



ZETA

640/650

harness manufacturing



komax

ZETA 640 650

The industry places the highest demands on the flexibility of automated wire assembly, requiring that it be possible to process many different cables and terminals without changeovers, just-in-time, for batches of any size. Komax developed the highly flexible Zeta 640 and Zeta 650 for this reason. They allow automated processes and batch or sequential production without the need for changeovers, cutting the manufacturing time by up to 50 percent. EtherCAT improves the overall system performance and significantly increases output. With continuous data flow, the new Zeta machines are ready for their efficient future.

Highly flexible automation

- Production time reduced by up to 50%
- Continuous data flow from ECAD or DLW to the machine
- Economic just-in-time-production from a batch of 1 and up
- Wire deposit in the correct order for the follow-up process

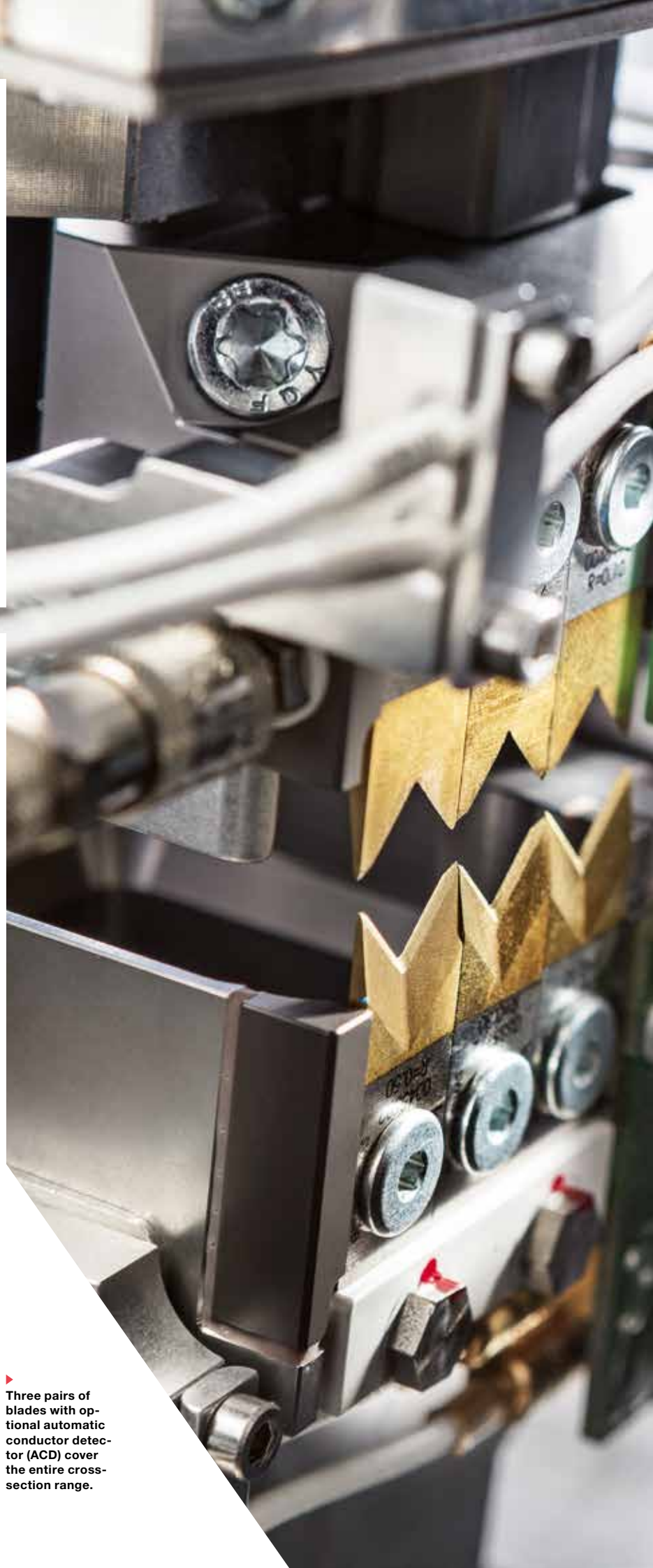
Maximum productivity without changeovers

- Up to 13 process modules
- Automatic wire selector with up to 36 different wires
- Automated marking with inkjet
- Large cross-section range: 0.22 – 6 mm²

Reliable processing with high quality

- Fully automatic production guarantees continuously high quality
- Optional quality test modules

▶ Three pairs of blades with optional automatic conductor detector (ACD) cover the entire cross-section range.





MAXIMUM PRODUCTIVITY
WITHOUT CHANGEOVERS FOR BATCHES OF ANY SIZE

HIGHLY FLEXIBLE AUTOMATION FOR INDUSTRIAL WIRE PROCESSING

Greater flexibility for batches and sequences

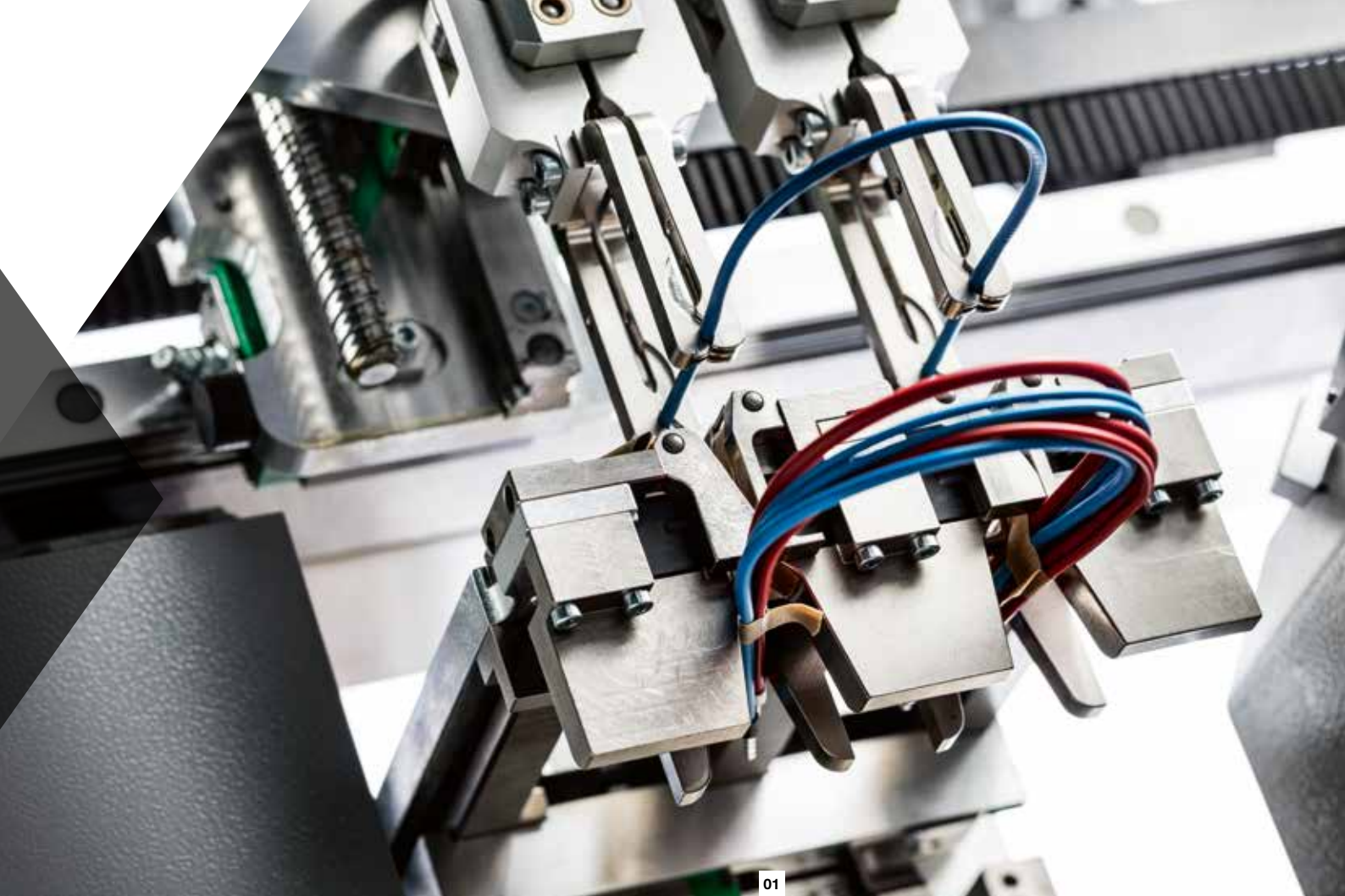
The fully automatic wire processing machines of the latest generation provide maximum flexibility for specific manufacturing across a wide range of applications. The Zeta 640 is equipped with five process modules in the standard configuration, opening up many new possibilities for small batches or sequences. The Zeta 650 is designed for eight modules, which reduces changeovers and interruptions to a minimum. Both machines can be extended by five additional modules along the transfer section as necessary.

Time savings of up to 50 percent

The new generation Zeta reduces manual processes to a minimum. It automates all processes such as cutting to length, stripping, labeling, sleeve insertion, etc., as needed and simultaneously on both wire ends. Three pairs of blades cover the entire cross-section range, enabling production without the need for changeovers. The high-quality, durable components permit high process speeds, which in turn shortens lead times.







01

01
The bundler sorts and binds the batches in a single process step.

02

02
Up to 36 different cables from the entire cross section range are available in the wire selector.



Wide variety with up to 36 wire types

Versatile control cabinet construction requires many different materials such as wire types, terminals or ferrules. These are available on the Zeta 640/650 without the need for changeovers. The automatic wire changer provides up to 36 different wires from the entire cross-section range. Up to two automated inkjet printers mark the wires in black and one additional color within the same sequence.

Correct order for further processing

The new Zeta machines process the required wires from A to Z in a single process step. Tied up as needed and sorted in the correct order, the bundler wire deposit provides the wires separately for further processing according to sequence or batches. This simplifies and significantly accelerates installation in the control cabinet and logistics. The wires can be removed mid-production. The binding method is freely defined for each wire, independent of the mode – batch or sequence production.

Continuous data flow to the machine

Data export from any system (ERP, ECAD, DLW, Excel cutting list, etc.) can be easily converted into readable data (TopConvert). This production data is then sent directly to the machine via the WPCS Komax interface. Manual programming of items in the machine is eliminated, making entry error-free and highly efficient – even with a batch size of one.

Continuous high quality thanks to automation

The continuous data transfer minimizes errors as manual entry on the machine is not necessary. The fully automatic production guarantees reproducible, continuous quality. Crimp height and pull-out force measurement is integrated and defective wires are automatically separated. Further quality monitoring like the automatic conductor detector (ACD), are available as an option.

Versatile configurations and options

An extensive range of process modules and options enables flexible configuration of the Zeta 640/650. The large number of terminal parts in the industrial sector can be processed with the C1370 crimp module. The CM 1/5 GS ferrule module is able to accommodate five taped AEH rolls simultaneously. A double gripper module enables the production of horizontal and vertical double crimps. Modules for untwisting and separating batches complete the processing possibilities.

03

Parallel processing set with 3 shuttles for top performance.

03





Innovation push for control cabinet construction: CM 1/5 GS ferrule module

The module accommodates five taped AEH rolls at the same time. The available positions can be assigned as desired and sequentially processed. This can be done over the full cross section range of 0.5 mm² to 2.5 mm² and in the lengths 8 mm and 10 mm. Consequently, five different types of ferrules can be processed very flexibly and without changeovers. The module is uniquely compact and readily accessible. No tools are needed to insert the AEH rolls and no tool change is required.

Technical data for CM 1/5 GS

Taped Z+F ferrules	0.5 – 2.5 mm ²
Sleeve length	8 mm / 10 mm
Crimp shape	Quadro
Dimensions (W × D × H)	260 × 540 × 490 mm
Weight	26.5 kg



The simple alternative

In order for the control cabinet construction process to be automated, the first step is to collect the production data, including the cable length. The DLW (Digital Lean Wiring) software developed by Komax offers the ideal solution for this with its clear focus on simplicity and flexibility.

Virtual wiring

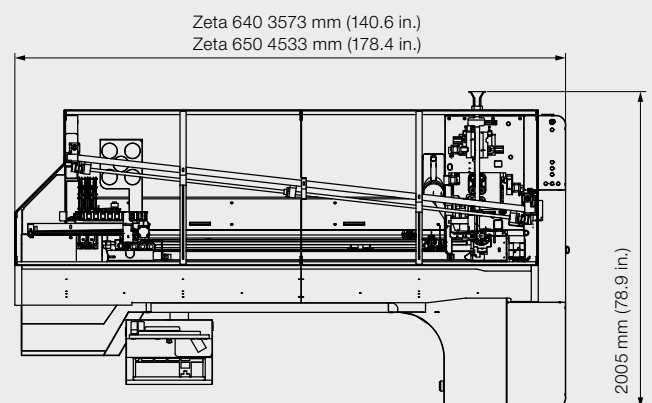
In the DLW software, the technician uses an image or a 2D drawing to wire the cables virtually on the screen. This is a highly efficient method of determining the cable length per connection. After that, the production data is converted and uploaded to the wire processing machine, which produces the ready-to install cables.

Technical data for the Zeta 640/650

Length range with two-sided processing	240 mm up to 3 m (9.44 in. – 9.8 ft.) standard 85 mm up to 240 mm (3.34 – 4.33 in.) application 3 m up to 5 m (9.8 – 16.4 ft.)* 5 m up to 10 m (16.4 – 32.8 ft.)*
Length range with one-sided processing	85 mm up to 3 m (3.34 in. – 9.8 ft.) standard 3 m up to 5 m (9.8 – 16.4 ft.)* 5 m up to 10 m (16.4 – 32.8 ft.)*
Stripping lengths	up to 25 mm (0.98 in.)
Wire cross sections**	0.22 – 6mm ² (AWG24 – AWG10)
Useable transfer length Zeta 640	1880 mm (74 in.), up to 5 crimp modules C1370
Useable transfer length Zeta 650	2880 mm (113.4 in.) up to 8 crimp modules C1370
Useable transfer length extension	1720 mm (67.7 in.), up to 5 additional crimp modules C1370
Wire feed speed	Maximum of 10 m/s (33 ft/s)
Wire selector	Maximum of 36 cables (in increments of six cables)
Noise level	< 75 dB (without crimp modules)
Electrical connection	3 × 208 – 480 V 50/60 Hz; 10 kVA (basic machine)
Compressed-air connection	5 – 6 bar (73 – 87 psi)
Air consumption	12 m ³ /h, (424 ft ³ /h) (without modules)
Weight	Zeta 640 approx. 1.9 t (4189 lbs) Zeta 650 approx. 2.6 t (5732 lbs)

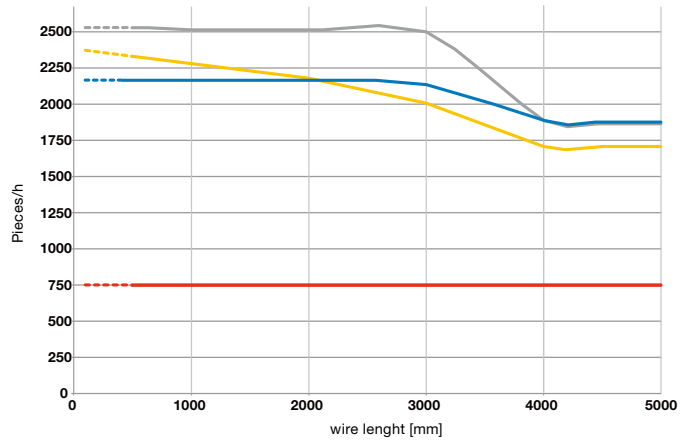
* Wire tests at Komax Switzerland necessary

** Certain extremely hard, tough wires may not be able to be processed even if they are within the indicated cross section range. In case of doubt, we are happy to produce samples of your wires.







◀ **The automatic marking system for two different inkjets marks the cables in an optimum manner.**

Piece output Zeta 640

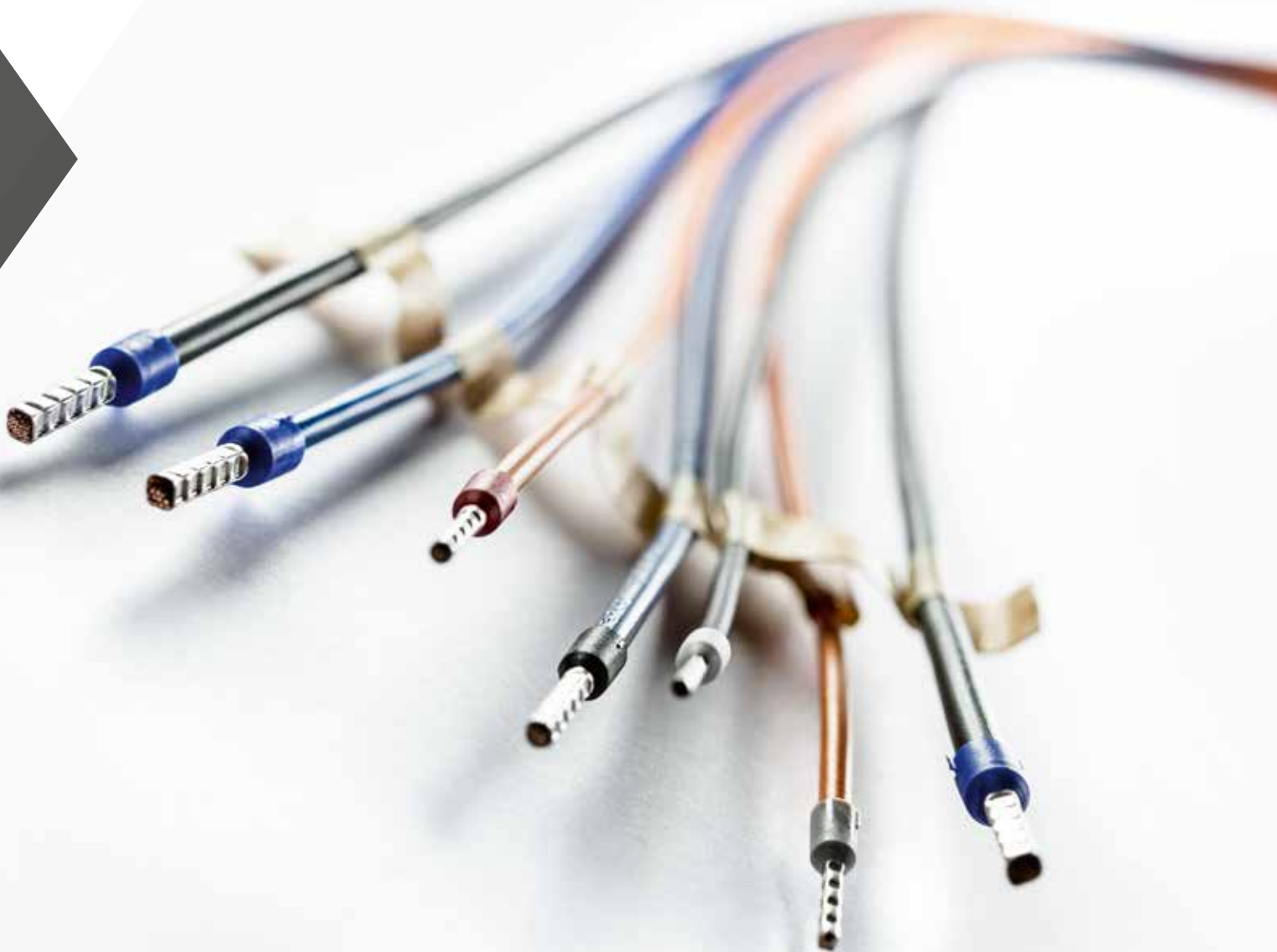


Wire speed	10 m/s
Crimp module	C1370
Seal module	S1441
AEH module	CM 1/5 GS
Crimp force monitoring	active

The effective output may vary with application and machine configuration.

-  Crimp / crimp
-  Crimp / crimp with wire selection movements (12 positions)
-  Crimp-seal / crimp
-  Ferrules / ferrules with wire selection movements (12 positions)

The cables are bound in the right order, which simplifies wiring in the control cabinet.




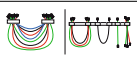



















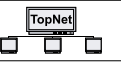











Options and accessories

Marking systems	Komax IMS inkjet marking systems • Automatic inkjet head changer
Wire feed	Expandable wire selector
Processing modules	C1370 crimp module • S1441 seal module • X1582 twisting module • X1585 Fluxing/tinning module • mci 792 sleeve Module • Double gripper module • AEH Ferrule module • MIL crimp module • Welding module • Ultrasonic compaction
Quality control	Integrated crimp height measurement • Integrated pull-out force measurement • ACD automatic conductor detector • Material change detection • Material verification • Splice detection • Q1240 strip monitoring • Terminal end detection
Accessories	Uninterruptible power supply • Signal light
Software	WPCS networking interface • TopConvert data conversion • Komax MES • DLW

Processing examples

Cutting to length		Wire feed	
Cutting pulled strands		Wire deposit system/binding	
Full stripping		Seal monitoring	
Half stripping		Crimp force analyzer	
Double sheath cable		Integrated crimp height measurement	
Crimping		Integrated pull-out force measurement	
Double crimping		Wire length correction	
Seal insertion		Splice detection	
Twisting / tinning		Good/bad separation / Bad part cutting	
Sleeve insertion		Sequence processing	
Split cycle for closed barrels		Batch separation	
Ferrule crimping		Networking (Manufacturing execution system, WPCS, MIKO)	
MIL crimping		Material change detection / Material verification	
Wire end solidifying, splicing, welding		Wire changer	
Inkjet marking		Programmable crimp height	
Tube marking			

Komax – leading the field now and in the future

As a pioneer and market leader in the field of automated wire processing, Komax provides its customers with innovative and sustainable solutions for any situation that calls for precise contact connections. Komax manufactures series and customer-specific machinery for various industries, catering to every degree of automation and customization. Its range of quality tools, test systems, and intelligent networking solutions complete the portfolio, and ensure safe and efficient production. Komax is a globally active Swiss company with development and production facilities on several continents. Komax uses its extensive distribution and service network, which includes local companies and their employees, to support customers across the world on site, thus ensuring the availability and value of their investments after equipment commissioning through standardized service processes.



Market segments

Komax offers outstanding competence and solutions for various areas of application and draws on them to generate the desired value-added for the entire process and optimize economic efficiency in line with customer requirements. The main markets of Komax are as follows: automotive, aerospace, industrial and telecom & datacom. With this breadth of experience, customers obtain expert knowledge for process optimization and access to the latest technologies.

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