Product Description

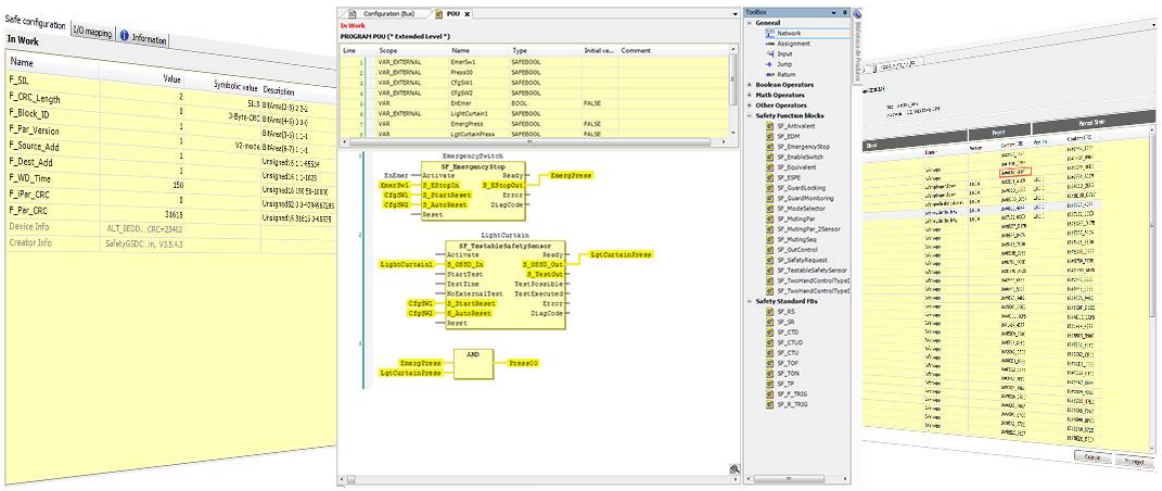
Nexto Series is a powerful and complete Programmable Logic Controller (PLC) with unique and innovative features. Due to its flexibility, smart design, enhanced diagnostics capabilities and modular architecture, Nexto is suitable for control systems ranging from medium to high-end large applications. Finally, its compact size, high density of points per module and superior performance, allow Nexto Series to be applied in small automation systems with high performance requirements, such as manufacturing applications and industrial machines.

Functional safety is the process of using non-standard equipment that has a safe response of the outputs in relation to ensure a proper process operation in every aspect. These safety requirements are not only valid for process applications, but also for factory automation. Normally used in systems that need a fast response to light barriers and emergency buttons, as industrial machines and process control, the logic used must provide the best performance as possible without compromising the system integrity.

MasterTool Safety is a complete tool for programming, debugging and performing configuration and simulation of Safety applications. Based on a concept of being flexible and easy to use, the software provides 27 pre-certified blocks to reduce the necessary time from creating the application and certifying it, thus making the application simple and efficient.

Also, MasterTool Safety offers all the well-known advantages of the FBD programming language: easy to use, to follow, to debug and to reuse, creating a easy to understand input to output workflow.

MasterTool SAFETY



Product Data

Product Code

The following codes should be used to purchase the product:

Code	Description
MT8800	MasterTool Safety

Related Products

The following products must be purchased separately when necessary:

	Compatible Licence	Software Version
MT8500	Professional or higher	3.03 or higher

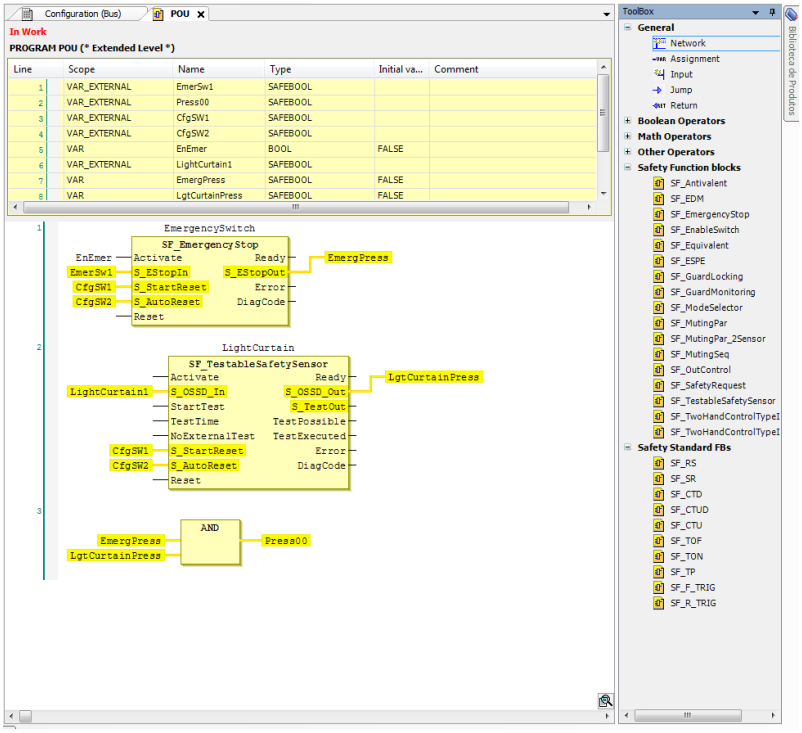
Note:

MT8500: MasterTool IEC XE is available in four different license versions: Lite, Basic, Professional and Advanced. For further details please check the table in this document or MasterTool IEC XE User Manual - MU299609.

Fatures

FBD Programming Language

- 27 pre-certified function blocks for easy programming and certification
- Application-oriented function modules in accordance with Copen Safety for typical safety devices such as e.g. emergency off buttons, two-handed-operation, safety door, etc.
- Language elements can either be entered directly or dragged into the editor from a tool box
- MT8800 offers an intelligent input assistance and an extended IntelliSense functionality
- Automatic declaration of variables
- Graphic table for declaration of variables



Available Safety PLCopen Function Blocks

Below is a list of pre-certified safety blocks for user application.

- **SF_Equivalent:** plausibility monitoring of two equivalent inputs that are linked to a logical output.
- **SF_Antivalent:** plausibility monitoring of two antivalent inputs that are linked to a logical output
- **SF_ModeSelector:** plausibility monitoring of 1 of 8 switches for the selection of the mode of operation, e.g. manual, automatic.
- **SF_EmergencyStop:** evaluation of the emergency stop switches (start-up lock)
- **SF_ESPE (Electro-Sensitive Protective Equipment):** evaluation of a non-contact functioning safety sensor (start-up lock)
- **SF_GuardMonitoring:** plausibility monitoring of two safety door switches (start-up lock)
- **SF_TwoHandControlTypeII:** plausibility monitoring of a twohand control type II according to EN 574 (without temporal monitoring of the two input signals)
- **SF_TwoHandControlTypeIII:** (with temporal monitoring of the two input signals of a fixed 500 milliseconds).
- **SF_GuardLocking (Safety Guard Interlocking with Locking):** safety door monitoring with tumbler (start-up lock).
- **SF_TestableSafetySensor:** function block for checking noncontact operating safety devices type 2 with periodic tests.
- **SF_MutingSeq:** function block for the temporary suppression of the protective function in order to transport material into or out of a danger zone secured with an ESPE. Arrangement with 4 sensors with signal sequence in a specified serial order.
- **SF_MutingPar:** function block for the temporary suppression of the protective function in order to transport material into or out of a danger zone secured with an ESPE. Arrangement with 2 pairs of sensors in a given order.
- **SF_MutingPar_2Sensor:** function block for the temporary suppression of the protective function in order to transport material into or out of a danger zone secured with an ESPE. Arrangement of the 2 sensors so that their beams cross.
- **SF_EnableSwitch:** plausibility monitoring of a 3-stage confirmation button (start-up lock)
- **SF_SafetyRequest:** function block for the plausibility monitoring of the safety function of a generic actuator such as a drive or valve.
- **SF_OutControl:** confirmation ANDing of a process signal with safety signal (start-up lock)
- **SF_EDM (External Device Monitoring):** monitoring of external connected relays/contactors with positively-driven contacts for checking their switching function.

Available Safety Standard Function Blocks

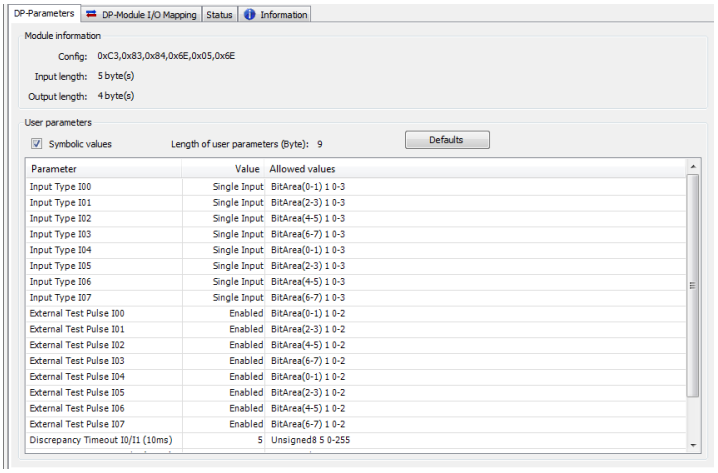
Below is a list of pre-certified safety blocks for user application.

- **SF_SR:** a bistable function block from the SafetyStandard standard library with dominant set
- **SF_CTD:** fulfils the countdown function
- **SF_CTUD:** fulfils the function of an up and down counter
- **SF_CTU:** Its function is the counting up of a counter to a defined upper limit
- **SF_TOF:** a timer block from the SafetyStandard standard library that implements a switch-off delay
- **SF_TON:** a timer function block from the SafetyStandard standard library that implements a switch-on delay
- **SF_TP:** a timer function block that operates as a pulse generator
- **SF_F_TRIG:** this function block detects a falling edge
- **SF_R_TRIG:** this function block detects a rising edge

Doc. Code: CE103730 Revision: A

Easy Module Parameterization

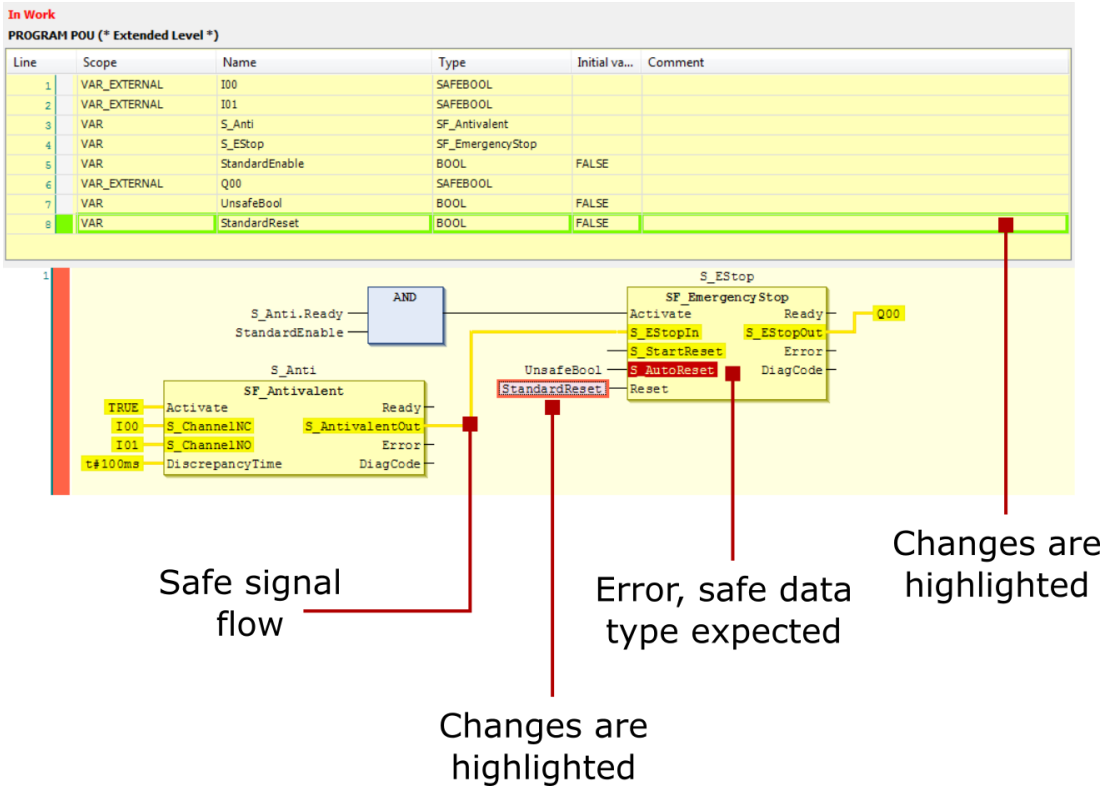
MasterTool Safety software offers an integrated way to configure the Nexto Safety I/O modules. With the aid of special editors, modules can be easily configured. There is no need to use external tools or connections to parameterize the remote modules; all parameterization occurs automatically via PROFIBUS-DP.



Online, Debugging and Commissioning Features

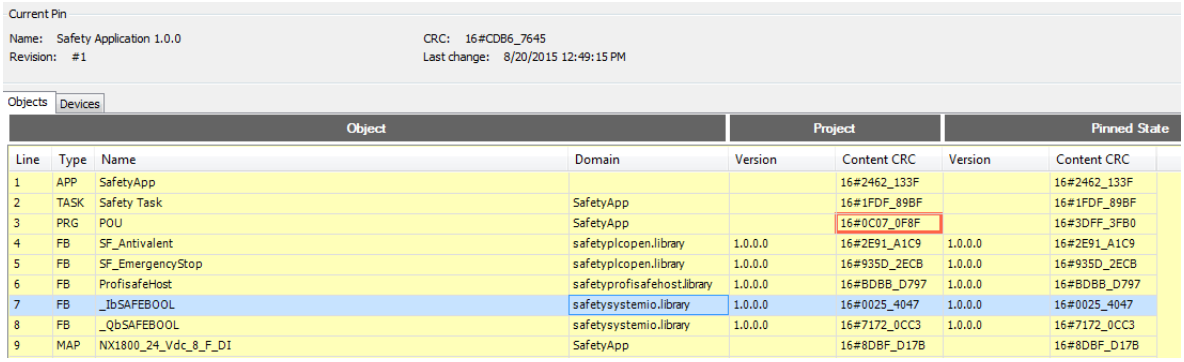
The code generated from the application is downloaded onto the target device with a single mouse click. Once MasterTool Safety is online, it offers many important functions for fast and efficient debugging, testing and commissioning.
The values of declared variables for example, are displayed directly in the program code. These values can be changed or forced without any difficulty.
MasterTool Safety provides shorter development cycles, faster production process and application certification, which leads to reduced costs and increased competitiveness.

Intuitive Interface



Project Pinning

MasterTool Safety software offers an innovative way to protect your application and configuration. Pinning means that a reference point to the current version of a safety application is set that identifies the specific version of the safety application and the associated objects. By means of the pin it is possible to identify a certain version of the application in the project, of an object in the editor and of a boot application on the safety controller. In addition the verifier, on the basis of the pin, can recognize at any time changes in the application structure, in the contents of its objects and in the library function blocks referred to.



Current Pin

Name: Safety Application 1.0.0 CRC: 16#CDB6_7645

Revision: #1 Last change: 8/20/2015 12:49:15 PM

Objects | Devices

Object				Project		Pinned State	
Line	Type	Name	Domain	Version	Content CRC	Version	Content CRC
1	APP	SafetyApp			16#2462_133F		16#2462_133F
2	TASK	Safety Task	SafetyApp		16#1FDF_89BF		16#1FDF_89BF
3	PRG	POU	SafetyApp		16#0C07_0F8F		16#3DFF_3FB0
4	FB	SF_Antivalent	safetyplcopen.library	1.0.0.0	16#2E91_A1C9	1.0.0.0	16#2E91_A1C9
5	FB	SF_EmergencyStop	safetyplcopen.library	1.0.0.0	16#935D_2ECB	1.0.0.0	16#935D_2ECB
6	FB	ProfisafeHost	safetyprofisafehost.library	1.0.0.0	16#BDBB_D797	1.0.0.0	16#BDBB_D797
7	FB	_IbSAFEBOOL	safetysystemio.library	1.0.0.0	16#0025_4047	1.0.0.0	16#0025_4047
8	FB	_QbSAFEBOOL	safetysystemio.library	1.0.0.0	16#7172_0CC3	1.0.0.0	16#7172_0CC3
9	MAP	NX1800_24_Vdc_8_F_DI	SafetyApp		16#8DBF_D17B		16#8DBF_D17B

Figure above shows an example of a pinned application. In this example, the safety POU was modified.

Compatibility with Other Products

MasterTool Safety is compatible with the following products

	Software version	Product revision
NX3810	1.4.1.6 or higher	AA or higher
NX2800	1.8.1.6 or higher	AA or higher
NX1800	1.7.1.6 or higher	AA or higher

Minimum Requirements

	MasterTool Safety
Platform	Windows 7 ® (64 bits)
Processor	Intel Core 2 Duo 1.66 GHz (minimum)
Disk space	1 Gbyte (minimum), 2 Gbytes (recommendable)
RAM memory	2 Gbytes (minimum), 3 Gbytes (recommendable)
Resolution	1024 x 768 (recommendable)
Language	Any Language

Manuals

For further technical details, configuration, installation and programming of Nexto Series the table below should be consulted.

Document Code	Description	Language
CE103730	MasterTool Safety – Technical Characteristic	English
CT103730	MasterTool Safety – Características Técnicas	Portuguese
CS103730	MasterTool Safety – Especificaciones y Configuraciones	Spanish