Terminal assignments for basic units

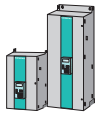| Type	Terminal design	Function	Terminal	Connection values/comments
Power section:	Converters with • 15 and 30 A: KDS10 PCB feed-through (screw-type terminal max. cross-section 10 mm^2, stranded)	Armature line input	1U1 1V1 1W1	See technical data
		Protective conductor PE	⏚	
	• 60 to 280 A: 1U1, 1V1, 1W1: Through-hole for M8 (3 x 20 copper bus) 1C1, 1D1: Through-hole for M8 (5 x 20 copper bus)	Armature circuit/ motor connection	1C1 (1D1) 1D1 (1C1)	
	• 400 to 600 A: 1U1, 1V1, 1W1: Through-hole for M10 (5 x 30 copper bus) 1C1, 1D1: Through-hole for M10 (5 x 35 copper bus)			
	• 710 to 850 A: Through-hole for M12 (5 x 60 copper bus)			
	• 900 to 1200 A: Through-hole for M12 (10 x 60 copper bus)			
	• 1500 to 2200 A: 1U1, 1V1, 1W1: Through-hole for M12 (10 x 80 copper bus) 1C1, 1D1: Through-hole for M12 (10 x 50 copper bus)			
	• 2200 to 3000 A: 1U1, 1V1, 1W1: Through-hole for M12 (2 x copper bus 10 x 100) 1C1, 1D1: Through-hole for M12 (2 x copper bus 10 x 80)			
	The converters are designed for a permanent power supply connection according to DIN VDE 0160 Section 6.5.2.1. PE conductor connection: Minimum cross-section 10 mm^2			
	The conductor cross-sections must be determined according to the applicable regulations, e.g. DIN VDE 100 Part 523, DIN VDE 0276 Part 1000).			
Field circuit	• 15 to 850 A: MKDS PCB terminal block (screw-type terminal) max. cross-section 4 mm^2 stranded	Mains connection	XF1-2/3U1 XF1-1/3W1	2-ph. AC 400 to 460 V (+15%/–20%)
		Field winding connection	XF2-2/3C XF2-1/3D	325 V rated DC voltage with 2-ph. AC 400 V mains connection
	• 900 to 2000 A: G10/4 converter terminal (screw-type terminal) max. cross-section 10 mm^2 stranded			
	• 2200 to 3000 A: UK16N converter terminal (screw-type terminal) max. cross-section 16 mm^2 stranded			
Electronics power supply [1]	• Plug-in terminal max. cross-section 1.5 mm^2 stranded	Incoming supply XP/5W1 XP/5N1	XP/5U1	2-ph. AC 380 to 460 V (+15%/–25%); I_n = 1 A (–35% for 1 min) or 1-ph. AC 190 to 230 V (+15%/–25%; I_n = 2 A
Fan [2]	Plug-in terminal (screw-type terminal) Max. cross-section 4 mm^2 stranded	Incoming supply	4U1 4V1 4W	3-ph. AC 400 V (±15%) For further information, see technical data
		Protective conductor PE	⏚	
Analog inputs, tacho inputs	Plug-in terminal Max. cross-section 2.5 mm^2	Tacho connection 8 to 270 V	XT/103	±270 V; > 143 kΩ
		Analog ground M	XT/104	Signs can be reversed and signals switched through by means of binary input functions.
Safety shutdown (E-STOP)	MSTB2.5 plug-in terminal Max. cross-section 2.5 mm^2	Supply for safety shutdown	XS/106	24 V DC, max. load 50 mA, short-circuit-proof, evaluation via fault message F018
		Safety shutdown – Switch – Pushbutton – Reset	XS/105 [3] XS/107 [3] XS/108 [3]	I_e = 20 mA NC contact I_e = 30 mA NO contact I_e = 10 mA

1) Note: For converters with a power section supply voltage that lies outside the tolerance range (note max. permissible power section supply voltage), the electronics power supply, field circuit mains connection and fan connection

must be adapted to AC 400 V via a transformer. An autotransformer is recommended for power section supply voltages up to 500 V. An isolating transformer must be used for power section supply voltages over 500 V. This isolating

transformer must have a center tap that is connected to protective earth PE.

2) On forced-ventilated converters ≥ 400 A

3) Note: Either terminal 105 or terminals 107 and 108 may be used. Terminal 105 is connected to terminal 106 in the delivery state.

Terminal assignments for CUD1

Type	Terminal design	Function	Terminal	Connection values/comments
Analog inputs, reference voltage	Plug-in (screw-type) terminal Max. cross-section 1.5 mm^2	Reference – M – P10 – N10	X174/1 X174/2 X174/3	±1% at 25° C (stability 0.1% per 10 °K); 10 mA short-circuit-proof
		Selectable input: – Main setpoint + – Main setpoint -	X174/4 X174/5	Differential input Parameter settings: ±10 V; 150 kΩ [1] Resolution can be parameterized up to approx. 555 µV (±14 bits) 0 to 20 mA; 300 Ω 4 to 20 mA; 300 Ω
		Selectable input: – Analog 1+ – Analog 1-	X174/6 X174/7	Differential input Parameter settings: ±10 V; 150 kΩ [1] Resolution can be parameterized up to approx. 555 µV (±14 bits) 0 to 20 mA; 300 Ω 4 to 20 mA; 300 Ω Signs can be reversed and signals switched through by means of binary input functions. Common mode suppression: ±15 V
Pulse encoder input	Plug-in (screw-type) terminal Max. cross-section 1.5 mm^2	Supply (+13.7 V to +15.2 V)	X173/26	200 mA; short-circuit-proof (electronic protection)
		Pulse encoder ground M	X173/27	
		Track 1: – Positive terminal – Negative terminal	X173/28 X173/29	Load: ≤ 5.25 mA at 15 V (w/o switching losses, see "Cable, cable length, shield connection") [2]
		Track 2: – Positive terminal – Negative terminal	X173/30 X173/31	Switching hysteresis: [3] Pulse/pause ratio: 1:1
		Zero marker: – Positive terminal – Negative terminal	X173/32 X173/33	Level of input pulses: [2] Track offset: See Page 5/21, Table 5 [2] Pulse frequency: See Page 5/21, Table 6 [2] Cable length: [3]
Other analog inputs	Plug-in (screw-type) terminal Max. cross-section 1.5 mm^2	Motor temperature: – Positive terminal – Negative terminal	X174/22 X174/23	Sensor acc. to P146, index 1 Sensor acc. to P146, index 1 PTC or KTY84-130
		Analog ground M	X174/24	

1) Resolution can be parameterized up to approx. 555 µV (±14 bits)

2) See Section "Characteristic data of pulse tacho evaluation electronics"

3) See page 5/21.

Open-loop and closed-loop control section

Terminal assignments for CUD1

Type	Terminal design	Function	Terminal	Connection values/comments
Analog outputs	Plug-in (screw-type) terminal Max. cross-section 1.5 mm^2	Actual current Analog ground M	X175/12 X175/13	0 ± 10 V corresponds to $0 \pm 200\%$ converter rated DC current Max. load 2 mA, short-circuit-proof
		Analog selectable output 1 Analog mass M	X175/14 X175/15	0 ± 10 V, max. 2 mA, short-circuit-proof Resolution ± 11 bits
		Analog selectable output 2 Analog mass M	X175/16 X175/17	0 ± 10 V, max. 2 mA, short-circuit-proof Resolution ± 11 bits
Binary control inputs	Plug-in (screw-type) terminal Max. cross-section 1,5 mm^2	Supply	X171/34	24 V DC, max. load 100 mA, internal supply referred to internal ground
		Digital ground M	X171/35	
		Switch-on/shutdown	X171/37	• H signal: Switch-on [1] Line contactor CLOSED + (with H signal at terminal 38) acceleration along ramp-function generator ramp to operating speed • L signal: Shutdown [1] Deceleration along ramp-function generator ramp to $n < n_{min}$ (P370) + controller disable + line contactor OPEN.
		Enable operation	X171/38	• H signal: Controller enabled [1] • L signal: Controller disabled [1] The L signal also acts at a higher level on "Inch" and "Crawl".
		Binary selectable input 1	X171/39	[1]
		Binary selectable input 6 (fault acknowledgement)	X171/36	The group message is acknowledged on a positive edge. The converter remains in the fault state until the fault has been eliminated and acknowledged and then switches to the "Starting lockout" state. The "Starting lockout" state can be reset by applying an L signal to terminal 37. [1]

1) H signal: +13 to +33 V *
   L signal: -33 to +3 V
   or terminal open *

* for binary control inputs
   8.5 mA at 24 V

Terminal assignments for CUD1

Type	Terminal design	Function	Terminal	Connection values/comments
Binary control outputs	Plug-in (screw-type) terminal Max. cross-section 1.5 mm^2	Ground M: – Binary selectable outputs – Binary selectable outputs	X171/47 X171/54	
		Selectable output "Fault"	X171/46	• H signal: No fault [1] • L signal: Fault [1] Short-circuit-proof 100 mA [1]
		Binary selectable output 2	X171/48	Short-circuit-proof 100 mA [1]
		Relay for line contactor: – Common potential – NO contact	XR/109 XR/110	Load rating: ≤ 250 V AC, 4 A; cos φ = 1 ≤ 250 V AC, 2 A; cos φ = 0.4 ≤ 30 V DC, 2 A
Serial interface 1 RS 232/X300 [2] [3] [4]		Housing earth	X300/1 [5]	
		Receive cable RS 232 standard (V.24)	X300/2 [5]	
		Send and receive cable two-wire RS 485, pos. diff. input/output	X300/4 [5]	
		$\overline{\text{BOOT}}$, control signal for software update	X300/4 [5] [8]	
		Ground	X300/5 [5]	
		5 V voltage supply for OP1S	X300/6 [5]	
		Send cable RS 232 standard (V.24)	X300/7 [5]	
		Send and receive cable two-wire RS 485, neg. diff. input/output	X300/8 [5]	
		Ground	X300/9 [5]	
Serial interface 2 RS 485 [6] [7]	Plug-in (screw-type) terminal Max. cross-section 1.5 mm^2	TX+	X172/56	RS 485, 4-wire send cable, positive differential input
		TX-	X172/57	RS 485, 4-wire send cable, negative differential input
		RX+/TX+	X172/58	RS 485, 4-wire receive cable, positive differential input, 2-wire send/receive cable, positive differential input
		RX-/TX-	X172/59	RS 485, 4-wire receive cable, negative differential input, 2-wire send/receive cable, negative differential input
		M X172/60		Ground

1) H signal: +16 to +30 V
 L signal: 0 to +2 V

2) 9-pin SUBMIN D socket

3) Cable length:
 – Up to 15 m acc. to EIA RS 232-C standard
 – Up to 30 m capacitive load max. 2.5 nF (cable and receiver)

4) A serial connection to a PLC or PC can be made using connector X300 on the PMU. This allows the converter to be controlled and operated from a central control center or room.

5) Connector pin

6) Cable length:
 – For baud rate of = 187.5 kbd: 600 m
 – For baud rate of ≤ 93.75 kbd: 1200 m

7) Please observe DIN 19245 Part 1. In particular, the potential difference between the data reference potentials M of all interfaces must not exceed -7 V/+12 V. If this cannot be guaranteed, then equipotential bonding must be provided.

8) For SIMOREG 6RA70, no function.