





Original instructions



Model F3SX-E-D1R2
-D1D1R2
-D1D1D1R2

Safety controller

INSTRUCTION SHEET

Please read and understand this instruction sheet before storing, installing, programming, operating, maintaining, or disposing of the products. Please consult your OMRON representative if you have any questions or comments.

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Ratings and Specifications

For the ratings and specifications of Model F3SX Safety Controller, refer to the F3SX User's Manual in CD-ROM attached to the product. Please read the User's Manual and understand the ratings, features, installation procedure, wiring and connection method, etc., before using the F3SX.

Legislation and Standards

The F3SX alone cannot be applied to the "Type Test" pursuant to the Article 44 of the Industrial Safety and Health Law. It is necessary to apply by the entire system including the controller. Accordingly, in order to use F3SX in Japan as the "Safety device for press machine or shearing tool" pursuant to the Article 42 of the abovementioned law, it is necessary to apply for the test by the entire system.

F3SX is the product applicable to European Union (EU) Machinery Directive Annex IV, B, Safety Components, Item 1 and 2.

- 1) EC Declaration of Conformity
OMRON declares that F3SX is in conformity with the requirements of the following EC Directives:
-Machinery Directive 2006/42/EC
-Low Voltage Directive 2006/95/EC
-EMC Directive 2004/108/EC
2) European standards EN61508 (SIL1-3), EN ISO13849-1(Cat.4 PL e), EN61496-1 (Type4 ESPE), EN50178, EN55011, EN60204-1, EN61000-6-2, EN61000-6-4, EN1760, EN574 (Type IIC), EN1088
3) International standards IEC61508 (SIL1-3), IEC61496-1 (Type4 ESPE), IEC60204-1

We have obtained the following certificate of UL for F3SX.
-Listing certificate for the safety standards of USA and Canada.
UL508, UL1998, UL61496-1 (type4 ESPE), CSA C22.2 No.14, CSA C22.2 No.0.8

Suitability for Use

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the product in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this instruction sheet.

Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations. Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

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Precautions on Safety

Meanings of Signal Words

WARNING icon: Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant physical damage.

CAUTION icon: Indicates a potentially hazardous situation which, if not avoided, will occasionally result in minor or moderate injury, or result in physical damage to property.

Meanings of Alert Symbols

Prohibited actions icon: Indicates prohibited actions.

Mandatory actions icon: Indicates mandatory actions.

Alert Statements

Table of alert statements including WARNING, CAUTION, and Prohibited/Mandatory icons with detailed instructions.

Main table of safety instructions with icons and detailed text covering topics like power source, EMC, wiring, and safety distances.

Precautions for Safe Use

Please observe the following precautions for safe use of the products.

- (1) Read this manual thoroughly to understand before using the product.
(2) Loads must satisfy all the conditions below:
Are not short-circuited.
Are not provided with the voltage higher than the rating.
Are not used with current higher than the rating.
(3) Provide the control circuit (24V DC circuit) of F3SX with double or reinforced insulation for protection from an electric shock.
(4) F3SX belongs to the over-voltage category II. Connect F3SX to the power distribution system of the over-voltage category II.
(5) Ground the minus terminal of 24V DC for the D-class earthing (through the earthing resistance of 100Ω max.).
(6) Put the product in the state of output-OFF (the emergency-stop state) once every 24 hours.
(7) Do not disassemble, repair or modify F3SX.
(8) Be sure to dispose of the F3SX as industrial waste.

Precautions for Correct Use

Please observe the following precautions to prevent operation failure, malfunctions, or undesirable effects on product performance.

- (1) Installation environment:
-Do not use F3SX at altitudes over 1,000 meters.
-Do not install the F3SX in the following environments:
-Areas with high-humidity where condensation is likely to occur;
-In the atmosphere with smoke or microparticles which may cause quality deterioration;
-In the atmosphere of corrosive, inflammable or explosive gases;
-Areas exposed to vibration or shock levels higher than specification provisions;
-Areas where the product may come in direct contact with water, oil, chemicals;
-Do not use radio equipment, such as cellular phones, walkie-talkies or transceivers which generate radio waves, near the F3SX.
-Protect the output circuit with a surge absorber when an inductive load is connected to the output.
-Fore ventilation and wiring, allow for 5mm on both sides of the F3SX, and 50mm or more above and beneath.
(2) Wiring and mounting
-Do not operate the control system until 5 seconds or more after turning ON the power of the F3SX.
-Do not have the input/output lines, such as that for sensor, share the same conduit with the high voltage or power electric lines.
-When replacing the metal connectors with other types such as resin connectors, use ones in the structure with the protection grade IP54 or higher.
-Wire correctly after confirming the signal names of all the terminals.
-Perform wiring between the input and output with a wiring length of 100m or less. When regulations specify that the wiring of a connected device must be 100m or less, perform wiring according to those regulations.
(3) Maintenance
-When cleaning, avoid using thinner, benzene or acetone.
(4) Standards
-The safety category is determined by the entire safety control system. Design and use it in accordance with all the related standards. Consultation with an independent certification organization is recommended.
-The customer is requested to make compliant with the applicable standards for the entire system.
(5) This is a class A product. In residential areas it may cause radio interference. In such case the Responsible Person may be required to take adequate measures to reduce interference.

Control Devices to Be Connected

The following signal words are used in this instruction sheet.

WARNING icon: In order to maintain the total safety functions, use appropriate device for connection with the product. Failure to do so may cause degradation of the safety functions.

Table with 2 columns: Control device and Requirements. Lists devices like Emergency-stop switch, Door interlock switch, Two-hand control switch, etc.

CAUTION icon: The safety category is determined by the entire safety control system. Design and use it in accordance with all the related standards. Consultation with an independent certification organization is recommended.



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