

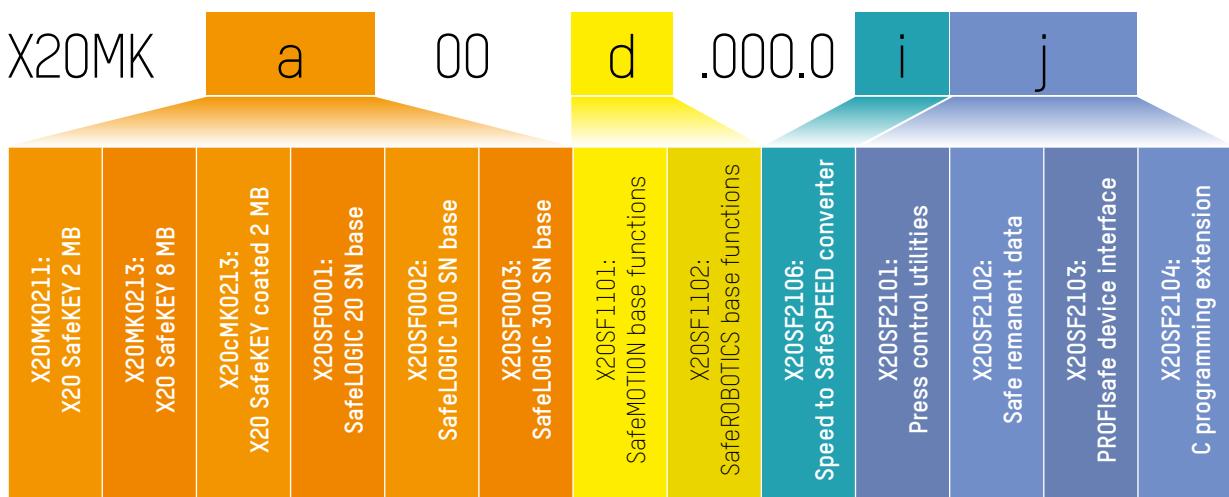


# Integrated safety technology System overview

PERFECTION IN AUTOMATION  
A MEMBER OF THE ABB GROUP



# Safety Technology Guarding



0									
1	✓		✓		✓		✓	✓	
2		✓	✓		✓	✓		✓	
3	✓			✓			✓	✓	
4		✓		✓					✓
5		✓			✓		✓		✓
6								✓	✓
7							✓	✓	✓
8									✓
9							✓		✓
A								✓	✓
B							✓	✓	✓
C								✓	✓
D							✓	✓	✓
E								✓	✓
F							✓	✓	✓
X		✓		✓					
Y		✓		✓					
Z		✓	✓						

SafeMOTION product	Safety Technology Guarding	AR Technology Guarding	Scope of license
ACOPOS multi SafeMOTION	X20SF1101	not required	1x per SafeLOGIC
ACOPOS motor SafeMOTION	X20SF1101	not required	1x per SafeLOGIC
3rd party openSAFETY drives	X20SF1101	not required	1x per SafeLOGIC
ACOPOS P3 SafeMOTION	not required	1TGACPSMCO.00-01	1 x per Axes: SOS, SS2, SLA, SLS, SMS
	not required	1TGACPSMCO.00-01	1 x per Axes: Safe Homing, SLP, SMP, RSP
	not required	1TGACPSMCO.00-01	1 x per Axes: SDI, SLI, SBT
	not required	1TGACP0000.00-99	1 x per Axes: ACOPOS P3 FLAT license

# 5 good reasons for integrated safety from B&R



## Maximum productivity

To avoid the painfully high cost of stopping production, machinery needs to have availability designed in from the start. Intelligent safety technology plays a critical role in preventing downtime and production outages.

## Custom configurations

The general approach taken with series-produced machinery is to equip it with a suite of customization options. This approach places special demands on the safety technology that can't be met by traditional safety solutions. Smart Safe Reaction from B&R makes machine options manageable without compromising the safety level.

## Line integration

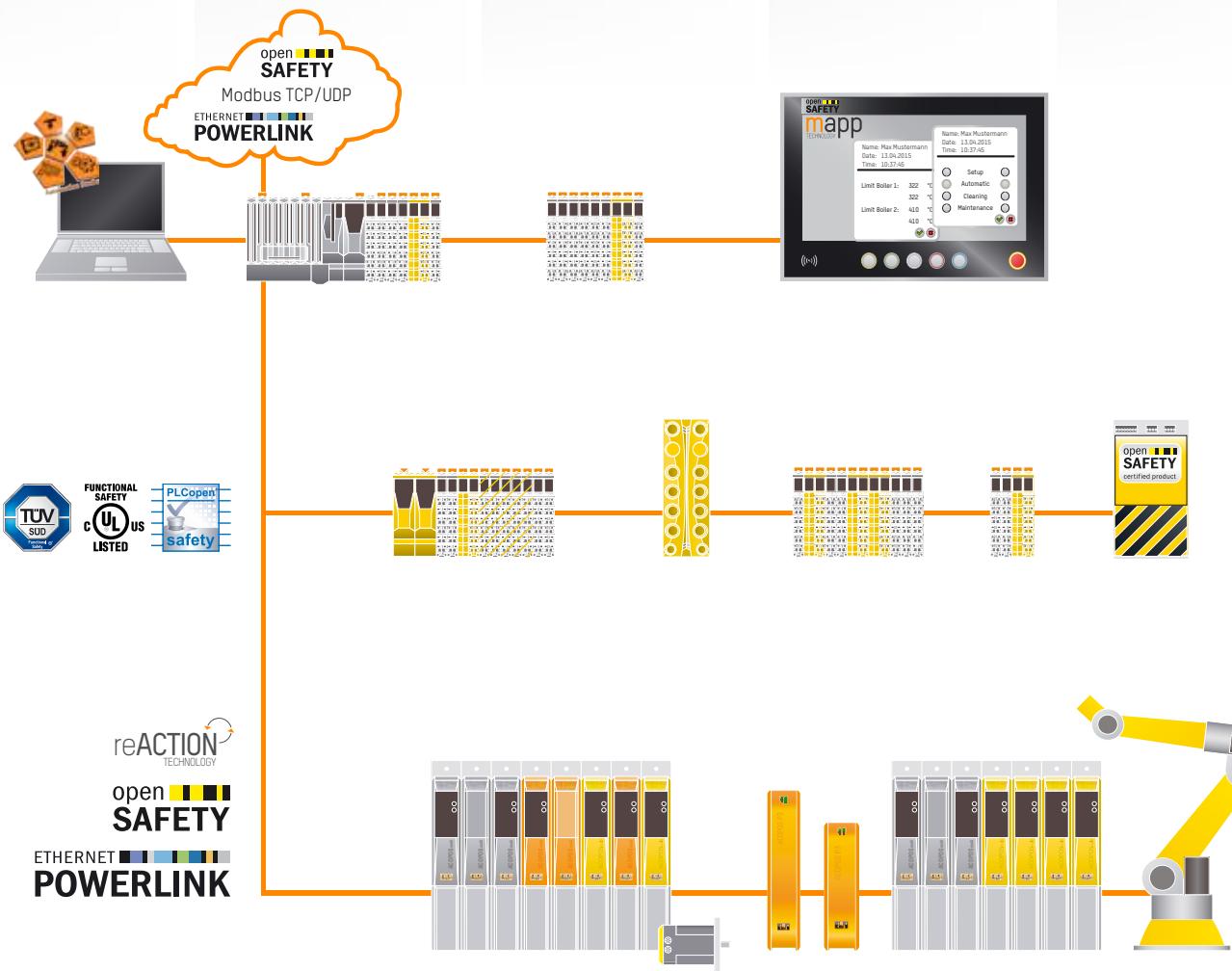
In a production line, machines from various vendors must interact. With integrated, network-based safety technology from B&R, the entire line is able to react to safety events in a coordinated way. Safe communication is provided by the bus-independent safety standard openSAFETY.

## Global installations

Network-based safety solutions from B&R are designed to be used anywhere in the world. Integrated diagnostic functions turn any smartphone into a highly effective troubleshooting instrument able to perform rapid and precisely targeted remote service. Across global markets, international certifications guarantee smooth implementation.

## Ultimate scalability

SafeLOGIC and SafeLOGIC-X controllers give B&R safety technology the scalability it takes to create a cost-optimized solution for any application. Hardware components and software functions remain fully compatible, regardless of which safety controller is selected.





## SafeLOGIC

X20SL8100 X20SL8101 X20SL8110 X20SLX210 X20SLX402 X20SLX410 X20SLX806 X20SLX811

<b>Max. no. of supported safety nodes</b>	300	300	300	10	10	10	10	10
<b>openSAFETY domain gateway instances</b>	20	20	20	-	-	-	-	-
<b>Max. payload data size on network</b>	1x 1490 bytes	4x 1490 bytes	4x 1490 bytes	300 bytes	300 bytes	300 bytes	300 bytes	300 bytes
<b>Network interface</b>	<b>ETHERNET POWERLINK</b>	<b>ETHERNET POWERLINK</b>	<b>ETHERNET POWERLINK</b>	X2X Link				
<b>Machine option</b>	<b>SafeBOOL</b>	512	512	64	64	64	64	64
	<b>Safe INT</b>	64	64	-	-	-	-	-
	<b>Safe UINT</b>	64	64	-	-	-	-	-
	<b>SafeDINT</b>	64	64	-	-	-	-	-
	<b>SafeUDINT</b>	64	64	-	-	-	-	-
<b>CPU / SafeLOGIC communication area</b>	128 bytes	128 bytes	128 bytes	8 bytes	8 bytes	8 bytes	8 bytes	8 bytes
<b>Shortest task class cycle time</b>	1 ms	1 ms	1 ms	2 ms	2 ms	2 ms	2 ms	2 ms
<b>Interface modules</b>	-	-	X20IF10E3-1	-	-	-	-	-
<b>Onboard SafelO</b>	-	-	-	✓	✓	✓	✓	✓
<b>Protection - IP 20</b>	✓	✓	✓	✓	✓	✓	✓	✓
<b>Protection - IP 20 coated</b>	✓	✓	-	-	-	✓	-	-

	X20SL8100	X20SL8101	X20SL8110	X20SLX210	X20SLX402	X20SLX410	X20SLX806	X20SLX811
<b>Max. no. of supported safety nodes</b>	300	300	300	10	10	10	10	10
<b>openSAFETY domain gateway instances</b>	20	20	20	-	-	-	-	-
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<b>Network interface</b>	<b>ETHERNET POWERLINK</b>	<b>ETHERNET POWERLINK</b>	<b>ETHERNET POWERLINK</b>	X2X Link				
<b>Machine option</b>	<b>SafeBOOL</b>	512	512	64	64	64	64	64
	<b>Safe INT</b>	64	64	-	-	-	-	-
	<b>Safe UINT</b>	64	64	-	-	-	-	-
	<b>SafeDINT</b>	64	64	-	-	-	-	-
	<b>SafeUDINT</b>	64	64	-	-	-	-	-
<b>CPU / SafeLOGIC communication area</b>	128 bytes	128 bytes	128 bytes	8 bytes	8 bytes	8 bytes	8 bytes	8 bytes
<b>Shortest task class cycle time</b>	1 ms	1 ms	1 ms	2 ms	2 ms	2 ms	2 ms	2 ms
<b>Interface modules</b>	-	-	X20IF10E3-1	-	-	-	-	-
<b>Onboard SafelO</b>	-	-	-	✓	✓	✓	✓	✓
<b>Protection - IP 20</b>	✓	✓	✓	✓	✓	✓	✓	✓
<b>Protection - IP 20 coated</b>	✓	✓	-	-	-	✓	-	-

## Digital SafelO

X20SI2100 X20SI4100 X20SI8110 X20SI9100 X20SP1130 X20S02110

<b>Safe dig. input channels</b>	2	4	8	20	-	-
<b>Pulse output channels</b>	2	4	4	4	-	-
<b>Safe dig. output channels HS/HS type</b>	-	-	-	-	1 x 10 A	-
<b>Safe dig. output channels HS/LS type</b>	-	-	-	-	-	2 x 0.5 A
<b>Safe dig. output relais channels</b>	-	-	-	-	-	-
<b>Door lock interface (2DE, 2DO, 2A device supply)</b>	-	-	-	-	-	-
<b>SafeLOGIC-X technology</b>	-	-	-	-	-	-
<b>reACTION technology for safety</b>	-	-	-	-	-	-
<b>IP 20 protection</b>	✓	✓	✓	✓	✓	✓
<b>IP67 protection</b>	-	-	-	-	-	-
<b>IP 20 coated protection</b>	-	✓	-	✓	-	-
<b>Option for HMI interfaces</b>	-	-	-	-	-	-

	X20SI2100	X20SI4100	X20SI8110	X20SI9100	X20SP1130	X20S02110
<b>Safe dig. input channels</b>	2	4	8	20	-	-
<b>Pulse output channels</b>	2	4	4	4	-	-
<b>Safe dig. output channels HS/HS type</b>	-	-	-	-	1 x 10 A	-
<b>Safe dig. output channels HS/LS type</b>	-	-	-	-	-	2 x 0.5 A
<b>Safe dig. output relais channels</b>	-	-	-	-	-	-
<b>Door lock interface (2DE, 2DO, 2A device supply)</b>	-	-	-	-	-	-
<b>SafeLOGIC-X technology</b>	-	-	-	-	-	-
<b>reACTION technology for safety</b>	-	-	-	-	-	-
<b>IP 20 protection</b>	✓	✓	✓	✓	✓	✓
<b>IP67 protection</b>	-	-	-	-	-	-
<b>IP 20 coated protection</b>	-	✓	-	✓	-	-
<b>Option for HMI interfaces</b>	-	-	-	-	-	-



# Advanced SafeIO

X20SLX842 | X20SLX910

10	10
-	-
300 bytes	300 bytes
X2X Link	X2X Link
64	64
-	-
-	-
-	-
-	-
8 bytes	8 bytes
2 ms	2 ms
-	-
✓	✓
✓	✓
-	✓

- Safe digital counter channels
- Max. input frequency
- Counting modes
- Safe analog input channels
- Current input, 4-20 mA
- Voltage input, +/- 65 mV
- Thermocouple input, type J, K, N, S, R, C, T
- PT100 / PT1000 input
- Digital converter resolution
- Protection - IP20
- Protection - IP20 coated

X20SD1207

X20SA4420

X20ST4492

X20S04110 X20S02120 X20S04120 X20S02530 X20S06300 X20SC2432 X20SC2212 X20SC0402 X20SC0806 X2



# SafeMOTION

Safety Performance	ACOPOS P3				ACOPOS		
	1, 2, 3, axis drive system				Multi-axis		
	S0/S1/S4/S5/ S8/S9/SA/SB	D0/D1/D4/D5/ D8/D9/DA/DB	3rd party ENDAT 2.2	Others	S0/S1/S4/S5/ S8/S9/SA/SB	D0/D1/D4/D5/ D8/D9/DA/DB	E0/E1/E4/E5
CAT 4 / PL e / SIL 3	✓	✓	✓ <sup>1</sup>	✓	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	✓	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	✓	✓	✓	✓
CAT 3 / PL d / SIL 2	-	-	-	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 4 / PL e / SIL 3	✓	✓	✓ <sup>1</sup>	✓	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	✓	✓ <sup>1</sup>	-	✓	✓	✓
CAT 3 / PL d / SIL 2	✓	-	✓ <sup>2</sup>	-	✓	-	-
CAT 3 / PL d / SIL 2	✓	-	✓ <sup>2</sup>	-	✓	-	-
CAT 3 / PL d / SIL 2	✓	-	✓ <sup>2</sup>	-	✓	-	-
CAT 3 / PL d / SIL 2	✓	-	✓ <sup>2</sup>	-	✓	-	-

[1] Safety performance depends on safety characteristics of 3rd party encoder

[2] Depends on safety-related mounting quality of 3rd party encoder

(3) Safety performance depends on safety charac



POSmulti

ACOPOMotor

Drive system

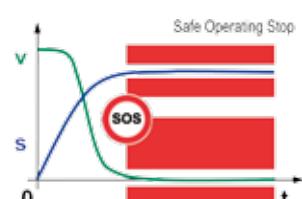
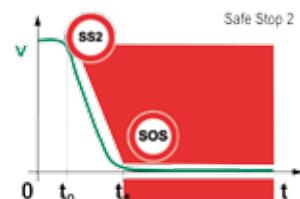
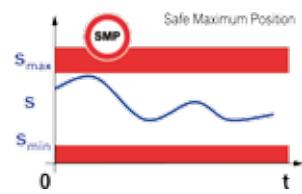
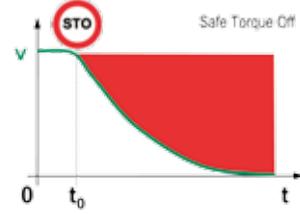
	Motor-integrated				
	3rd party ENDAT 2.2	3rd party sin/cos	Others	D8/D9/DA/DB	S8/S9/SA/SB
✓ <sup>1</sup>	✓ <sup>3</sup>	✓	✓	✓	✓
✓ <sup>1</sup>	✓ <sup>3</sup>	✓	✓	✓	✓
✓ <sup>1</sup>	✓ <sup>3</sup>	✓	✓	✓	✓
-	-	-	-	-	-
✓ <sup>1</sup>	✓ <sup>3</sup>	-	✓	✓	✓
✓ <sup>1</sup>	✓ <sup>3</sup>	✓	✓	✓	✓
✓ <sup>1</sup>	✓ <sup>3</sup>	-	✓	✓	✓
✓ <sup>1</sup>	✓ <sup>3</sup>	-	✓	✓	✓
✓ <sup>1</sup>	✓ <sup>3</sup>	-	✓	✓	✓
✓ <sup>1</sup>	✓ <sup>3</sup>	-	✓	✓	✓
✓ <sup>1</sup>	✓ <sup>3</sup>	-	✓	✓	✓
✓ <sup>2</sup>	✓ <sup>2,3</sup>	-	-	✓	✓
✓ <sup>2</sup>	✓ <sup>2,3</sup>	-	-	✓	✓
✓ <sup>2</sup>	✓ <sup>2,3</sup>	-	-	-	✓
✓ <sup>2</sup>	✓ <sup>2,3</sup>	-	-	-	✓
✓ <sup>2</sup>	✓ <sup>2,3</sup>	-	-	-	✓

Characteristics of 3rd party encoder (possible up to CAT 4 / PL e / SIL 3)

06 X20SLX842 X67SI8103 X67SC4122.L12

9APLK.01-000  
9AX2X.01-000

8	8	8	8
4	4	8	-
A	2 x 50mA	-	4 x 2 A
4 x 3 A	-	-	-
-	-	-	-
-	✓	-	-
✓	-	-	-
-	-	-	-
✓	-	-	-
-	✓	✓	-
-	-	-	-
-	-	-	✓



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