

## Product News

Winter 2007/2008

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**Never stop, never fail, just create...**




## **New Industrial Automation Guide – with more features than ever before!**

Dear readers,

The latest edition of the Omron Industrial Automation Guide has now been published. At almost 500 pages, the Guide is the most comprehensive edition ever, with information provided on each product group.

We have developed new navigation tools and improved product selectors to enable users to find the right product quickly and accurately. The navigation of the Guide is aligned with the online

product selector in the Omron website. Also we've aligned the navigation to the Europe-wide stock control system, so that it is very easy to match customer requirements with stock availability.

 English version available now. For ordering your own guidebook and for more information visit: [www.omron-industrial.com](http://www.omron-industrial.com)



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## CP1L the compact machine controller



### Think big... start small... take the lead today

When it comes to controllers for compact machines, Omron's new CP1L series offers the compactness of a micro-PLC with the capability of a modular PLC. But this new and exciting range is not only compact, it is scalable, has a faster processing speed than other controllers and is in a class of its own when it comes to price/performance. The CP1L series has all the functionality you need to control your machine. Naturally, it is compatible with all other devices in the Omron PLC line up.



#### CP1L-L

- CPU with 14 or 20 digital I/O built-in
- Expandable up to 60 I/O points (1 unit)
- USB port + 1 optional serial port
- 5 Ksteps user memory
- 0.6  $\mu$ s instruction speed
- 4 encoder inputs (100 kHz)
- 2 pulse outputs (100 kHz)



### All you need in one series

The CP1L series offers all the functionality and flexibility you need in a controller, plus the added advantage of one single platform, which means no worries about field-buses or integration of software. And the same 'Smart Platform' communication routing is provided over multiple network layers.

### Easy and familiar programming

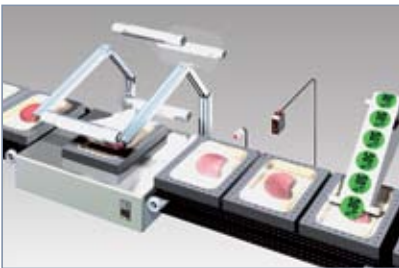
Omron's CX-One software offers the same easy and familiar programming as you might know from Omron's CJ1 or CS1 families that saves you time and effort. Enabling you to build, configure and program your networks, PLCs, HMIs, motion-control systems, drives, temperature controllers and sensors.

### USB interface, no expensive cabling required

No need for expensive additional cables with the CP1L series either because the USB interface enables you to simply plug and play.

### Features and benefits:

- 4 high-speed encoder inputs and 2 high-speed pulse outputs
- CPUs with AC or DC supply and 14, 20, 30 or 40 I/O built-in
- Instruction set compatible with CP1H-, CJ1-, and CS1 series PLC
- Optional RS232C and RS-422A/485 serial ports
- USB programming port
- Scalable with a wide range of I/O units (maximum up to 160 I/O points)
- Motion functionality
- One and the same software as other Omron controllers



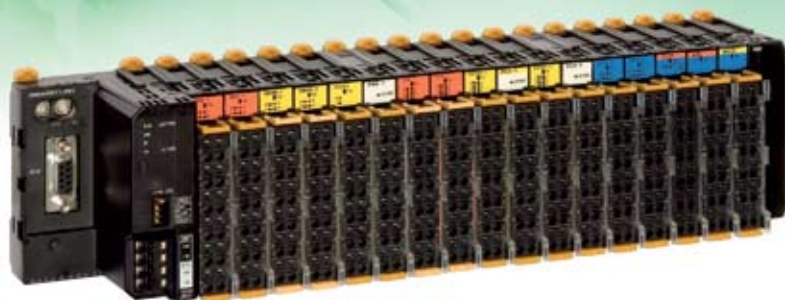
#### CP1L-M

- CPU with 30 or 40 digital I/O built-in
- Expandable up to 160 I/O points (3 units)
- USB port + 2 optional serial ports
- 10 Ksteps user memory
- 0.6  $\mu$ s instruction speed
- 4 encoder inputs (100 kHz)
- 2 pulse outputs (100 kHz)



#### CP1H

- CPU with 40 digital I/O and (optional) analogue I/O (4in/2Out) built-in
- Expandable up to 320 I/O points (7 units)
- USB port + 2 optional serial ports
- 20 Ksteps user memory
- 0.1  $\mu$ s instruction speed
- 4 encoder inputs (2 x 1 MHz + 2 x 100 kHz)
- 4 pulse outputs (2 x 1 MHz + 2 x 100 kHz)



## Intelligence, point by point

Automated production depends upon smart control systems that keep your process running, which is why Omron introduced SmartSlice. This modular, remote I/O system is full of patented, smart features that make it the most intelligent and easy-to-use remote I/O system available. SmartSlice will minimise engineering, troubleshooting and maintenance in your machine, line or plant, resulting in significantly reduced downtime.

### Enhancement

Naturally, this highly successful modular remote I/O system is being continuously enhanced with the addition of new units. Earlier in 2007, a series of 8-point digital units and accessories was introduced, allowing more compact systems with a higher I/O density. Now Omron is adding new units that increase SmartSlice's range of applications even further.

### More network interfaces, step by step

Looking further ahead, additional bus couplers will soon be launched, connecting SmartSlice I/O to CompoNet, ProfiNet and to the Trajexia motion control system using Mechatrolink II. These will be featured in an upcoming issue of Omron Product News.





### Early-warning system prevents breakdowns

Every SmartSlice unit has its own built-in early-warning functions, enabling you to schedule maintenance and prevent breakdowns.

Warnings include:



Supply voltage out of safe range - e.g. due to damaged cable or poor connection.



Preset maintenance interval exceeded - which can be a time interval or a target number of operations, to indicate that an inspection of (electro-mechanical parts) is required.



Maximum allowed delay between two I/O signals is exceeded - to indicate that wear or lack of lubrication is causing a machine to work slower than intended.

### New I/O modules:

The following units will be released soon:

- Pt100 and Pt1000 input units offer high-accuracy temperature measurement with alarms, rate-of-change or difference measurements, and peak detection.
- Thermocouple inputs support all common types of sensor, and have integrated cold-junction compensation.
- Two-ampere short circuit-proof digital output units can be used to drive loads like contactors or valves.
- AC input units (110 V or 220 V) can be used for status detection, for example, in building automation, HVAC applications.
- I/O power-feed units with built-in electronic fuse increase your system's reliability, and speed up troubleshooting during commissioning.

**DyaloX industrial PC series****Features and benefits:**

- Reliable 24/7 operation even in the harshest conditions
- Industrial-grade 1.3 GHz Intel Celeron CPU
- No moving parts, reliable disk-on-module storage
- DVI-I interface for connecting any display
- High-quality touch screen with two USB ports on the front
- 3 year warranty/7 year repair service

**Reliability made flexible**

The DyaloX box-type industrial PC is created specifically for 24/7 operation and sets new standards in reliability, even in the most demanding industrial environments. A very flexible IPC, the box can be mounted in two different ways. Either seperately so that a minimum amount of cabinet space is used, or it can be attached to the back of the touch screen in order to use it as a panel IPC.

**Feature full**

Available with either 2 GB or 4 GB disk-on-module storage and 512 MB or 1 GB of RAM, the DyaloX with the extended version of Windows XP Embedded provides high performance for a wide range of applications. The functionality can be further expanded using the two PCI slots and audio output ports, while the built-in DVI-I port allows either a 15 or 17 inch Omron touch screen (or any other screen of your choice) to be connected.

The DVI connection of the DyaloX box-type industrial PC makes it very suitable for big machines that use a swivel arm to operate the machine as it supports a length of up to 10 metres. The same advantage is applicable to machines that face heavy vibration, as the CPU box can be positioned to best suit your needs.

**The difference**

The DyaloX IPC makes use of Omron's unique RAS self-diagnostic hardware and software, to ensure that it will keep on running and warn you if conditions become unstable. To prove our reliability Omron offers a full 3-year warranty and a guarantee to repair your DyaloX IPC for up to 7 years after purchase.

**Features and benefits:**

- Based on standard Ethernet
- Easy setup using FDT tools, just like your used to with a traditional fieldbus
- Remote I/O with 2 ports for onward connection without external switches
- Supports single-point access to all devices
- Large data capacity, high speed

## Omron launches it's first ProfiNet products

Omron supports open industrial protocols on Ethernet that allow simple and fast interconnection of different vendors' equipment. Pursuing this strategy, Omron intends expanding its range with new ProfiNet units for two of its main product lines.

**CJ1 module**

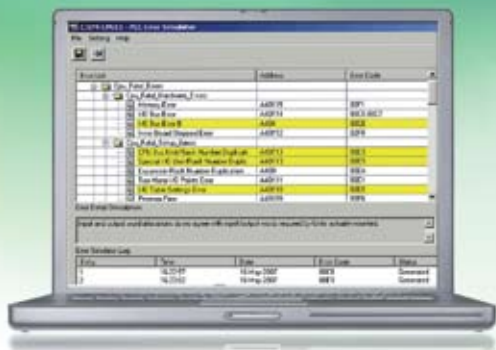
The CJ1 family is Omron's main PLC range. These compact and versatile controllers already support CIP networks CompoNet, DeviceNet, EtherNet/IP, plus Profibus DPV1 as master or slave. A new module (CJ1W-PNT21) will enable the CJ1 PLC to also support ProfiNet I/O. Setup and monitoring over all possible connections to the PLC will be supported using the latest FDT configuration tools, and will be as easy as setting up a traditional field network.

**Bus coupler module**

The SmartSlice modular I/O system has built in intelligence that reduces engineering effort and machine changeover times, and early-warning functions to avoid unplanned machine maintenance.

With the new GRT1-PNT bus coupler for ProfiNet I/O, these PLC-independent functions will be easily accessible through any FDT-based software tool. Equipped with a built-in Ethernet switch, it will be possible to link ProfiNet I/O stations together in a line topology without having to install additional hardware, thus saving costs, space and installation time.

Availability: Q2-2008



#### New features and benefits:

- IEC1131-3 SFC and ST now supported
- Enhanced Simulation: now possible to simulate error conditions and test how the program reacts
- Copy & Paste of symbols between CX-Programmer and CX-Designer

## One software for your complete machine

Omron now releases its third major release of CX-One adding support for two IEC6-1131 languages: Sequential Function Charts (SFC) and Structure Text (ST).

#### Understanding at a glance with SFC

SFC gives a graphical representation of the entire process. From top level it is easy to visualise the program flow. Especially useful for control of sequences, such as start-up/shutdown and batch recipes. Actions and Transitions can be reused leading to a more structured development.

#### Complex calculations in a single Line

CX-One already supported ST in function blocks, but now the entire program can be in ST.

Structured Text can make complex arithmetic and logic calculations possible in a single line. Converting programs between device vendors, becomes copy, paste and compile!

#### “One Software” for compact PLCs

A new LITE version of CX-One is now available. This is designed specifically for low end systems, such as the new CP1L range of PLCs. Therefore even our compact devices have the same integrated environment and “One Software” to program the PLC, design HMI and configure devices.



**CX-Server OPC v2****Open integration with OPC**

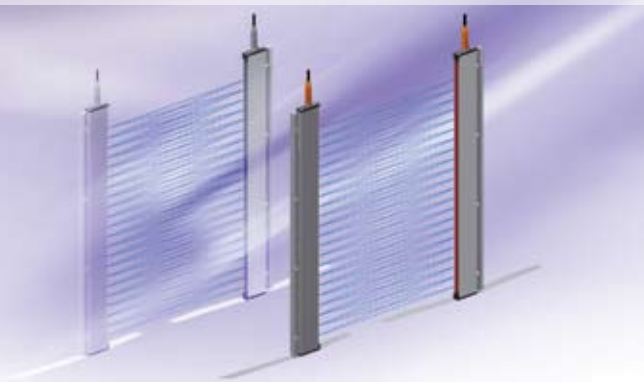
Omron's Smart Platform is based on 'Open Integration', which means we ensure each layer in our software supports open standards: Configuration with FDT technology, Programming with IEC6-1131 and Visualisation with OPC – the best open standard for data collection, which is so important for visualisation software such as a SCADA product. In Q1/2008, the new v2.0 release will be available and extend our OPC products.

**Features and benefits:**

- CX-Server OPC supports redundancy through continuous monitoring of the status of two devices, automatically switching communications to keep the system up and running
- A high-speed thin communications driver for Ethernet will ensure the server can be used in large applications
- Continued device support in OPC, now including: TrajeXia, CelciuX<sup>o</sup> and ZX/ZS sensors



## Sensing

**F3E flat multi-beam sensor for elevators****Features and benefits:**

- Robust aluminium housing
- Ray failure tolerance
- Test input
- Built-in amplifier (operation with 10-30 VDC)

**Easy to install multi-beam sensor in robust aluminium housing**

The F3E flat photoelectric sensor is specially designed for easy installation in all types of elevator constructions. Its flat (9 mm) form fulfils

the requirements of EN81-70. It has a sensing distance of 5 m and a detection area up to 1.8 m.

## ZFX vision sensor



### Easy vision at a touch

ZFX is an advanced vision sensor that introduces a new dimension of intuitive user guidance – Touch, Connect & Go. The built-in touch screen is easy to use and saves you from involvement with complex technical details. You get immediate feedback with live images and clear system messages during the entire set-up and inspection cycle.

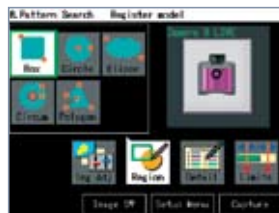
The ZFX vision sensor is supplied as a one or two camera system, offering monochrome or colour functionality.

### Get in touch and get going

Interactive menu guide you through the simple set-up of individual tasks in three easy steps. You'll be ready to go in a matter of minutes. And there's no need to connect a PC for set-up, maintenance or operation. The screen provides instant feedback – showing interactive menus and useful information on the inspection status, while the AUTO button automatically sets the proposed parameters.



Select inspection tools



Choose inspection regions



Set inspection parameters



#### Auto selection of colour filter - Step 1

Just press AUTO to automatically improve the contrast.



#### Auto selection of colour filter - Step 2

The optimum filter is automatically selected from seven colour filters.

### Features and benefits:

- Easy to use
- Built-in LCD touch screen
- Interactive menus
- Fast, PC-less setting up
- Push-button parameter setting

### Optimize your set-up with a click

Auto settings is a sophisticated built-in support function that applies optimum measurement conditions just by selecting AUTO. Automatically made settings can be checked and changed in each of the set-up screens.

### Easy to connect

Multiple interface options offer smooth integration into any process environment, such as Ethernet, USB and digital I/O, allowing the communication of result data and images via the network.



#### Position compensation tools:

Allows compensation of the current object position in 360° rotation



#### Pattern matching:

Searches for an object or finds deviations to a programmed object in 360° rotation



#### Area:

Measures the size of objects



#### Edge tools:

Finds the positions of edges, or measures the width of objects



#### Defect tools:

Finds minute defects in surfaces



#### Brightness/HUE:

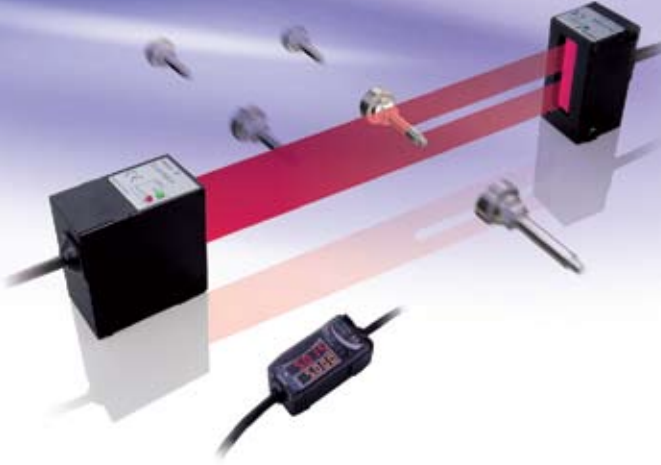
Finds deviations in the brightness or colour of objects



#### Calculation:

Allows calculations with tool results and the definition of data output

## ZX-GT smart laser micrometer



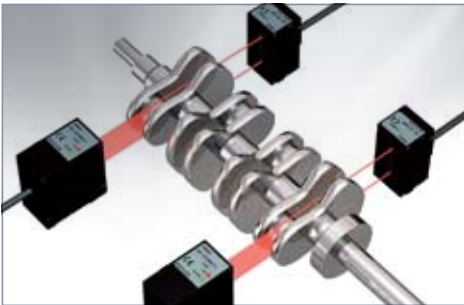
### Features and benefits:

- High accuracy: 10  $\mu\text{m}$
- Accurate on all surfaces
- Long sensing distance: < 500 mm
- Line width up to 28 mm
- Calculation unit for multiple heads
- Fast sampling time: 0.5 ms
- PC software for setup

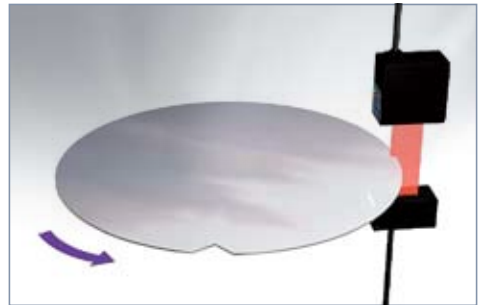
## Accurate and fast on all surfaces

The new ZX-GT smart laser micrometer compliments Omron's Smart Laser Measurement platform. ZX-GT is able to detect edges, measure diameters of objects and calculate positions precisely on all kind of materials. Based on CCD technology

ZX-GT achieves high accuracy and speed under difficult environmental conditions. Transparent objects, reflective surfaces or different positions do not influence the result. The PC Smart Monitor software makes setup and configuration easy.



Automotive - Diameter inspection of large tubes



Semiconductor - Notch position detection of glass

## E3ZM-B PET bottle sensor



### Features and benefits:

- Stable PET detection using circular polarization effect and LED power control
- Coaxial beam
- Compact SUS 316L housing
- Easy-to-use teach-in function

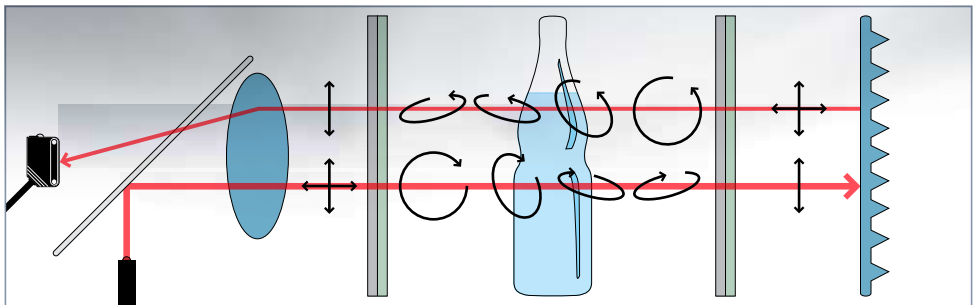
## Stable PET bottle detection in stainless steel housing

Sharing the same rugged stainless steel housing of other members of the E3ZM family, the E3ZM-B is the latest addition specially designed for PET bottle applications. The optical system using the circular polarization effect (p-opaqing) and the LED power control technology (AC3) ensure highest stability for PET detection.

The series features outstanding corrosion and wear resistance, and is ideal for food and beverage

industry where hygiene and resistance to aggressive cleaning agents is vital. The hermetically sealed housing is resistant to high-pressure water and meets IP69K requirements.

For more information on our stainless steel series for highest hygiene in food processing and our sensing solutions for transparent packaging material please visit our Food & Beverage solution section: [www.omron-industrial.com/food](http://www.omron-industrial.com/food)



Enhanced PET detection stability using the circular polarization effect of light in PET materials

## E3ZM-V mark detection sensor



### Features and benefits:

- White LED for stable detection of differently coloured print marks
- SUS 316L stainless steel housing
- Easy-to-use teach-in button

## Stainless steel housing family extended with easy-to-use mark sensor

The E3ZM series of SUS 316L stainless steel housing sensors for the food industry has been extended with the E3ZM-V mark detection sensor. This new sensor completes the special-function series for food & beverage processing and packaging.

For more information on our stainless steel series for the highest hygiene in food processing and our sensing solutions for packaging material, please visit our Food & Beverage solution section: [www.omron-industrial.com/food](http://www.omron-industrial.com/food)

## E3X-DAC-S colour (RGB) digital fibre amplifier



### Features and benefits:

- White LED for colour independence
- Fast response time of min 60  $\mu$ s
- 2 channel model with AND / OR function available
- Remote teaching or easy one-button teaching

## Colour detection with easy one-button teaching

The E3X-DAC-S detects the colour of a workpiece and enables it to be compared with a stored RGB ratio to identify coloured marks or workpieces.

Moreover, it does this independent of the light intensity and any sensing distance variations.

## Sigma 5 the 5-star servo



### Features and benefits:

- Integrated MECHATROLINK-II Motion Network
- Access to the drives from one connection
- Quicker positioning and smooth control
- Mechanical vibration suppression
- High Accuracy and low cogging
- Space saving
- Proven quality and reliability
- Easy of use
- Wide choice of best-in-class motors

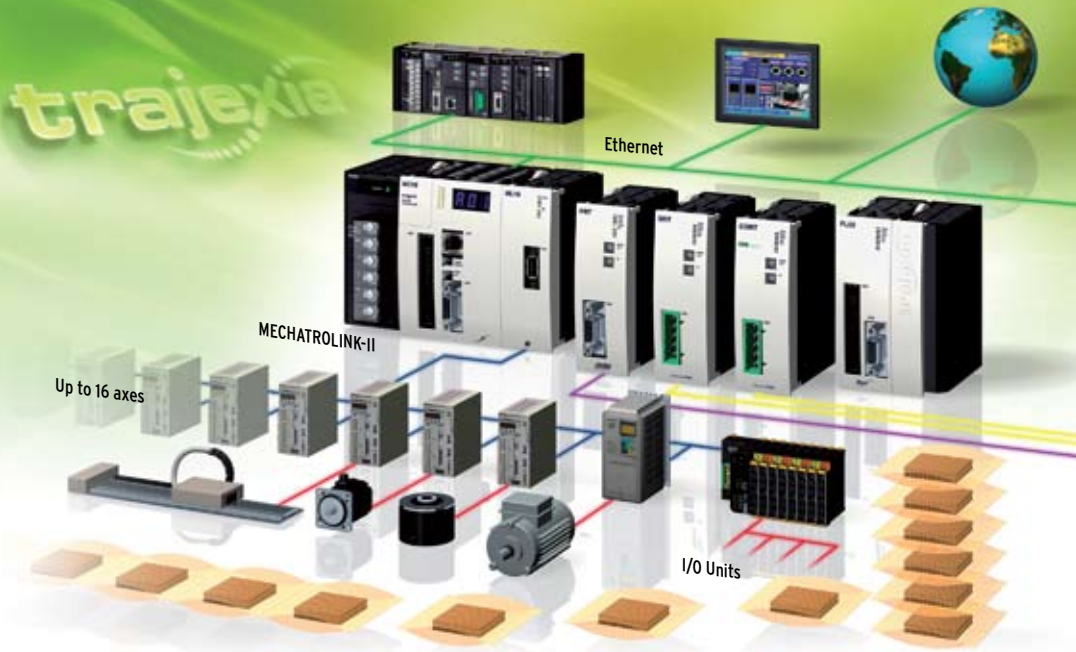
## Mechatrolink built in

Our obsession with quality has resulted in the most flexible and dependable drive ever. Sigma-5 with MECHATROLINK-II Motion Network reduces cabling and installation time, improves system reliability and enables remote-servo configuration and diagnosis.

The new Sigma-5 incorporates decades of experience in servo design and has all that you would expect from a servo and more. For instance, you need to do no tuning and it has a user-friendly software tool that minimizes commissioning time.



## Trajexia motion controller



### Total freedom in motion control

Trajexia, the advanced motion controller that puts you in control, offers the performance of a dedicated motion system with complete user friendliness. Omron has now updated and expanded Trajexia so that it makes your life even easier.

#### 4 axes controller

Trajexia now provides even better product scalability while reducing engineering time when reusing the same application for small and large machines. Capable of controlling up to 4 axes, the new CPU, together with the new 4 axes MECHATROLINK-II master, bring a compact solution without compromising performance. The new controller maintains compatibility with the existing family of Trajexia units while having the same performance level and instruction set as the 16 axes controller.

As you would expect, a wide choice of best-in-class rotary, linear and direct-drive servos as well as inverters are available to meet your needs in compactness, performance and reliability.



## Features and benefits:

### 4 axes controller:

- Motion control suitable for small machines
- Excellent scalability – engineering time reused in different controllers
- Mechatrolink-II master for 4 axes
- Compatible with existing Trajexia units
- Supports servos, inverters and IOs in a single network
- Wide range of actuators

### SmartSlice IOs in MECHATROLINK-II

- Scalable SmartSlice IO system available in Trajexia motion controllers
- Most compact IOs in the market (84 mm high)
- Self configurable
- Detachable terminal blocks allow hot-swapping without re-wiring
- 3-wire connection with ‘push-in’ technology (screwdriver-less installation)

### CANopen interface unit

- CANopen connectivity option for Trajexia motion controllers
- CiA standards implemented: DS301 and DS302
- 8 TPDO and 8 RPDO supported

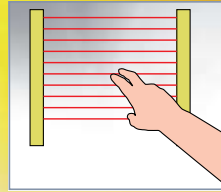
### SmartSlice IOs in MECHATROLINK-II

Omron’s SmartSlice I/O system is compact, intelligent and user friendly. When used with Omron’s Trajexia MECHATROLINK-II master units, it is a simple matter of plug-and-work, so no configuration tool is required.

### CANopen interface unit

Trajexia connectivity has been boosted with the new CANopen module, which is compatible with your existing devices and provides easy integration when the diversity of your machines requires different network architectures.

## All-In-One Safety light curtains



Finger- and hand-protection



Floating blanking

### Simple and safe, relieve your pain with safety light curtains: MS2800 and MS4800

Providing a full feature set in one seamless concept, MS family is the next step in safety light curtain applications:

#### ONE design fits all:

- ONE mechanical design
- ONE set of accessories
- ONE cascading concept for cat 2 and 4, all resolutions and detection heights.

#### New selector switch concept makes configuration easy:

Just open the configuration cap and select your desired function:

- Blanking
- Beam Coding
- EDM and Test functions

#### Simple installation with:

- Individual beam indicators showing status of each beam
- Full set of mounting brackets and T-Slot adapters
- M12-connectors

#### Simple operation supported by:

- Long operation range (finger protection up to 7 m and hand protection up to 20 m)
- Robustness is key - Special designed housing structure

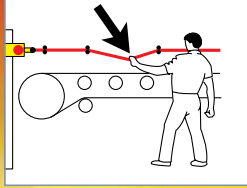
#### Highest value in class:

- Line up with basic and advanced functionality
- Saves time in selecting
- Saves time in installing
- Saves time in setting up
- Reduce maintenance time

## STI rope pull switches



Emergency push button can be mounted in different positions

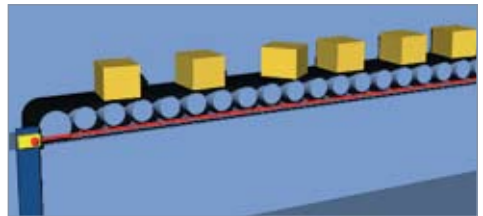
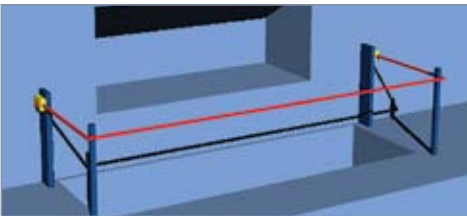


### Features and benefits:

- Easy configuration, set-up and diagnosis via built-in tension indicator and LED
- Vibration-tolerant design
- Integrated reset pushbutton
- Optional E-stop pushbutton
- Heavy duty die-cast housing in IP67
- Stainless-steel mounting accessories
- Rope spans of 40 m, 80 m, 125 m and 200 m

## Hold the line please - safe-emergency-stop available along the entire machine

With a rope span of up to 200 m, the ER series of rope-pull emergency-stop switches provide a safe shutdown for example in long conveyor lines or packaging machines. The use of ER series switches dramatically reduces the number of required E-stop pushbuttons along the line.



Typical applications are on conveyor systems and across rotating machinery, and around hazardous areas.

**E5\_N temperature controller series**
**Designed to exceed expectations**

Omron constantly seeks to improve even its best products. With “keeping the best, improve the rest” in mind, Omron is about to release an update of the E5\_N series.

The E5\_N single-loop digital temperature controller is the ideal choice for the majority of general analogue control applications. Exceptionally easy to install, use and configure for optimal control, it is not surprising that they are currently the most popular controllers in the world.

All models ensure maximum performance thanks to Omron’s unique 2-PID control that allows you to tune for best disturbance response as well as best response to changes in set-point. This is a big advantage over standard PID, which only lets you choose one or the other.

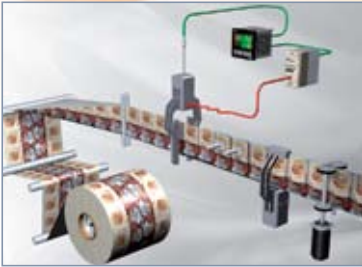
Improvements of the new E5\_N focus on even more ease of use, performance and functionality. All models are now easy to extract from the front and due to the 15° angle of the terminals, wiring is easier and quicker. Auto tuning is improved with a maximum-40%-output-power selection and when heat & cool is selected, the cool gain is automatically calculated. Input accuracy and the output resolution have been further improved and communication speed is now up to 57.6 kbps. Moreover, the rating of the alarm relays has been increased from 1 to 3 A.

The 1/8 and 1/4 DIN models (E5EN and E5AN) have a selectable 3rd display line for MV (output %) value and are equipped with an additional programmable function-key.



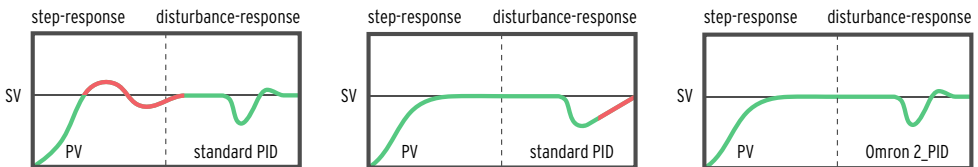
### Features and benefits:

- Excellent visibility in all lighting conditions thanks to high-intensity LCD with wide viewing angle
- Optimal status recognition with 3-colour-change PV display
- Clear diagnostics and extended process and heater alarm strategies
- Exact control with Omron's unique 2-PID system
- Easy set up and operation via the front keys or with Omron's improved intuitive CX-Thermo software
- Highest application security thanks to password protection and customizable menus
- Wide range of application-specific features and options available



### Faster input sampling and control period

This gives faster, more precise heater control in rapidly changing, disturbance-sensitive applications.



### 2-PID control combines stability with fast reaction speed

A highly innovative Omron development, 2-PID control is an important advance on standard PID (Proportional, Integral, Derivative) control. 2-PID control uses a powerful algorithm that enables the instrument to be tuned for optimum disturbance response without any compromise on the speed of reaction to changes in set point. And the best part is that the user doesn't have to take any special action since

the built-in 2-PID control does all the work. All our instruments with 2-PID control are factory preset with a default setting, suitable to give fast responses with minimal overshoot for most analogue control applications. What this means for you of course is faster start-up production times and much more stable control during production leading to better quality products.

## S8VT 3-phase input power supplies



### Features and benefits:

- 3-phase input (340-576 VAC) or single-phase 810 VDC
- 5, 10, 20 and 40 A; 24 VDC output
- Compact design with best footprint on the market
- UL60950 (CSA22.2-60950), UL508 listing (CSA22.2-14) and CE
- Parallel & serial operation possible

## Better than ever before!

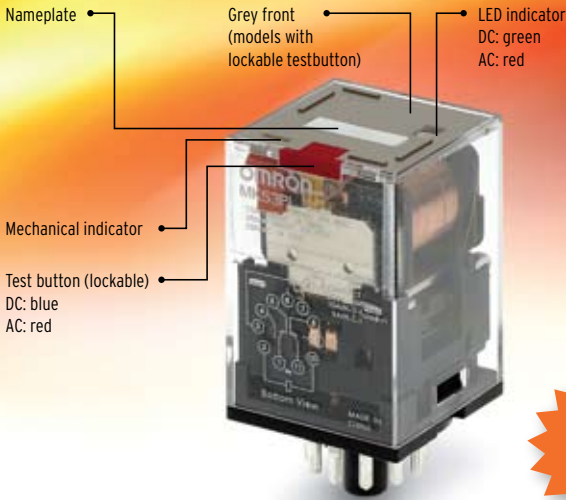
The new S8VT is very compact and therefore offers the best power versus footprint on the market. Four models are available with an output power of 120 W, 240 W, 480 W & 960 W at 24 VDC. All models are mains protected by fuses to protect both the power supply and your DC application. The units are design to give full power without the

need for additional ventilation. All models are equipped with double connection for the DC supply. The wide 3-phase voltage input range makes the S8VT world-wide application and you can use it as a single-phase DC/DC converter with an input voltage up to 810 VDC.

# MK-S industrial plug-in relay

## Features and benefits:

- 8-pin DPDT and 11-pin 3PDT contact types
- Switching current up to 10 A
- Lockable test button for easy testing
- Temperature rating from -40°C up to 60°C



## Proven technology updated

The MK(S) series has proven to be exceptionally reliable since its introduction almost 50 years ago. In order to provide the same easy testing as our other relay families, the new MK-S is equipped with a lockable test button offering the same function/operation as the MY(S) and G2R(S) families.



1

Relay in normal operation



2

**For momentary operation**  
Pull down the test button to the first position, then press the yellow button with an insulated tool to operate the contact



3

**For lock operation**  
Pull down the test button to the second position (the contact is now in the locked position)

## J7MN motor protection circuit breakers

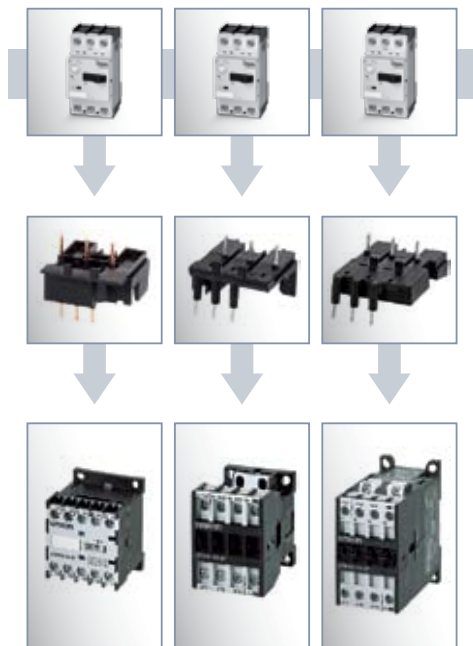


### Features and benefits:

- Rated operating currents to 32 A, 63 A and 100 A
- Switching capacity is mainly 50 kA/400 V or 100 kA/400 V
- All motor protection circuit breaker can be DIN-rail mounted
- Electro-mechanical link modules available for currents up to 32 A
- All components are finger proof

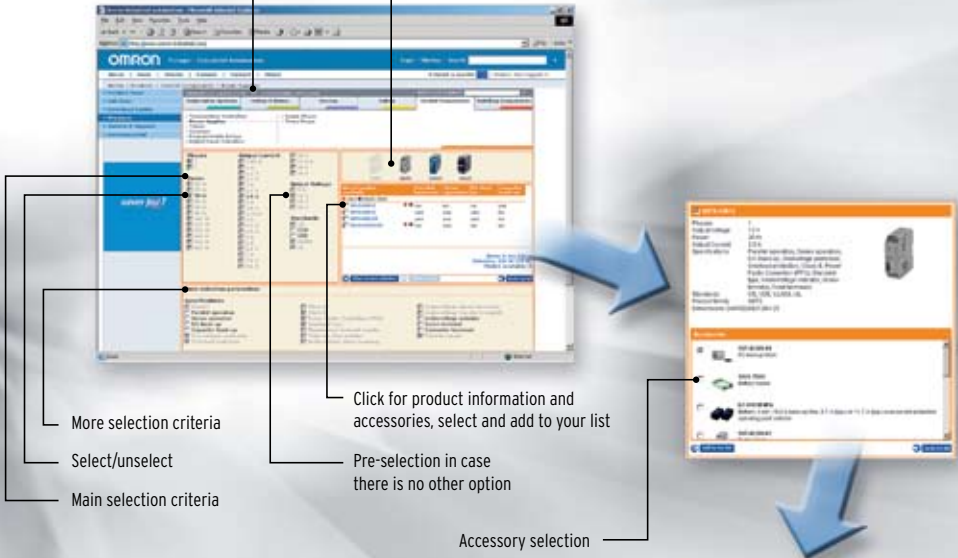
### Extended range

Our latest J7MN motor protection circuit breakers have been extended with versions up to 32 A for the push and rotary knob models in the 45 mm wide housing. The breaking capability has increased to 100 kA. For fuse-less load feeders, the J7MN-3P/3R is designed in such a way that it is very easy to connect a link module together with a contactor, thus saving wiring and installing time. Furthermore, the motor protection circuit breakers can be equipped with additional auxiliary contacts for front or side mounting. Similarly, other options like circuit trip alarm units, under-voltage and shunt release units are available. To make wiring easy, we also provide a busbar system.



# Parametric selector

Toggle function Product family carousel



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Desired quantity Desired action

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