QUALITY CONTROL

SM contact CORPORATION

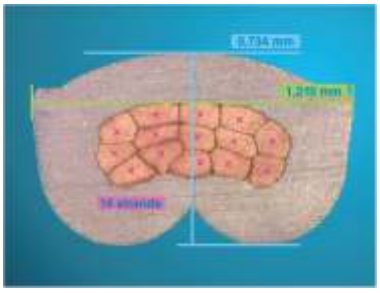
QUALITY CONTROL EQUIPMENT

SKP 4000, SKB 4000, SKA 4000, SK 6000 – mobile & stationary,
semi- and fully automatic micrograph laboratories
EPT 1000 – motorized pull force tester
CrimpiX - splice crimping height measurement tool
Viso – measurement software

QUALITY CONTROL TECHNOLOGY

KEY TO A SUCCESSFUL BUSINESS

Quality control is essential to make the final product's operation safe and efficient.



Having tested selected samples for required parameters manufacturer can be sure that Customer receives products free of defects and that risk of recall is reduced.

Unlike soldering, splice technology ensures reproducible quality of a connection possible to control during production process and after it. Crimp and splice connection cross-sections can be visually inspected for physical features or tested for mechanical parameters such as pull force and crimp height.

Quality control benefits

Comprehensive study

Splice quality control allows estimating all necessary characteristics, e.g., pull force, cross section parameters (tight closure, connection symmetry, appropriate compression, correct components positioning, no burrs), crimp height, etc.

Easy-to-go

Laboratory equipment is adapted to the production conditions: mobile tools – for frequent transfers between different locations; stationary – for other cases. It can also be tailored to Customer's connection according to its parameters and application.

Maintenance support

Tests results could be shared with supplier engineering team to get timely and appropriate maintenance.

Concern for quality

Quality control system encourages employees to be more attentive for quality.

Viso software

Studies improved by using software allow making digital measurements according to international quality standards (VW, USCAR, TYCO, PSA, Renault, TDK etc.) or individual standards and automatic detection of any deviations.

Positive branding

High products quality improves company's position in the market and works as effective advertising. It results in repeat sales and new customers attracted by word of mouth.

Money saving

Timely quality monitoring reduces production costs by improving its processes and it also helps to prevent serial rejects and as a consequence financial loss.

QUALITY CONTROL EQUIPMENT

SM Contact designs and produces quality control equipment for splice/crimp connections: micrograph laboratories, pull force and splice/crimp height devices, as well as specialized measurement software.

In many industries, especially in the automotive, quality standards have been developed and are widely applied: VW, USCAR, TYCO, PSA, Renault, TDK and others. Compliance with their requirements is the key to a successful business, as well as to the safe and efficient operation of the final product. That is why the availability of reliable laboratory equipment and the possibility of timely quality monitoring are so important in production.

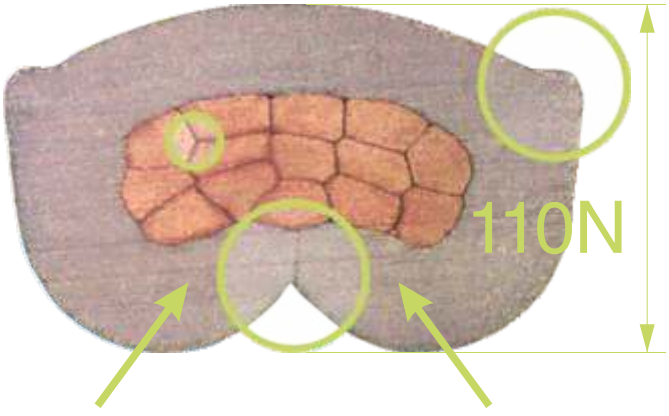
Inline tools*

Video monitor	Zoom view of a work area to position components precisely
Camera	Component position, color and stripping length
Laser	Component presence
Crimp Force Monitor (CFM)	Deviation from quality tolerances: missing wire strands, inaccurate components positioning or crimp height, insufficient insulation strip length, insulation in the splice area, etc.

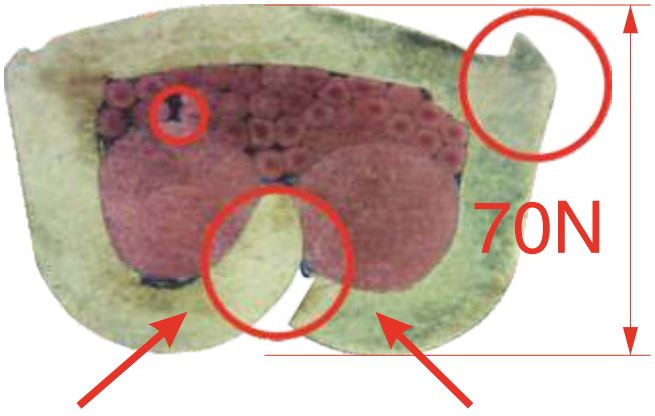
** Learn more in Splice crimping technology brochure or at www.smcontact.eu*

Standalone equipment

Micrograph laboratories SKB 4000, SKP 4000, SKA 4000, SK 6000	Crossview evaluation: crimp height and width, burr height and width, support angle, strands quantity, total area, splice thickness, etc.
EPT 1000	Pull force
CrimpiX	Crimp height



- TIGHT CLOSURE
- SYMMETRICAL CONNECTION
- CORRECT POSITIONING
- GOOD COMPRESSION
- PULL FORCE OK
- SMOOTH SURFACE
- CRIMP HEIGHT OK



- INCOMPLETE CLOSURE
- ASYMMETRICAL CONNECTION
- INCORRECT POSITIONING
- LOW COMPRESSION
- PULL FORCE NG
- BURRS
- CRIMP HEIGHT NG

MICROGRAPH LABORATORIES

Micrograph laboratory enables quick, user-friendly, reliable, and cost-effective quality assessment of a crimp or splice connection.

Work steps of a device are the following: first, a sample is cut, its cross-section surface is grinded and etched to make necessary details visible; finally, it is located under the optics to get macro image and to measure its parameters.

The accuracy of the quality assessment is assured by the patented SM Contact sample holder and Viso 6.00 measurement software.

Micrograph laboratories advantages

Innovative sample holder

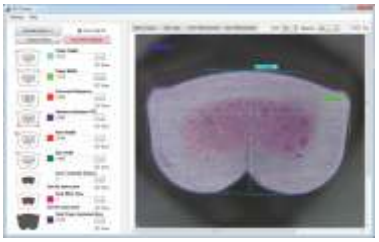
Brand new holder by SM Contact has interchangeable jaws adapted to corresponding connection.

Their shape follows the shape of a sample, while special stop block fixes the sample at the specified horizontal axial position. As a result, perpendicular sample position and proper cut guarantee valid measurement results.

Supply kit

All necessary spare parts and consumables are included into supply kit: abrasive papers, cutting disks, etching pen inserts, electrolyte, crossline reticle, etc. They are also available on stock on tooling.smcontact.eu.

Viso 6.00 measurement software



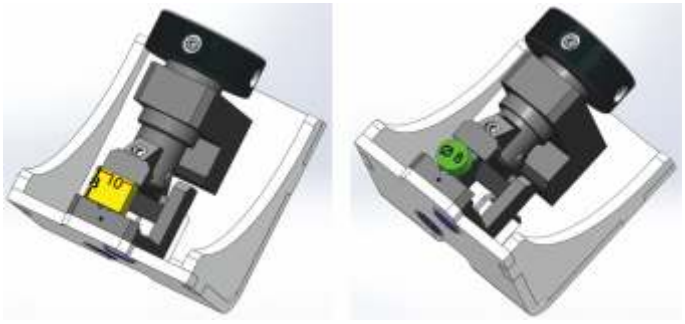
Captured image is measured with a help of special software – Viso 6.00. Operator chooses the parameters to measure, its reference values and performs the measurement on a cross-section image. Results are evaluated with appropriate presets or compared to the Control list.

It also provides dimensions detection and data export to PDF format.

Free measurement of random objects is possible (electrical components, equipment tooling, etc.).

All measurement results could be automatically uploaded to Customer's private area in SM Cloud data storage. If they diverge from the Control list, SM Contact engineers get a signal and provide Customer with the assistance.

Component dimensions



SM Contact micrograph laboratories can cut and grind round connections (wires) up to 8 mm diameter (50 mm^2) and rectangular connections (terminal) up to 8 x 10 mm.

Mobile micrograph laboratories SKB 4000 & SKP 4000

Technical characteristics

Power supply	**230 V / 50 Hz 110 V / 50 Hz (US) 100 V / 60(50) Hz (Japan)**
Power	**0.8 kW**
Cutting & grinding module rotation speed	**5 000 – 20 000 rpm, separately regulated**
Etching agent	**CE 1**
Etching voltage	**12 V**
Etching current	**1.5 A (optionally adjustable)**
Protective devices	**Plexiglass cover**
Lighting work area	**LED**
Cycle time	**3 - 5 min**
Weight	**26 kg**
Dimensions SKP 4000 (WxDxH)	**465 x 408 x 437 mm**
Dimensions SKB 4000 (WxDxH)	**575 x 517 x 484 mm**
CE conformity	✓

Automated micrograph laboratory SKA 4000

Technical characteristics

Power supply	**230 V / 50 Hz 110 V / 50 Hz (US) 100 V / 60(50) Hz (Japan)**
Power	**0.35 kW**
Cutting & grinding module rotation speed	**2 000 – 9 000 rpm, separately regulated**
Etching agent	**CE 1**
Etching voltage	**12 V**
Etching current	**1.5 A (optionally adjustable)**
Protective devices	**Plexiglass cover**
Lighting work area	**LED**
Cycle time	**3 - 5 min**
Weight	**26 kg**
Dimensions	**575 x 517 x 484 mm**
CE conformity	✓

Stationary micrograph laboratory SK 6000

Technical characteristics

Power supply	**230 V / 50 Hz**
Power	**1.5 kW**
Protection type	**IP 20**
Cycle time	**3 - 5 min**
CE conformity	✓

CUTTING MODULE SKT 6000

Cutting speed	**600 - 3000 rpm**
Grinding speed	**300 - 1500 rpm**
Dimensions (WxDxH)	**230 x 545 x 510 mm**
Weight	**25.1 kg**

ETCHING MODULE SKE 3000

Min. etching strength	**0.35 A**
Max. etching strength	**3.15 A**
Electrolyte	**AE 7 + CE 1**
Dimensions (WxDxH)	**250 x 210 x 125 mm**
Weight	**5.6 kg**

MICROSCOPE LMX 2000

Zoom ratio	**1 : 6.5 (0.7x - 4.5x)**		
Total magnification	**10x - 68x**	**15x - 101x**	**20x - 135x**
Field of view	**up to 35 mm**	**up to 23.5 mm**	**up to 17.6 mm**
USB camera	**IDS UI-3580LE-C-HQ**		
Dimension (WxDxH)	**230 x 320 x 475 mm**		
Weight	**10 kg**		

EPT 1000

MOTORIZED PULL-FORCE TESTER FOR CRIMP & SPLICE CONNECTIONS

Technical characteristics

Measurement range	**0-1000 N (can be changed on request)**
Accuracy	**0.05 - 0.10 of max. measurement range**
Measurement units	**N, kgf, lbf**
Variable pull speeds	**25, 50 and 100 mm/min**
Operating temperature	**0 – 40° C**
Max. displacement	**157 mm**
Display	**5” colour touchscreen**
File synchronization via USB or Wi-Fi	
Ingress protection	**IP 20**
Power supply	**220 V/AC**
Weight	**11.5 kg**
Dimensions (WxDxH)	**450 x 185 x 170 mm**
Measurement modes	**Break, Hold, Hold & Break**
CE & EMC machinery conformity	✓

Ergonomic clamp arrangement

EPT 1000 is a motorized pull-force tester for measurement of the pull forces of crimp connections and peeling forces in welding joints.

Adaptability and ease of use are provided by rotating interchangeable sample holder, long displacement path and intuitive graphical interface. A speed-controlled motor guarantees constant pull speed and accurate results.

The testing process is visualized on the graphical display in real time, and the results are automatically saved to the archive and can be transferred to PC by USB or Wi-Fi.

Operation principals

Measurement

Measurement is done automatically in the selected mode. It is also possible to move the carriage manually if necessary. Results are visualized in real time on force-time diagram. Measurement modes: Break (destructive), Hold, Hold & Break (destructive).

Measurement archive

All connection parameters and measurement results are saved even if the test is aborted: selected mode, force-time curve graphics, crimp width and height, maximum force, and hold duration of maximum pull force (in Hold and Hold & Break modes).

CRIMPIX

SPLICE CRIMPING HEIGHT MEASUREMENT DEVICE

Technical characteristics

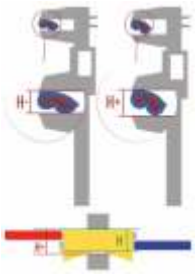
Measuring range	**0.12 mm**
Accuracy	**0.005 mm (0.001 mm upon demand)**
Power supply	**5 W max**
Data transmission	**Bluetooth, SD card**
Screen size	**320 x 240 px/3.5"**
Image resolution	**640 x 480 px**
Weight	**2.5 kg**
Dimensions (W x D x H)	**250 x 275 x 275 mm**

CrimpiX achieves high measurement accuracy thanks to quick-change clincher which follows the shape of a sample.

Operator lifts spring-loaded pin by pushing the lever. Then pin goes down to the sample and measurement is performed. Enlarged view of work area is displayed on the screen for visual control of measurement. Measurement results are saved on SD card or can be transferred to PC by Bluetooth.

Customized tooling

CrimpiX advantages

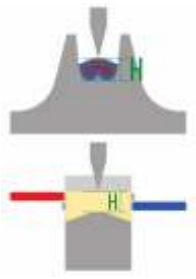


CrimpiX vs caliper

Jaws of a caliper don't fit the shape of a crimp. As a result, obtained height values will be wrong. Another reason of improper measurement results is overcompression of the sample.

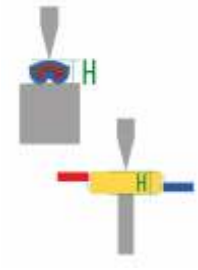
CrimpiX vs micrometer

Due to the shapes mismatch within micrometer measurement crimp may be positioned between the anvil and the pin randomly. Thus, measurement accuracy depends on operator skills.



CrimpiX for splice connection

CrimpiX guarantees proper positioning and correct measurement values thanks to a customized design of a clincher. Overcompression is impossible due to spring-loaded pin – it brings pressure sufficient for measurement, but without a risk of sample deformation.



CrimpiX for standard crimp

For standard crimp height measurement CrimpiX is used with flat plateau clincher. Accuracy is provided by built-in camera: it fixes sample positioning, simplifying detection of the operator's error.

VISO

PC MEASUREMENT SOFTWARE FOR SPLICE MICRO-SECTION ANALYSIS

Viso 6.00 is PC measurement software that helps to evaluate splice quality by means of micro-section analysis and if necessary to maintain timely direct interaction with SM Contact engineering staff. All measurements are taken according to predetermined industry (VW, PSA, etc.) or customized reference values.

This intuitive software guides the operator through the following steps:

- Operator prepares the sample with a help of laboratory equipment, captures its image and transfers it to Viso.
- Within the operating panel of a software, operator chooses the mode: free measurement or Control list correlation.
- Selecting the free mode, operator chooses the parametres to measure. In the Control list mode the parametres and their reference values are predetermined.
- Operator measures the parameters by setting the start and end points of each measurement in the working area.
- Viso 6.00 generates a report (free measurement) or a comparison report (Control list mode).

VISO advantages

Control list with reference values

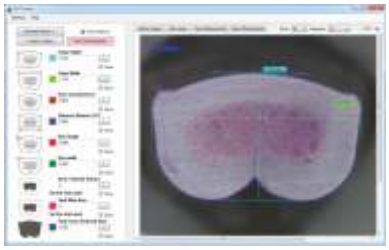
Optimal dimensions and their tolerances found in Control lists are determined by SM Contact for the corresponding connection.

If connected to the Internet, Viso 6.00 automatically downloads all new Control lists corresponding to the certain Customer. Relevant documents are identified by the unique license number which is given to each user.

Conformity to individual and industrial standards

Viso 6.00 has 5 pre-stored sets of parameters (presets) which are to be examined during free measurement. They match the most common industry standards (VW 60330, USCAR 21, TYCO114-18022-10, PSA 9634115099, Renault 36-05-019).

Simple-to-use program with guided procedure



Automatic measurement of splice dimensions and cross section area

SM Contact is developing an automatic recognition of the following 5 parameters: crimp height, crimp width, support angle, inner terminal surface, final cross-sectional area.

COMING SOON!

CONTACTS

SM CONTACT FRANCE

Headquarters est. 1986

+33 (0)1 64 63 66 66
Fax +33 (0)1 64 63 67 22
smcontact@smcontact.eu

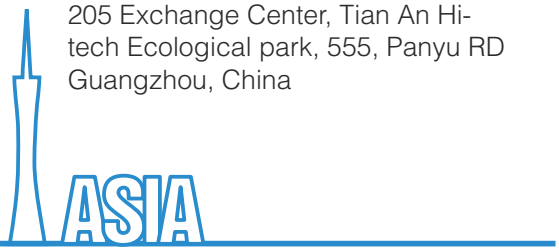
20-22 voie Gallo Romaine
77860 Quincy-Voisins, France

SM CONTACT ASIA

Asian subsidiary est. 2008

+86 (0)20 2288 3182
info@smcontact.cn

205 Exchange Center, Tian An Hi-tech Ecological park, 555, Panyu RD
Guangzhou, China



SM CONTACT ENGINEERING

Russian & CIS subsidiary est. 2011

+7 812 980 97 93
info@smcontact.ru

21 lit. A Basseynaya Street
196191 Saint Petersburg, Russia

SM CONTACT GMBH

German subsidiary est. 2015

+49 89 693 30 380
sales_de@smcontact.eu

Haidgraben 2
D-85521 Ottobrunn, Germany

SM CONTACT SPAIN

Spanish subsidiary est. 2017

+34 645 22 62 37
smcontact@smcontact.eu

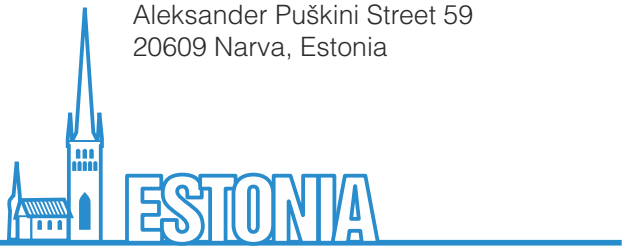
Coworking Nogués, studio 4, Passatge de Nogués 10, 08025 Barcelona, Spain

SM CONTACT TECH

Estonian subsidiary est. 2018

+372 682 55 01
info@smcontact.ee

Aleksander Puškini Street 59
20609 Narva, Estonia



Download this brochure

Know more about quality control

SMCONTACT.EU