

smartServo

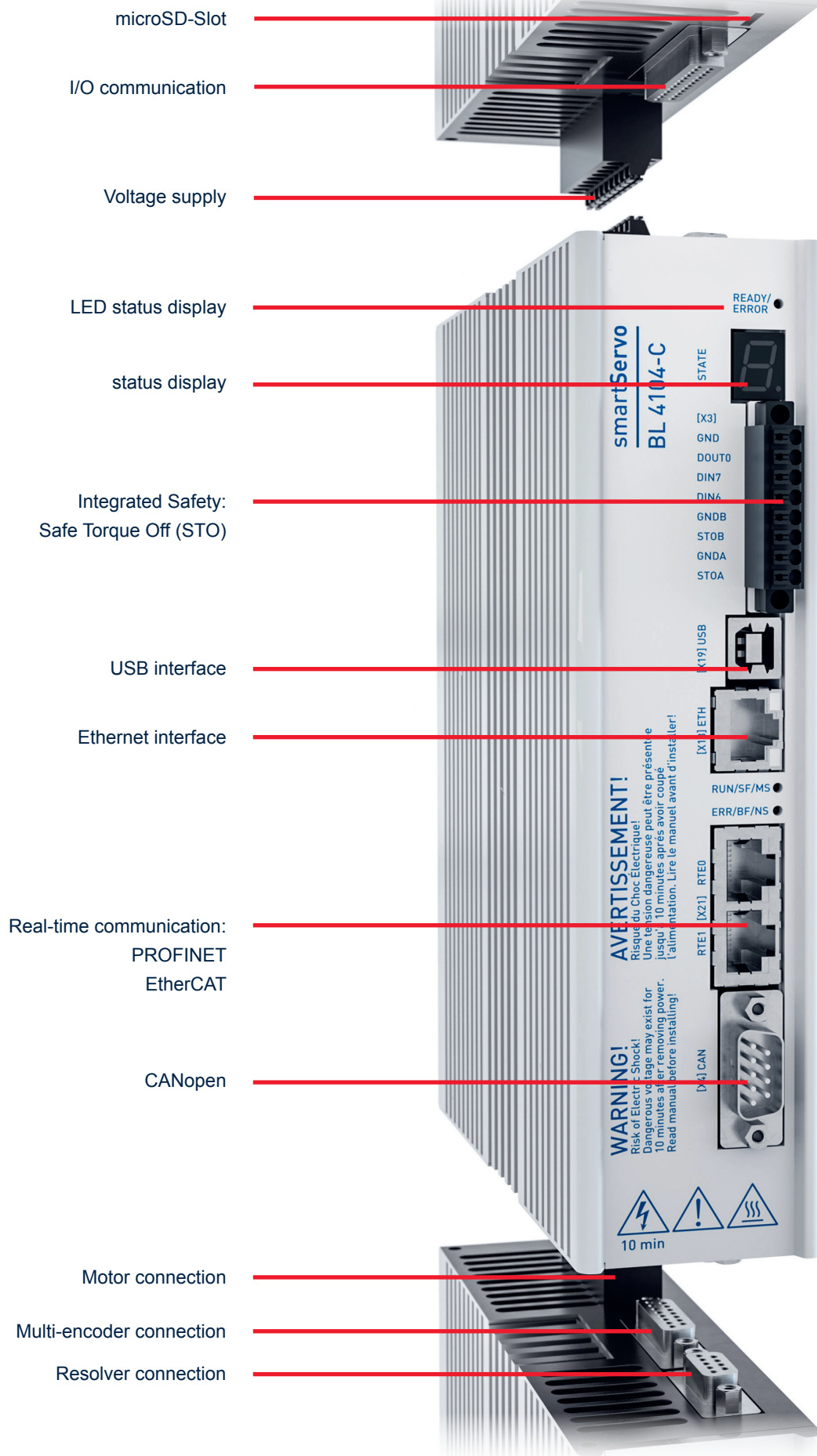
Ready for IoT

smart ideas
for great projects



**MOTOR
POWER**
COMPANY





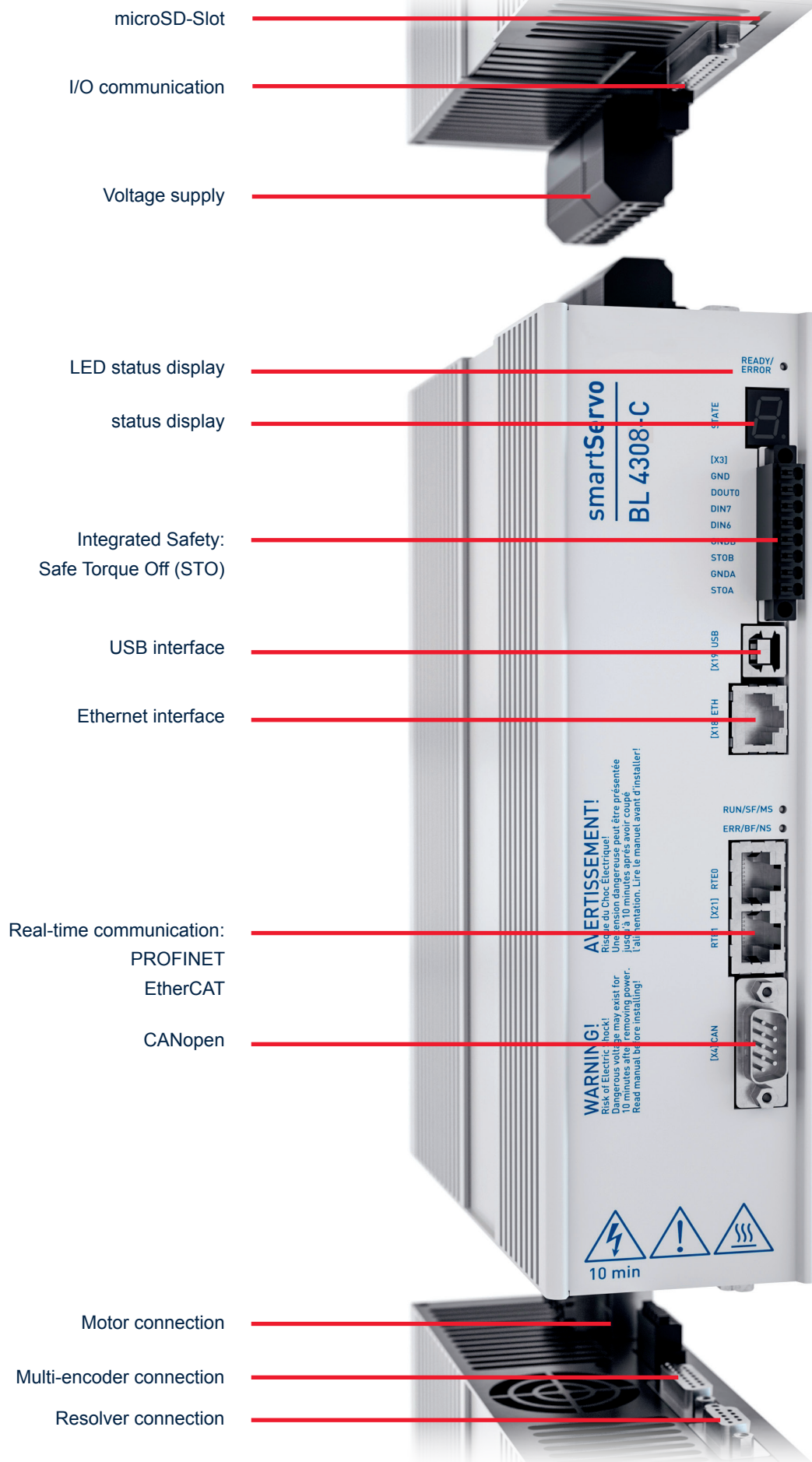
smartServo - speedy, slim, smart

Single-phase servo drive

- › Highest performance and dynamics internal sampling time < 32 µs
- › USB and Ethernet as parameterisation interfaces
- › Fieldbus on board EtherCAT, PROFINET, CANopen
- › Universal encoder evaluation HIPERFACE®, HIPERFACE DSL®, EnDat 2.2, resolver, analogue and digital incremental encoders, BISS

Technical data			
Features	BL 4102-C	BL 4104-C	BL 4108-C
Voltage supply	1 x 75...230 VAC [$\pm 10\%$], 50...60 Hz		
Control voltage	24 VDC [$\pm 20\%$] (0,35 A) ^{**1)}		
DC link voltage	325 VDC (with $U_{\text{mains}} = 230 \text{ VAC}$)		
Output power	400 W	800 W	1600 W
Max. output power for 2 s	1 kW	2 kW	4,8 kW
Rated output current	2 A _{rms}	4 A _{rms}	8 A _{rms}
Max. output current for 2 s	6 A _{rms}	12 A _{rms}	24 A _{rms}
Internal brake resistor	75 Ω		30 Ω
Continuous power / pulse power	8 W / 2 kW		50 W / 6,4 kW
External brake resistor	75 Ω , max. 2 kW		$\geq 30 \Omega$
Holding brake	24 VDC, max. 2 A		
Dimensions servo drive H x W x D	200 x 50 x 163 mm 245 x 50 x 163 mm with mounting plate		230 x 67 x 200 275 x 67 x 200 with mounting plate
Weight	1,5 kg		2,9 kg
Encoder evaluation	EnDat 2.2, HIPERFACE®, HIPERFACE DSL®, resolver, analogue and digital incremental encoders with/without commutation signals, BISS (Type C)		
Interfaces	USB 2.0, Ethernet, CAN-Bus, EtherCAT, PROFINET, MicroSD card Ethernet Powerlink		
Inputs/outputs	8 x digital in (24 VDC), 2 x analogue in ($\pm 10 \text{ V}$) 3 x digital out (24 VDC)		


^{**1)} plus the current consumption of a holding brake and I/Os (if included)



smartServo - speedy, slim, smart

Three-phase servo drive

- › Highest performance and dynamics internal sampling time < 32 µs
- › USB and Ethernet as parameterisation interfaces
- › Fieldbus on board EtherCAT, PROFINET, CANopen
- › Universal encoder evaluation HIPERFACE®, HIPERFACE DSL®, EnDat 2.2, resolver, analogue and digital incremental encoders, BISS



Technical data

Features	BL 4304-C	BL 4308-C	BL 4312-C	BL 4320-C	BL 4340-C	BL 4360-W
Voltage supply	3 x 230... 480 VAC [± 10 %], 45 ... 66 Hz					
Control voltage	24 VDC [± 20 %] (0,35 A) ^{**1)}	24 VDC [± 20 %] (0,45 A) ^{**1)}	24 VDC [± 20 %] (0,65 A) ^{**1)}	24 VDC [± 20 %] (max. 1A) ^{**1)}		
DC link voltage	565 VDC (with U _{mains} = 400 VAC)					
Output power	1,6 kW	3,2 kW	4,8 kW	8 kW	16 kW	18 kW
Max. output power for 2 s	4,8 kW	9,6 kW	12 kW	20 kW	40 kW	45 kW
Rated output current	4 A _{rms}	8 A _{rms}	12 A _{rms}	20 A _{rms}	40 A _{rms}	60 A _{rms}
Max. output current for 2 s	12 A _{rms}	24 A _{rms}	30 A _{rms}	50 A _{rms}	100 A _{rms}	150 A _{rms}
Internal brake resistor	30 Ω			15 Ω		
Continuous power / pulse power	50 W / 24 kW			80 W / 18 kW	160 W / 36 kW	
External brake resistor	≥ 30 Ω			15 Ω ≤ R _{Extern} ≤ 50 Ω		
Holding brake	24 VDC, max. 2 A					
Dimensions servo drive H x W x D	230 x 67 x 200 mm 275 x 67 x 200 mm with mounting plate			351 x 90,5 x 256,5 390 x 93 x 263 with mounting plate	351 x 162,5 x 256,5 390 x 165 x 263 with mounting plate	351 x 161 x 180 390 x 163 x 186 with mounting plate
Weight	2,9 kg			8 kg	13,5 kg	9 kg
Encoder evaluation	EnDat 2.2, HIPERFACE®, HIPERFACE DSL®, resolver, analogue and digital incremental encoders with/without commutation signals, BISS (Type C)					
Interfaces	USB 2.0, Ethernet, CAN-Bus, EtherCAT, PROFINET, MicroSD card, Ethernet Powerlink					
Inputs/outputs	8 x digital in (24 VDC), 2 x analogue in (±10 V) 3 x digital out (24 VDC)					

^{**1)} plus the current consumption of a holding brake and I/Os (if included)

Connectivity-Options

Universal interface variety



> CANopen

The CANopen fieldbus system with the CiA 402 drive profile, which has been tried and tested for decades, is always on board. With the operating modes Profile Torque Mode, Profile Velocity Mode, Profile Position Mode, Homing Mode and Interpolated Position Mode, the servo drive can be used in a variety of different applications. A few hundred parameters enable the servo drive to be completely configured via CANopen.



ETHERNET

> Ethernet

The integrated Ethernet interface can be connected via a UDP / IP connection e.g. can be used for remote maintenance or as a fieldbus connection. A transfer of setpoints and actual values, an error analysis, the loading and saving of parameter sets, the setting of individual parameters and the display of values is possible via the oscilloscope function.



> EtherCAT

All BL 4000-C have the Ethernet-based EtherCAT fieldbus system. With the CoE application protocol (CANopen over EtherCAT), all operating modes and parameters of CANopen can also be used under EtherCAT. In multi-axis applications, in the "Cyclic synchronous position" operating mode in connection with distributed clocks (DC), highly synchronous movements are achieved even at high cycle times, since the servo drives synchronize exactly with the external clock.



> PROFINET

The Ethernet-based fieldbus system PROFINET is also already fundamentally integrated. Based on PROFIdrive, the specific application profile enables uncomplicated access to all functions of the servo drive. Finished function blocks and a sample project make the integration of the smartServo into the control system a breeze. The plain text display of fault messages in the control system considerably simplifies commissioning, so that the machine or system is ready for use more quickly.

Encoder interfaces

EnDat 2.2

> EnDat 2.2

Heidenhain encoders with EnDat interface have a serial communication channel that is used for the communication between the servo drive and the encoder. Via this channel all relevant information is read out of the electronic nameplate of the encoder. This avoids a cumbersome manual parameterisation. If the used encoder also has an EEPROM, the motor information can be saved in the encoder so that the motor can be connected directly to another servo drive. The smartServo BL 4000-C supports EnDat 2.2 encoders, each as singleturn and multi-turn encoder.

HIPERFACE®

> HIPERFACE®

As well as the Heidenhain encoders, the HIPERFACE encoders have a serial communication channel that is used for the communication between the servo drive and the encoder. Here again all relevant information is read out of the encoder and motor information can be saved in the encoder. All common HIPERFACE single-turn and multi-turn encoders are supported.

HIPERFACE® DSL

> HIPERFACE DSL®

The single-cable technique HIPERFACE DSL® transmits the digitalized encoder signal via the motor cable. Thus, a minimum of connecting lines between servo drive and motor is required. Of course, all features of the HIPERFACE encoders (electronic nameplate, information saving in the encoder) are also available in the HIPERFACE DSL® encoder.

~ 1V □ TTL

> Analogue and digital incremental encoders

are supported as well as digital track signals including homing tracks and index pulse. In addition to commutation, digital Hall signals can be evaluated and the determination of an error signal can be activated. One of the encoder inputs may also be used as pulse direction input or as forward-backward counting input.

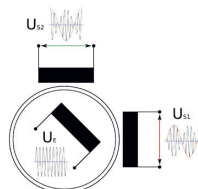
FA-CODER® Nikon A-Format

> FA-CODER® und Nikon A-Format

The smartServo BL 4000-C also directly supports numerous encoders from the two Japanese manufacturers Nikon and Tamagawa Seiki.

> Resolver

Of course, the smartServo BL 4000-C also supports the resolver as a robust and costeffective position encoder.



INDUSTRIE
4.0



MOTOR POWER

COMPANY

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