

## Description

Intelligent and complex systems as well as the electrification of loads currently play a decisive role in the development of on-board electrical systems.

The SCS200 is the right answer to these requirements. It is an intelligent power distribution system, allowing decentralised control and monitoring of loads via the CAN bus. The design features a pcb-based power distribution in a compact IP66/67 enclosure.

The SCS200 modules are plug & play solutions that allow you to reduce wiring time and save space. Comprehensive diagnostic capabilities (integral load protection, load current and voltage measurement, output status) and the integrated CAN connection of the SCS200 allow predictive maintenance and the implementation of load management.

## Applications


### Scope of applications:

- Agricultural machinery, construction machinery, special vehicles, trucks and buses
- Decentralised power distribution below the ECU
- Vehicle modernisation and easy system extension through a standard CAN component

## Benefits

- Predictive maintenance and load management through comprehensive diagnostic functions (current, voltage, status)
- Reduction of wiring time through plug-and-play design with CAN connection
- Space-saving and flexible installation through a compact IP66/67-rated enclosure
- Enhanced safety through integral electronic load protection

## Approvals

Approval authority	Logo	Directive	Approval logos
KBA	E1 10R-059019	ECE-R10	

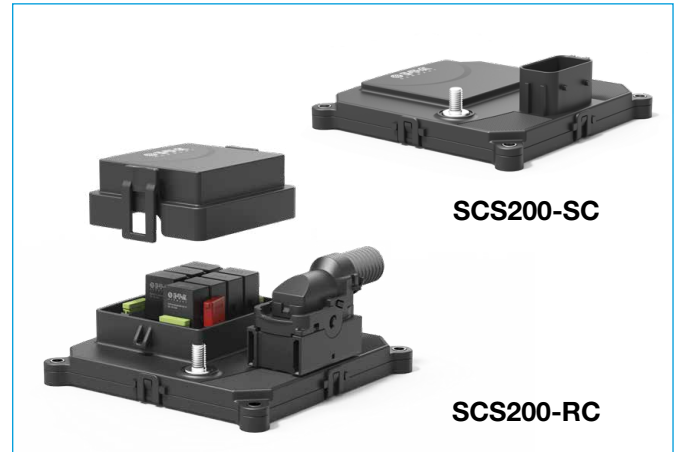
## Compliance



## Product versions

Part numbers	Short description
SCS200-SC08-00-01-C1-01	8 load outputs, fully electronic, DC 12 V
SCS200-SC12-00-01-C1-01	12 load outputs, fully electronic, DC 12 V
SCS200-RC08-00-01-C1-01	8 load outputs relays and fuses, DC 12/24V (unpopulated)

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## Technical data SCS200-SC... (T<sub>AMB</sub> = 25 °C at U<sub>N</sub> = 12 V)

Rated voltage	DC 12 V
Operating voltage range	9 V ... 16 V
Rated current per channel	8-channel version: 4 x 30 A, 4 x 10 A 12-channel version: 4 x 30 A, 8 x 10 A
Total current	8-channel version: 120 A 12-channel version: 150 A
Analog inputs	6 analog inputs (0 – 10 V)
Temperature range <sup>1)</sup>	-40 ... +85 °C
Closed current	< 0.5 mA
Electronic load protection	trip current 1: 1.3 x I <sub>N</sub> trip delay 1: 200 ms  trip current 2: 3 x I <sub>N</sub> (channels 1-4: max. 60 A, channels 5-12: max. 22.5 A) trip delay 2: 25 ms (can be deactivated via software)
Bus communication	CAN 2.0B / SAE J1939 250 kBits/s
Degree of protection	IP66, IP67 to ISO 20653
Environmental tests	to ISO 16750
EMC	to ECE-R10 (E1)
Reverse polarity protection	supply terminals (reverse polarity non-conductive) and load outputs (reverse polarity conductive)
Short circuit resistance	30 A channel > 100 A at 16 V 10 A channel > 60 A at 16 V
Voltage drop <sup>2)</sup>	channel 1-4 (at 24 A): max. 50 mV channel 5-12 (at 8 A): max. 75 mV
Vibration	RMS acceleration 57.9 m/s <sup>2</sup>
Shock resistance	50 g/6 ms half-sine
Housing material	PA66-GF25FR V-0
Mass	410 g
Dimensions	159 x 159 x 44 mm

<sup>1)</sup> Ampacity see derating (user manual SCS200)

<sup>2)</sup> Cannot be ensured over the entire life span

## Technical data SCS200-RC... (T<sub>AMB</sub> = 25 °C at U<sub>N</sub> = 12 V/24 V)

Rated voltage	DC 12 V/24 V
Operating voltage range	9 V ... 32 V
Rated current per channel	4 x 30 A, 4 x 10 A
Total current	120 A
Analog inputs	6 analog inputs (0 – 10 V)
Temperature range <sup>1)</sup>	-40 ... +85 °C
Closed current	12 V < 1.2 mA 24 V < 2.4 mA
Electronic load protection	trip current 1: 1.3 x I <sub>N</sub> trip delay 1: 200 ms  trip current 2: 3 x I <sub>N</sub> (channels 1-4: max. 60 A, channels 5-8: max. 22.5 A) trip delay 2: 25 ms (can be deactivated via software)
Fail-safe	ATO fuses as back-up elements (not included in the delivery)
Bus communication	CAN 2.0B / SAE J1939 250 kBits/s
Degree of protection	IP66, IP67 to ISO 20653
Environmental tests	to ISO 16750
EMC	to ECE-R10 (E1)
Reverse polarity protection	Supply (reverse polarity non-conductive)
Short circuit resistance	depending on the relays fitted. Example:  TE V23074-A2002-A403 (30A channel): > 100 A at 24 V  E-T-A ESR10-NC2A4HB-00-D2-10A (10 A channel) > 60 A at 24 V
Voltage drop <sup>2)</sup>	channel 1-4 (at 24 A): max. 50 mV channel 5-12 (at 8 A): max. 75 mV
Vibration	RMS acceleration 57.9 m/s <sup>2</sup>
Shock resistance	50 g/6 ms half-sine
Housing material	PA66-GF25FR V-0
Mass	630 g (fully populated)
Dimensions	159 x 159 x 62 mm

<sup>1)</sup> Ampacity see derating (user manual SCS200)

<sup>2)</sup> Cannot be ensured over the entire life span

## Ordering information

<b>Type</b>	<b>SCS200</b> Intelligent power distribution board - Smart Control Systems
<b>Load outputs</b>	
<b>SC</b>	power semi-conductor
<b>RC</b>	micro-relay socket and ATO fuse block
<b>Number of channels</b>	
<b>08</b>	8 load outputs
<b>12</b>	12 load outputs (only with SC version)
<b>Population</b>	
<b>00</b>	standard (with RC version without relays and fuses)
<b>Rated voltage</b>	
<b>01</b>	12 load VDC (only with SC version)
<b>03</b>	12/24 VDC (only with RC version)
<b>CAN standard</b>	
<b>C1</b>	SAE J1939 compatible
<b>C2</b>	SAE J1939 compatible, without internal CAN termination (upon request)
<b>Software configuration</b>	
<b>01</b>	standard configuration, to be configured locally via CAN

SCS200-SC 08-00-01 - C1 - 01 ordering example

## CAN communication interface CAN 2.0B/SAE J1939

### Receive (Rx)

- Switch load outputs ON and OFF
- Query of measured values per load output  
- current and voltage
- Query of analog outputs
- Query of total current and U<sub>Bat</sub>
- Query of load output status  
- switching status and error diagnosis (ON, OFF, overload, open load)
- Activate sleep mode
- Initialise module  
- ON and OFF delay per channel (0.5 s ... 2.7 hrs)  
- Module ID  
- Rated current per channel  
10 A channels: 1 A ... 10 A  
30 A channels: 5 A ... 30 A

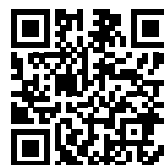
### Send (Tx)

- Total current and U<sub>Bat</sub>  
(accuracy: ± 3 A or. ± 3% at U<sub>N</sub>)
- Load current per channel (accuracy: ± 0.5 A)
- Voltage applied per channel (accuracy: ± 3% at U<sub>N</sub>)
- Voltage values of analog inputs  
(0 – 10 V, accuracy: ± 200 mV)
- Error diagnosis per channel (normal, overload, open load)
- Switching conditions of load outputs

The SCS200 supports address claiming to SAE J1939-81

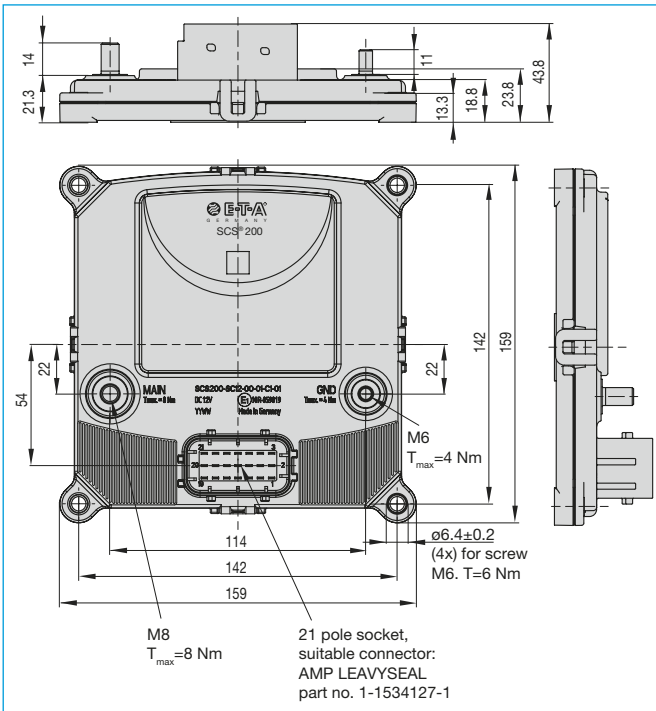
No special configuration software required for initialising/configuring the module.

For listing all pertinent CAN frames and other information, please observe the separate user manual:



SCS®200  
<https://www.e-t-a.de/qr1042/>

## Dimensions SCS200-SC...



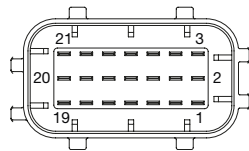
## Pin assignment SCS200-SC08-...

### Main terminals

U<sub>Bat</sub>: M8 screw terminal (marking: MAIN)  
GND: M6 screw terminal (marking: GND)

### 21-pole connector

Mating plug: Tyco AMP LEAVYSEAL  
1-1534127-1



Pin	Name	Description
1	n.c.	not connected
2	LOAD_8	10 A load
3	LOAD_4	30 A load
4	n.c.	not connected
5	IN_A_1	Analogue input 1
6	LOAD_7	10 A load
7	n.c.	not connected
8	IN_A_3	Analogue input 3
9	LOAD_3	30 A load
10	n.c.	not connected
11	IN_A_4	Analogue input 4
12	LOAD_6	10 A load
13	IN_A_2	Analogue input 2
14	IN_A_5	Analogue input 5
15	LOAD_2	30 A load
16	IN_A_6	Analogue input 6
17	WAKE_SIGNAL_IN	CAN wake up input
18	LOAD_5	10 A load
19	CAN_H_OUT	CAN high
20	CAN_L_OUT	CAN low
21	LOAD_1	30 A load

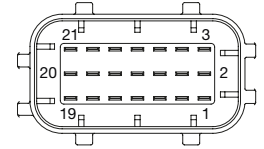
## Pin assignment SCS200-SC12-...

### Main terminals

U<sub>Bat</sub>: M8 screw terminal (marking: MAIN)  
GND: M6 screw terminal (marking: GND)

### 21-pole connector

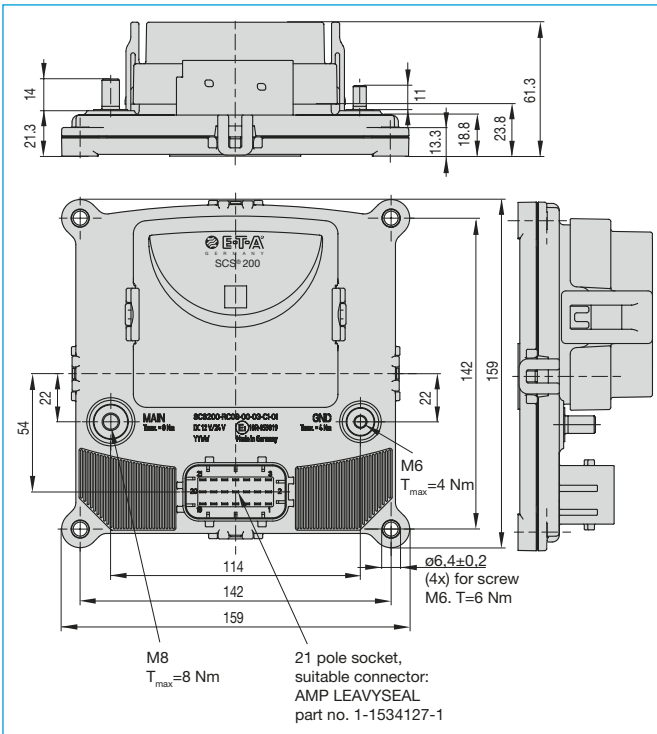
Mating plug: Tyco AMP LEAVYSEAL  
1-1534127-1



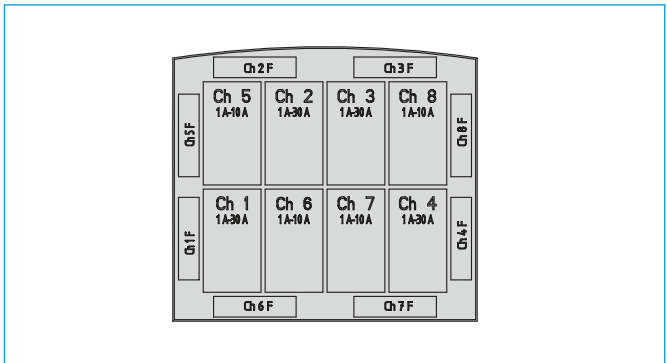
Pin	Name	Description
1	LOAD_9	10 A load
2	LOAD_8	10 A load
3	LOAD_4	30 A load
4	LOAD_10	10 A load
5	IN_A_1	Analogue input 1
6	LOAD_7	10 A load
7	LOAD_11	10 A load
8	IN_A_3	Analogue input 3
9	LOAD_3	30 A load
10	LOAD_12	10 A load
11	IN_A_4	Analogue input 4
12	LOAD_6	10 A load
13	IN_A_2	Analogue input 2
14	IN_A_5	Analogue input 5
15	LOAD_2	30 A load
16	IN_A_6	Analogue input 6
17	WAKE_SIGNAL_IN	CAN wake up input
18	LOAD_5	10 A load
19	CAN_H_OUT	CAN high
20	CAN_L_OUT	CAN low
21	LOAD_1	30 A load

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## Dimensions SCS200-RC...



## Channel assignment SCS200-RC08-...



## Cable cross sections and mounting method

### Cross section of main terminal:

$\geq 50\text{ mm}^2$

The cross section needs to be adjusted to the actual current and the operating temperature conditions. The temperature behaviour of the device improves with larger cross sections.

### Cross section of load terminal:

30 A channels: AWG12 or  $4\text{ mm}^2$

10 A channels: AWG12 or  $\geq 2.5\text{ mm}^2$

The cross section needs to be adjusted to the actual current and the operating temperature conditions. The temperature behaviour of the device improves with larger cross sections.

### Mounting screws:

M6, max. tightening torque 6 Nm

(not included in the scope of delivery)

## Pin assignment SCS200- RC08-...

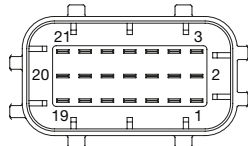
### Main terminals

$U_{Bat}$ : M8 screw terminal (marking: MAIN)

GND: M6 screw terminal (marking: GND)

### 21-pole connector

Mating plug: Tyco AMP LEAVYSEAL  
1-1534127-1



Pin	Name	Description
1	n.c.	not connected
2	LOAD_8	10 A load
3	LOAD_4	30 A load
4	n.c.	not connected
5	IN_A_1	Analogue input 1
6	LOAD_7	10 A load
7	n.c.	not connected
8	IN_A_3	Analogue input 3
9	LOAD_3	30 A load
10	n.c.	not connected
11	IN_A_4	Analogue input 4
12	LOAD_6	10 A load
13	IN_A_2	Analogue input 2
14	IN_A_5	Analogue input 5
15	LOAD_2	30 A load
16	IN_A_6	Analogue input 6
17	WAKE_SIGNAL_IN	CAN wake up input
18	LOAD_5	10 A load
19	CAN_H_OUT	CAN high
20	CAN_L_OUT	CAN low
21	LOAD_1	30 A load

Accessories: Population for SCS200-RC08-...

Note: The SCS200-RC08-00-03-xx-01 product version is delivered unpopulated. Accessories can be ordered additionally and are enclosed with the delivery.

**Relays and fuses for 12 V DC:** X22392701

**Contents:**

- 4 x 10 A micro-relay E-T-A ESR10-NC3A4HB-00-D1-10A
- 4 x 30 A micro-relay E-T-A ESR10-NC3A4HB-00-D1-30A
- 4 x 15 A blade-type fuse MTA 380029 blue
- 4 x 40 A blade-type fuse MTA 380035 orange

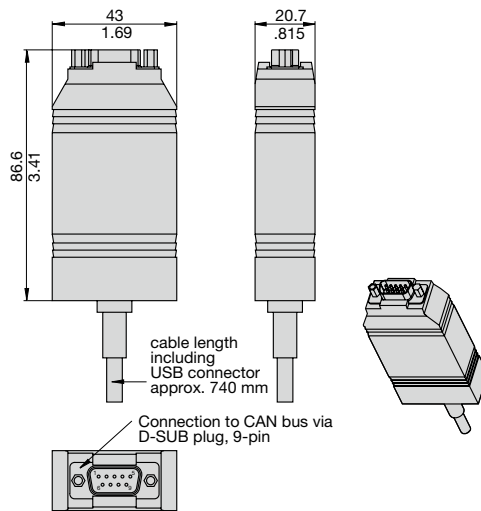
**Relays and fuses for 24 V DC:** X22392702

**Contents:**

- 4 x 10 A micro-relay E-T-A ESR10-NC3A4HB-00-D2-10A
- 4 x 30 A micro-relay Tyco V23074-A2002-A403
- 4 x 15 A blade-type fuse MTA 380029 blue
- 4 x 40 A blade-type fuse MTA 380035 orange

Accessories: USB/CAN converter

- X PP-USBC0
- X PP-USBC1 (opto-decoupled)



Pin assignment D-SUB output plug

PIN	assignment
2	CAN-L
7	CAN-H

This is a metric design and millimeter dimensions take precedence. Applicable for nominal dimensions without direct tolerance indication: DIN ISO 286 ± IT 13. Refer to product datasheet for installation and safety instructions.