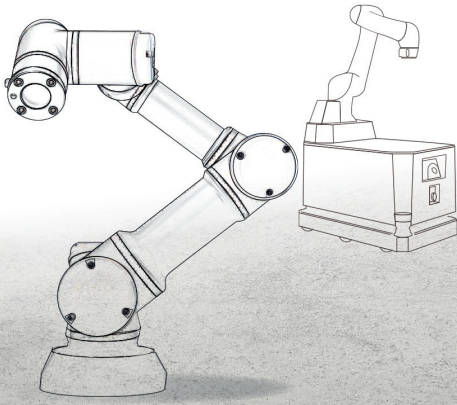


# TECHNICAL DATASHEET



## SSCU/1/x SAFETY CONTROL UNIT



- Open programmable and configurable FSoE MainInstances for operation on EtherCAT networks.

### CHARACTERISTIC OF THE MODULES

- » Safe logic processing of input, output, status and activation signals
- » Easy and transparent programming and parametrization via SafePLC<sup>2</sup>
- » Scanner master functions, activation of monitoring areas and computing of monitoring result status
- » Complete set of Drive monitoring
- » Deterministic data communication and processing for safe position und speed functions via distributed sensor / multiple axes
- » Special AGV functions
- » Storage of safe parameters in the base module
- » Status LEDs for IO
- » Multifunction button (Quit, Start, Reset) front side
- » Integrated Communication interface :
  - EtherCAT interface and FSoE MainInstance stack for safe connectivity to higher levels of control
  - or Modbus TCP/IP
- » Optional: SARC functionality

	SSCU/1	SSCU/1/AX	SSCU/1/Pro *
<b>Safety Integrity Level</b>		SIL 3 /IEC 61508	
<b>Performance Level</b>		PLe EN ISO 13849-1	
<b>Cycle Time (ms)</b>	4, 8, 12, 16	4, 8, 12, 16	4, 8, 12, 16
<b>Safe digital inputs</b>	16	16	16
<b>Safe outputs</b>	8x 0,5A 4x 2A 2x Relay	8x 0,5A 4x 2A 2x Relay	8x 0,5A 4x 2A 2x Relay
<b>Safe digital IO`s</b>	-	-	-
<b>Encoder Interface</b>	-	4	-
<b>Serial Interface (Data interface)</b>	Data interface for u to 6 scanner		
<b>Fieldbus interface 1</b>	EtherCAT, Ethernet		
<b>Safe Master Protocol</b>	Safety over EtherCAT (FSoE)		
<b>Feldbus interface 2</b>	EtherCAT, PROFINET, Ethernet/IP, Modbus TCP/IP		
<b>Safe slave Protocol</b>	FSoE, PROFIsafe, SMMC (BBH),		
<b>Housing dimension (HxDxW)</b>	124x95x57 mm	124x95x76 mm	124x95x76 mm

\* available in different variants, e.g. SSCU/1/P/ECI

	SSCU/1	SSCU/1/AX	SSCU/1/Pro
	<ul style="list-style-type: none"> <li>▪ 7 DoF kinematics</li> <li>▪ 5 Extended points</li> <li>▪ 20 3D points calculations (VA)</li> <li>▪ 3 3D speed calculations</li> <li>▪ 64 SWMs</li> <li>▪ 16 SEL</li> <li>▪ 16 SLS</li> <li>▪ 30 SCA</li> <li>▪ 12 SS1 Stop</li> <li>▪ 12 SS2 Stop</li> <li>▪ 12 FSoE slave axes</li> <li>▪ 4 internal axes</li> <li>▪ Boolean logics to make application</li> <li>▪ Live Diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>▪ 7 DoF kinematics</li> <li>▪ 5 Extended points</li> <li>▪ 20 3D points calculations (VA)</li> <li>▪ 3 3D speed calculations</li> <li>▪ 64 SWMs</li> <li>▪ 16 SEL</li> <li>▪ 16 SLS</li> <li>▪ 30 SCA</li> <li>▪ 12 SS1 Stop</li> <li>▪ 12 SS2 Stop</li> <li>▪ 12 FSoE slave axes</li> <li>▪ 4 internal axes</li> <li>▪ Boolean logics to make application</li> <li>▪ Live Diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>▪ 7 DoF kinematics</li> <li>▪ 20 Extended points</li> <li>▪ 32 3D points calculations (VA)</li> <li>▪ 32 3D points calculations (VA3D)</li> <li>▪ 32 3D speed calculations (VA3D)</li> <li>▪ 64 SWMs</li> <li>▪ 910 SLMs</li> <li>▪ 1500 STMs</li> <li>▪ 10 SCMPs</li> <li>▪ 16 SEL</li> <li>▪ 16 SLS</li> <li>▪ 32 SLS3D</li> <li>▪ 48 SCA</li> <li>▪ 16 SS1 Stop</li> <li>▪ 18 SS2 Stop</li> <li>▪ 16 FSoE slave axes</li> <li>▪ Boolean logics to make application</li> <li>▪ Live Diagnosis</li> </ul>
			<b>SSCU/1/x</b> <b>SSCU/1/Pro</b>
<b>Cycle Time (ms)</b>	Device cycle time	4, 8, 12, 16	4, 8, 12, 16
<b>Boolean Logic</b>	These blocks are the basis for the creation of a program for the safety application. They allow the logic connection of the inputs with monitoring functions with the outputs	✓	✓
<b>Safe Arithmetic</b>	SARC: A user-friendly interface for floating-point arithmetic and trigonometric functions, designed to support the development of tailored applications	✓	✓
<b>Safe Cam</b>	SCA: Monitoring of a parametrizable position/speed range with assigned minimum limit and maximum limit	✓ 30	✓ 48
<b>Safe Direction Indication</b>	SDI: Monitoring of the given rotational direction / motion direction	✓	✓
<b>Safe Limited Speed</b>	SLS: Monitoring of speed against an allowed maximum limit	✓ 16	✓ 16
<b>Safe Emergency Location</b>	SEL: Monitoring of real/virtual axes against minimum and maximum limits along with stopping distance	✓	✓
<b>Safe Limited Position</b>	SLP: Monitoring of real/virtual axes against minimum and maximum limits along with stopping distance (Direction specified by user)	✓	✓
<b>Safe Operational Stop</b>	SOS: Monitoring of standstill position	✓	✓
<b>Safe Stop</b>	SSX: SS1 and SS2 stop with ramp functionality for real/virtual axis	✓ 12/12	✓ 16/18
<b>Safe Workspace Monitoring</b>	SWM: Monitoring of 3D point against obstacle → cuboid, wall, cylinder, sphere	✓ 64	✓ 64
<b>Safe Link Monitoring</b>	SLM: A safety function that checks for collisions between a robotic arm (defined by two 3D points) and predefined geometric objects or planes.		✓
<b>Safe Tool Monitoring</b>	STM: A safety function that checks for collisions between a sphere (defined by a 3D point) and predefined geometric objects or planes.		✓
<b>Virtual Axis</b>	VA: Any 3D point like TCP can be stored as VA and can be monitored against speed limits or collision against objects (one dimension)		✓
<b>3D Virtual Axis</b>	VA3D: Any 3D point like TCP can be stored as VA and can be monitored against speed limits or collision against objects (3 dimension + speed)		✓
<b>Safe Comparator</b>	SCMP: Comparison of up to 10 VA3D.		✓