HIRSCHMANN

Automation and Network Solutions

Test & Measurement

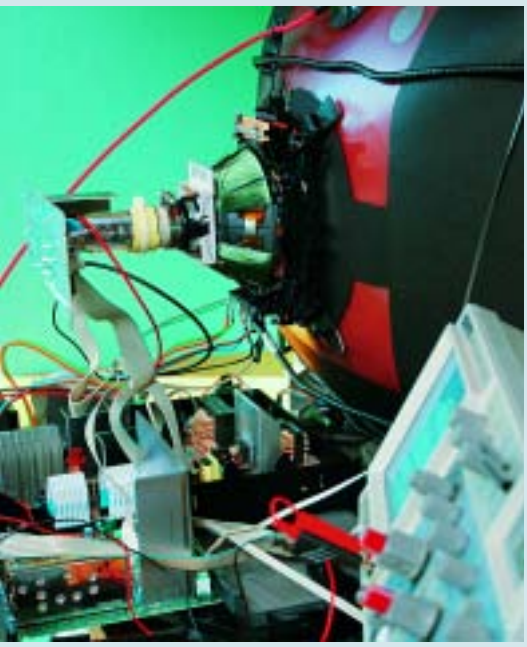
Edition 1

Quality is irreplaceable.

Only the best is good enough, because it is quality that makes you different.

Financial success alone does not decide how long we will last in the future. But how well we do things. And that by no means depends solely on the abilities of our employees. Because even the best scientist can achieve very little in the absence of reliable, high quality and innovative equipment. In the current global competitive scenario, low-quality measuring and testing instruments cost a company much more than investment in equipment of proven quality. Because in these times of limited budgets and cutthroat competition, there is one thing you simply cannot afford: mistakes.

Wherever the daily work routine requires high quality and tight tolerances, or where statutory provisions apply, no amount of precision is enough. Hirschmann offers a complete system comprising products that are specially designed and attuned to each other for machine-mounted accessories and circuits for use in research and development laboratories, test laboratories and workshops, training workshops and institutes, as well as for use by Customer Service and maintenance personnel. Because in measuring and testing technology, it is the small things that make a big difference – and make it easier to carry out high-precision work – from manual work in the field to work in research and development laboratories.



Only the best is good enough, because it is quality that makes the difference. Hirschmann test probes with flexible shafts, the patented piercing KLEPS or double-insulated measuring leads are examples of this Hirschmann product philosophy. If you can have access to a freely combinable, multi-faceted and comprehensive range of different systems and customized products for specific applications – the right tool for the right job.

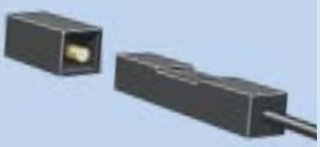
It is good to know that you can rely on the world's largest manufacturer of measuring and testing equipment, on its technical knowledge, pioneering spirit and innovative ideas – already known to you for almost eighty years now as the inventor of the banana plug. Of course, Test and Measurement are only a small part of our work – Hirschmann's "Automation and Network Solutions" product range extends from Industrial Connectors to FiberINTERFACES to Industrial ETHERNET components.

Every measuring and testing task requires a different specialist – all Hirschmann products offer maximum safety through, for example double insulation for optimum contact protection.

Ergonomic design, high-quality contact materials, extremely long life and load bearing capacity are only a few of the many winning characteristics of Hirschmann test and measurement systems.

Here you have everything you need.

From manual work in the field to work in the Research and Development laboratory, Hirschmann offers you the right tool for every task.

Product group / System	System description	Clamp-type test probes Page 10 to 17	Alligator/ crocodile clips Page 18 to 27
0.64 mm System 	***The 0.64 mm system is compatible for plug-in connections to all conventional 0.64 mm PCB plugs available in the market. Extremely small contacts made of high-quality contact material, with mechanical protection all around, ensures good contact and a long life. This system can test and measure even extremely small components and measuring points. Max. 60 V***	 Page 12	 Page 20
2 mm System 	***The 2 mm system consists of a solid contact pin and a spring-loaded socket. The small, high-quality contact spring is thereby protected against mechanical influences. Max. 60 V***	 Page 13	 Page 21 to 22
4 mm System 	***The 4 mm system consists of a spring-loaded contact pin and sockets. The possibility to combine different contact technologies makes possible a unique solution for every user. 4 mm plugs can be connected to Safety System products. Max. 60 V***	 Page 14	 Page 23 to 25
4 mm Sliding sleeve system 	***The 4 mm sliding sleeve system is a measuring lead system in which the contact protection can be pushed back via a locking spring. The plugs and the measuring leads of the system can be combined with all 4 mm systems. Max. 300 V***	 Page 16	
4 mm Safety system 	***The safety system consists of a 4 mm pin with contact spring. A plastic encasing protects contact pin against contact, and the probe is protected by a plastic cap. Safety sockets (SEB..., KLEPS..., AK..., ...), are suitable for plug-in connections with all the plugs of the 4 mm system. The Safety System conforms to IEC 61010 (EN 61010). Max. 1000 V***	 Page 16 to 17	 Page 26 to 27

The marked plugs and measuring leads can be connected to any product within the 4 mm system.
The components with the lowest dielectric strength define the most reliable voltage in the measuring structure.

Content

Quality can withstand every test.

Our measuring and testing products can do anything – except fail.

From the extremely fine miniature plug to the highly demanding safety products for 1,000 V measurements, Hirschmann offers a comprehensive module of tried and tested products, practice-oriented innovations and customized solutions to problems. For this, we offer high-quality contact pins made of brass, spring-loaded sockets made of copper-beryllium and partially gold-plated contact surfaces for constant contact quality along with the legendary product life of Hirschmann test and measurement tools. In our comprehensive testing and measurement modules, we have assigned the greatest importance to ergonomics and convenient design together with low contact resistances as required in microelectronic devices in particular.

This classic keeps your hands free during measuring and testing. Page 10

Clamp-type test probes

Measuring voltage quickly and easily – this is possible in a wide variety of situations with the units shown on the left. Hirschmann can offer you the clamp-type test probe that you need even special solutions to enable access to difficult-to-access places. The flexible shaft allows you to connect to wires, pins and eyelets as well as to measuring clamps, and to the finest connections in the electronics field.

- ***Measurements on even the most inaccessible points***
- ***Fast contact in all directions***
- ***Hands-free operation once contact is made***
- ***No accidental short-circuiting: only the clamp is conductive***
- ***Special product models, different sizes and customized products for specific applications, for example measurements on surface-mounted PCBs***
- ***Special solutions for isolating conductors (for example in automobiles)***

They not only have sharp teeth, they also find the right spot. Page 18

Alligator/crocodile clips

Large jaws that pack a punch: alligator or crocodile clips firmly bite into the test specimen, making them perfectly suitable for machine-mounted accessories in laboratories and for final inspections in industrial manufacturing. With alligator clips, you can have your hands free when you take measurements or take readings of the currents of the smallest components.

- ***Safe contact over a large area***
- ***Can also be used for high currents***
- ***Sharp, carefully machined teeth for a perfect hold***
- ***Clamping range from a few mm to 30 mm***
- ***Stainless steel version for use in galvanic and acidic environments***
- ***Special types with soldering connections for self-assembling***

Here, measuring and testing are brought to a fine point. Page 28

Test probes

The Hirschmann range of products offers you the right probe pressure for manual fieldwork and in electronics – whether you need to penetrate oxidation layers, or wish to establish contact with sensitive components or robust test specimens. The slim structure in particular, makes the testing of wiring systems much easier.

- ***Safer contact with higher point-accuracy***
- ***Long life***
- ***The finest needles for making contact with surface-mounted components***
- ***Sharp needles for penetrating oxidation layers and insulation***
- ***Spring-loaded tips maintain contact without damaging the test specimen***
- ***No accidental short-circuiting: only the fine probe is conductive***
- ***IC-contacting aid SS 260 (accessory)***

Content

Measuring leads

Whether it is for testing devices, testing media or for machine-mounted accessories – conductors are required simply everywhere. But they must be robust, flexible, capable of handling heavy loads and be particularly long-lasting. For this reason, Hirschmann manufactures measuring leads from high-quality material and carefully monitors the entire manufacturing process. After all, quality makes a difference!

- ***High-quality version***
- ***Extremely robust structure with cage spring***
- ***Highly flexible even at low temperatures***
- ***Double insulation***
- ***Basic insulation in white as an indicator of possible damage to the insulation***
- ***Up to 1,000 V/32 A***
- ***Conductors made of silicone are resistant to contact with the soldering iron***
- ***Many colors for properly legible machine-mounted accessories***
- ***Safety measuring leads of up to 1,000 V CAT III as per IEC 61010***
- ***Wire cross-sections up to 2.5 mm² for 32 A***
- ***Adapter for connecting to the entire system***
- ***Length, color and appropriate plugs in various variants***
- ***Manufacture of special types on request***

Plugs

With their large cross-sectional area in many colors and types, plugs enable the problem-free creation of your own connection leads without the use of special tools during installation. That is why Hirschmann plugs are used everywhere in industrial research and development, given their proven track record over so many years.

- ***Complete modular system with self-assembling plugs***
- ***Different contact and connection systems***
- ***Safety plugs with screw connection as per IEC 61010 for voltages up to 1,000 V***
- ***Self-assembling easily possible***

A long-term solution may be as inconspicuous as this. Page 78

Sockets

Available in many colors and types, the long-lasting Hirschmann sockets and couplings are highly wherever a safe plug-in connection is required. They can be used as a connecting socket in network devices, as a connecting point in training devices or as test connection for measuring devices.

- *High-quality manufacturing*
- *For insulated or uninsulated use, depending on the requirement*
- *Installation and contact protection of up to 1,000 V CAT III as per IEC 61010*
- *Simple, even spring-loaded clamping of cables also possible*
- *Many color variants*

The intelligent, comprehensive system for daily use. Page 96

Sets

Specialists such as precision engineers or automobile engineers rely on extremely useful combinations of mutually well-matched Hirschmann products such as test leads, test probes, alligator/crocodile clips. With a complete set of fittings in the form of a handy kit, people in the field are optimally prepared for their various tasks. Even on the installation site, a comprehensive set of this type is extremely handy and serviceable.

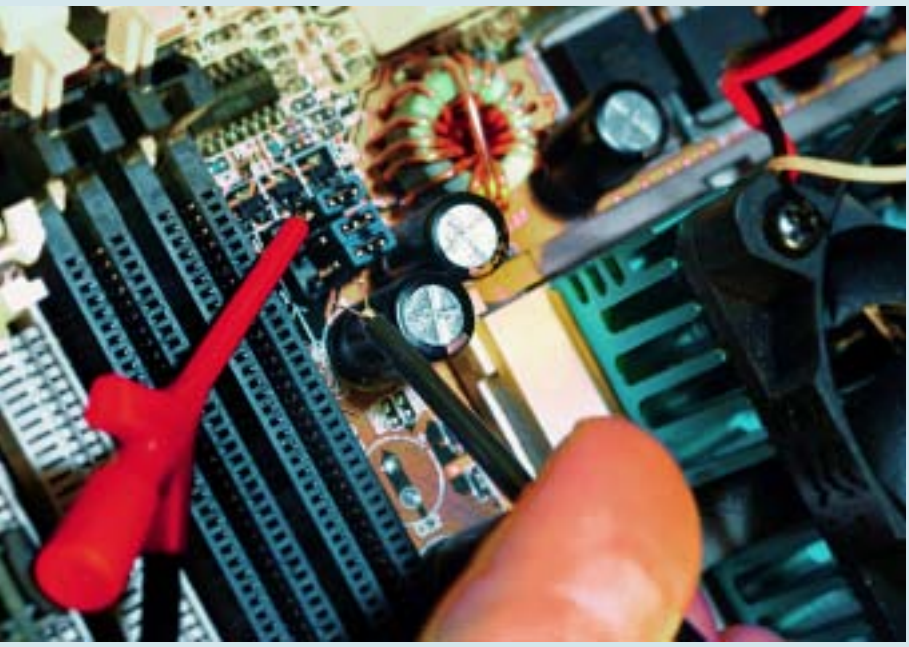
- *All-in-one solution*
- *Can also be used under rough conditions*
- *Premium quality*
- *Optimized for specific areas of application*

Information in series

The Hirschmann competence area “Automation and Network Solutions” comprises, apart from complete modules for measurement and testing technology, a comprehensive portfolio, about which information is contained in many catalogs. With sturdy Industrial Connectors, versatile FiberINTERFACES and innovative industrial ETHERNET components, we make our customers a unique offer: open, highly accessible and future-safe solutions ranging from the field bus to the management level, all under one roof. With our best recommendations. See for yourself!

This classic component keeps your hands free during measurement and testing.

Clamp-type test probes for measuring and testing tasks.

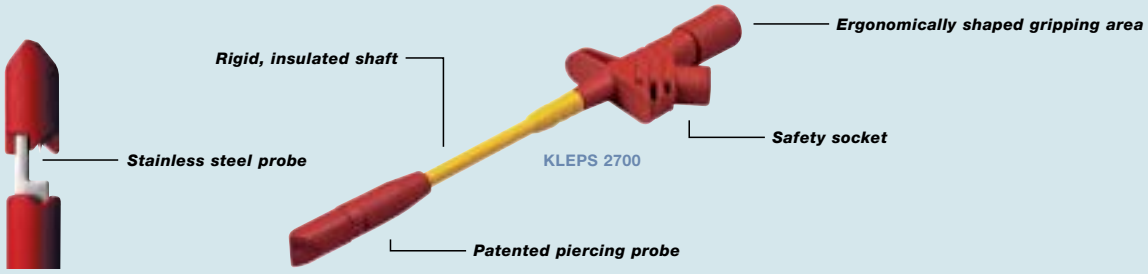


The value of items of daily use is greatly increased if they make your work easier. For this reason, Hirschmann's robust clamp-type test probes, which can also handle high voltages, have been indispensible in research and development for many years now, and perform extremely well even in fast service operations in information technology and household electrical work. This intelligent tool not only reaches difficult-to-access measuring points but also allows exact positioning.

Various designs and sizes offer the appropriate solution for every application – the flexible gripper can reach every measuring point even on the smallest electronic products and PCBs. The problem of inaccessible conductor ends can be easily solved: the patented piercing KLEPS can penetrate cable jacketing without any problems.

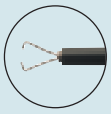
The robust KLEPS 2600 is a useful tool to the electrician as a standard tool, to reach difficult to access locations in domestic electronics, and after contact, one has one's hands fully free.

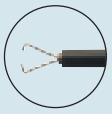
The patented piercing KLEPS 2700 can penetrate leads without any problems, for example in the automobile field, in which it enables measurements for which cable ends would have had to be undone.



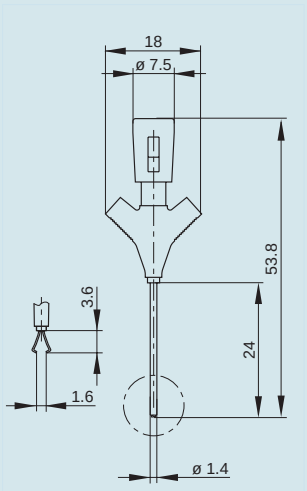
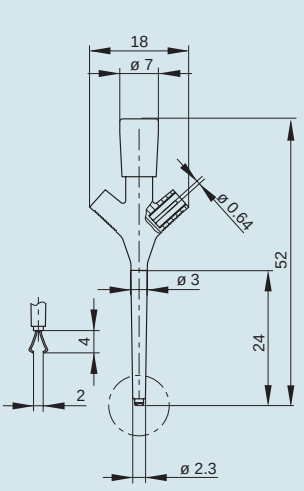
Clamp-type test probe

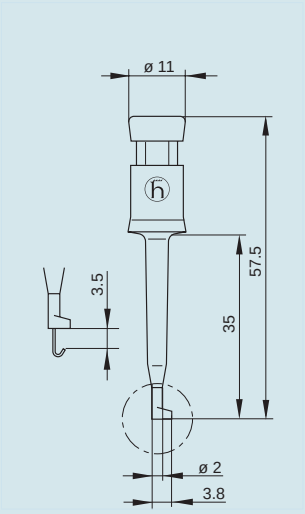
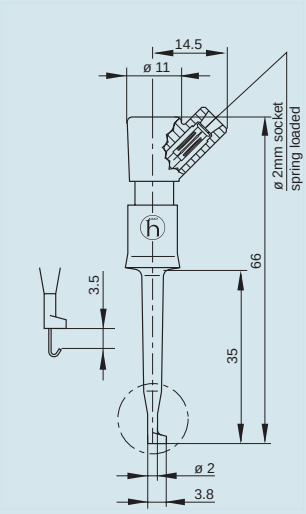
0.64 mm system



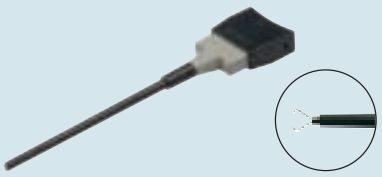
0.64 mm system

Product description		
Description	Miniature clamp-type test probe with rotating grip jaws (SMD technology). The insulated shaft can be bent up to 35°. Suitable for very thin wires and densely packed contact points (1.27 mm IC spacing pitch). Connects with MKL... and MAL...	Miniature clamp-type test probe with rotating grip jaws. Suitable for very thin wires and densely packed contacts. Connects with MKL... and MAL...
Type	**MICRO-KLEPS schwarz/black**	**KLEPS 3 ST schwarz/black**
Order No.	973 972-100	973 592-100
System	0.64 mm system	0.64 mm system
Clamping range	2 mm diameter	3.5 mm
Clamp type	rotating grip jaws	rotating grip jaws
Housing Color	black	black
Other standard types	red color, order no. 973 972-101	red color, order no. 973 592-101
Drawing		
		
Technical data		
Type of contact	pin	pin
Type of termination	2 x 0.64 mm diameter pin	1 x 0.64 mm diameter pin
Rated voltage	DC 60 V	DC 60 V
Rated current	2 A	2 A
Contact resistance	10 mOhm	10 mOhm
Material		
Contact material	spring steel	spring steel
Contact surface material	nickel-plated	nickel-plated
Housing material	PBT	PBT
Environmental conditions		
Temperature range	-25 °C to +100 °C	-25 °C to +100 °C
Inflammability class		
Housing	94 HB	94 HB

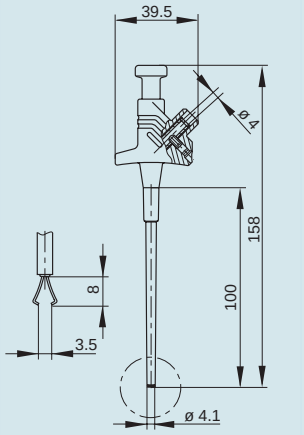
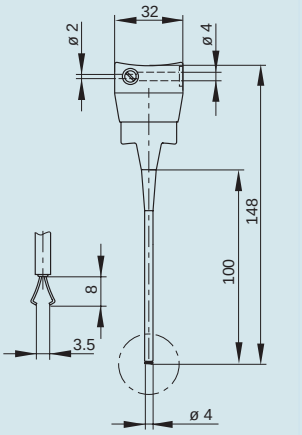
Product description		
Description	Miniature clamp-type test probe with solder connection. Gold-plated sprung bronze contact hook for wires up to a maximum diameter of 2 mm. Remove actuator button for soldering, when cable is connected, press back on until it engages.	Miniature clamp-type test probe with 2 mm diameter socket connection. Gold-plated copper beryllium contact spring. Gold-plated sprung bronze contact hook for wires up to a maximum diameter of 2 mm. Suitable for connection to wrap posts up to a maximum of 1 x 1 mm.
Type	**KLEPS 2 schwarz/black**	**KLEPS 2 BU schwarz/black**
Order No.	931 467-100	973 501-100
System	unrelated to system	2 mm system
Clamping range	2 mm	2 mm
Clamp type	contact hook	contact hook
Housing Color	black	black
		
Other standard types	red color, order no. 931 467-101	red color, order no. 973 501-101
Drawing		
		
Technical data		
Type of contact	solder	socket (spring-loaded)
Type of termination	solder	plug
Rated voltage	DC 60 V	DC 60 V
Rated current	6 A	6 A
Contact resistance	15 mOhm	15 mOhm
Material		
Contact material	contact hook: bronze	contact hook: bronze, contact spring: copper beryllium
Contact surface material	gold-plated	gold-plated
Housing material	PBT	PBT
Environmental conditions		
Temperature range	-25 °C to +100 °C	-25 °C to +100 °C
Inflammability class		
Housing	94 HB	94 HB

Clamp-type test probe

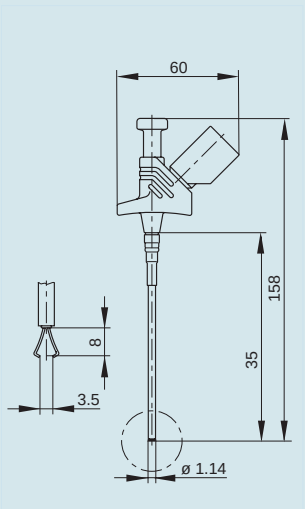
4 mm system



4 mm system

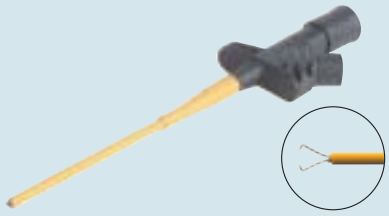
Product description		
Description	Clamp-type test probe with rotating grip jaws and flexible shaft. The special form of the grip jaws allows clamping of pins and wires up to a maximum of 4 mm diameter. 4 mm diameter brass socket connection with side screw, grip jaws additionally nickel-plated.	Clamp-type test probe grip jaws and flexible shaft. The special form of the grip jaws permits clamping of pins and wires up to a maximum of 4 mm diameter. 4 mm diameter brass socket connection with additional screw connection, grip jaws additionally nickel-plated.
Type	**KLEPS 30 schwarz/black**	**KLEPS 60 schwarz/black**
Order No.	930 113-100	973 053-100
System	4 mm system	4 mm system
Clamping range	4 mm	4 mm
Clamp type	rotating grip jaws	grip jaws
Housing Color	black	black
Other standard types	red color, order no. 930 113-101	red color, order no. 973 053-101
Drawing		
		
Technical data		
Type of contact	socket, screw connection	socket
Type of termination	4 mm socket, screw	4 mm socket, 2 mm screw
Rated voltage	DC 60 V	DC 60 V
Rated current		
Contact resistance	50 mOhm	50 mOhm
Material		
Contact material	spring steel wire	spring steel wire
Contact surface material	nickel-plated	nickel-plated
Housing material	PF	PBT
Environmental conditions		
Temperature range	-25 °C to +80 °C	-25 °C to +60 °C
Inflammability class		
Housing	94 HB	94 HB

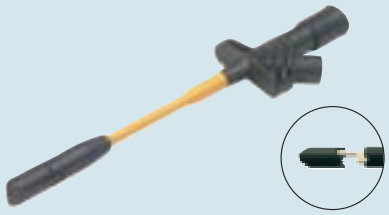
4 mm sliding sleeve system

Product description		
Description	Contact-protected clamp-type test probe with rotating grip jaws and flexible shaft. The grip jaws allows clamping of pins and wires up to a max. of 4 mm diameter. Brass 4 mm diameter contact-protected socket connection. Connects with sliding sleeve measuring leads.	
Type	**KLEPS 250 schwarz/black**	
Order No.	973 528-100	
System	4 mm sliding sleeve system	
Clamping range	4 mm	
Clamp type	rotating grip jaws	
Housing Color	black	
		
Other standard types	red color, order no. 973 528-101	
Drawing		
		
Technical data		
Type of contact	socket	
Type of termination	4 mm socket	
Rated voltage	AC/DC 300 V	
Rated current		
Contact resistance	100 mOhm	
Material		
Contact material	spring steel	
Contact surface material	nickel-plated	
Housing material	PF	
Environmental conditions		
Temperature range	-25 °C to +80 °C	
Inflammability class		
Housing	94 HB	

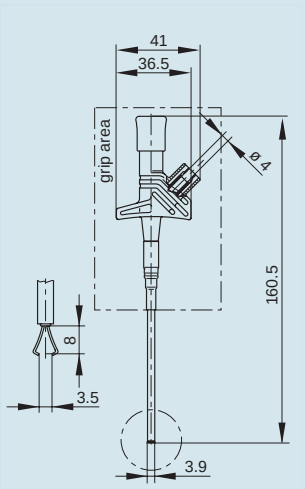
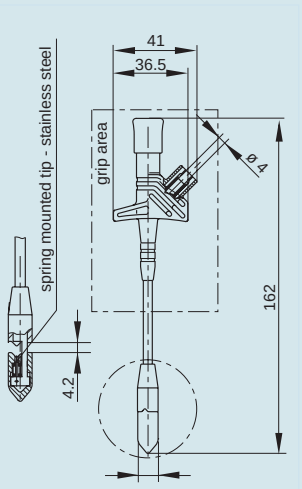
Clamp-type test probe

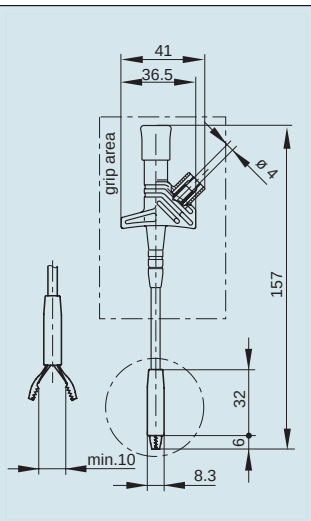
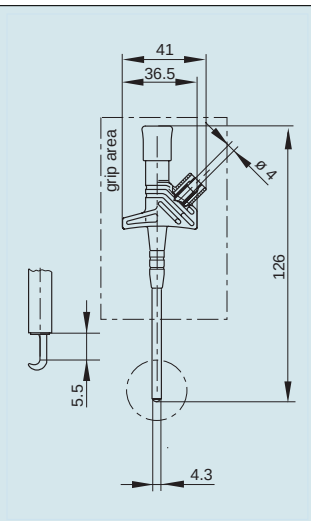
4 mm safety system





4 mm safety system

Product description			
Description	Safety clamp-type test probe with rotating grip jaws and flexible shaft. Wires and pins with up to a maximum diameter of 4 mm can be clamped thanks to the special form of the grip jaws. 4 mm diameter brass socket connection.	Safety clamp-type test probe with split test clamp. The sprung stainless steel tip can contact insulated leads with cross-sections between 0.25 mm² and 1.5 mm² (3.5 mm diameter) without the need to strip them. 4 mm diameter brass socket connection.	
Type	**KLEPS 2600 schwarz/black**	**KLEPS 2700 schwarz/black**	
Order No.	972 306-100	972 307-100	
System	4 mm safety system	4 mm safety system	
Clamping range	4 mm	1.5 mm²	
Clamp type	rotating grip jaws	stainless steel tip	
Housing Color	black	black	
Other standard types	black color, order no. 972 306-101	red color, order no. 972 307-101	
Drawing			
			
Technical data			
Type of contact	socket	socket	
Type of termination	4 mm socket	4 mm socket	
Standard	IEC 61010	IEC 61010	
Rated voltage	AC/DC 1000 V	AC/DC 1000 V	
Measurement Category	CAT III	CAT III	
Rated current		10 A	
Contact resistance	50 mOhm	100 mOhm	
Material			
Contact material	spring steel	needle (stainless steel)	
Contact surface material	nickel-plated	nickel-plated	
Housing material	PBT	PBT	
Environmental conditions			
Temperature range	-25 °C to +80 °C	-25 °C to +80 °C	
Inflammability class			
Housing	94 HB	94 HB	

	Safety clamp-type test probe with wide opening grip claws for contacting large measuring areas and leads with large cross-sections. 4 mm brass socket connection. Connects with safety measuring leads.	Safety clamp-type test probe with rigid hook to ensure secure clamping of eyes, pins, wires and boards. 4 mm brass socket connection. Connects with safety measuring leads.	
	KLEPS 2800 schwarz/black	**KLEPS 2900 schwarz/black**	
	972 308-100	972 309-100	
	4 mm safety system	4 mm safety system	
	10 mm	5.5 mm	
	grip claws	hook	
	black	black	
			
	red color, order no. 972 308-101	red color, order no. 972 309-101	
			
	socket	socket	
	4 mm socket	4 mm socket	
	IEC 61010	IEC 61010	
	AC/DC 1000 V	AC/DC 1000 V	
	CAT III	CAT III	
	20 A	20 A	
	100 mOhm	50 mOhm	
	stainless steel	stainless steel	
	nickel-plated	nickel-plated	
	PBT	PBT	
	-25 °C to +80 °C	-25 °C to +80 °C	
	94 HB	94 HB	

They not only have strong teeth, they also find the right spot.

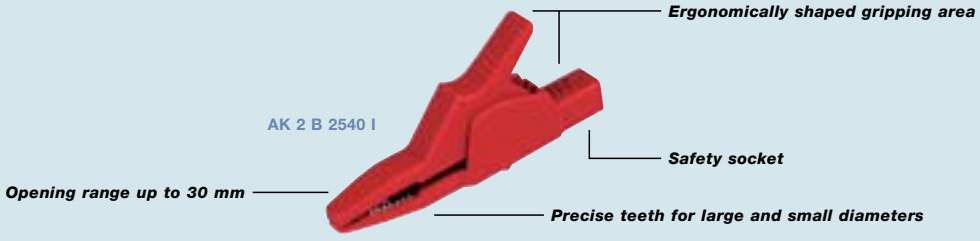
Alligator/crocodile clips for testing machine-mounted accessories in the laboratory and for quality-control inspection.

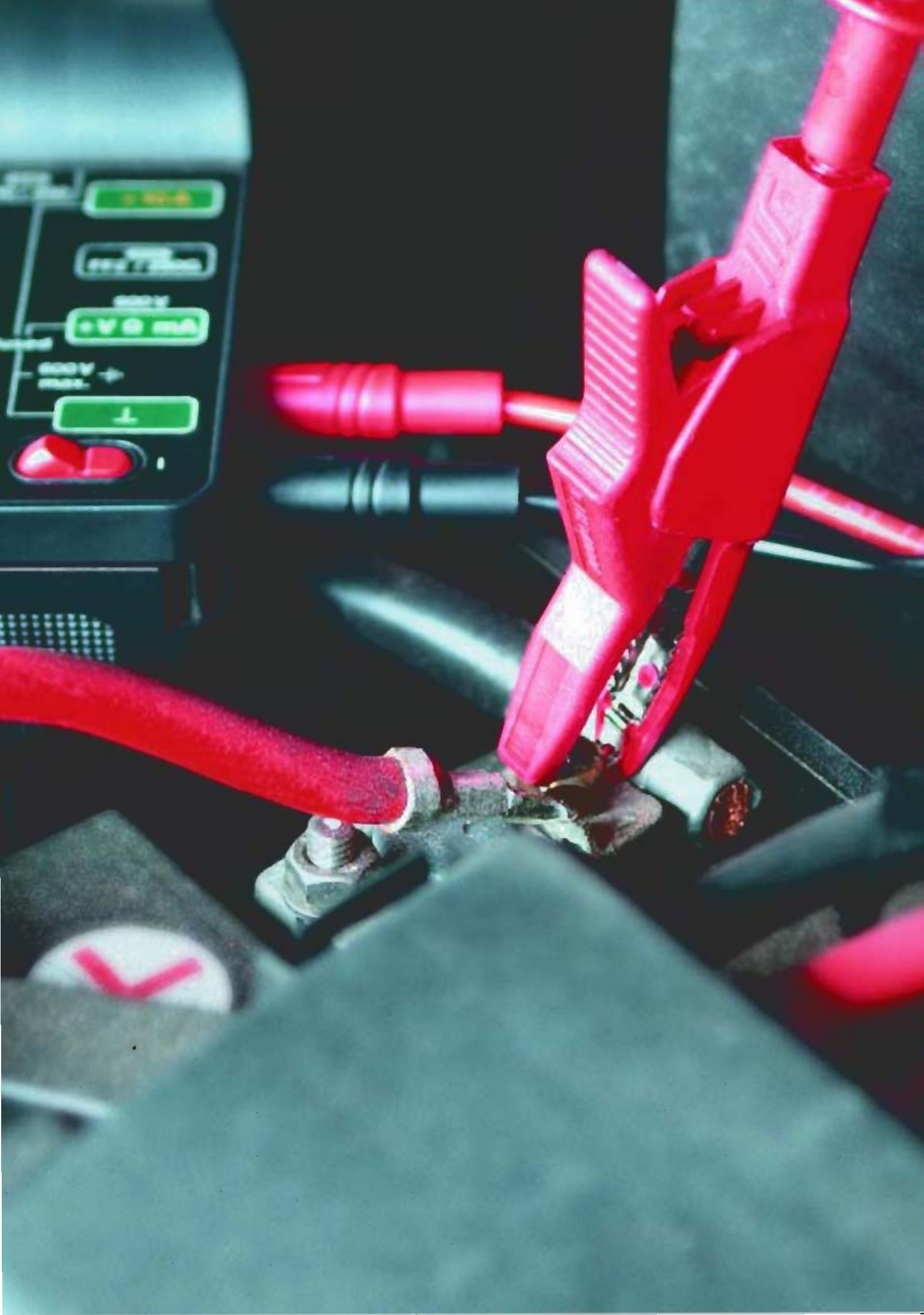
Our alligator and crocodile clips have the right bite size for every occasion: sheets, bolts and automobile batteries, use in acceptance inspections in industrial manufacture or even for electrical supply to electrochemical accessories. They are used wherever variable clamping with low contact resistance is required. Their powerful teeth and the gentle fine wire clamping area make them the universal and high-stress bearing tool for the measurement and transmission of currents.

Depending on the individual application, the MICRO-SMD CLIP can handle the two-pole testing of the smallest surface-mounted components, and with opening widths of up to 30 mm, they have really large jaws. Alligator clips have a powerful bite, and after contact is made, your hands are free. The stainless steel version is non-magnetic and resistant to acids, making it suitable for chemical trials.

As a special solution for the small-size electronics sector, Hirschmann has added the MICRO-SMD CLIP to its product range, for enabling high-precision contact and allowing freehand two-pole testing of even very small SMD components.

The alligator clips AK 2B 2540 I with their wide-opening jaws and variable clamping capability are especially suitable for use in automobile, and make life in the field much easier: after contact is made, your hands are free.

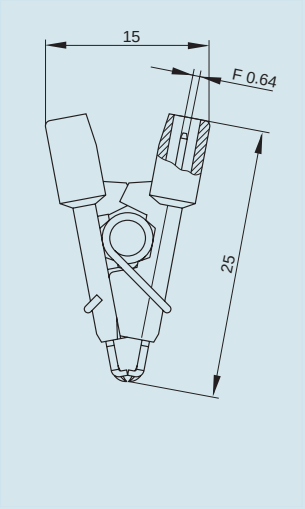




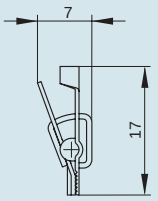
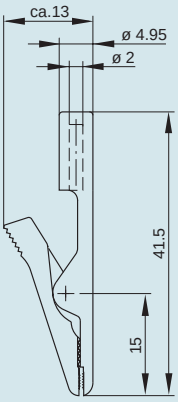
Alligator clips

0.64 mm system

0.64 mm system

Product description		
	Spring-loaded, two-pole test clip, specially designed for SMD components. Gold-plated, hardened tip for testing circuits, flat-nosedgrips for individual components; notch for gripping thin wires. Balanced spring force permits testing of large and small components; 0.64 mm pin connection; electrically insulated spring.	
	MICRO-SMD CLIP 1	
	972 416-100	
	0,64 mm system	
	0 mm to 8 mm	
	black	
Drawing		
		
Technical data		
	pin	
	2 x 0,64 mm diameter pin	
	DC 60 V	
	6 mOhm	
Material		
	copper beryllium	
	gold-plated	
	PBT	
Environmental conditions		
	-30 °C to +100 °C	
Inflammability class		
	94 HB	

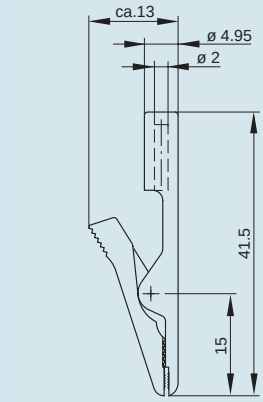
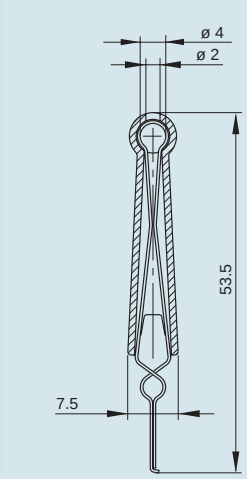
2 mm system

Product description		
	Miniature alligator clip for small components, e.g. on printed circuits. Bright metal surface. Maximum clamping range 1 mm². Maximum connecting lead cross-section 0.5 mm² solder or crimped.	Miniature alligator clip with unbreakable insulation. Nickel-plated brass jaws. The flat part of the jaws (fine wire section) allows a secure contact to be made when clamping even the thinnest wires. Capable of clamping flat components (soldering eyes) and wires up to a maximum diameter of 4 mm.
	AGF 1	**MA 1 schwarz/black**
	930 476-001	930 317-800
	unrelated to system	2 mm system
	1 mm	4 mm
		black
		
		red color, order no. 930 317-801
Drawing		
		
Technical data		
		socket (spring-loaded)
	solder, crimped	2 mm socket
	DC 60 V	DC 60 V
	15 mOhm	5 mOhm
Material		
	brass	brass
	silvered	nickel-plated
		PA
Environmental conditions		
	-25 °C to +100 °C	-25 °C to +100 °C
Inflammability class		
	94 HB	94 HB

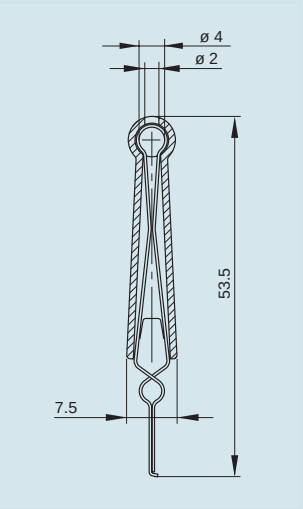
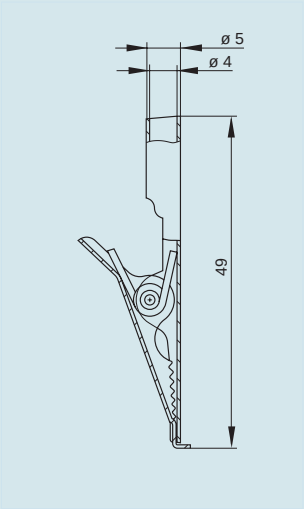
Alligator clips

2 mm system

2 mm system

Product description		
	Miniature alligator clip with unbreakable insulation. The flat part of the jaws (fine wire section) allows a secure contact to be made when clamping even the thinnest wires. Capable of clamping flat components (soldering eyes) and wires up to a maximum diameter of 4 mm. MA 1 S is made of stainless steel - rust-proof , acid-proof, non magnetic. Clamping jaws additionally tin-plated.	Extra-fine alligator clip, particularly suited for gripping densely packed extremely small contact points. Contact tongues insulated on the outside to prevent short circuits. Plug connection through 2 mm and 4 mm diameter connectors.
	MA 1 S schwarz/black	**AGF 2 schwarz/black**
	973 584-100	931 272-100
	2 mm system	2 mm und 4 mm system
	4 mm	4 mm
	black	black
		
	red color, order no. 973 584-101	red color, order no. 931 272-101
Drawing		
		
Technical data		
	socket (spring-loaded)	2 mm und 4 mm socket
	2 mm socket	2 mm diameter, 4 mm diameter
	DC 60 V	DC 60 V
	5 mOhm	300 mOhm
Material		
	stainless steel	stainless steel
	tinned	stainless steel
	PA	PVC-P
Environmental conditions		
	-25 °C to +100 °C	-25 °C to +80 °C
Inflammability class		
	94 HB	94 HB

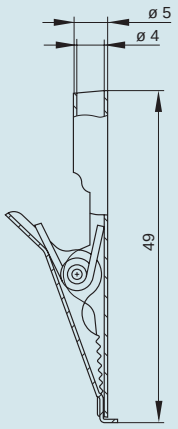
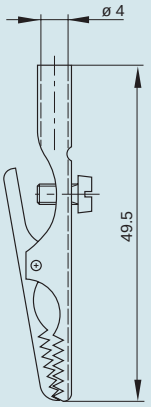
4 mm system

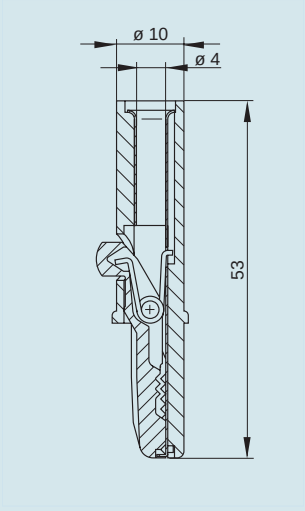
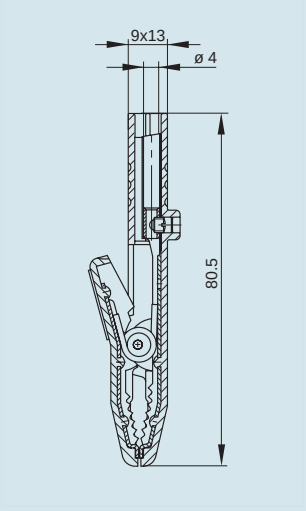
Product description		
	Extra-fine alligator clip, particularly suited for gripping densely packed extremely small contact points. Contact tongues insulated on the outside to prevent short circuits. Plug connection through 2 mm and 4 mm diameter connectors.	Nickel-plated steel alligator clip. The special shape allows clamping of both extremely fine and thick wires. Maximum bolt diameter 10 mm. 4 mm diameter socket connection and solder connection possible.
	AGF 2 schwarz/black	**AGF 20**
	931 272-100	930 120-000
	2 mm und 4 mm system	4 mm system
	4 mm	10 mm
	black	metal color
	red color, order no. 931 272-101	
Drawing		
		
Technical data		
	2 mm und 4 mm socket	socket
	2 mm diameter, 4 mm diameter	4 mm socket, solder
	DC 60 V	DC 60 V
	300 mOhm	15 mOhm
Material		
	stainless steel	steel
	stainless steel	nickel-plated
	PVC-P	steel
Environmental conditions		
	-25 °C to +80 °C	-25 °C to +100 °C
Inflammability class		
	94 HB	94 HB

Alligator clips

4 mm system

4 mm system

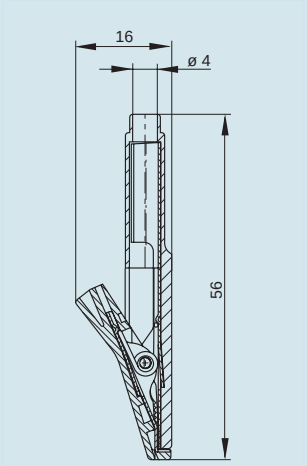
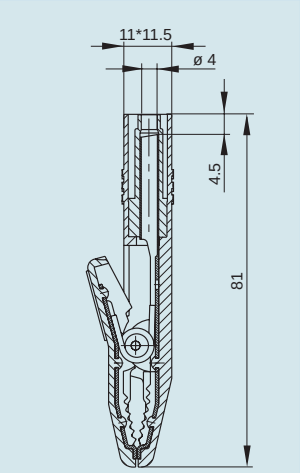
Product description			
	Stainless steel alligator clip. The special shape allows clamping of both extremely fine and thick wires. Maximum bolt diameter 10 mm. 4 mm diameter socket connection and solder connection possible. Rust-proof, acid-proof and non-magnetic.	Nickel-plated steel alligator clip. Clamping range up to a maximum bolt diameter 5 mm. 4 mm diameter socket connection, connection possible by terminal screw and solder connection.	
	AGF 30	**AGS 20**	
	930 122-000	603 006-001	
	4 mm system	4 mm system	
	10 mm	5 mm	
	metal color	metal color	
Drawing			
			
Technical data			
	socket	socket	
	4 mm socket, solder	4 mm socket, solder, screw	
	DC 60 V	DC 60 V	
	15 mOhm	10 mOhm	
Material			
	stainless steel	steel	
	stainless steel	nickel-plated	
	stainless steel	steel	
Environmental conditions			
	-25 °C to +100 °C	-25 °C to +100 °C	
Inflammability class			
	94 HB	94 HB	

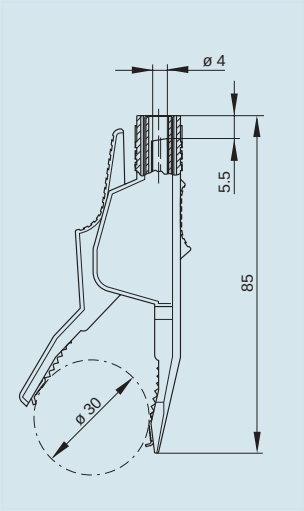
	Insulated alligator clip. Clamping range up to 6 mm bolt diameter. Fine wire section for very thin wires. Only the lower part o fthe clip has a tin-plated, brass contact insert. 4 mm diameter socket connection.	Insulated, unbreakable alligator clip. Clamping range up to 9.5 mm bolt diameter. The flat part of the jaws (fine wire section) allows even the finest wires to be clamped. 4 mm diameter socket connection and screw connection up to 1.5 mm².	
	AK 10 rot/red	**AK 2 S schwarz/black**	
	930 126-601	932 146-100	
	4 mm system	4 mm system	
	6 mm	9.5 mm	
	red	black	
	black color, order no. 930 126-100; blue color, order no. 930 126-102; yellow color, order no. 930 126-103; green color, order no. 930 126-104	red color, order no. 932 146-101	
			
	socket	socket	
	4 mm socket	4 mm socket, screw	
	DC 60 V	DC 60 V	
	6 A	25 A	
	15 mOhm	10 mOhm	
	brass	brass	
	tinned	nickel-plated	
	PS	PP	
	-25 °C to +60 °C	-25 °C to +80 °C	
	94 HB	94 HB	

Alligator clips

4 mm safety system

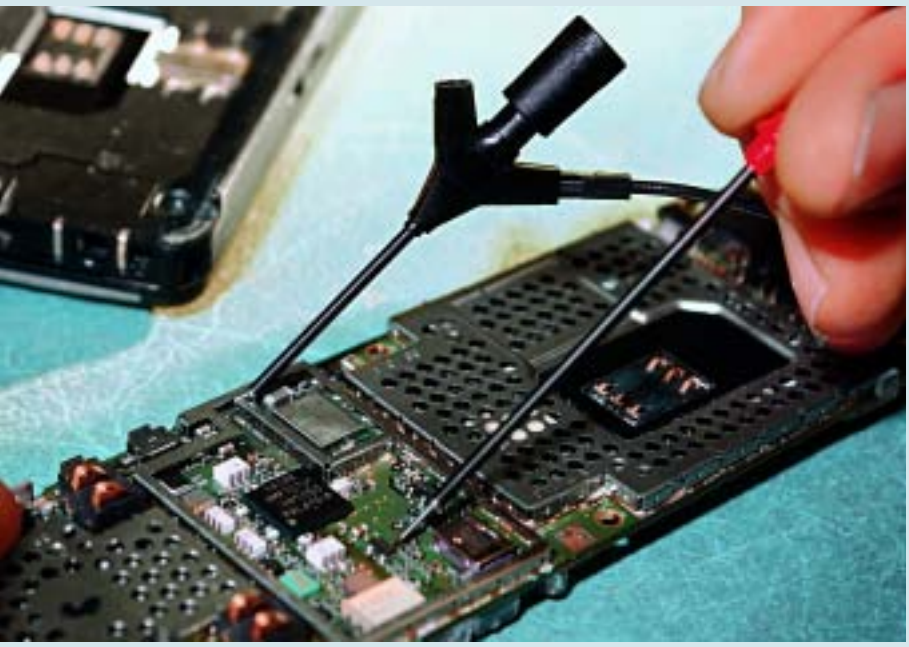
4 mm safety system

Product description			
	Contact-protected, unbreakable miniature alligator clip. Clamping range up to a bolt diameter of 6 mm. The flat section of the clamping jaws allows extremely fine wires to be clamped. 4 mm diameter brass socket connection.	Contact-protected, unbreakable alligator clip. Clamping range up to a bolt diameter of 9.5 mm. The flat section of the clamping jaws allows extremely fine wires to be clamped. 4 mm diameter brass socket connection.	
	MA 260 SH schwarz/black	**AK 2 B schwarz/black**	
	973 889-100	932 435-100	
	4 mm safety system	4 mm safety system	
	6 mm	9.5 mm	
	black	black	
	red color, order no. 973 889-101	red color, order no. 932 435-101	
Drawing			
			
Technical data			
	socket	socket	
	4 mm socket	4 mm socket	
	IEC 61010	IEC 61010	
	AC/DC 300 V	AC/DC 300 V	
	CAT II	CAT II	
	15 A	25 A	
	5 mOhm	10 mOhm	
	CE	CE	
Material			
	brass	brass	
	nickel-plated	nickel-plated	
	PA	PP	
Environmental conditions			
	-25 °C to +80 °C	-25 °C to +80 °C	
Inflammability class			
	94 HB	94 HB	

	Contact-protected, unbreakable, wide-opening alligator clip. Clamping range up to a bolt diameter of 30 mm. Solid wire clip, U-shaped, fine wire face; 4 mm diameter brass connecting socket, suitable for use with safety-type measuring leads.		
	AK 2 B 2540 I schwarz/black		
	972 405-100		
	4 mm safety system		
	30 mm		
	black		
	red color, order no. 972 405-101		
			
	socket		
	4 mm socket		
	IEC 61010		
	AC/DC 1000 V		
	CAT II		
	34 A		
	10 mOhm		
	CE		
	brass		
	nickel-plated		
	PP		
	-30 °C to +90 °C		
	94 HB		

Here, measuring and testing are brought to a fine point.

Test probes can be positioned accurately within millimeters.

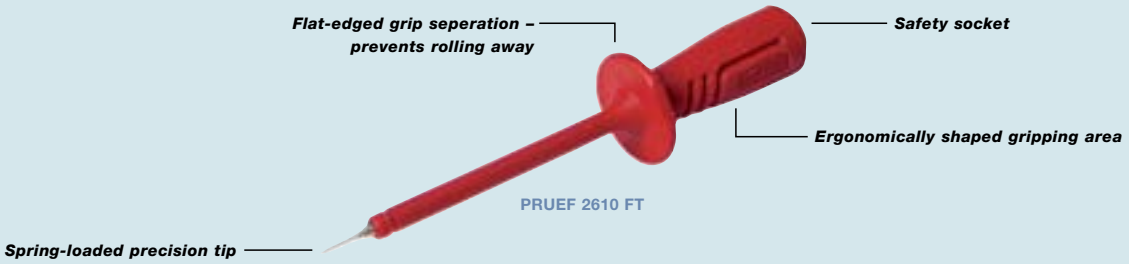


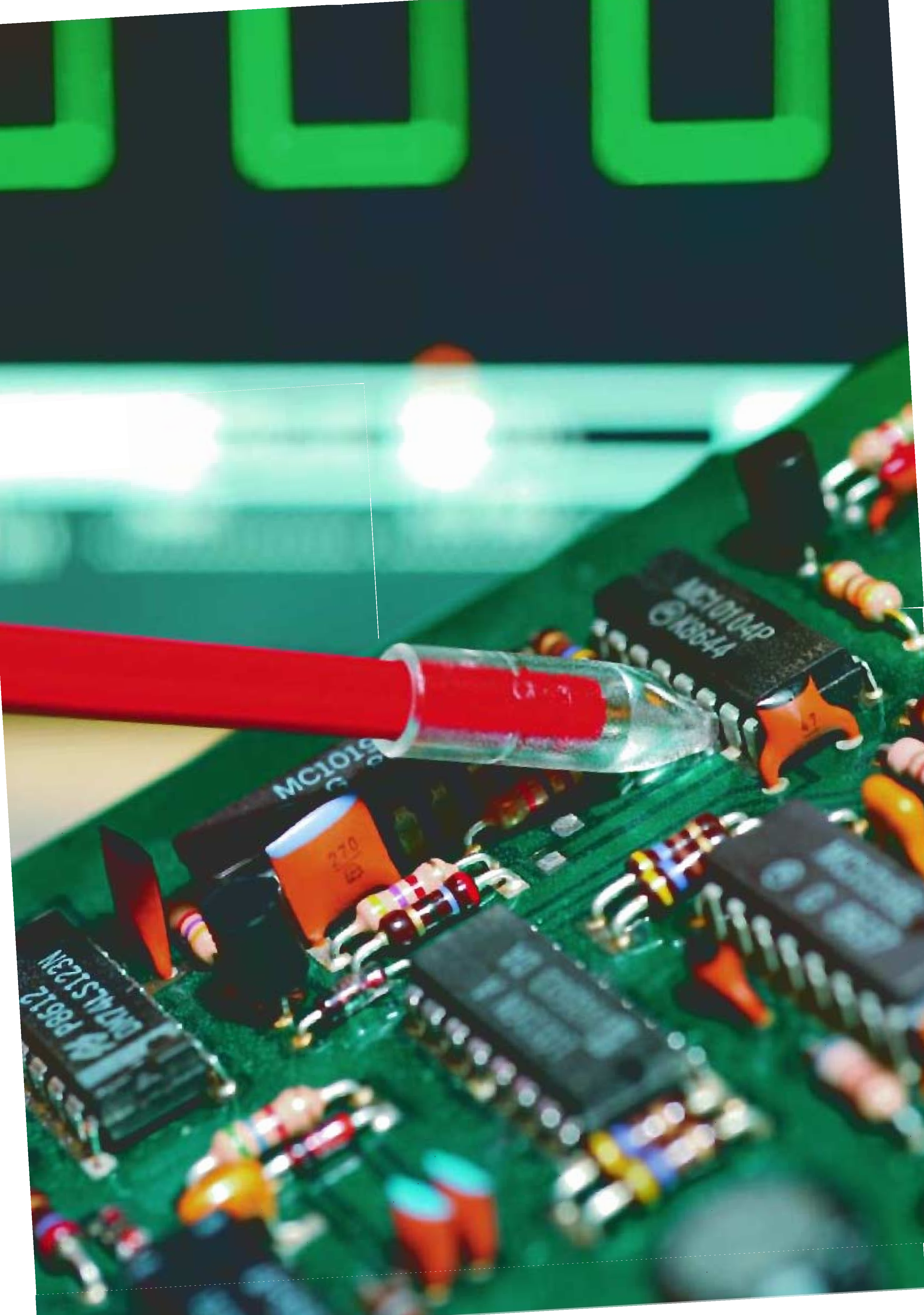
There is literally no space for inaccuracies in small electronic devices – in surface-mounted components, one tenths of millimeters are involved. So what you need for high-precision voltage testing under these circumstances are a steady hand – and the right Hirschmann test probe. Even a little slip of the needle could destroy the entire device. For the especially gentle measurement of sensitive PCBs, fine, spring-loaded micro-testing probes are needed provide the necessary spring force.

Hirschmann uses slim stainless steel probes in the narrowest spaces and in wiring systems. And even if a more robust application, such as in manual work or in electronics, Hirschmann can provide you with needle-shaped steel probes that can penetrate tough insulations or oxidation layers. A tip protection has been provided to prevent both injury and short-circuit, while ensuring secure contacts with IC sockets.

The MICRO-testing MPS 2/0.64 FT with measuring lead is used in surface-mounted PCBs where precision is of absolute essence – where a slip of the needle could destroy the device itself.

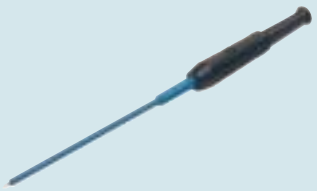
Safe contact protection and a contact–making aid for IC sockets: the tip protection SS 260 provides an ideal supplement to the test probe 2600, which can be used in a variety of ways in electronics.



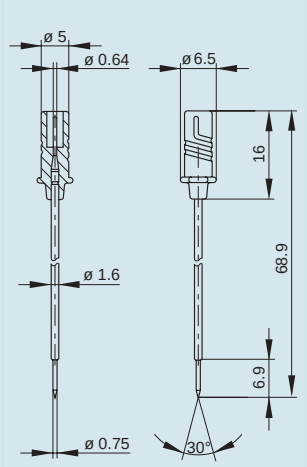
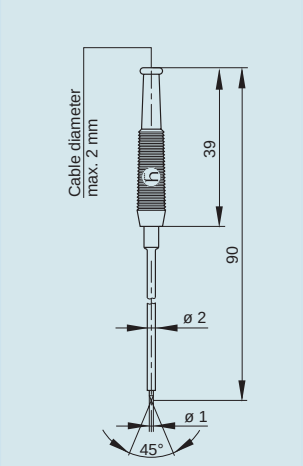

MC10104P
K8644

Test probes

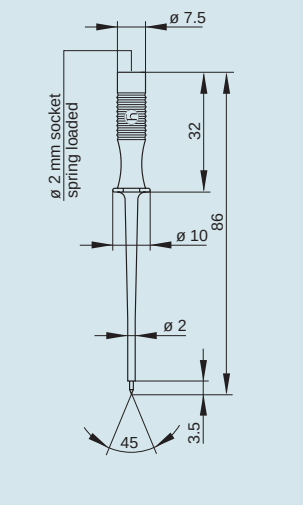
0.64 mm system



0.64 mm system

Product description		
Description	Miniature test probe with sprung 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...and MAL...	Miniature test probe for sampling extremely small measuring points.Shatter-proof grip, may be un-screwed. The stainless steel tip easily penetrates insulation and oxide layers. Solder connection up to 0.5 mm².
Type	**MICRO-PRUEF MPS 2 0,64 FT schwarz/black**	**PRUEF 1 schwarz/black**
Order No.	973 995-100	931 376-100
System	0.64 mm system	unrelated to system
Housing Color	black	black
Other standard types	red color, order no. 973 995-101	red color, order no. 931 376-101
Drawing		
		
Technical data		
Pin dimensions	0.64 mm	
Type of contact	pin	solder
Type of termination	1 x 0.64 mm diameter pin, gold-plated	solder
Rated voltage	DC 60 V	DC 60 V
Contact resistance	16 mOhm	50 mOhm
Material		
Contact material	stainless steel	stainless steel
Contact surface material	rhodium	nickel-plated
Housing material	PBT	PVC-P
Environmental conditions		
Temperature range	-25 °C to +80 °C	-25 °C to +60 °C
Inflammability class		
Housing	94 HB	94 HB

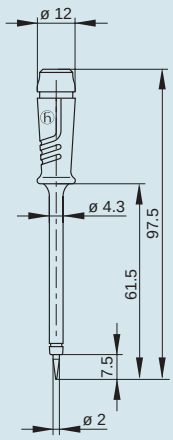
2 mm system

Product description		
Description	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.	
Type	**MPS 1 Schwarz/black**	
Order No.	973 531-101	
System	2 mm system	
Housing Color	black	
Other standard types	red color, order no. 973 531-101	
Drawing		
		
Technical data		
Pin dimensions	2 mm	
Type of contact	socket (spring-loaded)	
Type of termination	2 mm diameter socket	
Rated voltage	DC 60 V	
Contact resistance	100 mOhm	
Material		
Contact material	stainless steel	
Contact surface material	nickel-plated	
Housing material	PE	
Environmental conditions		
Temperature range	-25°C to +60°C	
Inflammability class		
Housing		

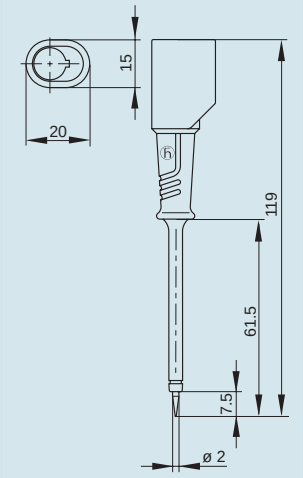
Test probes

4 mm system

4 mm system

Product description		
Description	Test probe with elastic, shatter-proof insulated sleeve. Insulation and oxide layers can be penetrated by the slender stainless steel tip. 4 mm diameter brass socket connection. Accessory tip protector and IC tap SS 260.	Tip protection and IC tap. Clipping onto the PRUEF 2, PRUEF 2 S and PRUEF 2600 test probe covers the needle tip and provides protection against injury. Contact is made with ICs without short circuiting or slipping off.
Type	**PRUEF 2 schwarz/black**	**SS 260**
Order No.	973 368-100	973 865-001
System	4 mm System	4 mm System
Housing Color	black	
Other standard types	red color, order no. 973 368-101	
Drawing		
		
Technical data		
Pin dimensions	4 mm	
Type of contact	socket	
Type of termination	4 mm socket	
Rated voltage	DC 60 V	
Contact resistance	50 mOhm	
Material		
Contact material	stainless steel	
Contact surface material	nickel-plated	
Housing material	PP	
Environmental conditions		
Temperature range	-25 °C to +80 °C	
Inflammability class		
Housing	94 HB	

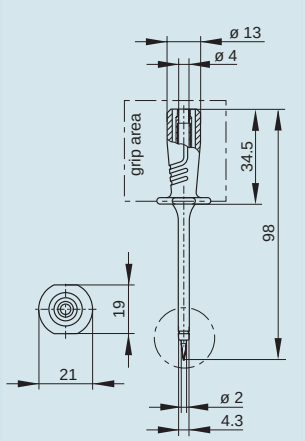
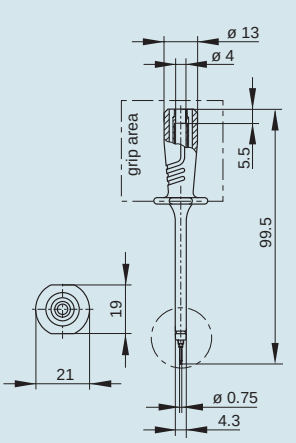
4 mm sliding sleeve system

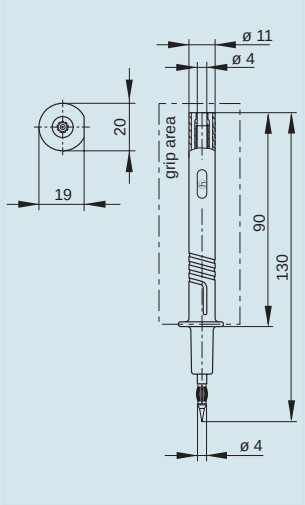
Product description		
Description	Contact-protected test probe with elastic, shatter-proof insulated sleeve and slender stainless steel tip. Tip penetrates insulation and oxide layers. Insulated brass 4 mm diameter socket connection. Connects with sliding sleeve measuring leads. Accessory tip protector and IC tap SS 260.	
Type	**PRUEF 2 S schwarz/black**	
Order No.	973 659-100	
System	4 mm sliding sleeve system	
Housing Color	black	
Other standard types	red color, order no. 973 659-101	
Drawing		
		
Technical data		
Pin dimensions	4 mm	
Type of contact	socket	
Type of termination	4 mm socket	
Rated voltage	AC/DC 600 V	
Contact resistance	50 mOhm	
Certificates	CE	
Material		
Contact material	stainless steel	
Contact surface material	nickel-plated	
Housing material	PP	
Environmental conditions		
Temperature range	-25 °C to +80 °C	
Inflammability class		
Housing	94 HB	

Test probes

4 mm safety system

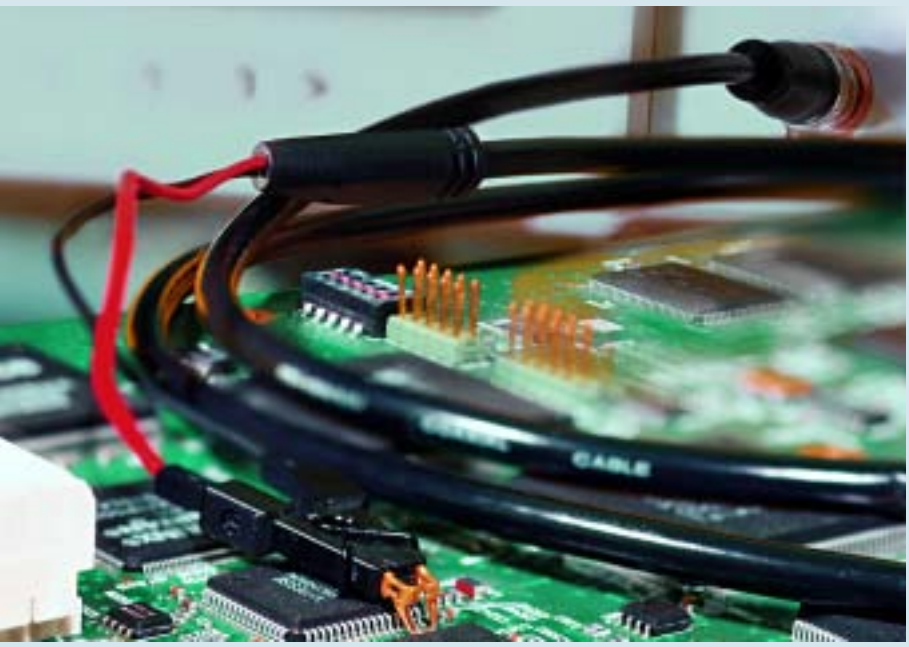
4 mm safety system

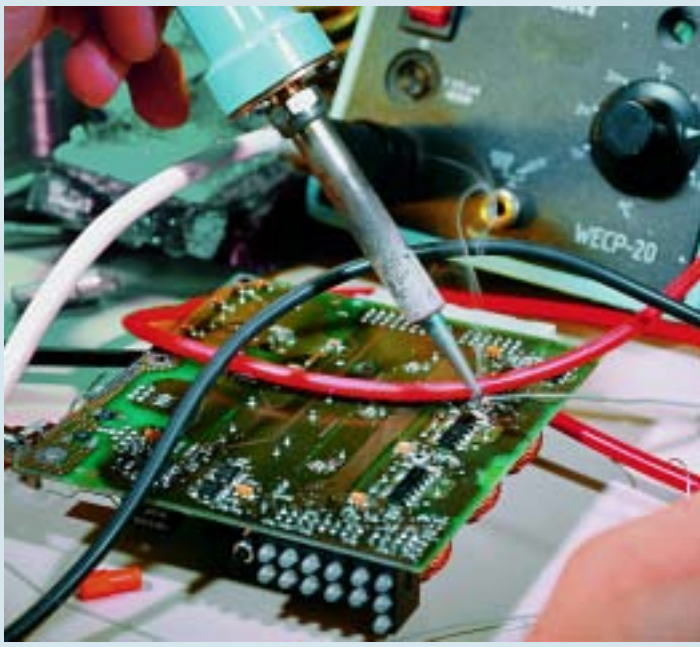
Product description			
Description	Test probe with elastic, shatter-proof insulated sleeve and slender stainless steel tip. Tip for penetration of insulation and oxide layers. 4 mm diameter brass socket connection. Connects with safety measuring leads. Accessory tip protector and IC tap SS 260.	Test probe with elastic 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.	
Type	**PRUEF 2600 schwarz/black**	**PRUEF 2610 FT schwarz/black**	
Order No.	972 317-100	972 318-100	
System	4 mm safety system	4 mm safety system	
Housing Color	black	black	
Other standard types	red color, order no. 972 317-101	red color, order no. 972 318-101	
Drawing			
			
Technical data			
Pin dimensions	4 mm	4 mm	
Type of contact	pin (spring-loaded)	socket	
Type of termination	4 mm socket	4 mm socket	
Standard	IEC 61010	IEC 61010	
Rated voltage	AC/DC 1000 V	AC/DC 1000 V	
Measurement Category	CAT III	CAT III	
Contact resistance	50 mOhm	50 mOhm	
Certificates	CE	CE	
Material			
Contact material	stainless steel	stainless steel	
Contact surface material	nickel-plated	rhodium	
Housing material	PP	PP	
Environmental conditions			
Temperature range	-25 °C to +80 °C	-25 °C to +80 °C	
Inflammability class			
Housing	94 HB	94 HB	

	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 protection and IC tap. Clipping onto the PRUEFf 2, PRUEF 2 S and PRUEF 2600 test probe covers the needle tip and provides protection against injury. Contact is made with ICs without short circuiting or slipping off.	
	PRUEF 2700 schwarz/black	**SS 260**	
	972 319-100	973 865-001	
	4 mm safety system	4 mm System, 4 mm safety system	
	black		
	red color, order no. 972 319-101		
			
	4 mm		
	socket		
	4 mm socket		
	IEC 61010		
	AC/DC 1000 V		
	CAT III		
	2 mOhm		
	CE		
	brass, contact spring: copper beryllium		
	nickel-plated		
	PP		
	-25 °C to +80 °C		
	94 HB		

The safe, the right connection for all measurements.

Measuring leads that meet every requirement.





Measuring leads should be able to withstand a great deal: heat and cold, tensile forces, contact with soldering irons, current and voltage loads. For this reason, with high-quality materials, a closely monitored production process and double insulation for optimum protection, it has what it takes to act as a connection between the measuring probe and testing device, or as a connecting element in machine-mounted accessories or for current supply to testing panels.

A built-in color indicator shows whether a cable is damaged or not. Measuring leads with push-on sleeves are suitable for legacy devices without safety sockets, and offer short-circuit protection for open leads. Hirschmann can give you all this in a never-ending variety of forms, a wide range of color choices and of course, the long life that you have come to expect from our products over so many decades.

Flexibility and high load handling capacity are the result of a targeted selection of cross-sections and insulation materials – for example measuring leads made of silicone easily resist the contact with a soldering iron.

Measuring leads easily connect all components to each other, for example, testing media, measuring devices and machine-mounted accessories – measuring lead stands in training operations are therefore often quite full.

Safety and standard measuring leads in a wide range of colors

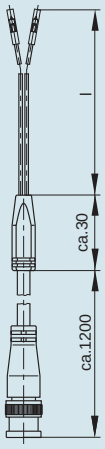
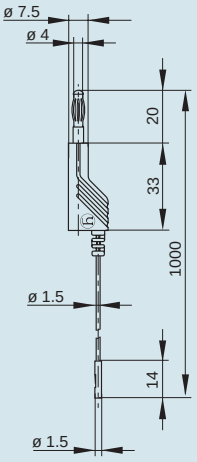
Highly flexible leads – PVC/silicone

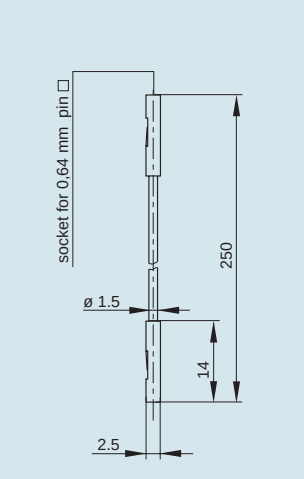
Double-insulated measuring leads with color indicator.

Measuring leads

0,64 mm system

0,64 mm system

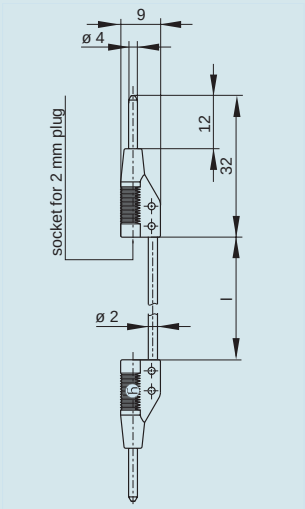
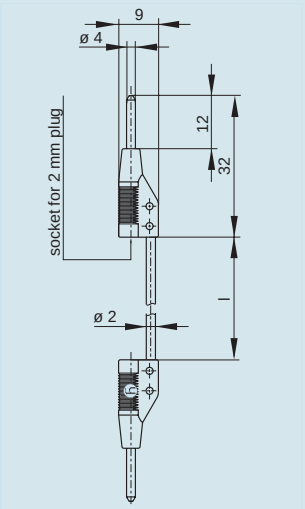
Product description			
	BNC adapter lead with insulated sockets for 0.64 mm round pillar and 0.64 mm rectangular pillar. Red inner lead, black shielding; cable type RG 58 A/U, 50 Ohm. For use with oscilloscopes, PC cards, etc.	Injection-moulded measuring lead with sprung 4 mm diameter plug and 4 mm diameter socket for further connection and insulated socket for 0.64 mm round pillar and 0.64 mm rectangular pillar. Highly flexible 0.25 mm² stranded wire.	
	BNC AL 0,64	**MAL N 4-0,64/100-0,25 schwarz/black**	
	933 844-001	934 160-100	
	0.64 mm system	0.64 mm system	
	120 cm BNC + 10 cm wire	100 cm	
		0.25 mm²	
		PVC	
	black	black	
	black	black	
		red color, order no. 934 160-101	
Drawing			
			
Technical data			
	0.64 mm	4 mm, 0,64 mm	
	socket	pin (spring-loaded) and socket (spring-loaded)	
	BNC, 2 x 0,64 mm diameter socket	1 x 4 mm diameter pin, 1 x 0,64 mm socket	
		LIY	
	highly flexible lead	highly flexible lead	
		130 mm x 0.05 mm	
	DC 60 V	DC 60 V	
		3 A	
		70 mOhm	
Material			
		contact pin: brass, contact spring: copper beryllium	
		nickel-plated	
		PVC	
Environmental conditions			
	-15 °C to +70 °C	-15 °C to +70 °C	
Inflammability class			

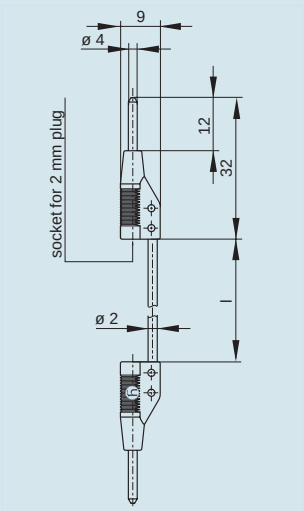
	Measuring lead with two insulated sockets for 0.64 mm round pillar and 0.64 mm rectangular pillar. Highly flexible 0.25 mm two stranded wire with two 0.64 mm diameter sockets.		
	MKL 0,64/25-0,25 schwarz/black		
	973 604-100		
	0.64 mm system		
	25 cm		
	0.25 mm²		
	PVC		
	black		
	black		
			
	red color, order no. 973 604-101		
			
	0.64 mm		
	socket (spring-loaded)		
	0,64 mm diameter socket		
	LIY		
	highly flexible lead		
	130 mm x 0.05 mm		
	DC 60 V		
	3 A		
	20 mOhm		
	PVC		
	-40 °C to +60 °C		

Measuring leads

2 mm system

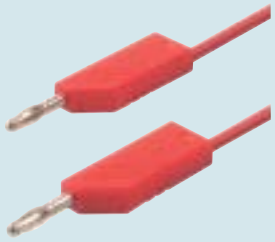
2 mm system

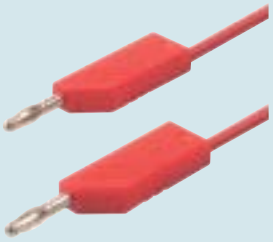
Product description			
	Injection-moulded measuring lead, at either end 2 mm diameter nickel-plated brass connector and 2 mm diameter socket with contact spring, for tower constructions. Highly flexible stranded lead 0.5 mm², grip and lead shatter-proof.	Injection-moulded measuring lead, at either end 2 mm diameter nickel-plated brass connector and 2 mm diameter socket with contact spring, for tower constructions. Highly flexible stranded lead 0.5 mm², grip and lead shatter-proof.	
	MVL 2/25 schwarz/black	**MVL 2/50 schwarz/black**	
	973 594-100	973 595-100	
	2 mm system	2 mm system	
	25 cm	50 cm	
	0,5 mm²	0,5 mm²	
	PVC	PVC	
	black	black	
	black	black	
			
	red color, order no. 973 594-101	red color, order no. 973 595-101	
Drawing			
			
Technical data			
	2 mm	2 mm	
	socket (spring-loaded), pin	socket (spring-loaded), pin	
	2 mm diameter pin	2 mm diameter pin	
	highly flexible lead	highly flexible lead	
	DC 60 V	DC 60 V	
	6 A	6 A	
	17 mOhm	26 mOhm	
Material			
	brass	brass	
	nickel-plated	nickel-plated	
	PP	PP	
Environmental conditions			
	-40 °C bis +60 °C	-40 °C to +60 °C	
Inflammability class			

	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 0.5 mm², grip and lead shatter-proof.		
	MVL 2/100 schwarz/black		
	973 596-100		
	2 mm system		
	100 cm		
	0,5 mm²		
	PVC		
	black		
	black		
			
	red color, order no. 973 596-101		
			
	2 mm		
	socket (spring-loaded), pin		
	2 mm diameter pin		
	highly flexible lead		
	DC 60 V		
	6 A		
	44 mOhm		
	brass		
	nickel-plated		
	PP		
	-40 °C to +60 °C		

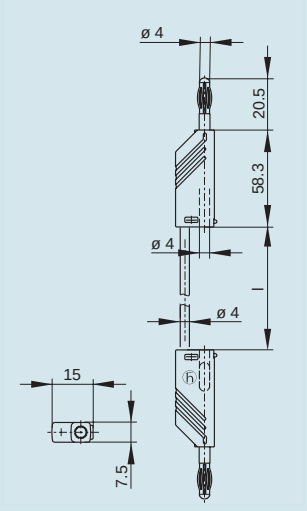
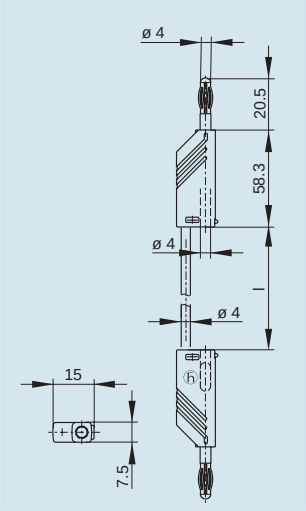
Measuring leads

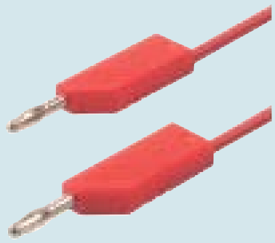
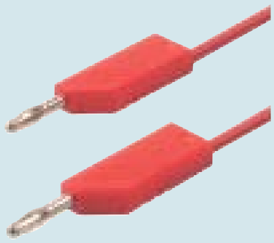
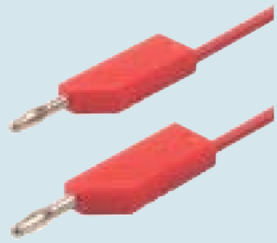
4 mm system

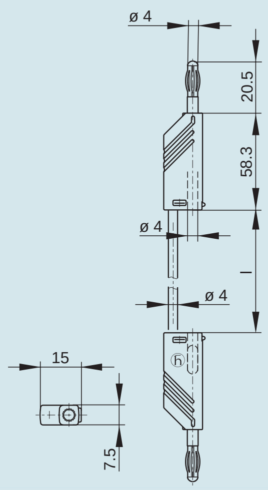
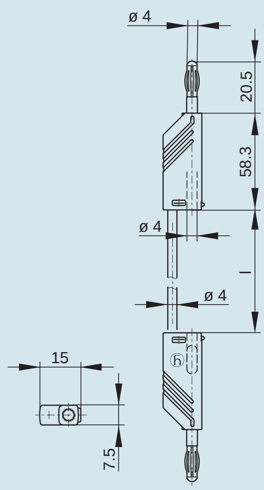
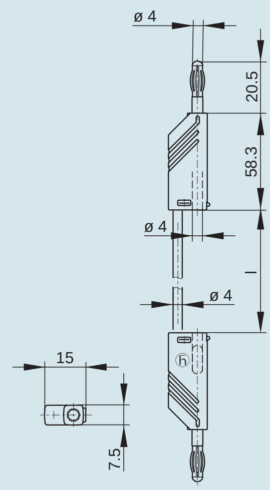




4 mm system

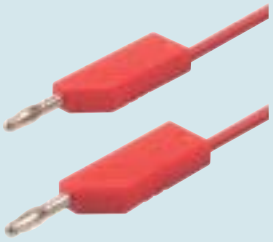
Product description			
	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm diameter socket for tower construction. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, grip and lead shatter-proof. Built in colour indicator for easy identifcation of insulation damages.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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 identifcation of insulation damages.	
	MLN SIL 25/1 rot/red	**MLN SIL 50/1 rot/red**	
	934 090-101	934 091-101	
	4 mm system	4 mm system	
	25 cm	50 cm	
	1 mm²	1 mm²	
	silicone	silicone	
	red	red	
	red	red	
			
	black color, order no. 934 090-100; blue color, order no. 934 090-102; yellow color, order no. 934 090-103; green color, order no. 934 090-104	black color, order no. 934 091-100; blue color, order no. 934 091-102; yellow color, order no. 934 091-103; green color, order no. 934 091-104	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	4 mm diameter pin and socket	4 mm diameter pin and socket	
	LEH-XY	LEH-XY	
	most flexible lead, high temperature resistant (solde-ring iron)	most flexible lead, high temperature resistant (solde-ring iron)	
	320 x 0.10	259 x 0,07	
	DC 60 V	DC 60 V	
	16 A	16 A	
	8,5 mOhm	13 mOhm	
Material			
	contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium	
	nickel-plated	nickel-plated	
	PA	PA	
Environmental conditions			
	-15 °C to +70 °C	-15 °C to +70 °C	
Inflammability class			
	94 HB	94 HB	
	94 V-2	94 V-2	

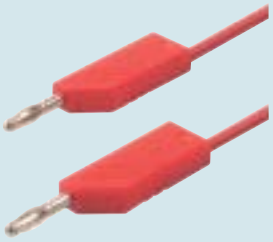
  

Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm diameter socket for tower construction. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, grip and lead shatter-proof. Built in colour indicator for easy identifcation of insulation damages.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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 identifcation of insulation damages.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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 identifcation of insulation damages.
MLN SIL 100/1 rot/red	**MLN SIL 150/1 rot/red**	**MLN SIL 200/1 rot/red**
934 092-101	934 093-101	934 094-101
4 mm system	4 mm system	4 mm system
100 cm	150 cm	200 cm
1 mm²	1 mm²	1 mm²
silicone	silicone	silicone
red	red	red
red	red	red
black color, order no. 934 092-100; blue color, order no. 934 092-102; yellow color, order no. 934 092-103; green color, order no. 934 092-104	black color, order no. 934 093-100; blue color, order no. 934 093-102; yellow color, order no. 934 093-103; green color, order no. 934 093-104	black color, order no. 934 094-100; blue color, order no. 934 094-102; yellow color, order no. 934 094-103; green color, order no. 934 094-104
		
4 mm	4 mm	4 mm
pin (spring-loaded)	pin (spring-loaded)	pin (spring-loaded)
4 mm diameter pin and socket	4 mm diameter pin and socket	4 mm diameter pin and socket
LEH-XY	LEH-XY	LEH-XY
most flexible lead, high temperature resistant (soldering iron)	most flexible lead, high temperature resistant (soldering iron)	most flexible lead, high temperature resistant (soldering iron)
259 x 0,07	259 x 0,07	259 x 0,07
DC 60 V	DC 60 V	DC 60 V
16 A	16 A	16 A
22 mOhm	34 mOhm	40 mOhm
contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium
nickel-plated	nickel-plated	nickel-plated
PA	PA	PA
-15 °C to +70 °C	-15 °C to +70 °C	-15 °C to +70 °C
94 HB	94 HB	94 HB
94 V-2	94 V-2	94 V-2

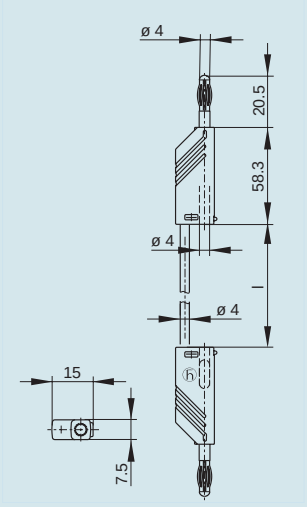
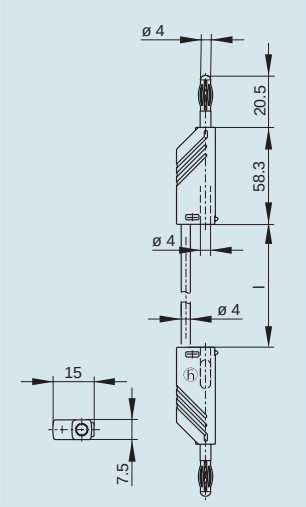
Measuring leads

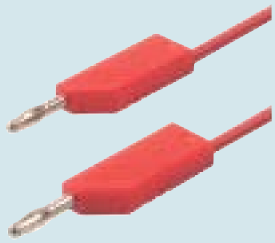
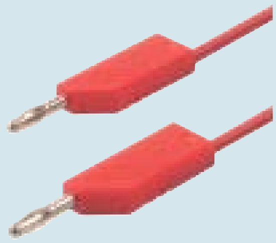
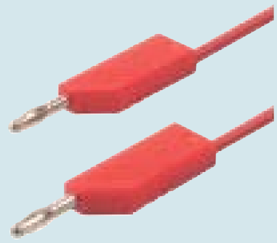
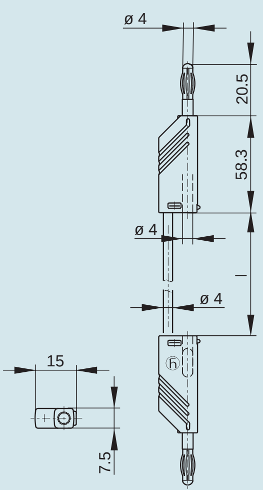
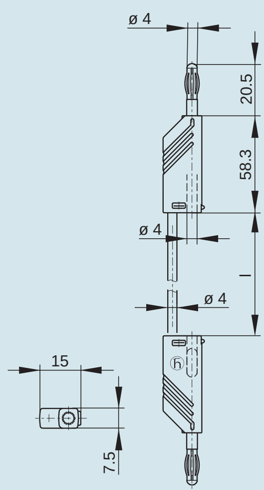
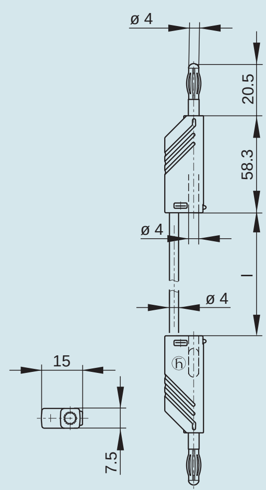
4 mm system





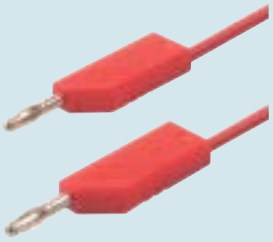
4 mm system

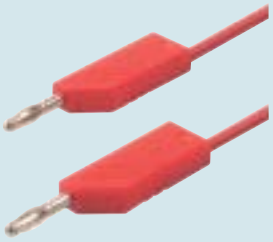
Product description			
	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm diameter socket for tower construction. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, grip and lead shatter-proof. Built in colour indicator for easy identifcation of insulation damages.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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 identifcation of insulation damages.	
	MLN 25/1 rot/red	**MLN 50/1 rot/red**	
	934 058-101	934 060-101	
	4 mm system	4 mm system	
	25 cm	50 cm	
	1 mm²	1 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	black color, order no. 934 058-100; blue color, order no. 934 058-102; yellow color, order no. 934 058-103; green color, order no. 934 058-104	black color, order no. 934 060-100; blue color, order no. 934 060-102; yellow color, order no. 934 060-103; green color, order no. 934 060-104	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	4 mm diameter pin and socket	4 mm diameter pin and socket	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	259 x 0,07	259 x 0,07	
	DC 60 V	DC 60 V	
	16 A	16 A	
	8,5 mOhm	13 mOhm	
Material			
	contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium	
	nickel-plated	nickel-plated	
	PA	PA	
Environmental conditions			
	-15 °C to +70 °C	-15 °C to +70 °C	
Inflammability class			
	94 HB	94 HB	
	94 V-2	94 V-2	

			
	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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.
	MLN 100/1 rot/red	**MLN 150/1 rot/red**	**MLN 200/1 rot/red**
	934 062-101	934 064-101	934 065-101
	4 mm system	4 mm system	4 mm system
	100 cm	150 cm	200 cm
	1 mm²	1 mm²	1 mm²
	PVC	PVC	PVC
	red	red	red
	red	red	red
	black color, order no. 934 062-100; blue color, order no. 934 062-102; yellow color, order no. 934 062-103; green color, order no. 934 062-104	black color, order no. 934 064-100; blue color, order no. 934 064-102; yellow color, order no. 934 064-103; green color, order no. 934 064-104	black color, order no. 934 065-100; blue color, order no. 934 065-102; yellow color, order no. 934 065-103; green color, order no. 934 065-104
	 	 	
	4 mm	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)	pin (spring-loaded)
	4 mm diameter pin and socket	4 mm diameter pin and socket	4 mm diameter pin and socket
	LEH-XY	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead	highly flexible lead
	259 x 0,07	259 x 0,07	259 x 0,07
	DC 60 V	DC 60 V	DC 60 V
	16 A	16 A	16 A
	22 mOhm	34 mOhm	40 mOhm
	contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium
	nickel-plated	nickel-plated	nickel-plated
	PA	PA	PA
	-15 °C to +70 °C	-15 °C to +70 °C	-15 °C to +70 °C
	94 HB	94 HB	94 HB
	94 V-2	94 V-2	94 V-2

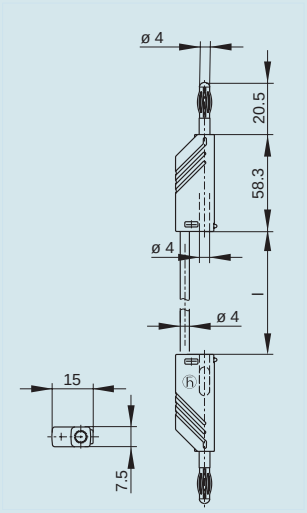
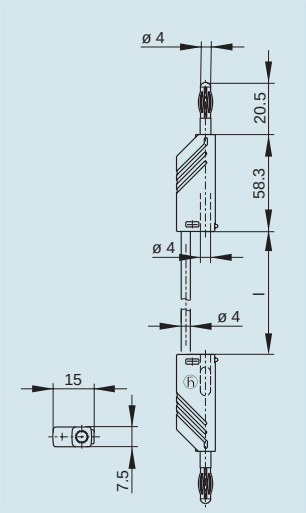
Measuring leads

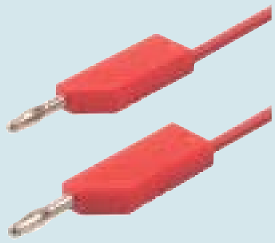
4 mm system

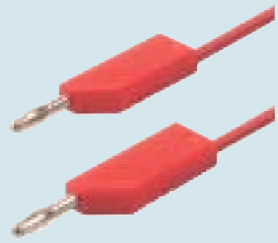


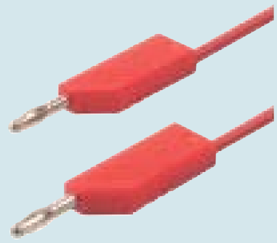


4 mm system

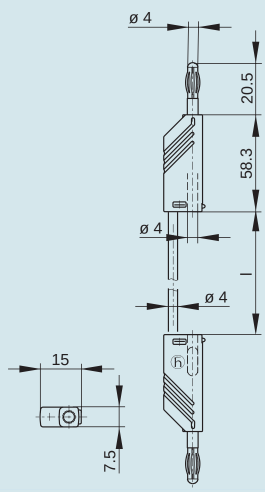
Product description			
	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm diameter socket for tower construction. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, grip and lead shatter-proof. Built in colour indicator for easy identifcation of insulation damages.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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 identifcation of insulation damages.	
	MLN 25/2,5 rot/red	**MLN 50/2,5 rot/red**	
	934 059-101	934 061-101	
	4 mm system	4 mm system	
	25 cm	50 cm	
	2,5 mm²	2,5 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	black color, order no. 934 059-100; blue color, order no. 934 059-102; yellow color, order no. 934 059-103; green color, order no. 934 059-104; yellow/green color, order no. 934 059-188	black color, order no. 934 061-100; blue color, order no. 934 061-102; yellow color, order no. 934 061-103; green color, order no. 934 061-104; yellow/green color, order no. 934 061-188	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	4 mm diameter pin and socket	4 mm diameter pin and socket	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	320 x 0.10	320 x 0.10	
	DC 60 V	DC 60 V	
	32 A	32 A	
	6 mOhm	8 mOhm	
Material			
	contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium	
	nickel-plated	nickel-plated	
	PA	PA	
Environmental conditions			
	-15 °C to +70 °C	-15 °C to +70 °C	
Inflammability class			
	94 HB	94 HB	
	94 V-2	94 V-2	

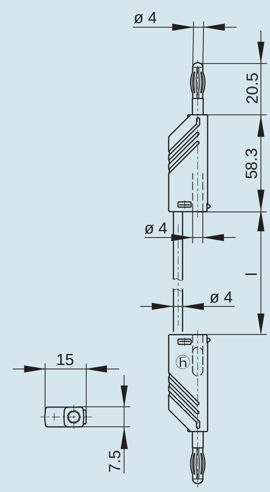


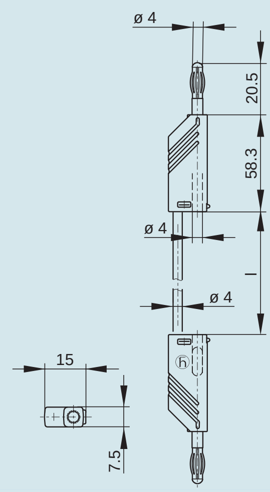




	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm diameter socket for tower construction. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, grip and lead shatter-proof. Built in colour indicator for easy identifcation of insulation damages.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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 identifcation of insulation damages.	Measuring lead, at either end 4 mm diameter plug with caged spring and 4 mm 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 identifcation of insulation damages.
	MLN 100/2,5 rot/red	**MLN 150/2,5 rot/red**	**MLN 200/2,5 rot/red**
	934 063-101	934 507-101	934 066-101
	4 mm system	4 mm system	4 mm system
	100 cm	150 cm	200 cm
	2,5 mm²	2,5 mm²	2,5 mm²
	PVC	PVC	PVC
	red	red	red
	red	red	red
	black color, order no. 934 063-100; blue color, order no. 934 063-102; yellow color, order no. 934 063-103; green color, order no. 934 063-104; yellow/green color, order no. 934 063-188	black color, order no. 934 507-100; blue color, order no. 934 507-102; yellow color, order no. 934 507-103; green color, order no. 934 507-104; yellow/green color, order no. 934 507-188	black color, order no. 934 066-100; blue color, order no. 934 066-102; yellow color, order no. 934 066-103; green color, order no. 934 066-104; yellow/green color, order no. 934 066-188



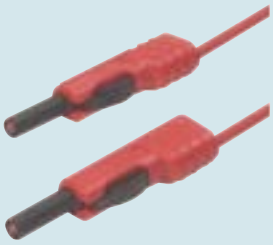


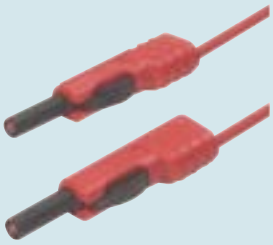


	4 mm	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)	pin (spring-loaded)
	4 mm diameter pin and socket	4 mm diameter pin and socket	4 mm diameter pin and socket
	LEH-XY	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead	highly flexible lead
	320 x 0.10	320 x 0.10	320 x 0.10
	DC 60 V	DC 60 V	DC 60 V
	32 A	32 A	32 A
	12 mOhm	16 mOhm	20 mOhm
	contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium	contact pin: brass, contact spring: copper beryllium
	nickel-plated	nickel-plated	nickel-plated
	PA	PA	PA
	-15 °C to +70 °C	-15 °C to +70 °C	-15 °C to +70 °C
	94 HB	94 HB	94 HB
	94 V-2	94 V-2	94 V-2

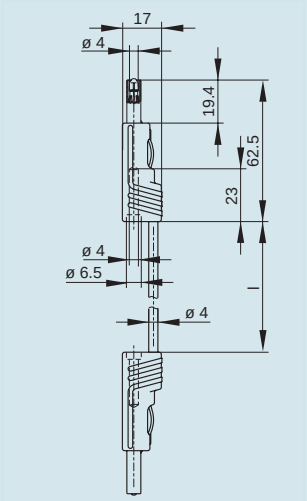
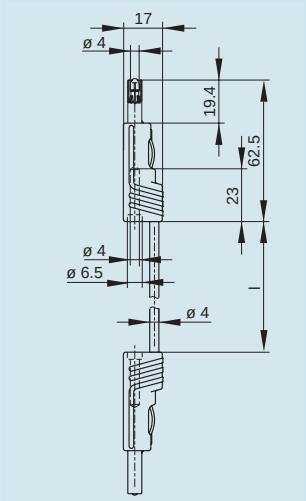
Measuring leads

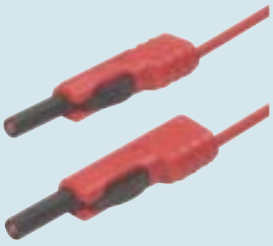
4 mm sliding sleeve system

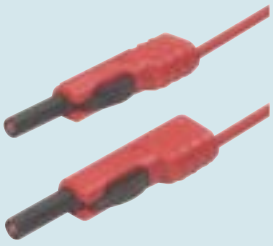


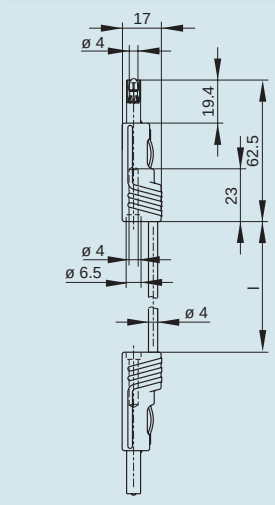
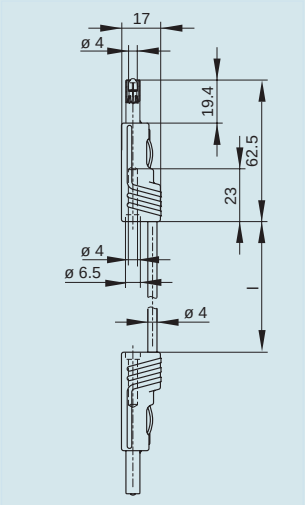


4 mm sliding sleeve system

Product description			
	Contact-protected measuring lead, at either end: 4 mm diameter plug, insulated by latching and sprung insulated sleeve which is only released by pressure on the side-mounted locking spring. 4 mm diameter nickel-plated. Highly flexible, double insulated stranded conductor. Color indicator for the recognition of damage to the isolation. Socket to the far plug-inness.	Contact-protected measuring lead, at either end: 4 mm diameter plug, insulated by latching and sprung insulated sleeve which is only released by pressure on the side-mounted locking spring. 4 mm diameter nickel-plated. Highly flexible, double insulated stranded conductor. Color indicator for the recognition of damage to the isolation. Socket to the far plug-inness.	
	MLB 25/1 V rot/red	**MLB 50/1 V rot/red**	
	973 644-101	973 645-101	
	4 mm sliding sleeve system	4 mm sliding sleeve system	
	25 cm	50 cm	
	1 mm²	1 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	Farbe schwarz, order no. 973 644-100; blue color, order no. 973 644-102; yellow color, order no. 973 644-103; green color, order no. 973 644-104	black color, order no. 973 645-100; blue color, order no. 973 645-102; yellow color, order no. 973 645-103; green color, order no. 973 645-104	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	4 mm diameter pin and socket	4 mm diameter pin and socket	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	259 x 0,07	259 x 0,07	
	DC 60 V	DC 60 V	
	16 A	16 A	
	8,5 mOhm	13 mOhm	
Material			
	copper beryllium	copper beryllium	
	nickel-plated	nickel-plated	
Environmental conditions			
	-15 °C bis +70 °C	-15 °C to +70 °C	
Inflammability class			
	94 HB	94 HB	



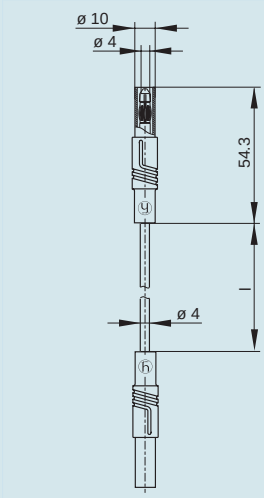
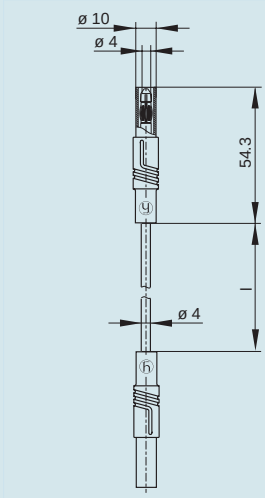


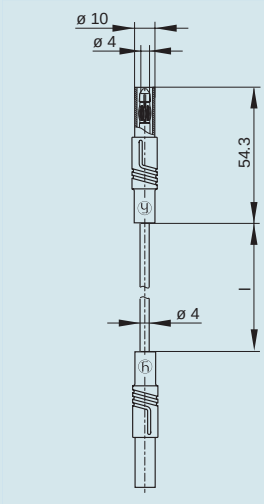
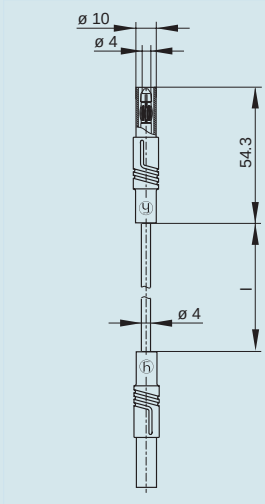
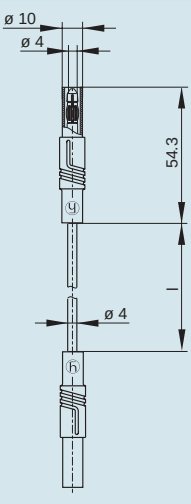
	Contact-protected measuring lead, at either end: 4 mm diameter plug, insulated by latching and sprung insulated sleeve which is only released by pressure on the side-mounted locking spring. 4 mm diameter nickel-plated. Highly flexible, double insulated stranded conductor. Color indicator for the recognition of damage to the isolation. Socket to the far plug-inness.	Contact-protected measuring lead, at either end: 4 mm diameter plug, insulated by latching and sprung insulated sleeve which is only released by pressure on the side-mounted locking spring. 4 mm diameter nickel-plated. Highly flexible, dou-ble insulated stranded conductor. Color indicator for the recognition of damage to the isolation. Socket to the far plug-inness.	
	MLB 100/1 V rot/red	**MLB 200/1 V rot/red**	
	973 646-101	973 647-101	
	4 mm sliding sleeve system	4 mm sliding sleeve system	
	100 cm	200 cm	
	1 mm²	1 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	black color, order no. 973 646-100; blue color, order no. 973 646-102; yellow color, order no. 973 646-103; green color, order no. 973 646-104; yellow color/grün, order no. 973 646-188	black color, order no. 973 647-100; blue color, order no. 973 647-102; yellow color, order no. 973 647-103; green color, order no. 973 647-104	
			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	4 mm diameter pin and socket	4 mm diameter pin and socket	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	259 x 0,07	259 x 0,07	
	DC 60 V	DC 60 V	
	16 A	16 A	
	22 mOhm	40 mOhm	
	copper beryllium	copper beryllium	
	nickel-plated	nickel-plated	
	-15 °C to +70 °C	-15 °C to +70 °C	
	94 HB	94 HB	

Measuring leads

4 mm safety system

4 mm safety system

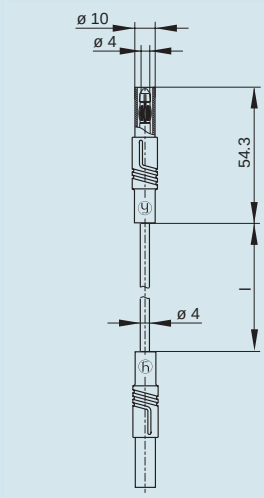
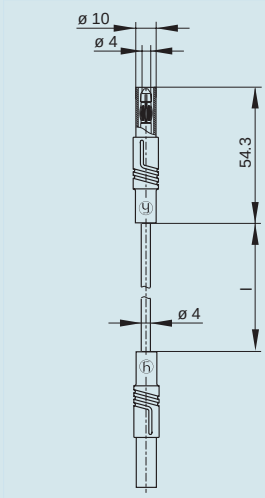
Product description			
	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	
	MLS GG 25/1 rot/red	**MLS GG 50/1 rot/red**	
	934 070-101	934 072-101	
	4 mm safety system	4 mm safety system	
	25 cm	50 cm	
	1 mm²	1 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	black color, order no. 934 070-100; blue color, order no. 934 070-102; yellow color, order no. 934 070-103; green color, order no. 934 070-104	black color, order no. 934 072-100; blue color, order no. 934 072-102; yellow color, order no. 934 072-103; green color, order no. 934 072-104	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	4 mm diameter pin	4 mm diameter pin	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	259 x 0,07	259 x 0,07	
	IEC 61010	IEC 61010	
	AC/DC 1000 V	AC/DC 1000 V	
	CAT III	CAT III	
	16 A	16 A	
	8,5 mOhm	13 mOhm	
	CE	CE	
Material			
	copper beryllium	copper beryllium	
	nickel-plated	nickel-plated	
	PA	PA	
Environmental conditions			
	-15 °C to +70 °C	-15 °C to +70 °C	
Inflammability class			
	94 HB	94 HB	
	94 V-2	94 V-2	

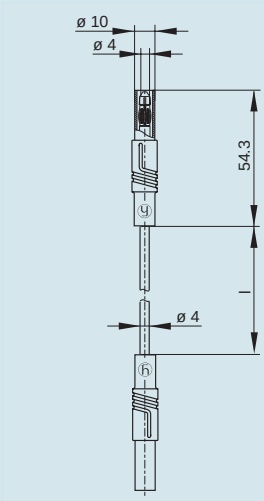
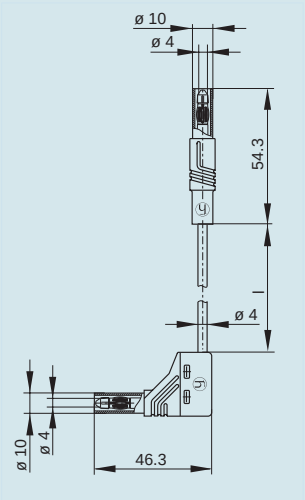
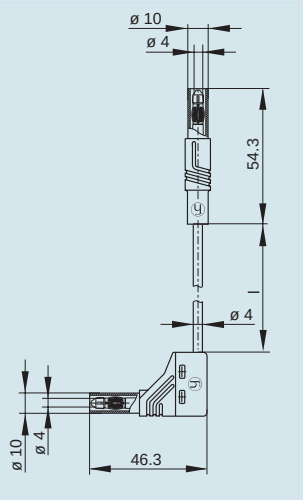
	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.
	MLS GG 100/1 rot/red	**MLS GG 200/1 rot/red**	**MLS GG 25/2,5 rot/red**
	934 074-101	934 076-101	934 071-101
	4 mm safety system	4 mm safety system	4 mm safety system
	100 cm	200 cm	25 cm
	1 mm²	1 mm²	2,5 mm²
	PVC	PVC	PVC
	red	red	red
	red	red	red
			
	black color, order no. 934 074-100; blue color, order no. 934 074-102; yellow color, order no. 934 074-103; green color, order no. 934 074-104	black color, order no. 934 076-100; blue color, order no. 934 076-102; yellow color, order no. 934 076-103; green color, order no. 934 076-104	black color, order no. 934 071-100; blue color, order no. 934 071-102; yellow color, order no. 934 071-103; green color, order no. 934 071-104; yellow color/grün, order no. 934 071-188
			
	4 mm	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)	pin (spring-loaded)
	4 mm diameter pin	4 mm diameter pin	4 mm diameter pin
	LEH-XY	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead	highly flexible lead
	259 x 0,07	259 x 0,07	320 x 0.10
	IEC 61010	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V	AC/DC 1000 V
	CAT III	CAT III	CAT III
	16 A	16 A	32 A
	22 mOhm	40 mOhm	6 mOhm
	CE	CE	CE
	copper beryllium	copper beryllium	copper beryllium
	nickel-plated	nickel-plated	nickel-plated
	PA	PA	PA
	-15 °C to +70 °C	-15 °C to +70 °C	-15 °C to +70 °C
	94 HB	94 HB	94 HB
	94 V-2	94 V-2	94 V-2

Measuring leads

4 mm safety system

4 mm safety system

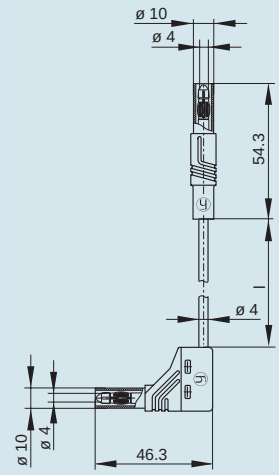
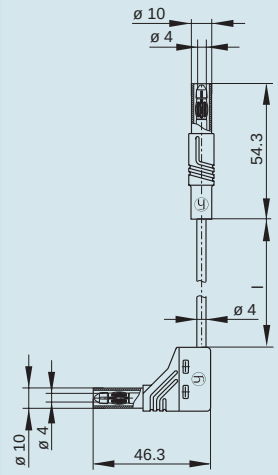
Product description			
	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	
	MLS GG 50/2,5 rot/red	**MLS GG 100/2,5 rot/red**	
	934 073-101	934 075-101	
	4 mm safety system	4 mm safety system	
	50 cm	100 cm	
	2,5 mm²	2,5 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	black color, order no. 934 073-100; blue color, order no. 934 073-102; yellow color, order no. 934 073-103; green color, order no. 934 073-104; yellow/green color, order no. 934 073-188	black color, order no. 934 075-100; blue color, order no. 934 075-102; yellow color, order no. 934 075-103; green color, order no. 934 075-104; yellow/green color, order no. 934 075-188	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	4 mm diameter pin	4 mm diameter pin	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	320 x 0.10	320 x 0.10	
	IEC 61010	IEC 61010	
	AC/DC 1000 V	AC/DC 1000 V	
	CAT III	CAT III	
	32 A	32 A	
	8 mOhm	12 mOhm	
	CE	CE	
Material			
	copper beryllium	copper beryllium	
	nickel-plated	nickel-plated	
	PA	PA	
Environmental conditions			
	-15 °C to +70 °C	-15 °C to +70 °C	
Inflammability class			
	94 HB	94 HB	
	94 V-2	94 V-2	

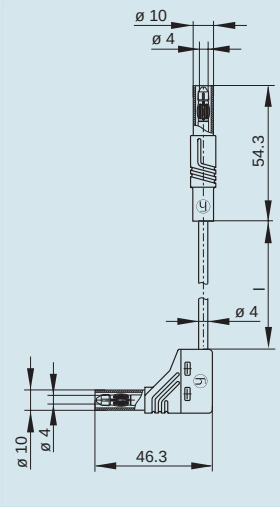
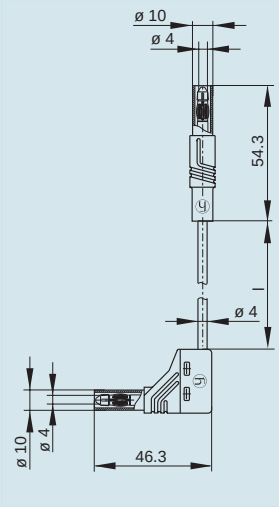
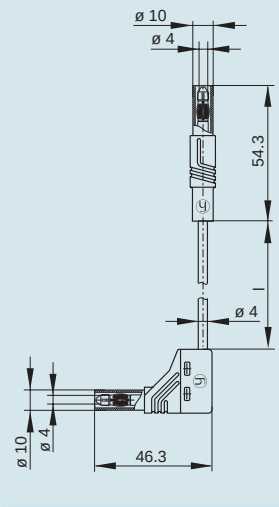
	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.
	MLS GG 200/2,5 rot/red	**MLS WG 25/1 rot/red**	**MLS WG 50/1 rot/red**
	934 077-101	934 078-101	934 080-101
	4 mm safety system	4 mm safety system	4 mm safety system
	200 cm	25 cm	50 cm
	2,5 mm²	1 mm²	1 mm²
	PVC	PVC	PVC
	red	red	black
	red	red	black
			
	black color, order no. 934 077-100; blue color, order no. 934 077-102; yellow color, order no. 934 077-103; green color, order no. 934 077-104; yellow/green color, order no. 934 077-188	black color, order no. 934 078-100; blue color, order no. 934 078-102; yellow color, order no. 934 078-103; green color, order no. 934 078-104	red color, order no. 934 080-101; blue color, order no. 934 080-102; yellow color, order no. 934 080-103; green color, order no. 934 080-104
			
	4 mm	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)	pin (spring-loaded)
	4 mm diameter pin	4 mm diameter pin	4 mm diameter pin
	LEH-XY	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead	highly flexible lead
	320 x 0.10	259 x 0,07	259 x 0,07
	IEC 61010	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V	AC/DC 1000 V
	CAT III	CAT III	CAT III
	32 A	16 A	16 A
	20 mOhm	8 mOhm	13 mOhm
	CE	CE	CE
	copper beryllium	copper beryllium	copper beryllium
	nickel-plated	nickel-plated	nickel-plated
	PA	PA	PA
	-15 °C to +70 °C	-15 °C to +70 °C	-15 °C to +70 °C
	94 HB	94 HB	94 HB
	94 V-2	94 V-2	94 V-2

Measuring leads

4 mm safety system

4 mm safety system

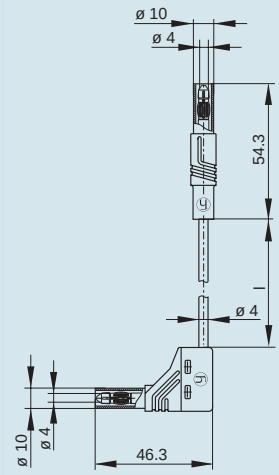
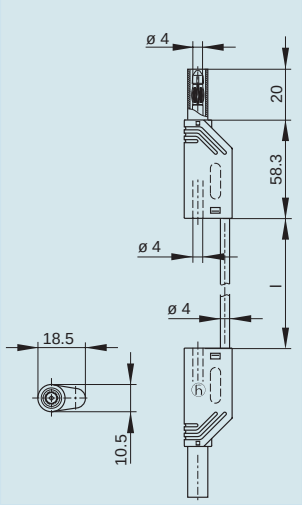
Product description			
	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	
	MLS WG 100/1 rot/red	**MLS WG 200/1 rot/red**	
	934 082-101	934 084-101	
	4 mm safety system	4 mm safety system	
	100 cm	200 cm	
	1 mm²	1 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	black color, order no. 934 082-100; blue color, order no. 934 082-102; yellow color, order no. 934 082-103; green color, order no. 934 082-104	black color, order no. 934 084-100; blue color, order no. 934 084-102; yellow color, order no. 934 084-103; green color, order no. 934 084-104	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	4 mm diameter pin	4 mm diameter pin	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	259 x 0,07	259 x 0,07	
	IEC 61010	IEC 61010	
	AC/DC 1000 V	AC/DC 1000 V	
	CAT III	CAT III	
	16 A	16 A	
	22 mOhm	40 mOhm	
	CE	CE	
Material			
	copper beryllium	copper beryllium	
	nickel-plated	nickel-plated	
	PA	PA	
Environmental conditions			
	-15 °C to +70 °C	-15 °C to +70 °C	
Inflammability class			
	94 HB	94 HB	
	94 V-2	94 V-2	

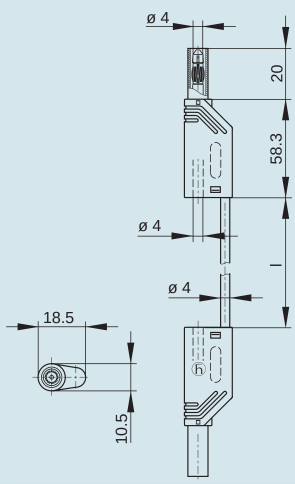
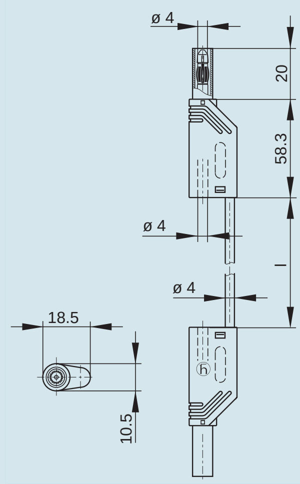
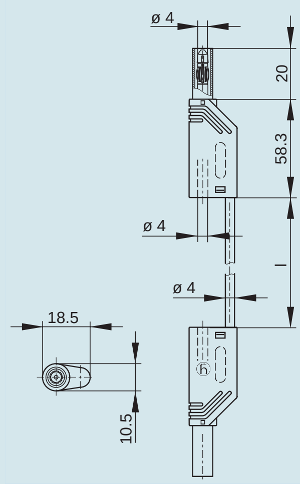
	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.
	MLS WG 25/2,5 rot/red	**MLS WG 50/2,5 rot/red**	**MLS WG 100/2,5 rot/red**
	934 079-101	934 081-101	934 083-101
	4 mm safety system	4 mm safety system	4 mm safety system
	25 cm	50 cm	100 cm
	2,5 mm²	2,5 mm²	2,5 mm²
	PVC	PVC	PVC
	red	red	red
	red	red	red
			
	black color, order no. 934 079-100; blue color, order no. 934 079-102; yellow color, order no. 934 079-103; green color, order no. 934 079-104; yellow/green color, order no. 934 079-188	black color, order no. 934 081-100; blue color, order no. 934 081-102; yellow color, order no. 934 081-103; green color, order no. 934 081-104; yellow/green color, order no. 934 081-188	black color, order no. 934 083-100; blue color, order no. 934 083-102; yellow color, order no. 934 083-103; green color, order no. 934 083-104; yellow/green color, order no. 934 083-188
			
	4 mm	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)	pin (spring-loaded)
	4 mm diameter pin	4 mm diameter pin	4 mm diameter pin
	LEH-XY	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead	highly flexible lead
	320 x 0.10	320 x 0.10	320 x 0.10
	IEC 61010	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V	AC/DC 1000 V
	CAT III	CAT III	CAT III
	32 A	32 A	32 A
	6 mOhm	8 mOhm	12 mOhm
	CE	CE	CE
	copper beryllium	copper beryllium	copper beryllium
	nickel-plated	nickel-plated	nickel-plated
	PA	PA	PA
	-15 °C to +70 °C	-15 °C to +70 °C	-15 °C to +70 °C
	94 HB	94 HB	94 HB
	94 V-2	94 V-2	94 V-2

Measuring leads

4 mm safety system

4 mm safety system

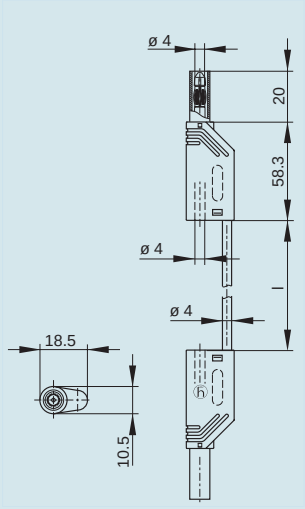
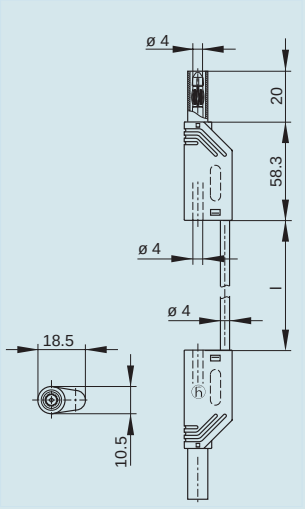
Product description			
	Safety measuring lead, at either end 4 mm diameter safety connector with straight outlet and integrated kink protection. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead.	Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. In accordance to IEC 61010 standards. Built in colour indicator for easy identifcation of insulation damages.	
	MLS WG 200/2,5 rot/red	**MLS WS 25/1 rot/red**	
	934 085-101	934 067-101	
	4 mm safety system	4 mm safety system	
	200 cm	25 cm	
	2,5 mm²	1 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	black color, order no. 934 085-100; blue color, order no. 934 085-102; yellow color, order no. 934 085-103; green color, order no. 934 085-104; yellow/green color, order no. 934 085-188	black color, order no. 934 067-100; blue color, order no. 934 067-102; yellow color, order no. 934 067-103; green color, order no. 934 067-104	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded) and socket	
	4 mm diameter pin	4 mm diameter pin	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	320 x 0.10	259 x 0,07	
	IEC 61010	IEC 61010	
	AC/DC 1000 V	AC/DC 1000 V	
	CAT III	CAT II	
	32 A	16 A	
	20 mOhm	8 mOhm	
	CE	CE	
Material			
	copper beryllium	copper beryllium	
	nickel-plated	nickel-plated	
	PA	PA	
Environmental conditions			
	-15 °C to +70 °C	-15 °C to +70 °C	
Inflammability class			
	94 HB	94 HB	
	94 V-2	94 V-2	

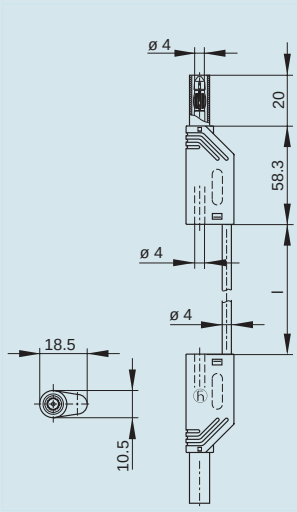
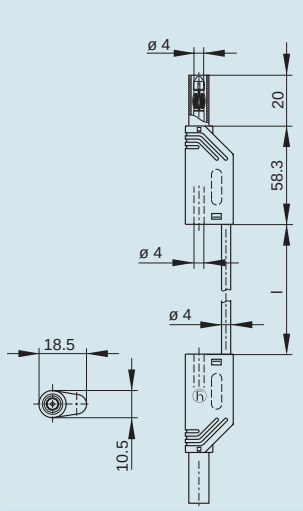
Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. In accordance to IEC 61010 standards. Built in colour indicator for easy identifca-tion of insulation damages.	Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. In accordance to IEC 61010 standards. Built in colour indicator for easy identifca-tion of insulation damages.	Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. In accordance to IEC 61010 standards. Built in colour indicator for easy identifca-tion of insulation damages.
MLS WS 50/1 rot/red	**MLS WS 100/1 rot/red**	**MLS WS 200/1 rot/red**
934 068-101	934 095-101	934 069-101
4 mm safety system	4 mm safety system	4 mm safety system
50 cm	100 cm	200 cm
1 mm²	1 mm²	1 mm²
PVC	PVC	PVC
red	red	red
red	red	red
black color, order no. 934 068-100; blue color, order no. 934 068-102; yellow color, order no. 934 068-103; green color, order no. 934 068-104	black color, order no. 934 095-100; blue color, order no. 934 095-102; yellow color, order no. 934 095-103; green color, order no. 934 095-104	black color, order no. 934 069-100; blue color, order no. 934 069-102; yellow color, order no. 934 069-103; green color, order no. 934 069-104
		
4 mm	4 mm	4 mm
pin (spring-loaded) and socket	pin (spring-loaded) and socket	pin (spring-loaded) and socket
4 mm diameter pin	4 mm diameter pin and socket	4 mm diameter pin
LEH-XY	LEH-XY	LEH-XY
highly flexible lead	highly flexible lead	highly flexible lead
259 x 0,07	259 x 0,07	259 x 0,07
IEC 61010	IEC 61010	IEC 61010
AC/DC 1000 V	AC/DC 1000 V	AC/DC 1000 V
CAT II	CAT II	CAT II
16 A	16 A	16 A
13 mOhm	22 mOhm	40 mOhm
CE	CE	CE
copper beryllium	copper beryllium	copper beryllium
nickel-plated	nickel-plated	nickel-plated
PA	PA	PA
-15 °C to +70 °C	-15 °C to +70 °C	-15 °C to +70 °C
94 HB	94 HB	94 HB
94 V-2	94 V-2	94 V-2

Measuring leads

4 mm safety system

4 mm safety system

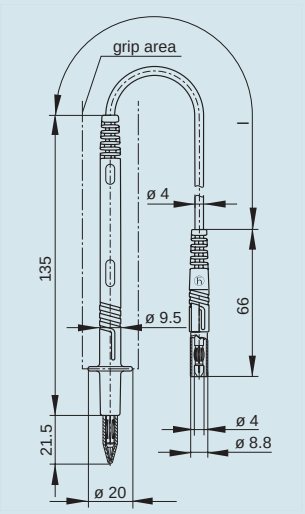
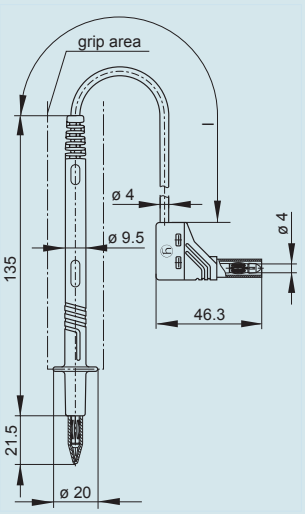
Product description		
	Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. In accordance to IEC 61010 standards. Built in colour indicator for easy identifcation of insulation damages.	Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. In accordance to IEC 61010 standards. Built in colour indicator for easy identifcation of insulation damages.
	MLS WS 25/2,5 rot/red	**MLS WS 50/2,5 rot/red**
	934 086-101	934 087-101
	4 mm safety system	4 mm safety system
	25 cm	50 cm
	2,5 mm²	2,5 mm²
	PVC	PVC
	red	red
	red	red
		
	black color, order no. 934 086-100; blue color, order no. 934 086-102; yellow color, order no. 934 086-103; green color, order no. 934 086-104; yellow/green color, order no. 934 086-188	black color, order no. 934 087-100; blue color, order no. 934 087-102; yellow color, order no. 934 087-103; green color, order no. 934 087-104; yellow/green color, order no. 934 087-188
Drawing		
		
Technical data		
	4 mm	4 mm
	pin (spring-loaded) and socket	pin (spring-loaded) and socket
	4 mm diameter pin	4 mm diameter pin
	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead
	320 x 0.10	320 x 0.10
	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V
	CAT II	CAT II
	32 A	32 A
	6 mOhm	8 mOhm
	CE	CE
Material		
	copper beryllium	copper beryllium
	nickel-plated	nickel-plated
	PA	PA
Environmental conditions		
	-15 °C to +70 °C	-15 °C to +70 °C
Inflammability class		
	94 HB	94 HB
	94 V-2	94 V-2

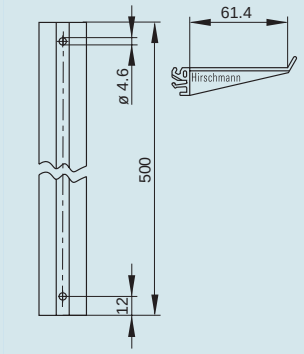
	Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. In accordance to IEC 61010 standards. Built in colour indicator for easy identifcation of insulation damages.	Safety measuring lead, at either end 4 mm diameter safety connector with onward connection capability. Nickel-plated copper beryllium contact spring. Highly flexible, double insulated stranded lead, shatter-proof grip sleeve and lead. In accordance to IEC 61010 standards. Built in colour indicator for easy identifcation of insulation damages.	
	MLS WS 100/2,5 rot/red	**MLS WS 200/2,5 rot/red**	
	934 088-101	934 089-101	
	4 mm safety system	4 mm safety system	
	100 cm	200 cm	
	2,5 mm²	2,5 mm²	
	PVC	PVC	
	red	red	
	red	red	
			
	black color, order no. 934 088-100; blue color, order no. 934 088-102; yellow color, order no. 934 088-103; green color, order no. 934 088-104; yellow/green color, order no. 934 088-188	black color, order no. 934 089-100; blue color, order no. 934 089-102; yellow color, order no. 934 089-103; green color, order no. 934 089-104; yellow/green color, order no. 934 089-188	
			
	4 mm	4 mm	
	pin (spring-loaded) and socket	pin (spring-loaded) and socket	
	4 mm diameter pin	4 mm diameter pin	
	LEH-XY	LEH-XY	
	highly flexible lead	highly flexible lead	
	320 x 0.10	320 x 0.10	
	IEC 61010	IEC 61010	
	AC/DC 1000 V	AC/DC 1000 V	
	CAT II	CAT II	
	32 A	32 A	
	12 mOhm	20 mOhm	
	CE	CE	
	copper beryllium	copper beryllium	
	nickel-plated	nickel-plated	
	PA	PA	
	-15 °C to +70 °C	-15 °C to +70 °C	
	94 HB	94 HB	
	94 V-2	94 V-2	

Measuring leads

4 mm safety system

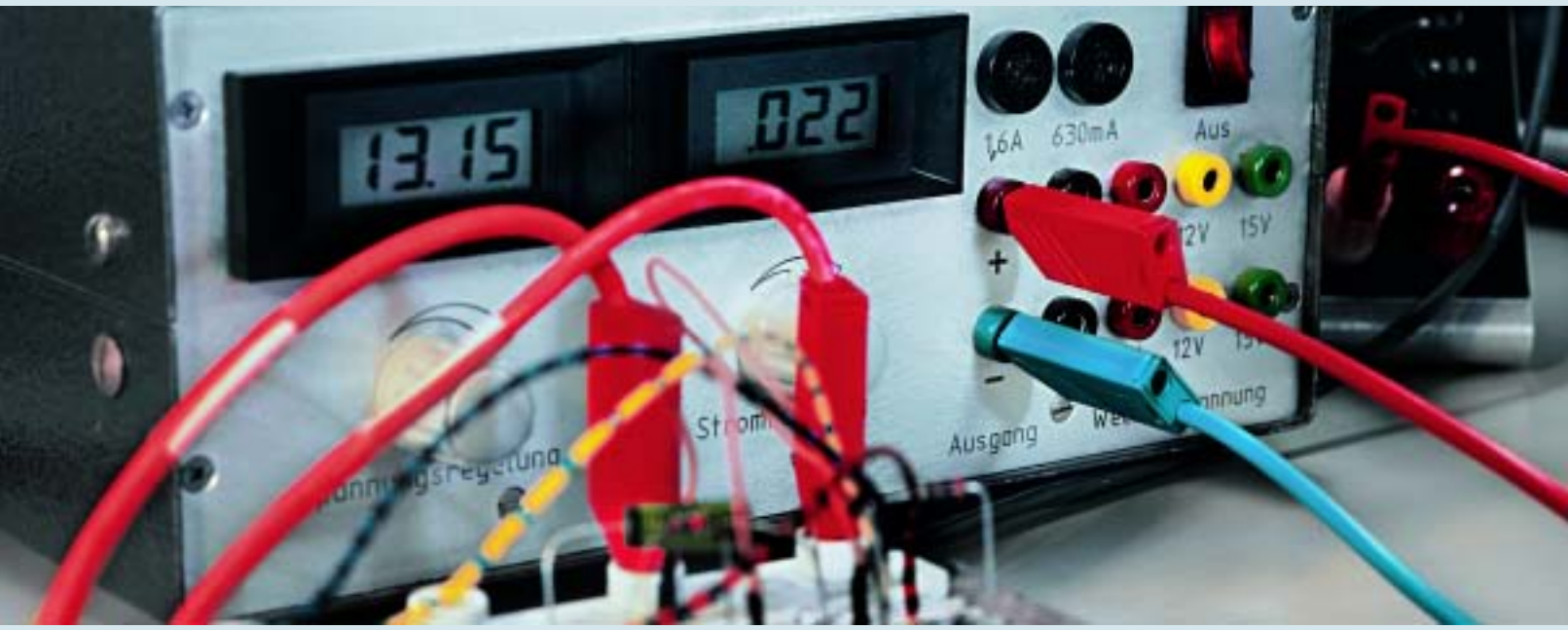
4 mm safety system

Product description		
	Safety test 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.	Safety test 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.
	PL 2600 S schwarz/black	**PL 2600 S W schwarz/black**
	934 159-100	934 158-100
	4 mm safety system	4 mm safety system
	100 cm	100 cm
	1 mm²	1 mm²
	PVC	PVC
	black	black
	black	black
	red color, order no. 934 159-101	red color, order no. 934 158-101
Drawing		
		
Technical data		
	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)
	4 mm diameter pin	4 mm diameter pin
	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead
	259 x 0.07	259 x 0.07
	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V
	CAT III	CAT III
	16 A	16 A
	20 mOhm	20 mOhm
	CE	CE
Material		
	copper beryllium	copper beryllium
	nickel-plated	nickel-plated
	PA	PA
Environmental conditions		
	-15 °C to +70 °C	-15 °C to +70 °C
Inflammability class		
	94 HB	94 HB
	94 HB	94 HB

Product description		
	Laboratory test lead holder with plastic brackets. Test leads can be laid neatly on walls, cabinets, etc. Consists: one aluminium profile rail, 30 plastic brackets, fastening kit.	
	LMLH 50	
	unrelated to system	
	973 919-001	
Drawing		
		

The original from the inventor of the banana plug.

Plugs for every application in manual, industrial and laboratory work.

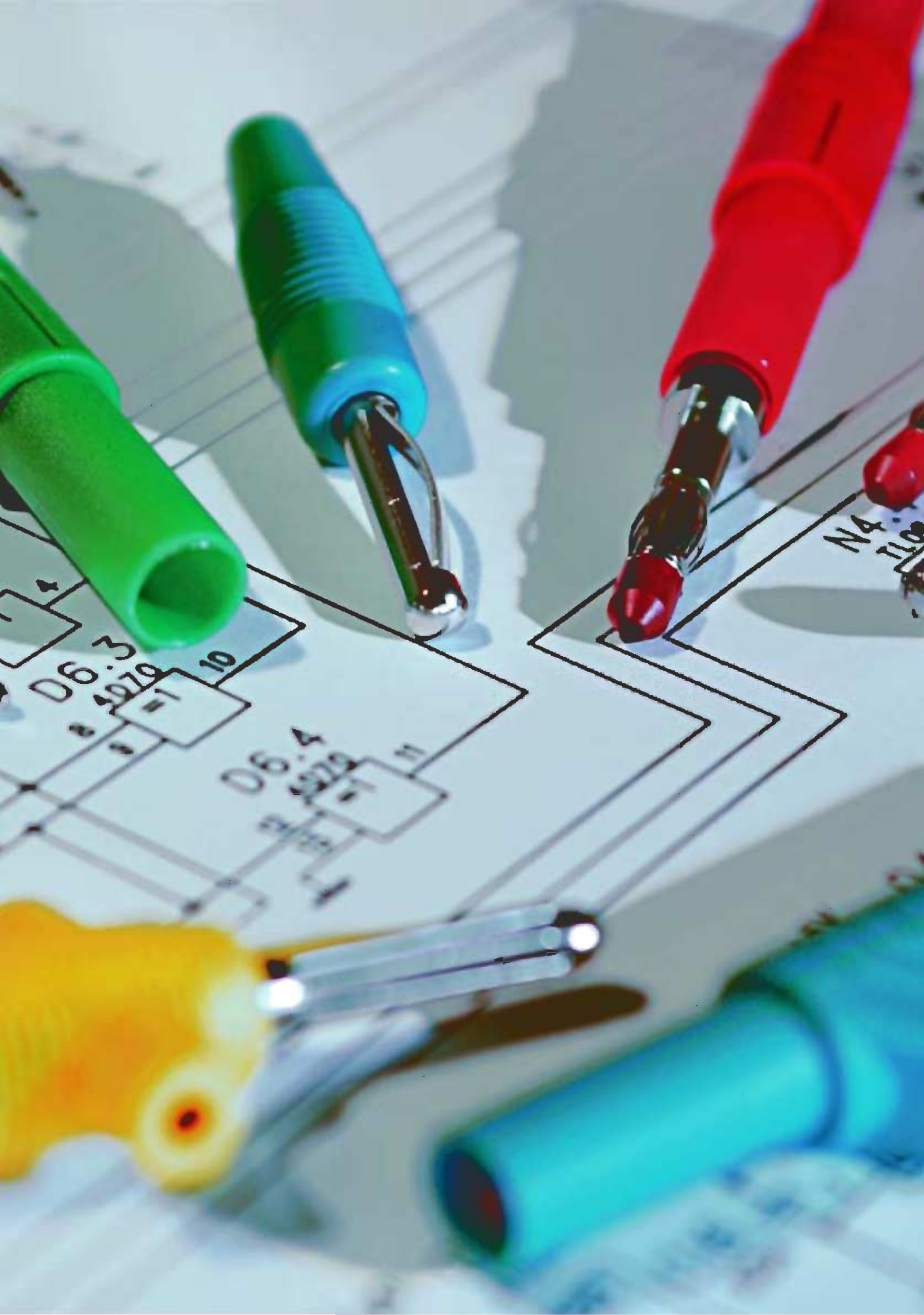


Expect the optimum from the inventor of the banana plug: Hirschmann can offer you a time-tested optimum solution, no matter where you have to assemble your measuring leads. This applies in particular to special test leads or to plug-in, universal device connections.

You can chose from the wide variety of Hirschmann's contact and connection systems in many different cross-sections, colors and types. Obviously, for special applications with voltages of up to 1,000 V, we can also supply you with safety plugs with a screw connection. Incidentally, you can create a reliable connection using only a humble screw driver. You therefore require no special tool for screwing, plugging-in and soldering.

You should be able to easily unplug your own measurement and testing leads while installing test devices – like the screw-locking safety plug as per IEC 61010, for voltages of up to 1,000 V.

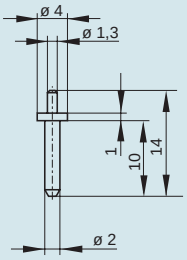
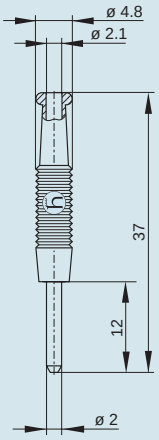
Wherever assembled measuring leads are used, the inventor of the banana plug has a perfect solution available – in many colors and types, with different contact and connecting systems.

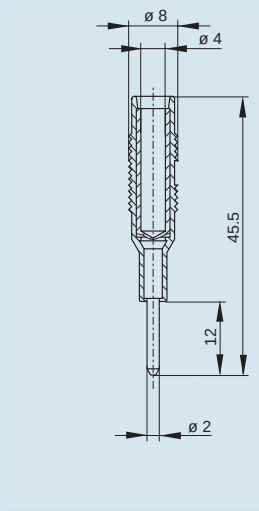
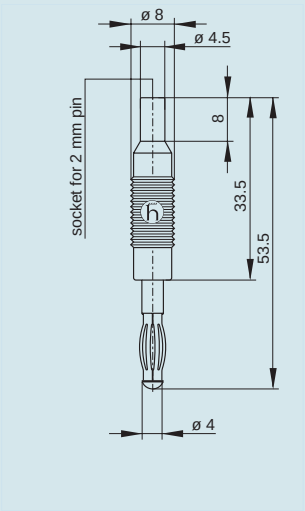

D6.3
D6.4

Plugs

2 mm system

2 mm system

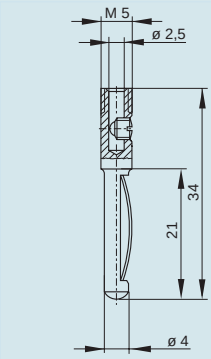
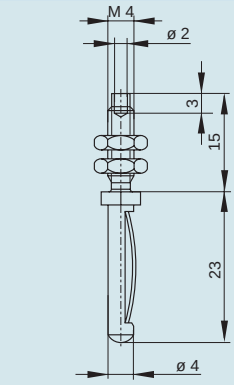
Product description			
	2 mm diameter miniature connector pin for soldering into printed boards. Connects with MKU 1 and MBU 2. This connector pin is used together with the MBU 2 socket in stacking printed boards. Connector pins are installed at a spacing pitch from 5 mm up.	2 mm diameter miniature connector, nickel-plated brass pin with solder connection. Flexible, shatter-proof insulated sleeve. For making up connecting leads with a maximum external diameter of 1.9 mm.	
	MST 201	**MST 3 rot/red**	
	931 338-001	973 509-101	
	2 mm system	2 mm system	
		red	
		black color, order no. 973 509-100; blue color, order no. 973 509-102; yellow color, order no. 973 509-103; green color, order no. 973 509-104; grey color, order no. 973 509-106	
Drawing			
			
Technical data			
	2 mm	2 mm	
	pin	pin	
	solder	solder	
	DC 60 V	DC 60 V	
	6 A	6 A	
	6 mOhm	6 mOhm	
Material			
	brass	brass	
	nickel-plated	nickel-plated	
		PVC-P	
Environmental conditions			
	-20 °C to +60 °C	-25 °C to +60 °C	
Inflammability class			
		94 V-2	

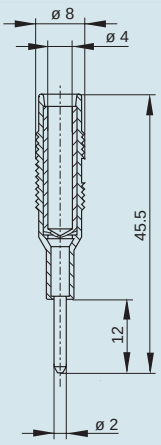
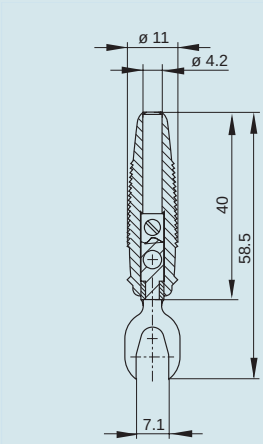
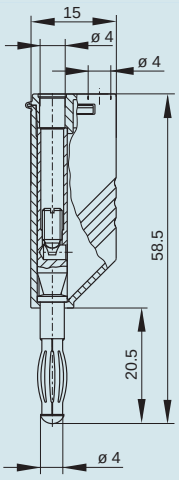
	Injection-moulded adapter plug from 2 mm diameter plug to 4 mm diameter socket. This adapter plug enables the use of 4 mm plugs and 2 mm measuring leads.	Injection-moulded adapter plug from 4 mm diameter plug to 2 mm diameter socket. This adapter plug enables the use of 2 mm system plugs and 4 mm system measuring leads.	
	MZS 2 schwarz/black	**MZS 4 schwarz/black**	
	973 600-100	973 599-100	
	2 mm und 4 mm system	2 mm und 4 mm system	
	black	black	
			
	red color, order no. 973 600-101	red color, order no. 973 599-101	
			
	2 mm pin and 4 mm socket	4 mm pin and 2 mm socket	
	pin, socket	2 mm socket (spring-loaded), 4 mm pin (spring-loaded)	
	plug	plug	
	DC 60 V	DC 60 V	
	6 A	6 A	
	6 mOhm	6 mOhm	
	brass	copper beryllium	
	nickel-plated	nickel-plated	
	PP	PP	
	-20 °C to +60 °C	-20 °C to +60 °C	
	94 HB	94 HB	

Plugs

4 mm system

4 mm system

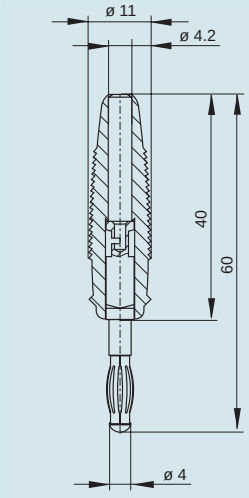
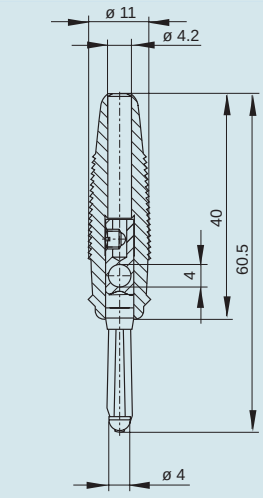
Product description			
	Fully mating connector as built-in pin, screw connection up to maximum cable cross-section of 1.5 mm². Tin-plated brass contact material.	Fully mating connector as built-in pin, solder connection up to maximum cable cross-section of 2 mm². Nickel-plated brass contact material.	
	VST 100	**VST 20**	
	930 581-000	930 050-000	
	4 mm System	4 mm System	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	screw	solder	
	DC 60 V	DC 60 V	
	16 A	16 A	
	3 mOhm	3 mOhm	
Material			
	brass	brass	
	nickel-plated	nickel-plated	
	PVC-P	PVC-P	
Environmental conditions			
	-25 °C to +100 °C	-25 °C to +100 °C	
Inflammability class			
	94 V-2	94 V-2	

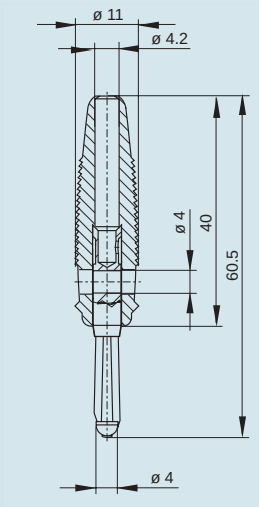
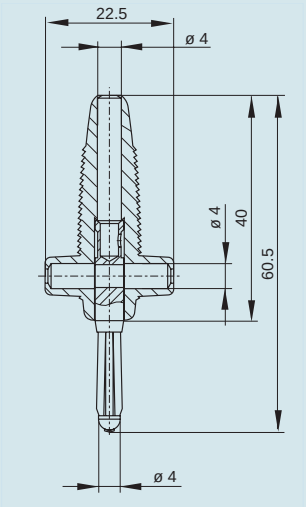
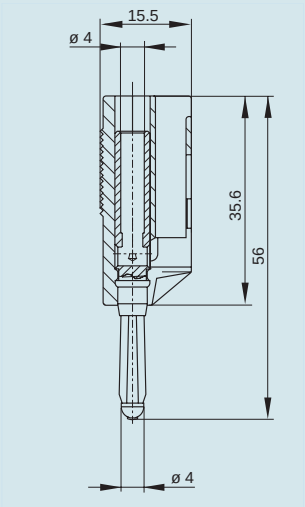
	Injection-moulded adapter plug from 2 mm diameter plug to 4 mm diameter socket. This adapter plug enables the use of 4 mm plugs and 2 mm measuring leads.	Cable lug with shatter-proof, flexible insulated sleeve with 4 mm diameter transverse hole. Screw connection up to a maximum of 2.5 mm². For connection to bolts from 4 mm to 7 mm diameter. Nickel-plated brass contact material.	Connector for tower construction with screw connection for leads from 0.5 mm² to 1.5 mm², outer diameter of lead max. 4.2 mm. Plug 4 mm with caged spring, not contact-protected. Simple assembly by “Click-System”.
	MZS 2 schwarz/black	**KB 2 schwarz/black**	**LAS N WS rot/red**
	973 600-100	930 584-100	934 100-101
	2 mm und 4 mm system	4 mm System	4 mm safety system
	black	black	red
	red color, order no. 973 600-101	red color, order no. 930 584-101	black color, order no. 934 100-100; blue color, order no. 934 100-102; yellow color, order no. 934 100-103; green color, order no. 934 100-104
			
	2 mm pin and 4 mm socket	4 mm	4 mm with laminated spring
	pin, socket	clip	pin (spring-loaded)
	plug	screw	screw
	DC 60 V	DC 60 V	DC 60 V
	6 A	30 A	24 A
	6 mOhm	1 mOhm	3 mOhm
	brass	brass	copper beryllium
	nickel-plated	nickel-plated	nickel-plated
	PP	PVC-P	PA
	-20 °C to +60 °C	-25 °C to +70 °C	-15 °C to +70 °C
	94 HB	94 V-0	94 HB

Plugs

4 mm system

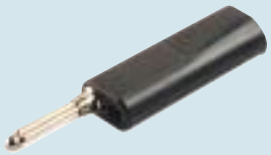
4 mm system

Product description			
	Laminated, shatter-proof plug with caged spring and tapering sleeve providing protection against kinking. Soldered connections up to 1.5mm², cable diameters up to 4.2 mm. Nickel-plated brass contact, nickel-plated copper beryllium contact spring.	Multiple-spring wire plug, shatter-proof, flexible insulated sleeve with transverse hole. The tapering sleeve end also serves as kinking protection for the lead. Screw connection up to maximum cable cross-section of 1.5 mm². Nickel-plated brass contact material.	
	LAS 30 schwarz/black	**BUELA 20 K rot/red**	
	972 518-100	930 726-101	
	4 mm safety system	4 mm System	
	black	red	
	red color, order no. 972 518-101	black color, order no. 930 726-100; blue color, order no. 930 726-102; yellow color, order no. 930 726-103; green color, order no. 930 726-104	
Drawing			
			
Technical data			
	4 mm with laminated spring	4 mm	
	pin (spring-loaded)	pin (spring-loaded)	
	solder	screw	
	DC 60 V	DC 60 V	
	32 A	16 A	
	3 mOhm	3 mOhm	
Material			
	copper beryllium	brass	
	nickel-plated	nickel-plated	
	PVC-P	PVC-P	
Environmental conditions			
	-25 °C to +70 °C	-25 °C to +70 °C	
Inflammability class			
	94 V-2	94 V-2	

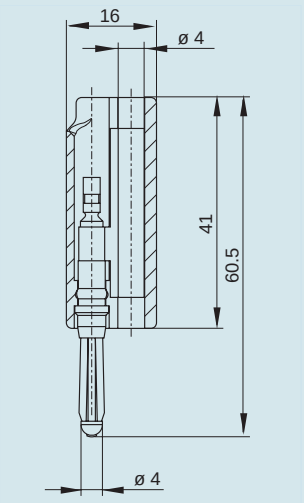
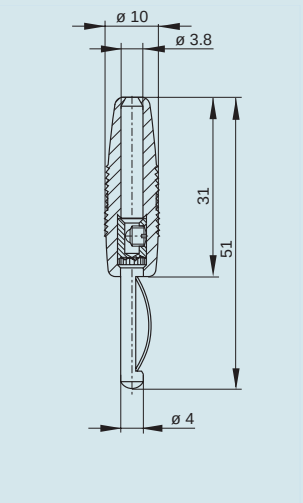
	Multiple-spring wire plug, shatter-proof, flexible insulated sleeve with transverse hole. The tapering sleeve end also serves as kinking protection for the lead. Solder connection up to maximum cable cross-section of 2.5 mm². Nickel-plated brass contact material.	Multiple-spring wire plug, shatter-proof, flexible insulated sleeve with transverse hole. Lateral supports provide protection against contact when plugged in at right angles. The tapering sleeve end also serves as kinking protection for the lead. Solder connection up to maximum cable cross-section of 2.5 mm².	Multiple-spring wire plug with longitudinal or transverse cable entry in tower construction. Screw connection up to maximum cable cross-section of 2.5 mm² and external diameter of 4 mm. Nickel-plated brass contact material.
	BUELA 30 K rot/red	**BUELA 300 K rot/red**	**BSB 20 K rot/red**
	930 727-101	931 667-101	930 729-101
	4 mm System	4 mm System	4 mm System
	red	red	red
	black color, order no. 930 727-100; blue color, order no. 930 727-102; yellow color, order no. 930 727-103; green color, order no. 930 727-104	black color, order no. 931 667-100; blue color, order no. 931 667-102; yellow color, order no. 931 667-103; green color, order no. 931 667-104	black color, order no. 930 729-100; blue color, order no. 930 729-102; yellow color, order no. 930 729-103; green color, order no. 930 729-104
			
	4 mm	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)	pin (spring-loaded), socket
	solder	solder	screw
	DC 60 V	DC 60 V	DC 60 V
	30 A	30 A	30 A
	3 mOhm	3 mOhm	3 mOhm
	brass	brass	brass
	nickel-plated	nickel-plated	nickel-plated
	PVC-P	PVC-P	PP
	-25 °C to +70 °C	-25 °C to +70 °C	-25 °C to +100 °C
	94 V-2	94 V-2	94 V-2

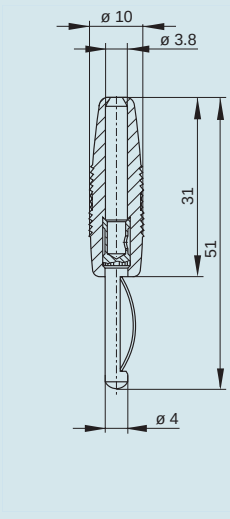
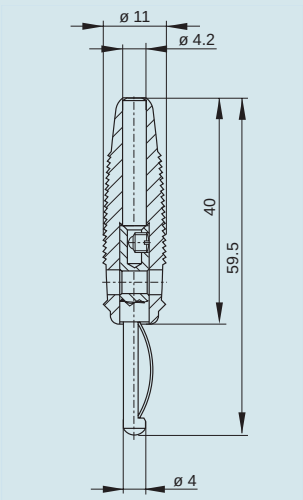
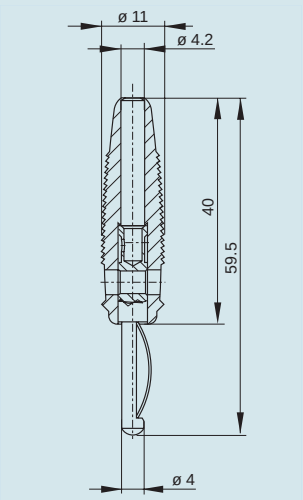
Plugs

4 mm system



4 mm system

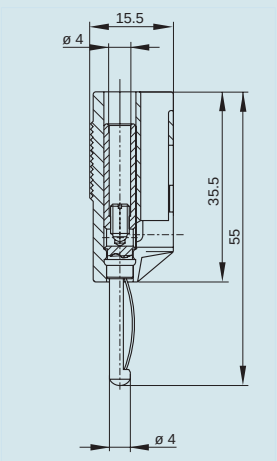
Product description			
	Multiple-spring wire plug with coupling located parallel to the connector pin. In this way, the plugs can be connected together without shorting. Solder connection up to maximum cable cross-section of 1.5 mm². Nickel-plated brass contact material.	Fully mating connector ,shatter-proof, flexible insulated sleeve. The tapering sleeve end also serves as kinking protection for the lead. Screw connection up to maximum cable cross-section of 1.5 mm². Nickel-plated brass contact material.	
	BSB 300 schwarz/black	**VON 20 rot/red**	
	931 294-100	930 046-101	
	4 mm System	4 mm System	
	black	red	
	red color, order no. 931 294-101	black color, order no. 930 046-100; blue color, order no. 930 046-102; yellow color, order no. 930 046-103; green color, order no. 930 046-104	
Drawing			
			
Technical data			
	4 mm	4 mm	
	pin (spring-loaded), socket	pin (spring-loaded)	
	solder	screw	
	DC 60 V	DC 60 V	
	16 A	16 A	
	3 mOhm	3 mOhm	
Material			
	brass	brass	
	nickel-plated	nickel-plated	
	PP	PVC-P	
Environmental conditions			
	-25 °C to +100 °C	-25 °C to +70 °C	
Inflammability class			
	94 V-2	94 V-2	

	Fully mating connector, shatter-proof, flexible insulated sleeve. The tapering sleeve end also serves as kinking protection for the lead. Solder connection up to maxi-mum cable cross-section of 2.5 mm². Nickel-plated brass contact material.	Fully mating connector, shatter-proof, flexible insulated sleeve with transverse hole. The tapering sleeve end also serves as kinking protection for the lead. Screw connection up to maximum cable cross-section of 1.5 mm². Nickel-plated brass contact material.	Fully mating connector, shatter-proof, flexible insulated sleeve with transverse hole. The tapering sleeve end also serves as kinking protection for the lead. Solder connection up to maximum cable cross-section of 2.5 mm². Nickel-plated brass contact material.
	VON 30 rot/red	**VQ 20 rot/red**	**VQ 30 rot/red**
	930 047-101	930 058-101	930 061-101
	4 mm System	4 mm System	4 mm System
	red	red	red
			
	black color, order no. 930 047-100; blue color, order no. 930 047-102; yellow color, order no. 930 047-103; green color, order no. 930 047-104	black color, order no. 930 058-100; blue color, order no. 930 058-102; yellow color, order no. 930 058-103; green color, order no. 930 058-104	black color, order no. 930 061-100; blue color, order no. 930 061-102; yellow color, order no. 930 061-103; green color, order no. 930 061-104
			
	4 mm	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)	pin (spring-loaded)
	solder	screw	solder
	DC 60 V	DC 60 V	DC 60 V
	30 A	16 A	30 A
	3 mOhm	3 mOhm	3 mOhm
	brass	brass	brass
	nickel-plated	nickel-plated	nickel-plated
	PVC-P	PVC-P	PVC-P
	-25 °C to +70 °C	-25 °C to +70 °C	-25 °C to +70 °C
	94 V-2	94 V-2	94 V-2

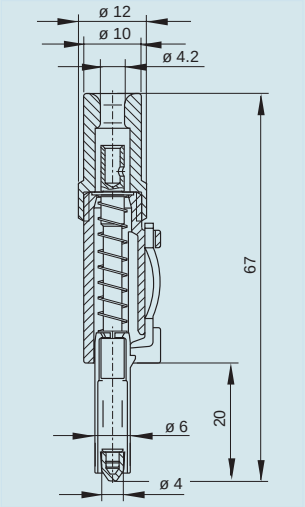
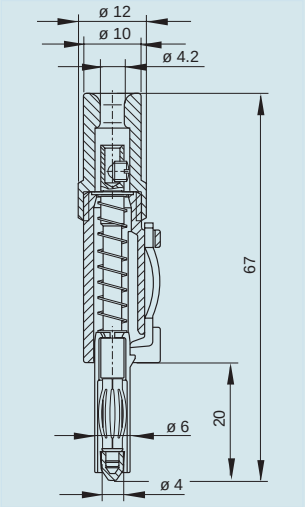
Plugs

4 mm system

4 mm system

Product description		
	Fully mating connector with longitudinal or transverse cable entry in tower construction. Screw connection up to maximum cable cross-section of 2.5 mm² and external diameter of 4 mm. Nickel-plated brass contact material.	Measuring adapter for measurement with 4 mm measuring leads and plugs and DIN EN 175 301-803-A sockets (e.g. Hirschmann GDM-Series), Short circuiting bridge inclusive.
	VSB 20 rot/red	**MESAP 43650**
	930 435-101	932 818-002
	4 mm System	systemunabhängig
	red	black / red
		
	black color, order no. 930 435-100; blue color, order no. 930 435-102; yellow color, order no. 930 435-103; green color, order no. 930 435-104	
Drawing		
		
Technical data		
	4 mm	4 mm for measuring connections
	pin (spring-loaded)	socket
	screw	
	DC 60 V	
	30 A	
	3 mOhm	
Material		
	brass	
	nickel-plated	
	PP	
Environmental conditions		
	-25 °C to +70 °C	
Inflammability class		
	94 V-2	

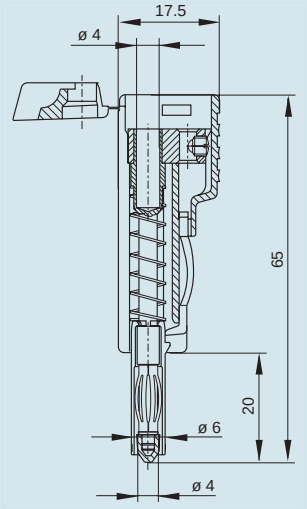
4 mm sliding sleeve system

Product description		
	Banana plug, protected against touch, may be made up into cables with solder connection for cross-sections up to 2.5 mm², insulated by latching and sprung insulated sleeve which is only released by pressure on the side-mounted locking spring. 4 mm diameter.	Banana plug, touch-protected, can be assembled with cables with screw connection up to 1.5 mm² cross-section, insulated by latching and sprung insulated sleeve which is only released by pressure on the side-mounted locking spring. 4 mm diameter.
	SLS 10 B schwarz/black	**SLS 20 B schwarz/black**
	931 824-100	931 825-100
	4 mm sliding sleeve system	4 mm sliding sleeve system
	black	black
		
	red color, order no. 931 824-101	red color, order no. 931 825-101
Drawing		
		
Technical data		
	4 mm with laminated spring	4 mm with laminated spring
	pin (spring-loaded)	pin (spring-loaded)
	solder	screw
	DC 60 V	DC 300 V
	30 A	16 A
	5 mOhm	5 mOhm
Material		
	copper beryllium	copper beryllium
	nickel-plated	nickel-plated
	POM	POM
Environmental conditions		
	-25 °C to +80 °C	-25 °C to +80 °C
Inflammability class		
	94 HB	94 HB

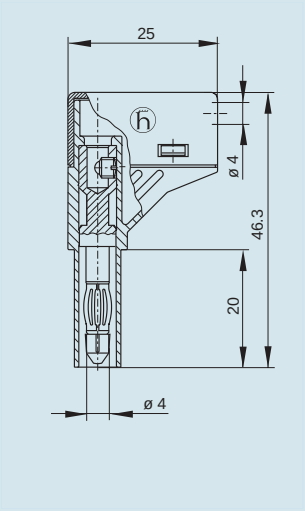
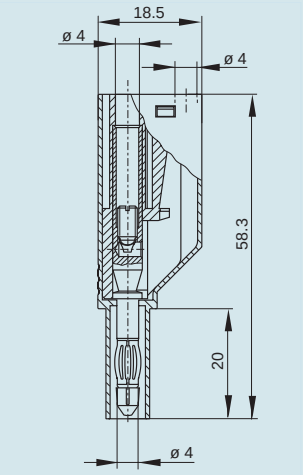
Plugs

4 mm sliding sleeve system

4 mm sliding sleeve system

Product description		
	Banana plug, touch-protected, with capability of further connection, with solder connection for cross-sections up to 2.5 mm², insulated by latching and sprung insulated sleeve which is only released by pressure on the side-mounted locking spring. 4 mm diameter.	
	SLS 200 schwarz/black	
	932 153-100	
	4 mm sliding sleeve system	
	black	
	red color, order no. 932 153-101	
Drawing		
		
Technical data		
	4 mm with laminated spring	
	pin (spring-loaded), socket	
	screw	
	DC 300 V	
	30 A	
	5 mOhm	
Material		
	copper beryllium	
	nickel-plated	
	PP	
Environmental conditions		
	-25 °C to +80 °C	
Inflammability class		
	94 V-2	

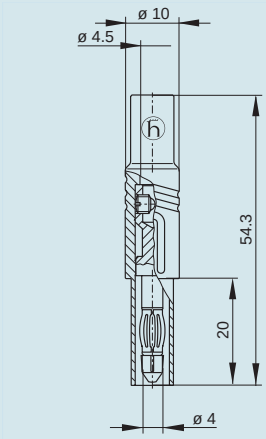
4 mm saftey system

Product description		
	Safety angled connector with screw connection for leads from 0.5 mm² to 1.5 mm², outer diameter of lead max. 4.2 mm. Plug 4 mm with caged spring, 1000 V-system, IEC 61010. Simple assembly by “Click-System”	Safety connector for tower construction with screw connection for leads from 0.5 mm² to 1.5 mm², outer diameter of lead max. 4.2 mm. Plug 4 mm with caged spring, 1000 V-system, IEC 61010. Simple assembly by “Click-System”.
	LAS S W rot/red	**LAS S WS rot/red**
	934 098-101	934 099-101
	4 mm safety system	4 mm safety system
	red	red
	black color, order no. 934 098-100; blue color, order no. 934 098-102; yellow color, order no. 934 098-103; green color, order no. 934 098-104	black color, order no. 934 099-100; blue color, order no. 934 099-102; yellow color, order no. 934 099-103; green color, order no. 934 099-104
Drawing		
		
Technical data		
	4 mm with laminated spring	4 mm with laminated spring
	pin (spring-loaded)	pin (spring-loaded), socket
	screw	screw
	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V
	CAT III	CAT II
	24 A	24 A
Material		
	copper beryllium	copper beryllium
	nickel-plated	nickel-plated
	PA	PA
Environmental conditions		
	-15 °C to +70 °C	-15 °C to +70 °C
Inflammability class		
	94 V-2	94 V-2

Plugs

4 mm saftey system

4 mm saftey system

Product description		
	Safety straight connector with screw connection for leads from 0.5 mm² to 1.5 mm², outer diameter of lead max. 4.2 mm. Plug 4 mm with caged spring, 1000 V-system, IEC 61010. Simple assembly by “Click-System”.	
	LAS S G rot/red	
	934 097-101	
	4 mm safety system	
	red	
		
	black color, order no. 934 097-100; blue color, order no. 934 097-102; yellow color, order no. 934 097-103; green color, order no. 934 097-104	
Drawing		
		
Technical data		
	4 mm with laminated spring	
	pin (spring-loaded)	
	screw	
	IEC 61010	
	AC/DC 1000 V	
	CAT III	
	24 A	
Material		
	copper beryllium	
	nickel-plated	
	PA	
Environmental conditions		
	-15 °C to +70 °C	
Inflammability class		
	94 V-2	

A long-term solution can be as inconspicuous as this.

Sockets are almost indestructible.

You can fit them quickly, and thanks to their long life, forget them as well: Hirschmann sockets and couplings provide quick and uncomplicated connections of measuring leads and plugs in devices, covers or panels and can be used for setting up circuits, for example. In the pole clamp version, they can be used for sub-clamping of leads and cable lugs in practice.

The high-quality tin-plated and gold-plated sockets are highly resistant to environmental influences and thanks to their “recessed” installation, offer an inconspicuous visually pleasant solution. The product range offers numerous color variants and different connecting cross-sections, thereby covering every practical requirement for uninsulated and insulated installation.

While configuring circuits, the more colors the better: Hirschmann provides robust sockets in a surprising variety of colors with large and small connecting cross-sections.

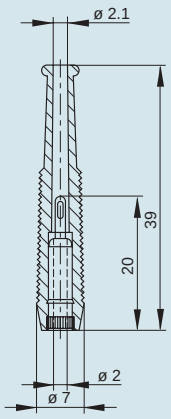
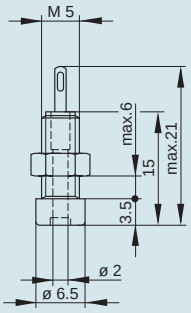
A complete product range of tin-plated and gold-plated sockets. The insulation in the PKI 110 socket comes with a spring – so the connection of stranded wires can be made very quickly.

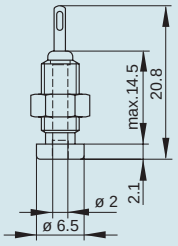
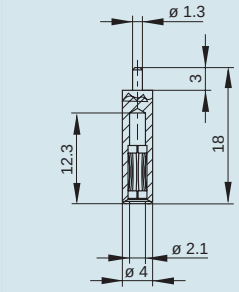
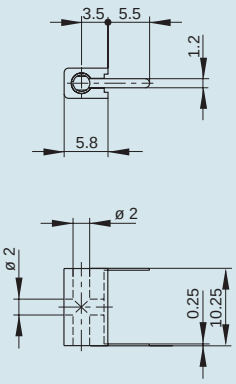
PKNI 10 B

Sockets

2 mm system

2 mm system

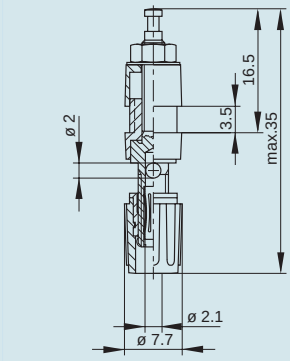
Product description			
	2 mm diameter miniature coupling, insulated, nickel-plated copper beryllium contact spring with solder connection. Flexible, shatter-proof insulated sleeve. For making up connecting leads with a maximum external diameter of 2 mm.	2 mm diameter miniature socket, insulated, tin-plated copper beryllium contact spring, with solder connect-ion. Suitable for installation in equipment chassis and switch panels up to a maximum wall thickness of 5 mm.	
	MKU 1 schwarz/black	**MBI 1 rot/red**	
	930 320-100	930 308-101	
	2 mm system	2 mm system	
	black	red	
	red color, order no. 930 320-101	black color, order no. 930 308-100; blue color, order no. 930 308-102; yellow color, order no. 930 308-103; green color, order no. 930 308-104; grey color, order no. 930 308-106	
Drawing			
			
Technical data			
	socket (spring-loaded)	socket (spring-loaded)	
	solder	solder	
	DC 60 V	DC 60 V	
	6 A	6 A	
	6 mOhm	6 mOhm	
	screw	screw	
Material			
	copper beryllium	copper beryllium	
	tin-plated	tin-plated	
	PVC-P	PA	
Environmental conditions			
	-20 °C to +60 °C	-20 °C to +60 °C	
Inflammability class			
	94 V-0	94 HB	

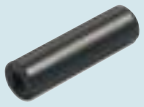
	2 mm diameter bright metal miniature socket. Brass nickel-plated socket body, tin-plated copper beryllium contact spring, with solder connection. Suitable for installation in equipment chassis and switch panels up to a maximum wall thickness of 8 mm.	2 mm diameter miniature socket for soldering into printed boards. Fits MST 3,MVL 2/...and MST 201. This socket is used in connection with the MST 201 connector pin in stacking populated printed boards. Tin-plated brass socket body.	2 mm diameter miniature test socket, dimensions complying with DIN 41 649. Suitable for measuring and testing printed circuits during operation. Tin-plated sprung bronze contact spring. Test socket with horizontal and vertical connections.
	MBU 1	**MBU 2**	**MPB 1 schwarz/black**
	930 312-000	931 337-000	930 224-100
	2 mm system	2 mm system	2 mm system
			black
			red color, order no. 930 320-101
			
	socket (spring-loaded)	socket (spring-loaded)	socket (spring-loaded)
	solder	solder	solder
	DC 60 V	DC 60 V	DC 60 V
	6 A	6 A	6 A
	6 mOhm	6 mOhm	6 mOhm
	screw	screw	screw
	copper beryllium	brass	bronze
	tin-plated	tin-plated	tin-plated
	PF2400	PF2400	PC
	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
	94 V-0	94 V-0	94 HB

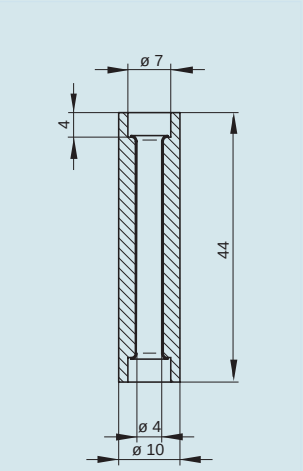
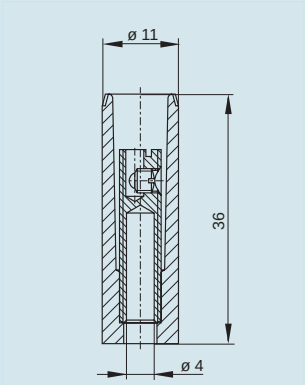
Sockets

2 mm system

2 mm system

Product description		
	2 mm diameter miniature pole clamp with transverse hole, insulated, gold-plated copper beryllium contact spring, tin-plated brass threaded bolt with solder connection. Suitable for installation in equipment chassis and switch panels up to amaximum wall thickness of 3.5 mm.	
	MPK 1 schwarz/black	
	930 268-100	
	2 mm system	
	black	
		
	red color, order no. 930 268-101	
Drawing		
		
Technical data		
	socket (spring-loaded)	
	solder	
	DC 60 V	
	6 A	
	6 mOhm	
	screw	
Material		
	copper beryllium	
	gold-plated	
	PA	
Environmental conditions		
	-20 °C to +60 °C	
Inflammability class		
	94 V-2	

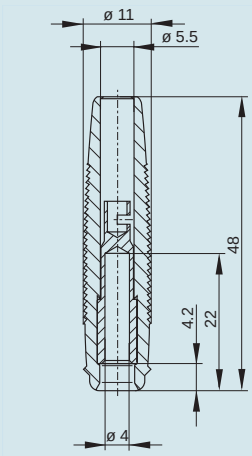
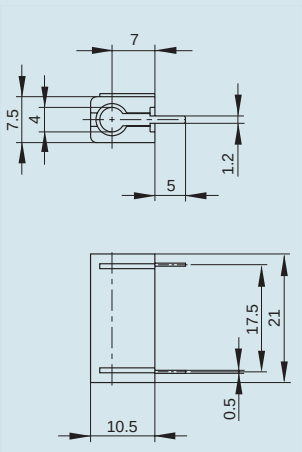


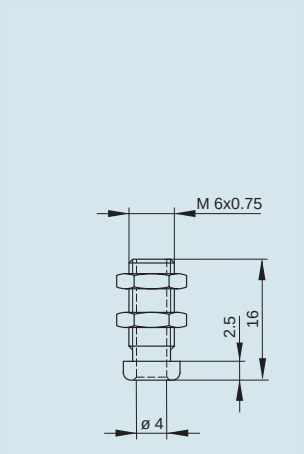
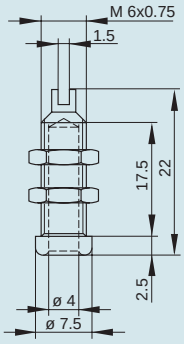
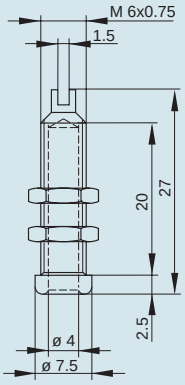
Product description		
	Insulated coupling with a nickel-plated brass tube for two 4 mm diameter plugs.	Insulated coupling for a 4 mm diameter plug and screw connection up to cable cross-section of 1.5 mm². Tin-plated brass socket. The socket is screwed into the insulated handle.
	KD 10 schwarz/black	**KUN 10 schwarz/black**
	930 109-100	930 189-100
	4 mm system	4 mm system
	black	black
	red color, order no. 930 109-101	red color, order no. 930 189-101
Drawing		
		
Technical data		
	socket	socket
	4 mm diameter socket	screw
	DC 60 V	DC 60 V
	10 A	16 A
	5 mOhm	3 mOhm
	screw	
Material		
	brass	brass
	nickel-plated	tin-plated
	PA	PS
Environmental conditions		
	-25 °C to +70 °C	-25 °C to +70 °C
Inflammability class		
	94 V-0	94 HB

Sockets

4 mm system

4 mm system

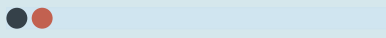
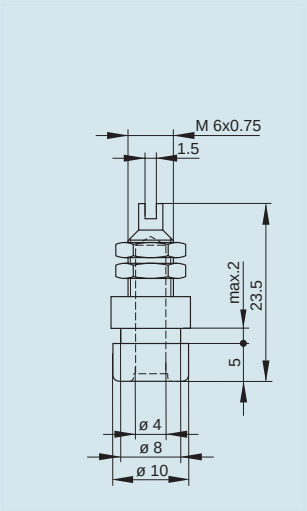
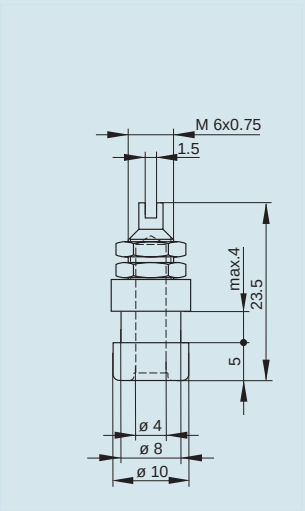
Product description			
	Shatter-proof, flexible, insulated coupling for a 4 mm diameter plug and solder connection up to a cable cross-section of 2.5 mm². Tin-plated brass socket.	4 mm diameter test socket for measuring and testing printed boards during operation. The test socket may also be mounted on the printed board using a BZ 2.2 DIN7971 pan-head, self-tapping screw. Tin-plated brass through-hole 4 mm diameter socket.	
	KUN 30 rot/red	**PB 4 schwarz/black**	
	931 804-101	973 582-100	
	4 mm system	4 mm system	
	red	black	
	black color, order no. 931 804-100; blue color, order no. 931 804-102; yellow color, order no. 931 804-103; green color, order no. 931 804-104	red color, order no. 973 582-101	
Drawing			
			
Technical data			
	socket	socket	
	solder	solder	
	DC 60 V	DC 60 V	
	16 A	16 A	
	3 mOhm	5 mOhm	
		screw	
Material			
	brass	brass	
	tin-plated	tin-plated	
	PVC-P	PC	
Environmental conditions			
	-25 °C to +70 °C	-25 °C to +85 °C	
Inflammability class			
	94 V-2	94 HB	

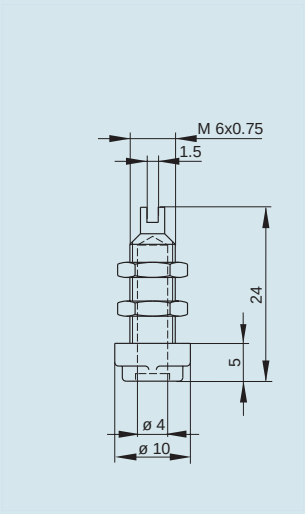
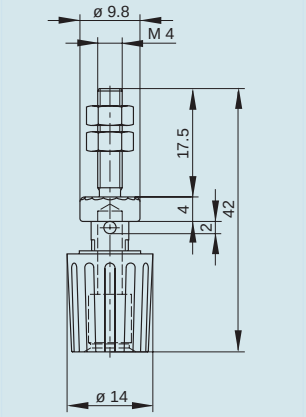
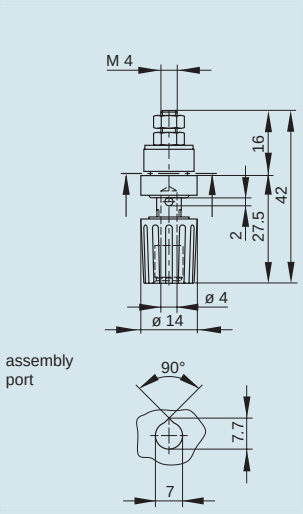
	Bright metal 4 mm diameter nickel-plated brass socket.	Bright metal 4 mm diameter nickel-plated brass socket with solder connection. Length 22 mm.	Bright metal 4 mm diameter nickel-plated brass socket with solder connection. Length 22 mm.
	BO 10	**BU 10**	**BU 20**
	930 160-000	930 147-000	930 177-000
	4 mm system	4 mm system	4 mm system
	red	red	red
			
	socket	socket	socket
	screw	solder	solder
	DC 60 V	DC 60 V	DC 60 V
	16 A	16 A	16 A
	5 mOhm	5 mOhm	5 mOhm
	screw	screw	screw
	brass	brass	brass
	nickel-plated	nickel-plated	nickel-plated
	PA	PA	PA
	-25 °C to +100 °C	-25 °C to +100 °C	-25 °C to +100 °C
	94 V-0	94 V-0	94 V-0

Sockets

4 mm system

4 mm system

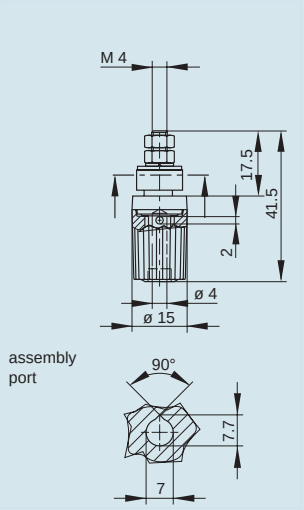
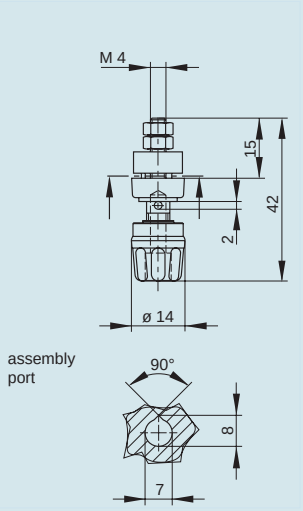
Product description		
	Socket with insulated head and ring for installation in equipment chassis and switchpanels with a wall thickness up to 2 mm. 4 mm diameter tin-plated brass socket, with solder connection.	Socket with insulated head and ring for installation in equipment chassis and switchpanels up to 4 mm wall thickness. 4 mm diameter tin-plated brass socket, with solder connection.
	BIL 20 rot/red	**BIL 30 schwarz/black**
	930 176-101	930 166-100
	4 mm system	4 mm system
	red	black
		
	black color, order no. 930 176-100; blue color, order no. 930 176-102; yellow color, order no. 930 176-103; green color, order no. 930 176-104; white color, order no. 930 176-107	red color, order no. 930 176-101
Drawing		
		
Technical data		
	socket	socket
	solder	solder
	DC 60 V	DC 60 V
	32 A	32 A
	5 mOhm	5 mOhm
	screw	screw
Material		
	brass	brass
	tin-plated	tin-plated
	PF	PF
Environmental conditions		
	-25 °C to +85 °C	-25 °C to +85 °C
Inflammability class		
	94 V-0	94 V-0

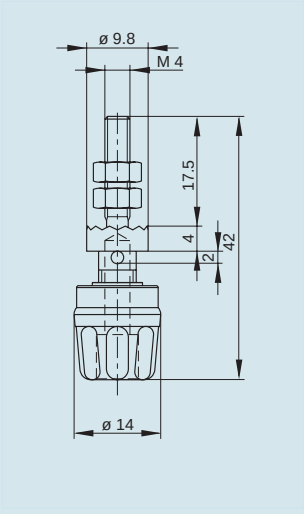
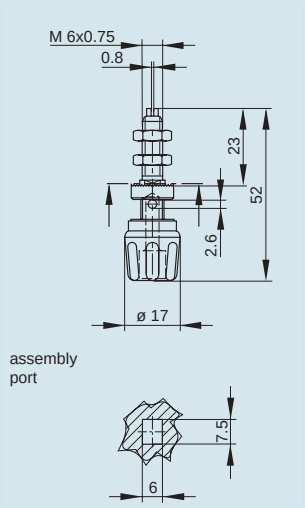
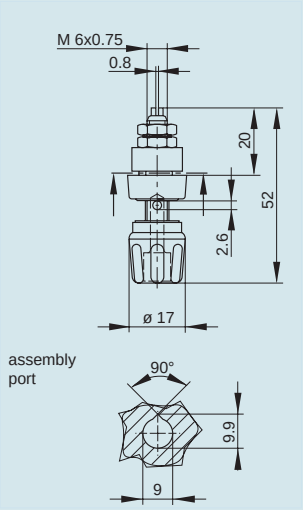
	Socket with oval insulated head, 4 mm diameter tin-plated brass socket, with solder connection.	Pole clamp with claw edge and captive insulated head. 4 mm diameter nickel-plated brass threaded bolt with 2 mm diameter transverse hole. For installation in equip-ment chassis and switch panels.	Pole clamp with claw edge, captive insulated head and insulated ring. 4 mm diameter nickel-plated brass thread-ed bolt with 2 mm diameter transverse hole. For insulat-ed, non-rotating installation in equipment chassis and switch panels up to 3.5 mm wall thickness.
	BUG 10 rot/red	**PK 110 schwarz/black**	**PKI 110 rot/red**
	930 175-101	931 713-100	931 714-101
	4 mm system	4 mm system	4 mm system
	red	black	red
	black color, order no. 930 175-100; blue color, order no. 930 175-102; yellow color, order no. 930 175-103; green color, order no. 930 175-104; white color, order no. 930 175-107	red color, order no. 931 713-101	black color, order no. 931 714-100; blue color, order no. 931 714-102; yellow color, order no. 931 714-103; green color, order no. 931 714-104; yellow/green color, order no. 931 714-188
			
	socket	socket	socket
	solder	M 4 thread	M 4 thread
	DC 60 V	DC 60 V	DC 60 V
	16 A	35 A	35 A
	5 mOhm	2 mOhm	2 mOhm
	screw	screw	screw
	brass	brass	brass
	tin-plated	nickel-plated	nickel-plated
	PF	PA	PA
	-25 °C to +85 °C	-25 °C to +100 °C	-25 °C to +100 °C
	94 V-0	94 V-2	94 V-2

Sockets

4 mm system

4 mm system

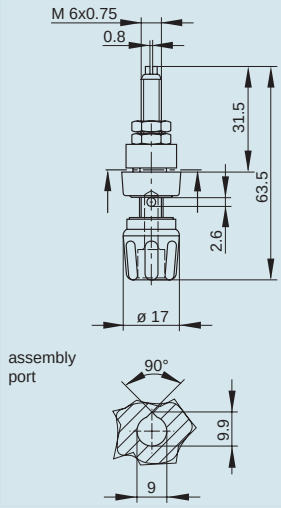
Product description			
	Pole clamp with captive insulated head, which is held under constant pressure against the insulated rings by a spring. 4 mm diameter nickel-plated, brass threaded bolt with 2 mm diameter transverse hole. For non-rotating installation in switchpanels and equipment chassis with wall thicknesses up to 3.5 mm.	Pole clamp with claw edge and captive insulated head and insulated ring. 4 mm diameter nickel-plated brass threaded bolt with 2 mm diameter transverse hole. For insulated, non-rotating installation in equipment chassis and switchpanels with a wall thickness up to 2 mm.	
	PKI 100 rot/red	**PKI 10 A rot/red**	
	930 757-101	930 103-101	
	4 mm system	4 mm system	
	red	red	
	black color, order no. 930 757-100; blue color, order no. 930 757-102; yellow color, order no. 930 757-103; green color, order no. 930 757-104; yellow/green color, order no. 930 757-188	black color, order no. 930 103-100; blue color, order no. 930 103-102; yellow color, order no. 930 103-103; green color, order no. 930 103-104; yellow/green color, order no. 930 103-188	
Drawing			
			
Technical data			
	socket	socket	
	M 4 thread	M 4 thread	
	DC 60 V	DC 60 V	
	35 A	35 A	
	2 mOhm	2 mOhm	
	screw	screw	
Material			
	brass	brass	
	nickel-plated	nickel-plated	
	PA	PF	
Environmental conditions			
	-25 °C to +100 °C	-25 °C to +100 °C	
Inflammability class			
	94 V-2	94 V-0	

	Pole clamp with claw edge and captive insulated head. 4 mm diameter nickel-plated brass threaded bolt with 2 mm diameter transverse hole. For installation in equipment chassis and switch panels.	Pole clamp with claw edge and captive insulated head. 6 mm diameter nickel-plated brass threaded bolt with 2.6 mm diameter transverse hole. For non-rotating installation in equipment chassis and switchpanels.	Pole clamp with claw edge, captive insulated head and insulated ring. 6 mm diameter nickel-plated brass threaded bolt with 2.6 mm diameter transverse hole. For insulated non-rotating installation in equipment chassis and switch panels up to 3.5 mm wall thickness.
	PK 10 A rot/red	**PKN 10 B schwarz/black**	**PKNI 10 B schwarz/black**
	930 099-101	930 117-100	930 136-100
	4 mm system	4 mm system	4 mm system
	red	black	black
	black color, ortder no. 930 099-100; blue color, ortder no. 930 099-102; yellow color, ortder no. 930 099-103; green color, ortder no. 930 099-104; yellow/green color, ortder no. 930 099-188	red color, order no. 931 117-101	red color, order no. 930 136-101
			
	socket	socket	socket
	M 4 thread	M 6 thread	M 6 thread
	DC 60 V	DC 60 V	DC 60 V
	16 A	63 A	63 A
	2 mOhm	2 mOhm	2 mOhm
	screw	screw	screw
	brass	brass	brass
	nickel-plated	nickel-plated	nickel-plated
	PF	PF	PF
	-25 °C to +100 °C	-25 °C to +100 °C	-25 °C to +100 °C
	94 V-0	94 V-0	94 V-0

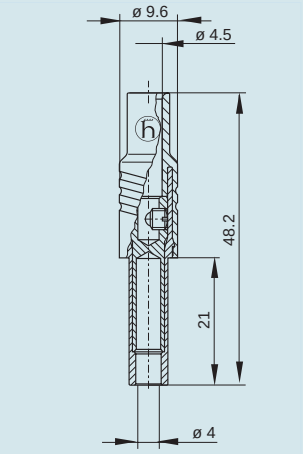
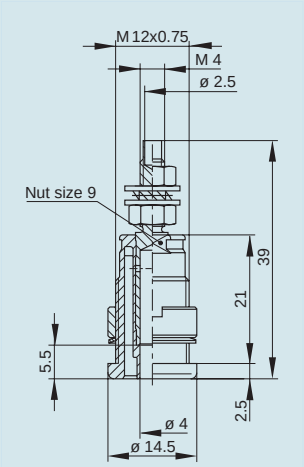
Sockets

4 mm system

4 mm system

Product description		
	Pole clamp with claw edge, captive insulated head and insulated ring. 6 mm diameter nickel-plated brass threaded bolt with 2.6 mm diameter transverse hole. For insulated non-rotating installation in equipment chassis and switch panels up to 3.5 mm wall thickness.	
	PKNI 20 B schwarz/black	
	930 144-100	
	4 mm system	
	red	
		
	red color, order no. 930 144-101	
Drawing		
		
Technical data		
	socket	
	M 6 thread	
	DC 60 V	
	63 A	
	2 mOhm	
	screw	
Material		
	brass	
	nickel-plated	
	PF	
Environmental conditions		
	-25 °C to +100 °C	
Inflammability class		
	94 V-0	

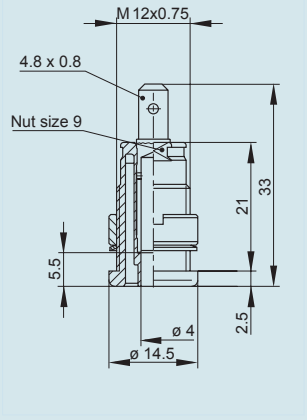
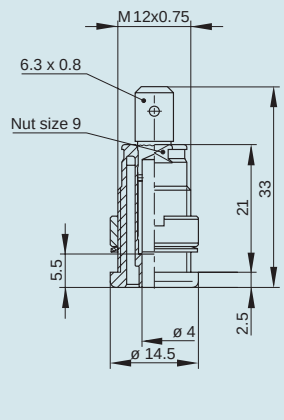
4 mm safety system

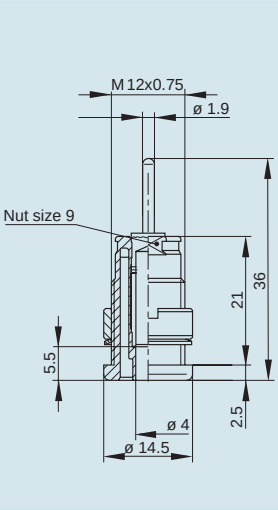
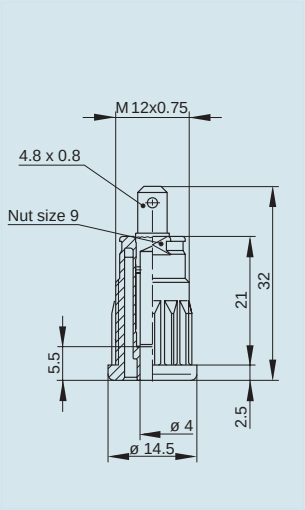
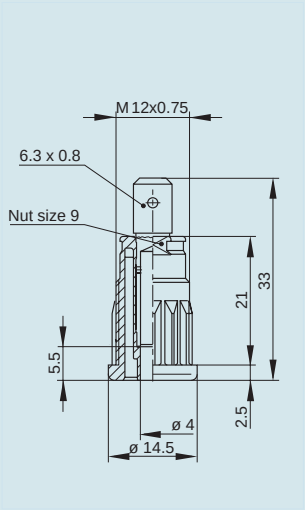
Product description		
	Safety coupling with screw connection for leads from 0.5 mm² to 1.5 mm², outer diameter of lead max. 4,2 mm. Connectable with contact-protected plug 4 mm, 1000 V-system, IEC 61010. Simple assembly by “Click System”.	Safety built-in socket, 4 mm diameter, touch-protected, M 4 threaded connection and soldering hole, gold-plated brass. For installation into switch-panels and equipment chassis with wall thicknesses up to 6 mm. Accessory BES 1000. Installation hole: 12.2 mm diameter. Tightening torque: 50 Ncm
	KUN S rot/red	**SEB 2600 G M4 rot/red**
	934 096-101	972 354-101
	4 mm safety system	4 mm safety system
	red	red
	black color, order no. 934 096-100; blue color, order no. 934 096-102; yellow color, order no. 934 096-103; green color, order no. 934 096-104	black color, order no. 972 354-100; blue color, order no. 972 354-102; yellow color, order no. 972 354-103; green color, order no. 972 354-104; yellow/green color, order no. 972 354-188
Drawing		
		
Technical data		
	socket	socket
	screw	screw / solder
	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V
	CAT III	CAT II
	24 A	32 A
		5 mOhm
		screw
Material		
	brass	brass
	nickel-plated	gold-plated
	PA	PA
Environmental conditions		
	-15 °C to +70 °C	-40°C to +80°C
Inflammability class		
	94 V-2	94 V-2

Sockets

4 mm safety system

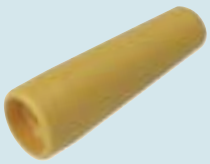
4 mm safety system

Product description		
	Safety built-in socket, 4 mm diameter, contact-protected, with 4.8 x 0.8 tab connector complying with DIN 46 244, gold-plated brass. For installation into switchpanels and equipment chassis with wall thicknesses up to 6 mm. Accessory BES 1000. Installation hole: 12.2 mm diameter. Tightening torque: 50 Ncm.	Safety built-in socket, 4 mm diameter, contact-protected, with 6.3 x 0.8 tab connector complying with DIN 46 244, gold-plated brass. For installation into switchpanels and equipment chassis with wall thicknesses up to 6 mm. Accessory BES 1000. Installation hole: 12.2 mm diameter. Tightening torque: 50 Ncm.
	SEB 2610 F4,8 rot/red	**SEB 2620 F6,3 rot/red**
	972 355-101	972 356-101
	4 mm safety system	4 mm safety system
	red	red
		
	black color, order no. 972 355-100; blue color, order no. 972 355-102; yellow color, order no. 972 355-103; green color, order no. 972 355-104; yellow/green color, order no. 972 355-188	black color, order no. 972 356-100; blue color, order no. 972 356-102; yellow color, order no. 972 356-103; green color, order no. 972 356-104; yellow/green color, order no. 972 356-188
Drawing		
		
Technical data		
	socket	socket
	flat plug 4.8 x 0.8	flat plug 6.3 x 0.8
	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V
	CAT II	CAT II
	25 A	32 A
	5 mOhm	5 mOhm
	screw	screw
Material		
	brass	brass
	gold-plated	gold-plated
	PA	PA
Environmental conditions		
	-40 °C to +80 °C	-40 °C to +80 °C
Inflammability class		
	94 V-2	94 V-2

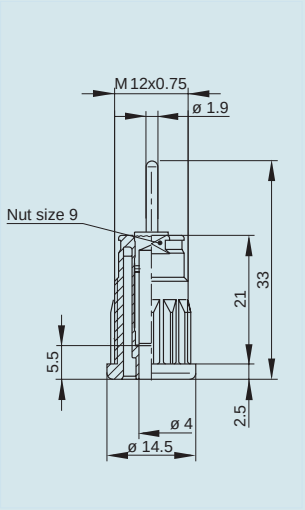
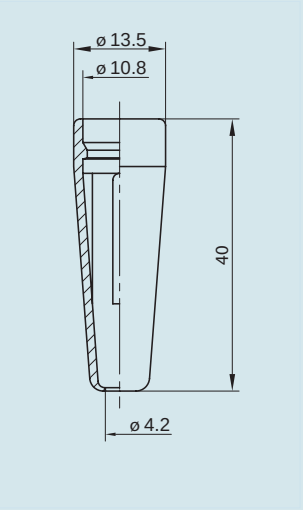
	Safety built-in socket, 4 mm diameter, contact-protected, with 1.9 mm soldering spike, gold-plated brass. For installation into switchpanels and equipment chassis with wall thicknesses up to 6 mm. Soldering spike can be soldered into printed boards. Accessory BES 1000. Installation hole: 12.2 mm diameter. Tightening torque: 50 Ncm.	Safety press-in socket, 4 mm diameter, contact-protected, with 4.8 x 0.8 tab connector complying with DIN 46 244, gold-plated brass. For rapid installation into switchpanels with wall thicknesses between 1-10 mm. Accessory BES 1000. Installation hole: 12.2 +/- 0.1 mm diameter. Entry chamfer: 0.5 x 45 degree.	Safety press-in socket, 4 mm diameter, contact-protected, with 6.3 x 0.8 tab connector complying with DIN 46 244, gold-plated brass. For rapid installation into switchpanels with wall thicknesses between 1-10 mm. Accessory BES 1000. Installation hole: 12.2 +/- 0.1 mm diameter. Entry chamfer: 0.5 x 45 degree.
	SEB 2630 S1,9 rot/red	**SEP 2610 F4,8 rot/red**	**SEP 2620 F6,3 rot/red**
	972 359-101	972 361-101	972 362-101
	4 mm safety system	4 mm safety system	4 mm safety system
	red	red	red
	black color, order no. 972 359-100; blue color, order no. 972 359-102; yellow color, order no. 972 359-103; green color, order no. 972 359-104; yellow/green color, order no. 972 359-188	black color, order no. 972 361-100; blue color, order no. 972 361-102; yellow color, order no. 972 361-103; green color, order no. 972 361-104; yellow/green color, order no. 972 361-188	black color, order no. 972 362-100; blue color, order no. 972 362-102; yellow color, order no. 972 362-103; green color, order no. 972 362-104; yellow/green color, order no. 972 362-188
			
	socket	socket	socket
	solder	flat plug 4.8 x 0.8	flat plug 6.3 x 0.8
	IEC 61010	IEC 61010	IEC 61010
	AC/DC 1000 V	AC/DC 1000 V	AC/DC 1000 V
	CAT II	CAT II	CAT II
	24 A	24 A	32 A
	5 mOhm	5 mOhm	5 mOhm
	screw	moulded in	moulded in
	brass	brass	brass
	gold-plated	gold-plated	gold-plated
	PA	PA	PA
	-40 °C to +80 °C	-40 °C to +80 °C	-40 °C to +80 °C
	94 V-2	94 V-2	94 V-2

Sockets

4 mm safety system



4 mm safety system

Product description		
	Gold-plated brass safety press-in socket, 4 mm diameter, contact-protected, with 1.9 mm soldering spike. For installation into switchpanels with wall thicknesses between 1 mm and 10 mm. Accessory BES 1000. Installation hole: 12.2 +/- 0.1 mm diameter. Entry chamfer: 0.5 x 45 degree.	Contact protection for screwing and press sockets (SEB and SEP). It is snapped on the socket and covers the exchange area. The contact protection serves as additional isolation within the equipment.
	SEP 2630 S1,9 rot/red	**BES 1000**
	972 363-101	973 616-103
	4 mm safety system	4 mm safety system
	red	yellow
		
	black color, order no. 972 363-100; blue color, order no. 972 363-102; yellow color, order no. 972 363-103; green color, order no. 972 363-104; yellow/green color, order no. 972 363-188	
Drawing		
		
Technical data		
	socket	
	solder	
	IEC 61010	
	AC/DC 1000 V	
	CAT II	
	24 A	
	5 mOhm	
	moulded in	
Material		
	brass	
	gold-plated	
	PA	PVC-P
Environmental conditions		
	-40 °C to +80 °C	-20°C to +70°C
Inflammability class		
	94 V-2	

The intelligent, comprehensive system for daily use.

Sets fully equipped to handle special tasks.

As a man in the field, you already have a lot on your plate: Hirschmann can provide you with some relief through an intelligent combination of the appropriate tools required in daily work, in applications in the electrical and electronic fields, in automobile workshops and in the world of the hobbyist. It's a good thing that you have everything laid out for you with our testing lead and testing media sets, with the entire range from the test probes to measuring leads for use on the move.

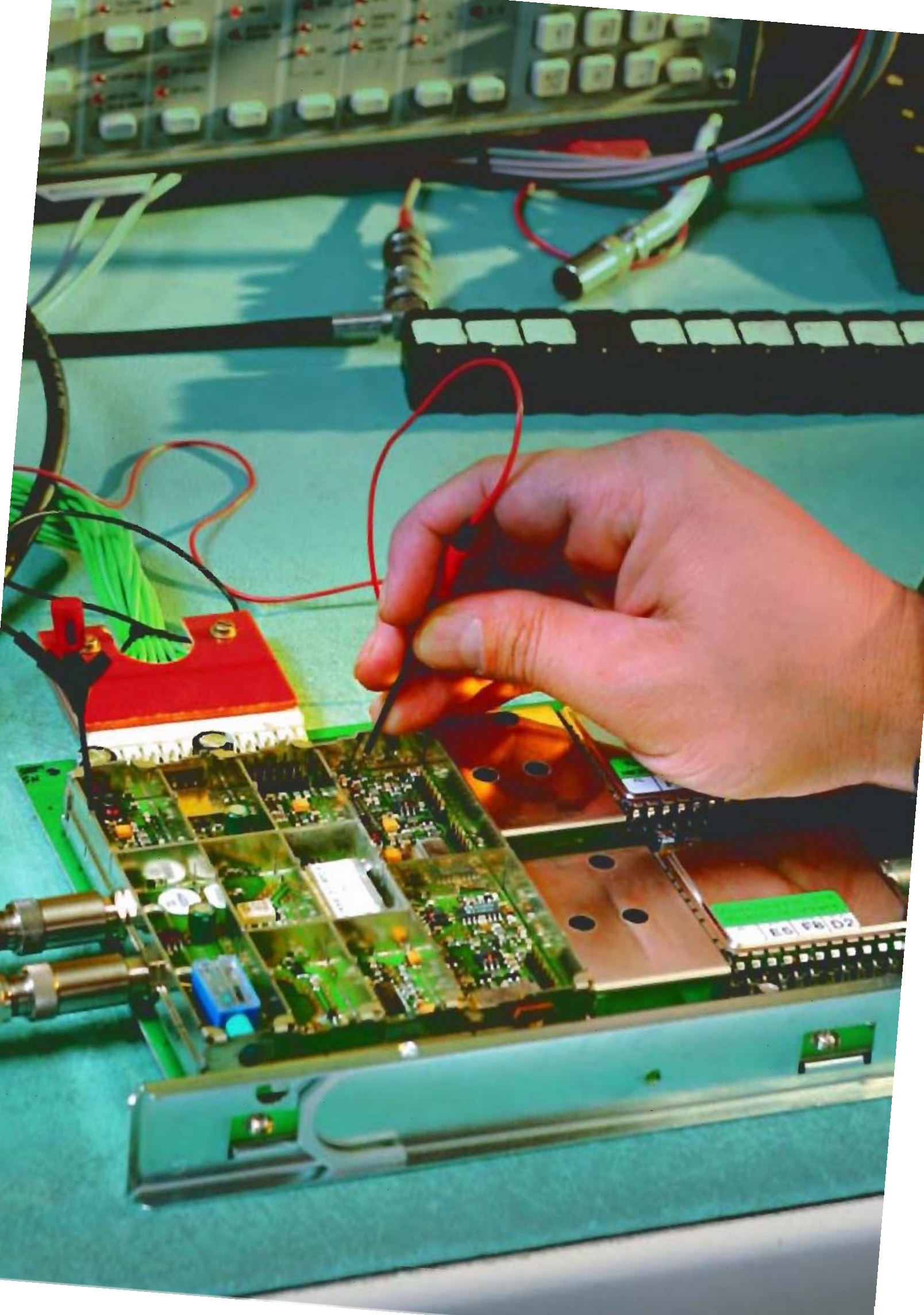
And even better that every individual component of this intelligent complete system in the proven Hirschmann quality is perfectly matched to each other. Because with it, you retain full control for example in automobile servicing or the testing of circuits even under rough working conditions. So that you can focus your full attention on the measuring and testing routine at hand.

Whether as a primary tool kit for electronics (PMS 0.64), automobile service kit (PMS 4 KFZ) or safety set for electricians (PMS 2600) – with Hirschmann complete systems, you can have each and every measuring and testing task firmly in hand.

The practical Hirschmann complete systems with measuring leads, test probes, crocodile clips and all the other things that you need, are suitable for use both in professional applications as well as in the world of the hobbyist.

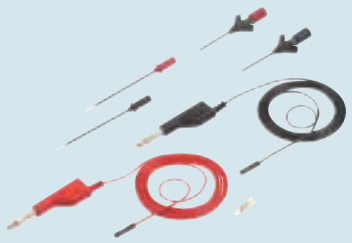
PMS 2600

Special test sets for safety applications



Sets

0.64 mm system



0.64 mm system

Product description	
Description	Micro test equipment set for SMD components and 0.64 mm test system. 2 x Miniature clamp-type test probe MICRO-KLEPS 2 x Miniature test probe MICRO-PRUEF MPS 2/0,64 FT 1 x Miniature crocodile clip AGF 1 2 x Test leaed MAL N 4-0.64/100-0,25
Type	**PMS 0,64**
Order No.	932 959-001
System	0.64 mm system
Cable length	100 cm
Conductor size	0.25 mm^2
Cable material	PVC
Cable color	Each article in black and red.
Housing Color	Each article in black and red.
Clamping range	1.6 mm: Micro-KLEPS; 2 mm: AGF 1
Technical data	
Pin dimensions	0.64 mm, 4 mm
Type of contact	socket (spring-loaded) 0.64 mm; pin (spring-loaded) 4 mm
Type of termination	1 x 4 mm diameter pin, 1 x 0.64 mm socket
Cable type	LIY
Cable specification	highly flexible lead
Wire stranding	130 x 0.05
Rated voltage	DC 60 V
Environmental conditions	
Temperature range	-15 °C to +70 °C

2 mm system

Product description	
Description	Test equipment set for 2 mm system. 2 x Clamp-type test probe KLEPS 2 BU 2 x Miniature test probe MPS 1 2 x Miniature-crocodile clip MA 1 2 x Test lead MVL 2/100
Type	**PMS 2**
Order No.	932 961-001
System	2 mm system
Cable length	100 cm
Conductor size	0.5 mm^2
Cable material	PVC
Cable color	Each article in black and red.
Housing Color	Each article in black and red.
Clamping range	2 mm
Technical data	
Pin dimensions	2 mm
Type of contact	solder
Type of termination	socket (spring-loaded)
Cable type	
Cable specification	
Wire stranding	
Rated voltage	DC 60 V
Environmental conditions	
Temperature range	-40 °C to +60 °C

Sets

4 mm system

4 mm system

Product description		
Description	Test equipment set for 4 mm system. 2 x Clamp-type test probe KLEPS 30 2 x Test-Probe PRUEF 2 2 x Crocodile clip AK 2 S 2 x Test lead MLN 100/1	
Type	**PMS 4**	
Order No.	932 793-001	
System	4 mm system	
Cable length	100 cm	
Conductor size	1 mm²	
Cable material	PVC	
Cable color	Each article in black and red.	
Housing Color	Each article in black and red.	
Clamping range	4 mm - 9.5 mm	
Technical data		
Pin dimensions	4 mm	
Type of contact	pin (spring-loaded), socket	
Type of termination	4 mm socket, screw	
Cable type	LEH-XY	
Cable specification	highly flexible lead	
Wire stranding	259 x 0.07	
Rated voltage	DC 60 V	
Environmental conditions		
Temperature range	-15 °C to +70 °C	

	Test equipment set for automobile service and workshops, 4 mm system. 2 x Clamp-type test probe KLEPS 2700 2 x Test-Probe (spring-loaded tip) PRUEF 2610 FT 2 x Crocodile clip AK 2 B 2540 2 x Silicone test lead MLN SIL 150/1, heat resistant, 150 cm	
	PMS 4 KFZ	
	933 003-001	
	4 mm	
	150 cm	
	1 mm^2	
	Silicone	
	Each article in black and red.	
	Each article in black and red.	
	1.5 mm - 30 mm	
	4 mm	
	pin (spring-loaded), socket	
	4 mm diameter pin and socket	
	LEH-XY	
	most flexible lead, high temperature resistant	
	259 x 0.07	
	DC 60 V	
	-15 °C to +70 °C	

Sets

4 mm sliding sleeve system

4 mm sliding sleeve system

Product description	
Description	Sliding sleeve test equipment set for 4 mm system. 2 x Clamp-type test probe KLEPS 250 2 x Test-Probe PRUEF 2 S 2 x Crocodile clip AK 2 B 2 x Test lead MLB 100/1 V
Type	**PMS 250**
Order No.	932 827-001
System	4 mm sliding sleeve system
Cable length	100 cm
Conductor size	1 mm²
Cable material	PVC
Cable color	Each article in black and red.
Housing Color	Each article in black and red.
Clamping range	4 mm
Technical data	
Pin dimensions	4 mm
Type of contact	pin (spring-loaded)
Type of termination	4 mm diameter pin and socket
Cable type	LEH-XY
Cable specification	highly flexible lead
Wire stranding	259 x 0.07
Rated voltage	DC 60 V
Environmental conditions	
Temperature range	-15 °C to +70 °C

4 mm safety system

4 mm safety system

Product description	
Description	Test equipment set for safety applications, as accessories for measuring instruments. 2 x Clamp-type test probe KLEPS 2600 2 x Test-Probe PRUEF 2600 2 x Crocodile clip AK 2 B 2 x Safety test lead MLS GG 100/1
Type	**PMS 2600**
Order No.	972 338-001
System	4 mm safety system
Cable length	100 cm
Conductor size	1 mm^2
Cable material	PVC
Cable color	Each article in black and red.
Housing Color	Each article in black and red.
Clamping range	4 mm - 9.5 mm
Technical data	
Pin dimensions	4 mm
Type of contact	socket, pin (spring-loaded)
Type of termination	4 mm diameter pin and socket
Standard	IEC 61010
Cable type	LEH-XY
Cable specification	highly flexible lead
Wire stranding	259 x 0.07
Rated voltage	AC/DC 1000 V; AK 2 B: AC/DC 300 V
Measurement Category	CAT III; AK 2 B: CAT II
Environmental conditions	
Temperature range	-15 °C to +70 °C

Sets

4 mm safety system

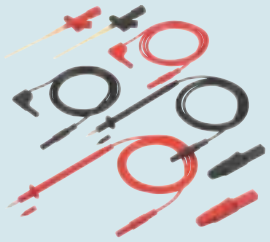
4 mm safety system

Product description		
Description	Test equipment set for safety applications, as accessories for measuring instruments. 2 x Clamp-type test probe KLEPS 2800 2 x Test-Probe PRUEF 2700 2 x Safety test lead MLS WG 100/1	
Type	**MMS 2010**	
Order No.	972 339-001	
System	4 mm safety system	
Cable length	100 cm	
Conductor size	1 mm²	
Cable material	PVC	
Cable color	Each article in black and red.	
Housing Color	Each article in black and red.	
Clamping range	10 mm	
Technical data		
Pin dimensions	4 mm	
Type of contact	pin (spring-loaded)	
Type of termination	4 mm diameter pin	
Standard	IEC 61010	
Cable type	LEH-XY	
Cable specification	highly flexible lead	
Wire stranding	259 x 0.07	
Rated voltage	AC/DC 1000 V	
Measurement Category	CAT III	
Environmental conditions		
Temperature range	-15 °C to +70 °C	

	Test equipment set for safety applications, as accessories for measuring instruments. 2 x Test-Probe PRUEF 2700 2 x Crocodile clip AK 2 B 2540 2 x Safety test lead MLS WG 100/1	Test equipment set for safety applications, as accessories for measuring instruments. 2 x Test-Probe PRUEF 2700 2 x Clamp-type test probe KLEPS 2600 2 x Savety test lead MLS WG 100/1
	MMS 2020	**MMS 2030**
	972 340-001	972 341-001
	4 mm safety system	4 mm safety system
	100 cm	100 cm
	1 mm^2	1 mm^2
	PVC	PVC
	Each article in black and red.	Each article in black and red.
	Each article in black and red.	Each article in black and red.
	30 mm	30 mm
	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)
	4 mm diameter pin	4 mm diameter pin
	IEC 61010	IEC 61010
	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead
	259 x 0.07	259 x 0.07
	AC/DC 1000 V	AC/DC 1000 V
	CAT III; AK 2 B 2540: CAT II	CAT III
	-15 °C to +70 °C	-15 °C to +70 °C

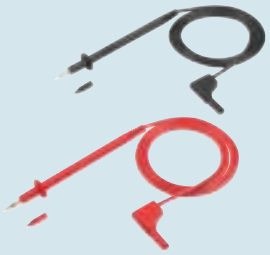
Sets

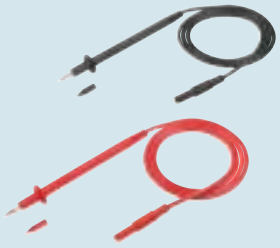
4 mm safety system



4 mm safety system

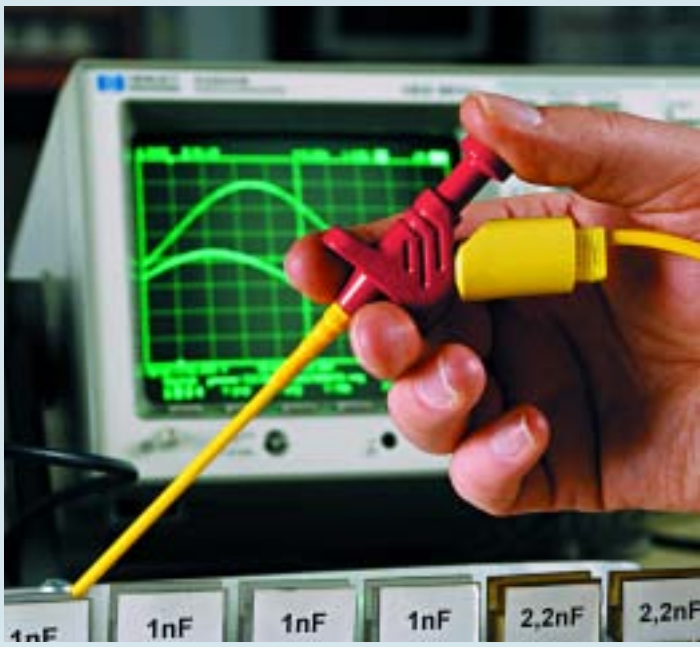
Product description		
Description	Test equipment set for safety applications, as accessories for measuring instruments. 2 x Clamp-type test probe KLEPS 2600 2 x Crocodile clip AK 2 B 2 x Test lead with integrated probes PL 2600 S 2 x Safety test lead MLS WG 100/1	
Type	**MMS 2040**	
Order No.	972 342-001	
System	4 mm safety system	
Cable length	100 cm	
Conductor size	1 mm²	
Cable material	PVC	
Cable color	Each article in black and red.	
Housing Color	Each article in black and red.	
Clamping range	4 mm - 9.5 mm	
Technical data		
Pin dimensions	4 mm	
Type of contact	pin (spring-loaded)	
Type of termination	4 mm diameter pin	
Standard	IEC 61010	
Cable type	LEH-XY	
Cable specification	highly flexible lead	
Wire stranding	259 x 0.07	
Rated voltage	AC/DC 1000 V; AK 2 B: 300 V	
Measurement Category	CAT III; AK 2 B: CAT II	
Environmental conditions		
Temperature range	-15 °C to +70 °C	





	Test probe set as accessory for measuring devices. 2 x Test lead with integrated probes PL 2600 S W	Test probe set as accessory for measuring devices. 2 x Test lead with integrated probes PL 2600 S
	PL 2600 S W Set	**PL 2600 S Set**
	972 425-001	972 337-002
	4 mm safety system	4 mm safety system
	100 cm	100 cm
	1 mm^2	1 mm^2
	PVC	PVC
	Each article in black and red.	Each article in black and red.
	Each article in black and red.	Each article in black and red.
	4 mm	4 mm
	pin (spring-loaded)	pin (spring-loaded)
	4 mm diameter pin	4 mm diameter pin
	IEC 61010	IEC 61010
	LEH-XY	LEH-XY
	highly flexible lead	highly flexible lead
	259 x 0.07	259 x 0.07
	AC/DC 1000 V	AC/DC 1000 V
	CAT III	CAT III
	-15 °C to +70 °C	-15 °C to +70 °C

Test & Measurement Lexicon



Basic information

The multipart international standard IEC 61010 corresponds with the EN 61010 standard as well as the VDE regulation 0411. The aim of the standard is to protect the user against the following dangers through suitable structures (excerpt):

- Dangerous body currents
- Electrical burns
- Mechanical danger
- Excessively high temperature

The provisions of the standard relating to reliable functioning, efficiency and other characteristics of the devices, as well as the maintenance of the same shall be applied to the following devices:

- Measuring and testing devices
- Control and regulation devices
- Laboratory devices
- Measuring accessories for the above-mentioned devices

What does the standard mean for Hirschmann products?

As an important supplier of electro-mechanical components, Hirschmann offers a comprehensive range of contact-protected measuring leads and measurement accessories. The IEC 61010 does not apply below peak values of 70 V DC or 46.7 V AC. Products and accessories specified below these voltage limits can therefore not be tested according to the IEC 61010. Voltages above this limit value may lead to dangerous body currents. For this, Hirschmann offers the 4 mm safety system that has been designed as per IEC 61010. If used correctly, the system ensures optimum safety up to 1,000 V. The products are designed, tested and marked according to IEC 61010. These products bear a text indicating the permissible rated voltage and Measurement Category. Hirschmann products satisfy international safety standards and are recognized all over the world as reliable and high-quality products.

Safety instructions

The products of the **Hirschmann 4 mm Safety system** should only be touched in the gripping area whenever a dangerous voltage is present. The gripping area is the area in which the user can touch a measuring medium during operation without being exposed to dangerous body currents. Safety measuring leads as per IEC 61010 are crimped and provided with pull relief on the conductor and the conductor insulation. Hirschmann products more than satisfy the values demanded by the standard. The conductors are therefore especially robust and long lasting. The heightened pull relief does not however mean that it can be used as a handle for unplugging. The gripping area on the plug should be used for this.

Technical details

We reserve the right to make changes in view of technical advances and for higher safety without prior notice. All the details contained in the catalog are not guaranteed.

Tensile force, pull relief

The safety measuring leads as per IEC 61010 are crimped and the conductor as well as the conductor insulation is provided with pull relief. The values required by the standard are far exceeded by Hirschmann, and as a result, the leads are especially robust and long lasting.

Test & Measurement Lexicon

Air clearance

The air clearance is the directly measured distance between two conducting parts. As a rule, this clearance acts as an insulator and should be dimensioned according to IEC 61010.

Baseline hazard

The baseline hazard is the minimum insulation function, the failure of which can lead to dangerous body currents.

CE certification mark

The CE certification mark is a certificate that attests to conformity with all the directives and standards. All goods and products that are brought into circulation within Europe should conform to the European Directives. For Hirschmann measuring and testing devices, these are essentially the Low Voltage Directive (72/23/EWG) and the EMV Directive (89/336/EWG), as well as the European Standard EN 61010. According to these statutory standards, all fully terminated measuring leads and test probes with a rated voltage of higher than 70 V DC are issued with the CE certification mark (see Product description). Plugs and sockets are regarded as components and can only be evaluated after proper installation. For these components, it is not possible to have a CE certification mark.

Conductor cross-section

The conductor cross-section determines the effective electrical cross-section of the conductor material used. As a rule it consists of a copper conductor and is defined in terms of square millimeters. Larger conductor cross-sections have a lower electrical resistance and can transmit higher currents.

Conductor structure

The conductor structure is defined by the specifications of the conductor (its product description). Flexible conductors made by Hirschmann consist of many fine, individual copper wires. Their number and structure decide the flexibility of the conductor.

Contact material

The contact material is the base material of the contact. This can be refined further in order to achieve optimal conductivity. (See contact surface material.)

Contact protection

Contact protection is the protection of measurement media against accidental contact. Contact protection depends on the voltage to be measured, the overvoltage to be expected (Measurement Category), the environmental conditions (Degree of Contamination) as well as the insulating material. All the products of the **4 mm Safety system** that are held in the hand during the measurement have either double insulation or reinforced insulation. This makes possible optimum contact protection with maximum safety. All products of the **Hirschmann 4 mm Safety system** are designed for a voltage of 1,000 V III (CAT III), unless otherwise specified. In this connection, all the details specified relate to the Degree of Contamination 2. It is possible, by defining other ambient conditions, to obtain a different measurement voltage. Hirschmann would be happy to provide you with advice about the safe use of higher voltages.

Contact surface material

Contact surface material is the material on the surface of the electrical contact. Often, special nickel or gold coating is used here, with optimum electrical and mechanical properties.

Creepage distance

The creepage distance is the shortest distance along an insulating material surface between two live parts. All peaks and valleys on the insulating body will be taken into account. Creepage distances are defined in the IEC 61010 for all products of the **4 mm Safety system** and are strictly adhered-to by Hirschmann.

Degree of Contamination

The Degree of Contamination may be classified into the following three categories in the standard IEC 61010.

Degree of Contamination 1
Degree of Contamination 1 allows no contamination or only a little contamination, which should not be conductive.

Degree of Contamination 2
Degree of Contamination 2 is a light, normal level of contamination that may become conductive due to moisture condensation. This contamination may result due to sweat from human hands. For this reason, the Degree of Contamination 2 is applied for hand-held measurement accessories. All Hirschmann **4 mm Safety system** products are designed for Degree of Contamination 2.

Degree of Contamination 3
Degree of Contamination 3 is contamination that is conductive or which becomes conductive due to moisture condensation.

Derating curve

According to the derating curve (load reduction curve as per DIN 41 640, Part 3), the operating current at higher ambient temperature is to be reduced. The current loading capacity of plugs is limited by the thermal load-bearing capacity of the contact materials or the insulating parts. The derating curve therefore applies to currents that may continuously pass through each contact element of the plugs, without exceeding the upper limit temperature.

Double insulation

Double insulation is an insulation that consists of basic insulation and additional insulation (see contact protection).

Gripping area

The gripping area is the area in which the user can touch a measuring medium during operation without being exposed to dangerous shock currents. In case of the proper use of measuring media, the same should be only touched on the designated gripping areas. Wrongful use or the use of damage products will mean a high, crucial safety risk.

IEC 61010

The international standard IEC 61010 “Safety specifications for electrical measurement, control, regulation and laboratory devices”, which defines the protection of the user against dangerous body currents and electrical burns. For measuring and testing accessories, the section IEC 61010-031 will be applied. The standard corresponds to the European standard EN 61010-031 and the German standard VDE 0411-031. All Hirschmann products from the **Hirschmann 4 mm Safety system** have been designed in accordance with this standard and tested by an accredited testing laboratory (see production descriptions).

Insulation

As far as insulation is concerned, a distinction is made between basic insulation and double or reinforced insulation. For hand-held measuring accessories, the standard specifies double or reinforced insulation. This consists of the basic insulation, which ensures minimum protection against dangerous body currents, and an additional insulation, which offers protection against dangerous body currents when the basic insulation fails. Hirschmann uses double or reinforced insulation for all hand-held products of the **4 mm Safety system** for the protection of the user.

Test & Measurement Lexicon

Measurement Category

In the Measurement Category, application fields are classified according to the potential risk to the user, since transient voltage surges may lead to danger to the user.

Measurement Category I (CAT I)
Measurement Category I is for current circuits within devices that are not connected to the mains, electronic devices, battery devices, etc., in which only minor transient overvoltages can occur.

Measurement Category II (CAT II)
Measurement Category II is for devices that are connected to the mains or that receive power via the mains, but are not a part of the installation. In these devices, there may be transient overvoltages due to switching processes (for example mains-powered entertainment electronic appliances, domestic appliances).

Measurement Category III (CAT III)
Measurement Category III is for voltages in the field of distribution installations and fixed installations (for example switches, socket outlets, general domestic installations).

Measurement Category IV (CAT IV)
Measurement Category IV is for voltages at the source of the installation (for example overhead lines, cable networks).

In general, the following applies: the higher the Measurement Category, the higher will be the safety requirements that apply to the product. Unless otherwise specified, there is a **4 mm Safety system** designed by Hirschmann for the Measurement Category III (CAT III) and the Contamination Level 2. Thereby, the largest range of measurement tasks up to 1,000 V are safely covered. It is possible to achieve a different measurement voltage by defining different environmental conditions. Hirschmann would be happy to provide advice in connection with the safe use of measuring devices at high voltages.

Pull relief

Pull relief is a quality characteristic for the mechanical stability of measuring leads. In Hirschmann measuring leads a special, robust and long-lasting contacting process is used for connecting the conductor to the plug. In addition, a crimped connection is made between the plug connector and the conductor insulation. With this manufacturing technology, it is possible to achieve the highest pull relief values that are far above the statutorily required values.

Rated current

The rated current is the current that can continuously pass through all the contact elements without the limit temperature being exceeded.

Rated voltage

The rated voltage is the voltage at which Hirschmann products can be used safely, if used properly. The stipulations of the IEC 61010 have been accurately observed. The rated voltage specified always relates to the Degree of Contamination 2 and the specified Measurement Category.

Reinforced insulation

Reinforced insulation is an insulation that offers protection against dangerous body currents. It can alternatively be used for double insulation (see insulation).

Safety color indicator

All the measuring leads of the **4 mm Safety system** have a safety color indicator. The cable insulation consists of two separated insulation layers. The first layer is directly installed on the stranded copper wire and it is white in all measuring leads. In a subsequent manufacturing stage, a second insulation layer is applied in the respective cable color (for example red). If the insulation is damaged while using the measuring lead, the white insulating layer becomes visible. For safety reasons, the lead should be immediately replaced with a new Hirschmann measuring lead.

Safety extra-low voltage

Safety extra-low voltages as per VDE 0100 Part 410 are voltages from 25 V AC and 60 V DC. Below this voltage, it is permissible to use measuring media without contact protection. In this connection, the applicable national regulations should be duly followed.

Temperature range

The temperature range is the permissible range within which the plug connector may be used without damaging the materials. The derating curve should be taken into account while rating the current in the upper temperature range.

Test voltages

The test voltage is the voltage at which Hirschmann products are tested in the design and manufacturing stage, in order to ensure the insulating capacity and the dielectric strength under the specified conditions. The magnitude of the voltage depends on the application and is laid down in various standards (for example IEC 61010). The testing voltage is a multiple of the operating voltage and is satisfied by all the products mentioned in the catalog, and this criterion is in fact exceeded. In order to avoid confusion with the lower rating voltage, the test voltage is not separately indicated in the catalog.

Transient voltage

The transient voltage is the overvoltage that arises due to a switching process or lightning discharge. The transient voltages are laid down in standards (for example IEC 61010) and depend on the ambient conditions and the location in the supply network at which the measurement is carried out.

Voltage details

The voltage details in the products mentioned in the catalog indicate the voltage range for which they can be used. Hirschmann has designed the entire **4 mm Safety system** for 1,000 V, Measurement Category III (CAT III) with Degree of Contamination 2. The largest range of measuring tasks in the higher voltage range is safely covered. It is possible to achieve a different measuring voltage by defining other ambient conditions. Hirschmann would be happy to provide advice in connection with the safe use of measuring devices at high voltages.

Volume resistance

Volume resistance is the resistance measured between the connections of connected contact parts. It consists of bulk resistances (pure ohmic resistance of semi-conductor components) and the contact resistances (resistance at the input and output points for current). The volume resistance is tested as per DIN 41 640.

Index by type

Type	Order no.	Page
MVL 2/100 schwarz/black	973 596-100	41
MVL 2/25 schwarz/black	973 594-100	40
MVL 2/50 schwarz/black	973 595-100	40
MZS 2 schwarz/black	973 600-100	65
MZS 2 schwarz/black	973 600-100	67
MZS 4 schwarz/black	973 599-100	65
PB 4 schwarz/black	973 582-100	87
PK 10 A rot/red	930 099-101	87
PK 110 schwarz/black	931 713-100	88
PKI 10 A rot/red	930 103-101	87
PKI 100 rot/red	930 757-101	89
PKI 110 rot/red	931 714-101	88
PKN 10 B schwarz/black	930 117-100	89
PKNI 10 B schwarz/black	930 136-100	89
PKNI 20 B schwarz/black	930 144-100	90
PL 2600 S Set	972 337-002	107
PL 2600 S W Set	972 425-001	107
PL 2600 S W schwarz/black	934 158-100	60
PL 2600 S schwarz/black	934 159-100	59
PMS 0,64	932 959-001	98
PMS 250	932 827-001	102
PMS 4	932 793-001	100
PMS 4 KFZ	933 003-001	101
PRUEF 1 schwarz/black	931 376-100	30
PRUEF 2 schwarz/black	973 368-100	32
PRUEF 2600 schwarz/black	972 317-100	34
PRUEF 2610 FT schwarz/black	972 318-100	34
PRUEF 2700 schwarz/black	972 319-100	35
SEB 2610 F4,8 rot/red	972 355-101	92
SEB 2620 F6,3 rot/red	972 356-101	92
SEB 2630 S1,9 rot/red	972 359-101	93
SEP 2610 F4,8 rot/red	972 361-101	93
SEP 2620 F6,3 rot/red	972 362-101	93
SEP 2630 S1,9 rot/red	972 363-101	94
SLS 200 schwarz/black	932 153-100	74
SS 260	973 865-001	32
SS 260	973 865-001	35
VON 20 rot/red	930 046-101	70
VON 30 rot/red	930 047-101	71
VQ 20 rot/red	930 058-101	71
VQ 30 rot/red	930 061-101	71
VSB 20 rot/red	930 435-101	72
VST 100	930 581-000	66
VST 20	930 050-000	66

Index by Order no.

Order no.	Type	Page
972 308-100	KLEPS 2800 schwarz/black	17
972 309-100	KLEPS 2900 schwarz/black	17
972 317-100	PRUEF 2600 schwarz/black	34
972 318-100	PRUEF 2610 FT schwarz/black	34
972 319-100	PRUEF 2700 schwarz/black	35
972 337-002	PL 2600 S Set	107
972 339-001	MMS 2010	104
972 340-001	MMS 2020	105
972 341-001	MMS 2030	105
972 342-001	MMS 2040	106
972 355-101	SEB 2610 F4,8 rot/red	92
972 356-101	SEB 2620 F6,3 rot/red	92
972 359-101	SEB 2630 S1,9 rot/red	93
972 361-101	SEP 2610 F4,8 rot/red	93
972 362-101	SEP 2620 F6,3 rot/red	93
972 363-101	SEP 2630 S1,9 rot/red	94
972 405-100	AK 2 B 2540 I schwarz/black	27
972 416-100	MICRO-SMD CLIP 1	20
972 425-001	PL 2600 S W Set	107
972 518-100	LAS 30 schwarz/black	68
973 053-100	KLEPS 60 schwarz/black	14
973 368-100	PRUEF 2 schwarz/black	32
973 509-101	MST 3 rot/red	64
973 582-100	PB 4 schwarz/black	87
973 592-100	KLEPS 3 ST schwarz/black	12
973 594-100	MVL 2/25 schwarz/black	40
973 595-100	MVL 2/50 schwarz/black	40
973 596-100	MVL 2/100 schwarz/black	41
973 599-100	MZS 4 schwarz/black	65
973 600-100	MZS 2 schwarz/black	65
973 600-100	MZS 2 schwarz/black	67
973 604-100	MKL 0,64/25-0,25 schwarz/black	39
973 616-103	BES 1000	94
973 644-101	MLB 25/1 V rot/red	48
973 645-101	MLB 50/1 V rot/red	48
973 646-101	MLB 100/1 V rot/red	49
973 647-101	MLB 200/1 V rot/red	49
973 865-001	SS 260	32
973 865-001	SS 260	35
973 889-100	MA 260 SH schwarz/black	26
973 972-100	MICRO-KLEPS schwarz/black	12
973 995-100	MICRO-PRUEF MPS 2 0,64 FT schwarz/black	30

HIRSCHMANN

Automation and Network Solutions

Germany
Hirschmann Electronics GmbH
Automation and Network Solutions
Stuttgarter Straße 45-51
D-72654 Neckartenzlingen
Postfach 1649
D-72606 Nürtingen
Tel. +49-71 27-14-14 80
Fax +49-71 27-14-14 95/-14 96
E-mail: ans-hi-line@hirschmann.de
http://www.hirschmann.com

Switzerland
Hirschmann Electronics GmbH,
Neckartenzlingen
Zweigniederlassung Uster
Seestrasse 16
CH-8610 Uster
Tel. +41-44-9 05 82 82
Fax +41-44-9 05 82 89
E-mail: ans_ch@hirschmann.ch

France
Hirschmann Electronics S.A.S.
2, rue des Charpentiers
F-95330 Domont
Tel. +33-1-39 35 01 00
Fax +33-1-39 35 01 02
E-mail: ans@hirschmann.fr

UK
Hirschmann Electronics Ltd.
4303 Waterside Centre
Solihull Parkway
Birmingham Business Park
Birmingham
West Midlands
B37 7YN
Tel. +44-1 21-3 29-50 00
Fax +44-1 21-3 29-50 01
E-mail: enquiry@hirschmann.co.uk

Netherlands
Hirschmann Electronics B.V.
Pampuslaan 170
1382 JS WEESP
Postbus 92
NL-1380 AB Weesp
Tel. +31-2 94-4 62-5 91
Fax +31-2 94-4 62-5 54
E-mail: ans@hirschmann.nl

Spain
Hirschmann Automation and Control S.L.
Calle Trespaderne, 29
Edificio Barajas I, 2a Planta
E-28042 Madrid
Tel. +34-91-7 46 17 30
Fax +34-91-7 46 17 35
E-mail: hes@hirschmann.es

Hungary
Hirschmann Electronics Kft.
Rokolya u. 1-13
H-1131 Budapest
Tel. +36-1-3 49 41 99
Fax +36-1-3 29 84 53
E-mail: info@hirschmann.hu

USA
Hirschmann Electronics Inc.
20440 Century Boulevard, Suite 150
Germantown, MD 20874
Tel. +1-2 40 6 86 23 00
Fax +1-2 40 6 86 35 89
E-mail: ans@hirschmann-usa.com

China
Hirschmann Electronics
Pte Ltd Shanghai Office
Room 828, Summit Center
1088 West Yan An Road
Shanghai 200052
P.R. China
Tel. +86-21-62 07-66 37
Fax +86-21-62 07-68 37
E-mail: info@hirschmann.sh.cn

Singapore
Hirschmann Electronics Pte. Ltd.
2 International Business Park #11-02/03
The Strategy Singapore 609930
Tel. +65-63 16 77 97
Fax +65-63 16 79 77
E-mail: info@hirschmann.com.sg

For all other countries please dial Tel. +49-71 27-14-16 20
Contact address see Hirschmann Germany.

Regarding the details in this catalog:
Alterations may have been made to the product after the editorial deadline for this publication, namely 11/01/2004. The manufacturer reserves the right to alter the construction and form, manufacture different shades and amend the scope of delivery during the delivery period insofar as the alterations and differences are acceptable to the buyer while allowing for the seller's interests. Insofar as the seller or the manufacturer uses signs or numbers to mark the order or the ordered item, no rights may be derived from this alone. The illustrations may also contain accessories and special equipment which are not part of the mass-produced scope of delivery. Color differences are attributable to technical aspects of the printing process. This publication may also contain types and support services that are not made available/rendered in some countries. The information/details in this publication merely contain general descriptions or performance factors which, when applied in an actual situation, do not always correspond with the described form, and may be amended by way of the further development of products. The desired performance factors shall only be deemed binding if these are expressly agreed on conclusion of the contract. This catalog will be used internationally. However, comments on statutory, legal and fiscal provisions and effects only apply to the Federal Republic of Germany at the time of the editorial deadline for this publication. Please consult your pertinent seller about the provisions and effects that apply to your country, and regarding the latest binding version.

DS 280 720-008 · Edition 1 · Printed in Germany

HIRSCHMANN Test & Measurement Automation and Network Solutions

DS 280 720-008-1104