

Safety solutions dynamic & innovative

SAFETY @ ITS BEST!

SERVICES



Application planning
Standard / customized solutions
For your application



Initial / Start-up
Configuration, parameterization & function test
Commissioning support



Product & system support
Per phone, e-mail & contact form
Support for all technical questions



Product training
Online or in-house

ABOUT US

BBH Products is a leader in the field of safe drive monitoring and deterministic, high-speed safety processes. For more than 20 years, we have been on the cutting edge to introduce new comprehensive safety functions for safe drive monitoring and short, guaranteed response times also for IO signal processing. With solutions for both:

safe stand-alone = Safety separated and
fieldbus-based safety technology = Safety integrated,
we are the right partner for all functional safety tasks!

- **Safety integrated:**
SCU series / FSoE Master & Slaves
- **Safety separated:**
SMX series / central & decentral solutions
- **Easy & powerful programming: SafePLC²**

SafePLC² Software

\mathbb{R} define SARC_CST	$a_1 + a_2 = r$ SARC_ADD	$a_1 - a_2 = r$ SARC_SUB	$a_1 \times a_2 = r$ SARC_MUL	$\frac{a_1}{a_2} = r$ SARC_DIV	$-1 \times a$ SARC_NEG
$\mathbb{Z} \rightarrow \mathbb{R}$ SARC_IN	\sqrt{a} SQRT	$ a $ SARC_ABS	$\cos(\omega)$ SARC_COS	$\arccos(\omega)$ SARC_ACOS	
$\mathbb{R} \rightarrow \mathbb{Z}$ SARC_OUT	$\sin(\omega)$ SARC_SIN	$\arcsin(\omega)$ SARC_ASIN	$\tan(\omega)$ SARC_TAN	$\arctan(\omega)$ SARC_ATAN	
$\begin{bmatrix} a_{11} & \dots & a_{1m} \\ \vdots & & \vdots \\ a_{n1} & \dots & a_{nm} \end{bmatrix}$ MATRIX	$\begin{bmatrix} a_{11} & \dots & a_{1n} \\ \vdots & & \vdots \\ a_{m1} & \dots & a_{mn} \end{bmatrix} \begin{bmatrix} b_1 & \dots & b_n \\ \vdots & & \vdots \\ b_1 & \dots & b_n \end{bmatrix}$ MMMUL	$[M_1] \rightarrow \mathbb{R}$ SARC_Matst			

SAFE FLOATING-POINT CALCULATION &
FAST MOTION MONITORING

SAFE ARITHMETIC
CALCULATIONS
Features

SafePLC² comfortable programming

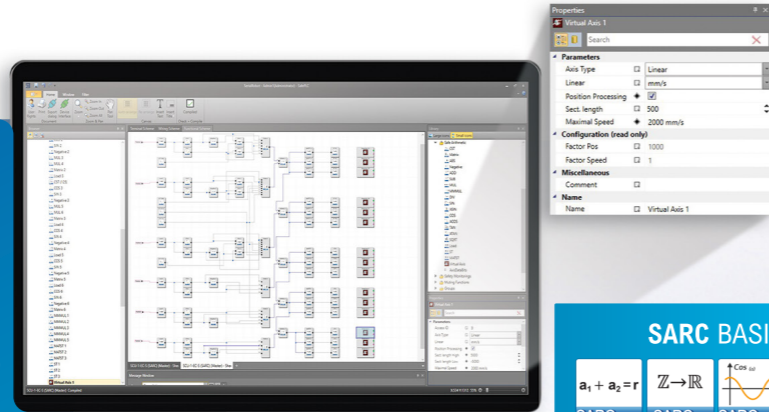
The SafePLC² programming interface meets the requirements of a modern programming interface and combines all series of our safety controls. A very extensive library of sensors and actuators is available to the user. These can be adapted and extended to the customer's requirements.



SARC - SAFE ARITHMETIC CALCULATIONS Features

New Library and functions in engineering software SafePLC²

SARC includes a wide-ranging library for safe calculations in float data format. These start from simple operations over trigonometric and root functions up to matrix calculations. A large selection of safety-related tasks can be implemented.



- NEW! Software-Modul "SARC", for floating-point calculations
- SCU series: FSoE Master safety controls
- Safe Arithmetic calculation functions, per Drag&Drop in functional scheme
- Two extension stages: SARC BASIC and SARC ADVANCED
- Ideal for safe robotics and/or complex kinematics incl. load calculations or in process technology
- SafePLC² - a programming interface, from simple safe IO logic to complex safe calculation
- Certified for applications up to SIL 3 / IEC 61508 respective PL e / EN ISO 13849-1

SARC BASIC			
$a_1 + a_2 = r$	$Z \rightarrow IR$	\sin	\arccos
SARC_ADD	SARC_IN	SARC_COS	SARC_ACOS
$a_1 - a_2 = r$	$IR \rightarrow Z$	\arctan	\arcsin
SARC_SUB	SARC_OUT	SARC_TAN	SARC_ASIN
$a_1 \times a_2 = r$	IR define	\cos	$\arctan2$
SARC_MUL	SARC_CST	SARC_SIN	SARC_ASIN
$\frac{a_1}{a_2} = r$	$ a $	$-1 \times a$	\sqrt{a}
SARC_DIV	SARC_ABS	SARC_NEG	SQRT

Safety controls for EtherCAT environment

SCU Series



SCU-0-EC

SCU-1-EC/NM

SCU-2-EC

FSoE Master



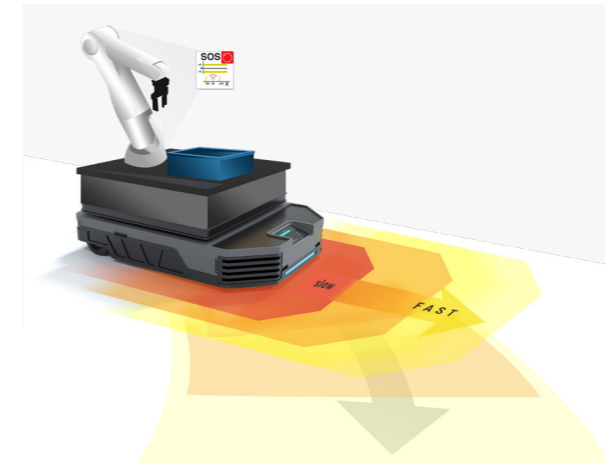
Safety solutions for robots, cobots & AGV's

Flexible management and dynamic activation of safe area monitoring and safe workspace

Safety without limits!

To assure safe and easy movement of automated guided vehicles (AGV's), their direction and speed has to be tracked and safely processed. The FSoE master safety controls and the compact Safe Master Fieldbox SMF-x are ideal for this application. The safe components are space efficient and easily integrated in AGV's. Using the extensive assortment of certified safety functions in the associated engineering tool "SafePLC²", any AGV application is easily created. Realize visual parameterization, diagnosis up to validation of highly complex AGV's easily with the software module Safe Arithmetic Calculations "SARC".

- Safe Arithmetic functions integrated in FSoE Master devices
- Safety-related tasks: such as scanner field switching for AGV's related to kinematics and position of the steering axes



- Safe AGV Safe speed detection & monitoring
- Safe AGV Safe direction detection
- Cobot in standstill mode (SOS)

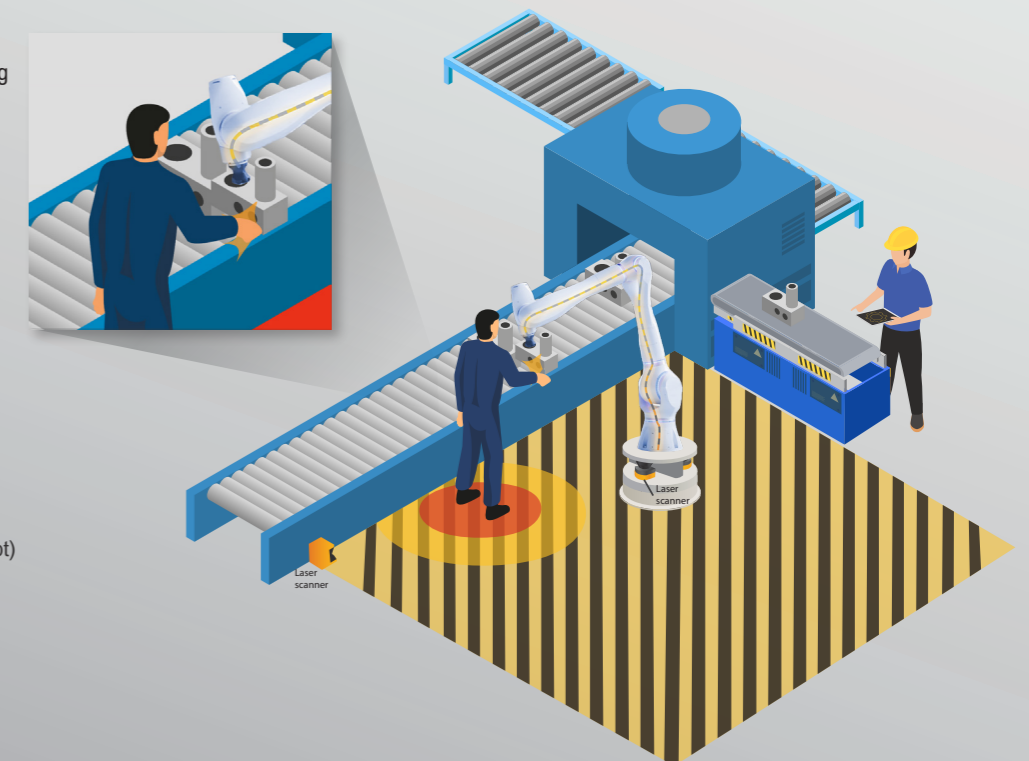
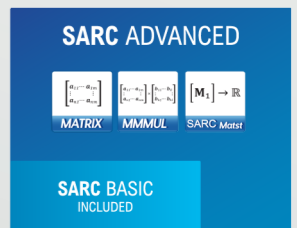


- Cobot active spatial monitoring (SWM), AGV in stop mode (SOS)
- Warning and stop field management
Intelligent field activation by speed and direction information. Additional IO's for speed and safety control. All other safety limit switches and sensors (e.g. manual mode, install mode, on truck sensor) can be evaluated safely and linked to their respective conditions (e.g. SLS, SCA, SSX,...).

Cobot solution: SWM - Safe Workspace Monitoring & Force control

Safe Cartesian TCP joint speed / position detection & monitoring = safe workspace monitoring

- Safe Cartesian TCP Joint position / speed detection & monitoring
- Safe dynamic workspace monitoring
- Safe Cartesian speed range
- Safe acceleration detection
- Safe force detection & monitoring



- Force Limit
Dynamic axis load detection
TCP / Joint force monitoring
- Person tracking
SCA - Safe cam, safe laser scanner
STO - safe torque off at contact (robot)
Safe position range (robot)
SLT - Safe Limited Torque (robot)
- Robot setup
Safe limited speed (TCP, Joints)
Safe standstill monitoring (robot)