

New Value for Control Panels



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Control Panels: The Heart of Manufacturing Sites.

Evolution in control panels results in large evolution in production facilities.

And if control panel design, control panel manufacturing processes, and human interaction with them are innovated, control panel manufacturing becomes simpler and takes a leap forward.

Process

Realize greatly reduces design/manufacturing work

Innovation for design, building
Process

Further Evolution for
Panels

New Value for
Control Panels

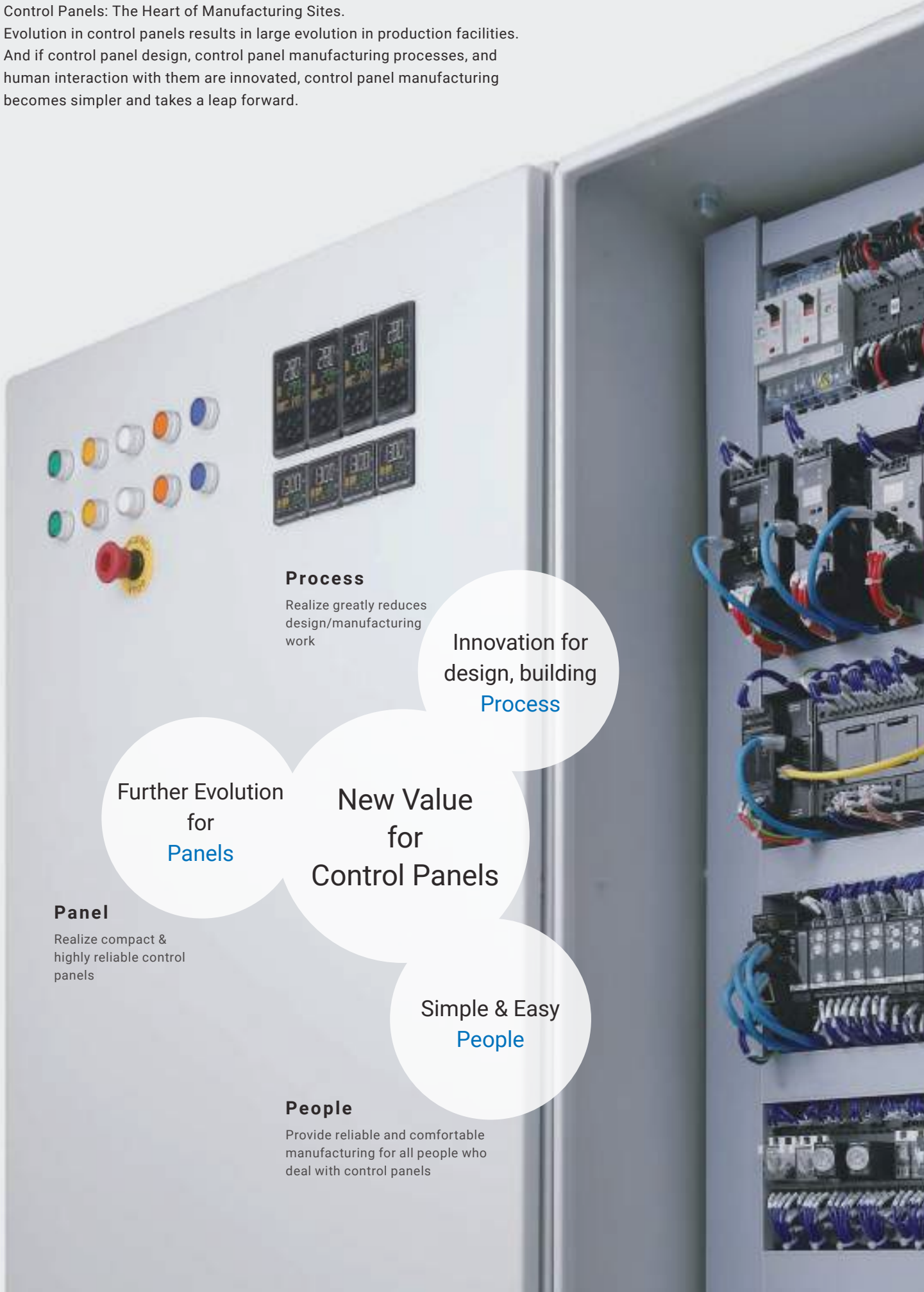
Panel

Realize compact & highly reliable control panels

Simple & Easy
People

People

Provide reliable and comfortable manufacturing for all people who deal with control panels





Innovation for Control Panels Building with Value Design

Our shared concept for the specifications of products used in control panels, " Value Design for Panel " (herein after referred to as Value Design) will create new value to our customer's control panels. Combining multiple products that share the Value Design concept will further increase the value provided to control panels.



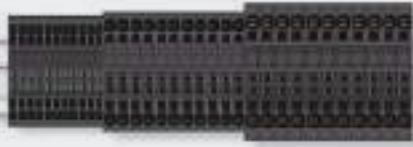
- 1 Unified height & slim size^{*1}
- 2 Side-by-side mounting at
(55°C) ambient temperature^{*2}
- 3 Unique Push-In Plus technology^{*1}
- 4 Front-in and front-release wiring
- 5 eCAD library
- 6 Certification for CE, UL, and CSA

*1. Expect for some products

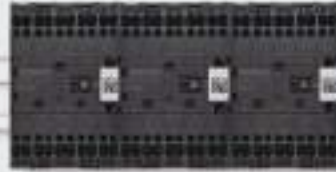
*2. Side-by-side mounting is possible in the same series

Overwhelming Line up That Innovates Your Control Panel Manufacturing

DIN Track Terminal Blocks



Magnetic Contactors



Common Terminal Blocks



Switch mode power supplies / Related equipment



I/O Relay Terminals



Timers



Motor Protective Relays



Power Monitors



Wireless Push button Switches



Condition Monitoring Devices



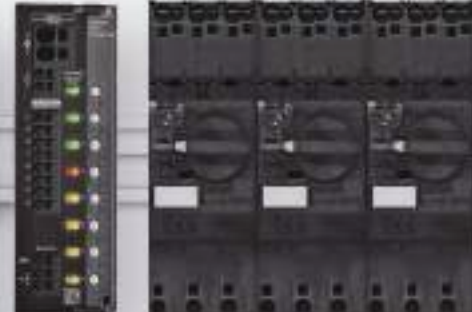
Temperature Controllers



Switch mode power supplies / Related equipment



Manual Motor Starters



Our Value Design Products Deliver Innovation to Your Manufacturing Site



Saving Space and More-advanced Control Panels P6



Reducing Wiring Work P8

Relays, Solid-state Relays



Uninterruptible Power
Supplies

Machine Automation Controllers

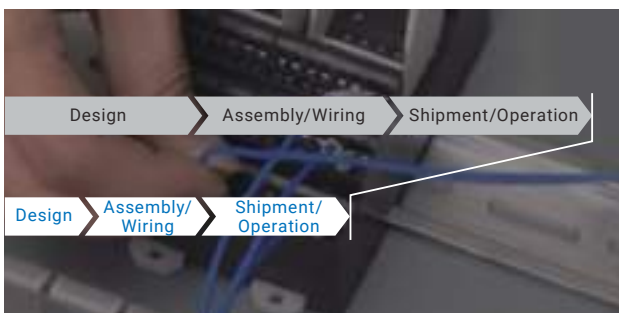
Safety Relays



Push Button Switches

Power Monitors

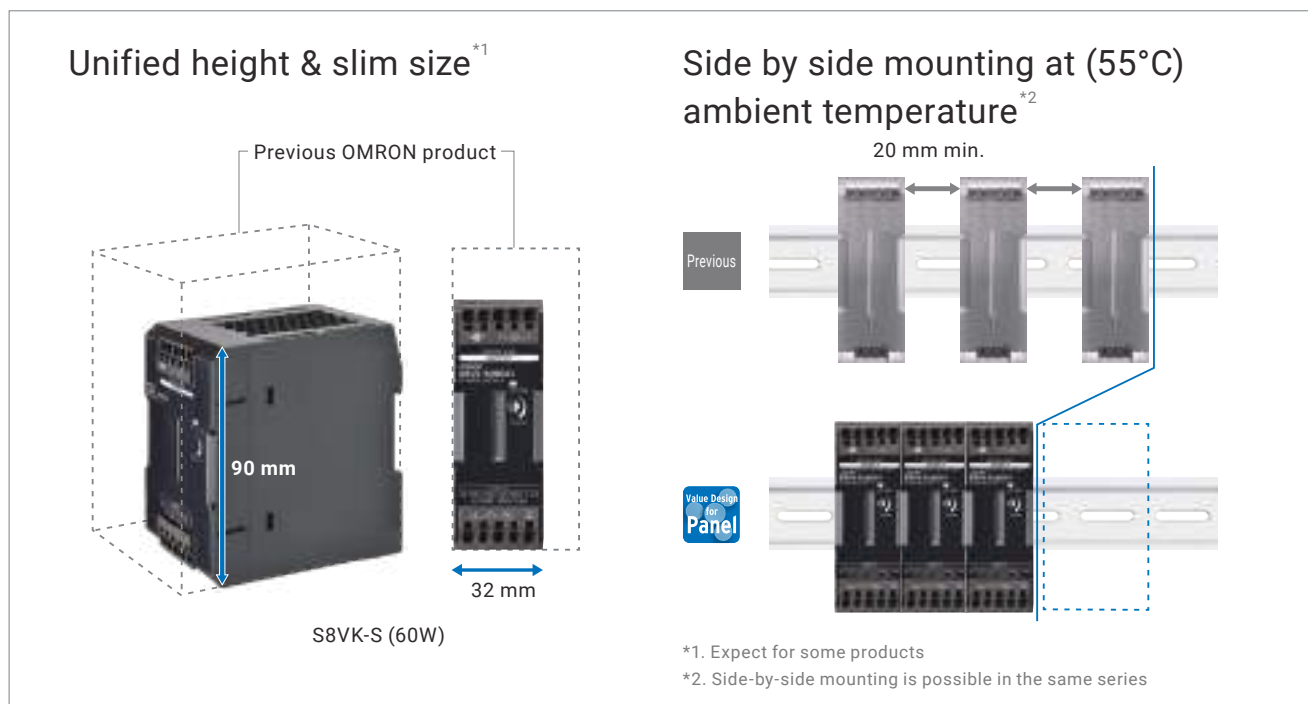
Temperature Controllers



Shortening Lead Time for
Control Panel Building P10

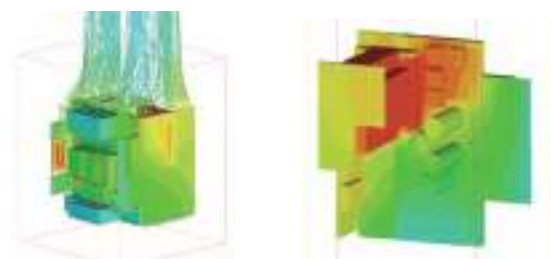
Saving Space and More-advanced Control Panels

Unified size and side-by-side mounting help delivering more compact control panels with additional functionality.



Heat Control Technology that allows side-by-side mounting

OMRON's unique heat modeling know-how let you understand the accurate heat flow and thereby achieve a device layout with high heat dissipation.



Slim + Side-by-side mounting technology save space, and make more-advanced Control Panels

You can add a new function, at the re-engineering stage for improving product quality and securing safety of the production line.

Previous

Reduction of approx. 50%

The saved space can be used for implementing additional functions such as safety or IoT.

Value Design for Panel

Safety Controllers Condition Monitoring Devices Networks

Unified height reduces dead space and downsizes control panels

When newly designing, you can decrease the height of a control panel to secure a wide view of a whole production line for improved safety.

Reduction of approx. 20% *1

Previous

The different heights create a lot of dead space.

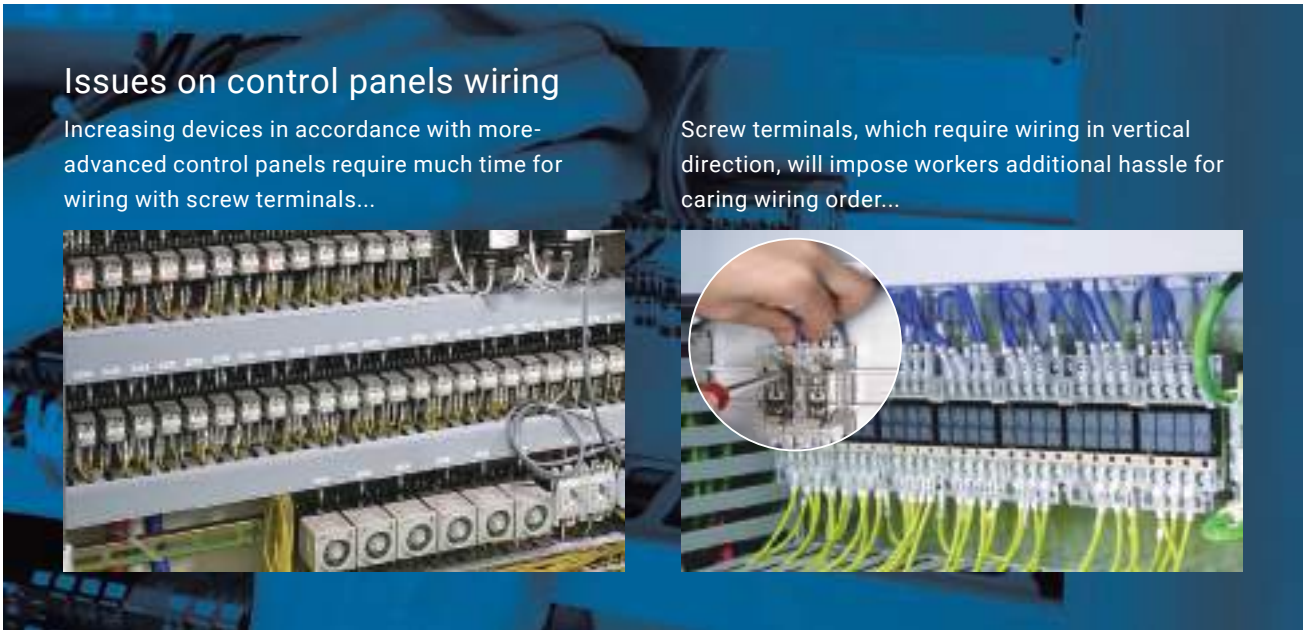
Value Design for Panel

Dead space is reduced and the width between wiring ducts is optimized.

*1. A space of 10 mm is allowed above and below the products (This is in comparison with previous OMRON products.).

Reducing Wiring Work

Push-In Plus technology and Front-in / Front-release Wiring allow wiring work easier and speedier.



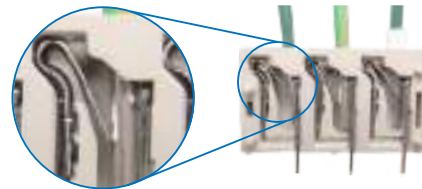
Issues on control panels wiring

Increasing devices in accordance with more-advanced control panels require much time for wiring with screw terminals...

Screw terminals, which require wiring in vertical direction, will impose workers additional hassle for caring wiring order...



OMRON Push-In Plus technology for easy wire insertion and firm wire holding ability



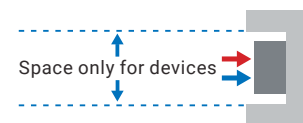
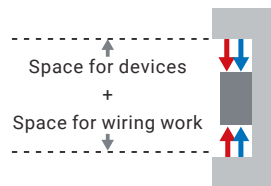
IEC standard *1 Push-In Plus *2 Screw *2

20 N min.	125 N	112 N
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OMRON's Push-In Plus technology is as easy as inserting to an earphone jack. This reduces the load on workers.

Even though less insertion force is required, the wires are held firmly in place by a unique spring structure that ensures reliability.

Front-in and Front-release Wiring that allows easy insertion to terminal holes facing forward

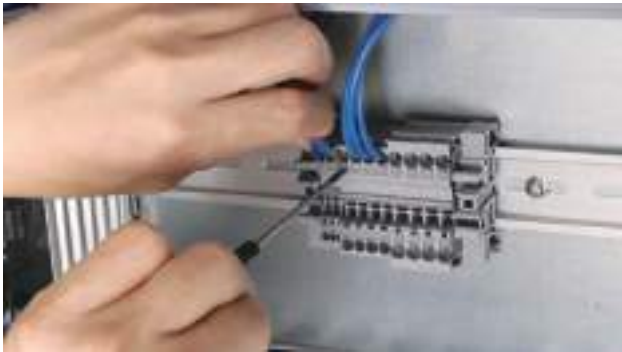


Previous Wiring in vertical direction is hard and need more space...

Value Design for Panel Easy insertion to the terminal holes facing forward, and saving space in a vertical direction

*1. In the case that a cable diameter is AWG20, 0.5 mm² *2. OMRON's actual measurement value data for the XW2R.

Easy wiring with both hands for stranded wires with holding screwdriver

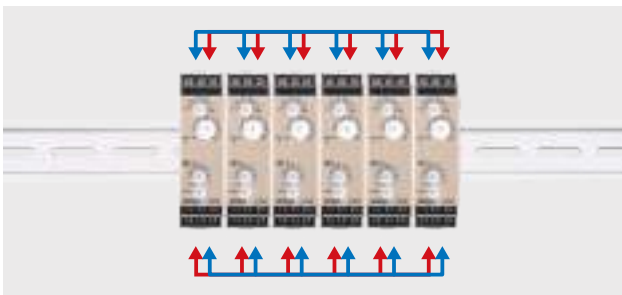


Previous One hand wiring with the other hand holding the screwdriver...

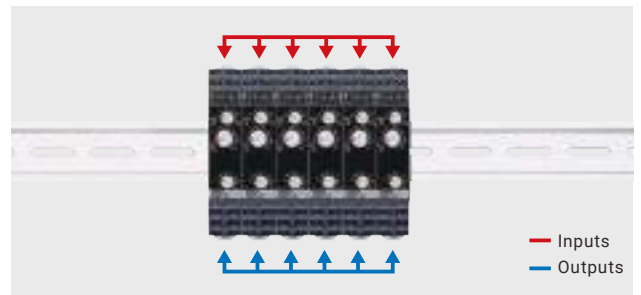


Value Design for Panel Wiring with both hands, because the screwdriver is held in the release hole

Improved wiring workability by unified I/O terminal positions on the top and bottom



Previous Hard wiring due to mixed I/O terminals located on the top and bottom...

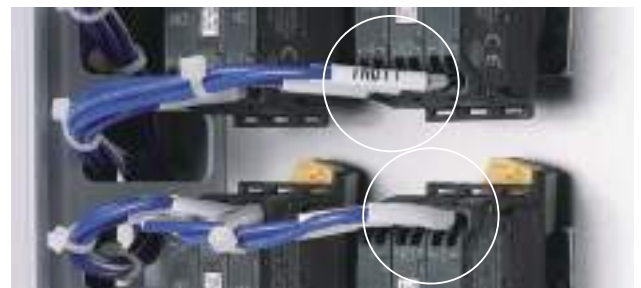


Value Design for Panel Unified method so that inputs are on the top and outputs are on the bottom, and make work easire.

Front-in Wiring improves workability and safety without interference of wires even in the narrow space among devices



Previous Hard wiring in the narrow space by the interference of wires due to the screw terminals requiring wiring in vertical direction....



Value Design for Panel No interference of wiring helps improve workability and safety

Shortening Lead Time for Control Panel Building

Compatible with eCAD and worldwide safety standards, accelerating an entire process of control panel manufacturing.

Issues on control panels process

Our response is required to meet customer needs by increasing process speed...

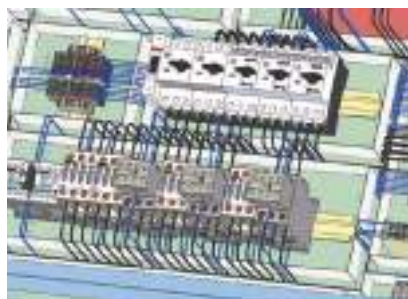
Design

Up to 50%^{*1}

eCAD library provided for all models greatly reduces design work

OMRON provides the libraries for over 45,000 models^{*2}, highest in the industry, to achieve the great reduction of works for electrical design drawing and data creation.

BOM (Bills of materials)



Wiring length data

Wiring list

*1. In the case of ZUKEN E3 series

*2. In the case of EPLAN, based on OMRON's investigation as of 2019 September

eCAD Partners

By cooperating with various partners, we offer you more choices for your eCAD solutions.

E3.series is a product name of Zuken Inc. for their Electrical and Control Cable Design Solution.

EPLAN is a registered trademark of EPLAN Software & Service GmbH & Co. KG.



Zuken Inc.



EPLAN

Assembly/Wiring

Push-In Plus technology requires only a single step, greatly reducing wiring work

Reduction of approx. **60%**^{*1}



1. Remove the screw
2. Connect with the terminal
3. Tighten the screw
4. Put a check mark
5. Retighten the screw



1. Insert the terminal

Previous

A lot of steps are required to complete wiring for the screw terminal...



Push-In Plus technology completes by a single step

^{*1}. Information for Push-In Plus and Screw Terminal Blocks is based on OMRON's actual measurement data

Shipment/Operation

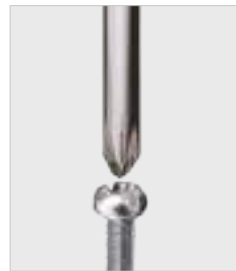
No need for retightening, even when vibration is applied on terminals

The pressure of the clamp spring holds the ferrule or wire securely with Push-In Plus technology, eliminating worries about screws loosening or disconnection due to vibration.



Previous

The screw is loosened and dropped by vibration...



Retightening is needed before export and shipment...



No drop-off or retightening of screws

Smooth shipment with our products compliant with worldwide safety standards CE, UL, and CSA.

All of Value Design products are certified for CE, UL, and CSA, and shipment to abroad goes smoothly. Further, Express Delivery Services to 37^{*2} countries and regions worldwide offer easy troubleshooting.



^{*2}. According to OMRON investigation in September 2019.

Simplify and Accelerate Panel Designing with Panel Solution Site

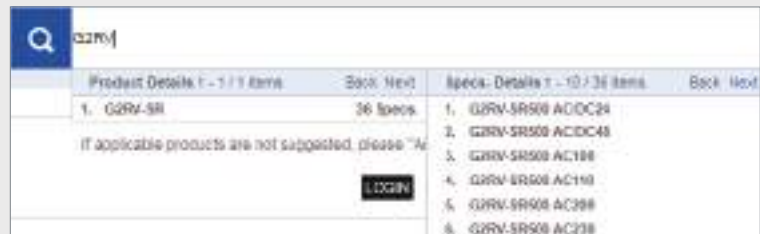
Panel Solution Site supports your control panel manufacturing through from selection to design.



You can select your best product by searching with models, categories and solutions

Select based on model

Entering a model name with a first few letters will show you a list of model candidates, where you can review those product specifications.



Select based on categories

Select a category, and you can narrow model selection by the specifications.



Select based on solutions

Various contents introduce you the solutions for your control panel manufacturing issues.





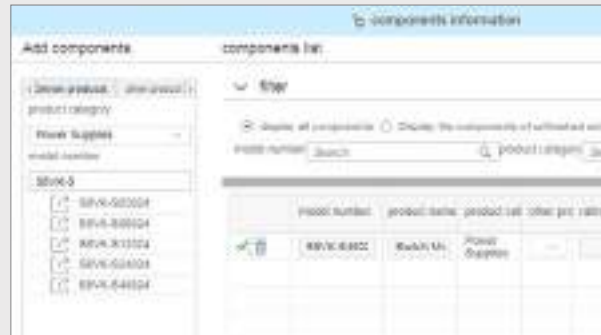
Thermal Simulation Tool

For customers who need to understand heat risks in advance, Thermal Simulation Tool supports the heat design from a simple calculation of heat inside the control panel to selection of fans.

Input control panel information



Input the specification of your control panel.



Input product information. For OMRON products, selecting a type will automatically display its heat value.

Simulation results

temperature in panel **59.9** (°C) margin (difference from allowable temperature) **-4.9** (°C)

The simulated temperature in the control panel is displayed.

measures by adding FAN Target characteristics of FAN to be added.

target airflow : 4.020 (m/min)

target static pr... : 0.11 (Pa)

components that the temperature is considered too high

model number: SIVC-S40004 critical value 47.4

Provides proposed measures for bringing temperature to a target value and information about the parts with a risk of being overheated.

Customer's voice

Our Value Design products help solve issues with many customers.

Reduce the size by 30 % as well as the wiring lead time by half.

Semiconductor / FPD manufacturing equipment manufacturer

[Issues] Reducing wiring work at site was necessary to shorten the electric construction period. To achieve it, smaller, simpler control panels are required. He adds that smaller control panels can be incorporated into equipment, thus saving space at client factories.

[Effect] Not only downsized components, but also terminal holes on the front helped a lot to reduce wiring lead time. Terminal holes on the front eliminate the need for maintaining work space, thus downsizing the control panels and reducing wiring work drastically.



Reduction by 30 % for both of control panel footprint and lead time

Transferring machine manufacturer

[Issues] Our existing transferring line systems are mostly driven by mechanical structures. Advancing them to meet customer needs will result in increase in control I/Os and size of the control panels.

On the other hand, needs for saving space are growing at the customers' factories. Further, the demand for built-in control panel in line system is also increasing to operate and maintain system close, not at the standalone control panel installed on the wall.

[Effect] The effect was obvious, because the maintenance work completed in three days earlier than planned, where 10 days are allowed in the beginning.

We will promote adoption of the Value Design products in our systems in order to reduce the cost and lead time of existing products as well as to accelerate space-saving.



Streamline control panel manufacturing with improved reliability

Control panel builder

[Issues] As demand increases for quality assurance, one of most possible errors with switchboards and control panels is a screw loosening error. All control panel and switchboard manufacturers perform the inspection of course; however, a possibility of human error still exists.

[Effect] Once the devices in control panel are unified to Push-In Plus technology and engineers get used to the wiring work, we can expect workability greatly improves. In addition, we expect for the reliability enhancement in the future by reducing workload of engineers who check for loose screws and recheck for recurrence prevention.



Improved maintainability for equipment by saving space

Confectionery equipment manufacturer

[Issues] The control panel for existing oven line is engineered with a basic design of 20 years ago. The electrical control devices for the panel are large and so the control panel itself should be, as those devices also need much space for mounting with screws. It was in a situation that many devices are mounted on the door of the control panel due to no space inside.

[Effect] I am fully convinced that a wide variety of OMRON lineups help downsize our control panels. Replacing the existing devices mounted in the control panel are with OMRON panel solution devices will save space by approx. 40%. We achieved zero-cabinet by utilizing those devices, and now the control panels are not conspicuous. Further, we have changed the connection method for input cables coming from the machine body to the Push-In Plus technology. This allows us to complete the wiring work in about one and a half hours, which used to take a half day before.

Needless of retightening allows wiring time reduction to one-fourth

Packaging machine manufacturer

[Issues] To achieve space-saving on machines, the needs for downsizing control panels has increased year by year. The devices can be forcibly mounted in the machine when considering only design aspect. However, workability at the manufacturing process and maintainability at the after-sales service will need a hassle. We were thinking if the devices in the control panels would become more compact.

[Effect] For the conventional screw terminal, we provided the works relating to screws such as check and retightening to have three times, though, for the Push-In Plus technology, retightening is needless, resulting in the work reduction. Considering it as a work time, it is reduced to about a quarter.

OMRON's Products Support IoT for Control Panels and Production Lines



Panel condition monitoring device
K6PM

Cat. No. H232-E1



Motor Condition Monitoring Devices
K6CM

Cat. No. N220-E1



Switch Mode Power Supplies
S8VK-X

Cat. No. T211-E1



Digital Temperature Controllers
E5□D/NX-TC

Cat. No. H222-E1

2019 Released in October



Low Voltage Switching Gears
J7KC / J7TC / J7MC

Cat. No. J229-E1



DC Electronic Circuit Protector
S8V-CP

Cat. No. T227-E1



Push-In Plus Terminal Block Relay Series
PTF-PU

Cat. No. J213-E1

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