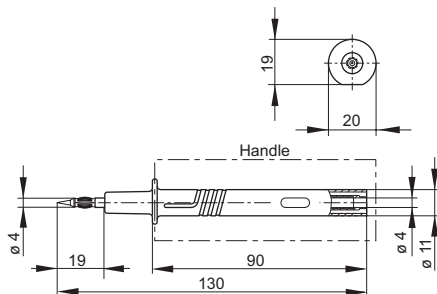
**Technical Data**

Connection Type	stationary tip
Voltage Rating	fixed socket Ø 4 mm
Measurement Category (IEC61010)	AC/DC 1000 V
Current Rating*	CAT II
Contact Resistance	32 A
<b>Material Specifications</b>	2 mOhm
Tip	nickel plated brass
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PP
<b>Environmental Conditions</b>	
Temperature range	-25 °C to +80 °C (13°F to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

Connection Type	stationary tip
Voltage Rating	fixed socket Ø 4 mm
Measurement Category (IEC61010)	AC/DC 1000 V
Current Rating*	CAT III
Contact Resistance	1 A
Material Specifications	50 mOhm
Tip	stainless steel
Connection pin/ socket	nickel plated brass
Contact Spring	-
Housing	PP
<b>Environmental Conditions</b>	
Temperature range	-25 °C to +80 °C (13°F to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

**Drawing**

Measurements are shown in millimeters. Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Oscilloscope Test Probes

## High Frequency Measurement



Altech High Frequency Test Probes are for direct connection to oscilloscopes. The line consists of a standard 5mm series with adjustable probe ratio and 2.5mm series with fixed 10:1 ratio.

- 10:1 probe ratio
- Exchangable spring tip
- Low Input Capacitance

### Type

### TKO 5 - PMS 221A

Passive High Impedance Miniature Test Probe with 150 MHz Bandwidth and Probe Ratio 10:1 (Switchable, 20 MHz @ Probe Ratio 1:1). The probe is adjustable for low frequencies.

#### Features:

- Modular Probe
- Coaxial Design
- Coaxial Reed Switch
- New IC contact system for 0.003" to 0.004" grids
- Interchangeable Spring Contact Tip for reliable Contacting

### PART NO.

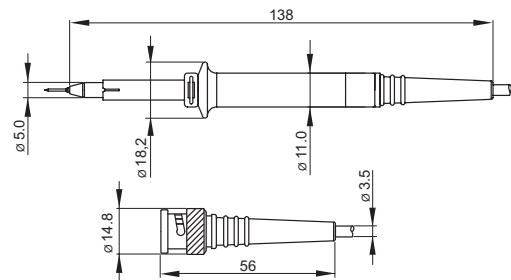
974312000

#### Technical Data

Probe Ratio	1:1	10:1
Input Resistance	-	10 MΩ
Input Capacitance	78 pF inkl. Oszi.	13 pF
Oscilloscope Input	1 MΩ AC/DC	1 MΩ AC/DC
Probe bandwidth	20 MHz	150 MHz
Risetime	18 nsec	2,4 nsec
Compensation Range		15 ... 40 pF
Measurement category	55 V eff. CAT II	300 V rms CAT II
Pollution degree	2	2
Safety standard	IEC 61010-031	
Cable length	1.2 m (3.94 ft.)	

#### Drawing

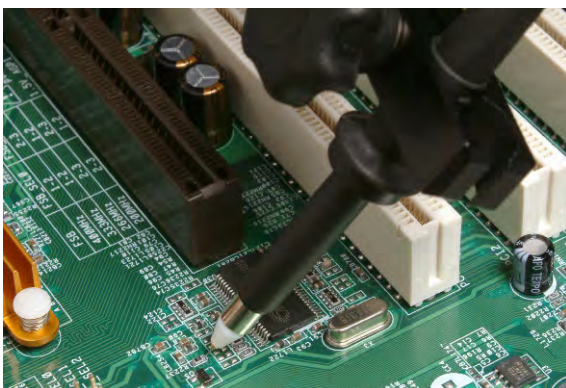
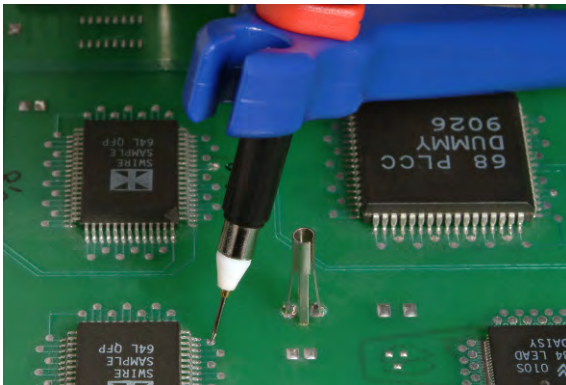
Measurements are shown in millimeters. Multiply by 0.03937 to convert to inches.



#### Contents



- Test Probe
- Manual
- Ground Lead 0.22m (0.72")
- Spring Tip 0.8mm (0.003")
- Solid Tip CuBe 0.8mm (0.003")
- Ground Blade 5.0mm (0.016")
- Isolation Cover 5.0mm (0.016")
- Protection Cover 5.0mm (0.016")
- IC covers 0.8 to 1.27mm (0.003-0.004")
- Spring Hook 5.0mm (0.016")
- Adjustment Tool T





### Type

### TKO 2,5 - PML 711A

Passive High Impedance Miniature Test Probe with 500 MHz Bandwidth and Probe Ratio 10:1. Designed for Oscilloscopes having 1M $\Omega$  Input resistance.

#### Features:

- Compact Size (0.008" probe tip) ideal for measuring SMD Components
- 0.002" gold plated spring loaded changeable Probe tip
- Innovative IC contact system for 0.002" to 0.004" grids
- With ReadOut (RO)

### PART NO.

974301000



### TKO 5 - PMT 221A

Passive High Impedance Miniature Test Probe with 250 MHz Bandwidth and Probe Ratio 10:1 (Switchable, 30 MHz @ Probe Ratio 1:1). The probe is adjustable for low frequencies.

#### Features:

- Modular Probe
- Coaxial Design
- Coaxial Reed Switch
- Innovative IC contact system for 0.003" to 0.004" grids
- Interchangeable Spring Contact Tip for reliable Contacting
- HF- Adjustment

### PART NO.

974311000

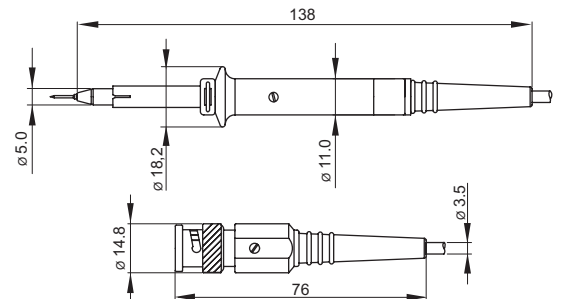
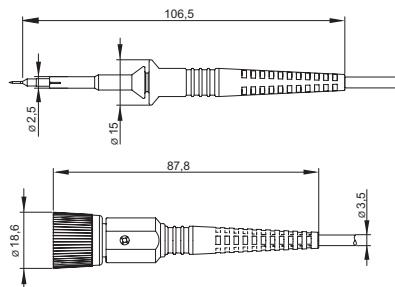
### Technical Data

Probe Ratio	10:1
Input Impedence	10 M $\Omega$
Input Capacitence	9,5 pF
Oscilloscope Input	1 M $\Omega$ AC/DC
Probe bandwidth (3dB)	500 MHz
Risetime (10% - 90%)	700 psec
Compensation Range	10 ... 25 pF
Measurement category	300 V CAT II
Pollution degree	2
Safety standard	IEC 61010-031
Cable length	1.3 m (4.27 ft.)

1:1	10:1
-	10 M $\Omega$
80 pF inkl. Oszi.	13 pF
1 M $\Omega$ AC/DC	1 M $\Omega$ AC/DC
30 MHz	250 MHz
12 nsec	1,4 nsec
-	10...35 pF (**)
55 V eff. CAT II	300 V rms CAT II
2	2
IEC 61010-031	
1.2 m (3.94 ft.)	

### Drawing

Measurements are shown in millimeters. Multiply by 0.03937 to convert to inches.



### Contents



- |  |   |  |   |
|--|---|--|---|
| <ul style="list-style-type: none"> <li>• Test Probe</li> <li>• Manual</li> <li>• Spring Tip gold plated 0.5mm (0.002")</li> <li>• Solid Tip CuBe 0.5mm (0.002")</li> <li>• Coding Rings (3x4 colors)</li> <li>• Ground Lead 0.11m (0.36")</li> <li>• Ground Blade 2.5mm (0.008")</li> <li>• 2 self adhesive Cu Pads</li> </ul> | <ul style="list-style-type: none"> <li>• Isolation Cover 2.5mm (0.008")</li> <li>• Protection Cover 2.5mm (0.008")</li> <li>• IC covers 0.5 to 1.27mm (0.002-0.004")</li> <li>• Spring Hook 2.5mm (0.008")</li> <li>• Ground Spring 2.5mm (0.008")</li> <li>• PCB Adapter Kit 2.5mm (0.008")</li> <li>• 2 Foot Positioner</li> <li>• Adjustment Tool T</li> </ul> | <ul style="list-style-type: none"> <li>• Test Probe</li> <li>• Manual</li> <li>• Ground Lead 0.22m (0.72")</li> <li>• Spring Tip 0.8mm (0.003")</li> <li>• Solid Tip CuBe 0.8mm (0.003")</li> <li>• Ground Blade 5.0mm (0.016")</li> <li>• Isolation Cover 5.0mm (0.016")</li> </ul> | <ul style="list-style-type: none"> <li>• Protection Cover 5.0mm (0.016")</li> <li>• IC covers 0.8 to 1.27mm (0.003-0.004")</li> <li>• Spring Hook 5.0mm (0.016")</li> <li>• BNC Adapter 5.0mm (0.016")</li> <li>• 2 Foot Positioner</li> <li>• Adjustment Tool T</li> </ul> |
|--|---|--|---|



## Alligator Clips

Altech Alligator clips have the proper jaw opening and grabbing strength for every application. From a Micro SMD clip for measuring smallest surface-mount components up to a 30mm (1.18in) “big mouth” a wide range of alligator clips is available.

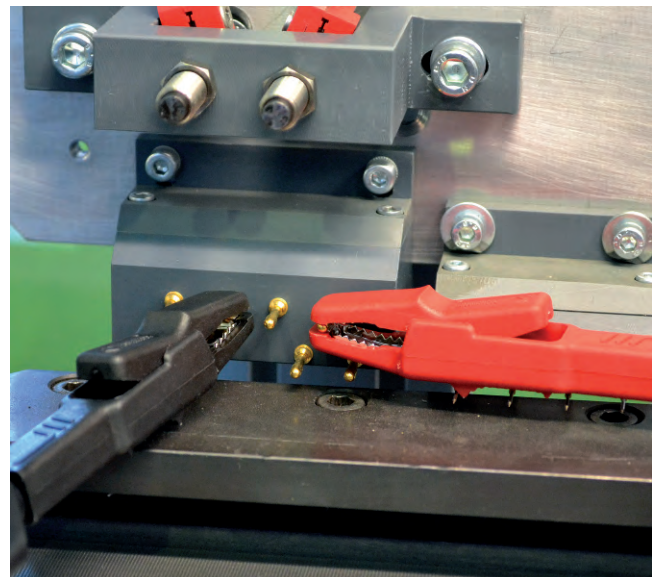
- Various clamping ranges
- Stainless steel versions for use in galvanic and acid environments
- Soldering connections for “do it yourself” connections



“Big Mouth” AK 2B 2540 1 with wide pin opening is especially suitable for cars.



Special solution for very small SMD components  
MICRO-SMD CLIP 1.



# Alligator Clips

## 0.64 and 2 mm System



### Type

#### MICRO-SMD CLIP 1

Spring loaded 2 pole test clip designed for MSD components; gold plated, hardened tip; flat nose for testing individual components; insulated spring, 0.64mm connection pin terminal.

Clamping range

0 mm to 8 mm (0.31")

PART NO. / Housing color

972416100 ●



#### AGF 1

Mini alligator clip for small components, silver plated, solder/ crimp terminal max. 0.5mm<sup>2</sup>.

1 mm (0.04")

930476001 ●

### Technical Data

Contact Type alligator clip  
 Connection Type 2x pin 0.64 mm  
 Voltage Rating 30 VAC / 60 VDC  
 Measurement Category (IEC61010) CAT I  
 Current Rating\* 1 A  
 Contact Resistance 6 mOhm

#### Material Specifications

Alligator Clip gold plated copper beryllium  
 Housing PBT

#### Environmental Conditions

Temperature Range -30 °C to +100 °C (22°F to 212°F)

#### Flamability Rating

Housing UL 94 HB

alligator clip  
 solder, crimp 0.5mm<sup>2</sup>  
 30 VAC / 60 VDC  
 CAT I  
 3 A  
 15 mOhm

silver plated brass

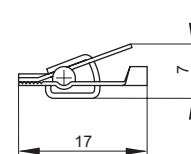
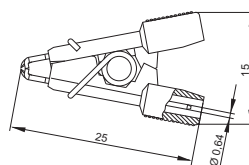
-

-25°C to +100 °C (13°F to 212°F)

-

### Drawing

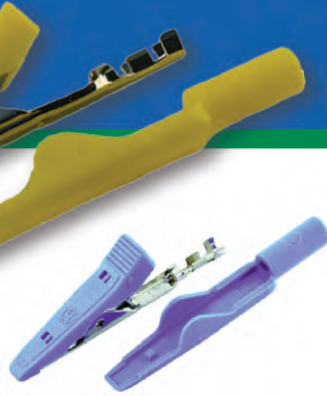
Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Alligator Clips 2 mm System



## Type

### MA 1 Crimp

Mini Alligator Clip, high-strength insulation, nickel plated brass/ bronze jaws, crimp terminal 0.25mm 2-0.5mm<sup>2</sup> for suitable crimp tool insert.

### MA 1

Mini Alligator Clip, high-strength insulation, nickel plated brass/ bronze jaws, 2mm system socket terminal.

### MA 1 S

Mini Alligator Clip, high-strength insulation, stainless steel spring, nickel plated brass/ bronze jaws, 2mm system socket terminal.

Clamping range

4 mm (0.16")

4 mm (0.16")

4 mm (0.16")

PART NO. / Housing color

930318100 ● 930318104 ●  
 930318101 ● 930318106 ●  
 930318102 ● 930318107 ○  
 930318103 ●

930317800 ● 930317804 ●  
 930317801 ● 930317806 ●  
 930317802 ● 930317807 ○  
 930317803 ●

973584100 ● 973584104 ●  
 973584101 ● 973584106 ●  
 973584102 ● 973584107 ○  
 973584103 ●

## Technical Data

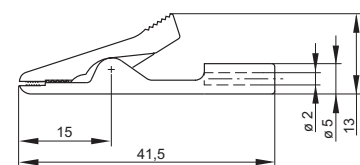
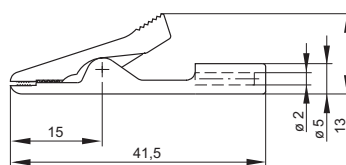
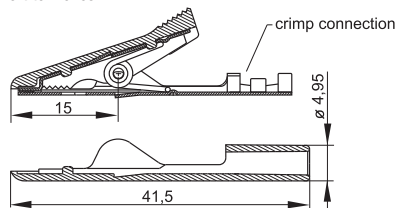
Contact Type	alligator clip
Connection Type	crimp 0.25 mm <sup>2</sup> up to 0.5 mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	8 A
Contact Resistance	5 mOhm
<b>Material Specifications</b>	
Alligator Clip	nickel plated brass / bronze
Housing	PP
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

Contact Type	alligator clip
Connection Type	spring-loaded socket Ø 2 mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	8 A
Contact Resistance	5 mOhm
<b>Material Specifications</b>	
Alligator Clip	nickel plated brass / bronze
Housing	PP
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

Contact Type	alligator clip
Connection Type	spring-loaded socket Ø 2 mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	8 A
Contact Resistance	5 mOhm
<b>Material Specifications</b>	
Alligator Clip	tin plated brass / bronze
Housing	PP
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	UL 94 HB

## Drawing

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Alligator Clips 4 mm System



## Type

### AGF 2

Extra small Alligator Clip, for extremely small dense contact points, jaws insulated on the outside, 2mm and 4mm system socket terminal.

### AGF 20

Steel Alligator Clip, nickel plated, max, jaw opening 12mm, 4mm system socket and solder terminal.

### AGF 30

Stainless Steel Alligator Clip, max, jaw opening 10mm, 4mm system socket and solder terminal.

Clamping range

4 mm (0.16")

12 mm (0.47")

10 mm (0.40")

PART NO. / Housing color

**931272100** ●  
**931272101** ●

**930120000**

**930122000**

## Technical Data

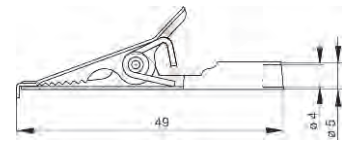
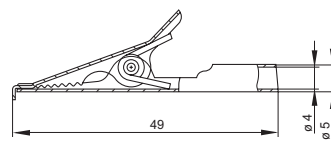
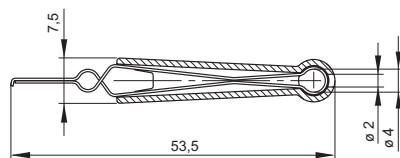
Contact Type	alligator clip
Connection Type	socket Ø 4mm and Ø 2mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6 A
Contact Resistance	300 mOhm
<b>Material Specifications</b>	
Alligator Clip	stainless steel
Housing	PVC-P
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +80 °C (13°F to 176°F)
<b>Flamability Rating</b>	
Housing	-

Contact Type	alligator clip
Connection Type	socket Ø 4 mm, solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	4 A
Contact Resistance	15 mOhm
<b>Material Specifications</b>	
Alligator Clip	nickel plated steel
Housing	-
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	-

Contact Type	alligator clip
Connection Type	socket Ø 4 mm, solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	4 A
Contact Resistance	15 mOhm
<b>Material Specifications</b>	
Alligator Clip	stainless steel
Housing	-
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +100 °C (13°F to 212°F)
<b>Flamability Rating</b>	
Housing	-

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Alligator Clips 4 mm System



## Type

### AGS 20

Steel Alligator Clip, nickel plated, max. jaw opening mm, 4mm system socket and solder/ screw terminal.

### AK 10

Insulated Alligator Clip, tin plated brass insert, suitable for very thin wires, 4mm system socket terminal.

### AK 2 S

High Strength Alligator Clip, insulated, nickel plated brass, 4mm system socket and screw terminal max. 1.5mm<sup>2</sup>.

Clamping range

5 mm (0.20")

6 mm (0.24")

9.5 mm (0.37")

PART NO. / Housing color

**603006001**

**930126100** ●  
**930126101** ●  
**930126102** ●  
**930126103** ●  
**930126104** ●

**932146100** ●  
**932146101** ●

## Technical Data

Contact Type	alligator clip
Connection Type	socket Ø 4 mm, solder screw terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	4 A
Contact Resistance	10 mOhm

### Material Specifications

Alligator Clip	nickel plated steel
Housing	-

### Environmental Conditions

Temperature Range	-25°C to +100 °C (13°F to 212°F)
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### Flamability Rating

Housing	-
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Contact Type	alligator clip
Connection Type	socket Ø 4 mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6 A
Contact Resistance	15 mOhm

Alligator Clip	tin plated brass
Housing	PS

Temperature Range	-25°C to +100 °C (13°F to 212°F)
-------------------	----------------------------------

Housing	UL 94 HB
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Contact Type	alligator clip
Connection Type	socket Ø 4 mm, screw terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	25 A
Contact Resistance	10 mOhm

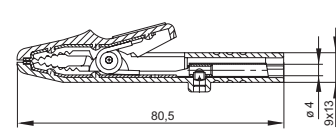
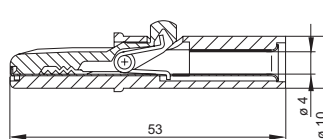
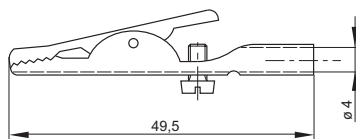
Alligator Clip	nickel plated brass
Housing	PP

Temperature Range	-25°C to +80 °C (13°F to 176°F)
-------------------	---------------------------------

Housing	UL 94 HB
---------	----------

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Alligator Clips 4 mm System



CE



CE



CE

**Type**

**MA 260 SH**

Touch proof mini Alligator Clip, nickel plated bronze, jaw opening 6mm, 4mm system socket and solder terminal.

**AK 2 B**

High Strength Alligator Clip, touch proof, nickel plated brass, 9.5mm jaw opening, 4mm system socket terminal.

**AK 2 B 2540 I**

High Strength wide opening Alligator Clip, touch proof, nickel plated brass, 30mm jaw opening, 4mm system socket terminal.

Clamping range

6 mm (0.24")

9.5 mm (0.37")

30 mm (1.18")

**PART NO. / Housing color**

**973889100** ●  
**973889101** ●

**932435100** ●  
**932435101** ●

**972405100** ●  
**972405101** ●  
**972405102** ●  
**972405103** ●  
**972405104** ●  
**972405188** ●

**Technical Data**

Contact Type alligator clip  
Connection Type socket Ø 4 mm, solder terminal  
Voltage Rating AC/DC 300 V  
Measurement Category (IEC61010) CAT II  
Current Rating\* 15 A  
Contact Resistance 5 mOhm

**Material Specifications**

Alligator Clip nickel plated bronze  
Housing PA

**Environmental Conditions**

Temperature Range -25°C to +80 °C (13°F to 176°F)

**Flamability Rating**

Housing UL 94 HB

Contact Type alligator clip  
Connection Type socket Ø 4 mm  
Voltage Rating AC/DC 300 V  
Measurement Category (IEC61010) CAT II  
Current Rating\* 25 A  
Contact Resistance 10 mOhm

Alligator Clip nickel plated brass  
Housing PP

Temperature Range -25°C to +80 °C (13°F to 176°F)

Housing UL 94 HB

Contact Type alligator clip  
Connection Type socket Ø 4 mm  
Voltage Rating AC/DC 1000 V  
Measurement Category (IEC61010) CAT II  
Current Rating\* 32 A  
Contact Resistance 10 mOhm

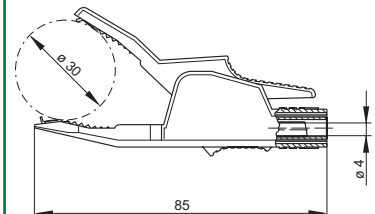
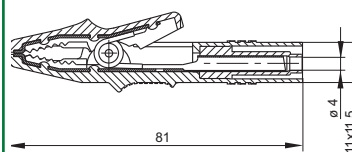
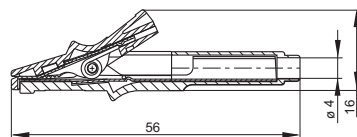
Alligator Clip nickel plated brass  
Housing PP

Temperature Range -30°C to +90 °C (22°F to 194°F)

Housing UL 94 HB

**Drawing**

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



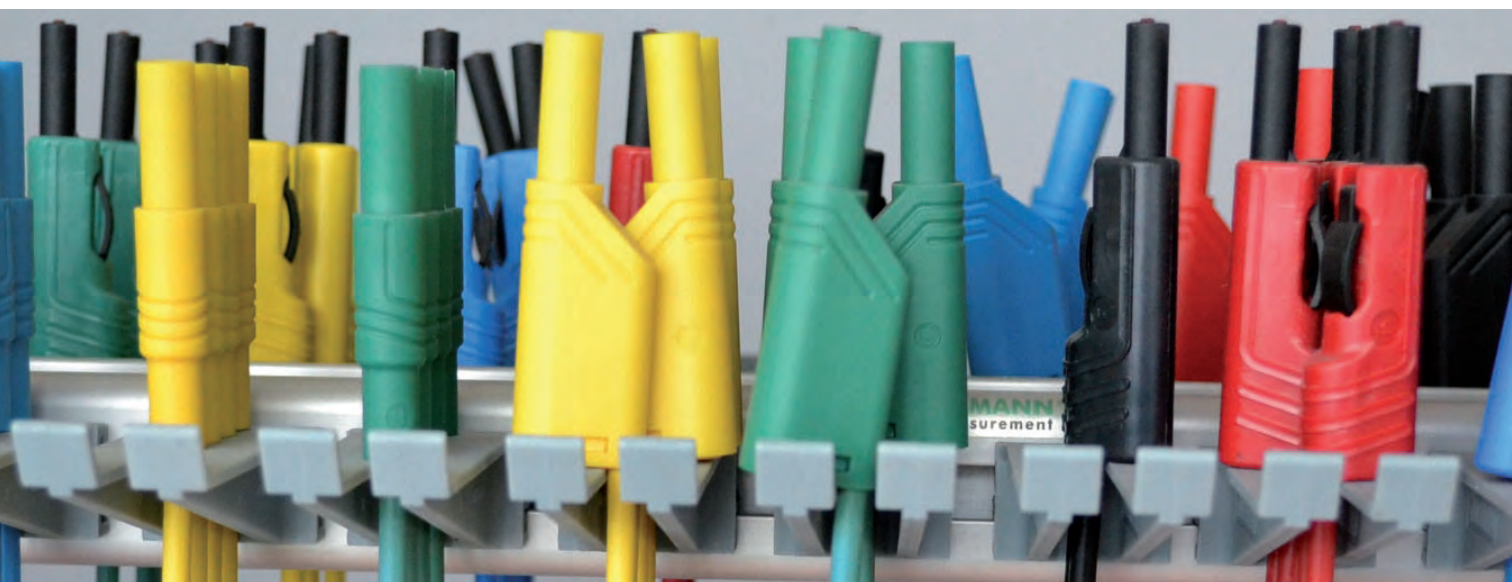
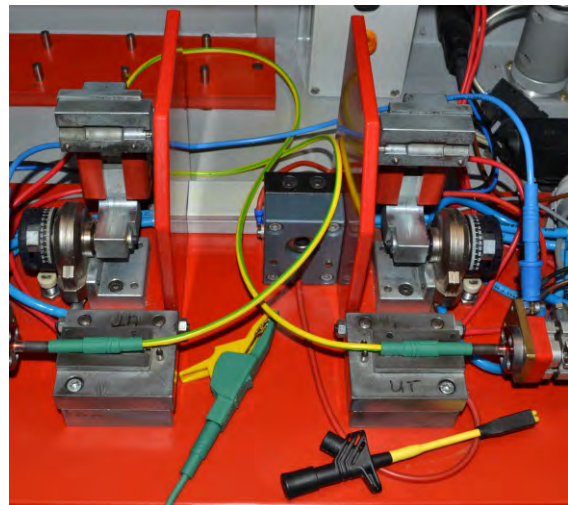
\* Please consider derating graph on page 80.



## Measuring Leads

Altech Test & Measurement Leads are often exposed to extensive wear and tear and other extreme conditions. They must be robust, flexible, carry heavy loads and long lasting. Therefore they are manufactured in a closely monitored process with high quality materials.

- Wide variety of colors, length and connections
- Double insulation
- Highly flexible also at low temperatures
- Silicone version for solder resistance
- Built-in white color indicator for damage identification
- Up to 1000V CAT III
- Wire size up to 2.5mm<sup>2</sup> for 32A
- Safety Systems
- Nickel and Gold plating



# Measuring Leads 0.64 mm System



## Type

### BNC AL 0,64

BNC adapter lead with insulated sockets for 0.64 mm round and rectangular pin. Red inner lead, black shielding; cable type RG 58 A/U, 50 Ohm. For use with oscilloscopes, PC cards, etc.

### MAL N 4-0,64/100-0,25

Injection-moulded measuring lead with spring loaded 4 mm diameter plug and 4 mm diameter socket for further connection and insulated socket for 0.64 mm round and rectangular pin. Highly flexible 0.25 mm<sup>2</sup> stranded wire.

### MKL 0,64/25-0,25

Measuring lead with two insulated sockets for 0.64 mm round and rectangular pin. Highly flexible 0.25 mm<sup>2</sup> stranded wire with two 0.64 mm diameter sockets.

Cable length	1.2m (47.2") BNC + 0.1m (3.9") wires
Cable size	-
Cable material	-
Pin dimensions	-
Cable type	RG 58 A/U

**PART NO. / Housing color** ● **933844001**

Cable length	0.1m (39.4")
Cable size	0.25 mm <sup>2</sup> (24 AWG)
Cable material	PVC
Pin dimensions	4 mm (0.157")
Cable type	LIY

● **934160100**  
● **934160101**

Cable length	25 mm
Cable size	0.25 mm <sup>2</sup> (24 AWG)
Cable material	PVC
Pin dimensions	4 mm (0.157")
Cable type	LIY

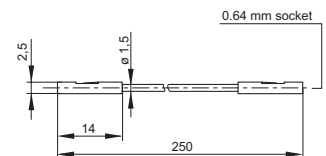
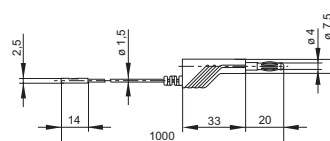
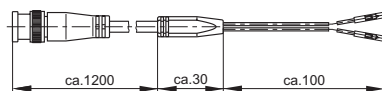
● **973604100**  
● **973604101**

## Technical Data

Contact Type	BNC conector, 2x0.64 mm (0.025") spring loaded square pin socket	pin (spring-loaded), 0.64mm (0.025") spring loaded square pin socket	2x0.64mm (0.025 in.) spring loaded square pin socket
Voltage Rating	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I	CAT I	CAT I
Current Rating*	-	3 A	3 A
Contact Resistance	-	70 mOhm	20 mOhm
<b>Material Specifications</b>			
Contact Pin	-	nickel plated brass	gold plated copper beryllium
Contact Spring	-	nickel plated copper beryllium	-
Housing	-	PVC	PPO
<b>Environmental Conditions</b>			
Temperature Range	-15 °C to +70 °C (5°F to 158°F)	-15°C to +70°C (5°F to 158°F)	-40 °C to +60 °C (-40°F to 140°F)
<b>Flamability Rating</b>			
Housing	-	-	UL 94 HB

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Measuring Leads 2 mm System



## Type

### MVL 2/25; MVL 2/50; MVL 2/100

Injection-moulded measuring lead, at either end 2 mm diameter nickel-plated brass connector and 2 mm diameter socket with contact spring, for tower constructions. Highly flexible stranded lead, grip and lead shatter-proof.

### MAL S WS 2-4 100/1

Safety measuring lead according to IEC 61010, one end with 2 mm safety plug and other end with 4 mm safety plug, as well as 2 mm and 4 mm socket for onward connection capability. Gold-plated / nickel-plated copper-beryllium contact spring. Highly flexible, double insulated stranded lead and shatter-proof grip sleeves. Built in colour indicator for easy identification of insulation damages.

Cable length	0.25m (9.8"), 0.5m (19.7"), 1.0m (39.4")
Cable size	0.5 mm <sup>2</sup> (20AWG)
Cable material	PVC
Pin dimensions	2 mm (0.078")
Cable type	LF-Y
<b>PART NO. / Housing color</b>	0.25 m <b>973594100</b> ● <b>973594101</b> ●
	0.5 m <b>973595100</b> ● <b>973595101</b> ●
	1.0 m <b>973596100</b> ● <b>973596101</b> ●

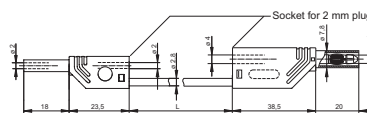
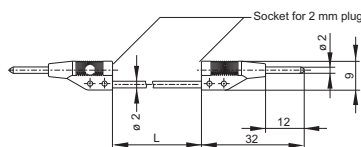
100 m (39.4")	● <b>975163100</b>	● <b>975163105</b>
1 mm <sup>2</sup> (18 AWG)	● <b>975163101</b>	● <b>975163106</b>
PVC	● <b>975163102</b>	● <b>975163107</b>
2 mm (0.078") / 4 mm (0.157")	● <b>975163103</b>	● <b>975163109</b>
LEH-XY	● <b>975163104</b>	

## Technical Data

Contact Type	stationary pin	spring-loaded pin
Voltage Rating	30 VAC / 60 VDC	AC/DC 1000V
Measurement Category (IEC61010)	CAT I	CAT II
Current Rating*	6 A	10 A
Contact Resistance	26 mOhm	21 mOhm
<b>Material Specifications</b>		
Contact Pin	nickel plated brass	nickel plated brass
Contact Spring	copper beryllium	gold plated copper beryllium
Housing	Polypropylene	Polyamide
<b>Environmental Conditions</b>		
Temperature Range	-40 °C to +60 °C (-40°F to 140°F)	-15 °C to +70 °C (5°F to 158°F)
<b>Flamability Rating</b>		
Housing	UL 94 HB	UL 94 V-2

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



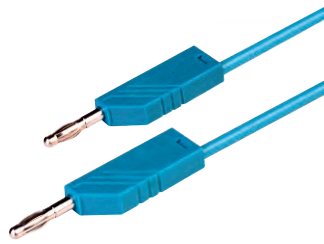
\* Please consider derating graph on page 80.





# Measuring Leads

## 4 mm Solder Resistant System



### Type

**MLN SIL 25/1      MLN SIL 50/1      MLN SIL 100/1      MLN SIL 150/1      MLN SIL 200/1**

Measuring lead, at either end 4mm diameter plug with caged spring and 4mm diameter socket for tower construction. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, grip and lead shatter-proof. Built in colour indicator for easy identification of insulation damages.

	<b>0.25m (9.8")</b>	<b>0.5m (19.7")</b>	<b>1.0m (39.4")</b>	<b>1.5m (59.1")</b>	<b>2.0m (78.7")</b>
Cable length	0.25m (9.8")	0.5m (19.7")	1.0m (39.4")	1.5m (59.1")	2.0m (78.7")
Cable size	1 mm <sup>2</sup> (18 AWG)	1 mm <sup>2</sup> (18 AWG)	1 mm <sup>2</sup> (18 AWG)	1 mm <sup>2</sup> (18 AWG)	1 mm <sup>2</sup> (18 AWG)
Cable material	Silicone	Silicone	Silicone	Silicone	Silicone
Pin dimensions	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")
Cable type	LEH-XY	LEH-XY	LEH-XY	LEH-XY	LEH-XY

### PART NO. / Housing color

● 934090100	● 934091100	● 934092100	● 934093100	● 934094100
● 934090101	● 934091101	● 934092101	● 934093101	● 934094101
● 934090102	● 934091102	● 934092102	● 934093102	● 934094102
● 934090103	● 934091103	● 934092103	● 934093103	● 934094103
● 934090104	● 934091104	● 934092104	● 934093104	● 934094104

### Technical Data

	MLN SIL 25/1	MLN SIL 50/1	MLN SIL 100/1	MLN SIL 150/1	MLN SIL 200/1
Contact Type	2x spring-loaded pin	2x spring-loaded pin	2x spring-loaded pin	2x spring-loaded pin	2x spring-loaded pin
Voltage Rating	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I	CAT I	CAT I	CAT I	CAT I
Current Rating*	16A	16A	16A	16A	16A
Contact Resistance	8.5 mOhm	13 mOhm	22 mOhm	34 mOhm	40 mOhm

### Material Specifications

Contact Pin	nickel plated brass
Contact Spring	nickel plated copper-beryllium
Housing	Polyamide

### Environmental Conditions

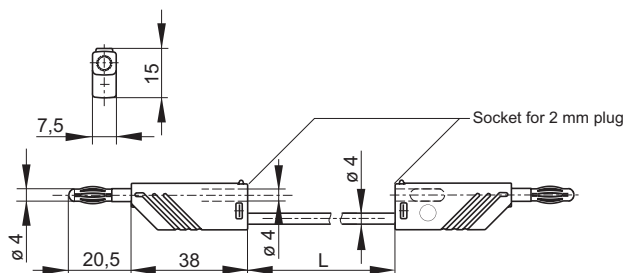
Temperature Range	-15 °C to +70 °C (5°F to 158°F)
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### Flamability Rating

Housing	UL 94 V-2
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### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.

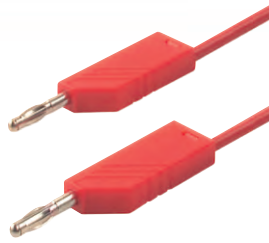


\* Please consider derating graph on page 80.





# Measuring Leads 4 mm System



## Type

**MLN 25/1      MLN 50/1      MLN 100/1      MLN 150/1      MLN 200/1**

Measuring lead, at either end 4mm diameter plug with caged spring and 4mm diameter socket for tower construction. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, grip and lead shatter-proof. Built in colour indicator for easy identification of insulation damages.

	<b>MLN 25/1</b>	<b>MLN 50/1</b>	<b>MLN 100/1</b>	<b>MLN 150/1</b>	<b>MLN 200/1</b>
Cable length	<b>0.25m (9.8")</b>	<b>0.5m (19.7")</b>	<b>1.0m (39.4")</b>	<b>1.5m (59.1")</b>	<b>2.0m (78.7")</b>
Cable size	1 mm <sup>2</sup> (17 AWG)	1 mm <sup>2</sup> (17 AWG)	1 mm <sup>2</sup> (17 AWG)	1 mm <sup>2</sup> (17 AWG)	1 mm <sup>2</sup> (17 AWG)
Cable material	PVC	PVC	PVC	PVC	PVC
Pin dimensions	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")
Cable type	LEH-XY	LEH-XY	LEH-XY	LEH-XY	LEH-XY
<b>PART NO. / Housing color</b>	<ul style="list-style-type: none"> <li>● <b>934058100</b></li> <li>● <b>934058101</b></li> <li>● <b>934058102</b></li> <li>● <b>934058103</b></li> <li>● <b>934058104</b></li> </ul>	<ul style="list-style-type: none"> <li>● <b>934060100</b></li> <li>● <b>934060101</b></li> <li>● <b>934060102</b></li> <li>● <b>934060103</b></li> <li>● <b>934060104</b></li> </ul>	<ul style="list-style-type: none"> <li>● <b>934062100</b></li> <li>● <b>934062101</b></li> <li>● <b>934062102</b></li> <li>● <b>934062103</b></li> <li>● <b>934062104</b></li> </ul>	<ul style="list-style-type: none"> <li>● <b>934064100</b></li> <li>● <b>934064101</b></li> <li>● <b>934064102</b></li> <li>● <b>934064103</b></li> <li>● <b>934064104</b></li> </ul>	<ul style="list-style-type: none"> <li>● <b>934065100</b></li> <li>● <b>934065101</b></li> <li>● <b>934065102</b></li> <li>● <b>934065103</b></li> <li>● <b>934065104</b></li> </ul>

## Technical Data

	<b>MLN 25/1</b>	<b>MLN 50/1</b>	<b>MLN 100/1</b>	<b>MLN 150/1</b>	<b>MLN 200/1</b>
Contact Type	spring-loaded pin	spring-loaded pin	spring-loaded pin	spring-loaded pin	spring-loaded pin
Voltage Rating	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I	CAT I	CAT I	CAT I	CAT I
Current Rating*	16A	16A	16A	16A	16A
Contact Resistance	8.5 mOhm	13 mOhm	22 mOhm	34 mOhm	40 mOhm

## Material Specifications

Contact Pin	nickel plated brass
Contact Spring	nickel plated copper-beryllium
Housing	Polyamide

## Environmental Conditions

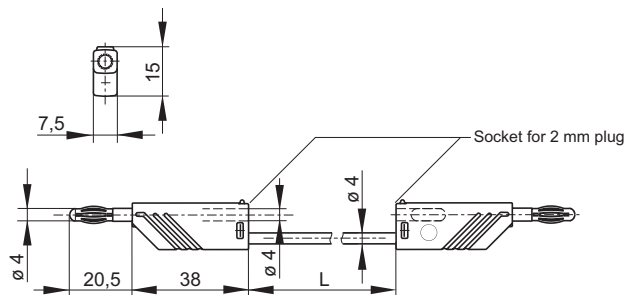
Temperature Range	-15 °C to +70 °C
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## Flamability Rating

Housing	UL 94 V-2
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## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Measuring Leads 4 mm System



## 2.5 mm<sup>2</sup> (14 AWG) Nickel plated contacts

Type	MLN 25/2.5	MLN 50/2.5	MLN 100/2.5	MLN 150/2.5	MLN 200/2.5
PART NO. / Housing color	● 934059100	● 934061100	● 934063100	● 934507100	● 934066100
	● 934059101	● 934061101	● 934063101	● 934507101	● 934066101
	● 934059102	● 934061102	● 934063102	● 934507102	● 934066102
	● 934059103	● 934061103	● 934063103	● 934507103	● 934066103
	● 934059104	● 934061104	● 934063104	● 934507104	● 934066104
	● 934059105	● 934061105	● 934063105	● 934507105	● 934066105
	● 934059106	● 934061106	● 934063106	● 934507106	● 934066106
	● 934059107	● 934061107	● 934063107	● 934507107	● 934066107
	● 934059109	● 934061109	● 934063109	● 934507109	● 934066109
	● 934059188	● 934061188	● 934063188	● 934507188	● 934066188

## 2.5 mm<sup>2</sup> (14 AWG) Gold plated contacts

Type	MLN 25/2.5 Au	MLN 50/2.5 Au	MLN 100/2.5 Au	MLN 150/2.5 Au	MLN 200/2.5 Au
PART NO. / Housing color	● 934059700	● 934061700	● 934063700	● 934507700	● 934066700
	● 934059701	● 934061701	● 934063701	● 934507701	● 934066701
	● 934059702	● 934061702	● 934063702	● 934507702	● 934066702
	● 934059703	● 934061703	● 934063703	● 934507703	● 934066703
	● 934059704	● 934061704	● 934063704	● 934507704	● 934066704
	● 934059705	● 934061705	● 934063705	● 934507705	● 934066705
	● 934059706	● 934061706	● 934063706	● 934507706	● 934066706
	● 934059707	● 934061707	● 934063707	● 934507707	● 934066707
	● 934059709	● 934061709	● 934063709	● 934507709	● 934066709
	● 934059788	● 934061788	● 934063788	● 934507788	● 934066788

<b>Technical Data</b>	spring-loaded pin	spring-loaded pin	spring-loaded pin	spring-loaded pin	spring-loaded pin
Contact Type					
Voltage Rating	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I	CAT I	CAT I	CAT I	CAT I
Current Rating*	32A	32A	32A	32A	32A
Contact Resistance	6 mOhm	8 mOhm	12 mOhm	16 mOhm	20 mOhm
<b>Material Specifications</b>					
Contact Pin			nickel /gold plated brass		
Contact Spring			nickel/gold plated copper-beryllium		
Housing			Polyamide		
<b>Environmental Conditions</b>					
Temperature Range			-15 °C to +70 °C		
<b>Flamability Rating</b>					
Housing			UL 94 V-2		

\* Please consider derating graph on page 80.



# Measuring Leads

## 4.0 mm Safety Plug System



### Type

Type	MLS GG 25/1 MLS GG 25/2,5	MLS GG 50/1 MLS GG 50/2,5	MLS GG 100/1 MLS GG 100/2,5	MLS GG 200/1 MLS GG 200/2,5
------	------------------------------	------------------------------	--------------------------------	--------------------------------

Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. Built in colour indicator for easy identification of insulation damages.

	0.25m (9.8")	0.5m (19.7")	1.0m (39.4")	2.0m (78.7")
Cable length	0.25m (9.8")	0.5m (19.7")	1.0m (39.4")	2.0m (78.7")
Cable size	1 mm <sup>2</sup> (18 AWG)	1 mm <sup>2</sup> (18 AWG)	1 mm <sup>2</sup> (18 AWG)	1 mm <sup>2</sup> (18 AWG)
Cable material	PVC	PVC	PVC	PVC
Pin dimensions	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")
Cable type	LEH-XY	LEH-XY	LEH-XY	LEH-XY

### 1 mm<sup>2</sup> (18 AWG)

PART NO. / Housing color

● 934070100	● 934072100	● 934074100	● 934076100
● 934070101	● 934072101	● 934074101	● 934076101
● 934070102	● 934072102	● 934074102	● 934076102
● 934070103	● 934072103	● 934074103	● 934076103
● 934070104	● 934072104	● 934074104	● 934076104

### 2.5 mm<sup>2</sup> (14 AWG)

PART NO. / Housing color

● 934071100	● 934073100	● 934075100	● 934077100
● 934071101	● 934073101	● 934075101	● 934077101
● 934071102	● 934073102	● 934075102	● 934077102
● 934071103	● 934073103	● 934075103	● 934077103
● 934071104	● 934073104	● 934075104	● 934077104
● 934071105	● 934073105	● 934075105	● 934077105
● 934071106	● 934073106	● 934075106	● 934077106
● 934071107	● 934073107	● 934075107	● 934077107
● 934071109	● 934073109	● 934075109	● 934077109
● 934071188	● 934073188	● 934075188	● 934077188

### Technical Data

Contact Type	spring-loaded pin	spring-loaded pin	spring-loaded pin	spring-loaded pin
Voltage Rating	AC/DC 1000V	AC/DC 1000V	AC/DC 1000V	AC/DC 1000V
Measurement Category (IEC61010)	CAT III	CAT III	CAT III	CAT III
Current Rating*	16 A 32 A	16 A 32 A	16 A 32 A	16 A 32 A
Contact Resistance	8.5 mOhm 6 mOhm	13 mOhm 8 mOhm	22 mOhm 12 mOhm	40 mOhm 20 mOhm

### Material Specifications

Contact Pin	nickel plated brass
Contact Spring	copper-beryllium
Housing	Polyamide

### Environmental Conditions

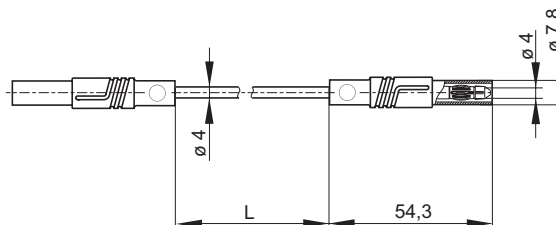
Temperature Range	-15 °C to +70 °C (5°F to 158°F)
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### Flamability Rating

Housing	UL 94 V-2
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### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Measuring Leads

## 4.0 mm Safety Plug System



Type	MLS WG 25/1 MLS WG 25/2.5	MLS WG 50/1 MLS WG 50/2.5	MLS WG 100/1 MLS WG 100/2.5	MLS WG 200/1 MLS WG 200/2.5
Safety measuring lead, at either end 4mm diameter safety connector with straight and angled outlet. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. Built in colour indicator for easy identification of insulation damages.				
Cable length	0.25m (9.8")	0.5m (19.7")	1.0m (39.4")	2.0m (78.7")
Cable size	1 mm <sup>2</sup> (18 AWG) 2.5 mm <sup>2</sup> (14 AWG)	1 mm <sup>2</sup> (18 AWG) 2.5 mm <sup>2</sup> (14 AWG)	1 mm <sup>2</sup> (18 AWG) 2.5 mm <sup>2</sup> (14 AWG)	1 mm <sup>2</sup> (18 AWG) 2.5 mm <sup>2</sup> (14 AWG)
Cable material	PVC	PVC	PVC	PVC
Pin dimensions	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")
Cable type	LEH-XY	LEH-XY	LEH-XY	LEH-XY
<b>1 mm<sup>2</sup></b>				
<b>PART NO. / Housing color</b>	● 934078100 ● 934078101 ● 934078102 ● 934078103 ● 934078104	● 934080100 ● 934080101 ● 934080102 ● 934080103 ● 934080104	● 934082100 ● 934082101 ● 934082102 ● 934082103 ● 934082104	● 934084100 ● 934084101 ● 934084102 ● 934084103 ● 934084104
<b>2.5 mm<sup>2</sup></b>				
<b>PART NO. / Housing color</b>	● 934079100 ● 934079101 ● 934079102 ● 934079103 ● 934079104 ● 934079188	● 934081100 ● 934081101 ● 934081102 ● 934081103 ● 934081104 ● 934081188	● 934083100 ● 934083101 ● 934083102 ● 934083103 ● 934083104 ● 934083188	● 934085100 ● 934085101 ● 934085102 ● 934085103 ● 934085104 ● 934085188

### Technical Data

	MLS WG 25/1 MLS WG 25/2.5	MLS WG 50/1 MLS WG 50/2.5	MLS WG 100/1 MLS WG 100/2.5	MLS WG 200/1 MLS WG 200/2.5
Contact Type	spring-loaded pin	spring-loaded pin	spring-loaded pin	spring-loaded pin
Voltage Rating	AC/DC 1000V	AC/DC 1000V	AC/DC 1000V	AC/DC 1000V
Measurement Category (IEC61010)	CAT III	CAT III	CAT III	CAT III
Current Rating*	16 A 32 A	16 A 32 A	16 A 32 A	16 A 32 A
Contact Resistance	8 mOhm 6 mOhm	13 mOhm 8 mOhm	22 mOhm 12 mOhm	40 mOhm 20 mOhm

### Material Specifications

Contact Pin	nickel plated brass
Contact Spring	copper-beryllium
Housing	Polyamide

### Environmental Conditions

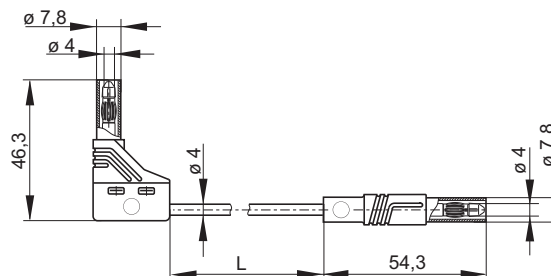
Temperature Range	-15 °C to +70 °C (5°F to 158°F)
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### Flamability Rating

Housing	UL 94 V-2
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### Drawing

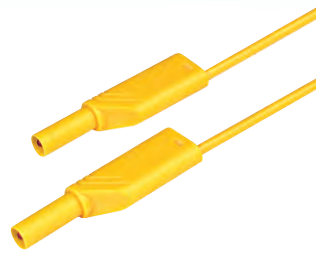
Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Measuring Leads

## 4 mm - Safety Plug System



### Type

MLS WS 25/1 MLS WS 25/2,5	MLS WS 50/1 MLS WS 50/2,5	MLS WS 100/1 MLS WS 100/2,5	MLS WS 200/1 MLS WS 200/2,5
------------------------------	------------------------------	--------------------------------	--------------------------------

Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability (4mm socket). Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. Built in colour indicator for easy identification of insulation damages.

	0.25m (9.8")	0.5m (19.7")	1.0m (39.4")	2.0m (78.7")
Cable length	0.25m (9.8")	0.5m (19.7")	1.0m (39.4")	2.0m (78.7")
Cable size	1 mm <sup>2</sup> (18 AWG) 2.5 mm <sup>2</sup> (14 AWG)	1 mm <sup>2</sup> (18 AWG) 2.5 mm <sup>2</sup> (14 AWG)	1 mm <sup>2</sup> (18 AWG) 2.5 mm <sup>2</sup> (14 AWG)	1 mm <sup>2</sup> (18 AWG) 2.5 mm <sup>2</sup> (14 AWG)
Cable material	PVC	PVC	PVC	PVC
Pin dimensions	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")	4 mm (0.157")
Cable type	LEH-XY	LEH-XY	LEH-XY	LEH-XY

### 1 mm<sup>2</sup>

PART NO. / Housing color

● 934067100	● 934068100	● 934095100	● 934069100
● 934067101	● 934068101	● 934095101	● 934069101
● 934067102	● 934068102	● 934095102	● 934069102
● 934067103	● 934068103	● 934095103	● 934069103
● 934067104	● 934068104	● 934095104	● 934069104

### 2.5 mm<sup>2</sup>

PART NO. / Housing color

● 934086100	● 934087100	● 934088100	● 934089100
● 934086101	● 934087101	● 934088101	● 934089101
● 934086102	● 934087102	● 934088102	● 934089102
● 934086103	● 934087103	● 934088103	● 934089103
● 934086104	● 934087104	● 934088104	● 934089104
● 934086105	● 934087105	● 934088105	● 934089105
● 934086106	● 934087106	● 934088106	● 934089106
● 934086107	● 934087107	● 934088107	● 934089107
● 934086109	● 934087109	● 934088109	● 934089109
● 934086188	● 934087188	● 934088188	● 934089188

### Technical Data

	MLS WS 25/1 MLS WS 25/2,5	MLS WS 50/1 MLS WS 50/2,5	MLS WS 100/1 MLS WS 100/2,5	MLS WS 200/1 MLS WS 200/2,5
Contact Type	spring-loaded pin	spring-loaded pin	spring-loaded pin	spring-loaded pin
Voltage Rating	AC/DC 1000V**	AC/DC 1000V**	AC/DC 1000V**	AC/DC 1000V**
Measurement Category (IEC61010)	CAT II**	CAT II**	CAT II**	CAT II**
Current Rating*	16 A 32 A	16 A 32 A	16 A 32 A	16 A 32 A
Contact Resistance	8 mOhm 6 mOhm	13 mOhm 8 mOhm	22 mOhm 12 mOhm	40 mOhm 20 mOhm

### Material Specifications

Contact Pin	nickel plated brass
Contact Spring	copper-beryllium
Housing	Polyamide

### Environmental Conditions

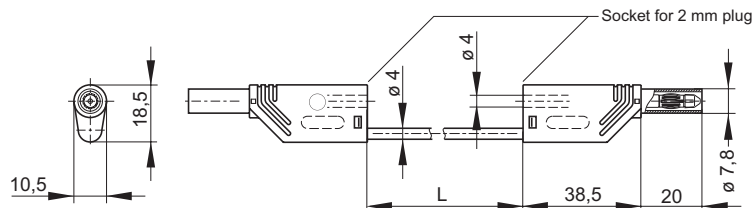
Temperature Range	-15 °C to +70 °C (5°F to 158°F)
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### Flamability Rating

Housing	UL 94 V-2
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### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

\*\* 600V AC/DC CAT III

# Measuring Leads

## 4 mm - Safety Plug System



**Type**

**PL 2600 S**

Safety measuring lead with dual function safety test probe. Tip for penetration of insulation and oxide layers and 4 mm diameter pin for insertion into sockets. 4 mm diameter safety connector with straight outlet. Incl. Tip protection

Cable length 1.0m (39.4")  
Conductor size **1 mm<sup>2</sup> (18 AWG)**  
Cable material PVC  
Pin dimensions 4 mm (0.157")  
Clamp type LEH-XY

**PART NO. / Housing color**

- 934159100
- 934159101
- 934159102



**PL 2600 S W**

Safety measuring lead with dual function safety test probe. Tip for penetration of insulation and oxide layers and 4 mm diameter pin for insertion into sockets. 4 mm diameter safety connector with right-angled outlet. Incl. Tip protection

Cable length 1.0m (39.4")  
Conductor size **1 mm<sup>2</sup> (18 AWG)**  
Cable material PVC  
Pin dimensions 4 mm (0.157")  
Clamp type LEH-XY

● 934158100  
● 934158101

**Technical Data**

Contact Type spring-loaded pin, stationary tip  
Voltage Rating AC/DC 1000 V  
Measurement Category (IEC61010) CAT II  
Current Rating\* 16 A  
Contact Resistance 20 mOhm

**Material Specifications**

Contact Pin nickel plated brass  
Contact Spring nickel plated copper-beryllium  
Housing PA, PP

**Environmental Conditions**

Temperature Range -15°C to +70°C (5°F to 158°F)

**Flamability Rating**

Housing UL 94 HB

Contact Type spring-loaded pin, stationary tip  
Voltage Rating AC/DC 1000 V  
Measurement Category (IEC61010) CAT II  
Current Rating\* 16 A  
Contact Resistance 20 mOhm

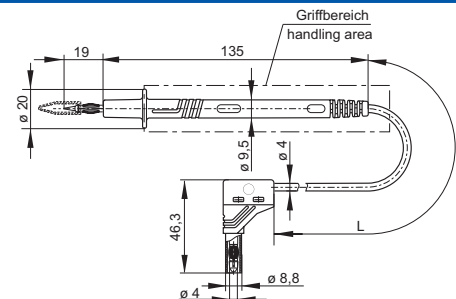
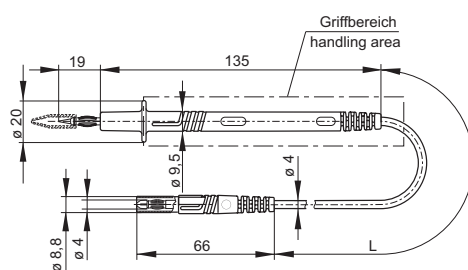
Contact Pin nickel plated brass  
Contact Spring nickel plated copper-beryllium  
Housing PA, PP

Temperature Range -15°C to +70°C (5°F to 158°F)

Housing UL 94 HB

**Drawing**

Measurements are shown in millimeters. Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Measuring Leads 4 mm Safety System



## Type

### LMLH 50

Laboratory test lead holder with plastic brackets. Measuring leads can be laid neatly on walls, cabinets, etc. Consists: one aluminium profile rail, 30 plastic brackets, fastening kit.

### TW 120 BAN

SMD Test Tweezer for 2 wire measurements with multimeters. The gold-plating ensures lowest transition resistance. Available with BNC Connectors or Banana Plugs. Contacts gold-plated. Other cable lengths on request.

Cable length	-
Conductor size	-
Cable material	-
Pin dimensions	-
Clamp type	-

1.2m (47.2")
-
-
-
RG 174

PART NO. / Housing color

● 973919001

● 974330000

## Technical Data

Contact Type	-
Voltage Rating	-
Measurement Category (IEC61010)	-
Current Rating*	-
Contact Resistance	-

## Material Specifications

Contact Pin	-
Contact Spring	-
Housing	-

## Environmental Conditions

Temperature Range	-
-------------------	---

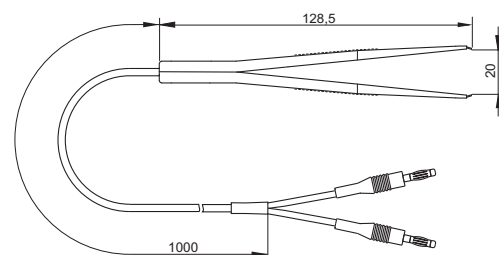
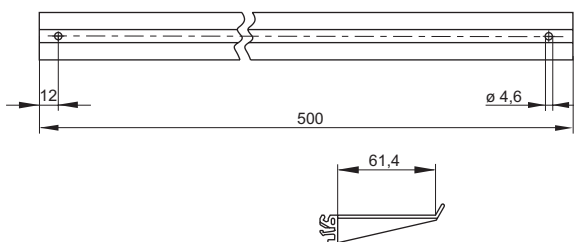
## Flamability Rating

Housing	-
---------	---

2 gold-plated 4 mm banana plugs to gold-plated tweezer tips
30 VAC / 60 VDC
CAT I
-
-
-
-
-
-
-

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Measuring Leads 4 mm Safety System



## Type

### TKL 065 BAN

High quality Kelvin Measuring Leads for 4 wire measurements with LCR measuring bridges and multimeters. The gold-plating ensures lowest transition resistance. Available with BNC Connectors or Banana Plugs. Contacts gold-plated. Other cable lengths on request.

Cable length	0.65m (25.6")
Conductor size	—
Cable material	—
Pin dimensions	4 mm (0.157")
Clamp type	RG 174

**PART NO. / Housing color** ● 974340000



### SML 100/1

Silicone measuring lead, 4 mm plug with caged spring on both sides. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, resistant against soldering iron, grip and lead shatter-proof. Built in colour indicator for easy identification of insulation damages.

Cable length	1m (39.37")
Conductor size	1 mm <sup>2</sup> (18 AWG)
Cable material	silicone
Pin dimensions	4 mm (0.157")
Clamp type	LEH-XY

- 973388100
- 973388101
- 973388102
- 973388103
- 973388104

## Technical Data

Contact Type	spring-loaded pin, stationary tip
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	—
Contact Resistance	—

## Material Specifications

Contact Pin	—
Contact Spring	—
Housing	—

## Environmental Conditions

Temperature Range	—
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## Flamability Rating

Housing	—
---------	---

Contact Type	spring-loaded pin
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	16 A
Contact Resistance	20 mOhm

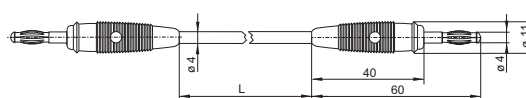
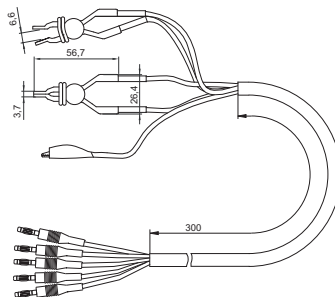
Contact Pin	brass
Contact Spring	nickel plated copper-beryllium
Housing	PA, PP

Temperature Range	-15°C to +70°C (5°F to 158°F)
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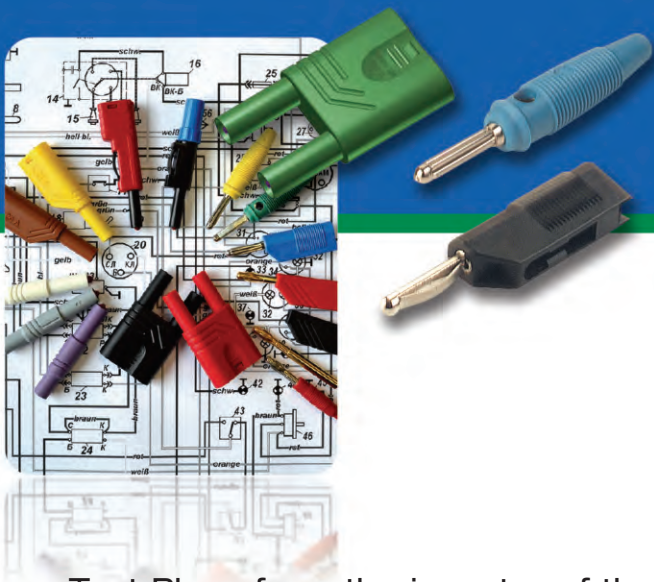
## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



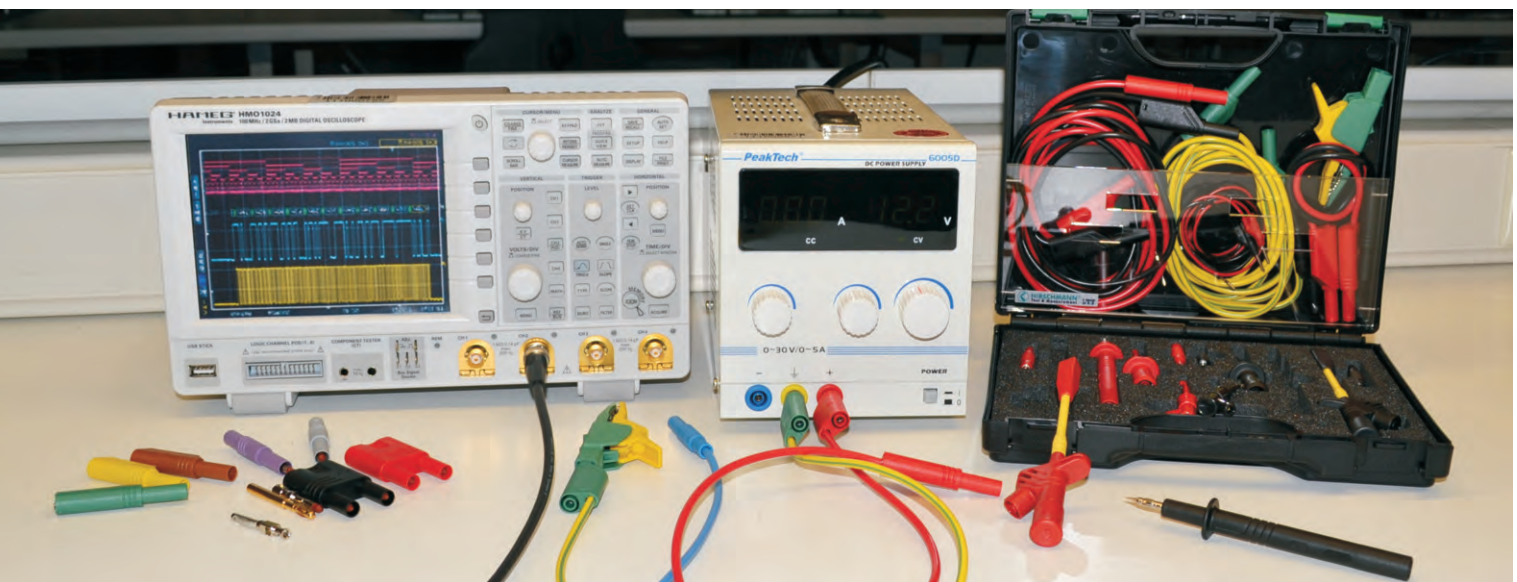
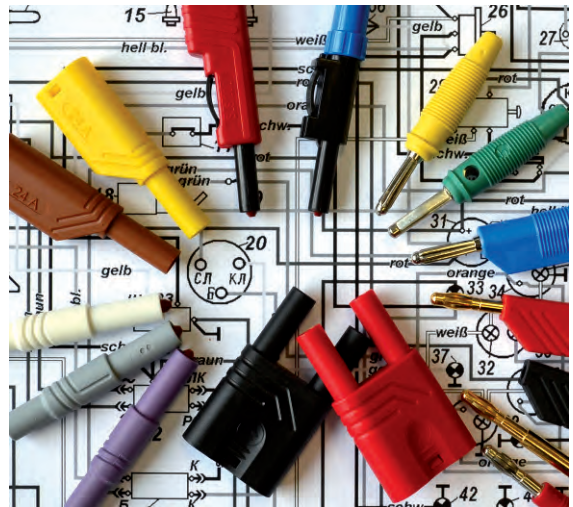
\* Please consider derating graph on page 80.

# Test Plugs



Test Plugs from the inventor of the Banana Plug. Altech and SKS Hirschmann offers endless possibilities and solutions for different contact and connection systems. Various Plugs are also available for “Do it yourself” measurement leads.

- Large color spectrum
- Various connection types
- Different cross sections
- Safety plugs according to IEC61010





# Test Plugs 2 mm System



**Type** MST 201

2mm mini connector pin for PCB boards, fits MKU1 and MBU2 (for stacking PCB boards), pin spacing 5mm and up.

Pin diameter 2 mm (0.078")

**PART NO. / Housing color** 931338001

**MST 3**

2mm mini connector, nickel plated brass pin with solder connection, flexible and shatter proof insulated sleeve, connecting leads up to 1.9mm.

2 mm (0.078")

- 973509100
- 973509101
- 973509102
- 973509103
- 973509104
- 973509106

### Technical Data

Contact Type pin

Connection Type solder terminal

Voltage Rating 30 VAC / 60 VDC

Measurement Category (IEC61010) CAT I

Current Rating\* 6A

Contact Resistance 6 mOhm

### Material Specifications

Plug nickel plated brass

Contact Spring -

Housing -

### Environmental Conditions

Temperature range -20 °C to +60 °C (-4 to 140°F)

### Flamability Rating

Housing -

spring loaded pin

solder terminal

30 VAC / 60 VDC

CAT I

6A

6 mOhm

nickel plated brass

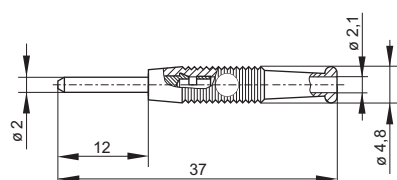
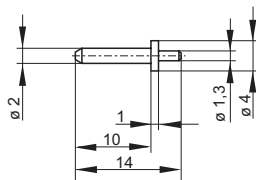
-

PVC-P

-20 °C to +60 °C (-4 to 140°F)

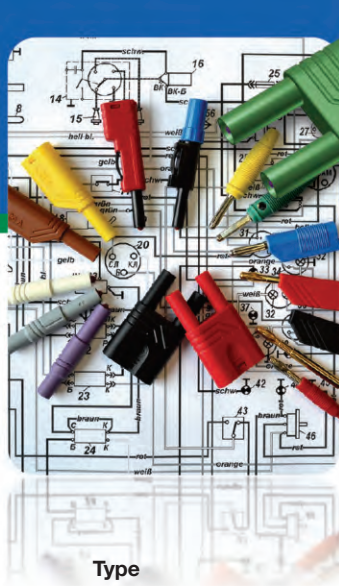
### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs 2 mm System



Type



**MZS 2**

Shrouded Adapter 2mm plug to 4mm jack.

Pin diameter 2 mm (0.078")

● 973600100

● 973600101



CE

**MST S WS 30 AU**

2mm safety plug, spring loaded pin, gold plated, solder terminal 0.5mm2-1.0mm2, 1000V system.

Pin diameter 2 mm (0.078")

● 975090700

● 975090701

● 975090702

● 975090703

● 975090704

● 975090705

● 975090706

● 975090707

● 975090709

Pin diameter

PART NO. / Housing color

## Technical Data

Contact Type	stationary
Connection Type	jack Ø4mm
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6A
Contact Resistance	6 mOhm
<b>Material Specifications</b>	
Plug	nickel plated brass
Contact Spring	-
Housing	PP
<b>Environmental Conditions</b>	
Temperature range	-20 °C to +60 °C (-4 to 140°F)
<b>Flamability Rating</b>	
Housing	UL94 HB

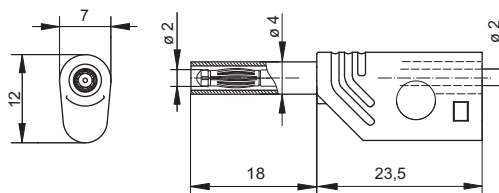
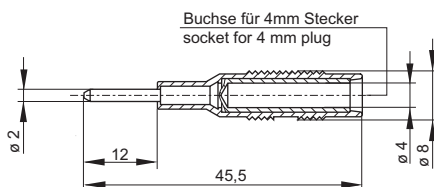
spring loaded pin
solder terminal
AC/DC 1000V
CAT III
10A
2 mOhm

gold plated copper-beryllium
gold plated brass
Polyamide

-15°C to +70°C (-5 to 158°F)

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs 4 mm System



**Type** **VST 100**  
4mm spring loaded connector pin, nickel plated brass, screw terminal up to 1.5mm<sup>2</sup>.

Pin diameter 4 mm (0.157")

**PART NO. / Housing color** **930581000**



**VST 20**  
4mm spring loaded connector pin, nickel plated brass, M4 thread/ screw terminal up to 2mm<sup>2</sup>.

4 mm (0.157")

**930050000**

### Technical Data

Contact Type spring loaded pin  
 Connection Type screw terminal max. 1.5mm<sup>2</sup>  
 Voltage Rating 30 VAC / 60 VDC  
 Measurement Category (IEC61010) CAT I  
 Current Rating\* 16A  
 Contact Resistance 3 mOhm

### Material Specifications

Plug nickel plated brass  
 Contact Spring -  
 Housing -

### Environmental Conditions

Temperature range -25 °C to +100°C (-13 to 212°F)

### Flamability Rating

Housing -

spring loaded pin  
 M4 thread / soldering max. 2mm<sup>2</sup>  
 30 VAC / 60 VDC  
 CAT I  
 16A  
 3 mOhm

nickel plated brass

-

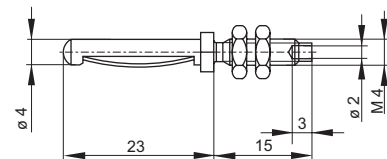
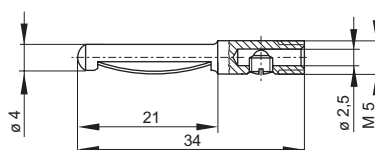
-

-25 °C to +100°C (-13 to 212°F)

-

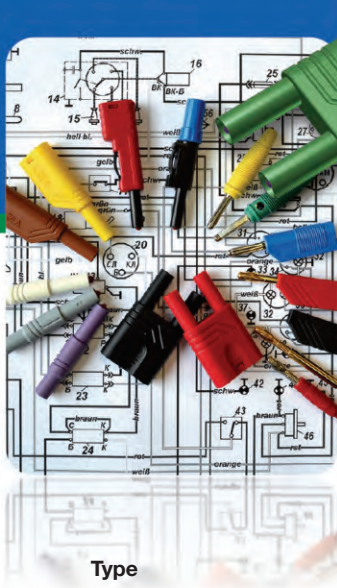
### Drawing

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs 4 mm System



Type



**MZS 4**

Shrouded Adapter 4mm plug to 2mm jack.

Pin diameter 4 mm (0.157")

- 973599100
- 973599101

**KB 2**

Fork type cable lug, nickel plated brass, flexible insulation sleeve, screw terminal up to 2.5mm<sup>2</sup>.

Fork

- 930584100
- 930584101



Pin diameter

PART NO. / Housing color

## Technical Data

Contact Type	spring loaded pin
Connection Type	spring-loaded jack (Ø 2 mm)
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6A
Contact Resistance	6 mOhm

## Material Specifications

Plug	nickel plated brass
Contact Spring	nickel plated copper-beryllium
Housing	PP

## Environmental Conditions

Temperature range	-20 °C to +60 °C (-4 to 140°F)
-------------------	--------------------------------

## Flamability Rating

Housing	-
---------	---

fork cable lug
screw terminal max. 2.5mm <sup>2</sup>
30 VAC / 60 VDC
CAT I
30A
1 mOhm

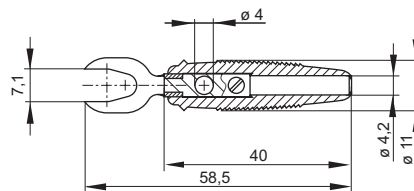
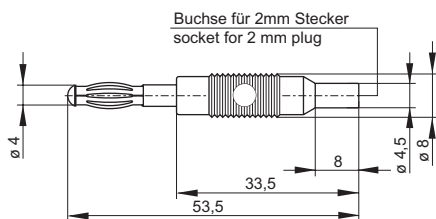
nickel plated brass
-
PVC-P

-25 °C to +70 °C (-13 to 158°F)
---------------------------------

-

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs 4 mm System



**Type**

**LAS 30 / LAS 30 Au**

4mm spring loaded plug, nickel/ gold plated contact spring, solder terminal up to 1.5mm<sup>2</sup>.

Pin diameter

4 mm (0.157")

**PART NO.** / Housing color

- | Nickel Plated | Gold Plated |
|---------------|-------------|
| ● 972518100   | ● 972518700 |
| ● 972518101   | ● 972518701 |
| ● 972518102   | ● 972518702 |
| ● 972518103   | ● 972518703 |
| ● 972518104   | ● 972518704 |



**BUELA 20 K**

4mm multi spring plug, flexible, insulated sleeve with 4mm cross hole, nickel plated brass, screw terminal max. 1.5mm<sup>2</sup>.

4 mm (0.157")

- 930726100
- 930726101
- 930726102
- 930726103
- 930726104
- 930726107

**Technical Data**

Contact Type: spring loaded pin  
 Connection Type: solder terminal max. 1.5mm<sup>2</sup>  
 Voltage Rating: 30 VAC / 60 VDC  
 Measurement Category (IEC61010): CAT I  
 Current Rating\*: 32A  
 Contact Resistance: 3 mOhm

**Material Specifications**

Plug: nickel plated brass; gold plated brass  
 Contact Spring: nickel pl. copper-beryllium; gold pl. copper-beryllium  
 Housing: PVC-P

**Environmental Conditions**

Temperature range: -25 °C to +70°C (-13 to 158°F)

**Flamability Rating**

Housing: -

Contact Type: spring loaded pin  
 Connection Type: screw terminal max. 1.5mm<sup>2</sup>  
 Voltage Rating: 30 VAC / 60 VDC  
 Measurement Category: CAT I  
 Current Rating: 16A  
 Contact Resistance: 3 mOhm

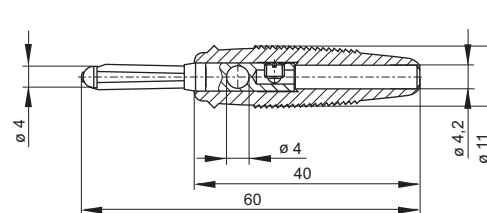
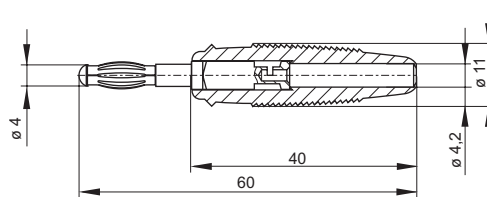
Plug: nickel plated brass  
 Contact Spring: -  
 Housing: PVC-P

Temperature range: -25 °C to +70°C (-13 to 158°F)

Housing: -

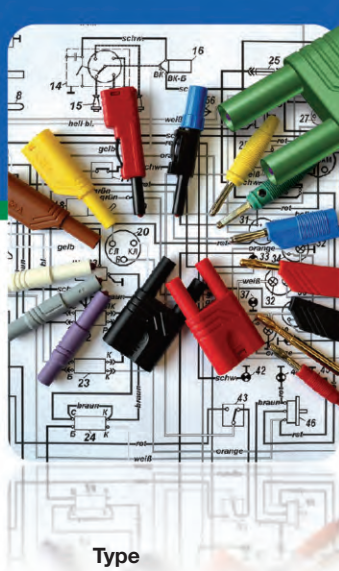
**Drawing**

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs 4 mm System



Type



## BUELA 30 K

4mm multi spring plug, flexible, insulated sleeve with 4mm cross hole, nickel plated brass, solder terminal max. 2.5mm<sup>2</sup>.

Pin diameter

4 mm (0.157")

PART NO. / Housing color

- 930727100
- 930727101
- 930727102
- 930727103
- 930727104
- 930727107



## BUELA 300 K

4mm multi spring plug, flexible, insulated sleeve with 4mm cross hole, nickel plated brass, solder terminal max. 2.5mm<sup>2</sup>.

4 mm (0.157")

- 931667100
- 931667101
- 931667102
- 931667103
- 931667104

### Technical Data

Contact Type	spring loaded pin
Connection Type	solder terminal max. 2.5mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	30A
Contact Resistance	3 mOhm

### Material Specifications

Plug	nickel plated brass
Contact Spring	-
Housing	PVC-P

### Environmental Conditions

Temperature range	-25 °C to +70°C (-13 to 158°F)
-------------------	--------------------------------

### Flamability Rating

Housing	-
---------	---

fork cable lug	
solder terminal max. 2.5mm <sup>2</sup>	
30 VAC / 60 VDC	
CAT I	
30A	
3 mOhm	

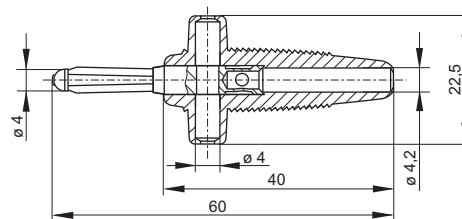
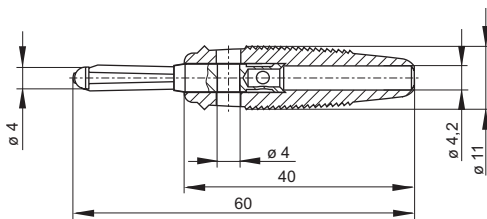
nickel plated brass	
-	
PVC-P	

-25 °C to +70°C (-13 to 158°F)	
--------------------------------	--

-	
---	--

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs 4 mm System



## Type

### LAS N WS / LAS N WS Au

4mm stackable plug, nickel/ gold plated contact spring, screw terminal 0.5-1.5mm<sup>2</sup>.

### BSB 20 K

4mm multi spring plug with cable gland, nickel plated brass, screw terminal max. 2.5mm<sup>2</sup>.

Pin diameter

4 mm (0.157")

4 mm (0.157")

PART NO. / Housing color

Nickel Plated	Gold Plated
● 934100100	● 934100700
● 934100101	● 934100701
● 934100102	● 934100702
● 934100103	● 934100703
● 934100104	● 934100704
● 934100105	● 934100705
● 934100106	● 934100706
● 934100107	● 934100707
● 934100109	● 934100709

● 930729100
● 930729101
● 930729102
● 930729103
● 930729104

## Technical Data

Contact Type	spring loaded pin
Connection Type	screw terminal max. 1.5mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	24A
Contact Resistance	3 mOhm

## Material Specifications

Plug	nickel plated brass; gold plated brass
Contact Spring	nickel pl. copper-beryllium; gold pl. copper-beryllium
Housing	Polyamide

## Environmental Conditions

Temperature range	-15 °C to +70°C (5 to 158°F)
-------------------	------------------------------

## Flamability Rating

Housing	UL 94 V-2
---------	-----------

Contact Type	spring loaded pin
Connection Type	screw terminal max. 2.5mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	30A
Contact Resistance	3 mOhm

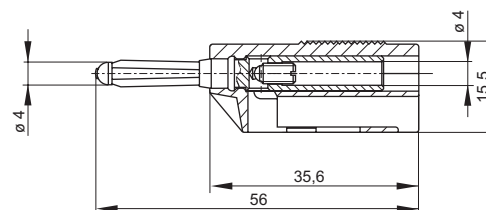
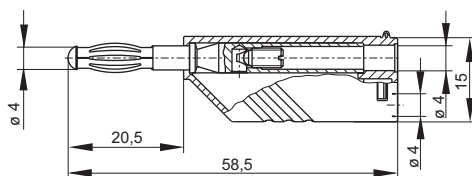
Plug	brass
Contact Spring	nickel
Housing	PP

Temperature range	-25 °C to +100°C (-13 to 212°F)
-------------------	---------------------------------

Housing	UL 94 HB
---------	----------

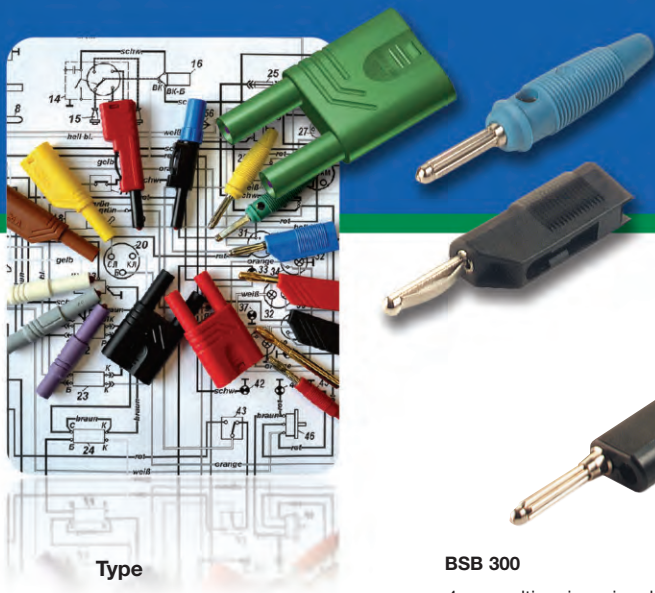
## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs 4 mm System



Type

## BSB 300

4mm multi spring wire plug with parallel adapter for shorting proof connection, nickel plated brass, solder terminal max. 1.5mm<sup>2</sup>.

Pin diameter

4 mm (0.157")

PART NO. / Housing color

- 931294100
- 931294101
- 931294102
- 931294103
- 931294104

## VSB 20

4mm spring loaded plug with cable gland, stackable (4mm jack), screw terminal max. 2.5mm<sup>2</sup>.

4 mm (0.157")

- 930435100
- 930435101
- 930435102
- 930435103
- 930435104

### Technical Data

Contact Type	spring loaded pin
Connection Type	solder terminal max. 1.5mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	16A
Contact Resistance	3 mOhm

### Material Specifications

Plug	nickel plated brass
Contact Spring	-
Housing	PP

### Environmental Conditions

Temperature range	-25 °C to +100°C (-13 to 212°F)
-------------------	---------------------------------

### Flamability Rating

Housing	UL 94 HB
---------	----------

spring loaded pin
screw terminal max. 2.5mm <sup>2</sup>
30 VAC / 60 VDC
CAT I
30A
3 mOhm

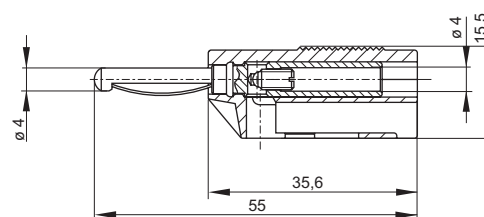
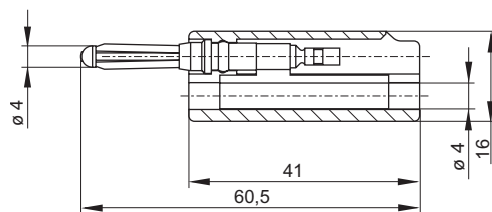
nickel plated brass
-
PP

-25 °C to +70 °C (-13 to 158°F)
---------------------------------

UL 94 HB
----------

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Plugs 4 mm System



**Type**

**VON 20**

4mm spring loaded plug, flexible insulation sleeve, nickel plated brass, screw terminal max. 1.5mm<sup>2</sup>.

**VON 30**

4mm spring loaded plug, flexible insulation sleeve, nickel plated brass, solder terminal max. 2.5mm<sup>2</sup>.

Pin diameter

4 mm (0.157")

4 mm (0.157")

**PART NO.** / Housing color

- 930046100
- 930046101
- 930046102
- 930046103
- 930046104

- 930047100
- 930047101
- 930047102
- 930047103
- 930047104

**Technical Data**

Contact Type: spring loaded pin  
 Connection Type: screw terminal max. 1.5mm<sup>2</sup>  
 Voltage Rating: 30 VAC / 60 VDC  
 Measurement Category (IEC61010): CAT I  
 Current Rating\*: 16A  
 Contact Resistance: 3 mOhm

**Material Specifications**

Plug: nickel plated brass  
 Contact Spring: -  
 Housing: PVC-P

**Environmental Conditions**

Temperature range: -25°C to +70°C (-13 to 158°F)

**Flamability Rating**

Housing: -

Contact Type: spring loaded pin  
 Connection Type: screw terminal max. 2.5mm<sup>2</sup>  
 Voltage Rating: 30 VAC / 60 VDC  
 Measurement Category (IEC61010): CAT I  
 Current Rating\*: 30A  
 Contact Resistance: 3 mOhm

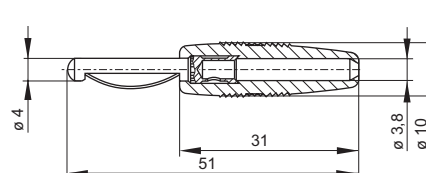
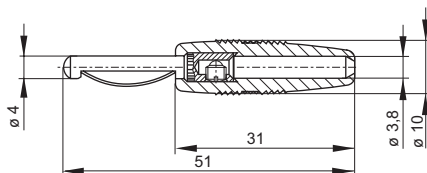
Plug: nickel plated brass  
 Contact Spring: -  
 Housing: PVC-P

Temperature range: -25°C to +70°C (-13 to 158°F)

Housing: -

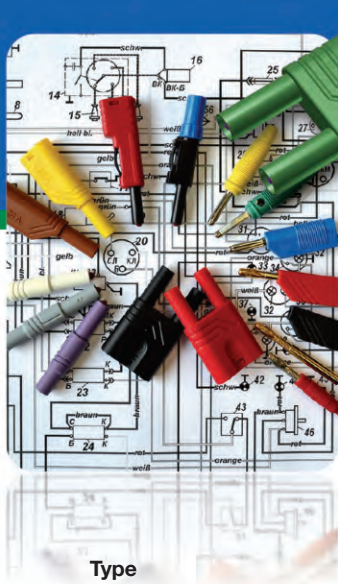
**Drawing**

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs 4 mm System



Type



## VQ 20

4mm spring loaded plug with 4mm cross hole, flexible insulation sleeve, nickel plated brass, screw terminal max. 1.5mm<sup>2</sup>.



## VQ 30

4mm spring loaded plug with 4mm cross hole, flexible insulation sleeve, nickel plated brass, solder terminal max. 2.5mm<sup>2</sup>.



Pin diameter

4 mm (0.157")

PART NO. / Housing color

- 930058100
- 930058101
- 930058102
- 930058103
- 930058104
- 930058107

4 mm (0.157")

- 930061100
- 930061101
- 930061102
- 930061103
- 930061104
- 930061107

### Technical Data

Contact Type	spring loaded pin
Connection Type	screw terminal max. 1.5mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	16A
Contact Resistance	3 mOhm

### Material Specifications

Plug	nickel plated brass
Contact Spring	-
Housing	PVC-P

### Environmental Conditions

Temperature range	-25°C to +70°C (-13 to 158°F)
-------------------	-------------------------------

### Flamability Rating

Housing	-
---------	---

spring loaded pin	spring loaded pin
solder terminal max. 2.5mm <sup>2</sup>	solder terminal max. 2.5mm <sup>2</sup>
30 VAC / 60 VDC	30 VAC / 60 VDC
CAT I	CAT I
30A	30A
3 mOhm	3 mOhm

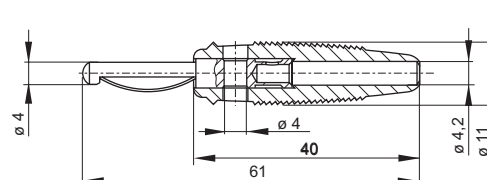
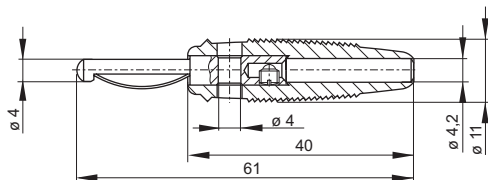
nickel plated brass	nickel plated brass
-	-
PP	PP

-25°C to +70 °C (-13 to 158°F)	-25°C to +70 °C (-13 to 158°F)
--------------------------------	--------------------------------

-	-
---	---

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Plugs

## 4 mm Retractable Plug System



### Type

#### SLS 10 B

4mm touch proof banana plug, sliding sleeve system, solder terminal max. 2.5mm<sup>2</sup> leads.

#### SLS 20 B

4mm touch proof banana plug, sliding sleeve system, screw terminal max. 1.5mm<sup>2</sup> leads.

Pin diameter

4 mm (0.157")

PART NO. / Housing color

- 931824100
- 931824101
- 931824102
- 931824103
- 931824104
- 931824107

4 mm (0.157")

- 931825100
- 931825101
- 931825102
- 931825103
- 931825104
- 931825107

### Technical Data

Contact Type	spring loaded plug
Connection Type	solder terminal max. 2.5mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	30A
Contact Resistance	5 mOhm

### Material Specifications

Plug	nickel plated brass
Contact Spring	nickel plated copper-beryllium
Housing	POM

### Environmental Conditions

Temperature range	-25°C to +70°C (-13 to 158°F)
-------------------	-------------------------------

### Flamability Rating

Housing	UL 94 HB
---------	----------

Contact Type	spring loaded plug
Connection Type	screw terminal max. 1.5mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC <sup>1</sup>
Measurement Category (IEC61010)	CAT I
Current Rating*	16A
Contact Resistance	5 mOhm

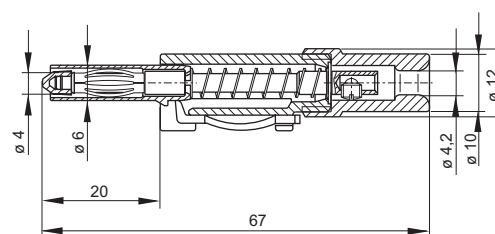
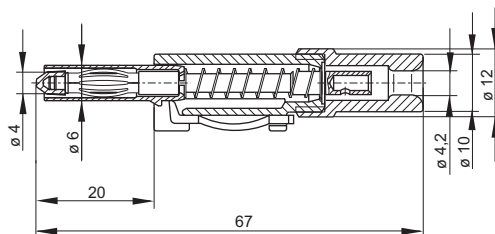
Plug	nickel plated brass
Contact Spring	nickel plated copper-beryllium
Housing	POM

Temperature range	-25°C to +70°C (-13 to 158°F)
-------------------	-------------------------------

Housing	UL 94 HB
---------	----------

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.

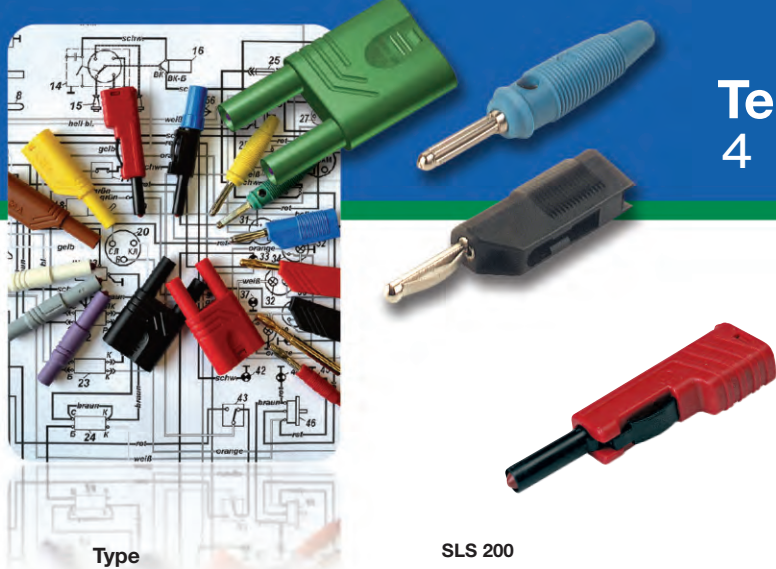


\* Please consider derating graph on page 80.

<sup>1</sup>For this two types up to DC 150 V, CAT II according IEC/EN 61010-31 item 6.4., comment 4 allowed for devices with not yet protected sockets.

# Test Plugs

## 4 mm System Retractable Plug



Type

### SLS 200

4mm touch proof banana plug, stackable, sliding sleeve system, screw terminal max. 2.5mm<sup>2</sup> leads.

Pin diameter

4 mm (0.157")

PART NO. / Housing color

- 932153100
- 932153101
- 932153102
- 932153103
- 932153104



### LAS S W

4mm safety banana plug, angled, 1000V system, screw terminal 0.5-1.5mm<sup>2</sup> leads.

4 mm (0.157")

- 934098100
- 934098101
- 934098102
- 934098103
- 934098104

### Technical Data

Contact Type	spring loaded plug
Connection Type	screw terminal max. 2.5mm <sup>2</sup>
Voltage Rating	30 VAC / 60 VDC <sup>1</sup>
Measurement Category (IEC61010)	CAT I
Current Rating*	30A
Contact Resistance	5 mOhm

### Material Specifications

Plug	nickel plated brass
Contact Spring	nickel plated copper-beryllium
Housing	PP

### Environmental Conditions

Temperature range	-25°C to +70°C (-13 to 158°F)
-------------------	-------------------------------

### Flamability Rating

Housing	UL 94 HB
---------	----------

spring loaded plug
screw terminal 0.5-1.5mm <sup>2</sup>
AC/DC 1000V
CAT III
24A
-

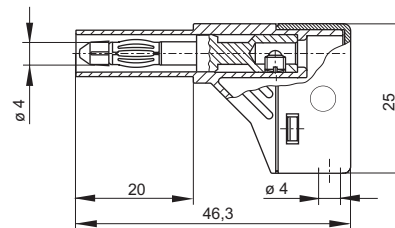
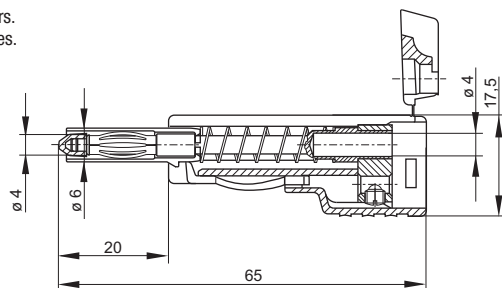
nickel plated brass
nickel plated copper-beryllium
Polyamide

-25°C to +70°C (-13 to 158°F)
-------------------------------

UL 94 V-2
-----------

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

<sup>1</sup>For this two types up to DC 150 V, CAT II according IEC/EN 61010-31 item 6.4., comment 4 allowed for devices with not yet protected sockets.

# Test Plugs 4 mm System



**Type**

**LAS S WS**  
4mm safety banana plug,  
stackable, 1000V system,  
screw terminal 0.5-1.5mm<sup>2</sup>  
leads.

Pin diameter

4 mm (0.157")

**PART NO. / Housing color**

- 934099100
- 934099101
- 934099102
- 934099103
- 934099104
- 934099105
- 934099106
- 934099107
- 934099109



**LAS S G**  
4mm safety banana plug,  
stackable, 1000V system,  
screw terminal 0.5-1.5mm<sup>2</sup>  
leads.

4 mm (0.157")

- 934097100
- 934097101
- 934097102
- 934097103
- 934097104
- 934097105
- 934097106
- 934097107
- 934097109



**KST S WS**  
4mm dual safety plug,  
stackable, 1000V system,  
nickel plated, 4mm jack.

4 mm (0.157")

- 932200100
- 932200101
- 932200102
- 932200103
- 932200104

**Technical Data**

Contact Type: spring loaded plug  
 Connection Type: screw terminal 0.5-1.5mm<sup>2</sup>  
 Voltage Rating: AC/DC 1000 V  
 Measurement Category (IEC61010): CAT II  
 Current Rating\*: 24A  
 Contact Resistance: -

**Material Specifications**

Plug: nickel plated brass  
 Contact Spring: nickel plated copper-beryllium  
 Housing: Polyamide

**Environmental Conditions**

Temperature range: -15°C to +70°C (5 to 158°F)

**Flamability Rating**

Housing: UL 94 V-2

Contact Type: spring loaded plug  
 Connection Type: screw terminal 0.5-1.5mm<sup>2</sup>  
 Voltage Rating: AC/DC 1000 V  
 Measurement Category (IEC61010): CAT III  
 Current Rating\*: 24A  
 Contact Resistance: -

Plug: nickel plated brass  
 Contact Spring: nickel plated copper-beryllium  
 Housing: Polyamide

Temperature range: -15°C to +70°C (5 to 158°F)

Housing: UL 94 V-2

Contact Type: 2x spring loaded plug  
 Connection Type: jack Ø 4 mm  
 Voltage Rating: AC/DC 1000 V  
 Measurement Category (IEC61010): CAT II  
 Current Rating\*: 32A  
 Contact Resistance: 8 mOhm

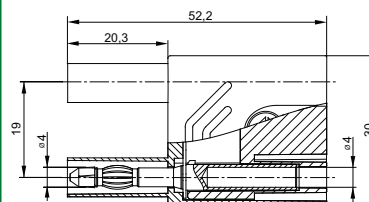
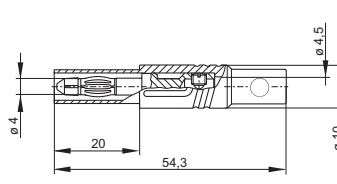
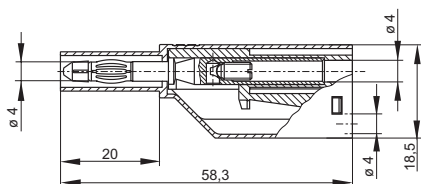
Plug: nickel plated copper-beryllium  
 Contact Spring: nickel plated brass  
 Housing: Polyamide

Temperature range: -15°C to +70°C (5 to 158°F)

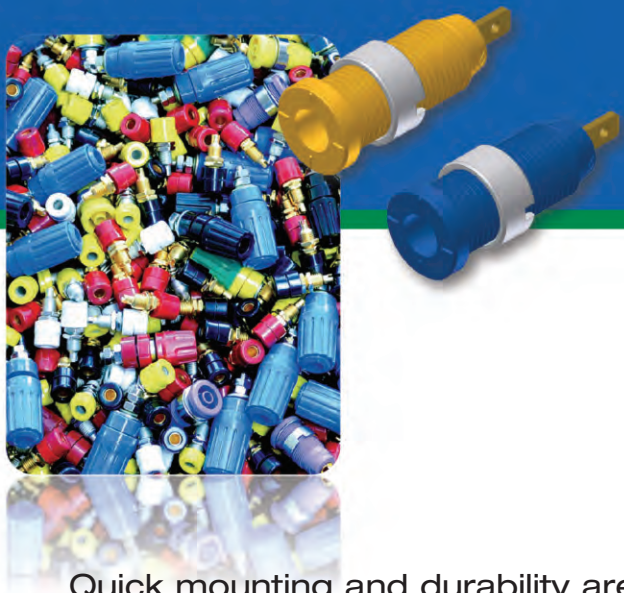
Housing: UL 94 V-2

**Drawing**

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



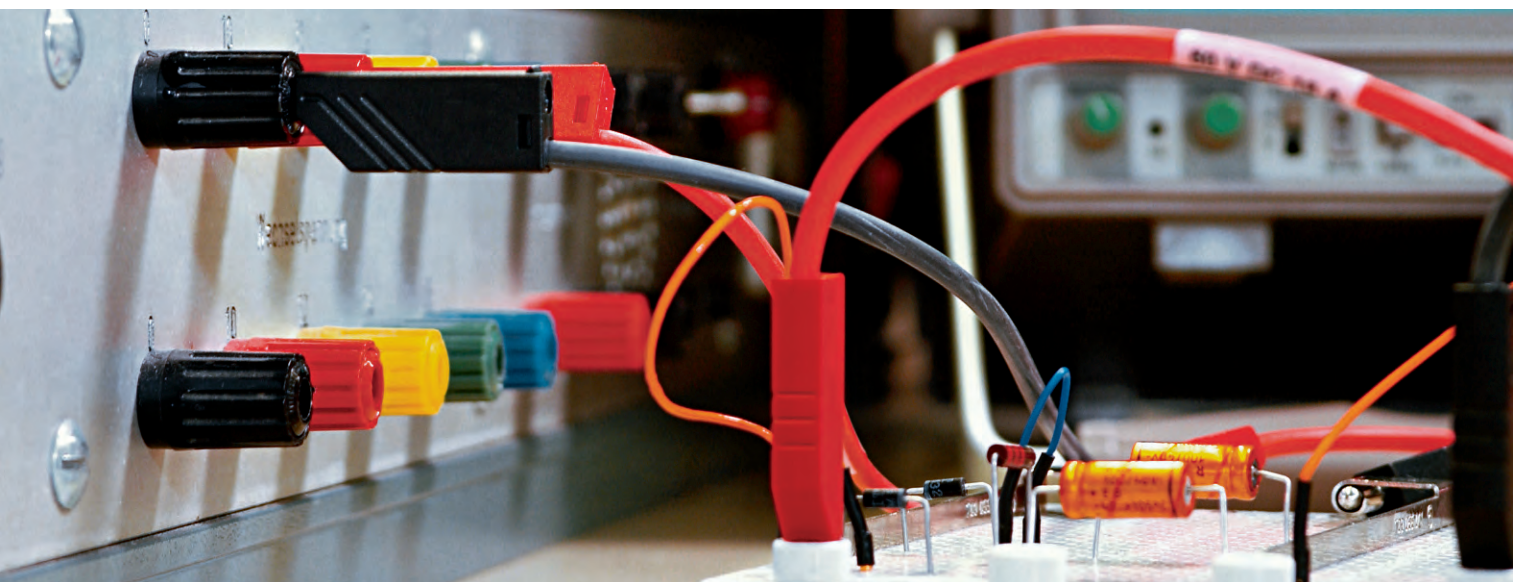
\* Please consider derating graph on page 80.



## Test Jacks

Quick mounting and durability are 2 attributes that characterize Altech test jacks and sockets. They can be used as connecting sockets in power supplies, connecting points in service devices or test jacks in test & measurement applications and devices.

- Large variety in colors
- Tin/ nickel/ gold plating
- Screw-in and press-in versions
- Regular and spring loaded jacks/ sockets
- Up to 1000V CAT III voltage rating



# Test Jacks 2 mm System



**Type** **MKU 1**  
2mm mini Adapter, tin plated Copper-Beryllium contact spring with solder terminal. Flexible, shatter-proof insulation sleeve, max. connecting lead diameter 2mm.

Pin Diameter 2 mm

**PART NO. / Housing color**

- 930320100
- 930320101
- 930320102
- 930320103
- 930320104
- 930320107



**MBI 1 / MBI 1 Au**  
2mm panel mount mini test jack, tin/ gold plated Copper-Beryllium contact spring with solder terminal. Installation in equipment chassis and switch panels, max. wall thickness 5mm.

2 mm

**Nickel Plated**

- 930308100
- 930308101
- 930308102
- 930308103
- 930308104
- 930308106

**Gold Plated**

- 930308700
- 930308701
- 930308702
- 930308703
- 930308704
- 930308706

### Technical Data

**Contact Type** spring-loaded jack Ø 2 mm  
**Connection Type** solder terminal max Ø 2 mm  
**Voltage Rating** 30 VAC / 60 VDC  
**Measurement Category (IEC61010)** CAT I  
**Current Rating\*** 6 A  
**Contact Resistance** 6 mOhm  
**Mounting Type** -

### Material Specifications

**Jack Body** -  
**Contact Spring** tin plated copper-beryllium  
**Housing** PVC-P

### Environmental Conditions

**Temperature Range** -20°C to +60 °C (-4 to 140°F)

### Flamability Rating

**Housing** -

spring-loaded jack Ø 2 mm

solder terminal  
30 VAC / 60 VDC  
CAT I  
6 A  
6 mOhm  
screw thread M5

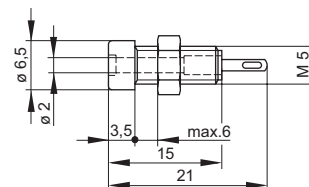
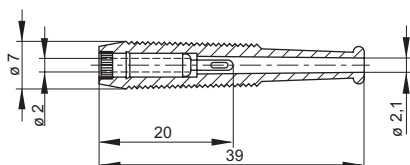
-  
tin plated copper-beryllium | gold plated copper-beryllium  
Polyamide

-20°C to +60 °C (-4 to 140°F)

UL 94 HB

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 2 mm System

## Type

### MBU 1

2mm panel mount mini test jack, nickel plated brass, spring loaded with solder terminal. max. installation wall thickness 8mm.



### MBU 2

2mm mini metal test jack, tin plated brass, spring loaded with PCB soldering terminal. Fits MST3, MVL 2 and MST201.



Pin Diameter

2 mm

2 mm

**PART NO.** / Housing color

**930312000**

**931337000**

## Technical Data

Contact Type	spring-loaded jack Ø 2 mm
Connection Type	solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6 A
Contact Resistance	6 mOhm
Mounting Type	screw thread M5

## Material Specifications

Jack Body	nickel plated brass
Contact Spring	tin plated copper-beryllium
Housing	-

## Environmental Conditions

Temperature Range	-20°C to +60 °C (-4 to 140°F)
-------------------	-------------------------------

## Flamability Rating

Housing	-
---------	---

spring-loaded jack Ø 2 mm
solder terminal
30 VAC / 60 VDC
CAT I
6 A
6 mOhm
screw

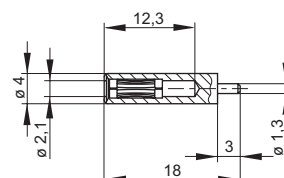
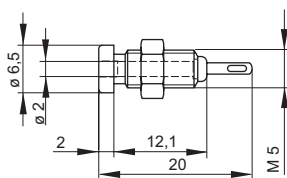
tin plated brass
gold plated copper-beryllium
-

-20°C to +60 °C (-4 to 140°F)
-------------------------------

-
---

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 2 mm System



### Type

#### MPB 1

2mm mini test jack, dimensions according to DIN41649. Suitable for testing PCB boards during operation.

Pin Diameter

2 mm

PART NO. / Housing color

● 930224100

● 930224101



#### MPK 1

2mm insulated panel mount binding post with cross hole, gold plated Copper-Beryllium contact spring, tin plated brass thread bold with solder terminal. max. panel thickness 8mm

2 mm

● 930268100

● 930268101

### Technical Data

Contact Type	spring-loaded jack Ø 2 mm
Connection Type	solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6 A
Contact Resistance	6 mOhm
Mounting Type	PCB

### Material Specifications

Jack Body	-
Contact Spring	tin plated bronze
Housing	PC

### Environmental Conditions

Temperature Range	-20°C to +60 °C (-4 to 140°F)
-------------------	-------------------------------

### Flamability Rating

Housing	UL 94 HB
---------	----------

Contact Type	spring-loaded jack Ø 2 mm, cross hole Ø 2 mm
Connection Type	solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	6 A
Contact Resistance	6 mOhm
Mounting Type	screw thread M3

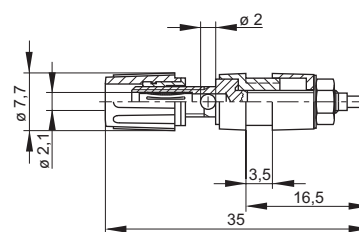
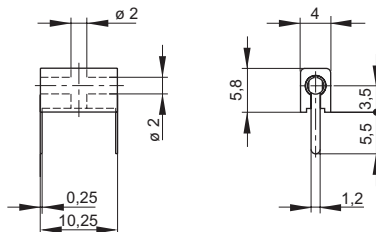
Jack Body	gold plated copper-beryllium
Contact Spring	-
Housing	Polyamide

Temperature Range	-20°C to +60 °C (-4 to 140°F)
-------------------	-------------------------------

Housing	UL 94 V-2
---------	-----------

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 2 mm System



Type



**MSEB 2600 G M3 Au**  
2mm panel mount safety test jack, gold plated brass with M3 thread and solder terminal. max. installation wall thickness 8mm.



**MSEB 2610 F2.8 Au**  
2mm panel mount safety test jack, gold plated brass with flat 2.8x0.8mm DIN46244 terminal. max. installation wall thickness 8mm.



**MSEB 2630 S1.9 Au**  
2mm panel mount safety test jack, gold plated brass with 1.9mm solder pin terminal. max. installation wall thickness 8mm.

Pin Diameter  
PART NO. / Housing color

- 2 mm
- 975454700
  - 975454701
  - 975454702
  - 975454703
  - 975454704
  - 975454705
  - 975454706
  - 975454707
  - 975454709

- 2 mm
- 975455700
  - 975455701
  - 975455702
  - 975455703
  - 975455704
  - 975455705
  - 975455706
  - 975455707
  - 975455709

- 2 mm
- 975459700
  - 975459701
  - 975459702
  - 975459703
  - 975459704
  - 975459705
  - 975459706
  - 975459707
  - 975459709

### Technical Data

Contact Type	jack Ø 2 mm
Connection Type	M3 thread, solder terminal
Voltage Rating	AC/DC 1000V
Measurement Category (IEC61010)	CAT III
Current Rating*	10 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M8

### Material Specifications

Jack Body	gold plated brass
Contact Spring	-
Housing	Polyamide

### Environmental Conditions

Temperature Range	-15°C to +70°C (5 to 158°F)
-------------------	-----------------------------

### Flamability Rating

Housing	UL 94 V-2
---------	-----------

Contact Type	jack Ø 2 mm
Connection Type	flat 2.8x0.8 mm push in tab
Voltage Rating	AC/DC 1000V
Measurement Category (IEC61010)	CAT III
Current Rating*	10 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M8

Jack Body	gold plated brass
Contact Spring	-
Housing	Polyamide

Temperature Range	-15°C to +70°C (5 to 158°F)
-------------------	-----------------------------

Housing	UL 94 V-2
---------	-----------

Contact Type	jack Ø 2 mm
Connection Type	solder terminal
Voltage Rating	AC/DC 1000V
Measurement Category (IEC61010)	CAT III
Current Rating*	10 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M8

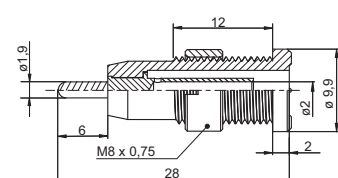
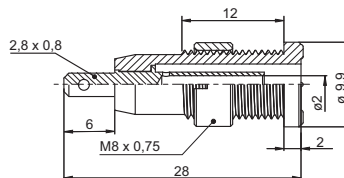
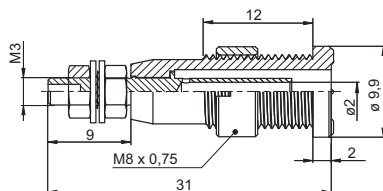
Jack Body	gold plated brass
Contact Spring	-
Housing	Polyamide

Temperature Range	-15°C to +70°C (5 to 158°F)
-------------------	-----------------------------

Housing	UL 94 V-2
---------	-----------

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Jacks 4 mm System



## Type

### KUN 30 / KUN 30 Au

4mm Adapter, nickel/ gold plated brass with solder terminal max 2.5mm<sup>2</sup>. Flexible, shatter-proof insulation sleeve

Pin Diameter

4 mm

PART NO. / Housing color

Nickel Plated	Gold Plated
● 931804100	● 931804700
● 931804101	● 931804701
● 931804102	● 931804702
● 931804103	● 931804703
● 931804104	● 931804704
○ 931804107 nickel	○ 931804707 gold



### PB 4

4mm test jack, dimensions according to DIN41649. Suitable for testing PCB boards during operation.

4 mm

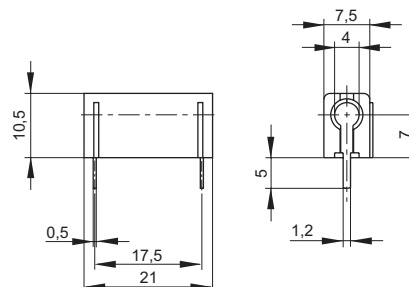
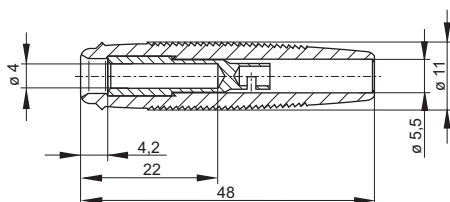
● 973582100
● 973582101

## Technical Data

Contact Type	jack Ø 4 mm	jack Ø 4 mm
Connection Type	solder terminal (max. 2.5mm <sup>2</sup> )	solder
Voltage Rating	30 VAC / 60 VDC	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I	CAT I
Current Rating*	16 A	16 A
Contact Resistance	3 mOhm	5 mOhm
Mounting Type	-	PCB
<b>Material Specifications</b>		
Jack Body	nickel plated brass   gold plated brass	tin plated brass
Contact Spring	-	-
Housing	PVC-P	PC
<b>Environmental Conditions</b>		
Temperature Range	-25°C to +70 °C (-13 to 158°F)	-25°C to +70 °C (-13 to 158°F)
<b>Flamability Rating</b>		
Housing	-	UL 94 HB

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 4 mm System

## Type

### KD 10

4mm Insulated Adapter, nickel plated brass, for two 4mm plugs

### KUN 10

4mm Insulated Adapter, tin plated brass jack and screw terminal max 1.5mm<sup>2</sup>

Pin Diameter

4 mm

4 mm

PART NO. / Housing color

● 930109100  
● 930109101

● 930189100  
● 930189101

## Technical Data

Contact Type	jack Ø 4 mm
Connection Type	jack (Ø 4 mm)
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	10 A
Contact Resistance	5 mOhm
Mounting Type	-

## Material Specifications

Jack Body	nickel plated brass
Contact Spring	-
Housing	PS

## Environmental Conditions

Temperature Range	-25°C to +70 °C (-13 to 158°F)
-------------------	--------------------------------

## Flamability Rating

Housing	UL 94 HB
---------	----------

jack Ø 4 mm
screw terminal max. 1.5mm <sup>2</sup>
30 VAC / 60 VDC
CAT I
16 A
3 mOhm
-

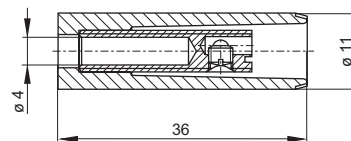
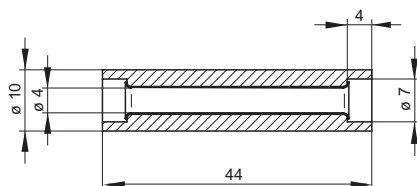
tin plated brass
-
PS

-25°C to +70 °C (-13 to 158°F)
--------------------------------

UL 94 HB
----------

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Jacks 4 mm System



**Type** **BO 10**  
4mm panel mount test jack, nickel plated brass, M6 thread screw terminal. panel thickness 1.5-8mm

Pin Diameter 4 mm

**PART NO. / Housing color** **930160000**



**BU 10 / BU 10 Au**  
4mm panel mount test jack, nickel/gold plated brass, M6 thread screw/ solder terminal. max. panel thickness 11mm

4 mm

**930147000**  
(Nickel plated)  
**930147700**  
(Gold plated)

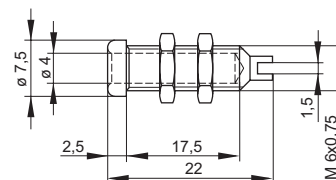
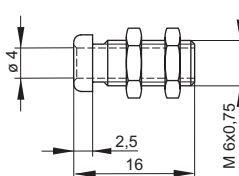
### Technical Data

Contact Type	jack Ø 4 mm
Connection Type	M6 thread
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	16 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M6
<b>Material Specifications</b>	
Jack Body	nickel plated brass
Contact Spring	-
Housing	-
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +70 °C (-13 to 158°F)
<b>Flamability Rating</b>	
Housing	-

Contact Type	jack Ø 4 mm
Connection Type	M6 thread, solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	16 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M6
<b>Material Specifications</b>	
Jack Body	nickel / gold plated brass
Contact Spring	-
Housing	-
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +70 °C (-13 to 158°F)
<b>Flamability Rating</b>	
Housing	-

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 4 mm System

## Type

### BU 20

4mm panel mount test jack, nickel plated brass, M6 thread screw/ solder terminal. max. panel thickness 13.5mm

### BIL 20 / BIL 20 Au

4mm panel mount test jack, tin/ gold plated brass, M6 thread screw/ solder terminal, max. panel thickness 2mm

Pin Diameter

4 mm

4 mm

PART NO. / Housing color

930177000

#### Nickel Plated

- 930176100
- 930176101
- 930176102
- 930176103
- 930176104
- 930176105
- 930176106
- 930176107
- 930176109

#### Gold Plated

- 930176700
- 930176701
- 930176702
- 930176703
- 930176704
- 930176705
- 930176706
- 930176707
- 930176709

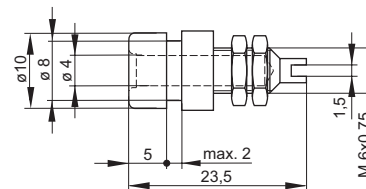
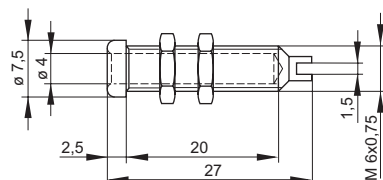
## Technical Data

Contact Type	jack Ø 4 mm
Connection Type	M6 thread, solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	16 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M6
<b>Material Specifications</b>	
Jack Body	nickel plated brass
Contact Spring	nickel
Housing	-
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +70 °C (-13 to 158°F)
<b>Flamability Rating</b>	
Housing	-

Contact Type	jack Ø 4 mm
Connection Type	M6 thread, solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	32 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M6
<b>Material Specifications</b>	
Jack Body	tin / gold plated brass
Contact Spring	-
Housing	Polyamide
<b>Environmental Conditions</b>	
Temperature Range	-25°C to +70 °C (-13 to 158°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

## Drawing

Measurements are shown in millimeters. Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Jacks 4 mm System



## Type

### BIL 30 / BIL 30 Au

4mm panel mount test jack, tin/ gold plated brass, M6 thread screw/ solder terminal, max. panel thickness 4mm

Pin Diameter

4 mm

PART NO. / Housing color

Nickel Plated	Gold Plated
● 930166100	● 930166700
● 930166101	● 930166701
● 930166102	● 930166702
● 930166103	● 930166703
● 930166104	● 930166704
● 930166105	● 930166705
● 930166106	● 930166706
● 930166107	● 930166707
● 930166109	● 930166709



### BUG 10 / BUG 10 Au

4mm panel mount test jack, tin/ gold plated brass, M6 thread screw/ solder terminal, max. panel thickness 8mm

4 mm

Nickel Plated	Gold Plated
● 930175100	● 930175700
● 930175101	● 930175701
● 930175102	● 930175702
● 930175103	● 930175703
● 930175104	● 930175704
○ 930175107	○ 930175707

## Technical Data

Contact Type	jack Ø 4 mm
Connection Type	M6 thread, solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	32 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M6

## Material Specifications

Jack Body	tin / gold plated brass
Contact Spring	-
Housing	Polyamide

## Environmental Conditions

Temperature Range	-25°C to +85 °C (-13 to 185°F)
-------------------	--------------------------------

## Flamability Rating

Housing	UL 94 V-2
---------	-----------

jack Ø 4 mm

Connection Type	M6 thread, solder terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	16 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M6

tin / gold plated brass

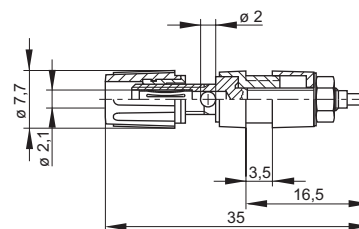
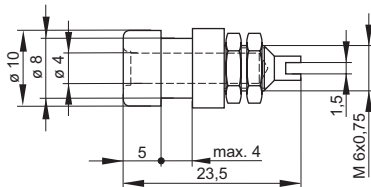
-  
Polyamide

-25°C to +85 °C (-13 to 185°F)

UL 94 V-2

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 4 mm System

## Type

### PK 110

4mm insulated panel mount binding post with 2mm cross hole, nickel plated brass M4 thread terminal.

### PKI 110

4mm insulated panel mount binding post with 2mm cross hole, nickel plated brass, M4 thread terminal, max. panel thickness 3.5mm.

Pin Diameter

4 mm

4 mm

PART NO. / Housing color

- 931713100
- 931713101

- 931714100
- 931714101
- 931714102
- 931714103
- 931714104
- 931714188

## Technical Data

Contact Type	jack Ø 4 mm, cross hole Ø 2 mm
Connection Type	M4 thread terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	35 A
Contact Resistance	2 mOhm
Mounting Type	screw thread M4

## Material Specifications

Jack Body	nickel plated brass
Contact Spring	-
Housing	Polyamide

## Environmental Conditions

Temperature Range	-25°C to +100 °C (-13 to 212°F)
-------------------	---------------------------------

## Flamability Rating

Housing	UL 94 V-2
---------	-----------

jack Ø 4 mm, cross hole Ø 2 mm

Connection Type	M4 thread terminal
Voltage Rating	30 VAC / 60 VDC
Measurement Category (IEC61010)	CAT I
Current Rating*	35 A
Contact Resistance	2 mOhm
Mounting Type	screw thread M4

nickel plated brass

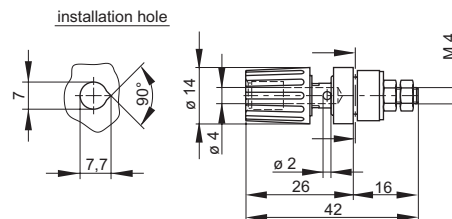
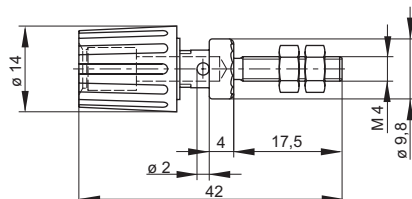
-  
Polyamide

-25°C to +100 °C (-13 to 212°F)

UL 94 V-2

## Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 4 mm System



**Type** **PKI 100**  
4mm insulated panel mount binding post with 2mm cross hole, nickel plated brass, M4 thread terminal, max. panel thickness 3.5mm.

**PKI 10 A / PKI 10 A Au**  
4mm insulated panel mount binding post with 2mm cross hole, nickel/ gold plated brass, M4 thread terminal, max. panel thickness 2mm

Pin Diameter 4 mm

4 mm

**PART NO. / Housing color**

- 930757100
- 930757101
- 930757102
- 930757103
- 930757104
- 930757188

**Nickel Plated**      **Gold Plated**

- 930103100      ● 930103700
- 930103101      ● 930103701
- 930103102      ● 930103702
- 930103103      ● 930103703
- 930103104      ● 930103704
- 930103188      ● 930103788

### Technical Data

Contact Type jack Ø 4 mm, cross hole Ø 2 mm  
 Connection Type M4 thread terminal  
 Voltage Rating 30 VAC / 60 VDC  
 Measurement Category (IEC61010) CAT I  
 Current Rating\* 32 A  
 Contact Resistance 2 mOhm  
 Mounting Type screw thread M4

### Material Specifications

Jack Body nickel plated brass  
 Contact Spring -  
 Housing Polyamide

### Environmental Conditions

Temperature Range -25°C to +100 °C (-13 to 212°F)

### Flamability Rating

Housing UL 94 V-2

Contact Type jack Ø 4 mm, cross hole Ø 2 mm  
 Connection Type M 4 thread terminal  
 Voltage Rating 30 VAC / 60 VDC  
 Measurement Category (IEC61010) CAT I  
 Current Rating\* 35 A  
 Contact Resistance 2 mOhm  
 Mounting Type screw thread M4

nickel plated brass | gold plated brass

-

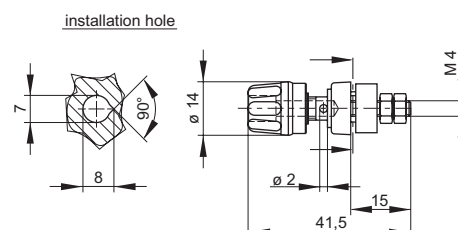
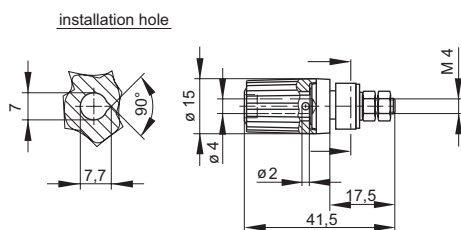
PF

-25°C to +100 °C (-13 to 212°F)

-

### Drawing

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 4 mm System

## Type



### PK 10 A

4mm insulated panel mount binding post with 2mm cross hole, nickel plated brass, M4 thread terminal



### PKN 10 B

4mm insulated panel mount binding post with 2.6mm cross hole, nickel plated brass, M6 thread terminal

Pin Diameter

4 mm

4 mm

PART NO. / Housing color

- 930099100
- 930099101
- 930099102
- 930099103
- 930099104
- 930099188

- 930117100
- 930117101

## Technical Data

Contact Type jack Ø 4 mm, cross hole Ø 2 mm  
 Connection Type M 4 thread terminal  
 Voltage Rating 30 VAC / 60 VDC  
 Measurement Category (IEC61010) CAT I  
 Current Rating\* 16 A  
 Contact Resistance 2 mOhm  
 Mounting Type screw thread M4

## Material Specifications

Jack Body nickel plated brass  
 Contact Spring nickel  
 Housing PF

## Environmental Conditions

Temperature Range -25°C to +100 °C (-13 to 212°F)

## Flamability Rating

Housing -

jack Ø 4 mm, cross hole Ø 2,6 mm  
 M6 thread, solder terminal  
 30 VAC / 60 VDC  
 CAT I  
 63 A  
 2 mOhm  
 screw thread M6

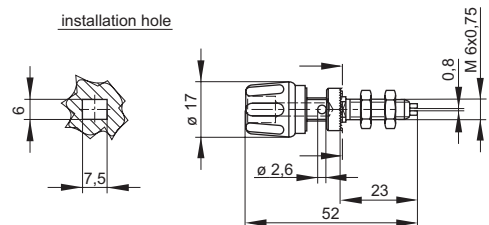
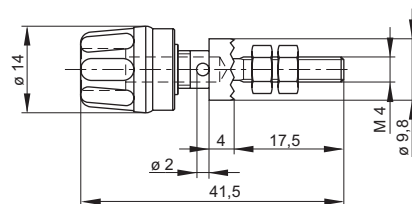
brass  
 nickel plated nickel  
 PF

-25°C to +100 °C (-13 to 212°F)

UL 94 HB

## Drawing

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Jacks 4 mm System



**Type**

**PKNI 10 B**

4mm insulated panel mount binding post with 2.6mm cross hole, nickel plated brass, M6 thread/ solder terminal, max. panel thickness 3.5mm

Pin Diameter

4 mm

**PART NO.** / Housing color

- 930136100
- 930136101



**PKNI 20 B**

4mm insulated panel mount binding post with 2.6mm cross hole, nickel plated brass, M6 thread/ solder terminal, max. panel thickness 3.5mm

4 mm

- 930144100
- 930144101

**Technical Data**

Contact Type jack Ø 4 mm, cross hole Ø 2.6 mm  
 Connection Type M6 thread, solder terminal  
 Voltage Rating 30 VAC / 60 VDC  
 Measurement Category (IEC61010) CAT I  
 Current Rating\* 63 A  
 Contact Resistance 2 mOhm  
 Mounting Type screw thread M6

**Material Specifications**

Jack Body nickel plated brass  
 Contact Spring -  
 Housing PF

**Environmental Conditions**

Temperature Range -25°C to +100 °C (-13 to 212°F)

**Flamability Rating**

Housing UL 94 HB

Contact Type jack Ø 4 mm, cross hole Ø 2.6 mm  
 Connection Type M6 thread, solder terminal  
 Voltage Rating 30 VAC / 60 VDC  
 Measurement Category (IEC61010) CAT I  
 Current Rating\* 63 A  
 Contact Resistance 2 mOhm  
 Mounting Type screw thread M6

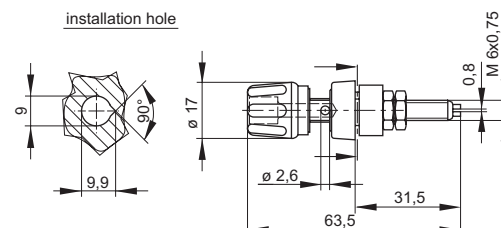
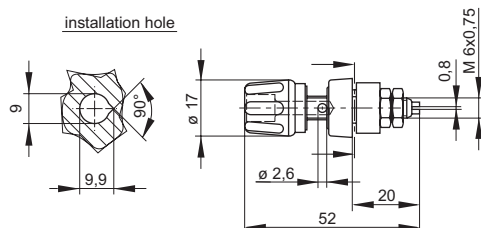
Jack Body nickel plated brass  
 Contact Spring -  
 Housing PF

Temperature Range -25°C to +100 °C (-13 to 212°F)

Housing UL 94 HB

**Drawing**

Measurements are shown in millimeters.  
 Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 4 mm System

Type



## KUN S

4mm Safety adapter, nickel plated brass with screw terminal 0.5-1.5mm<sup>2</sup>, IEC61010 1000V system



## SEB 2600 G M4

4mm panel mount safety Jack, touch proof, gold plated brass with M4 thread/ solder terminal, max. panel thickness 6mm

Pin Diameter  
PART NO. / Housing color

- 4 mm
- 934096100
  - 934096101
  - 934096102
  - 934096103
  - 934096104

- 4 mm
- 972354100
  - 972354101
  - 972354102
  - 972354103
  - 972354104
  - 972354105
  - 972354106
  - 972354107
  - 972354109
  - 972354188

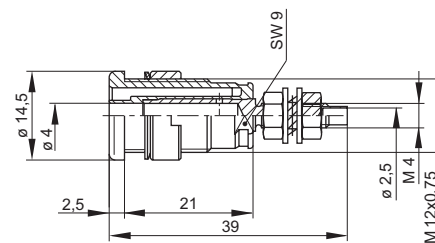
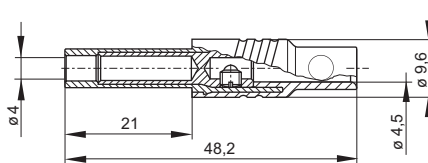
### Technical Data

Contact Type	jack Ø 4 mm
Connection Type	screw terminal max. 1.5mm <sup>2</sup>
Voltage Rating	AC/DC 1000 V
Measurement Category (IEC61010)	CAT III
Current Rating*	24 A
Contact Resistance	-
Mounting Type	-
<b>Material Specifications</b>	
Jack Body	nickel plated brass
Contact Spring	-
Housing	Polyamide
<b>Environmental Conditions</b>	
Temperature Range	-15°C to +70°C (5 to 158°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

Contact Type	jack Ø 4 mm
Connection Type	M4 thread, solder terminal
Voltage Rating	AC/DC 1000 V
Measurement Category (IEC61010)	CAT III
Current Rating*	32 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M12
<b>Material Specifications</b>	
Jack Body	gold plated brass
Contact Spring	-
Housing	Polymide
<b>Environmental Conditions</b>	
Temperature Range	-40°C to +80°C (-40 to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test Jacks 4 mm System



**SEB 2610 F4,8**  
4mm panel mount safety Jack, touch proof, gold plated brass with flat 4.8x0.8mm DIN46244 terminal, max. panel thickness 6mm

**Type**

Pin Diameter  
**PART NO. / Housing color**

- 972355100
- 972355101
- 972355102
- 972355103
- 972355104
- 972355105
- 972355106
- 972355107
- 972355109
- 972355188



**SEB 2620 F6,3**  
4mm panel mount safety Jack, touch proof, gold plated brass with flat 6.3x0.8mm DIN46244 terminal, max. panel thickness 6mm

- 972356100
- 972356101
- 972356102
- 972356103
- 972356104
- 972356105
- 972356106
- 972356107
- 972356109
- 972356188

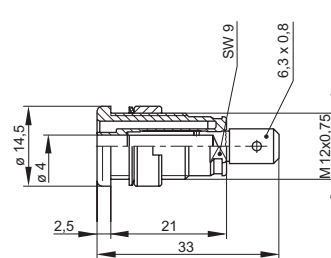
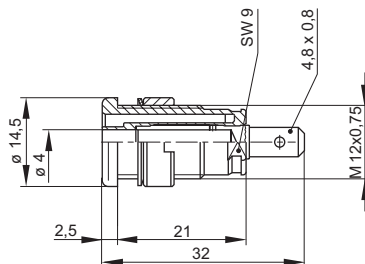
**Technical Data**

Contact Type	jack Ø 4 mm
Connection Type	flat 4.8 x 0.8 mm tab
Voltage Rating	AC/DC 1000 V
Measurement Category (IEC61010)	CAT III
Current Rating*	25 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M12
<b>Material Specifications</b>	
Jack Body	gold plated brass
Contact Spring	-
Housing	Polyamide
<b>Environmental Conditions</b>	
Temperature Range	-40°C to +80°C (-40 to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

Contact Type	jack Ø 4 mm
Connection Type	flat 6.3 x 0.8 mm tab
Voltage Rating	AC/DC 1000 V
Measurement Category (IEC61010)	CAT III
Current Rating*	32 A
Contact Resistance	5 mOhm
Mounting Type	screw thread M12
<b>Material Specifications</b>	
Jack Body	gold plated brass
Contact Spring	-
Housing	Polyamide
<b>Environmental Conditions</b>	
Temperature Range	-40°C to +80°C (-40 to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

**Drawing**

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.



# Test Jacks 4 mm System



Type



### SEB 2630 S1,9

4mm panel mount safety Jack, touch proof, gold plated brass with soldering pin 1.9mm, max. panel thickness 6mm

### MW SEB

Installation tool for 4mm panel mount safety jacks.



Pin Diameter  
PART NO. / Housing color

- 4 mm
- 972359100
  - 972359101
  - 972359102
  - 972359103
  - 972359104
  - 972359105
  - 972359106
  - 972359107
  - 972359109
  - 972359188

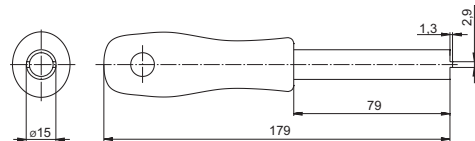
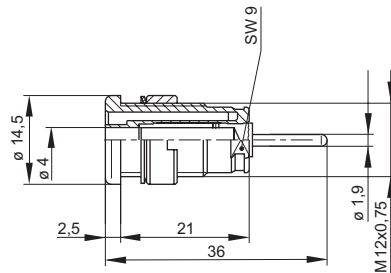
- 4 mm
- 973929000

### Technical Data

Contact Type	jack Ø 4 mm	-
Connection Type	solder pin 1.9mm	-
Voltage Rating	AC/DC 1000 V	-
Measurement Category (IEC61010)	CAT III	-
Current Rating*	24 A	-
Contact Resistance	5 mOhm	-
Mounting Type	screw thread M12	-
<b>Material Specifications</b>		
Jack Body	gold plated brass	-
Contact Spring	-	-
Housing	Polyamide	-
<b>Environmental Conditions</b>		
Temperature Range	-40°C to +80°C (-40 to 176°F)	-
<b>Flamability Rating</b>		
Housing	UL 94 V-2	-

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

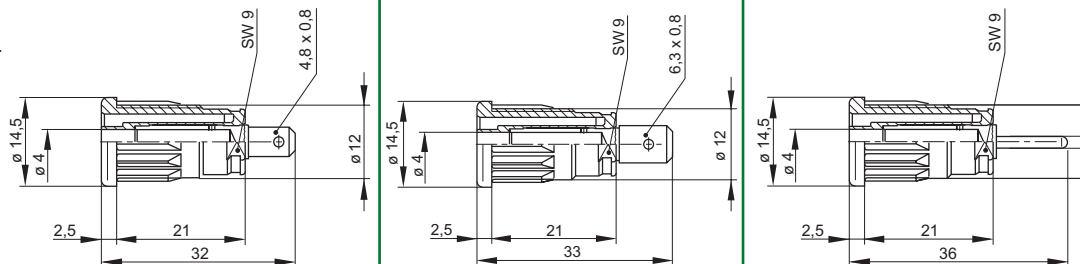
# Test Jacks 4 mm System

			
	CE	CE	CE
<b>Type</b>	<b>SEP 2610 F4,8</b> Safety press-in socket, 4 mm diameter, contact-protected, with 4.8 x 0.8 mm tab connector complying with DIN 46 244, gold-plated brass. For rapid installation into switch panels with wall thicknesses between 1-10 mm. Installation hole: 12.2 +/- 0.1 mm diameter. Entry chamfer: 0.5 x 45 degree.	<b>SEP 2620 F6,3</b> Safety press-in socket, 4 mm diameter, contact-protected, with 6.3 x 0.8 mm tab connector complying with DIN 46244, gold-plated brass. For rapid installation into switch panels with wall thicknesses between 1-10 mm. Installation hole: 12.2 +/- 0.1 mm diameter. Entry chamfer: 0.5 x 45 degree.	<b>SEP 2630 S1,9</b> Gold-plated brass safety press-in socket, 4 mm diameter, contact-protected, with 1.9 mm soldering spike. For installation into switch panels with wall thicknesses between 1 mm and 10 mm. Installation hole: 12.2 +/- 0.1 mm diameter. Entry chamfer: 0.5 x 45 degree.
Pin Diameter	2 mm	2 mm	2 mm
<b>PART NO. / Housing color</b>	<ul style="list-style-type: none"> <li>● 972361100</li> <li>● 972361101</li> <li>● 972361102</li> <li>● 972361103</li> <li>● 972361104</li> <li>● 972361188</li> </ul>	<ul style="list-style-type: none"> <li>● 972362100</li> <li>● 972362101</li> <li>● 972362102</li> <li>● 972362103</li> <li>● 972362104</li> <li>● 972362188</li> </ul>	<ul style="list-style-type: none"> <li>● 972363100</li> <li>● 972363101</li> <li>● 972363102</li> <li>● 972363103</li> <li>● 972363104</li> <li>● 972363188</li> </ul>

<b>Technical Data</b>	
Contact Type	jack Ø 4 mm
Connection Type	flat 4.8 x 0.8 mm tab
Voltage Rating	AC/DC 1000 V
Measurement Category (IEC61010)	CAT III
Current Rating*	24 A
Contact Resistance	5 mOhm
Mounting Type	press in
<b>Material Specifications</b>	
Jack Body	gold plated brass
Contact Spring	-
Housing	PA
<b>Environmental Conditions</b>	
Temperature Range	-40°C to +80°C (-40 to 176°F)
<b>Flamability Rating</b>	
Housing	UL 94 V-2

### Drawing

Measurements are shown in millimeters.  
Multiply by 0.03937 to convert to inches.



\* Please consider derating graph on page 80.

# Test & Measurement Sets



Altech offers a variety of Test & Measurement Sets consisting of suitable components for certain System Types and specific applications. Comprehensive Service cases include extensive line of products for in-field installation, testing and service.

- 0.64 System
- 2mm System
- 4mm System
- 4mm Retractable Sleeve System
- 4mm Safety System
- Automobile Test Kit
- Service cases for Electronic or Electrical applications







Type  
PART No.  
Description

**PMS 0.64**  
**932959001**

Micro Test Equipment Set for SMD Components and 0.64mm systems.

- 1 x Plunger Style Test Probe MICRO-KLEPS black 973972100
- 1 x Plunger Style Test Probe MICRO-KLEPS red 973972101
- 1 x Test Probe MICRO-PRUEF MPS 2/0,64 FT black 973995100
- 1 x Test Probe MICRO-PRUEF MPS 2/0,64 FT red 973995101
- 1 x Alligator Clip AGF 1 930476001
- 1 x Measuring Lead MAL N 4-0,64/100-0,25 black 934160100
- 1 x Measuring Lead MAL N 4-0,64/100-0,25 red 934160101



Type  
PART No.  
Description

**PMS 2**  
**932961001**

Test Equipment Set for 2mm systems.

- 1 x Plunger Style Test Probe KLEPS 2 BU black 973501100
- 1 x Plunger Style Test Probe KLEPS 2 BU red 973501101
- 1 x Test Probe MPS 1 black 973531100
- 1 x Test Probe MPS 1 red 973531101
- 1 x Alligator Clip MA 1 black 930317800
- 1 x Alligator Clip MA 1 red 930317801
- 1 x Measuring Lead MVL 2/100 black 973596100
- 1 x Measuring Lead MVL 2/100 red 973596101



Type  
PART No.  
Description

**PMS 2 S LMLH**  
**975604001**

Laboratory Test Holder with 10 measuring leads in various colors for 2mm safety system.

- 1 x Test Lead Holder LMLH 973919001
- 2 x Test Lead MVL S WS 100/1 AU black 975696700
- 2 x Test Lead MVL S WS 100/1 AU red 975696701
- 2 x Test Lead MVL S WS 100/1 AU blue 975696702
- 2 x Test Lead MVL S WS 100/1 AU yellow 975696703
- 2 x Test Lead MVL S WS 100/1 AU green 975696704



Type  
PART No.  
Description

**PMS 4**  
**932793001**

Test Equipment Set for 4mm systems.

- 1 x Plunger Style Test Probe KLEPS 30 black 930113100
- 1 x Plunger Style Test Probe KLEPS 30 red 930113101
- 1 x Test Probe PRUEF 2 black 973368100
- 1 x Test Probe PRUEF 2 red 973368101
- 1 x Alligator Clip AK 2 S black 932146100
- 1 x Alligator Clip AK 2 S red 932146101
- 1 x Measuring Lead MLN 100/1 black 934062100
- 1 x Measuring Lead MLN 100/1 red 934062101

# Test & Measurement Sets



Type  
PART No.  
Description

## PMS 4 KFZ 933003001

Test Equipment Set for Automobiles, Service and repair shops.



- 1 x Safety Plunger Style Test Probe KLEPS 2700 black 972307100
- 1 x Safety Plunger Style Test Probe KLEPS 2700 red 972307101
- 1 x Test Probe PRUEF 2610 FT black 972318100
- 1 x Test Probe PRUEF 2610 FT red 972318101
- 1 x Safety Alligator Clip AK 2 B 2540 I black 972405100
- 1 x Safety Alligator Clip AK 2 B 2540 I red 972405101
- 1 x Silicone Test Lead MLN SIL 150/1 black 934093100
- 1 x Silicone Test Lead MLN SIL 150/1 red 934093101

Type  
PART No.  
Description

## PMS 4 SKS 932794001

Test Equipment Set for 4mm systems.



- 1 x Measuring Lead MLN 50/1 black 934060100
- 1 x Measuring Lead MLN 50/1 red 934060101
- 2 x Measuring Lead MLN 100/1 black 934062100
- 2 x Measuring Lead MLN 100/1 red 934062101
- 1 x Measuring Lead MLN 200/1 black 934065100
- 1 x Measuring Lead MLN 200/1 red 934065101
- 1 x Plunger Style Test Probe KLEPS 30 black 930113100
- 1 x Plunger Style Test Probe KLEPS 30 red 930113101
- 1 x Alligator Clip AK 2 S black 932146100
- 1 x Alligator Clip AK 2 S red 932146101
- 1 x Test Probe PRUEF 2 black 973368100
- 1 x Test Probe PRUEF 2 red 973368101

Type  
PART No.  
Description

## PMS 4 LMLH 972604001

Laboratory Test Holder with 10 measuring leads in various colors for 4mm safety system.



- 1 x Test Lead Holder LMLH 973919001
- 2 x Test Lead MLN 100/1 black 934062100
- 2 x Test Lead MLN 100/1 red 934062101
- 2 x Test Lead MLN 100/1 blue 934062102
- 2 x Test Lead MLN 100/1 yellow 934062103
- 2 x Test Lead MLN 100/1 green 934062104

Type  
PART No.  
Description

## PMS 250 932827001

Sliding Sleeve Test Equipment Set for 4mm systems.



- 1 x Plunger Style Test Probe KLEPS 250 black 973528100
- 1 x Plunger Style Test Probe KLEPS 250 red 973528101
- 1 x Test Probe PRUEF 2 S black 973659100
- 1 x Test Probe PRUEF 2 S red 973659101
- 1 x Alligator Clip AK 2 B black 932435100
- 1 x Alligator Clip AK 2 B red 932435101
- 1 x Measuring Lead MLB 100/1 V black 973646100
- 1 x Measuring Lead MLB 100/1 V red 973646101



Type  
**PART No.**  
Description

**PMS PMS 2600**  
**972338001**

Test Equipment Set Safety Applications for 4mm system (Accessory for measuring instruments)

- 1 x Plunger Style Test Probe KLEPS 2600 black 972306100
- 1 x Plunger Style Test Probe KLEPS 2600 red 972306101
- 1 x Test Probe PRUEF 2600 black 972317100
- 1 x Test Probe PRUEF 2600 red 972317101
- 1 x Alligator Clip AK 2 B black 932435100
- 1 x Alligator Clip AK 2 B red 932435101
- 1 x Measuring Lead MLS GG 100/1 black 934074100
- 1 x Measuring Lead MLS GG 100/1 red 934074101



Type  
**PART No.**  
Description

**PL 2600 S Set**  
**972337002**

Test Probe Set for measuring devices with straight connectors.

- 1 x Measuring Lead PL 2600 S black 934159100
- 1 x Measuring Lead PL 2600 S red 934159101



Type  
**PART No.**  
Description

**PL 2600 S W Set**  
**972425002**

Test Probe Set for measuring devices with angled connectors.

- 1 x Measuring Lead PL 2600 S W black 934158100
- 1 x Measuring Lead PL 2600 S W red 934158101



Type  
**PART No.**  
Description

**MMS 2010**  
**972339001**

Test Equipment Set for Safety Applications – Plunger Test Clips KLEPS 2800, Test probes, Measuring Leads.

- 1 x Safety Plunger Style Test Probe KLEPS 2800 black 972308100
- 1 x Safety Plunger Style Test Probe KLEPS 2800 red 972308101
- 1 x Safety Test Probe PRUEF 2700 black 972319100
- 1 x Safety Test Probe PRUEF 2700 red 972319101
- 1 x Safety Test Lead MLS WG 100/1 black 934082100
- 1 x Safety Test Lead MLS WG 100/1 red 934082101



Type  
**PART No.**  
Description

**MMS 2020**  
**972340001**

Test Equipment Set for Safety Applications – Alligator Clips, Test probes, Measuring Leads.

- 1 x Safety Alligator Clip AK 2 B 2540 I black 972405100
- 1 x Safety Alligator Clip AK 2 B 2540 I red 972405101
- 1 x Safety Test Probe PRUEF 2700 black 972319100
- 1 x Safety Test Probe PRUEF 2700 red 972319101
- 1 x Safety Test Lead MLS WG 100/1 black 934082100
- 1 x Safety Test Lead MLS WG 100/1 red 934082101

# Test & Measurement Sets



Type  
**PART No.**  
Description

## MMS 2030 972341001

Test Equipment Set for Safety Applications – Plunger Test Clips KLEPS 2600, Test probes, Measuring Leads.

- 1 x Safety Test Probe PRUEF 2700 black 972319100
- 1 x Safety Test Probe PRUEF 2700 red 972319101
- 1 x Plunger Style Test Probe KLEPS 2600 black 972306100
- 1 x Plunger Style Test Probe KLEPS 2600 red 972306101
- 1 x Safety Test Lead MLS WG 100/1 black 934082100
- 1 x Safety Test Lead MLS WG 100/1 red 934082101



Type  
**PART No.**  
Description

## MMS 2040 972342100

Test Equipment Set for Safety Applications – Plunger Test Clips KLEPS 2600, Alligator Clips, Measuring Leads.

- 1 x Plunger Style Test Probe KLEPS 2600 black 972306100
- 1 x Plunger Style Test Probe KLEPS 2600 red 972306101
- 1 x Alligator Clip AK 2 B black 932435100
- 1 x Alligator Clip AK 2 B red 932435101
- 1 x Measuring Lead PL 2600 S black 934159100
- 1 x Measuring Lead PL 2600 S red 934159101
- 1 x Safety Test Lead MLS WG 100/1 black 934082100
- 1 x Safety Test Lead MLS WG 100/1 red 934082101



Type  
**PART No.**  
Description

## PMS SKS Safety 932795001

Safety Test Equipment Set – Plunger Test Clips KLEPS 2600, Alligator Clips, Test Leads.

- 1 x Plunger Style Test Probe KLEPS 2600 black 972306100
- 1 x Plunger Style Test Probe KLEPS 2600 red 972306101
- 1 x Test Probe PRUEF 2600 black 972317100
- 1 x Test Probe PRUEF 2600 red 972317101
- 1 x Alligator Clip AK 2 B black 932435100
- 1 x Alligator Clip AK 2 B red 932435101
- 1 x Test Lead MLS WS 50/1 black 934068100
- 1 x Test Lead MLS WS 50/1 red 934068101
- 2 x Test Lead MLS WS 100/1 black 934095100
- 2 x Test Lead MLS WS 100/1 red 934095101
- 1 x Test Lead MLS WS 200/1 black 934069100
- 1 x Test Lead MLS WS 200/1 red 934069101



Type  
**PART No.**  
Description

## PMS 4 S LMLH 972605001

Laboratory Test Holder with 10 measuring leads in various colors for 4mm safety system.

- 1 x Test Lead Holder LMLH 973919001
- 2 x Test Lead MLS WS 100/1 black 934095100
- 2 x Test Lead MLS WS 100/1 red 934095101
- 2 x Test Lead MLS WS 100/1 blue 934095102
- 2 x Test Lead MLS WS 100/1 yellow 934095103
- 2 x Test Lead MLS WS 100/1 green 934095104





**Type** PMS SKS Elektronik  
**PART No.** 932791001  
**Description** Service Case Electronic

- 1 x Safety Test Probe PRUEF 2610 FT black 972318100
- 1 x Safety Test Probe PRUEF 2610 FT red 972318101
- 1 x Test Probe MICRO-PRUEF MPS 2/0,64 FT black 973995100
- 1 x Test Probe MICRO-PRUEF MPS 2/0,64 FT red 973995101
- 1 x Plunger Style Test Probe MICRO-KLEPS black 973972100
- 1 x Plunger Style Test Probe MICRO-KLEPS red 973972101
- 1 x Mini Alligator Clip KLEPS 064 PCH black 974201100
- 1 x Mini Alligator Clip KLEPS 064 PCH red 974201101
- 1 x Mini Alligator Clip KLEPS 064 PCH blue 974201102
- 1 x Mini Alligator Clip KLEPS 064 PCH yellow 974201103
- 1 x Mini Alligator Clip KLEPS 064 PCH green 974201104
- 1 x Mini Alligator Clip KLEPS 064 PCH gray 974201106
- 1 x Mini Alligator Clip KLEPS 064 PCH white 974201107
- 1 x Adapter MZS 4 black 973599100
- 1 x Adapter MZS 4 red 973599101
- 1 x 2 pole Test Clip MICRO-SMD CLIP 1 972416100
- 1 x Mini Alligator Clip MA 260 SH black 973889100
- 1 x Mini Alligator Clip MA 260 SH red 973889101
- 1 x Alligator Clip AK 2 B 2540 I yellow-green 972405188
- 1 x Test Lead MLS WS 50/2,5 black 934087100
- 1 x Test Lead MLS WS 50/2,5 red 934087101
- 1 x Test Lead MLS WS 50/2,5 yellow-green 934087188
- 1 x Measuring Lead MAL N 4-0,64/100-0,25 black 934160100
- 1 x Measuring Lead MAL N 4-0,64/100-0,25 red 934160101
- 1 x Test Lead MKL 0,64/25-0,25 black 973604100
- 1 x Test Lead MKL 0,64/25-0,25 red 973604101
- 1 x Adapter BNC AL 0,64 black 933844001
- 1 x Passive Divider Probe TKO 5 – PMS 221 A 974312000
- 1 x 2 foot positioner for oscilloscope test probes 974401000

# Test & Measurement Sets



**Type** PMS SKS Electrical  
**PART No.** 932791001  
**Description** Service Case Electric (Industrial, Utility Management, Training, etc...)

1 x Plunger Style Test Probe KLEPS 2 BU black 973501100  
1 x Plunger Style Test Probe KLEPS 2 BU red 973501101  
1 x Test Probe PRUEF 2600 black 972317100  
1 x Test Probe PRUEF 2600 red 972317101  
1 x Safety Test Probe PRUEF 2700 black 972319100  
1 x Safety Test Probe PRUEF 2700 red 972319101  
1 x Safety Plunger Style Test Probe KLEPS 2800 black 972308100  
1 x Safety Plunger Style Test Probe KLEPS 2800 red 972308101  
1 x Adapter MZS 4 black 973599100  
1 x Adapter MZS 4 red 973599101  
1 x Test Lead MLS WS 25/2,5 black 934086100  
1 x Test Lead MLS WS 25/2,5 red 934086101  
1 x Test Lead MLS WS 200/2,5 black 934089100  
1 x Test Lead MLS WS 200/2,5 red 934089101  
1 x Test Lead MLS WS 520/2,5 black 934089188  
1 x Alligator Clip AK 2 B 2540 I yellow-green 972405188  
1 x Test Lead MVL 2/50 black 973595100  
1 x Test Lead MVL 2/50 red 973595101  
1 x Adapter MZS 2 black 973600100  
1 x Adapter MZS 2 red 973600101



# Test & Measurement Glossary

## Clearance Distance

Clearance Distance is the directly measured distance between two conducting parts, acts as an insulator and should be dimensioned according to IEC 61010.

## Contact Material

Contact Material is the base Material of the part.

## Contact Resistance

Contact Resistance is the resistance measured between the connections of connected contact parts. It consists of resistivity and contact-circuit resistance. Given values are according to DIN EN 60512.

## Contact Surface Material

Contact Surface Material is the material on the surface of the electrical contact. For Test & Measurement purposes special nickel or gold plating is used for ideal electrical and mechanical conditions.

## Creepage Distance

Creepage Distance is the shortest path between two conductive parts (or between a conductive part and the bounding surface of the equipment) measured along the surface of the insulation. It is defined in IEC 61010.

## Pollution Degree Rating

The pollution degree is the numerical index of the degree of pollution that can exist in the environment. IEC/EN 61010-031 defines 3 Pollution Degrees:

*Pollution Degree 1:* No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.

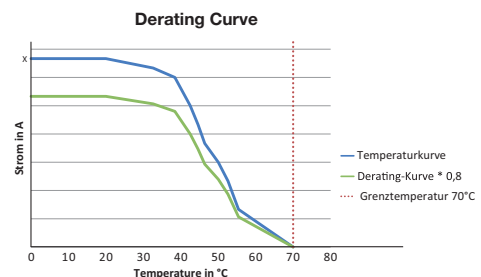
Example: Inside closed pieces of equipment.

*Pollution Degree 2:* Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation is to be expected. Examples: Laboratory, light industry.

*Pollution Degree 3:* Conductive pollution occurs, or dry non-conductive pollution, which becomes conductive due to condensation, is to be expected. Examples: Heavy industry, short service outdoors.

## Derating Curve

According to the derating Curve (load reduction curve acc. to DIN EN 60512-5-2), the operating current at higher ambient temperatures is reduced. The current loading capacity of measurement accessories is limited by the thermal load-bearing capacity of the contact material or insulating parts and by the upper temperature limit of measurement accessories acc. to IEC 61010. Therefore, the derating graph applies as a function of environmental temperature to currents that may continuously pass through each contact element without exceed the upper temperature limit.



The derating graph describes the relation between currents, thereby caused increase of temperature (power loss on contact resistance) and environmental temperature of the measurement accessory. The Graph ends with the upper temperature limit of the measurement accessory. Upper temperature limits for measurement accessories are according to IEC 61010: Non-metallic Material 70C (158F), Metallic Material 55C (131F)

GRAPH from Hirschmann Catalog

## Handle Area

The Handle Area is the area in which the user can touch a measuring device during operation without being exposed to electrical currents.

## IEC 61010-31

Title of the IEC/EN 61010:

“Safety requirements for electrical equipment for measurement, control and laboratory use”

Part 031:

“Safety requirements for hand-held probe assemblies for electrical measurement and test”

All products of the Hirschmann Test & Measurement Range are designed and approved according to this standard.



## Insulation

*Basic insulation* - is the insulation applied to live parts to provide basic protection against electric shock, eg. the failure of the basic insulation could cause the risk of electric shock.

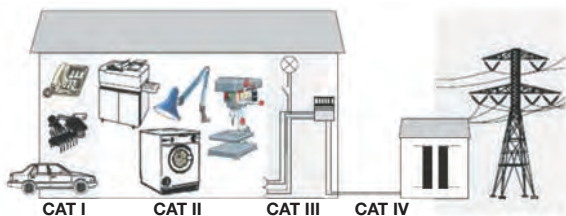
*Double insulation* - Insulation comprising both basic insulation and supplementary insulation.

*Reinforced insulation* - Insulation which provides protection against electric shock not less than that provided by double insulation.

## Measurement Categories acc. to IEC 61010-031

To facilitate the assignment of test accessories to the appropriate applications, standard IEC 61010-031 has established a number of categories which define where they can be used in the power supply network and to lay down appropriate requirements for each category.

In standard EN 61010-031 there are four different test categories, abbreviated "CAT". The category CAT followed by a number from I to IV is stated in our catalog with the rated voltage. As a general rule, the higher the CAT rating, the higher the safety requirement that applies to the product.



### CAT I

Applies to test objects that are not connected to the mains. E.g. electronic devices, batteries, etc. in which only minor over voltages occur.

CAT I will also include all test objects that cannot be assigned to CAT II to CAT IV.

### CAT II

Applies to measurements on equipment that is connected to the mains or supplied from the mains without constituting a part of the mains installation. Electrical equipment between appliance and power socket, or inside electrical equipment such as domestic appliances.

### CAT III

Applies to measurements inside the house or building installation. Installations in buildings, contactors, protective devices, switches, power sockets (Electricians).

### CAT IV

Applies to measurements at the supply source of the installation (input side). Secondary side of medium-voltage transformers, electricity meters, cable networks, connection to overhead lines (employees of power distribution companies).

## Current Rating

The rated current is the current which the test & measurement devices can carry continuously without the temperature exceeding the upper limit.

## Voltage Rating

Voltage Rating is the voltage at which the product can be used safely, if used properly. The specified rated voltage always relates to Pollution Degree 2. Each Voltage also refers to the appropriate Measuring Category.

## Safety Color Indicator

All the measuring leads of the 2 mm & 4 mm safety system have a safety colour indicator. The cable insulation consists of two separated insulation layers. The first layer is directly installed on the conductor and it is white in all measuring leads (except of white ones >red colour indicator). In a subsequent manufacturing stage, a second insulation layer is applied in the respective cable colour. If the insulation is damaged while using the measuring lead, the first insulating layer becomes visible. For safety reasons, the lead should be immediately replaced with a new SKS measuring lead.

## Sliding Sleeve System

The Sliding Sleeve System has a retraceable protective insulation to avoid short circuits and electric shocks while not connected. It is not allowed to use this system for dangerous voltages during use. Adapter test leads for the connection to equipment that (still) cannot take fully insulated plugs are an exception. For this reason the Sliding Sleeve System is classified according to IEC 61010, CAT I up to 60V.

## Temperature range (environmental conditions)

The temperature range is the allowed range in which the products may be used without damaging the materials.

## Voltage details

The voltage details for the products mentioned in the catalog indicate the voltage range for which they can be used. SKS has designed the entire 2 mm & 4 mm safety system, unless otherwise specified, for 1,000V, Measurement Category III (CAT III) with Pollution Degree 2. The largest range of measuring tasks in the higher voltage range is safely covered.

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### Example Part No. 9340621xx

00 = ● black	05 = ● brown
01 = ● red	06 = ● grey
02 = ● blue	07 = ○ white
03 = ● yellow	09 = ● violet
04 = ● green	88 = ● yellow/green

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## Instructions for Index and Part No.

### Example Part No. 9340621xx

00 = ● black	05 = ● brown
01 = ● red	06 = ● grey
02 = ● blue	07 = ○ white
03 = ● yellow	09 = ● violet
04 = ● green	88 = ●● yellow/green

# Terms & Conditions

**TITLE** - Title to the products of ALTECH shall remain with ALTECH until payment is made in full by Customer. Such reservation of title is for the purpose of securing the purchase price and shall not relieve Customer of the duty to inspect the products upon receipt, to notify ALTECH of any deficiencies or defects, and to exercise due care in the use, installation, operation, and maintenance of the products when on the premise of the Customer or under the control of the Customer. Notwithstanding any reservation of title by ALTECH, risk of loss shall pass to customer at any time of shipment.

**SHIPMENT AND DELIVERY** - All orders for destination in the mainland United States (less Hawaii, Alaska and non-continental United States possessions) will be shipped F.O.B. Flemington, N.J. All destination, shipping and other charges shall be paid by the Customer in accordance with ALTECH's then current shipping and billing practices.

Delivery dates given in the acceptance of any order are approximate. ALTECH shall not be liable for delays in delivery or in performance due to causes beyond its reasonable control including acts of God, acts of Customer, acts of civil or military authority, fires, strikes or other labor disturbances, war, riot or delays in transportation. In the event of such delay, the date of delivery or performance shall be extended for a period equal to the time lost by reason of the delay.

**PRICE** - PRICES in any ALTECH publication are subject to change without prior notification. Catalog prices are based on prices published in the current price list. All written quotations are valid for thirty (30) days from the date of quotation. Customer shall pay all sales, use, excise or similar taxes whenever ALTECH must itself pay and/or collect such tax from Customer arising out of the sale.

**PAYMENT** - Customer agrees to make payment within thirty (30) days of date of the invoice from ALTECH. Customer agrees to pay a late payment charge of one and one-half percent (1.5% per month, or the maximum late payment charge permitted by applicable law, whichever is less, on any unpaid amount for each calendar month (or fraction thereof) that such payment is in default. Orders amounting to less than \$100.00 will be billed at \$100.00 plus freight. Full carton purchases are required. In the event of referral to an attorney for collection, reasonable attorney's fees for collection of the overdue amount shall be paid by Customer. In the event payment is not received within 30 days from the date of invoice, any discount shall be cancelled and the full list price will be due.

**LIMITED WARRANTY** - ALTECH warrants to Customer that the equipment purchases shall be free from defects in material and workmanship under normal use and service for a period of one year from shipment.

Written notice as an explanation of the circumstances of any claim that the equipment has proved defective in material or workmanship shall be given promptly by the Customer to ALTECH.

ALTECH will not be liable for any misuse, improper operations, improper installation, improper maintenance, alteration, modification, accident or unusual degradation of the equipment or parts due to an unsuitable installation environment.

No representation of other affirmation of facts, including but not limited to statements regarding capacity, suitability for use or performance of the equipment, shall be or be deemed to be a warranty or representation by ALTECH for any purpose, nor give rise to any liability or obligation of ALTECH whatsoever.

Customer's sole and exclusive remedy in the event of breach of warranty, as set forth herein, is expressly limited to (1) the correction of the defect by adjustment, repair, modification, or replacement, or (2) issuance of a credit or refund of the purchase price for the defective equipment at ALTECH's election and sole expense.

EXCEPT AS SPECIFICALLY PROVIDED IN THIS AGREEMENT, THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THIS WARRANTY EXTENDS ONLY TO THE CUSTOMER FROM ALTECH OR ITS AUTHORIZED DISTRIBUTOR.

**LIMITATION OF LIABILITY** - IN NO EVENT, SHALL ALTECH BE LIABLE FOR LOSS OF PROFITS, INDIRECT, SPECIAL, CONSEQUENTIAL OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY BREACH OF THIS AGREEMENT OR OBLIGATIONS UNDER THE AGREEMENT.

ALTECH SHALL NOT BE LIABLE FOR ANY DAMAGES CAUSED BY DELAY IN SHIPMENT, INSTALLATION OR FURNISHING OF EQUIPMENT OR SERVICES UNDER THIS AGREEMENT.

No action arising out of any claimed breach of this Agreement may be brought by either party more than two (2) years after the cause of action has accrued.

**PATENT INDEMNITY** - ALTECH shall defend or settle any suit or proceeding brought against Customer based on a claim that any equipment made to ALTECH design and furnished hereunder constitutes an infringement of any existing United States patent, provided (ALTECH) is notified promptly in writing and is given complete authorization and information required for the defense, and ALTECH shall pay all damages and costs awarded against Customer, but shall not be responsible for any costs, expense or compromise incurred or made by Customer without ALTECH's prior written consent. If any equipment is in ALTECH's opinion likely to or does become the subject of a claim for patent infringement, ALTECH may at its option and expense procure for Customer the right to continue using the device, modify it to become non-infringing, but in the event ALTECH is not reasonably able to modify, substitute, or otherwise procure for Customer the right to continue using it, ALTECH will remove such equipment and refund to Customer the amount paid in excess of a reasonable rental for past use.

ALTECH shall not be liable for any infringement or claim based upon use of the equipment in combination with other equipment not supplied by ALTECH or with modifications made by Customer.

The foregoing states the entire liability of ALTECH to Customer arising from patent infringement.

**SELLER'S REMEDIES** - Should Customer fail to make any payment within ten (10) days of its due date, or fail to perform any other of the Customer's obligation hereunder upon thirty (30) days written notice, or should Customer be or become insolvent or be a party to any bankruptcy receivership proceeding prior to full payment of all amounts payable hereunder, ALTECH may: (a) with or without demand or notice to customer declare the entire amount unpaid immediately due and payable; (b) enter upon the premises where the equipment may be found and remove it (Customer shall assemble the equipment and make it available to ALTECH at a place reasonably convenient to both parties and shall permit and assist ALTECH in effecting the retaking and removal of the equipment); and (c) sell any or all the equipment as permitted under applicable law, applying the proceeds of the sale to payment of the expenses of retaking, repairing and selling the equipment, reasonable attorney fees and to the satisfaction of all indebtedness then due and unpaid under this Agreement. Any surplus shall be paid to Customer and any deficiency shall be paid to ALTECH by Customer.

The remedies provided herein shall be cumulative and in addition to all other remedies provided by law or equity or under the Uniform Commercial Code.

**GOVERNING LAW** - This agreement will be governed by the Laws of the State of New Jersey.

**GENERAL** - This Agreement shall only become effective and binding when either (a) it has been accepted and executed by an authorized representative of ALTECH, or (b) the equipment has been shipped to Customer, with or without acceptance in writing hereon. Notice of acceptance is hereby waived by Customer. Customer hereby acknowledges receipt of a true and complete copy hereof.

No addition to or modification of any of the Terms and Conditions of Sale as they appear herein shall be binding upon ALTECH unless signed in writing by duly authorized representative of ALTECH in Flemington, N.J.

Typographical and clerical errors in quotations, orders and acknowledgments are subject to correction.

This Agreement is not assignable without the prior written consent of ALTECH. Any attempt to assign any of the rights, duties or obligations of this Agreement without such consent is void.

If any provision or provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability, of the remaining provisions shall not in any way be affected or impaired thereby.

ALTECH is not responsible for failure to fulfill its obligation under this Agreement due to causes beyond its control, or except as agreed herein.

THE CUSTOMER ACKNOWLEDGES THAT HE HAS READ THE AGREEMENT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. FURTHERMORE, THE CUSTOMER AGREES THAT IT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE AGREEMENT BETWEEN THE PARTIES, WHICH SUPERSEDES ALL PROPOSALS OR PRIOR AGREEMENTS, ORAL OR WRITTEN, EXPRESSED OR IMPLIED, AND ALL OTHER COMMUNICATIONS BETWEEN THE PARTIES RELATING TO THE SUBJECT MATTER OF THIS AGREEMENT.

## Circuit Protection Devices



Altech the market leader in UL508 Manual Motor Controllers/ Miniature Circuit Breakers now introduces UL489 Miniature Circuit Breakers and UL1077 Supplementary Protectors. The UL489 versions are DIN rail mounted, 17.5mm wide, thermal magnetic, 240V, 480Y/277V AC, 50/60Hz, 125 and 250 VDC models, with short circuit interrupt capacity of 10kA, a positive trip indicator, and are line/load reversible. The UL1077 versions are DIN rail mounted, 17.5mm wide, thermal magnetic, 480Y/277V AC, 50/60Hz, a short circuit withstand capacity 10KA, have a positive trip indicator.

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## Interface Modules and Industrial Relays



Altech offers a wide range of DIN Rail or panel mount cable interface modules, relay interface modules, power supplies, carrier modules, and custom designed modules. Cable to connector models include: D-Sub connectors, ribbon cable connectors, and Dip socket connectors to terminals. Standard relay modules from 1 to 16 channels, and safety relay modules from 1 to 16 channels and up to 10 poles are included. The catalog also contains a large selection of industrial relays, and custom designed interface modules.

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## Contactors and More!



Altech's now carries contactors, mini contactors, definite purpose contactors & overload relays. The contactors come in 3 and 4 pole configurations at 9A to 800A. Available in Single Phase (115 -230V) and Three Phase (200 - 575V) AC and DC models. A large variety of coil voltages are supported and the accessories are auxiliary contacts and overload relays. The mini contactors come in screw clamp, fast-on, cage clamp and solder pin types.

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## Terminal Blocks



Altech offers a NEW Terminal Block catalog with the most competitively priced blocks in the industry. We feature screw and spring clamp models for DIN rail and panel mount applications. This advanced line of wire termination products will increase your design options and help to get the job done more efficiently. Our line of blocks include feed-through (single, double or triple level), distribution, ground, fuse, disconnect, thermocouple, surge suppressor and indicator. A wide variety of accessories, tools and ferrules are available.

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## Motor Disconnect Switches



Altech's line of Motor Disconnect Switches are UL 508 listed as Manual Motor Controllers for AC Motor Starting Across-the-line and AC General use. This new 16 page catalog includes the 3 different handle designs, which are all available in gray/black or yellow/red housings. Electrical ratings are 25-150A / 600V. The switches are non-fused DIN Rail mountable. Neat features include: snap-on auxiliary switches, door mounting kit and a retrofit 30A fuse holder. Also featured are Enclosed Motor Disconnect Switches & Fused Enclosed Motor Disconnect Switch (30A) in plastic or stainless housings.

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## Liquid Tight Strain Reliefs



This 64-page catalog introduces Altech's full line Liquid Tight Strain Reliefs (Cord Grips) which are used to seal cable entries, keep contaminants from entering enclosures, provide strain relief and thus reduce stress on components and termination points inside enclosures. Available in standard, high-performance, and economy versions, functions include Straight-Through, Increased Strain Relief, Bend Protection, Pull/Bend Protection, Multi-conductor, Flat Cable and EMI/RFI. They can be used with almost any type of cable, cord or conductor - solid, stranded, flat, shielded, high temperature, etc.

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