OMRON

Product News

Summer 2006

realizing

EJ1 MODULAR TEMPERATURE CONTROLLER

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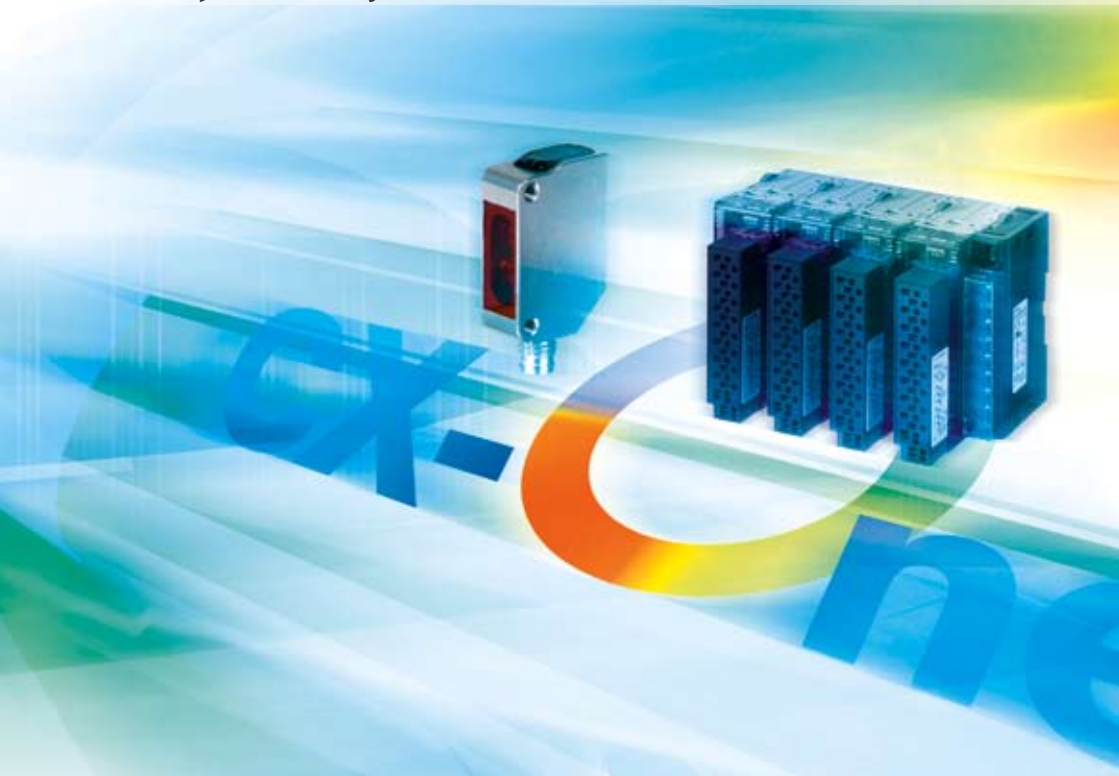
Never stop, never fail, just create...



Devices and solutions for the best machines

Dear readers,

it is again our greatest pleasure to share with you our latest innovations in products and solutions.

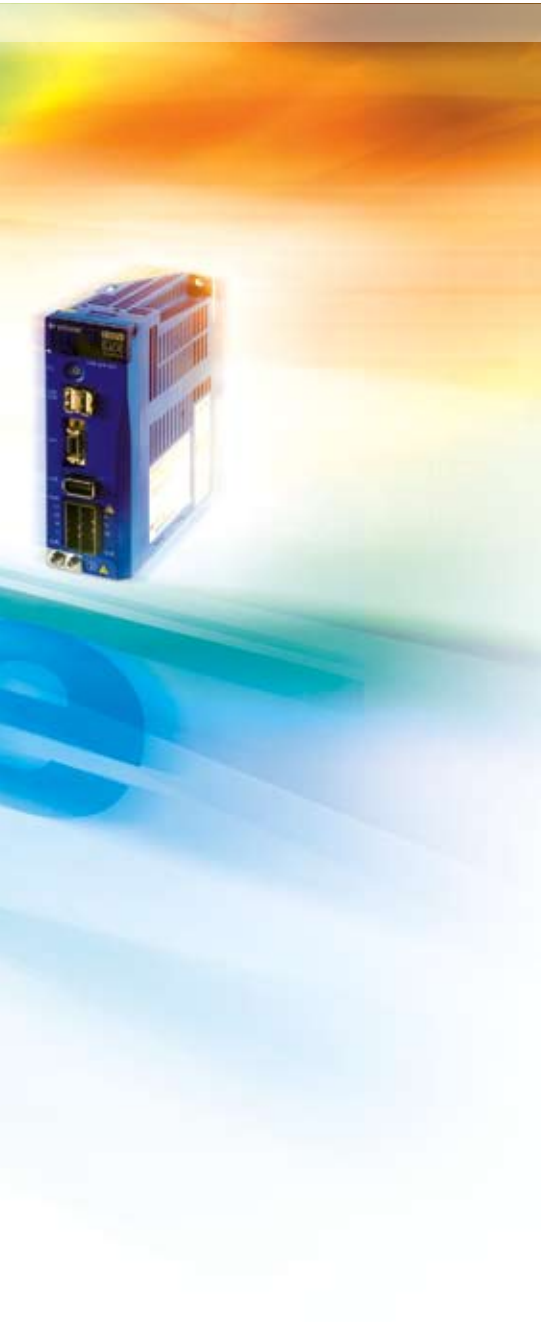
For sensors “metal” is the name of the game with the introduction of the E3ZM compact PES and the E2FM proximity sensor.

In motion control Junma, a pocket size servo offers you unmatched space and simplicity. A flexible axis module and a DeviceNet interface unit strengthen the Trajexia motion control line.

In terms of regulation we profile the EJ1 modular temperature control series that is poised to strongly position Omron in the flexible multi-loop temperature control area.

Last but not least we keep you informed of our new version of CX-One, openness and total machine integration.

Enjoy it and visit our website for more information: www.omron-industrial.com



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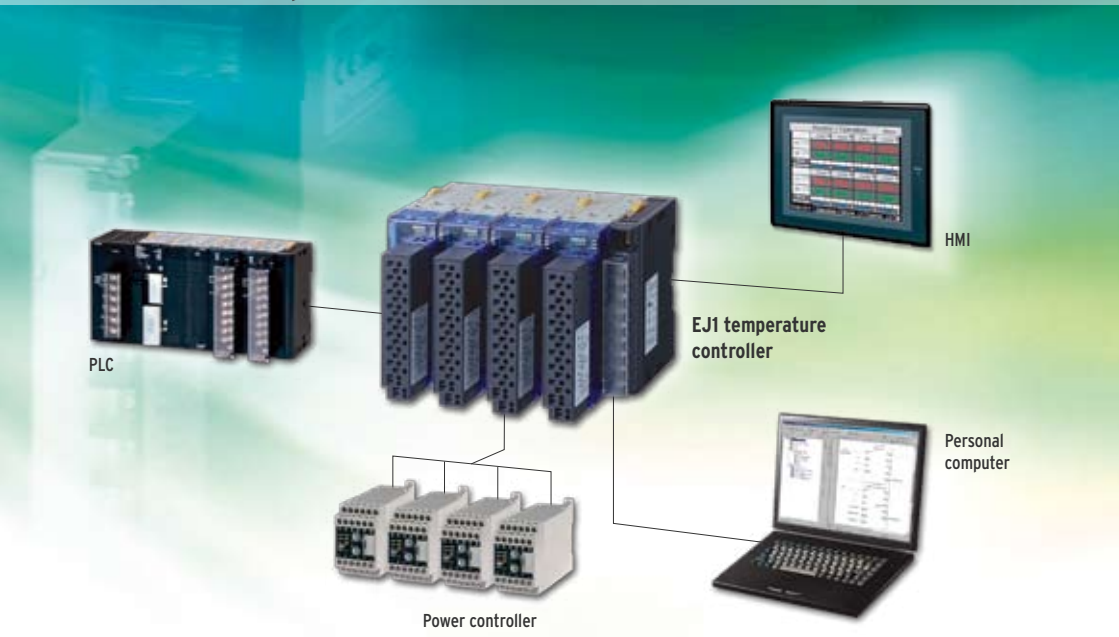
EJ1 modular temperature controller



Control & connectivity

The EJ1 is a multi-channel modular temperature controller. It is designed to handle complex temperature profiles thanks to Omron's unique Gradient temperature Control (GTC) algorithm and to offer easy program-less communication with Omron and third-party PLCs and HMI.

Above all, the EJ1 incorporates all "simple to use" clever temperature control technology, like 2-PID, disturbance control and various ways of tuning.

Features and benefits:

- Improved setup, because of high-speed program-less communications
- Easy installation with side-by-side connectors
- Available with screw terminals and screw-less clamp terminals
- Powerful software supported by Smart Active Parts and Smart Function Block Libraries
- One unit handling various types of input, such as Pt, Thermocouple, mA, and V input
- Gradient Temperature Control

CS1 slot PLC

Features and benefits:

- Install a complete CS1 PLC in your PC's PCI slot
- DeviceNet master function integrated
- Expandable with all standard CS1 PLC I/O units
- Can operate autonomously on external power supply
- Shared memory for easy data access by CX-One software suite

The CS1 slot PLC adds proven and reliable PLC technology to the flexibility of a PC

The CS1 slot PLC allows you to fully integrate the power and reliability of an Omron PLC in a standard PC. Its speed and capacity are the same as a CS1G-CPU45H CPU, and it includes standard PLC features like battery backup and program and data storage on CompactFlash card. The slot PLC exchanges data with the host PC through shared memory, which can be accessed by the applications in Omron's CX-One software suite.

Any DeviceNet remote I/O such as Omron's modular SmartSlice system can be controlled through the board's built-in DeviceNet Master function. Besides this, an optional expansion board lets you connect to standard CS1 I/O backplanes that accept any existing CS1 I/O unit.

To ensure reliable operation independent of the host PC's status, the CS1 slot PLC can be powered independently. Thus, the slot PLC can even continue to control when the host PC is shut-down.

Multivendor on NS

NS-series connects to Siemens and Mitsubishi PLCs

The NS terminals can now connect easily to Siemens S7-300 and Mitsubishi FX, Q and A series PLCs.

Now machine builders can benefit from the robustness, reliability and picture quality of the NS, with popular PLC brands. It is from now on possible to directly use third-party addresses in CX-Designer, the HMI design package. Hence, no need to remember complex mapping tables.

Connectivity to more popular brands will be released shortly.

Features and benefits:

- Connect to S7-300 series
- Connect to Mitsubishi FX, Q and A series
- Third-party PLC addresses fully integrated in CX-Designer

NS-series features:

- Perfect clarity and fast switching screens
- Supports all European languages, Asian and Cyrillic
- Easy data logging on Compact Flash
- Up to 60 MB memory to create beautiful applications
- 3 years warranty

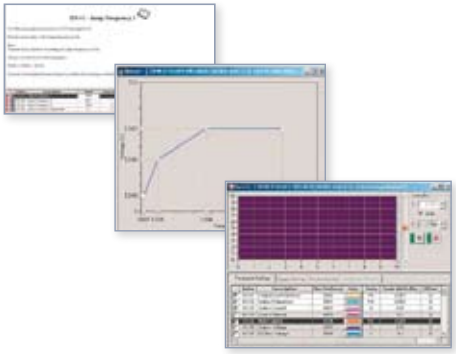
CX-One V2.1

New features and benefits:

- Open FDT architecture
- New IEC Programming languages
- Open common tag database

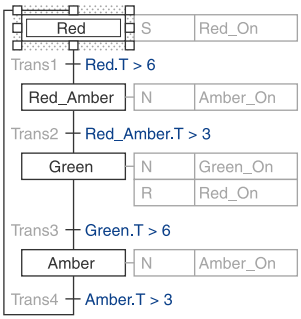
One software for your complete machine

The latest version of CX-One software offers several key benefits to reduce machine downtime.



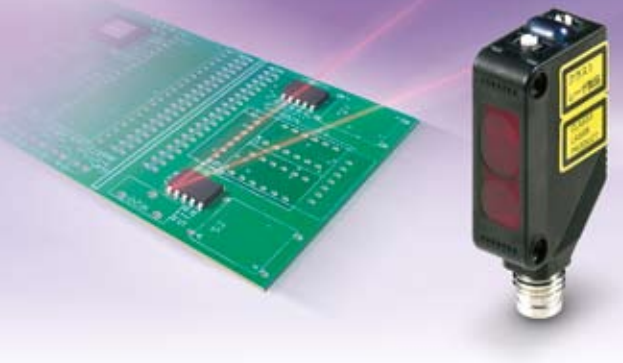
Open configuration architecture using FDT/DTM
If you use standard or complex devices on either Componet and Profibus networks, the full functionality of all devices can be edited, viewed, monitored, uploaded or downloaded from a single software using a single connection.
Since the architecture is open, you can use any devices you want in your configuration without restriction. The advantage is that complex devices become easier to configure, operate or maintain with increased functionality, hence reduce your training needs.

New programming languages
Fully IEC compliant SFC programming is implemented. Offering both class-leading functionality combined with real ease-of-use, allows simple sequencing of even the most complex tasks.
Also new is the ability to create a whole task in ST programming language – making programming easier for a new generation of PLC programming engineers.



Open common tag database
To further simplify the creation of larger projects, the sharing of tags within a project becomes even easier. By using the latest software technology Omron has simplified tag sharing and tag creation on all projects – reducing errors and allowing faster software development.

E3Z-Laser series



Features and benefits:

- Class 1 laser for maximum user protection
- Background suppression with excellent black/white error (‹ 1.5% at 100 mm)
- Long sensing distances: BGS: up to 300 mm, retro-reflective: up to 15 m, through-beam: up to 60 m
- Small visible spot supports easy adjustment

Compact and accurate

Available in BGS (background suppression), through-beam and retro-reflective versions, the E3Z-Laser series offers the ideal solution for precision positioning and detection of small objects in, for example, the semiconductor, packaging or pharmaceutical industry.

The E3Z-Laser series provides long sensing distances using Class 1 red lasers (same classification as normal LEDs). This contributes greatly to user protection (reducing the chance of eye damage).

The use of new, patented high-precision alignment technology minimises beam axis deviation. Moreover, the BGS version is characterized by excellent black/white error of less than 1.5% at 100 mm, providing exceptionally stable detection and operation.

Small visible spot

Small black/white error

High ambient light immunity

Ordering information

E3Z Laser	
Through-beam	E3Z-LT86
Retro-reflective & polarising filters	E3Z-LR86
Background suppression	E3Z-LL86

E3ZM stainless-steel series

Features and benefits:

- High-grade SUS 316L stainless-steel housing offering excellent corrosion and wear resistance
- IP69k high-pressure washdown certified
- Certified detergent resistance by Ecolab

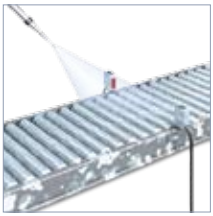
Hygienic and detergent resistant

Sharing the features of our E3Z general-purpose series, the E3ZM series comes in a high-grade SUS 316L stainless-steel housing.

The series features outstanding corrosion and wear resistance, and offers the ideal solution where hygiene and resistance to aggressive cleaning agents are important – as in food-production lines for example.

The hermetically-sealed housing also provides resistance to high-pressure water meeting IP69K requirements.

High detergent resistance



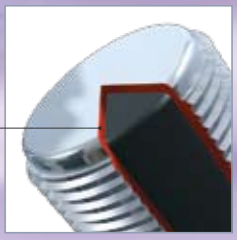
Certified by ECOLAB

Highest water resistance

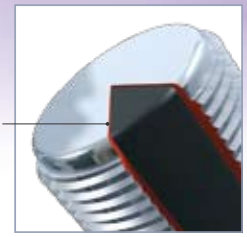
Ordering information

E3ZM stainless-steel	
Through-beam	E3ZM-T86
Retro-reflective	E3ZM-R86
Diffuse reflective	E3ZM-D86
Background suppression	E3ZM-LS86

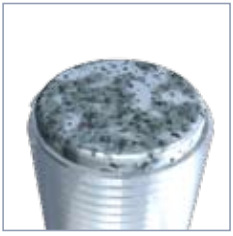
E2FM inductive proximity sensors



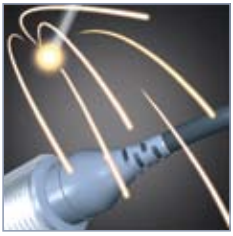
Extra thick E2FM surface
for 20 times longer lifetime



Ordinary product



No interference by
small metal chips



Cable resistant to welding
spatter damage

Zero tolerance on failure

Small things sometimes have a big impact. Proximity sensors may be small and relatively inexpensive, but malfunctions can create big problems for you and your operation like machine downtime, expensive delays and lost business.

That's why you cannot take chances even with the small things. And neither do we! With our E2 inductive proximity sensor series, we take a zero-tolerance approach to failure. Which means we leave nothing to chance. We design the sensors to withstand the toughest conditions they're ever likely to experience in operation.
We manufacture them using the most tightly controlled production processes – with stringent checks at every stage to guarantee unsurpassed quality and reliability. And we subject them to the most demanding tests available to the industry today. Providing objective proof that the E2 series is indeed what we claim – the natural choice when failure is not an option.

Features and benefits:

- Full body and sensing face SUS303 housing
- Optimised frequency modulation for metal-chip immunity
- Flame retardant cable for high protection against welding spatter damage

Stainless-steel for machine-tool toughness

For demanding environments in, for example, machine tool equipment, E2FM stainless-steel sensors are the perfect choice. Their tough all stainless-steel housing is highly resistant to impact, abrasion and aggressive chemicals and oils.

They also feature a sensing surface, which is 0.8 mm thick – 4 times thicker than that of ordinary stainless-steel proximity sensors – making them over 20 times tougher. We've proved this in continuous-impact tests in which ordinary stainless-steel sensors are penetrated after just 10,000 impacts, while the sensing surfaces of E2FM sensors are still intact even after 250,000 impacts. The sensors also feature a special ruggedized cable that's resistant to welding spatter. So they will continue operating in the toughest workshop conditions long after other stainless-steel sensors have been consigned to the recycle bin.

E2FM sensors also require less frequent cleaning than ordinary sensors thanks to the use of optimised low-frequency pulse modulation circuitry that ignores the small metal chips that build up on the sensing surface during milling and cutting. So your process can continue running, interrupted only by your normal cleaning and maintenance cycles.

Certified resistance against detergents and high pressure cleaning

Ordering information

E2FM DC 3-Wire, M12 Connector Models			
Appearance (shielded)	Sensing distance	Output configuration	Model
M8	1.5 mm	DC 3-Wire PNP	E2FM-X1R5B1-M1
M12	2 mm		E2FM-X2B1-M1
M18	5 mm		E2FM-X5B1-M1
M30	10 mm		E2FM-X10B1-M1

E3T-FL miniature size photoelectric sensors

Features and benefits:

- Ultra small size with high power pinpoint LED, where space is crucial
- 3.5 mm thin flat shape
- Pulse synchronisation for high ambient light immunity
- Flat background supression (BGS) with highest repeatability even for differently coloured objects

High precision sensing in the size of a stamp

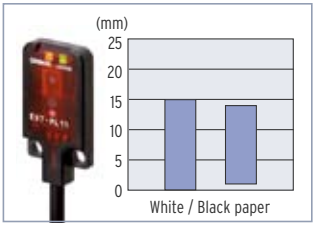
With the E3T-FL, the highest sensing accuracy has been achieved for the first time in a housing just 3.5 mm thick and only the size of a postage stamp. The innovative LED mounting technology enables the realization of stable background suppression for reliable detection of differently coloured object without background or ambient light influence.

First mounted flip-chip in industry

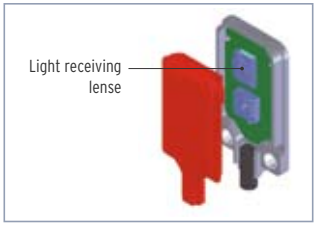
Flip-chip mounting technology, the ultimate in miniature mounting technology for attaching IC chips without covering them in resin, makes the slim structure of the E3T-FL possible. The E3T-FL is just 3.5 mm wide, even with a two-part light receiving element on the surface of the circuit board and a signal processing IC on the rear. Flip-chip mounting of the IC has enabled the mounting volume to be kept to the absolute minimum.

High-precision alignment technology

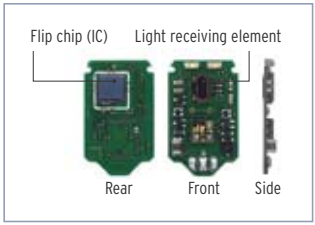
The E3T-FL sensing distances are subtly controlled using high-precision alignment technology, which aligns the optical axes of more than one part. The light receiving lens with its unique thinwalled structure is automatically adjusted inline to keep sensing distance fluctuations to a minimum.



Minimal black white error



Unique light receiving lens shape for high precision alignment



New mounting technology for reliable background suppressions in 3.5 mm flat housing

E3X-DA□-S remote photoelectric amplifier

Features and benefits:

E3X-DA□-SE-S
Easy teach & go remote photoelectric amplifier:

- One button teaching
- Sensor check at a glance from one central location

E3X-DA□-AT-S
Auto-compensation remote photoelectric amplifier:

- Active Threshhold Control for power loss (dirty lens) compensation

Teach & go – machine sensing at a glance

The E3X-DA□-S remote photoelectric amplifier significantly reduces sensor setup and maintenance time compared to standard compact sensors.

Sensors are usually located in many different places in a machine and often cannot be accessed easily after installation.

With Omron's E32 fibre optics the sensing information is transported from all places to the E3X amplifiers in one central location. All setting operations and functional checks can be carried out with ease from this location, reducing the time for sensor setup drastically.

The E3X-DA-□-SE-S makes it even easier and faster for users with the one-button, teach & go feature. Simply set up or modify all your sensors in your machine with a few button clicks from one central location.

In addition to the ease-of-use of the standard models the E3X-DA-□-AT-S ensures highest signal stability to keep your machines running even in changing environmental conditions. The Active Threshhold Control (ATC) compensates effects from dirty lenses. An alarm output provides an additional early warning signal so cleaning and maintenance can be scheduled between the next production cycles.

F3S-TGR-KXC safety light curtains

Features and benefits:

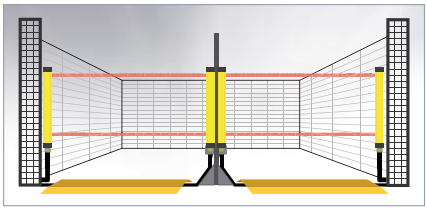
- Body protection
- Complies with EN 61496 Type 2 and Type 4 safety standard
- Active-passive 2, 3 and 4 beam systems
- Fully integrated muting function
- Detection distance up to 6 m
- Protective height 500, 800 and 900 mm
- Beam pitch 500 mm (2 beam), 400 mm (3 beam), 300 mm (4 beam)

Made for palletising applications

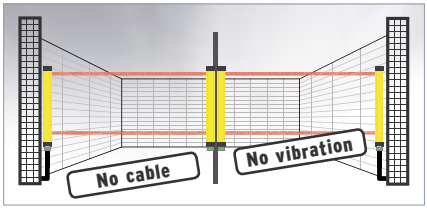
Omron's latest development in safety light curtains, the F3S-TGR-SBx-KxC series is the perfect choice for palletising applications.

The series features both Type 2 and Type 4 safety products and is distinguished by the transmitter and receiver being integrated into a single unit, creating an active-passive system with a simple reflector forming the second unit of the light curtain.
This greatly simplifies installation and reduces costs.

The series also embodies a fully integrated muting function that prevents automatic machine shutdown when palletised products pass through the light beams. This further simplifies installation by cutting the amount of wiring needed and eliminating the need for a separate muting control box.



Through beam type



Active-passive type: No cabling to the post in the middle, no protection of cables necessary, no vibration

Junma ML-2 servo system

A new concept in drive simplicity

The Junma ML-2 ultra-compact servo series draws on our world-leading servo-drive technology to open up new dimensions in drive simplicity.

The Junma is probably the first servo drive that is fully tune-less and programless. It also comes with a built-in MECHATROLINK motion bus.

The Junma can save you up to 30% of cabinet space and up to 50% in cabling and set-up time.

Features and benefits:

- Pocket-size servo with 12x5 cm footprint
- Tune-less and program-less operation
- Built-in MECHATROLINK motion bus reduces cabling and allows remote servo configuration and diagnosis
- High starting torque: 300% in 3 sec.
- Fast response to torque: 250 µs
- Node selection switch
- MECHATROLINK-II port
- IOs connector
- Encoder connector
- Power connectors

Omron keeps you up-to-date...

Here you find the latest news about our new product updates in sensing, control, visualisation, motion and panel components.

Of course, Omron offers a much larger range of products that you can find in this in hand product news magazine. For more information on services and company competence, please have a look at our catalogues or visit our website at www.omron-industrial.com.

SmartSlice family

Features and benefits:

- Single-channel counter units
- Up to 100 kHz input frequency
- 24 V or line-driver inputs
- Multi-purpose control
- Input & fast outputs included
- Decrease costly downtime

You can count on SmartSlice

The scope of Omron's SmartSlice remote I/O system has been widened with the introduction of two high-speed counter units.

The GRT1-CP1-1 counter unit accepts pulse train signals or incremental incoder inputs. It has an integrated reset input plus one control output, and can be used e.g. for accurate dosing applications. The GRT1-CP1-L counter/positioner unit additionally accepts 100 kHz line-driver signals. With its multi-purpose control input and two physical outputs, it is suitable for simple yet precise positioning applications, e.g. using an inverter with start/stop and high/low speed control.
Both new units include common SmartSlice features such as tracking the operation time, logging the number of I/O operations, and error reporting.
Visit www.SmartSlice.info for more information.

Junma Pulse servo drive

New features and benefits:

- Ultra compact size: 44% less space
- Yaskawa tuning-less technology built-in. No servo drive parameter setting is necessary
- Output range from 100 W to 750 W
- Servo drive with position and speed controlled by pulse input
- Position resolution of 8,192 steps per revolution
- Cost-effective servo solution

No more servo parameter setup – saving space and time.

Trajexia motion controller

Trajexia expands with 2 new modules

Flexible Axis module
The Flexible Axis module allows full control of two actuators via analogue output or pulse train. The module supports the main absolute encoder protocols allowing the connection of an external encoder to the system.

DeviceNet module
Trajexia expands its connectivity with the new DeviceNet module to be immediately integrated in your actual solutions when the variety of your machines require different network architectures.

New features and benefits:

Flexible Axis

- Full control of 2 axes
- Close loop analogue control and pulse train output for each axis
- Support for SSI, Endat and Tamagawa absolute encoders

DeviceNet

- DeviceNet connectivity option for Trajexia
- Supports Omron's newest DeviceNet slave features

G2RV push-in terminals

New features and benefits:

- PLC Interface quickly connects 8 sockets at once
- Cables for PLC interface in various length and configurations
- Custom cables for PLC interface available upon request
- Cross-bars available with 2, 3, 4, 10, 20 poles in red, blue or black

G2RV accessories reduce setup time

Shortly after introducing the first 6mm relay with strong mechanical pins, a full range of accessories has become available to facilitate easy wiring and reduce setup time.
The portfolio exists of a full range of cross-bars in various colours and number of poles (P2RVM-series) and a PLC interface module (P2RVC-8-O-F). The latter allows an easy connection between G2RV-SL700 series and PLCs; wiring up 8 sockets at once. Various cable configurations are available in order to quickly connect (multiple) PLC interfaces directly to industrial PLCs like Omron's CJ1.

G7Z high-capacity relay

New features and benefits:

- Switching current 160 A (40 A rating / 4 pole)
- Switching voltage 440 VAC
- Safety function with mirror contacts in various configurations
- Power consumption less than 4 Watts
- Low switching noise (70 dB)

Compact high-capacity power relay

G7Z series provides a compact, cost-efficient solution for applications like inverters, UPS, solar and fuel cell battery circuits. In combination with the auxiliary contact block, it meets EN 60947-4-1 for mirror contact mechanisms and the contact block is available in various configurations to simplify your design and reduce costs.
Coil ratings are 12 and 24 VDC. Power consumption is less than 4 Watt. The relay can easily be mounted on a DIN-rail, which makes it ideal for industrial applications.

S8M digital multi-circuit protector

Features and benefits:

- 4 circuit protection up to 4 A per channel
- UL Class 2 (max. 3.8 A)
- Emergency stop by external signal
- Optimum use of available power through startup sequence
- Maintenance control

S8M, full control over 24VDC-supply

With the S8M your machine will comply directly to UL Class 2, maximum tripping current is 3.8 A per channel (adjustable). This unit can control up to 4 circuits. Additionally, you will get startup/ shutdown –sequence control, display and alarm functions, like voltage, output current, run-time, and over temperature and external reset. These functions can be set by using the front buttons or with the free support software. The settings can be protected.

S8VM power supplies

New features and benefits:

- Full range in wattage and output voltage
- Power failure function
- Universal input voltage
- Uniform height

S8VM additional models 300/600/1,500 W

With the same height of only maximum 85 mm these 3 models complete the S8VM line. Now we offer models from 15/30/50/100/150 Watt to 300/600-1,500 Watt. The new models are equipped with fans to keep the internal heating to a minimum to guarantee lifetime.

Furthermore, there is a power failure function on the 300/600-1,500 Watt types when abnormal output voltage occurs. All models are available with an output voltage of 5 V, 12 V, 15 V or 24 V (1,500 W only with 24 V output). The input voltage is universal from 100 to 240 VAC.

OMRON EUROPE B.V. Wegalaan 67-69, NL-2132 JD, Hoofddorp, The Netherlands.
Tel: +31 (0) 23 568 13 00 Fax: +31 (0) 23 568 13 88 www.omron-industrial.com

Austria
Tel: +43 (0) 1 80 19 00
www.omron.at

Belgium
Tel: +32 (0) 2 466 24 80
www.omron.be

Czech Republic
Tel: +420 234 602 602
www.omron.cz

Denmark
Tel: +45 43 44 00 11
www.omron.dk

Finland
Tel: +358 (0) 207 464 200
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France
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www.omron.fr

Germany
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www.omron.de

Hungary
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www.omron.hu

Italy
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www.omron.it

Middle East & Africa
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www.omron-industrial.com

Netherlands
Tel: +31 (0) 23 568 11 00
www.omron.nl

Norway
Tel: +47 (0) 22 65 75 00
www.omron.no

Poland
Tel: +48 (0) 22 645 78 60
www.omron.pl

Portugal
Tel: +351 21 942 94 00
www.omron.pt

Russia
Tel: +7 495 745 26 64
www.omron.ru

Spain
Tel: +34 913 777 900
www.omron.es

Sweden
Tel: +46 (0) 8 632 35 00
www.omron.se

Switzerland
Tel: +41 (0) 41 748 13 13
www.omron.ch

Turkey
Tel: +90 (0) 216 474 00 40
www.omron.com.tr

United Kingdom
Tel: +44 (0) 870 752 08 61
www.omron.co.uk

More Omron representatives
www.omron-industrial.com

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