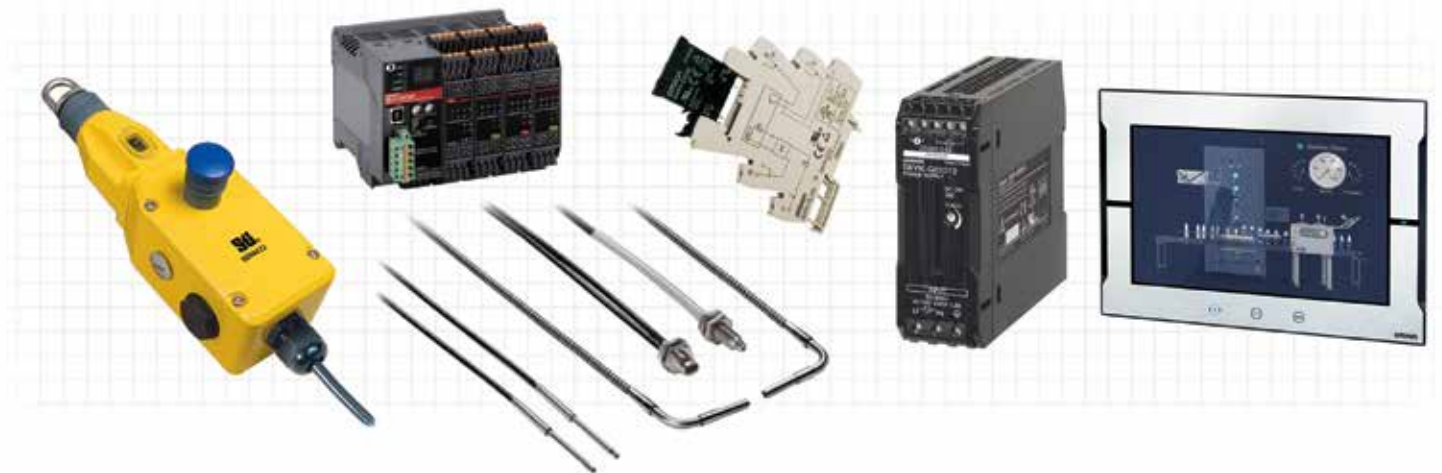


## Products designed for hazardous environments

Class I Division 2 Products



- Innovative technologies
- Easy to use, install and integrate
- Powerful solutions

# Omron Delivers a Wide Range of Class I Div 2 Products from a Single Source

For more than 80 years Omron has been providing proven control solutions for automation applications. Our Class I Div 2 products make it easy for you to design and deliver safe machines that help your customers increase productivity and maximize availability for hazardous environments.

We bring expertise in automotive, semiconductor, packaging, infrastructure, oil and gas, and agriculture industries backed by global support wherever your machine is used.

Apply Omron's Class I Div 2 products for a control solution ranging from a simple snap-action switch on a grain bin system, to a complex automation system for deep ocean oil drilling rigs that integrates PLCs, HMIs and safety products. We also offer products that satisfy clean room environment requirements found in semiconductor facilities.

Rely on Omron to deliver your complete automation and safety solution while helping you streamline purchasing processes and reduce internal costs to put more profit in your machine design. Make Omron your single source for hazardous environment controls.

## Grain Handling/Storage



## Lumber Processing



## Oil/Gas Drilling



## Mining



## Industries/Applications

- Lumber Processing
- Oil and Gas Drilling
- Grain Handling/Storage
- Mining
- Spray Paint Booths
- Off the Grid Electrical Systems

## Benefits

- "One Stop Shop" – Omron offers the complete solution for your Class I Division 2 environment
- Environmentally Safe – Products meet north american safety standards so it is safe to specify for a machine design
- Global Technical Support – Your questions are answered anywhere you are in the world

Machine Automation Controller

## NJ3/NJ5

High-Performance, Fully Integrated

Quick Link  
**H237**  
omron247.com

- Highest speed processor from Omron
- Built-in EtherNet/IP & EtherCAT network interfaces
- Built-in 4, 8, 16, 32, and 64 axis of motion
- Advanced motion control capabilities
- Local and remote I/O options including safety
- Available built-in SQL database connectivity
- Complete Sysmac NJ Solution configured, programmed, and commissioned using Sysmac Studio software



NX Modular & Safety I/O

## NX I/O

Speed and Accuracy for Machine Performance

Quick Link  
**H249**  
omron247.com

- High-speed I/O units synchronized with EtherCAT cycle
- NX I/O technology provides deterministic I/O response with nanosecond resolution
- Automatic backup/restore of all I/O parameters
- Detachable front connector with push-in type screwless terminals in all NX I/O units
- Capable of communicating with EtherNet/IP or EtherCAT bus coupler



Modular PLC

## CJ2

Fast and Powerful CPUs for Any Task

Quick Link  
**H236**  
omron247.com

- Scalable architecture which allows you to pick and choose the CPU and I/O based on application
- Program Capacity of 5K Steps - 60K Steps
- Data Storage: 64K Words - 160K Words
- Dedicated Function Block Memory: 20K Steps



Rack PLC

## CS1

Fast and Powerful CPUs for Any Task

Quick Link  
**H222**  
omron247.com

- Capability of choosing the level of redundancy needed; CPU, power supply, communication
- No special programming or software tools required
- Hot-swapping of I/O units



Micro PLC

## CP1H

High Performance Micro PLC

Quick Link  
**H225**  
omron247.com

- Can be expanded with CP-series I/O's and supports up to two CJ1 special I/O units
- Features four high-speed counters and four pulse outputs which are ideal for multi-axis positioning control



Micro PLC

## CP1L

The Compact Machine Controller

Quick Link  
**H226**  
omron247.com

- Offers maximum cost effectiveness with minimal footprint.
- Ideal for stand alone position control, temperature control and multi-Ethernet applications.
- Models available with 10 I/O to 60 I/O, built-in Ethernet and analog inputs.
- Expandable up to 180 I/O using a variety of I/O, analog and communication ports.



Micro PLC

**CP1E**

Easy, Efficient and Economic

- Economy class micro PLC which satisfies entry-level requirements for basic applications.
- Select CPU's from 10 I/O to 60 I/O with Basic expandability.
- All CP1E's CPUs offer high-speed USB quick programming.



Quick Link  
**H234**  
omron247.com

SmartSlice Remote I/O System

**GRT1**

Modular I/O System



- Easy set-up, backup and restore functions
- Detachable terminal blocks allow for hot-swapping without rewiring
- 3-wire connection with 'push-in' technology, no screwdriver required for installation

Quick Link  
**K224**  
omron247.com

EtherNet/IP I/O

**ERT1**

CIP Based EtherNet/IP I/O

- Rotary switch or web browser settable EtherNet address
- Cage clamp Connections for fast, vibration resistant, high density wiring
- Short circuit protection and indication
- Removable power, communications, and field wiring



Quick Link  
**K244**  
omron247.com

In-panel DeviceNet I/O

**DRT2**

Compact DeviceNet I/O Units with Extensive Diagnostic Functions

- Data regarding power supply status, I/O response times, operation counters and on-time are continuously recorded and checked against user-defined limits
- Compact, IP20 Housing
- Expandable digital I/Os
- Detachable I/O terminal blocks



Quick Link  
**K234**  
omron247.com

CompoNet I/O

**CRT1**

Smart CompoNet I/O

- Compact size IP20 housing
- Expandable digital I/Os with detachable terminal blocks
- Easy network wiring with IDC connections
- Built-in diagnostics and preventive maintenance functions
- Analog I/O with data pre-processing and alarm functions



Quick Link  
**K227**  
omron247.com

EtherCAT Remote I/O

**GX Remote I/O**

Compact, High-performance Remote I/O

- Easy set-up: automatic and manual address setting
- Digital I/O terminals with high-speed input functionality, ON/OFF delay of 200 µs max
- Digital input filters prevent malfunction when status is unstable due to chattering or noise
- Removable I/O terminal for easy maintenance



Quick Link  
**K246**  
omron247.com

## Sysmac Automation Platform

### NA

Industry leading wide screen displays

Quick Link  
**N554**  
omron247.com

- Wide-screen format at 7", 9", 12", and 15"
- High resolution 1280 x 800 (12" and 15"), 800 x 480 (7" and 9")
- Advanced programming capability with VB.NET
- Programmed with Sysmac Studio for an integrated development environment
- Multimedia display capability including Video, PDF, Word, and Excel.



## HMI & Control

### NSJ

Integrates Control, Display, and an Open I/O Network

Quick Link  
**N523**  
omron247.com

- 5", 8", 10" and 12" sizes
- Hardware Cost Savings: Reduced number of components to one, smaller control panel, less wires and conduit
- Installation Time Savings: One device installation, built-in self diagnostic screens, monitor
- Lower Operational Costs: reduced



## Machine Management

### NS

Complete Machine Management with Trouble-shooting

Quick Link  
**N523**  
omron247.com

- 5", 8", and 15" sizes
- Bright & Clear Displays: LED backlight and high contrast
- Scalable Projects: One software for all screens with automatic conversion
- Remote Maintenance & Operation: FTB Interface with Ethernet models



## Compact Touchscreens

### NV3/NV4

Compact and Simple

Quick Link  
**N529**  
omron247.com

- Extreme thin designs requiring only 1 inch of panel depth
- Easy-to-use NV Designer Software
- Mount in landscape or portrait orientation for more design flexibility



## Function Key/Text Displays

### NT11

Large Alphanumeric 4-Line Display with Function Keys

Quick Link  
**N526**  
omron247.com



- 4 Line X 20 character backlit LCD Display
- Keypad allows operators to input and enter numeric data
- Bar graph capability
- Password-protected screens

## Power Supplies

**S8VK-T**

## Three Phase Power Supply

- Wide input range for world wide applications: 380 to 480 VAC (320 to 576 VAC)
- Possible 2-phase input: 380 to 480 VAC (340 to 576 VAC)
- Power Boost function at 120%\*



Quick Link  
**P238**  
omron247.com

## Power Supplies

**S8VK-G**

## DIN Rail Mount Power Supply

- Double set of DC output terminals (three for the negative) to provide easy wiring
- High efficiency (90%) to reduce emergency consumption and generate less heat in the control enclosure
- Power Boost functionality (120%) provides power when start-up inrush current is above the rated output current



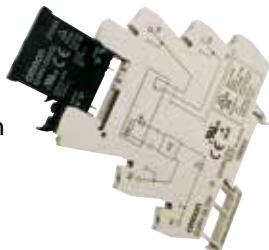
Quick Link  
**P234**  
omron247.com

## Solid State Relays

**G3RV**

## Solid State Plug-in Ultra-Slim Relay

- LED indicator allows verification of current flow of input
- Large plug-in terminal ensures reliable connection
- PLC interface and cable accessories are available
- Easily connect multiple G3RV Relays together with cross bars



Quick Link  
**R427**  
omron247.com

## General Purpose Relays

**MY4H**

## Hermetically Sealed MY-relay

- 4PDT contact type
- 3A rated load
- Mounts in socket PYF14A-E-US
- Bifurcated contacts available to achieve very low minimum switching current
- Conforms to UL508 and CSA 22.2



Quick Link  
**R237**  
omron247.com

## Fiber-optic Sensor Heads

**E32-series\*\***

A wide selection of shapes, environment-resistant and special beam type fiber optic sensing heads to meet the needs of numbers applications.



Quick Link  
**A289**  
omron247.com

\*Note: consult data sheet for regional safety standard requirements

\*\*E32 fiber heads are considered intrinsically safe since it does not utilize electricity. The fiber amplifier must be housed in an explosion proof container or outside the Class I Division 2 environment.

## Safety Interlock Switch

## EC

## Electrically Coded Interlock Switch and Control Unit

Quick Link

S284

omron247.com



- The EC series control units individually monitor one to four read heads to provide a Category 4 system for applications with up to four guard doors
- Uniquely coded actuators are highly tamper resistant
- External Device Monitoring (EDM) allows the EC series control unit to function as a safety monitoring relay

## Emergency Stop Switch

## XER1022

## Rope Pull Emergency Stop Switch

Quick Link

S428

omron247.com



- Rope spans up to 125m making this switch ideal for applications where long rope spans are required
- Integral E-stop—the optional E-stop buttons provides emergency stopping capability at the extreme end of installation
- Tension indicator makes system setup and rope tension maintenance easy

## Emergency Stop Switch

## XER6022

## Rope Pull Emergency Stop Switch

Quick Link

S432

omron247.com



- Rope spans up to 80m means fewer number of switches required per application
- Tension indicator makes system setup and rope tension maintenance easy
- Heavy-duty housing—die-cast housing and stainless steel eye nut is suitable for demanding applications

## Safety Interlock Switch

## XT5009

## Universal Tongue-Operated

Quick Link

S427

omron247.com



- Strong and versatile—the compact size of the strong, glass-filled polyester housing allows this popular switch to be used in most applications and can withstand water washdown cleaning
- Rotatable head gives four possible actuator entry points for versatile installation
- Vibration resistant—preventing unwanted opening of guard doors on vibrating machines

## Programmable Safety Controllers

## NE1A

## Compact Safety Network Controllers

Quick Link

S322

omron247.com



- Helps to reduce wiring within a safety network and delivers a high degree of flexibility
- For lines with various levels of distributed safety devices up to 64 controllers can be connected to the network
- Complicated safety systems are greatly simplified with 23 safety certified function blocks and easy drag

## Safety Light Curtain

## MS4800

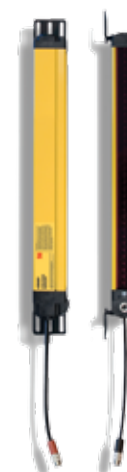
MS4800 series can be used in Class I Division 2 applications when MS4800-EPKT-T□□□\* series explosion-proof enclosure

Quick Link

S633

omron247.com

- All-purpose light curtain available in three versions (MS4800A, MS4800B and MS4800S)
- “Two box” design – no separate control box; no cable between transmitter and receiver
- Compact size : 50 x 38 mm (2 x 1.5 in)



\* Note: Boxes denote portion of part number to select size of MS4800 light curtain.

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# What is Class I Division 2?

A Class I Division 2 is a location: (1) In which volatile flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or

systems or in case of abnormal operation of equipment, or (2) In which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are normally prevented by positive mechanical ventilation, and which might become hazardous through failure or abnormal operation of the ventilating equipment.

## Class I Division 2 Classification

Class I Division 2 refers to the ANSI/ISA 12.12.01 standard. This standard was previously UL1604 until UL recommended the newer ANSI/ISA standard be used and that all hazardous location products be certified under this standard by July 2012.

This standard applies only to equipment, circuits, and components designed specifically for use in Class I and II, Division 2 and Class III, Divisions 1 and 2 hazardous locations as defined by the National Electrical Code (NEC) ANSI/NFPA 70.

Within the ANSI/ISA 12.12.01 standard. There are two types of hazardous conditions are 3 different classes and 2 divisions within each class. For a Class I rating the 2 divisions are Division 1 - normal conditions and Division 2 - abnormal conditions.

The CSA hazardous location certification is C22.2 No. 213-M1987-Non-Incendive Electrical Equipment for Use in Class I Division 2 Hazardous Locations.

## What is a hazardous location?

According to the NEC and the Canadian Electrical Code (CEC) a hazardous location is defined as areas "where fire or explosion hazards may exist due to flammable gasses or vapors, flammable liquids, combustible dust, or ignitable fibers or flyings." Specifically Class I Division 2 refers to only flammable gasses or vapors.

Furthermore, hazardous locations are locations where electrical equipment could be installed and might present a condition which could become explosive if the right elements for an ignition would be present.

Hazardous material is expected to be found within closed containers and/or systems and would be present only if an accidental rupture, breakage or

an unusual faulty operation would occur, leading the situation to be abnormal, the Division 2 rating.

An example of a normal condition would be where hazardous material would be present during normal plant operations, which coincides with the Division 1 rating.

This hazardous material could ignite through arcs and sparks, high temperature, and electrical equipment failure.

This means that any product with a Class I Division 2 rating must contain an explosion within, provide a way for the burning gases to escape after the flames are quenched through a flame path.

# Omron Class I Div 2 Product Offering

## Automation Systems

### Controllers

- NJ3/NJ5 – Machine Automation Controller
- NX I/O – Modular & Safety I/O
- CJ2 – Modular PLC
- CS1 – Rack PLC
- CP1H – High Performance PLC
- CP1L – Compact Machine Controller
- CP1E – Economic PLC



### HMI

- NA – Sysmac Platform
- NS – Advanced Troubleshooting
- NT11 – Function Key/Text
- NJS – HMI & Control
- NV3/NV4 – Compact and Simple



### I/O Blocks

- DRT2 – Compact DeviceNet I/O
- ERT1 – CIP Based Ethernet/IP
- CRT1 – Smart CompoNet I/O
- GX – EtherCAT I/O



## Industrial Components

### Relays

- G3RV – 6mm SSR
- MY4H – Hermetically Sealed GP relay



### Power Supplies

- S8VK-G Single-Phase
- S8VK-T Three-Phase



## Safety

### Safety Interlocks

- EC – Coded Interlock and Control Switch
- XT5009 – Door Interlock



### Emergency Stop Switch

- XER1022 – Rope Pull
- XER6022 – Rope Pull



### Safety Controller

- NE1A – Compact Safety Network Controller



### Safety Light Curtain

- MS4800 series can be used in Class I Division 2 applications with MS4800-EPKT-T series explosion-proof enclosure.

