

Product News

Spring 2007



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Never stop, never fail, just create...




10 years lifetime? Just normal!

Dear readers,

A new standard has been set with the launch of the new V1000 inverter drives. It is the first time where a drive is designed and built to operate in an industrial environment for 10 years. All critical parts like fans, capacitors and Insulated Gate Bipolar Transistors (IGBT's) are now designed to last for a minimum of 10 years. This removes a huge burden on maintenance costs for users and machine builders alike. This issue also highlights

Omron's new open sensor/actuator network CompoNet where transparency, system flexibility and above all openness are demonstrated. Once again welcome to Omron's industrial automation world where innovation and quality meet.

 For more new products and more information visit: www.omron-industrial.com



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CompoNet™ Remote I/O**CompoNet, the open network for high speed control**

With CompoNet, Omron introduces a new control network that combines fast response with easy installation and intelligent communication.

By adapting the proven CIP protocol to a robust physical layer, we have created a network ideal for in-machine control as well as distribution of bit-size I/O stations over wide areas. Apart from an I/O capacity of up to 384 slaves, and a guaranteed cycle time of less than 1 ms for 1000 digital I/O points, CompoNet also offers message transfer to configure and monitor more complex field devices.

Achieve more with less effort

Omron's initial product range for CompoNet comprises master units for CJ1 and CS1-series PLCs, remote I/O in IP20 and IP54 protection class, and a full range of cables, connectors, repeaters and

software tools. The master units automatically scan the network at startup, allowing system setup in seconds. For detailed settings or troubleshooting and maintenance work, a free software tool is available that provides access to CompoNet via any connection path to the PLC.

Slaves to fit anywhere

CompoNet slaves include compact multipoint digital and analog I/O units, while so-called "bit-slaves" are used for distribution of small numbers of I/O points over long distances, e.g. on conveyor lines. Omron's IP54 bit slaves have a robust construction to provide sensor- and actuator connections outside the control cabinet, Sensor wires can be connected directly to the I/O slaves, without costly connectors and cable assemblies.





Features and benefits:

- High performance 1000 I/O points in less than 1 ms, max. 384 nodes
- Simple settings, automatic baud rate, decimal address setting, status display
- Easy installation, fast wiring system, flexible layout, bit-level distribution
- Intelligence built-in, preventive maintenance data, smart diagnostics, transparent CIP messaging
- Fast troubleshooting, extensive error detection, network segmentation to isolate faults

Easy & flexible installation

Network cable can be unshielded twisted pair of 0.75 mm² for sections up to 500 m, and this distance can be extended to 1500 m using repeaters. For quick and fault-free wiring, a four-wire flatcable system has been developed that pro-

vides I/O power to slaves, and allows free-topology wiring. This quick-connect wiring system is available in basic IP20 form, but also with an IP54 rating that permits network branching even in dusty or wet environments.

Open for all

Interoperability guaranteed

The Open DeviceNet Vendors Association (ODVA) has included CompoNet in the CIP networks family, and controls specifications and device certification. For its nearly 300 member compa-

nies developing a wide variety of products, ODVA's involvement will assure plug-and-play operability of all devices.



CJ1W-DCM11-E DC motor control unit**Features and benefits:**

- Ideal for speed and simple position control of 24V brush-type DC motors
- Supporting PWM, encoder input and four digital inputs
- Continuous output current of 4A max. (10A peaks for 5 sec.)
- Fully protected against short circuits, reverse connections and overloads

Speed and simple position control

Using Pulse Width Modulation (PWM) for speed and direction and supporting counter inputs this unit provides simple but effective position control for 24V brush-type DC motors.

Especially in applications like conveyor systems, textile machines and printing machines this unit can help automate your machines.

CJ1W-AD04U universal analog input unit**Features and benefits:**

- 4 freely selectable and fully isolated inputs (V, I, thermocouple, RTD)
- Resolution of 1/32000 (15 bits)
- Accuracy of $\pm 0.3\%$
- Supports scaling, alarms, offset/gain adjustment
- Available in screw and screwless connection types

Input flexibility for small systems

CJ1's wide range of analog input units is now expanded with a new cost-effective solution for those applications needing different types of analog inputs.

Combining four freely selectable input types with high accuracy and ease-of-use this unit provides the required flexibility for small systems.

Sysmac One



Features and benefits:

- HMI + PLC with 2 separate CPUs for greater reliability
- Transparent architecture for easy remote maintenance
- Compact design occupying less panel space
- Flexible and cost-effective solution with multiple screen sizes, CPUs & networks
- Smart Active Parts for easy connection to field devices

Omron makes panel-space shortage a thing of the past

The launch of its Sysmac One series combining control and HMI functionality in one transparent package not only reduces installation time, it saves valuable panel space without any compromises on capability. It comprises a NS-series HMI, available in a wide range of sizes, a choice of two powerful CJ1 series PLCs, a standard network interface (e.g. DeviceNet or Profibus) and an optional Ethernet interface, all in one unit.

Full featured

With the full functionality that users would expect from separate units, the Sysmac One series is a flexible and cost-effective solution, but it offers much more. Separate CPUs are built in for better reliability, whilst the transparent architecture enables easy remote maintenance. Both the PLC and HMI part and even field devices are transparently accessible through a single port.

As well as incorporating multiple networks, Omron's Smart Active Parts technology means that connection to field devices is easy.

There is even an option to place an extension board at the back of the Sysmac One series offering an advanced Ethernet interface or an I/O extension board.

Integrated concept

The Sysmac One is completely integrated into Omron's CX-One concept. CX-One software allows users to build, configure and program a host of devices such as PLCs, HMIs and motion-control systems and networks using just one software package. This allows automation systems to be programmed or configured with minimal training.

I/O option

The compact and reliable Sysmac One combines perfectly together with Omron's new and intelligent SmartSlice modular I/O system.



**Features and benefits:**

- Efficiency improvement of program development
- New IEC programming language (SFC)
- Improved Function Block and Structured Text programming functionality
- New features available as of CX-One V2.1

Develop PLC programs more efficiently

Function Block (FB) programming

The online-edit functionality of the Function Block body is added, allowing changes in the logic of a Function Block and adding internal variables even during operation, enabling the programmer to save time on the debugging process.

A new data type (String) added for Structured Text Programming

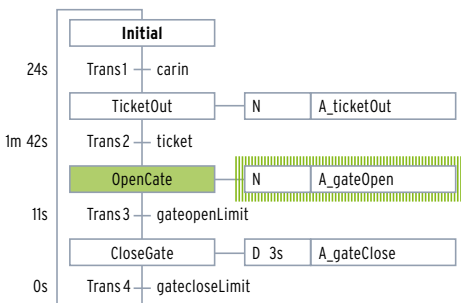
By adding the STRING data type, it has become much easier to display or send character string data. Converting character data into numerical data is no longer required, saving time and preventing mistakes.

New programming language: Sequential Function Chart (SFC)

As applications are getting larger and control events are becoming more complex, the need for functional descriptions increases, making ladder programming inadequate. The IEC61131-3 compliant SFC programming language describes these control sequences in graphical schedules.

Advantages of SFC programming

The control program is described in a more abstract way making it more task oriented and less hardware dependent. This makes it much easier to understand especially for the new generation of PLC programming engineers.



SFC allows program code to be divided into smaller graphical parts, making it possible for each machine section to have its own and therefore enabling easy reuse. A hierarchical structure can then finally describe the complete machine.

DyaloX HMI software



The DyaloX IPC is now available packaged with two choices of HMI software. A choice can be made between NS runtime, software for running (re-using) projects developed for NS-series HMI or CX-Supervisor Machine Edition, an open HMI software package targeting machines visualisation.

DyaloX packaged with PC based HMI software

In creating the DyaloX, Omron has drawn on its extensive experience in the manufacture of industrial-class stand-alone PC-based equipment (like ATMs) to create special self-diagnostic hardware and software. This includes the company's proprietary RAS (Reliability, Availability, Serviceability) solution in which a built-in RAS board, interfaced by RAS utility software, continually monitors and logs the status of the IPC.

From Q2 2007 the DyaloX can be purchased as a cost-saving package that includes a DyaloX IPC together with HMI software (not pre-installed).

The DyaloX can be ordered with two different software options:

NS-Runtime

The first option offers NS-Runtime software that enables users to re-use an NS-series HMI project and run that on the DyaloX.

Additional functionality consists of specially added functions to display documents and extra macro's that can be used, for instance, to start all user-defined applications from the Runtime project.

CX-Supervisor Machine Edition

The second option is called CX-Supervisor Machine Edition, offering CX-Supervisor Machine Edition software, a standard Windows HMI package that uses open technologies like ADO, ActiveX and OPC to provide comprehensive database connectivity, multi-vendor support to OPC servers and VBScript support, which is extendable with off-the-shelf and custom controls.

For ordering information contact your local Omron office.



Sigma II servo drive with safety



New features and benefits:

- Embedded Safety stop function Category 3 (EN954-1)
- 300% peak current for 3 seconds
- Automatic motor recognition with auto-tuning function
- Analogue and pulse inputs for speed, torque and position control
- Optional units for field buses, Mechatrolink II, servos and motion controller and indexers
- Trace function allowing oscilloscope function

Designed with ZERO compromise

The Sigma II servo series was designed with ZERO compromise on quality, reliability or performance. Now thanks to the embedded safety stop feature the new drives can easily be integrated in the safety circuit. Safety Category 3 can be achieved without additional contactors.

F7 frequency inverter with safety



New features and benefits:

- Embedded safety stop function, category 3 (EN954-1)
- Flux vector control. Excellent performance in open-loop mode with 150% torque at 0.5Hz
- Wide selection of option cards: fieldbus, PLC unit, Mechatrolink, analogue and digital I/Os, etc.
- Programming software: CX-drive for parameter configuration
- CASE (inverter application software) and PLC option board

The industrial workhorse

The F7 drive is intended to handle every conventional drive application from simple variable torque pumping to sophisticated networked material handling. Since competitive machinery demands highest reliability of drives to ensure maximized throughput, safety functionality is now embedded.

Frequency inverter V1000



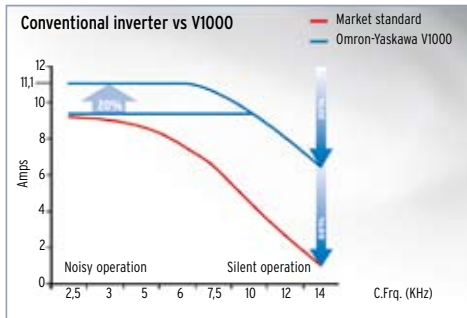
Features and benefits:

- Up to 15kw
- 54% less mechanical elements – reduced size, improved reliability
- Built-in filter
- Control terminal board with memory
- Current vector control
- Low-noise technology
- IM and PM motor control
- On-line tuning technology
- Embedded safety stop function Category 3 (EN954-1)

10 x 100 = 1 Quality has a new formula

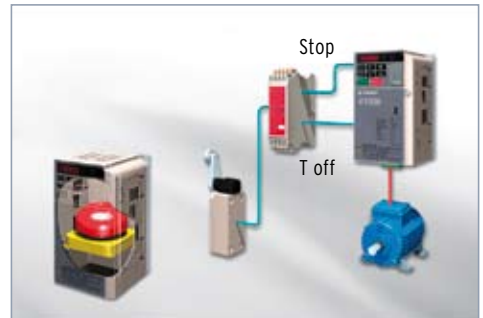
Thanks to patented design of the V1000 series and modern manufacturing the series is built for 10 years lifetime without maintenance. These new features guarantee a 100% expectation match.

And with a field failure rate of less than 1 in 10,000, the new V1000 series inverter will outperform all other inverters long after it has been implemented.



V1000 double rating: performance guaranteed

V1000 is able to increase the output current by around 20% when moving down in frequency carrier thanks to its double rating. The standard setting is constant torque (CT: 150% rated current/1 min) and increasing output current when in the variable torque mode (VT: 120% rated current/1 min).



Time-saving safety feature

Safety is embedded in the V1000 from the inside out, making it easy for you to integrate the inverter into your machine system and avoid difficult connections to safety controllers. Dual safety inputs (acc. to EN954-1 Safety Category 3) will disconnect the motor faster at the first sign of trouble, while reducing external wiring and contactors.

E2EC-M miniature inductive sensor



Features and benefits:

- Separate sensing head for enhanced durability in demanding environments
- Full metal-face for highest mechanical resistance

Miniature inductive sensor with stainless steel face

The E2EC-M remote amplifier inductive sensors are designed for metal object detection in tight spaces and rough environments like assembly machines for the automotive industry.



E2EH heat-resistant inductive sensor



Features and benefits:

- Temperature resistance up to 120°C
- SUS 316 housing with high performance plastic sensing face
- IP69k for highest water resistance

Reliable detection in high-temperature environments

The special environment line of inductive sensors provides enhanced resistance to environmental influences for highly reliable metal object or machine part detection.



E3ZM-C oil-resistant metal housing photoelectric sensor



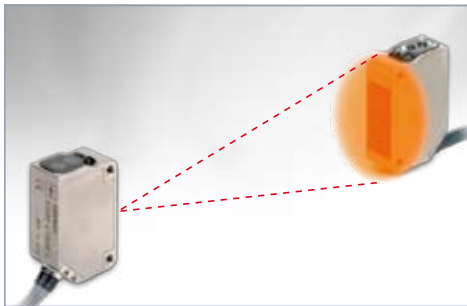
Features and benefits:

- Oil-resistant stainless steel housing
- IP67 and IP69k for highest water resistance
- High visibility orange LED



Made for oil-resistant object detection

The special environment line of the E3Z compact photoelectric sensors is used for object detection with high functional reserve in dirty or aggressive-media environments like automotive assembly lines.



A through-beam sensor with a visible spot for easy beam adjustment



Twist-and-click M12 pre-wired connector: only 1/8th turn locks the connectors

ZFX vision sensor



Coming soon!

Features and benefits:

- Easy vision – intuitive teach & go user interfaces
- Live – built-in LCD touch monitors for setup and immediate feedback
- Hybrid concept – colour and monochrome functionality in one
- Versatile – 20 detection tools and 32 inspections per image
- Simplicity – auto-adjustment functions for easy image set-up

Easy meets advanced

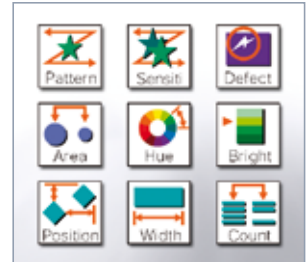
Usability is the key for Omron's family of easy-to-use vision sensors. In addition to the well-established easy-vision sensor ZFV the new ZFX adds advanced functionality to usability. Via its 3.5" touch screen, the ZFX provides an easy and

intuitive set-up method for its full range of professional inspection, communication and support tools. The ZFX comes with colour and monochrome functionality and best in class cameras.

Large variety of camera heads



Large variety of tools



Smart profile measurement sensor ZG



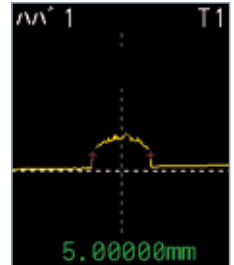
Features and benefits:

- Easy to use – intuitive user interface
- Live – built-in LCD monitor for setup and immediate profile display
- 18 measurement tools
- Accurate – 5 μm resolution
- Wide profiles – up to 70 mm

Easy profile inspection

The new ZG Smart sensor shows, that profile measurement and easy operation are no longer in contradiction. The built-in LCD monitor for an easy and intuitive user interface supports efficient installation, setup and provides immediate live feedback of the measurement result in real time. Advanced measurement tasks can be configured within 3 steps and save time for operation and setup with fine tuning of the settings can be achieved in seconds.

The ZG solves advanced measurement tasks with 18 different functions available. They allow calculating width, height, angle, area, etc. of the profile. Precise and stable shape measurement is guaranteed on almost all materials and surfaces. Changing materials and conditions are managed by the ZG itself in order to avoid time-consuming reconfigurations and reliably detect the objects. Intelligent mechanisms, such as automatic adjustment of the laser power and the capability to take several images, make stable results no longer an issue.



E32-ET16WR area-sensor fiber head



Features and benefits:

- 50 mm (effective 40 mm) wide sensing area
- Plastic or detergent resistant SUS housing

Passage monitoring for small objects

The area-sensor fiber heads in combination with the high-performance E3X amplifiers can be used for passage monitoring of small-sized objects on conveyor lines, providing an alternative to light curtains.

E32-T24S-1 edge-detection fiber head for clear labels



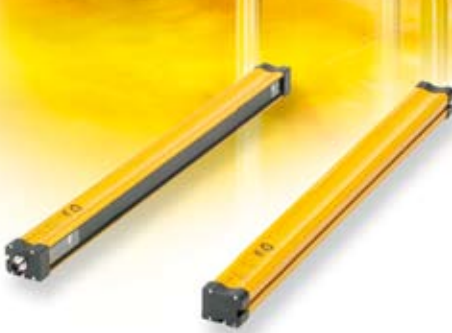
Features and benefits:

- Special focus lens for label edge detection, even for transparent labels on transparent film

Detailed label-detection fiber head

The special focus fiber heads in combination with the high performance E3X amplifiers can be used for detection of the most demanding objects or object details.

F3S-TGR-K safety light curtains for body protection

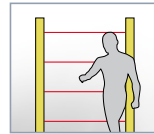


Features and benefits:

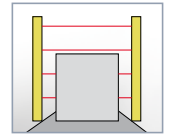
- Sensing distance up to 50m
- Muting function included (no additional controller needed)
- Conforms to safety categories 2 or 4 acc. EN 61496-1

Safety sensor for perimetrical guarding

Type 2 and type 4 perimetrical guards with working distance of up to 50m and fully included muting function complete the range of KxC-guards.



Bodyprotection



Muting application

F3S-TGR-N non-contact safety switches



Features and benefits:

- Excellent coverage of mechanical tolerances
- Operates behind stainless steel fittings
- Non-contact, no abrasion, no particles
- In plastic or stainless-steel housing
- Conforms to safety categories up to 4 acc. EN 954-1 and PDF-M acc. EN60947-5-3
- Operates with all Omron safety relay units and safety bus interfaces

Monitoring the status of guarding doors

TGR-N non-contact switches monitor the status of guarding doors. LED for easy diagnosis and stainless-steel housing for high hygienic standards in the food industry are available.

ZEN-10C3/4 and ZEN-20C3 programmable relays



New features and benefits:

- ZEN-10C3 & ZEN-20C3 have fixed I/O
- The ZEN-10C4 has RS-485 communication
- High-speed counter input
- High-accuracy calendar

Flexible automation expanded

With a total choice of 4 different 10 I/O (6 I, 4 O) CPU units and 3 different 20 I/O (12 I, 8 O) units, all kinds of control automation functionality can be fulfilled.

If 10 I/O or 20 I/O is enough for your system, we offer two new models with fixed I/O. And if you need more I/O and more functionality the ZEN-10C4 is equipped with communication and offers the possibility to link up to 32 units.



ZEN expansion unit

G2RV push-in terminals



New features and benefits:

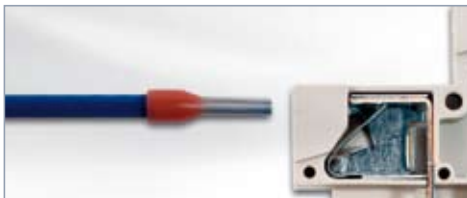
- No tools required
- Wiring time reduced
- Improved contact reliability
- Fits stranded wires (with ferrules) 0.5 - 2.5 mm²
- Fits solid wires 0.5 - 4.0 mm²

Coming soon!

Reduce wiring time by using push-in technology and cross-bars

Wiring time can be significantly reduced by using the G2RV-SL500 series. Only 2 steps are required to achieve a reliable connection between wire and terminal. Just remove the isolation and push-in the wire. Especially when a high number of connections has to be made, which typically is the case for applications when using slim relays, money can be saved compared with conventional

screw or tension clamp technology. Further reduction is possible when using the full range of cross-bars, which are available in 3 different colours and 4 different configurations (2, 3, 4, 10 and 20 poles). Cross bars easily can be tailored by breaking pins away to meet your configuration requirements.



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