

# SMART REMOTE I/O



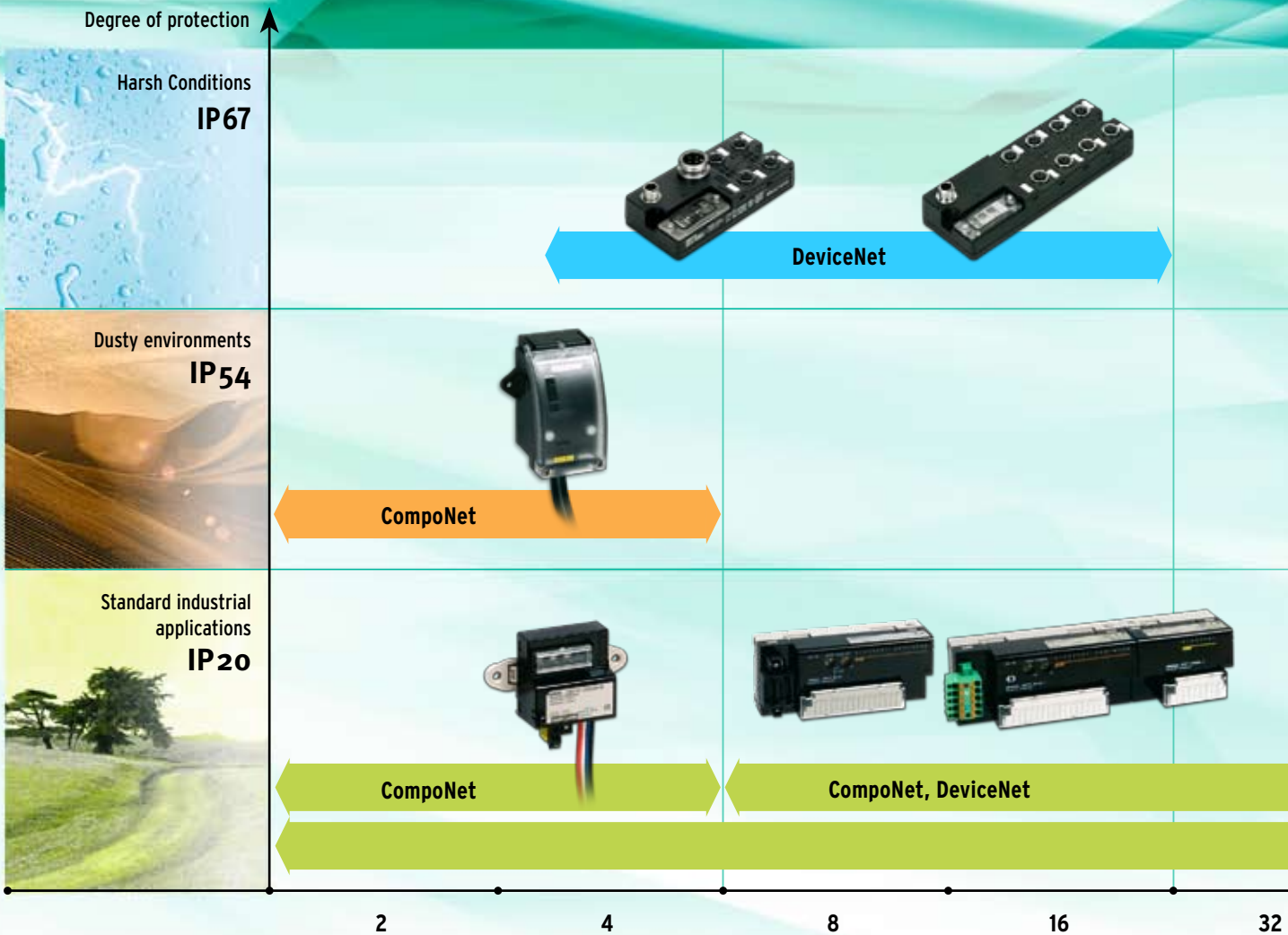
Intelligence in any environment

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# SMART I/O FOR EVERY APPLICATION



## THE RIGHT SOLUTION FOR ANY APPLICATION OR ENVIRONMENT

- The right protection for any environment (IP20, IP54, IP67)
- From two to 256 I/O points per station
- A choice of open networks (DeviceNet, PROFIBUS, CompoNet)
- All managed by the same software (CX-One)

Omron offers a wide choice of remote I/O for every situation and for any industrial environment. They can be connected to a choice of open networks and have smart features that will save engineering time, help you to plan preventive maintenance and increase productivity while reducing running costs. What's more, Omron's "Smart Platform" products can all be managed by a single software package (CX-One), which means further savings in terms of installation costs, complexity and training.





DeviceNet, PROFIBUS-DP

64

128

256

I/O points per station

## SmartSlice

- ▶ Intelligence Point by Point 4  
Smartslice: the smartest I/O of all

## IP 20

- ▶ Compact, cost-effective and quick 6  
CompoNet: put your I/O where you need them  
DeviceNet: compact and versatile

## IP54

- ▶ Smart I/O in a tough shell 8  
CompoNet field I/O: the smart alternative

## IP67

- ▶ Rugged I/O that nothing can stop 10  
The ideal solution for when the going gets really tough

## Smart features

- ▶ Omron Smart I/O 11  
At the top of their class

### Flexibility with intelligence

Whether just required for a couple of digital I/O or extensive data monitoring and analogue control, Omron's remote I/O offer flexibility matched with the intelligence you need for your application. They are available in compact, modular and expandable configurations and with a choice of wiring methods, either screw terminals, screwless push-in terminals, or standard connectors.

### Choice of networks

With many years of experience in the design and manufacturing of industrial automation systems, we realize that your machines for export may be destined for a region of the world with different network standards. This is why Omron is one of the few major players to offer three main networks in parallel: DeviceNet, PROFIBUS and CompoNet.





## YOUR BENEFITS

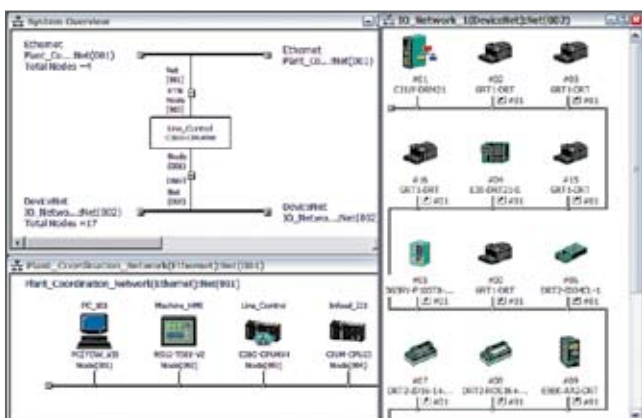
- Most compact modular remote I/O on the market
- Up to 64 I/O units per station
- Built-in smart features to save PLC programming
- Easy installation and maintenance without tools
- Hot-swappable without rewiring
- Connects to any control system with open communication standards (DeviceNet or PROFIBUS)

## SMARTSLICE GRT1: THE SMARTEST I/O OF ALL

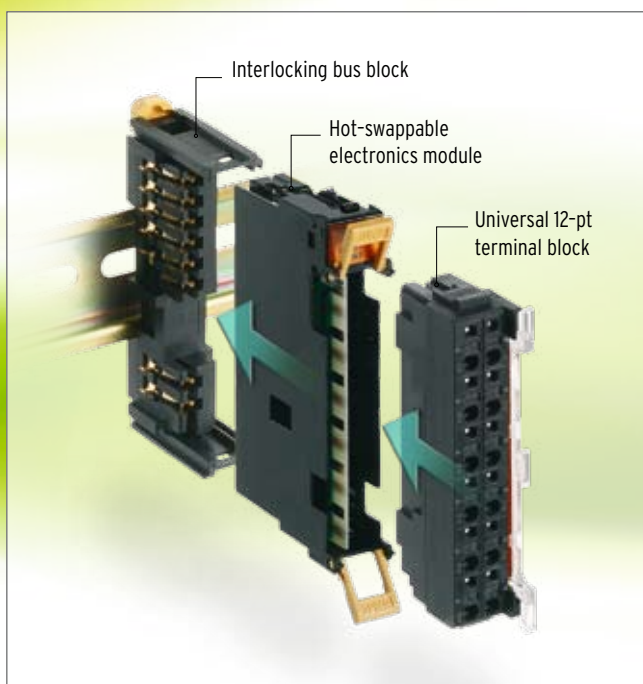
Omron's SmartSlice is a modular I/O system packed with cost- and time-saving smart features that make it the most intelligent and easy-to-use remote I/O system available. If you work with a mix of both digital and analogue signals and are looking to reduce your engineering, troubleshooting and maintenance, SmartSlice is the I/O system for you. It can be expanded up to 64 I/O units and its special 3-piece construction enables modules to be hot-swapped during operation and without rewiring. All settings are restored automatically after hot-swapping.

### Keep your machines running

Each SmartSlice I/O unit has built-in intelligence that helps you plan machine maintenance and minimize unscheduled machine downtime. It not only remembers its last maintenance date, all units also collect operation data and will warn you when thresholds are reached, e.g. a number of operations, a time interval, or an out-of-range supply voltage. Connection to control systems can be via the open communication standards DeviceNet and PROFIBUS. Both offer messaging to fully exploit SmartSlice's built-in intelligence. Additionally, DeviceNet offers plug-and-work communication with Omron PLC systems without setting up.



- ▲ **Transparent communication:** SmartSlice connects to control systems via open communication standards.



- ▲ **No need to stop:** The reliable 3-piece construction enables you to swap modules during operation, without rewiring. After you have set up all units, their parameters can be backed up in the bus interface unit at the flick of a switch. Restoring the settings is even simpler; after hot-swapping a unit, all settings are automatically loaded.

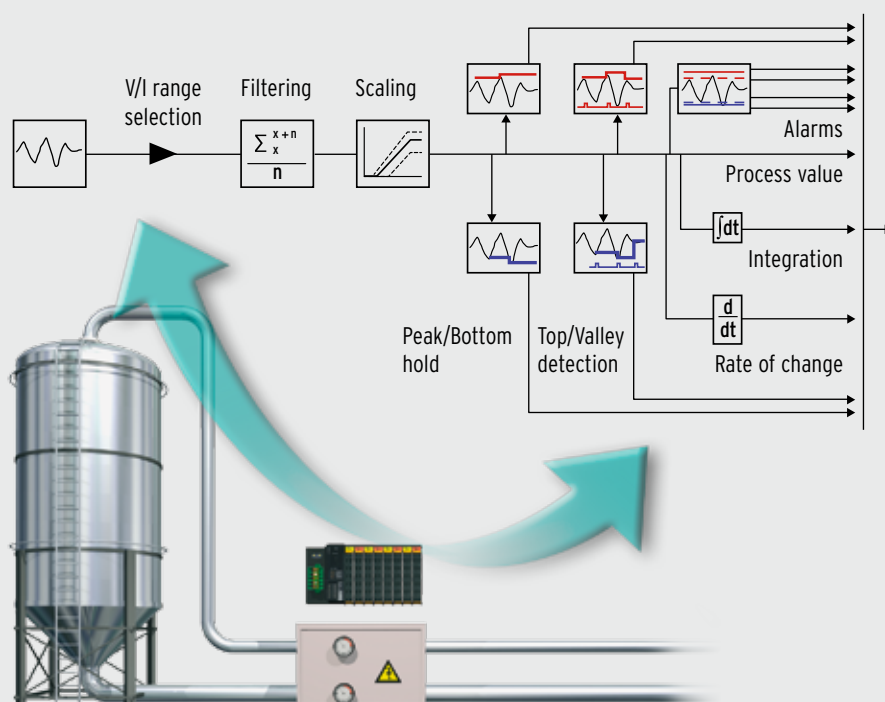
- ▲ **No tools required:** Easy push in wiring for quick installation. The SmartSlice terminal blocks provide fast and reliable screwless clamp connections.

## SMART FEATURE EXAMPLE: BUILT-IN CALCULATIONS



Calculations on analogue data can be complex to make in PLCs, especially when the signal behaviour in time must be analysed. Smart analogue I/O units have built-in functions to reduce your PLC programming considerably.

Besides scaling and alarms, SmartSlice analogue inputs have built-in integration (e.g. to calculate a volume based on analogue flow measurements) and rate-of-change calculation (e.g. to warn if an analogue value is changing faster than expected).





## YOUR BENEFITS

- Compact IP20 housing
- Digital I/O wherever you need them
- Built-in diagnostics and preventive maintenance functions
- Securely latching sensor connectors
- I/O power supply via CompoNet and DeviceNet



## COMPONET CRT1: PUT YOUR I/O WHERE YOU NEED THEM

The youngest member of the ODVA networks family is CompoNet. While keeping the transparent communication of DeviceNet, this new network is designed for maximum ease of use.

### Best of both worlds

In high-speed mode, it is ideally suited for in-machine use with consistent sub-millisecond response times. In long-distance mode, it offers free network topology and fine distribution of I/O points over a wide area.

### One cable is all it takes

A special flat cable and IDC connectors make CompoNet easy and quick to install. And even if measurement points are distributed over a large area, e.g. in conveyor systems or warehouses, that is no problem. One cable is all that is required to wire up the whole system, both easily and cost effectively.



- ▲ E-CON plugs connect your sensor cable to the I/O unit. Fast, simple and secure.



- ▲ Reduce the chance of wiring errors by mounting I/O units directly next to your machine's sensors and actuators, wherever they are located.



## YOUR BENEFITS

- Compact IP20 housing
- Expandable digital I/O
- Built-in diagnostics and preventive maintenance functions
- Detachable I/O terminal blocks
- Analogue I/O with data processing and alarm functions

## DEVICENET DRT2: COMPACT AND VERSATILE

If space restrictions in your machines require you to use the most compact equipment, our slim-line CompoNet and DeviceNet modules offer the ideal solution. These block I/O units have every smart feature necessary for your application, including operation timers and counters per input point, analogue value calculations and alarms. Smart I/O continuously monitor, record and check data against the limits that you set. Any deviations are flagged immediately.

### Optimum performance

With all performance data collected autonomously by the I/O, your control system can be optimised for performance, allowing you to build the best and easiest-to-maintain machines in less time.

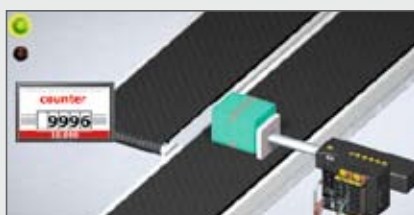


- ▲ Space savers in your control cabinet. The high density of compact CompoNet and DeviceNet I/O gives you more space to work.

## SMART FEATURE EXAMPLE: MAINTENANCE COUNTERS



Smart I/O will keep track of the duration and number of operations to help you plan machine maintenance. Timely warnings to inspect and adjust the machine will minimize any unplanned downtime.





## YOUR BENEFITS

- IP54 protection, dust-proof and splash-water resistant
- Unit and I/O powered by CompoNet: install just one cable
- Smart slave functions for diagnosis and preventive maintenance
- Easy installation and fast sensor connection
- Indication of I/O short-circuits and disconnections



## COMPONET FIELD I/O CRT1: THE EFFICIENT ALTERNATIVE

To meet customers' requirements for remote I/O that offers a higher level of protection with easy connection and at lower cost, Omron has developed the perfect solution: the IP54 CompoNet I/O. This is the first of a new breed of I/Os that can withstand dusty and dirty environments but represents an affordable alternative to traditional field-mounted I/O with relatively costly IP67 connection technology.

### Easy I/O wiring

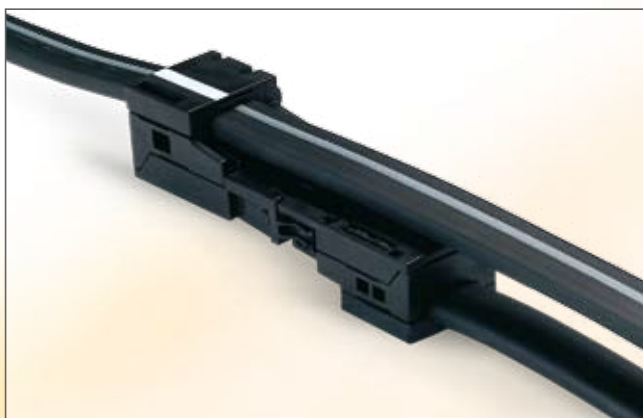
CompoNet IP54 units use standard connection technology for inputs and outputs, i.e. screwless clamps or eCON sensor connectors instead of sealed plugs. A protective housing with flexible rubber sealing makes the I/O connections dust-proof and splash-water resistant. Moreover, CompoNet offers high-speed communication and all slaves have the intelligence to keep track of what's happening locally in your machine or process, which is not possible with less intelligent I/O networks. Typical applications for the IP54 CompoNet I/O include warehouses or conveyor systems where a given throughput has to be maintained, for instance, to high-speed packaging machinery.

- ▼ Dustproof and tough enough to be out in the field. No additional protective housing needed. Easy and quick installation.



### Freedom in networking

CompoNet's quick-connect network system with IP54 connectors allows branches to be easily added at any station in the plant. With this flatcable system, network sections can be constructed in any topology up to 200 m in length. With repeaters, it is possible to link such sections up to three levels deep. With up to 64 repeaters per system, any layout is possible.



- ▲ Freedom in connection. Also the CompoNet cable and IDC branch connections have an IP54 protection rating. No additional protection required.



- ▲ Simply push in the terminated I/O wiring. Close the cover and you're done.

### SMART FEATURE EXAMPLE: RESPONSE TIME MONITORING



Smart I/O can measure delays between two I/O signals with millisecond accuracy, e.g. the time it takes from activating a pusher to detecting the end of the stroke. When your preset limit is exceeded, Smart I/O will warn you that low power or lack of maintenance has reduced machine performance. No programming required!



# RUGGED I/O THAT NOTHING CAN STOP



## YOUR BENEFITS

- IP67 protection for maximum reliability
- Powered by DeviceNet – fewer connections, fewer errors
- Smart slave functions for diagnostics and preventive maintenance
- Indication of broken wire and short circuit in I/O signals
- M12 connectors for easy and reliable installation



- ▲ Resistant against dust, water and welding spatter, IP67 I/O units are aimed at providing maximum availability under all circumstances.

## IP67 DRT2: THE IDEAL SOLUTION FOR WHEN THE GOING GETS REALLY TOUGH

In branches such as the automotive and chemical industries, equipment must perform continuously for very long periods in the harshest of conditions. Stoppages, if any, must only be for routine maintenance, which is why Omron has developed the IP67 DeviceNet I/O, the most rugged and reliable solution available for field mounting.

### Tough and smart

Built from tough materials and hermetically sealed, IP67 DeviceNet I/O units are resistant to dust, dirt, water, oil and even welding spatter. They enable you to obtain the maximum availability of your machine and process under any ambient conditions found in industry. And they are smart too! Status and performance data is available at all times and checked internally against the limits you set. When limits are exceeded, maintenance warnings are generated.

### Prevent mistakes

Just one cable (power and data) is required for straightforward network wiring. I/O connections are fast and sure using industry-standard and all connectors. Omron software enables easy setting up and trouble-shooting, and you can efficiently check even for circuit or wiring faults via the PC.



- ▲ One cable for power and data. Power supply through DeviceNet cable with rugged M12, prefabricated cable-connector assemblies.



## BUILT-IN INTELLIGENCE; OUR EXPERIENCE IS INCLUDED

All products from Omron's I/O range have one great thing in common: they have built-in smart features that will enable you to reduce engineering time, plan preventive maintenance

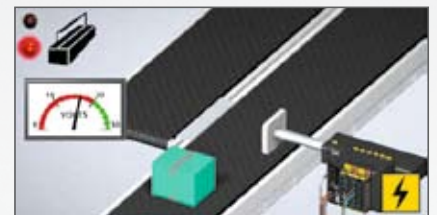
and increase your machine's productivity. We put in years of experience. You only need to tweak the settings to your needs. Here's how.



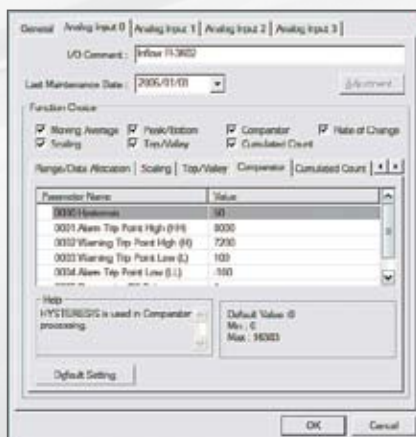
- ▲ Smart I/O can store the last date on which you performed maintenance so that you have a better overview to help you plan maintenance more efficiently.



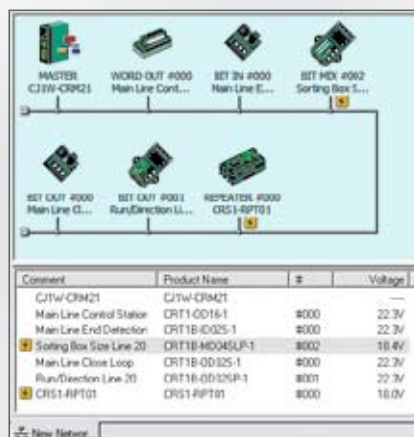
- ▲ Smart I/O keeps track of response times, total ON time and the number of operations. You'll get timely warnings to inspect and adjust the machine so that unplanned downtime is minimized.



- ▲ Smart I/O monitors its own supply voltage and will warn you if it strays outside the normal range, for example, due to a damaged cable or poor connection.



- ▲ Smart Analogue I/O performs data pre-processing to help you reduce PLC programming. It can handle scaling, alarms, totalizing and even rate-of-change calculations. Just tick the boxes and set the parameters.



- ▲ Omron's CX-One software has a special screen that displays maintenance information without any need for programming. It also lets you make and change settings with ease (e.g. alarms).



- ▲ Using Omron NS-series HMI, you can drag and drop Smart Active Parts (ready-made software modules) onto your screen to communicate and obtain information from Smart I/O, effortlessly.

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