

Environment-resistant IP67 Power Supply /
DC Blocking Box
S8NR-S/S8R-BB

OMRON

Easily configure power supply and safety circuits outside the control panel



IP67 compliance and integrated functionality simplify the construction of power and safety circuits outside of control panels

Omron's IP67-rated power supplies and Forcible Guided Relay can be installed outside the control panel and close to the equipment, allowing for flexible adaptations to line changes. They drive the evolution of production sites –from design and startup to maintenance and safety circuit construction. Furthermore, the IO-Link functionality in these power supplies enables remote parameter setting and monitoring, significantly improving efficiency in both commissioning and maintenance.

S8NR-S stands out with built-in electronic circuit protectors, delivering multi-channel output that reduces wiring and installation effort—even when installed outside the control panel.

Environment-resistant IP67 Power Supply S8NR-S



IP67-Rated Forcible Guided Relay (G7SA/G7S-□-E) Enable Conventional Safety Circuits Outside the Control Panel

DC Blocking Box S8R-BB



Note 1: The models shown above are representative examples.

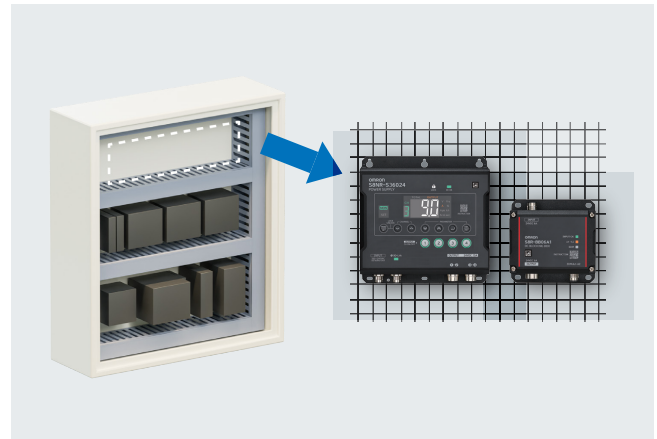
Note 2: All models are equipped with M12 connectors and screwless terminals (Smartclick) as standard. Smartclick is a trademark or registered trademark of OMRON Corporation in Japan and other countries.

Solves in-panel challenges while improving commissioning and maintenance efficiency outside the panel.

Design

Solves in-panel space and heat issues p4

Functional integration reduces the engineering effort required for designing and selecting external circuits p5



Startup

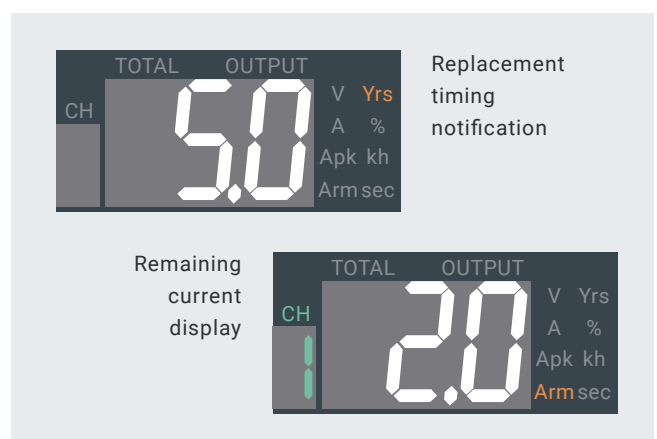
Reduces the workload of on-site workers through more efficient installation and wiring p6

Display and monitoring support efficient commissioning p8



Maintenance

Minimizes downtime through preventive maintenance and rapid identification of faulty locations p10



Solves in-panel space and heat issues. Functional integration reduces the engineering effort required for designing and selecting external circuits

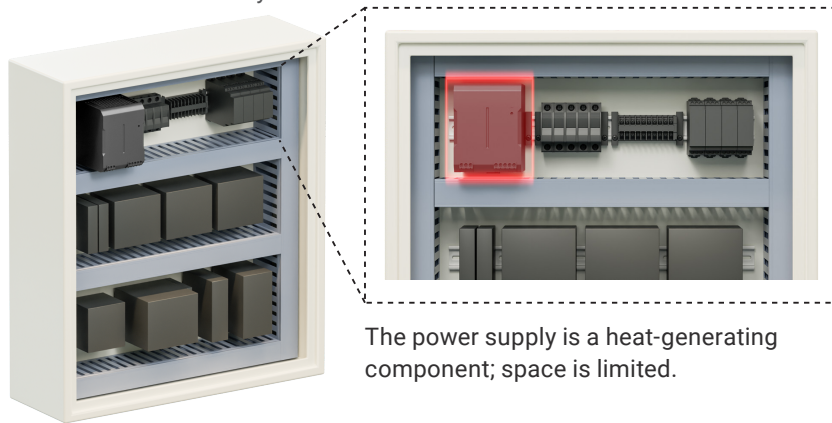
In addition to an IP67 power supply with built-in electronic circuit protectors, the DC Blocking box enables power and safety circuits to be constructed outside the control panel with reduced effort.

Contributes to space saving and simplified thermal design inside control panels

Conventional

As the number of components increases, securing space and designing thermal management inside the control panel become difficult.

Installed individually inside the control panel:
power supply, circuit protectors, terminal blocks,
and Forcible Guided Relay



Time-consuming thermal design inside the control panel (fan requirements, airflow rate, and airflow path)

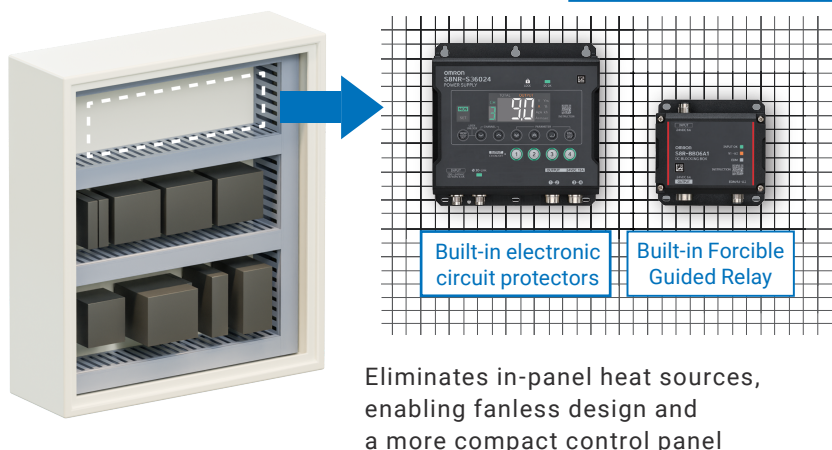
Layout planning

Thermal design

This product

By functionally integrating heat-generating power supplies and peripheral circuits and installing them outside the control panel, space constraints and thermal design challenges are resolved.

Through functional integration, the power supply and DC Blocking Box are installed outside the control panel.



Eliminates the need for thermal simulation studies

Reduces thermal design effort by 30%*

Layout planning

Thermal design

*. This is an estimated result based on our standard model. Actual labor-hour reduction effects may vary depending on the system configuration and operating conditions.

Contributes to reducing the effort required for off panel circuit design and component selection

Conventional

A large number of in-panel circuit components increases the effort required for circuit design and component selection

Complex circuit configuration

```
graph LR
    PS1[PS1] --- TB1[TB1]
    TB1 --- CP1[CP1]
    TB1 --- CP2[CP2]
    TB1 --- CP3[CP3]
    TB1 --- CP4[CP4]
    TB1 --- CP5[CP5]
    TB1 --- CP6[CP6]
    CP1 --- L1[Load 1]
    CP2 --- L2[Load 2]
    CP3 --- L3[Load 3]
    CP4 --- L4[Load 4]
    CP5 --- L5[Load 5]
    CP6 --- RY1[RY1]
    RY1 --- RY2[RY2]
    RY2 --- L6[Load 6]
```

10 selected components

Component ID	Model
PS1	Power supply
TB1	Terminal block
CP1	Mechanical circuit protector (Mechanical CP)
CP2	Mechanical circuit protector (Mechanical CP)
CP3	Mechanical circuit protector (Mechanical CP)
CP4	Mechanical circuit protector (Mechanical CP)
CP5	Mechanical circuit protector (Mechanical CP)
CP6	Mechanical circuit protector (Mechanical CP)
RY1	Forcible Guided Relay
RY2	Forcible Guided Relay

Circuit design

Component selection

This product

Functional integration enabled by built-in electronic circuit protectors contributes to reduced engineering effort

Simple circuit configuration

```
graph LR
    PS1[PS1] --- CP1[CP]
    PS1 --- CP2[CP]
    PS1 --- CP3[CP]
    PS1 --- CP4[CP]
    PS1 --- CP5[CP]
    PS1 --- CP6[CP]
    CP1 --- L1[Load 1]
    CP2 --- L2[Load 2]
    CP3 --- L3[Load 3]
    CP4 --- L4[Load 4]
    CP5 --- L5[Load 5]
    CP6 --- L6[Load 6]
    L5 --- RY1_RY2[RY1 • RY2]
    RY1_RY2 --- L6
```

Only two selected components

Component ID	Type
PS1	IP67 power supply (with six built-in electronic circuit protectors)
RY1/RY2	DC Blocking Box (with two built-in Forcible Guided Relay)

Circuit design

Component selection

Selection effort
80%

※. Based on internal research

Reduces the workload of on-site workers through more efficient installation and wiring

Intuitive installation and wiring reduce installation time, easing the burden on on-site operators and improving layout flexibility.

Easy installation using keyhole mounting, similar to hanging a wall clock

Standard screw holes

With conventional screw mounting, two operators are required, and once fixed, repositioning is time-consuming.



S8NR-S

The keyhole mounting structure allows screws to be temporarily fastened first, followed by easy position adjustment, enabling one-person installation.



DIN rail mounting simplifies installation and replacement work

In addition to screw mounting, DIN rail mounting is also supported. Simply snap the unit onto the rail for quick installation. Position adjustments can be easily made by sliding the unit left or right on the DIN rail, allowing flexible response to equipment modifications or specification changes.

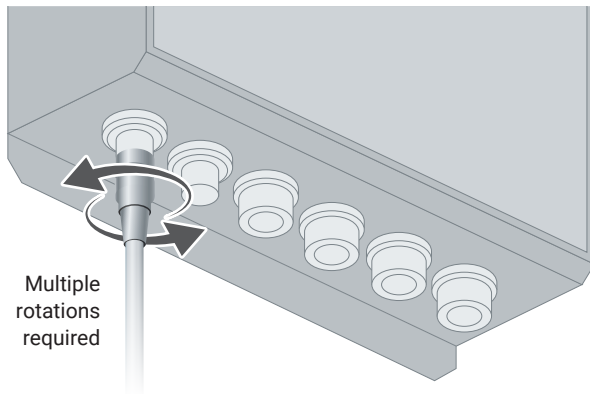


DIN rail mounting bracket : order separately

Tool-free connector connection significantly reduces wiring time

Screw-type connector

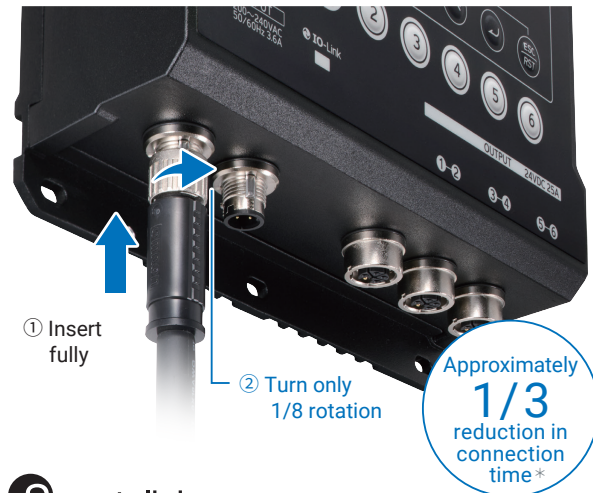
With conventional screw-type connectors, tightening is time-consuming and torque management is required



Screw-type connector : 12 seconds

S8NR-S S8R-BB

With Smartclick connectors, secure connection is achieved with just a 1/8 turn



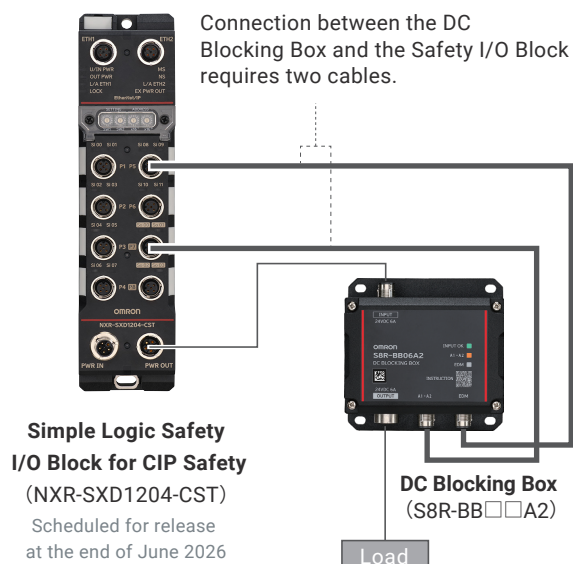
*. Based on internal research

Smartclick connector : 4 seconds

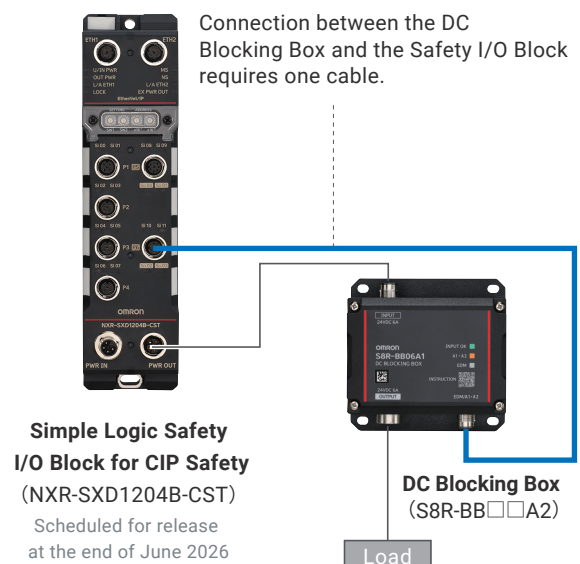
Build Safety Circuits Outside the Control Panel with Reduced Wiring

Safety circuits can be easily installed outside the control panel using an IP67-rated DC Blocking Box with a built-in Forcible Guided Relay. With the reduced-wiring configuration(using a 8—pin model), the DC Blocking Box and the Safety I/O Block can be connected using a single signal cable, significantly reducing wiring work and installation time.

General Configuration(using a 5-pin model)



Reduced-wiring Configuration(using a 8-pin model)



Smooth and Efficient Startup with Clear Status Visualization

With the built-in digital display, measured and setting values can be easily monitored, reducing adjustment errors and allowing fast commissioning.

Work efficiency is also improved during testing and recovery operations.

The high-visibility digital display allows anyone to easily and accurately check operating status and configure settings, improving work efficiency.

No tester is required—values can be confirmed using the display only.

The IP67 power supply adopts a connector-based connection method designed with a focus on water and dust resistance as well as ease of wiring, and features a highly visible digital display that allows users to check voltage and current status at a glance without using a tester.



Channel-by-channel ON/OFF switching is possible with a single button press.

Work efficiency is improved during testing and recovery operations.



IO-Link communication function

Remote configuration of parameters and channel ON/OFF switching are supported.

During parameter setting and verification, the IP67 power supply does not require an AC input and can be operated solely with power supplied from the IO-Link master.

Pre-configuration minimizes on-site work and reduces startup time.

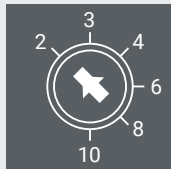
Precise Configuration of Each Circuit Helps Prevent Startup Issues

By setting the cutoff current to match the wire gauge, thinner wires can be used. Fine control of the startup sequence further helps prevent on-site issues.

Each channel is equipped with an electronic circuit protector (CP), and the cut-off current can be set in 0.1 A increments.

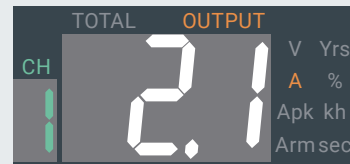
Conventional

With rotary switches, the cut-off current can only be set in increments of 1 A or more.



S8NR-S

On the digital display, the cutoff current can be finely set in 0.1 A increments, enabling the use of thinner wires.



The startup sequence for each channel can be set in 0.1-second increments.

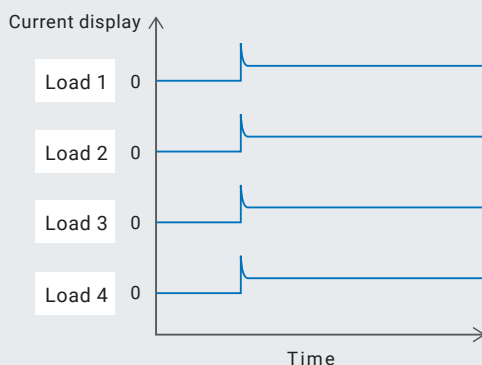
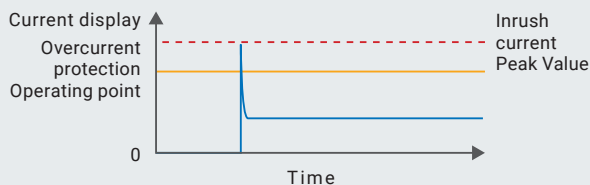
Conventional

When all loads connected to the power supply start simultaneously, inrush current may prevent the power supply from starting up.



Inrush current > Overcurrent protection operating point
Startup Failure

General-purpose power supply



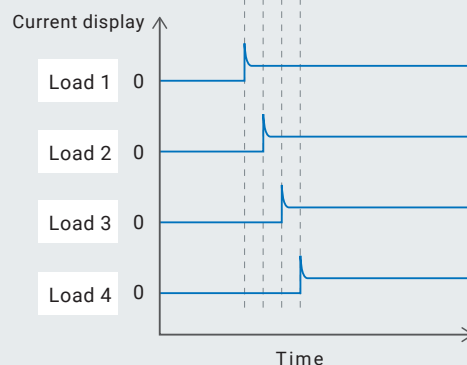
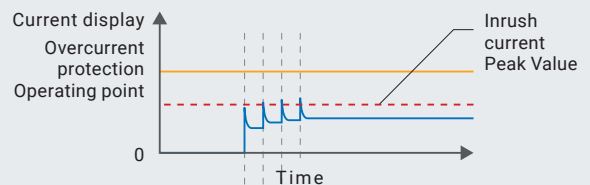
S8NR-S

By staggering the startup timing of each load, inrush current is reduced and on-site startup issues can be avoided.

*Enabled by default at shipment; operates with a 0.4-second delay.



Inrush current > Overcurrent protection operating point
Normal startup



Minimize Downtime through Predictive Maintenance and Easy Fault Identification

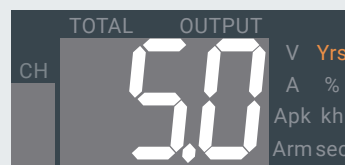
By visualizing the power supply status, preventive maintenance and identification of abnormal points become easier, enabling fast and efficient maintenance.

Clear Status Indication with LEDs and Monitor

The power supply status can be checked at a glance using LEDs and the monitor, helping to reduce maintenance work.

Advance Maintenance with Replacement Timing Notification

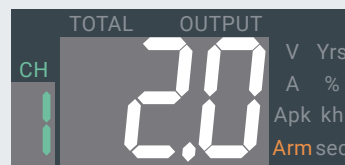
By visualizing the remaining service life, preventive maintenance becomes possible, reducing downtime caused by sudden line stoppages.



5.0 Yrs :Time to Replacement: 5.0 years

Remaining Current Display for Easy Expansion Decisions

The remaining current of each channel is displayed, allowing immediate judgment on whether additional devices can be connected and helping to shorten evaluation time.

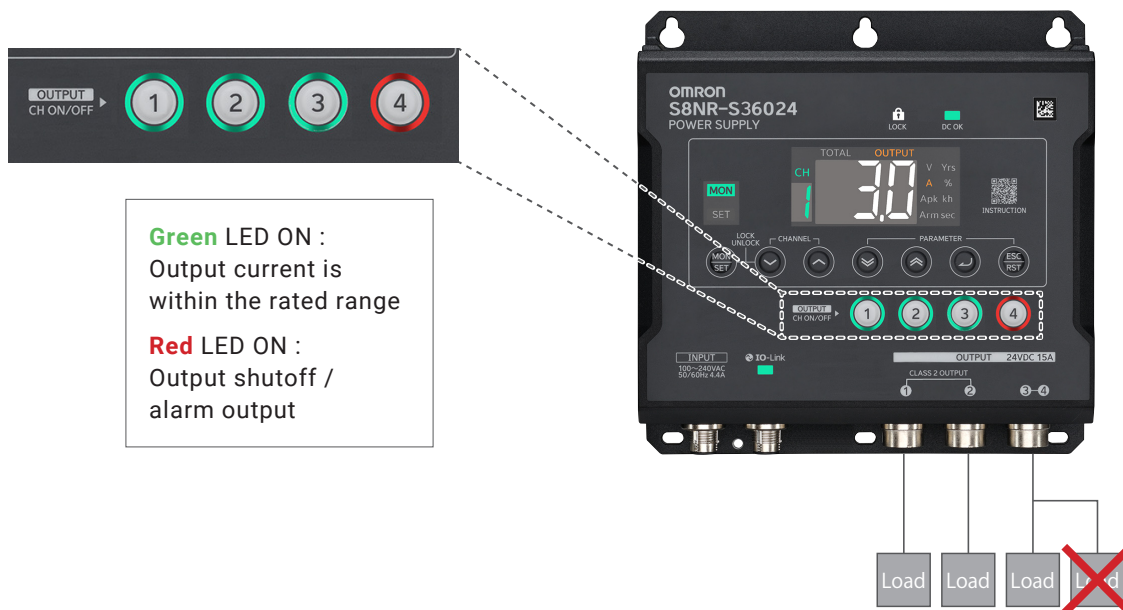


CH1 2.0A : Remaining Current Value

Easy Identification of Faulty Channels with Electronic CP per Channel

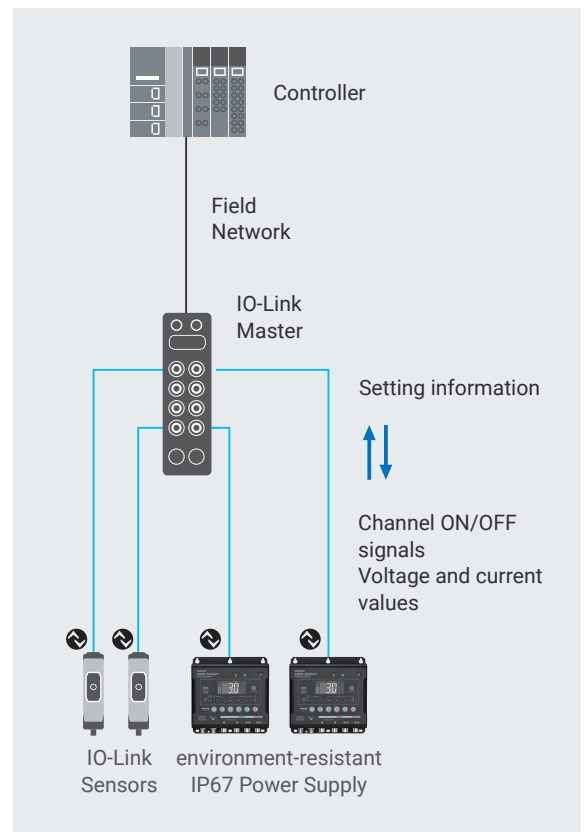
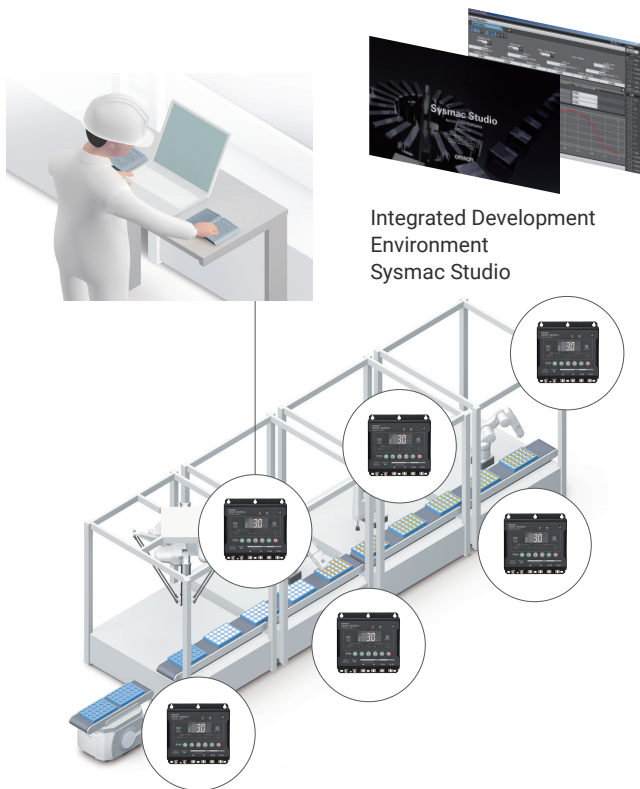
Each channel is equipped with an electronic circuit protector (CP).

The operating status of each channel can be easily checked via channel-specific LEDs, reducing maintenance effort. In addition, the operating status of each channel can also be monitored via IO-Link communication.



Improved Maintenance Efficiency with Remote Parameter Monitoring and Configuration

IO-Link communication enables remote monitoring and configuration of various parameters, as well as channel-by-channel ON/OFF control. This improves on-site work efficiency after startup.



Key Lock Function Prevents Misoperation

The key lock function helps prevent problems caused by accidental changes to display screens or settings. In addition, IO-Link communication allows disabling setting changes and channel ON/OFF key operations on the power supply unit itself. In monitor mode, only display switching and key lock operations are enabled.



OMRON AUTOMATION AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • automation.omron.com

OMRON CANADA, INC. • HEAD OFFICE

Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • automation.omron.com

OMRON ELECTRONICS DE MEXICO • HEAD OFFICE

Ciudad de México • 52.55.5901.4300 • 01.800.386.6766 • mela@omron.com

OMRON GUADALAJARA

Torre NIBA Av. de las Américas 1462, Country Club, 44610, Piso 8,
Guadalajara, Jal. Tel. 55.5901.4300

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE

São Paulo, SP, Brasil • 55 11 5171-8920 • automation.omron.com

OMRON ARGENTINA • SALES OFFICE

Buenos Aires, Argentina • +54.11.4521.8630 • +54.11.4523.8483
mela@omron.com

OTHER OMRON LATIN AMERICA SALES

+54.11.4521.8630 • +54.11.4523.8483 • mela@omron.com

Controllers & I/O

- Machine Automation Controllers (MAC) • Motion Controllers
- Programmable Logic Controllers (PLC) • Temperature Controllers • Remote I/O

Operator Interfaces

- Human Machine Interface (HMI)

Motion & Drives

- Machine Automation Controllers (MAC) • Motion Controllers • Servo Systems
- Frequency Inverters

Vision, Measurement & Identification

- Vision Sensors & Systems • Measurement Sensors • Auto Identification Systems

Sensing

- Photoelectric Sensors • Fiber-Optic Sensors • Proximity Sensors
- Rotary Encoders • Ultrasonic Sensors

Safety

- Safety Light Curtains • Safety Laser Scanners • Programmable Safety Systems
- Safety Mats and Edges • Safety Door Switches • Emergency Stop Devices
- Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

Control Components

- Power Supplies • Timers • Counters • Programmable Relays
- Digital Panel Meters • Monitoring Products

Switches & Relays

- Limit Switches • Pushbutton Switches • Electromechanical Relays
- Solid State Relays

Software

- Programming & Configuration • Runtime