

cSCALE Compact

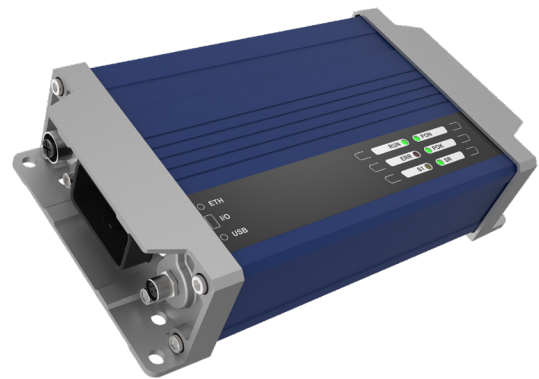
Compact controller that combines CoDeSys with Linux

Applications

- Telescopic cranes, lattice boom cranes, rough terrain cranes
- Telehandler
- Municipality machines

Special Features

- Compact, robust design
- IP66/67 housing - Fixed I/Os
- CoDeSys 2.3 and C/C++ programming
- Fast start-up time
- Uninterrupted Power Supply (5s)
- USB-interface for field-updates
- Cost effective



cSCALE Compact controller

Description

cSCALE Compact is a particularly resilient and robust controller based on the cSCALE platform. The controller, running Linux operating system and CoDeSys Runtime, offers the best of both worlds; the simplicity of programming with CoDeSys and the flexibility and power of Linux in dealing with large files e.g. different communication stacks.

cSCALE Compact features a fixed number of Inputs/Outputs optimized for use in many mobile machine applications. These applications range from driving different actuators to collecting data from different sensors as well as running special tasks. For example, a Rated Capacity Limiter application is supported by the RCL/ LMI core and available on the qSCALE Compact controller, which is a special variant of the cSCALE Compact.

cSCALE Compact is built into an extremely robust IP66/67 housing and can be used in temperatures ranging from -40°C to +70°C. In addition, it is resistant to shock and vibration according to EN 60721 3-5 as well as EMC protected according to EN 61000 and EN 7637.

Equipped with an ARM Cortex-A7@528 MHz processor, 140 MB DDR3 RAM and 235 MB Flash storage, cSCALE Compact enables fast processing of large machine control applications that can be programmed using CoDeSys 2.3 and/ or C/C++. Applications or libraries programmed in C/C++ will be running on top of the Linux operating system to meet hard realtime requirements. Systems designed in CoDeSys 2.3 and C/C++ are able to exchange data between each other which offers great flexibility in designing large mobile machine applications.

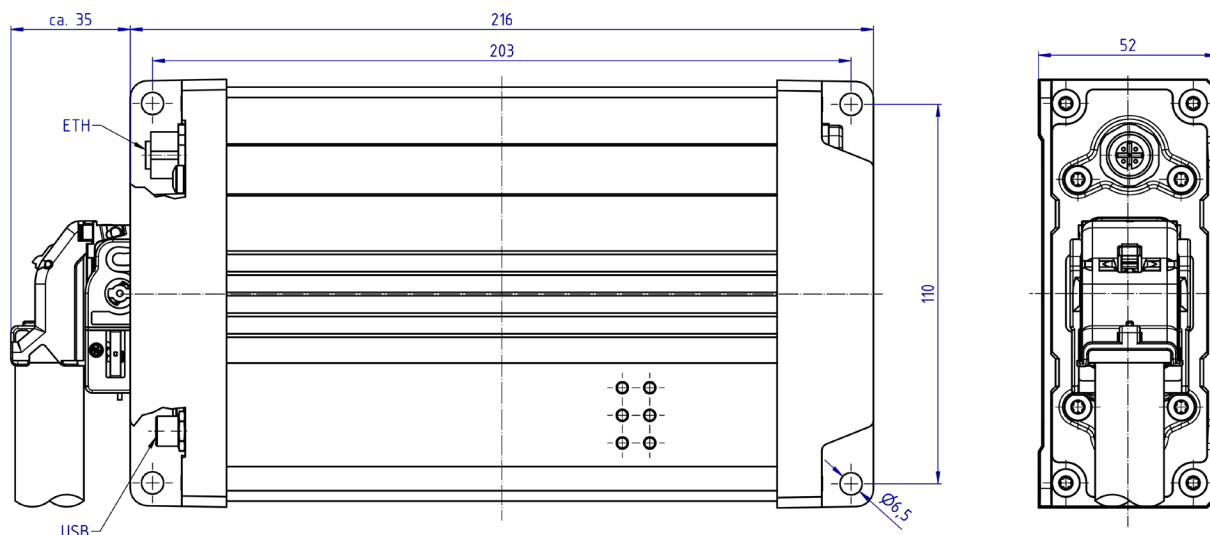
cSCALE Compact features a SuperCAP-based Uninterrupted Power Supply (UPS) module which ensures a safe shutdown of the whole controller and a backup of all running processes and RAM data when a power supply voltage drop is detected.

The visualization and administration of control variables and functions are possible through the optional WebVisu interface, which enables users to conveniently access the screens of a cSCALE Compact system using a web browser.

Technical Specifications

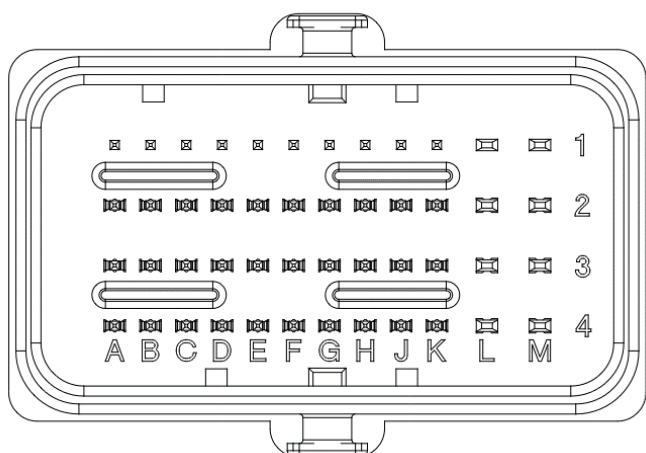
cSCALE Compact		
CPU module	S9: Linux PreemtRT, CoDeSys 2.3, WebVisu (optional), RTC	
Processor	ARM Cortex A7@528 MHz	
RAM/Flash/Retain/SD	140 MB DDR3 / 235 MB / 2 MB / 2 GB (optional)	
UPS-module	SuperCap-based uninterrupted power supply module: complete CPU shutdown, retain-transfer RAM to Flash	
I/O count	28 I/Os: 8 AI, 12 DI, 8 DO	
8	AI (4...20mA) or VI (0...10V), 12bit, per SW individually configurable	
4	DI_HSC (10KHz)	
6	DI (HS)	
2	DI_DIAG (HS/LS)	
4	DO_CC (2 A _{av})	
4	DO static (1 A _{av})	
*	DO/DO_CC total current draw 8 A _{av}	
2	CAN 2.0B supporting CANopen and J1939 protocols	
1	Sys-Bus (optional)	
1	USB 2.0	
1	Ethernet 10/100 Mbit/s - M12-D-coded	
1	Cut-off relay (redundant, Cat. 3), 3A (directly CPU-driven)	
Power supply	9..33 V _{DC} specified operating condition 6..36 V _{DC} limit for under-/ over-voltage like cold-cranking, ...	
Environment		
Ambient temperature	EN 60721 3-5: class 5K3 -40..+70°C (operating)	
Ingress protection	IP66/67 (EN 60529)	
Shock & vibration	EN 60721 3-5: class 5M3	
EMC	EN 61000-4-2, EN 61000-4-4, EN 61000-6-2, EN 61000-4-5, EN 7637-2, EN 7637-3	
Certification		
CE	EMC, RoHS	
Accessories	Order number	Description
Harness	537287	cSCALE standard cable (CMC 48-pole, 3,0m)
USB adapter	536428	M8 to USB cable (4-pole, USB A, 0.2m)
Ethernet cable	534778	M12-D Ethernet to RJ45 Crossover (2,5m)

Dimensions



Pin Assignment

I/O (Type: 48 pin MOLEX CMC Header SD-366380-002)



Ethernet (M12 D-coded)



1	TX+
2	RX+
3	TX-
4	RX-
housing	SHLD

USB (M8 A-coded)



1	VCC_USB
2	D-
3	GND
4	D+
housing	SHLD

	A	B	C	D	E	F	G	H	J	K	L	M	
1	DO1 CC_2A	DO2 CC_2A	DO3 CC_2A	DO4 CC_2A	DO5 1A	DO6 1A	DO7 1A	DO8 1A	CAN1_H	NC	+UBP	-UB_PWR	1
2	DI1	DI2	DI3	DI4	DI5	DI6	DI1_DIAG HS/LS	DI2_DIAG HS/LS	CAN1_L	PWR_ON	+UBS	SHLD	2
3	DI1_HSC	DI2_HSC	DI3_HSC	DI4_HSC	NC	NC	optional SYS-BUS_H	optional SYS-BUS_L	CAN2_H	CUT-OFF	-UB	SHLD	3
4	VI1/AI1	VI2/AI2	VI3/AI3	VI4/AI4	VI5/AI5	VI6/AI6	VI7/AI7	VI8/AI8	CAN2_L	VI_GND	+UBP	-UB_PWR	4
	A	B	C	D	E	F	G	H	J	K	L	M	