Flexi Soft

The safety controller that makes life easy
The Flexi Soft is a powerful, modular, easy to commission safety controller that can be efficiently adapted to the requirements of a variety of safety applications due to its scalability. Function blocks and logic functions can be combined using the intuitive user software. Thanks to this modular hardware platform, the controller grows module by module with the task – up to the highest level of safety. The design of safe system solutions is significantly simplified as a result.

The integration into fieldbus environments and the related bidirectional communication between sensors, actuators, controllers and the control level make Flexi Soft particularly interesting for small to medium-sized machinery.
Simple, quick commissioning

- Configuration using intuitive user software

Modular and adaptable

- Flexible number of inputs/outputs
- From simple to complex logic
- Modular expandability

Optimal sensor integration

- Enhanced functionality due to EFI (more information on page 6)

Platform independent integration

- All standard automation networks

Fast shut-off

- Fast shut-off times reduce the safety distances and provide optimal protection for man and machine

Very easy device replacement

- Captive Flexi Soft system plug for the complete configuration. Cannot be lost since it is connected to the power supply

FLEXI SOFT

- Configuration using free intuitive software: Flexi Soft Designer
- Function block based logic editor with comprehensive library of certified function blocks
- Modular construction (12-144 inputs/outputs)
- Freely scaleable by means of modules with transistor outputs and relay contacts
- Fast response times (8 ms) due to fast shut-off functionality
- Configuration memory in the system plug for rapid commissioning
- Simple fieldbus integration for all common bus systems and networks
- Usage of the expanded sensor functions via EFI
sens:Control – a new name for safe control solutions

The new generation of safe control solutions from SICK combines advanced technologies with ease of use in every project phase. How does it work? Very simply: SICK developed, from the ground up, a new integrated product concept that is consistently designed for uncomplicated usage.

A comprehensive range of engineering and services

Often it is a long way from planning to reality – but not with SICK! With sens:Control the selection is quick and the configuration simple. In all phases of the project from planning, through commissioning to maintenance and upgrades to existing systems, we support you with comprehensive services.
Safety relays
- Very reliable and rugged
- Low wiring effort
- Fast installation through removable terminals
- Compact, space-saving type of construction
- Selection of application-orientated variants

Flexi Classic
- Is configured on the front of the device using a screwdriver
- Modular construction; the controller grows with the application
- Freely scaleable by means of modules with transistor outputs and relay contacts
- Integration in all leading field bus systems

Flexi Soft
- Easy configuration via user friendly software
- Modular expandability
- Configuration memory in the system plug for rapid commissioning
- Expanded sensor functionality
- Integration in all leading field bus systems

Network solutions
- Simple integration of safety solutions in higher level networks
- Uniform programming, configuration and diagnostics over the network
- Integrated application-specific evaluation functions
- Process data display and system diagnostics via OPC server from SICK

Applications:
- Storage and conveyor technology
- Packaging
- Presses
- Logistics

Applications:
- Robots
- Logistics

Applications:
- Automated guided systems
- Robots

Applications:
- Muting stations
- Linked systems
- Robots
- Handling systems
More than just integration

Enhanced function interface for SICK devices

As a complete provider with an international orientation, SICK offers the right solution for industrial safety systems. The new safe control solutions combined with the electro-sensitive protective devices provide a safe, complete solution for your application.

Due to the innovative further development of the products and the possibility of expanding the functionality using the device’s EFI, SICK offers more than just integration.

Integration via OSSDs

The OSSD output (OSSD = output signal switching device) is the safe output signal switching device on an electro-sensitive protective device (e.g. a C4000 safety light curtain, S3000 safety laser scanner).

If the protective field is interrupted, the safety sensor switches the output signal switching devices (OSSDs) to the OFF state. This initiates the shutdown of the machine or the shutdown of the dangerous state.

Each safety sensor has two OSSD outputs that operate in parallel; depending on the required level of safety these outputs must be evaluated separately (dual-channel).

For example, the connection of electro-sensitive protective devices to a safety relay or a safety controller for category 3 acc. to EN 954-1 or Performance Level d acc. to EN ISO 13 849-1 is made using 2 OSSD outputs on the electro-sensitive protective device.

In the case of integration of safety sensors using OSSDs it must be noted that bi-directional communication is not possible. The safety sensor signals the status information “protective field clear”. This status information is evaluated in the safety controller or in the safety relay.

Diagnostics on the safety sensors can only be undertaken locally at the device. Diagnostics via the safety controller are not possible.

Advantage:

• Shortest response time
Integration via EFI

The SICK-specific EFI (= Enhanced Function Interface) was developed to realise safe communication between electro-sensitive protective devices, safety controllers and gateways.

Using EFI it is not only possible to transfer the process data from several sources with little installation effort and to perform diagnostics, the functionality of the individual protective device is expanded and the extensive diagnostics information is available to all EFI devices.

Expanded functionality means, e.g.:

- Simultaneous protective field evaluation (S3000 safety laser scanner)
- Protective field switching
- Operating mode switching
- Sampling of status signals (e.g. contamination of the front screen)

EFI provides a quick overview of the entire system configuration, which means increased capacity to act and therefore increased availability of your machine.

Advantages:

- Complete diagnostics
- Expanded sensor functionality
- Safe bi-directional device communication between several devices

Integration via SDL

For diagnostics and to achieve the fastest response times, with SICK it is possible to connect the sensors to the safety controller using the interaction of EFI and OSSDs (abbreviation SDL = Safety Data Link).

By means of this optimal connection of EFI and OSSDs, the EFI users can communicate with each other and the machine can be switched to a safe state as quickly as possible.

Advantages:

- Shortest response time
- Complete diagnostics
- Expanded sensor functionality
- Safe bi-directional device communication between several devices
Safety controllers can also be simple. Flexi Soft is an open and modularly expandable system for easy connection and intuitive configuration of safety solutions and allows easy integration into all common fieldbus systems.

### Product description
- Modular construction, the system grows with the application (12-144 inputs/outputs)
- Configuration via intuitive software with a graphical user interface
- Shortened response time and therefore shorter distance from the hazardous point (8 ms)
- Function block based logic editor
- Optimised integration via EFI (e.g. S3000, C4000)
- Integration in all leading networks: CANopen, PROFIBUS-DP, DeviceNet, Ethernet IP, Ethernet TCP/IP, Modbus TCP, PROFINet I/O

### Customer benefits
- Scalability prevents superfluous inputs and outputs
- Configuration memory in the system plug for rapid commissioning
- Tabular wiring diagram via software saves time
- All common sensors can be connected
Main unit
- 255 logic blocks
- Narrow width 22.5 mm
- General blocks (AND/OR/XOR/NOT)
- Application specific: Bypass, Muting, Press
- RS-232 connection for programming and real-time diagnostics
- System plug with integrated connection to the power supply stores the configuration of the safety controller
- Available with and without EFI

Input expansion unit
- 8 digital safety inputs
- Supplied via Flex Bus+
- 8 test outputs
- The system configuration can be expanded to a maximum of 12 input expansion units or extension units

Extension unit
- 8 safety inputs
- 4 safety outputs that each comply with SIL3
- If the input and output are on the same module, fast shut-off can be selected: 8 ms response time
- 2 test outputs
- The system configuration can be expanded to a maximum of 12 input expansion units or extension units
The new versatility

Expansion modules and gateways

Along with the main unit and the extension units, there are two ways of expanding the system. Relay modules can be connected to the 2A semiconductor outputs on the FX3-XTIO module and provide contacts with 2 A to 6 A switching capacity.

The other function expansions are diagnosis modules that provide the input and output states as well as error and status information to the existing automation control system via a fieldbus connection. The following expansion modules are available:

Relay module
- Width 22.5 mm
- With removable or double-layer spring terminals
- 2R0:
  2 N/O contacts, 1 application diagnostic output and 1 external device monitoring
- 4R0:
  2×2 N/O contacts, 2 application diagnostic outputs and 1 external device monitoring
- Response time < 30 ms
- The system configuration can be expanded with a maximum of 4 4R0 relay modules or 8 2R0 relay modules

Safety relay UE10-2FG/UE12-2FG
- Width 17.5 mm
- Simple safety relay for sensors with OSSD outputs
- 2 N/O contacts and one external device monitoring
- Response time < 10 ms
- Can be cascaded easily and quickly, if additional contacts are required
- Fast wiring
Available in the future

**EtherNet/IP Gateway**
- Contents of the process images in the network can be configured as required.
- The data required most frequently are automatically customised.
- The PLC can read from the gateway or the gateway can write automatically to it.
- With the aid of the gateway one has full access to the system and EFI devices over Ethernet TCP/IP.
- The system configuration can be expanded with a maximum of 2 gateways.

**CANopen gateway**
- Contents of the process images in the network can be customised.
- The data required most frequently are automatically configured using defaults.
- The system configuration can be expanded with a maximum of 2 gateways.

**PROFIBUS-DP gateway**
- Contents of the process images in the network can be configured as required.
- The data required most frequently are automatically customised.
- The system configuration can be expanded with a maximum of 2 gateways.
Hardware configuration

- Easy hardware configuration using Drag & Drop
- Large selection of input and output elements with clear symbols
- Context sensitive help
- Easy to move modules and elements already used
- Clear diagnostics due to online monitor; all system status at a glance
- Possible to assign user specific tag names
- User-specific modification of elements and storage in a special library

Logic editor

- Extensive library of 32 function blocks
- 255 logic blocks are available for your requirements
- Specialized function blocks for presses and muting included as standard
- Simple connection, clear structure
- Easy to use due to editor functions such as clipboard as well as replicate and undo
- I/O summary for a quick overview
- Online monitor with output of all intermediate results for easy and quick development of applications and for quickly finding errors
Report

- Tabular wiring diagram included
- Comprehensive report in a single file
- Specific parts of the report can be selected
- Depiction of the elements in the configuration in graphical form
- Detailed list of safety functions
- Possibility to save a project description
- Report can be saved as PDF and printed

Diagnostics

- Complete diagnostics; always up to date
- History with up to 100 entries
- Detailed description for rapid trouble shooting
- Customer-specific error description available as HTML
- Multilingual error text

For further information and to download the full version free of charge, visit us at: www.sens-control.com
Technical specifications and ordering information

For further information visit us at www.sens-control.com or see our data sheet for further technical specifications.

<table>
<thead>
<tr>
<th>Technical specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety integrity level</td>
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<tr>
<td>Performance Level</td>
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<tr>
<td>Number of inputs</td>
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<tr>
<td>Number of outputs</td>
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<tr>
<td>Number of EFI interfaces</td>
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<td>Configuration interface</td>
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<td>Logic operators</td>
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<td>Safety functions</td>
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</table>

### Main unit

<table>
<thead>
<tr>
<th>Number of EFI interfaces</th>
<th>Type</th>
<th>Part number</th>
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<tbody>
<tr>
<td>0</td>
<td>FX3-CPU00000000</td>
<td>10437831</td>
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<td>2</td>
<td>FX3-CPU1300002</td>
<td>10437841</td>
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1) The system plug has to be ordered separately.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Type</th>
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<tbody>
<tr>
<td>System plug</td>
<td>FX3-MPL000000</td>
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### Extension unit

<table>
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<tr>
<th>Number of inputs</th>
<th>Number of outputs</th>
<th>Connector technology</th>
<th>Type</th>
<th>Part number</th>
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<tbody>
<tr>
<td>8 single-channel</td>
<td>4 single-channel</td>
<td>Double-layer spring terminals</td>
<td>FX3-XTI084002</td>
<td>1044125</td>
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### Input expansion unit

<table>
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<th>Type</th>
<th>Part number</th>
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<td>Double-layer spring terminals</td>
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### Relay module

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<th>Number of N/O contacts</th>
<th>Number of application diagnostics outputs</th>
<th>Connector technology</th>
<th>Type</th>
<th>Part number</th>
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<td>2</td>
<td>1</td>
<td>Removable terminals</td>
<td>UE410-2R03</td>
<td>6026144</td>
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<tr>
<td></td>
<td></td>
<td>Double-layer spring terminals</td>
<td>UE410-4R04</td>
<td>6032676</td>
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<tr>
<td>4</td>
<td>2</td>
<td>Removable terminals</td>
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<td></td>
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<td>Double-layer spring terminals</td>
<td>UE410-2R04</td>
<td>6032677</td>
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</table>
Safety from the number one

SICK is the world’s leading producer of industrial safety systems. SICK offers integrated system solutions based on a unique mix of competence, products and services. Users profit from the high safety quality of standard- and directive-compliant machines and plant: safety solutions from SICK increase the security of investments and open up new savings potentials through more efficient processes, while always keeping the primary aim in view – the protection of humans and machines.

Unique variety and fundamental simplicity:
the range of products

Intelligent protective equipment is indispensable for automated production and logistics processes. It’s good that SICK has a complete programme of innovative products here. And the safe controller solution sens:Control ensures optimum integration of the sensors. SICK places great value on technology that is as easy as possible to use. Trouble-free commissioning is just as much a part of this as simple integration in the automation environment.

Services that save time
and cut costs

If desired, SICK experts advise on and support the use of each safety technology from the initial idea to regular maintenance. Consequently, the range of services available comprises everything from works visits, through the risk assessment, and up to the CE conformity assessment. SICK provides support during commissioning, carries out stop-time measurements and offers a wide-ranging training programme. SICK services cover all phases of the machine life cycle.
FACTORY AUTOMATION
With its intelligent sensors, safety systems, and auto ident applications, SICK realises comprehensive solutions for factory automation.

- Non-contact detecting, counting, classifying, and positioning of any types of object
- Accident protection and personal safety using sensors, as well as safety software and services

LOGISTICS AUTOMATION
Sensors made by SICK form the basis for automating material flows and the optimisation of sorting and warehousing processes.

- Automated identification with barcode and RFID reading devices for the purpose of sorting and target control in industrial material flow
- Detecting volume, position, and contours of objects and surroundings with laser measurement systems

PROCESS AUTOMATION
Analyzers and Process Instrumentation by SICK MAIHAK provides for the best possible acquisition of environmental and process data.

- Complete systems solutions for gas analysis, dust measurement, flow rate measurement, water analysis or, respectively, liquid analysis, and level measurement as well as other tasks

Worldwide presence with subsidiaries in the following countries:

- Australia
- Belgium/Luxembourg
- Brasil
- Ceská Republika
- China
- Danmark
- Deutschland
- España
- France
- Great Britain
- India
- Israel
- Italia
- Japan
- Nederlands
- Norge
- Österreich
- Polska
- Republikale Slovenija
- România
- Russia
- Schweiz
- Singapore
- Suomi
- Sverige
- Taiwan
- Türkiye
- USA/Canada/México

Please find detailed addresses and additional representatives and agencies in all major industrial nations at www.sick.com

Handed over by: