

2.13 Temperature sensor connections for SINAMICS components

The following table provides an overview of the components with temperature sensor connections available for the SINAMICS drive system.

Table 2-19 Temperature sensor connections for SINAMICS components

Module	Interface	Pin	Signal name	Technical specifications
SMC10/SMC20	X520 (sub D)	13	+Temp	Motor temperature measurement KTY84-1C130 (KTY+) or KTY84-1C130 (KTY-) Temperature sensor connection KTY84-1C130/PTC
		25	- Temp	
SMC30	X520 (sub D) Temperature channel 2	1	+Temp ²⁾	Motor temperature measurement KTY84-1C130 (KTY+) or KTY84-1C130 (KTY-) Temperature sensor connection KTY84-1C130/PTC
		8	- Temp ²⁾	
	²⁾ Only from Order No. 6SL3055-0AA00-5CA2 and Firmware 2.5 SP1			
	X531 (terminal) Temperature channel 1	3 4	- Temp +Temp	Motor temperature measurement KTY84-1C130 (KTY-) Temperature sensor connection KTY84-1C130/PTC
CU310	X120 (terminal) Temperature channel 2	4	+Temp ¹⁾	KTY or PTC input Ground for KTY or PTC
		5	- Temp ¹⁾	
	¹⁾ This is the only temperature channel for Order No. 6SL3040-0LA00-0AA0 and FW 2.5 SP1 as well as all CU310 with FW 2.4. For Order No. 6SL3040-0LA00-0AA1, this is the second temperature channel (T2), which can be used as single channel dependent on the parameterization or in combination with the first temperature channel (T1, refer to X23).			
	X23 (sub D) Temperature channel 1	1 8	+Temp ²⁾ - Temp ²⁾	KTY or PTC input Ground for KTY or PTC

Module	Interface	Pin	Signal name	Technical specifications
	²⁾ This temperature channel is only available as of Order No. 6SL3040-0LA00-0AA1 and FW 2.5 SP1. The associated temperature channel (T1) can be parameterized as a single channel or in combination with the second temperature channel (T2) at interface X120.			
CUA31	X210 (terminal)	1 2	+Temp - Temp	Temperature sensor connection KTY84-1C130 / PTC
CUA32	X210 (terminal) Temperature channel 2	1 2	+Temp - Temp	Temperature sensor connection KTY84-1C130 / PTC
	X220 (sub D) Temperature channel 1	1 8	+Temp - Temp	KTY or PTC input Ground for KTY or PTC
TM31	X522 (terminal)	7 8	+Temp - Temp	Temperature sensor connection KTY84-1C130 / PTC
SME120/ SME125	X200 (connector) Temperature channel 2	1 2	- Temp +Temp	Temperature sensor connection KTY84-1C130
	X200 (connector) Temperature channel 3	3 4	PTC connection PTC connection	Connection, PTC triplet 1 or bimetal 1
	X200 (connector) Temperature channel 4	5 6	PTC connection PTC connection	Connection, PTC triplet 2
Active Line Module	X21 (terminal)	1 2	+Temp - Temp	Temperature sensor connection of the Active Line Module
Basic Line Module	X21 (terminal)	1 2	+Temp - Temp	Temperature sensor connection of the Basic Line Module Temperature switch type: bimetallic-element switch with NC contact
Motor Module	X21/X22 (terminal)	1 2	+Temp - Temp	Temperature sensor connection KTY841-C130 / PTC

Commissioning information

The index [0..n] used in the following identifies either the motor data set or the encoder data set.

SMC10/SMC20

The parameterization of the motor temperature evaluation via the sub D socket X520 can be performed using the Starter screen (signals and monitoring \ Motor temperature).

SMC30 (only as of Order No. 6SL3055-0AA00-5CA2 and firmware 2.5 SP1)

In addition to the temperature evaluation via terminal X531, this module also has a temperature evaluation at the sub D socket X520.

The parameterization of the motor temperature evaluation via the sub D socket X520 must be performed in the expert list as follows:

- p0600[0..n]: Selection of the encoder (1, 2 or 3) to which the SMC30, that is used for the temperature evaluation, is assigned (n = motor data set).
- p0601[0..n] = 10 (evaluation via several temperature channels), n = motor data set.
- p4601[0..n]: Select the temperature sensor type for temperature channel 2 (depends on encoder data set n, not motor data set).

Note

With several encoders, the index [n] of the relevant encoder / encoder data set, via which the temperature evaluation is performed, must be used.

Example:

A KTY temperature sensor is connected at the sub D socket X520 on the SMC30 of Encoder 1.

This is parameterized via:

- p0600[0..n] = 1 / p0601[0..n] = 10 / p4601[0..n] = 20

Both temperature channels (X520 and X531) can be used at the same time. In addition to the above parameterization, the sensor type of the temperature sensor connected at terminal X531 must be entered in p4600[0..n]. The maximum value is then generated for the motor temperature and displayed in r0035.

CU310 (all hardware versions and firmware 2.4)

Only the temperature evaluation can be performed via terminal X120.

The parameterization of the motor temperature evaluation can be performed using the Starter screen (\Signals and monitoring \ Motor temperature). "Temperature sensor via Motor Module (11)" should be selected in the "Temperature sensor selection" field.

CU310 (Order No. 6SL3040-0LA00-0AA0 and firmware 2.5 SP1)

Only the temperature evaluation can be performed via terminal X120.

The parameterization of the motor temperature evaluation can be performed using the Starter screen (\Signals and monitoring \ Motor temperature). The encoder number of the internal encoder evaluation should be selected in the "Temperature sensor selection" field. If, for example, the internal encoder evaluation is used as Encoder 1, "Temperature sensor via Encoder 1 (1)" should be selected.

CU310 (as of Order No. 6SL3040-0LA00-0AA1 and firmware 2.5 SP1)

In addition to the temperature evaluation via terminal X120, a temperature sensor can also be connected at sub D socket X23 on this module.

The parameterization of the motor temperature evaluation via the sub D socket X23 can be performed using the Starter screen (\Signals and monitoring \ Motor temperature). The encoder of the internal encoder evaluation should be selected in the "Temperature sensor selection" field.

If the temperature evaluation is to be performed via terminal X120, the following parameterization must be entered via the expert list:

- p0600[0..n]: Selection of the encoder (1, 2 or 3) to which the internal encoder evaluation, that is used for the temperature evaluation, is assigned (n = motor data set).
- p0601[0..n] = 10 (evaluation via several temperature channels), n = motor data set.
- p4601[0..n]: Select the temperature sensor type (depends on encoder data set n, not motor data set).

Note

With several encoders, the index [n] of the relevant encoder / encoder data set, via which the temperature evaluation is performed, must be used.

Both temperature channels (X23 and X120) can be used at the same time. In addition to the above parameterization, the sensor type of the temperature sensor connected at sub D socket X23 must be entered in p4600[0..n]. The maximum value is then generated for the motor temperature and displayed in r0035.

CUA31

The parameterization of the temperature evaluation via terminal X210 can be performed using the Starter screen (\Signals and monitoring \ Motor temperature). "Temperature sensor via Motor Module (11)" should be selected in the "Temperature sensor selection" field. The temperature of the sensor is displayed in r0035.

CUA32

The parameterization of the temperature evaluation via terminal X210 or sub D socket X220 is performed in the same way as described above for the CU310 with two temperature channels.

TM31

With Terminal Module TM31, the sensor type used is set via p4100 and the temperature signal interconnected via r4105.

SME120/SME125

For modules with several temperature sensor connections (SME Modules), the temperature sensor is selected depending on encoder data set n via parameters p4601[0..n]..p4603[0..n]. A maximum of three motor temperature sensors can be evaluated simultaneously via terminal X200.

The parameterization of the motor temperature evaluation via terminal X200 must be performed in the expert list as follows:

- p0600[0..n]: Selection of the encoder (1, 2 or 3) to which the SME Module, that is used for the temperature evaluation, is assigned (n = motor data set).
- p0601[0..n] = 10 (evaluation via several temperature channels), n = motor data set.
- p4601[0..n]-p4603[0..n]: Select the temperature sensor type of temperature channel 2-4, depending on encoder data set n.
Only temperature channels 2-4 are available at terminal X200.
- Parameter r4620[0...3] Motor temperatures SME
is used to display the current temperatures in the motor, measured via an SME120 or

SME125. The indices mean:

[1] = SME temperature channel 2 / motor temperature sensor 2

[2] = SME temperature channel 3 / motor temperature sensor 3

[3] = SME temperature channel 4 / motor temperature sensor 4

Active Line Module, Basic Line Module

Parameter p0601 "Motor temperature sensor type" enables the setting for the sensor type for the temperature measurement at input X21. The measured value is displayed in r0035.