

Description

Digitisation is increasing more and more in the automotive sector. Modern vehicles and machines are equipped with numerous sensors and communication interfaces. The CAN bus technology and the SAE J1939 network protocol based on the CAN 2.0B specification form the standard for the cross-linking of components in utility vehicles of all kinds. The Smart Control Systems group developed by E-T-A combines intelligent systems, power distribution systems and components capable to communicate via CAN.

System size and high load currents play an important role in increasingly ingenious vehicle architecture, where space in the vehicle is limited.

The SCS3000 series are extremely compact, intelligent power distribution systems. The programmable I/O controllers offer significant design and application flexibility, coupled with industry-leading performance in one of the smallest form factors.

The SCS3000 are ideal in terms of upgradeability for fleet modernisation, retrofits and projects where space saving is paramount. The products are designed for use in harsh environments.

The SCS3000 modules are configured via an intuitive graphic programming software.



SCS3000-16 v2.1

Applications

Scope of applications:

- Specialty vehicles, construction machinery, agricultural machinery, trucks & buses
- Centralised power distribution and gateway functionality
- Upgradeability and retrofit for fleet modernisation
- Low level, configurable control functionality

Benefits

- Increased safety and diagnosis by way of real-time analysis and electronic load protection
- Space-saving and robust through efficient semi-conductor technology and optimised wiring
- Adapted to your needs, through customised software configuration

Approvals

Product	Approval authority	Reference	Directive
SCS3000 v2.1	VCA	E11*10R06/02*12120*00	ECE Ver. Nr. 10

Order numbering code

Order numbers	Short description
SCS3000-64-v2.1	SCS3000-64 v2.1 Power Distribution Unit (64 channels)
SCS3000-48-v2.1	SCS3000-48 v2.1 Power Distribution Unit (48 channels)
SCS3000-34-v2.1	SCS3000-34 v2.1 Power Distribution Unit (34 channels)
SCS3000-16-v2.1	SCS3000-16 v2.1 Power Distribution Unit (16 channels)
SCS3000-16-CS-XXX-YYY SCS3000-34-CS-XXX-YYY SCS3000-48-CS-XXX-YYY SCS3000-64-CS-XXX-YYY	Customer specific versions XXX: Project index number depending on region YYY: Version number
Order numbers (Accessories for testing and commissioning)	Short description
SCS3000-64-Con SCS3000-48-Con SCS3000-34-Con SCS3000-16-Con	SCS3000-64 Connector set SCS3000-48 Connector set SCS3000-34 Connector set SCS3000-16 Connector set
SCS3000-64-Loom-X.Xm SCS3000-48-Loom-X.Xm SCS3000-34-Loom-X.Xm SCS3000-16-Loom-X.Xm	SCS3000-64 cable harness SCS3000-48 cable harness SCS3000-34 cable harness SCS3000-16 cable harness X.X: X.X Selected length of cable in 0.2 m increments

All information and data given on our products are accurate and reliable to the best of our knowledge, but E-T-A does not accept any responsibility for the use in applications which are not in accordance with the present specification. E-T-A reserves the right to change specifications at any time in the interest of improved design, performance and cost effectiveness. Dimensions are subject to change without notice. Please enquire for the latest dimensional drawing with tolerances if required. Dimensions, data, drawings and description are not binding! Amendments, errors and omissions excepted. Ordering codes of the products may differ from their marking.

Technical data SCS3000-64, -48, -34 v2.1

Rated voltage	DC 12 V/24 V (On request, the SCS3000 is also available as a 48 V version.)
Input voltage range	DC 6.5 V ... 32 V
Total current	280 A
Quiescent current	200 mA (depending on supply voltage) 2.5 mA (in sleep mode)
Ambient temperature	-40 ... +85 °C
Degree of protection	IP67
EMC	ECE Regulation No. 10 (E11)
Environment	Tested to ISO 16750
Mass	SCS3000-64 v2.1: 1200 g SCS3000-48 v2.1: 1126 g SCS3000-34 v2.1: 1112 g
Dimensions	SCS3000-64 v2.1: 254.5 mm x 140 mm x 56.55 mm SCS3000-34 and -48 v2.1: 249.5 mm x 130 mm x 56.55 mm (without mating connector)
Enclosure	Aluminium milled
Terminals	Tyco Leavyséal 92 Pin Tyco Leavyséal 21 Pin Amphenol SurLok Power Stud
Outputs	
10 multifunctional outputs Channels 1-10	Configurable as: High side/low side load output 35 A 5 H-bridge outputs or 10 half-bridge outputs Softstart function Max. inrush 60 A
10 high side outputs Channels 11-20	35 A current rating Max. inrush 60 A Softstart function
Additional high side outputs Channels 21-28	12.5 A current rating Softstart function Max. inrush 20 A
Additional high side outputs Channels 29-xx	SCS3000-48: 36 x 12.5 A current rating SCS3000-48: 20 x 12.5 A current rating SCS3000-34: 6 x 12.5 A current rating Max. inrush 20 A
4 low side outputs	10 A, PWM: 125 Hz
Current limitation for high current loads	Adjustable via software Different softstart behaviour selectable for resistive or inductive loads

Technical data SCS3000-64, -48, -34 v2.1

Combined diagnostic output	Configurable with related reset input
Overload	All outputs are short circuit and thermally protected SMD fuses at the outputs Temperature and voltage based tripping depending on board temperature adjustable via software
PWM	Channels 1-12 can PWM @ 100 Hz - 20 kHz (Resistive, Inductive or Capacitive) Channels 13-20 - Capacitive soft start (not inductive) Channels 21-28 - can PWM @ 100 Hz - 20 kHz) (Resistive, Inductive or Capacitive)
128 soft outputs	8 bit variables, transmission via CAN frames
Inputs	
16 digital/ analogue inputs	0-32 V or thermistor input 3 kΩ pull up-resistance activatable via software 4 inputs configurable as wake-up pin (high signal)
Wake-up pin	For waking up the module from sleep-mode via hardware
128 soft inputs	8 bit variables, reception via CAN frames Configurable via software
Interfaces	
Ethernet	2 x 100 Mbit/s full duplex (usable as Ethernet switch)
CAN	3 x CAN 2.0B or SAE J1939
Serial interface	1 x RS232C serial interface
LIN	1 x LIN bus (optional)
Supply	
Separate logic supply pin	Optional, separate power supply for integrated microcontroller
External sensor supply	5 V voltage output Short circuit protection (max. 200 mA)
Sleep Mode	2 modes available: Soft Sleep and Deep Sleep

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Technical data SCS3000-16 v2.1

Rated voltage	DC 12 V/24 V (On request, the SCS3000 is also available as a 48 V version.)
Input voltage range	DC 6.5 V ... 32 V
Total current	200 A
Quiescent current	200 mA (depending on supply voltage) 2.5 mA (in sleep mode)
Ambient temperature	-40 ... +85 °C
Degree of protection	IP67
EMC	ECE Regulation No. 10 (E11)
Environment	Tested to ISO 16750
Mass	1015 g
Dimensions	203.5 mm x 142.25 mm x 50.45 mm (without mating connector)
Enclosure	Aluminium milled
Terminals	Tyco Leavysel 92 Pin Amphenol SurLok Power Stud

Outputs

4 multifunctional outputs Channels 1-4	Configurable as: High side/low side load output 35 A 2 H-bridge outputs or 4 half-bridge outputs Softstart function Max. inrush 60 A
2 high side outputs Channels 5-6	35 A current rating Max. inrush 60 A Softstart function
10 high side outputs Channels 7-16	12.5 A current rating Softstart function Max. inrush 20 A
2 low side outputs	10 A, PWM: 125 Hz
Current limitation for high current loads	Adjustable via software Different softstart behaviour selectable for resistive or inductive loads
Combined diagnostic output	Configurable with related reset input

Technical data SCS3000-16 v2.1

Overload	All outputs are short circuit and thermally protected SMD fuses at the outputs Temperature based tripping depending on board temperature adjustable via software
PWM	Channels 1-4 can PWM @ 100 Hz - 20 kHz (Resistive, Inductive or Capacitive soft start) Channels 5-6 - Capacitive soft start (not inductive) Channels 7-14 - can PWM @ 100 Hz - 20 kHz (Resistive, Inductive or Capacitive soft start) Channels 15-16 - Capacitive soft start (not inductive)
128 soft outputs	8 bit variables, transmission via CAN frames

Inputs

12 digital/ analogue inputs	0-32 V or thermistor input 3 kΩ pull up-resistance activatable via software 4 inputs configurable as wake-up pin (high signal)
Wake-up pin	For waking up the module from sleep-mode via hardware
128 soft inputs	8 bit variables, reception via CAN frames Configurable via software

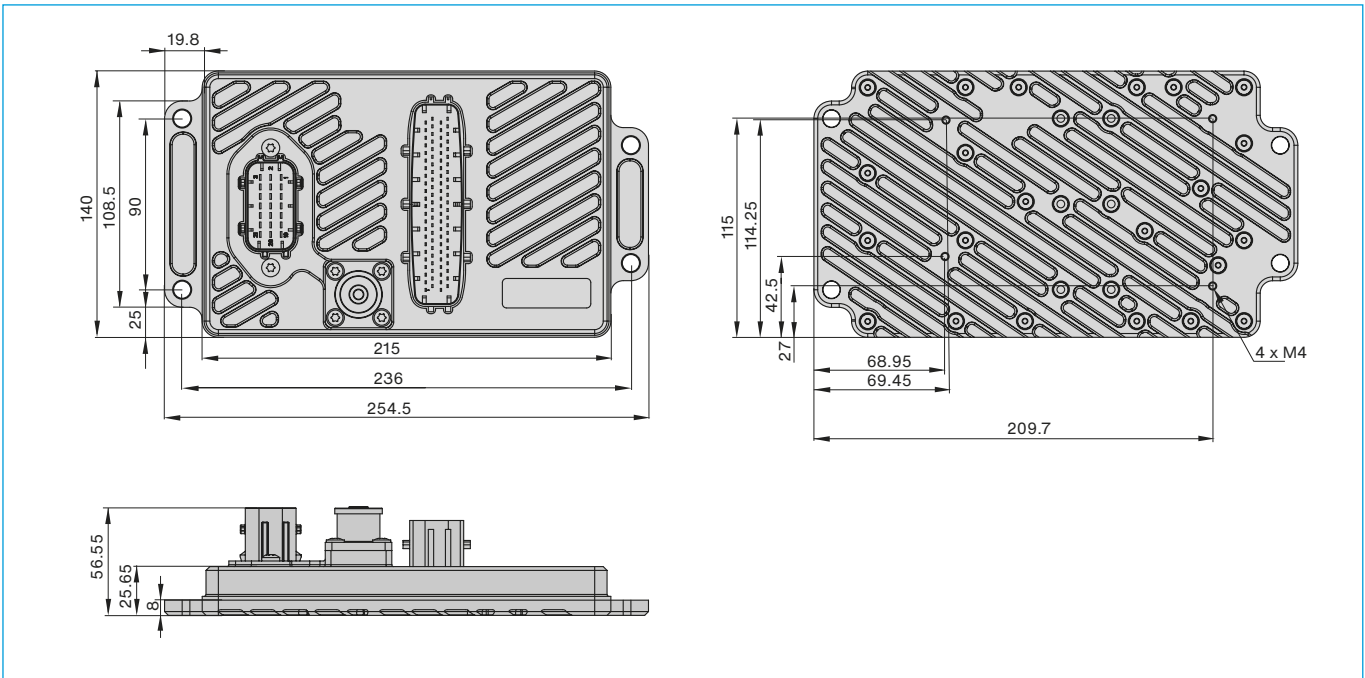
Interfaces

Ethernet	2 x 100 Mbit/s full duplex (usable as Ethernet switch)
CAN	3 x CAN 2.0B or SAE J1939
Serial interface	1 x RS232C serial interface
LIN	1 x LIN bus (optional)

Supply

Separate logic supply pin	Optional, separate power supply for integrated microcontroller
External sensor supply	5 V voltage output Short circuit protection (max. 200 mA)
Sleep Mode	2 modes available: Soft Sleep and Deep Sleep

Dimensions SCS3000-64



Connection pin assignment SCS3000-64

Supply connector

Mating connector: Surlok SLPPC...BSR0 (... = Size: 50 = 200 A, 70 = 250 A, 85 = 300/350 A)

Pin	Cross section	Name	Description
1	-	+ supply	Battery +

Connector 1

Mating connector: TE 1-1534127-1, cap: 9-1394050-1

Pin	Cross section	Name	Description
1	20-12AWG	Power ground	Battery -
2	20-12AWG	Output 20	High Side 35 A, capacitive soft start
3	20-12AWG	Output 19	High Side 35 A, capacitive soft start
4	20-12AWG	Output 18	High Side 35 A, capacitive soft start
5	20-12AWG	Output 17	High Side 35 A, capacitive soft start
6	20-12AWG	Output 16	High Side 35 A, capacitive soft start
7	20-12AWG	Output 15	High Side 35 A, capacitive soft start
8	20-12AWG	Output 14	High Side 35 A, capacitive soft start
9	20-12AWG	Output 13	High Side 35 A, capacitive soft start
10	20-12AWG	Output 12	High Side 35 A, PWM, soft start
11	20-12AWG	Output 11	High Side 35 A, PWM, soft start
12	20-12AWG	Output 10	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
13	20-12AWG	Output 9	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
14	20-12AWG	Output 8	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
15	20-12AWG	Output 7	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
16	20-12AWG	Output 6	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
17	20-12AWG	Output 5	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
18	20-12AWG	Output 4	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
19	20-12AWG	Output 3	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
20	20-12AWG	Output 2	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
21	20-12AWG	Output 1	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾

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Connector 2			
Mating connector: TE 1703998-1, cap: 1703997-1			
Pin	Cross section	Name	Description
1	24-16AWG	Output 64	High Side 12.5 A
2	24-16AWG	Output 62	High Side 12.5 A
3	24-16AWG	Output 60	High Side 12.5 A
4	24-16AWG	Output 58	High Side 12.5 A
5	24-16AWG	Output 56	High Side 12.5 A
6	24-16AWG	Output 54	High Side 12.5 A
7	24-16AWG	Output 52	High Side 12.5 A
8	24-16AWG	Output 50	High Side 12.5 A
9	24-16AWG	Output 48	High Side 12.5 A
10	24-16AWG	Output 46	High Side 12.5 A
11	24-16AWG	Output 44	High Side 12.5 A
12	24-16AWG	Output 42	High Side 12.5 A
13	24-16AWG	Output 40	High Side 12.5 A
14	24-16AWG	Output 38	High Side 12.5 A
15	24-16AWG	Output 36	High Side 12.5 A
16	24-16AWG	Output 34	High Side 12.5 A, capacitive soft start
17	24-16AWG	Output 32	High Side 12.5 A, capacitive soft start
18	24-16AWG	Output 30	High Side 12.5 A, capacitive soft start
19	24-16AWG	Output 28	High Side 12.5 A, PWM, soft start
20	24-16AWG	Output 26	High Side 12.5 A, PWM, soft start
21	24-16AWG	Output 24	High Side 12.5 A, PWM, soft start
22	24-16AWG	Output 22	High Side 12.5 A, PWM, soft start
23	24-16AWG	Low output 11	Low side, low side PWM
24	24-16AWG	Output 63	High Side 12.5 A
25	24-16AWG	Output 61	High Side 12.5 A
26	24-16AWG	Output 59	High Side 12.5 A
27	24-16AWG	Output 57	High Side 12.5 A
28	24-16AWG	Output 55	High Side 12.5 A
29	24-16AWG	Output 53	High Side 12.5 A
30	24-16AWG	Output 51	High Side 12.5 A
31	24-16AWG	Output 49	High Side 12.5 A
32	24-16AWG	Output 47	High Side 12.5 A
33	24-16AWG	Output 45	High Side 12.5 A
34	24-16AWG	Output 43	High Side 12.5 A
35	24-16AWG	Output 41	High Side 12.5 A
36	24-16AWG	Output 39	High Side 12.5 A
37	24-16AWG	Output 37	High Side 12.5 A
38	24-16AWG	Output 35	High Side 12.5 A
39	24-16AWG	Output 33	High Side 12.5 A, capacitive soft start
40	24-16AWG	Output 31	High Side 12.5 A, capacitive soft start
41	24-16AWG	Output 29	High Side 12.5 A, capacitive soft start
42	24-16AWG	Output 27	High Side 12.5 A, PWM, soft start
43	24-16AWG	Output 25	High Side 12.5 A, PWM, soft start
44	24-16AWG	Output 23	High Side 12.5 A, PWM, soft start
45	24-16AWG	Output 21	High Side 12.5 A, PWM, soft start
46	24-16AWG	Low output 12	Low side, low side PWM
47	24-16AWG	Input 01	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
48	24-16AWG	Input 03	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
49	24-16AWG	Input 05	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
50	24-16AWG	Input 07	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
51	24-16AWG	Input 09	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
52	24-16AWG	Input 11	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
53	24-16AWG	Input 13	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾

(1) H-bridge control only for adjacent output pairs (1+2, 3+4, 5+6, 7+8, 9+10).

(2) Wake-up calibration of the module for high signal. Dedicated wake pin permanently active.

54	24-16AWG	INPUT #15	Analogue 0-32 V, 3kΩ activatable pullup to 5 V, wake (3)
55	24-16AWG	SENSOR GND	Sensor mass, protected
56	24-16AWG	5V OUT	Regulated 5V sensor supply
57	24-16AWG	LOGIC POWER IN	Battery + logic supply, (optional - also via supply connector)
58	24-16AWG	WARNING AND RESET SW	Error output for LED to ground; for manual reset connect to ground
59	24-16AWG	RS232 RX	RS232 receive
60	24-16AWG	CAN #03 HI	CAN 3 high
61	24-16AWG	CAN #02 HI	CAN 2 high
62	24-16AWG	CAN #01 HI	CAN 1 high
63	24-16AWG	ETHERNET2 RX+	Ethernet communication port 2
64	24-16AWG	ETHERNET2 TX+	Ethernet communication port 2
65	24-16AWG	ETHERNET1 RX+	Ethernet communication port 1
66	24-16AWG	ETHERNET1 TX+	Ethernet communication port 1
67	24-16AWG	Power ground	Battery -
68	24-16AWG	Low output 13	Low side, low side PWM
69	24-16AWG	Low output 14	Low side, low side PWM
70	24-16AWG	INPUT #02	Analogue 0-32 V, 3kΩ activatable pullup to 5 V
71	24-16AWG	INPUT #04	Analogue 0-32 V, 3kΩ activatable pullup to 5 V
72	24-16AWG	INPUT #06	Analogue 0-32 V, 3kΩ activatable pullup to 5 V
73	24-16AWG	INPUT #08	Analogue 0-32 V, 3kΩ activatable pullup to 5 V
74	24-16AWG	INPUT #10	Analogue 0-32 V, 3kΩ activatable pullup to 5 V
75	24-16AWG	INPUT #12	Analogue 0-32 V, 3kΩ activatable pullup to 5 V
76	24-16AWG	INPUT #14	Analogue 0-32 V, 3kΩ activatable pullup to 5 V, wake (3)
77	24-16AWG	INPUT #16	Analogue 0-32 V, 3kΩ activatable pullup to 5 V, wake (3)
78	24-16AWG	SENSOR GND	Sensor mass, protected
79	24-16AWG	Power ground	Battery -
80	24-16AWG	WAKEUP	Dedicated wake pin (3)
81	24-16AWG	LIN	not connected
82	24-16AWG	RS232 TX	RS232 transmit
83	24-16AWG	CAN #03 LO	CAN 3 low
84	24-16AWG	CAN #02 LO	CAN 2 low
85	24-16AWG	CAN #01 LO	CAN 1 low
86	24-16AWG	ETHERNET2 RX-	Ethernet communication port 2
87	24-16AWG	ETHERNET2 TX-	Ethernet communication port 2
88	24-16AWG	ETHERNET1 RX-	Ethernet communication port 1
89	24-16AWG	ETHERNET1 TX-	Ethernet communication port 1
90	24-16AWG	Power ground	Battery -
91	24-16AWG	Power ground	Battery -
92	24-16AWG	Output 21D	High side with diode

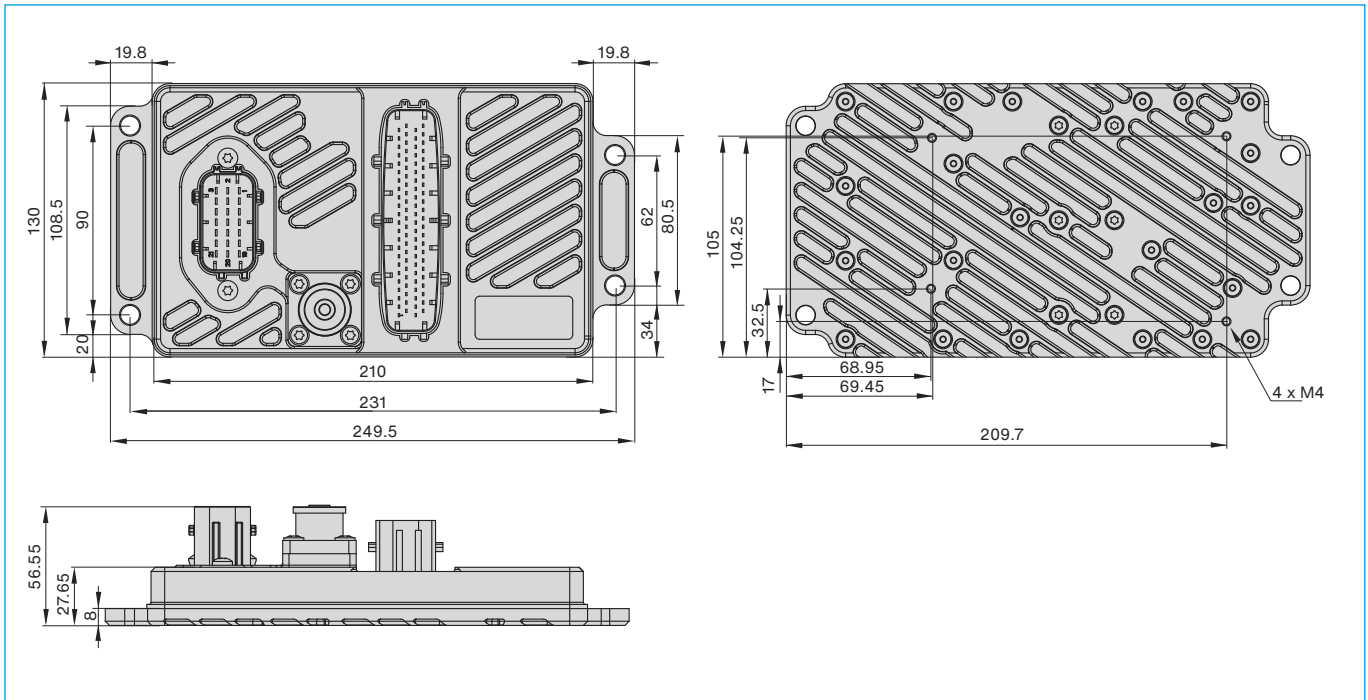
(1) PWM, half and full bridge only via ECU slaving possible

(2) H-bridge control only for adjacent output pairs (1+2, 3+4, 5+6, 7+8, 9+10).

(3) Wake-up calibration of the module for high signal. Dedicated wake pin permanently active.

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Dimensions SCS3000-48 v2.1



Connection pin assignment SCS3000-48 v2.1

Supply connector			
Mating connector: Surlok SLPPC...BSR0 (... = Size: 50 = 200 A, 70 = 250 A, 85 = 300/350 A)			
Pin	Cross section	Name	Description
1	-	+ supply	Battery +

Connector 1			
Mating connector: TE 1-1534127-1, cap: 9-1394050-1			
Pin	Cross section	Name	Description
1	20-12AWG	Power ground	Battery -
2	20-12AWG	Output 20	High Side 35 A, capacitive soft start
3	20-12AWG	Output 19	High Side 35 A, capacitive soft start
4	20-12AWG	Output 18	High Side 35 A, capacitive soft start
5	20-12AWG	Output 17	High Side 35 A, capacitive soft start
6	20-12AWG	Output 16	High Side 35 A, capacitive soft start
7	20-12AWG	Output 15	High Side 35 A, capacitive soft start
8	20-12AWG	Output 14	High Side 35 A, capacitive soft start
9	20-12AWG	Output 13	High Side 35 A, capacitive soft start
10	20-12AWG	Output 12	High Side 35 A, PWM, soft start
11	20-12AWG	Output 11	High Side 35 A, PWM, soft start
12	20-12AWG	Output 10	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
13	20-12AWG	Output 9	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
14	20-12AWG	Output 8	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
15	20-12AWG	Output 7	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
16	20-12AWG	Output 6	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
17	20-12AWG	Output 5	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
18	20-12AWG	Output 4	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
19	20-12AWG	Output 3	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
20	20-12AWG	Output 2	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
21	20-12AWG	Output 1	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾

Connector 2

Mating connector: TE 1703998-1, cap: 1703997-1

Pin	Cross section	Name	Description
1	-	n.c.	not connected
2	-	n.c.	not connected
3	-	n.c.	not connected
4	-	n.c.	not connected
5	-	n.c.	not connected
6	-	n.c.	not connected
7	-	n.c.	not connected
8	-	n.c.	not connected
9	24-16AWG	Output 48	High Side 12.5 A
10	24-16AWG	Output 46	High Side 12.5 A
11	24-16AWG	Output 44	High Side 12.5 A
12	24-16AWG	Output 42	High Side 12.5 A
13	24-16AWG	Output 40	High Side 12.5 A
14	24-16AWG	Output 38	High Side 12.5 A
15	24-16AWG	Output 36	High Side 12.5 A
16	24-16AWG	Output 34	High Side 12.5 A, capacitive soft start
17	24-16AWG	Output 32	High Side 12.5 A, capacitive soft start
18	24-16AWG	Output 30	High Side 12.5 A, capacitive soft start
19	24-16AWG	Output 28	High Side 12.5 A, PWM, soft start
20	24-16AWG	Output 26	High Side 12.5 A, PWM, soft start
21	24-16AWG	Output 24	High Side 12.5 A, PWM, soft start
22	24-16AWG	Output 22	High Side 12.5 A, PWM, soft start
23	24-16AWG	Low output 11	Low side, low side PWM
24	-	n.c.	not connected
25	-	n.c.	not connected
26	-	n.c.	not connected
27	-	n.c.	not connected
28	-	n.c.	not connected
29	-	n.c.	not connected
30	-	n.c.	not connected
31	-	n.c.	not connected
32	24-16AWG	Output 47	High Side 12.5 A
33	24-16AWG	Output 45	High Side 12.5 A
34	24-16AWG	Output 43	High Side 12.5 A
35	24-16AWG	Output 41	High Side 12.5 A
36	24-16AWG	Output 39	High Side 12.5 A
37	24-16AWG	Output 37	High Side 12.5 A
38	24-16AWG	Output 35	High Side 12.5 A
39	24-16AWG	Output 33	High Side 12.5 A, capacitive soft start
40	24-16AWG	Output 31	High Side 12.5 A, capacitive soft start
41	24-16AWG	Output 29	High Side 12.5 A, capacitive soft start
42	24-16AWG	Output 27	High Side 12.5 A, PWM, soft start
43	24-16AWG	Output 25	High Side 12.5 A, PWM, soft start
44	24-16AWG	Output 23	High Side 12.5 A, PWM, soft start
45	24-16AWG	Output 21	High Side 12.5 A, PWM, soft start
46	24-16AWG	Low output 12	Low side, low side PWM
47	24-16AWG	Input 01	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
48	24-16AWG	Input 03	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
49	24-16AWG	Input 05	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
50	24-16AWG	Input 07	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
51	24-16AWG	Input 09	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
52	24-16AWG	Input 11	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
53	24-16AWG	Input 13	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾

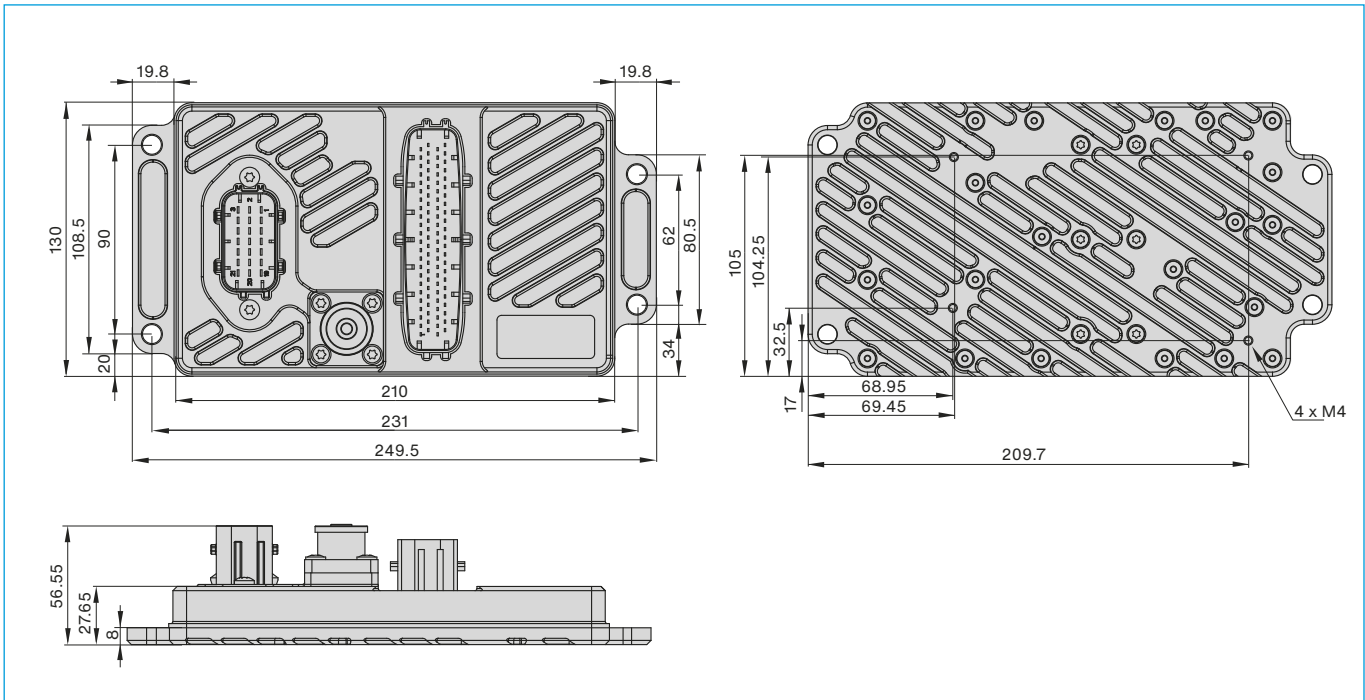
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Pin	Cross section	Name	Description
54	24-16AWG	Input 15	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾
55	24-16AWG	SENSOR GND	Sensor mass, protected
56	24-16AWG	5V OUT	Regulated 5 V sensor supply
57	24-16AWG	LOGIC POWER IN	Battery + logic supply, (also supplied via main power stud)
58	24-16AWG	WARNING AND RESET SW	Error output for LED to ground; for manual reset connect to ground
59	24-16AWG	RS232 RX	RS232 receive
60	24-16AWG	CAN 03 HI	CAN 3 high
61	24-16AWG	CAN 02 HI	CAN 2 high
62	24-16AWG	CAN 01 HI	CAN 1 high
63	24-16AWG	ETHERNET2 RX+	Ethernet communication port 2
64	24-16AWG	ETHERNET2 TX+	Ethernet communication port 2
65	24-16AWG	ETHERNET1 RX+	Ethernet communication port 1
66	24-16AWG	ETHERNET1 TX+	Ethernet communication port 1
67	24-16AWG	Power ground	Battery -
68	24-16AWG	Low output 13	Low side, low side PWM
69	24-16AWG	Low output 14	Low side, low side PWM
70	24-16AWG	Input 02	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
71	24-16AWG	Input 04	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
72	24-16AWG	Input 06	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
73	24-16AWG	Input 08	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
74	24-16AWG	Input 10	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
75	24-16AWG	Input 12	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
76	24-16AWG	Input 14	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾
77	24-16AWG	Input 16	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾
78	24-16AWG	SENSOR GND	Sensor mass, protected
79	24-16AWG	Power ground	Battery -
80	24-16AWG	WAKEUP	Dedicated wake pin ⁽²⁾
81	24-16AWG	LIN	not connected
82	24-16AWG	RS232 TX	RS232 transmit
83	24-16AWG	CAN 03 LO	CAN 3 low
84	24-16AWG	CAN 02 LO	CAN 2 low
85	24-16AWG	CAN 01 LO	CAN 1 low
86	24-16AWG	ETHERNET2 RX-	Ethernet communication port 2
87	24-16AWG	ETHERNET2 TX-	Ethernet communication port 2
88	24-16AWG	ETHERNET1 RX-	Ethernet communication port 1
89	24-16AWG	ETHERNET1 TX-	Ethernet communication port 1
90	24-16AWG	Power ground	Battery -
91	24-16AWG	Power ground	Battery -
92	24-16AWG	Output 21D	High side with diode

(1) H-bridge control only for adjacent output pairs (1+2, 3+4, 5+6, 7+8, 9+10).

(2) Wake-up calibration of the module for high signal. Dedicated wake pin permanently active.

Dimensions SCS3000-34 v2.1



Connection pin assignment SCS3000-34 v2.1

Supply connector

Mating connector: Surlok SLPPC...BSR0 (... = Size: 50 = 200 A, 70 = 250 A, 85 = 300/350 A)

Pin	Cross section	Name	Description
1	-	+ supply	Battery +

Connector 1

Mating connector: TE 1-1534127-1, cap: 9-1394050-1

Pin	Cross section	Name	Description
1	20-12AWG	Power ground	Battery -
2	20-12AWG	Output 20	High Side 35 A, capacitive soft start
3	20-12AWG	Output 19	High Side 35 A, capacitive soft start
4	20-12AWG	Output 18	High Side 35 A, capacitive soft start
5	20-12AWG	Output 17	High Side 35 A, capacitive soft start
6	20-12AWG	Output 16	High Side 35 A, capacitive soft start
7	20-12AWG	Output 15	High Side 35 A, capacitive soft start
8	20-12AWG	Output 14	High Side 35 A, capacitive soft start
9	20-12AWG	Output 13	High Side 35 A, capacitive soft start
10	20-12AWG	Output 12	High Side 35 A, PWM, soft start
11	20-12AWG	Output 11	High Side 35 A, PWM, soft start
12	20-12AWG	Output 10	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
13	20-12AWG	Output 9	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
14	20-12AWG	Output 8	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
15	20-12AWG	Output 7	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
16	20-12AWG	Output 6	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
17	20-12AWG	Output 5	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
18	20-12AWG	Output 4	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
19	20-12AWG	Output 3	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
20	20-12AWG	Output 2	High side, low side, PWM, half-bridge, full-bridge, soft start (1)
21	20-12AWG	Output 1	High side, low side, PWM, half-bridge, full-bridge, soft start (1)

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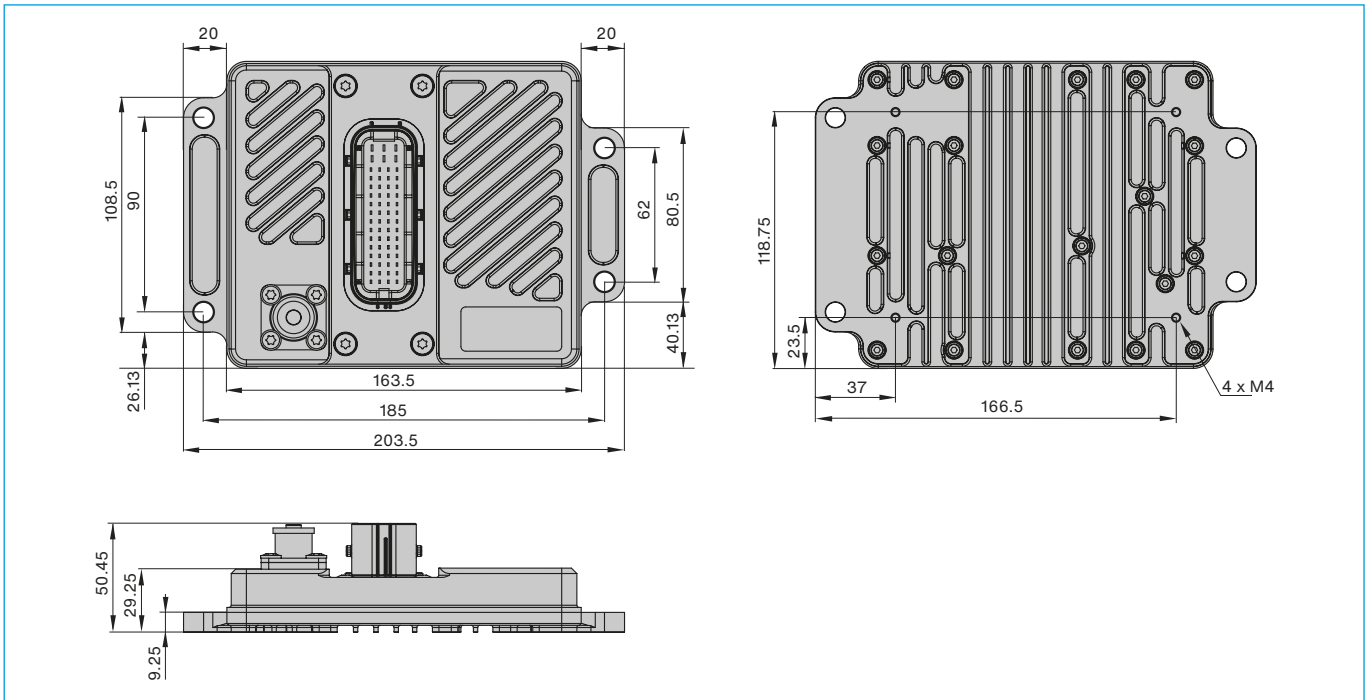
Connector 2			
Mating connector: TE 1703998-1, cap: 1703997-1			
Pin	Cross section	Name	Description
1	-	n.c.	not connected
2	-	n.c.	not connected
3	-	n.c.	not connected
4	-	n.c.	not connected
5	-	n.c.	not connected
6	-	n.c.	not connected
7	-	n.c.	not connected
8	-	n.c.	not connected
9	-	n.c.	not connected
10	-	n.c.	not connected
11	-	n.c.	not connected
12	-	n.c.	not connected
13	-	n.c.	not connected
14	-	n.c.	not connected
15	-	n.c.	not connected
16	24-16AWG	Output 34	High Side 12.5 A, capacitive soft start
17	24-16AWG	Output 32	High Side 12.5 A, capacitive soft start
18	24-16AWG	Output 30	High Side 12.5 A, capacitive soft start
19	24-16AWG	Output 28	High Side 12.5 A, PWM, soft start
20	24-16AWG	Output 26	High Side 12.5 A, PWM, soft start
21	24-16AWG	Output 24	High Side 12.5 A, PWM, soft start
22	24-16AWG	Output 22	High Side 12.5 A, PWM, soft start
23	24-16AWG	Low output 11	Low side, low side PWM
24	-	n.c.	not connected
25	-	n.c.	not connected
26	-	n.c.	not connected
27	-	n.c.	not connected
28	-	n.c.	not connected
29	-	n.c.	not connected
30	-	n.c.	not connected
31	-	n.c.	not connected
32	-	n.c.	not connected
33	-	n.c.	not connected
34	-	n.c.	not connected
35	-	n.c.	not connected
36	-	n.c.	not connected
37	-	n.c.	not connected
38	-	n.c.	not connected
39	24-16AWG	Output 33	High Side 12.5 A, capacitive soft start
40	24-16AWG	Output 31	High Side 12.5 A, capacitive soft start
41	24-16AWG	Output 29	High Side 12.5 A, capacitive soft start
42	24-16AWG	Output 27	High Side 12.5 A, PWM, soft start
43	24-16AWG	Output 25	High Side 12.5 A, PWM, soft start
44	24-16AWG	Output 23	High Side 12.5 A, PWM, soft start
45	24-16AWG	Output 21	High Side 12.5 A, PWM, soft start
46	24-16AWG	Low output 12	Low side, low side PWM
47	24-16AWG	Input 01	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
48	24-16AWG	Input 03	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
49	24-16AWG	Input 05	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
50	24-16AWG	Input 07	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
51	24-16AWG	Input 09	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
52	24-16AWG	Input 11	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
53	24-16AWG	Input 13	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾

Pin	Cross section	Name	Description
54	24-16AWG	Input 15	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾
55	24-16AWG	SENSOR GND	Sensor mass, protected
56	24-16AWG	5V OUT	Regulated 5V sensor supply
57	24-16AWG	LOGIC POWER IN	Battery + logic supply, (also supplied via main power stud)
58	24-16AWG	WARNING AND RESET SW	Error output for LED to ground; for manual reset connect to ground
59	24-16AWG	RS232 RX	RS232 receive
60	24-16AWG	CAN 03 HI	CAN 3 high
61	24-16AWG	CAN 02 HI	CAN 2 high
62	24-16AWG	CAN 01 HI	CAN 1 high
63	24-16AWG	ETHERNET2 RX+	Ethernet communication port 2
64	24-16AWG	ETHERNET2 TX+	Ethernet communication port 2
65	24-16AWG	ETHERNET1 RX+	Ethernet communication port 1
66	24-16AWG	ETHERNET1 TX+	Ethernet communication port 1
67	24-16AWG	Power ground	Battery -
68	24-16AWG	Low output 13	Low side, low side PWM
69	24-16AWG	Low output 14	Low side, low side PWM
70	24-16AWG	Input 02	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
71	24-16AWG	Input 04	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
72	24-16AWG	Input 06	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
73	24-16AWG	Input 08	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
74	24-16AWG	Input 10	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
75	24-16AWG	Input 12	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
76	24-16AWG	Input 14	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾
77	24-16AWG	Input 16	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V, wake ⁽²⁾
78	24-16AWG	SENSOR GND	Sensor mass, protected
79	24-16AWG	Power ground	Battery -
80	24-16AWG	WAKEUP	Dedicated wake pin ⁽²⁾
81	24-16AWG	LIN	not connected
82	24-16AWG	RS232 TX	RS232 transmit
83	24-16AWG	CAN 03 LO	CAN 3 low
84	24-16AWG	CAN 02 LO	CAN 2 low
85	24-16AWG	CAN 01 LO	CAN 1 low
86	24-16AWG	ETHERNET2 RX-	Ethernet communication port 2
87	24-16AWG	ETHERNET2 TX-	Ethernet communication port 2
88	24-16AWG	ETHERNET1 RX-	Ethernet communication port 1
89	24-16AWG	ETHERNET1 TX-	Ethernet communication port 1
90	24-16AWG	Power ground	Battery -
91	24-16AWG	Power ground	Battery -
92	24-16AWG	Output 21D	High side with diode

(1) H-bridge control only for adjacent output pairs (1+2, 3+4, 5+6, 7+8, 9+10).

(2) Wake-up calibration of the module for high signal. Dedicated wake pin permanently active.

Dimensions SCS3000-16 v2.1



Connection pin assignment SCS3000-16 v2.1

Supply connector

Mating connector: Surlok SLPPB...BSR (... = Size: 50 = 200 A, 35 = 150 A)

Pin	Cross section	Name	Description
1	-	+ supply	Battery +

Connector 1

Mating connector: TE 1-1534127-1, cap: 9-1394050-1

Pin	Cross section	Name	Description
1	24-16AWG	5V OUT	Regulated 5V sensor supply
2	24-16AWG	Input 12	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
3	24-16AWG	Input 11	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
4	24-16AWG	Input 10	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
5	24-16AWG	Input 09	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
6	24-16AWG	Input 08	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
7	24-16AWG	Input 07	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
8	24-16AWG	Input 06	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
9	24-16AWG	Input 05	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
10	24-16AWG	Input 04	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
11	24-16AWG	Input 03	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
12	24-16AWG	Input 02	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
13	24-16AWG	Input 01	Analogue 0-32 V, 3 kΩ activatable pullup to 5 V
14	24-16AWG	SENSOR GND	Sensor mass, protected
15	-	n.c.	not connected
16	24-16AWG	LIN	not connected
17	24-16AWG	RS232 TX	RS232 transmit
18	24-16AWG	RS232 RX	RS232 receive
19	24-16AWG	CAN 03 LO	CAN 3 low
20	24-16AWG	CAN 03 HI	CAN 3 high
21	24-16AWG	CAN 02 LO	CAN 2 low

Pin	Cross section	Name	Description
22	24-16AWG	CAN 02 HI	CAN 2 high
23	24-16AWG	CAN 01 LO	CAN 1 low
24	24-16AWG	CAN 01 HI	CAN 1 high
25	-	n.c.	not connected
26	-	n.c.	not connected
27	24-16AWG	ETHERNET2 TX-	Ethernet communication port 2
28	24-16AWG	ETHERNET2 TX+	Ethernet communication port 2
29	24-16AWG	ETHERNET2 RX-	Ethernet communication port 2
30	24-16AWG	ETHERNET2 RX+	Ethernet communication port 2
31	24-16AWG	ETHERNET1 TX-	Ethernet communication port 1
32	24-16AWG	ETHERNET1 TX+	Ethernet communication port 1
33	24-16AWG	ETHERNET1 RX-	Ethernet communication port 1
34	24-16AWG	ETHERNET1 RX+	Ethernet communication port 1
35	-	n.c.	not connected
36	-	n.c.	not connected
37	24-16AWG	WAKEUP	Dedicated wake pin ⁽²⁾
38	24-16AWG	LOGIC POWER IN	Battery + logic supply (optional- also via supply connector)
39	24-16AWG	Low output 06	Low side, low side PWM
40	24-16AWG	Low output 05	Low side, low side PWM
41	24-16AWG	WARNING AND RESET SW	Error output for LED to ground; for manual reset connect to ground
42	24-16AWG	Output 16D	High Side with diode
43	24-16AWG	Output 16	High Side 12.5 A, capacitive soft start
44	24-16AWG	Output 15	High Side 12.5 A, capacitive soft start
45	24-16AWG	Output 14	High Side 12.5 A, soft start
46	24-16AWG	Output 13	High Side 12.5 A, soft start
47	24-16AWG	Output 12	High Side 12.5 A, soft start
48	24-16AWG	Output 11	High Side 12.5 A, soft start
49	24-16AWG	Output 10	High Side 12.5 A, soft start
50	24-16AWG	Output 09	High Side 12.5 A, soft start
51	24-16AWG	Output 08	High Side 12.5 A, soft start
52	24-16AWG	Output 07	High Side 12.5 A, soft start
53	24-16AWG	Power ground	Battery -
54	24-16AWG	Power ground	Battery -
55	24-16AWG	Power ground	Battery -
56	24-16AWG	Power ground	Battery -
57	24-16AWG	Output 06	High side 35 A, capacitive soft start
58	24-16AWG	Output 05	High side 35 A, capacitive soft start
59	24-16AWG	Output 04	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
60	24-16AWG	Output 03	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
61	24-16AWG	Output 02	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾
62	24-16AWG	Output 01	High side, low side, PWM, half-bridge, full-bridge, soft start ⁽¹⁾

(1) H-bridge control only for adjacent output pairs (1+2, 3+4, 5+6, 7+8, 9+10).

(2) Wake-up calibration of the module for high signal. Dedicated wake pin permanently active.

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