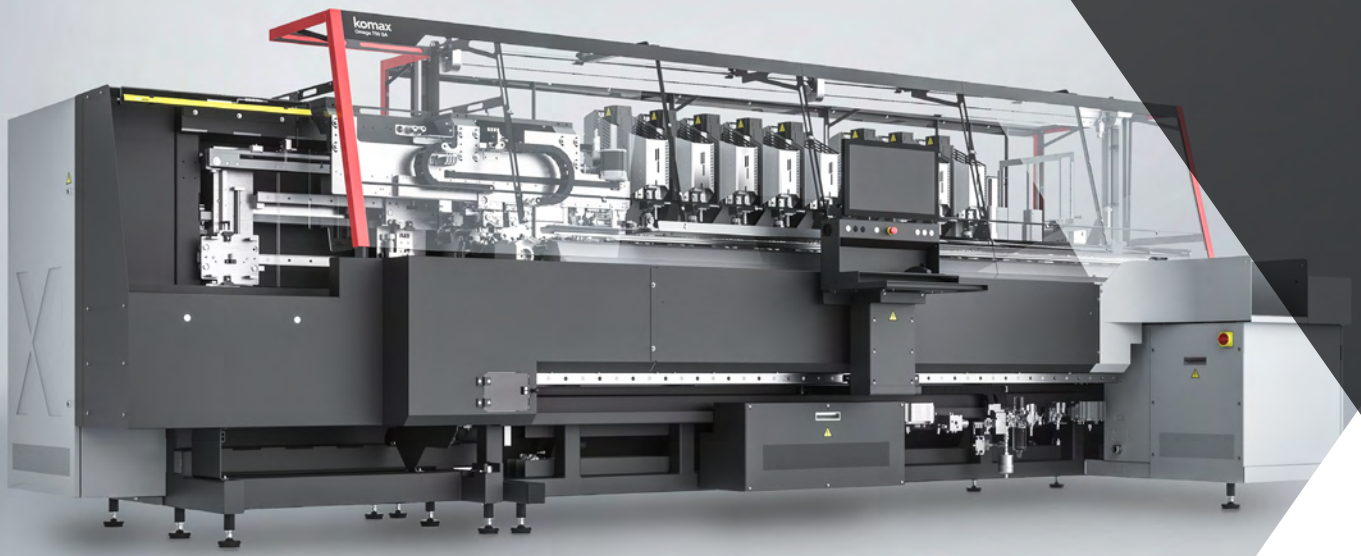
OMEGA 750 SA

harness manufacturing



komax

EN

OMEGA
750 SA

The Omega 740/750 makes it possible to produce wire harnesses of varying degrees of complexity and for terminal housings to be loaded on one side or both sides. Ten modules can be selected, as required. The Omega 750 SA is the economical answer to ongoing miniaturization and increasingly smaller batches. These machines make it possible to manufacture a range of different wire harnesses and reduce production time significantly.

The two parallel insertion heads take the speed of block loading to the next level. This improves performance and thus contributes to a faster return on investment. Furthermore, it enhances the application range by allowing the both-sided insertion of much shorter wires. The localized Omega 750 SA is perfectly tailored to the needs of the Asian market.

High efficiency – less storage requirement
- Shortest lead times – significantly reduced production time
- Minimized stock level of semi-finished products
- Optimized production process

High-quality wire harnesses thanks to automated processes
- Continuous quality, independent of the operator
- Reliable loading of miniaturized components
- Monitoring of the insertion process using force sensors
- Optional ACD incision monitoring

High flexibility
- Single-sided or double-sided loading with terminals of varying levels of complexity
- Omega 750 SA: standard machine with loading on pallet carousel, quick and individual changeover

Guaranteed quality of the end products
The quality of the end product is continually guaranteed, independent of the machine operator. A high-precision force sensor monitors the entire insertion process and correct latching of the terminal parts in the housing. The individual default values are synchronized. As a result, the insertion of small components, which can hardly be inserted by hand, is carried out in an absolutely reliable manner – supported by a precise and fast spindel and linear drives. With direct production of wire harnesses and by removing interim storage, the danger of terminals being damaged through the storage process or from mistakes and incorrect loading is also eliminated. The optional ACD incision monitoring reduces operator influence and ensures quality monitoring even for the smallest wire diameters. The ACD detects the slightest contact between the blades and conductor strands during stripping.

Continuous data flow and traceability
Production data can be sent directly to the machine via a network. The quality data from the production process is saved for each wire harness and traceability is guaranteed at all times.

Comprehensive advice for functional implementation
Komax brings the corresponding expert knowledge for the automation of wire harness production with the Omega. Specialists evaluate the design of the wire harnesses and components with regard to automated processing. They present design proposals and assist companies in the optimal integration into their production process.

Large pallet with mounting fixtures for different connector housings and produced harness.

QUANTUM LEAP
IN FULLY AUTOMATIC WIRE HARNESS PRODUCTION

Wide variety with up to 36 wire types

The different wire types for versatile wire harness production are available on the Omega machines without the need for changeovers. The automatic wire changer provides up to 36 different wires from the entire cross-section range. This enables the range of wires required in the construction of control cabinets, for example, to be covered perfectly.

High-resolution labeling in black or color

Two automated inkjet printers mark the wires in black and one additional color within the same sequence. After that, the wires are picked up by a shuttle system and guided in loops to the processing machines.

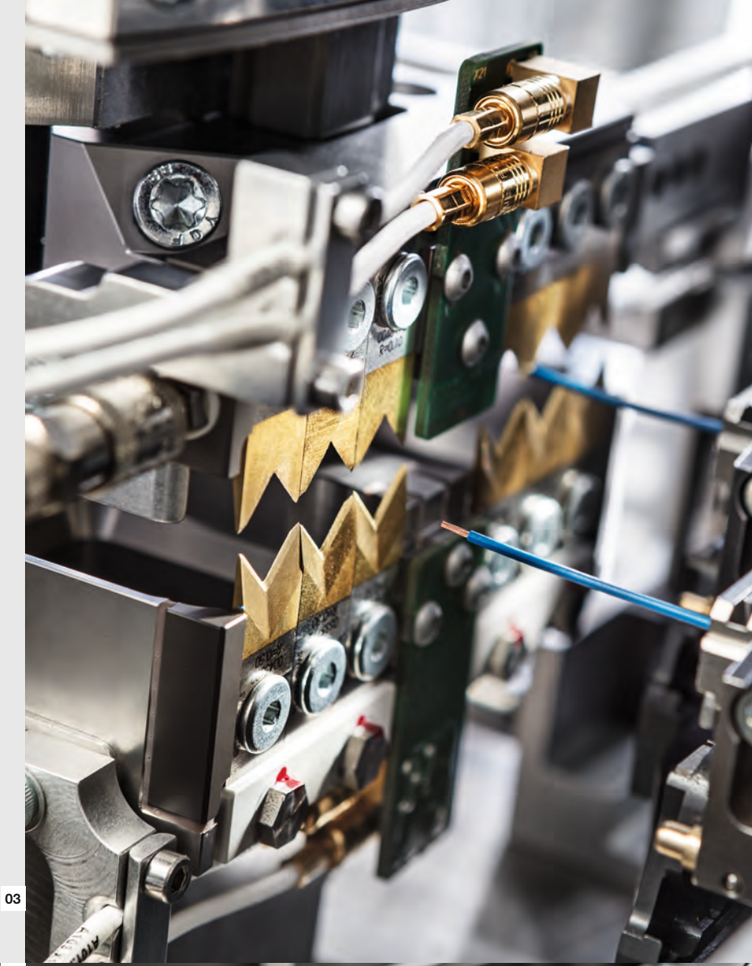
ACD incision monitoring

The ACD detects the slightest contact between the blades and conductor strands during stripping. It is based on a capacitive measuring principle, is integrated in the blade holder and can be operated using any standard stripping blade. The sensitivity of the monitoring can be configured using setting parameters. Defective wire ends are detected automatically and rejected.

Untwisting of the wires

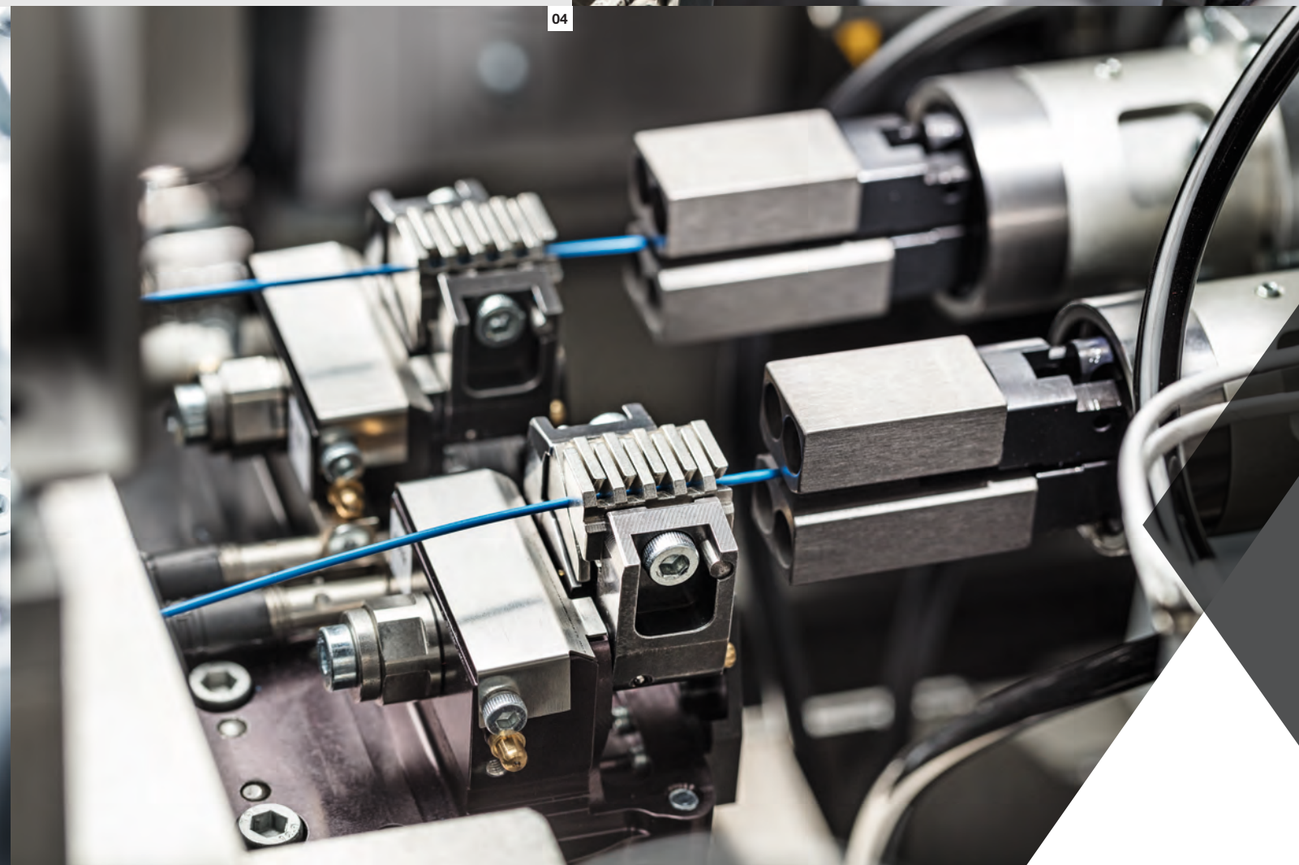
Unwound wires are always twisted. A special untwisting module removes this twist. The wires are then 100% straight, which is crucial for the subsequent fully automatic insertion.

01



03

02



04

01
The wire changer holds up to 36 different wires from the entire cross-section range ready for processing.
02
The automatic marking system with two different inkjets provides optimal labeling of the wires.

03
Three pairs of blades with optional incision monitoring (ACD) cover the entire cross-section range of 0.13 to 1.5 mm² (AWG 26 – 16)
04
Untwisting modules neutralize twisted wires.

Shorter lead times – less storage requirement – optimized process

Decisive savings in time and logistics and a corresponding growth in productivity can be achieved thanks to the absence of manual steps, interim storage and transport. Cutting, crimping and loading of the terminals all take place on the same machine and the time-consuming storage of individual wires is eliminated. Stock levels of semi-finished products can also be reduced, resulting in faster responses to design changes and reducing the amount of material to be liquidated. Furthermore, it reduces the amount of work in progress.

Versatile seal insertion

The latest generation Komax S1438 seal module creates the ideal conditions for the efficient insertion of conventional seals and mini-seals.

Crimp modules capable of sequencing

The Omega machines feature several C1368 crimp modules with crimp force of up to 22 kN. Sequences and functions like the stroke and split cycle can be programmed easily for these modules. The integrated Crimp Force Analyzer (CFA+) guarantees the highest quality with minimal rejects.

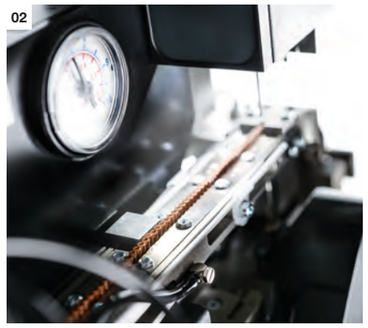
Optical control of the strip, seal position and crimp

The Q1250 scalable controls the stripping process during operation to ensure correct strip lengths and to check for pulled or splayed strands. The optional seal monitoring controls the positioning and can detect twisted and pierced seals. A second Q1250 scalable after the crimp module can be used to check for crimped and protruding strands. In addition, the conductor in the crimp and conductor protrusion are reliably monitored.

Wire storage

The wire storage system is essential for the efficient production of complex double-sided wire harnesses. It enables the immediate post-production of defective wires and thereby ensures the full loading of complete wire harnesses and their easy removal from the machine.

01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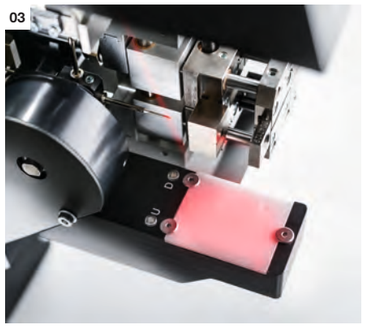
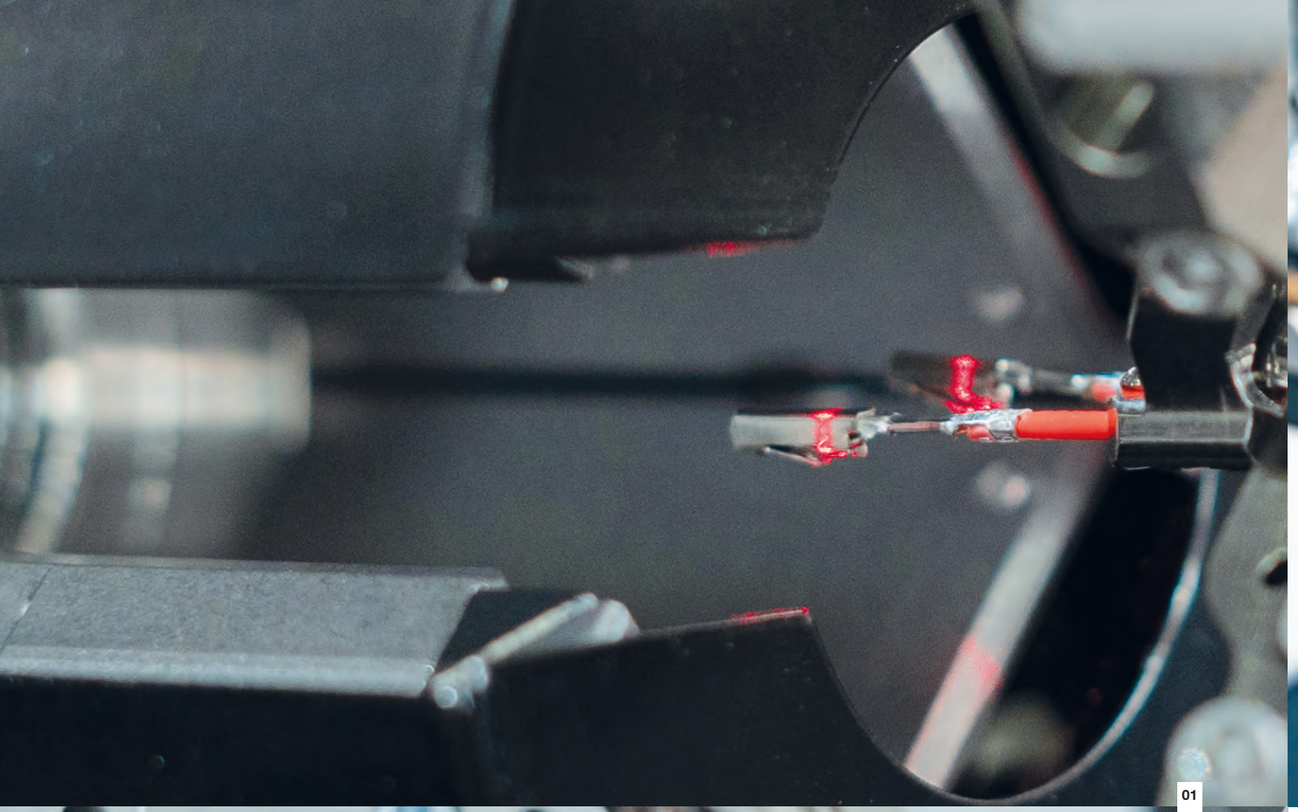
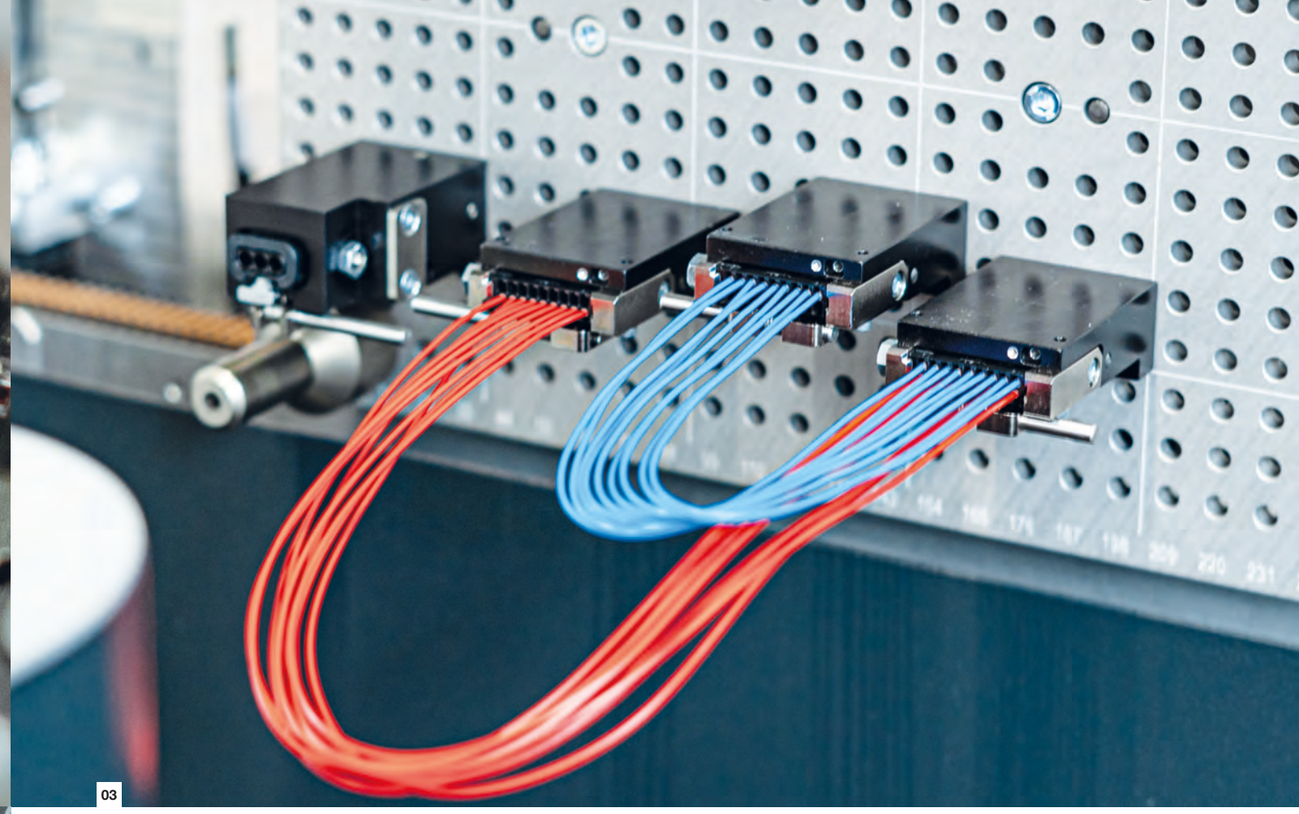

03

01
With the help of the wire storage system, double-sided wire harnesses with a high degree of complexity can easily be produced.
02
S1438 seal module for all conventional seals.
03
The Q1250 scalable strip and seal monitoring visually captures every individual wire end during production.



01
02



03

High flexibility and simple operation

The new fully automatic blockloaders with enlarged mounting pallets ensure even greater flexibility for specific manufacturing across a wide range of applications. They process wire harnesses in a single process step from A to Z and open up new possibilities for the required wire harnesses. Already created wire harnesses can be loaded again in seconds and re-produced. Thanks to individual configurations – the Omega 750 SA with ten process modules – changeovers and interruptions are reduced to a minimum.

Optical measurement system for terminals

To ensure the accurate placing of the terminals in the housing, the particular terminal must first be identified and measured. This check is also carried out using an optical measurement system. This image enables the insertion head to be positioned precisely.

Pallet carousel for highly flexible block loading

The Omega 750 SA feature two large pallets to accommodate many different terminal housings. This makes it possible to load more types of housing on a single pallet and manufacture different wire harness configurations simultaneously, thus significantly increasing flexibility. The pallets are loaded and unloaded as the machine is running, while another wire harness is produced on the second pallet with the newly developed, rapid hybrid gripper.

Hybrid insertion gripper

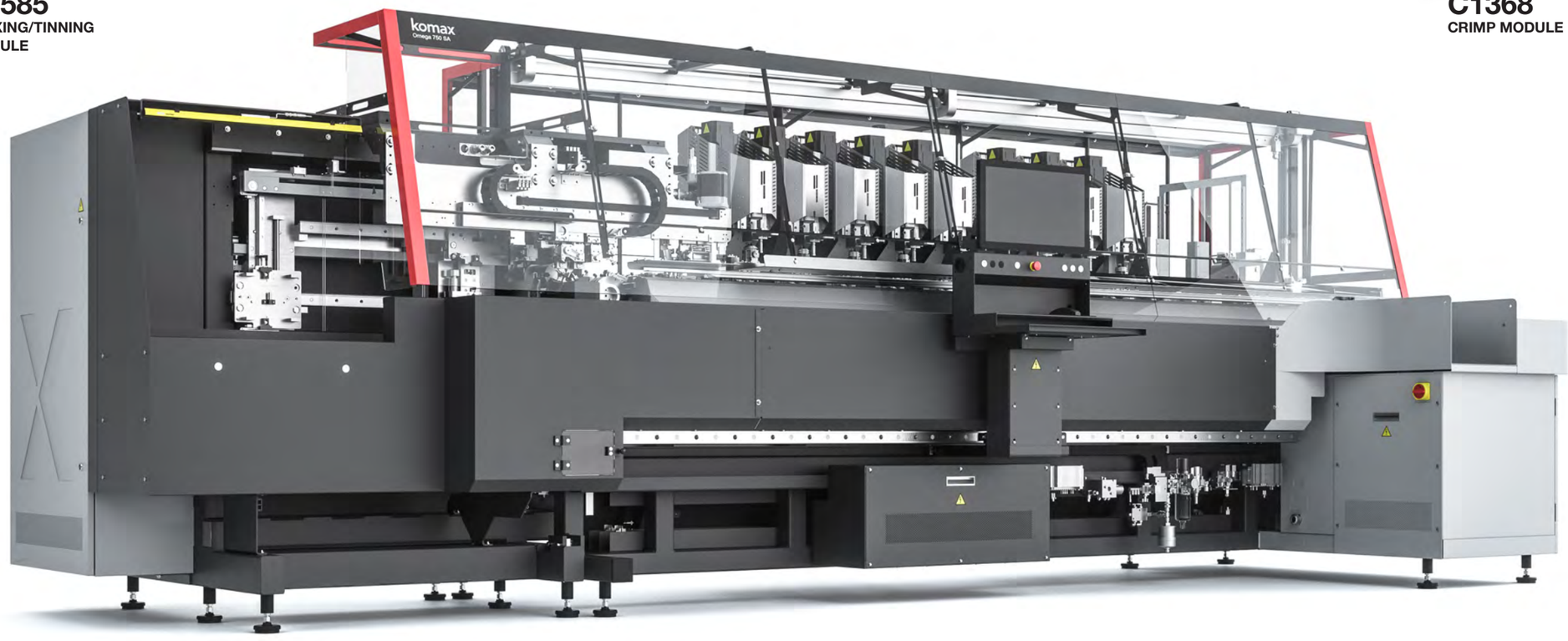
The insertion gripper picks up the terminals and inserts them into the wire housing. The loading force is monitored throughout the entire process and checks made to ensure that the terminal locking is correct. A pull-off test checks that the terminal is correctly locked in place.

01
The optical terminal measurement system enables the loading of a wide range of terminals.
02
The insertion gripper monitors the loading force during the entire process and checks that the terminal locking is correct.
03
Large pallet with mounting fixtures for different connector housings

INCREASED FLEXIBILITY
BY 10 PROCESS MODULES

X1582
TWISTING MODULE

X1585
FLUXING/TINNING MODULE



C1368
CRIMP MODULE

S1438
SEAL MODULE

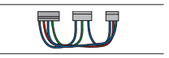
CM 1/5 GS
FERRULE MODULE

CM03
MIL CRIMP MODULE

AEH-LS
FERRULE MODULE

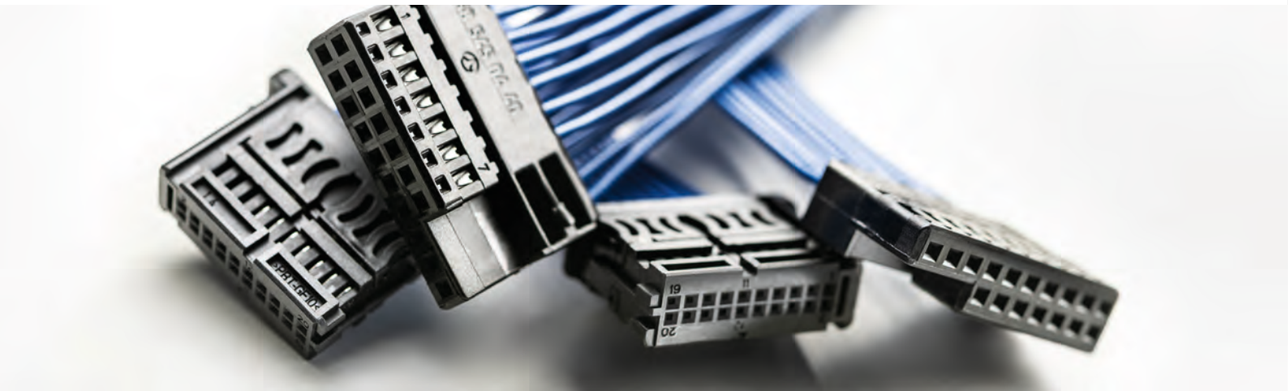
Q1250 SCALABLE
OPTICAL QUALITY MONITORING

Processing examples

Cutting		Wire draw-in	
Cutting pulled strands		Seal monitoring	
Full stripping		Crimp force monitoring	
Half stripping		Integrated crimp height measurement	
Double insulation cable		Integrated pull-off force measurement	
Crimping		Wire length correction	
Seal insertion		Splice detection	
Twisting/tintinning		Good/bad separation/ bad part cutting	
Sleeve insertion		Sequence processing	
Split cycle for closed terminals		Batch separation	
Ferrule crimping		Networking (MES, WPCS, MIKO)	
MIL crimping		Material change detection/ Material verification	
Solidifying, splicing and welding wire ends		Wire changer	
Inkjet printing		Programmable crimp height	
Block loading			

Options and accessories

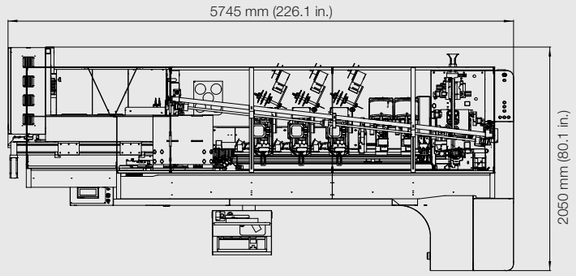
Marking systems	Komax inkjet marking system M1630 Jet • Automatic inkjet print head changer
Wire draw-in	Expandable wire changer
Process modules	C1368 crimp module (with programmable crimp height) • S1438 seal module • MIL crimp • AEH ferrule module • Ultrasonic compaction
Quality assurance	Integrated crimp height measurement • Integrated pull-off force measurement • Crimp force monitoring CFA/CFA+ • Splice detection • Automatic conductor detector ACD • Material change detection • Material verification • Q1250 scalable, strip, seal and crimp quality monitoring
Accessories	UPS • Warning lights
Software	WPCS networking interface • TopConvert data conversion



Technical data Omega 750 SA

Piece output, double-sided loading*	1.2 sec per insertion
Shortest wire length	For single-sided loading: 240 mm (9.45 in.) 60 mm (2.36 in.) **** Double-sided jumper connections: 240 – 560 mm (9.45 – 22.05 in.)** 100 – 240 mm (3.94 – 9.45 in.) ***** Complex loading: 240 – 780 mm (9.45 – 30.71 in.)**
Strip length	up to 25 mm (0.98 in.)
Wire cross-sections***	0.13 – 1.5 mm² (AWG 26 –16)
Outer wire diameter	Max. 2.1 mm (0.08 in.)
Usable transfer length	2800 mm (110.2 in.), up to ten C1368 crimp modules
Usable transfer length extension	1840 mm (72.4 in.) up to six additional C1368 crimp modules
Wire changer	Max. 36 wires (in increments of six wires)
Wire end storage	Rotary storage unit with a maximum of 30 storage spaces
Process monitoring (integrated)	Collision monitoring (block chambers) Insertion force monitoring Terminal locking monitoring
Block feed	Carousel with pallets
Pallet system loading area (W×H)	280 × 200 mm (11.02 × 7.87 in.)
Electrical connection	3 × 208 – 480 V, 50/60 Hz/4kVA
Compressed air connection	6 bar (87 psi)

* Piece output is dependent on wire length and housing/terminal combinations.
** Dependent on wire harness structure.
*** Certain extremely hard, tough wires may not be able to be processed, even if they are within the indicated cross-sectional area. If in doubt, we are happy to provide you with samples of your wires.
**** With turning module X2100 or one side process
***** With turning module X2100 and additional application



Machine height with closed protective hood 2060 mm (81.1 in.)
Machine height with open protective hood 2870 mm (113 in.)

Komax – leading the field now and in the future

As a pioneer and market leader in automated wire processing, Komax provides its customers with innovative solutions. Komax manufactures series and customer-specific machinery, catering to every degree of automation and customization. Its range of quality tools, test systems, and intelligent software and networking solutions complete the portfolio, and ensure safe, flexible, and efficient production.
Komax is a globally active Swiss company with highly qualified employees and development and production facilities on several continents. It provides local support to customers worldwide through its unique sales and service network and offers services that help them get the most out of their investments.

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Subject to change