

Service and Diagnostics

8

8.1 Test sockets and display elements of the feed modules

VS

8.1.1 User-friendly interface

Test sockets

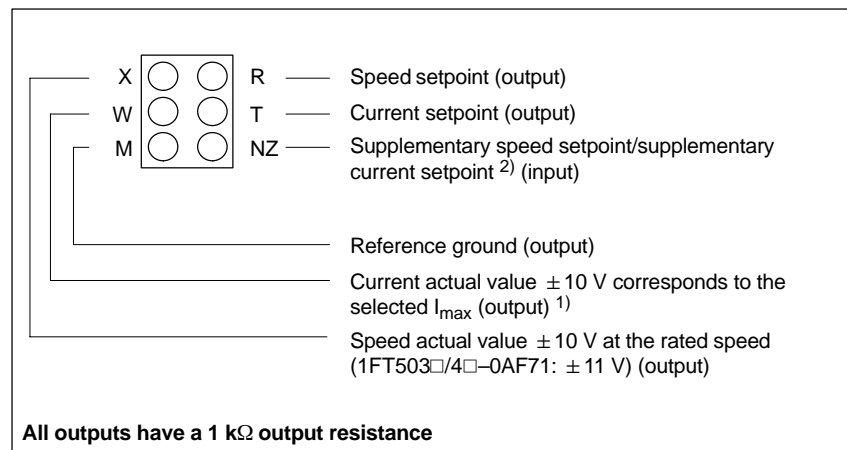


Fig. 8-1 Test sockets, user-friendly interface

Operating display

Par. board inserted	no	yes	yes	yes	yes	yes
Pulse enable 663	–	no	no	yes	yes	yes
Controller enable 65	–	no	yes	no	yes	yes
Current controlled	no	no	no	no	no	yes

Closed-loop speed controlled operation (standard operation)

1) Setting value I_{max} , refer to VS/Section 1.2

2) Closed-loop speed/current controlled depending on the operating mode

8.1 Test sockets and display elements of the feed modules

Fault display

Faule	1	2	3	4	5	6	7	8
I ² t monitoring or heatsink overtemperature	X				X			
Rotor position encoder		X						
Speed controller at its endstop					X	X	X	
Tachometer monitoring				X				
I _{act} = 0							X	
Motor overtemperature			X					
5 V undervoltage (5 V level faulted)								X
Effect:	Current limiting	Pulse cancellation		Pulse cancellation	Pulse cancellation	Pulse cancellation	Pulse cancellation	Pulse cancellation
Signal NE:	T. 5.x	–	T. 5.x	–	–	–	–	–
Signal FD:	T. 291	T. 297+ T. 672/ T. 674	T. 5.x T. 294	T. 297+ T. 672/ T. 674	T. 672/ T. 674	T. 288+ T. 672/ T. 674	T. 288+ T. 672/ T. 674	T. 672/ T. 674 ¹⁾

Sequence when the temperature or I²t monitoring responds

- **I²t monitoring:**
 - min. 250 ms before the limiting becomes active, a pre-alarm is output at terminal 5.x of the NE module (this is not saved)
 - when the limiting becomes active, fault 1 is displayed and a signal is output at term. 291 (saved)
- **Heatsink overtemperature monitoring:**
 - when the heatsink shutdown temperature is reached, a pre-alarm is output at terminal 5.x of the NE module (this is not saved)
 - after typ. 4 s, the pulses are inhibited, fault 1 is displayed and a signal is output at terminal 291 + terminal 672/terminal 674 (this is saved)

Motor overtemperature

The SIMODRIVE 611 feed modules with closed-loop control for 1FT5 servomotors are equipped with an evaluation circuit for the PTC thermistors integrated in the motor windings.

The monitoring combination is intended to protect the motors against inadmissibly high winding temperatures (trip temperature, 150 °C).

As the drive shouldn't randomly intervene in the machining process, when the response temperature is reached, this is only output as signal (no trip) at the SIMODRIVE 611 via the single fault signal, terminals 289/294/296 (this is saved) or centrally via terminals 5.1, 5.2 and 5.3 of the infeed module (this is saved).

There is no internal system response to protect the motor. In the adaptation control, the user must ensure that there is adequate thermal recovery time for the motor immediately after the signal is output. The motor should, if required, be immediately powered-down.

It is not permissible to delay this.

If the motor is not thermally monitored, then the complete drive could be destroyed when an overload condition develops, or if the drive converter has been overdimensioned.

1) Depending on the operating mode (ready/fault signal)

8.1.2 Standard interface

Test sockets and fault displays

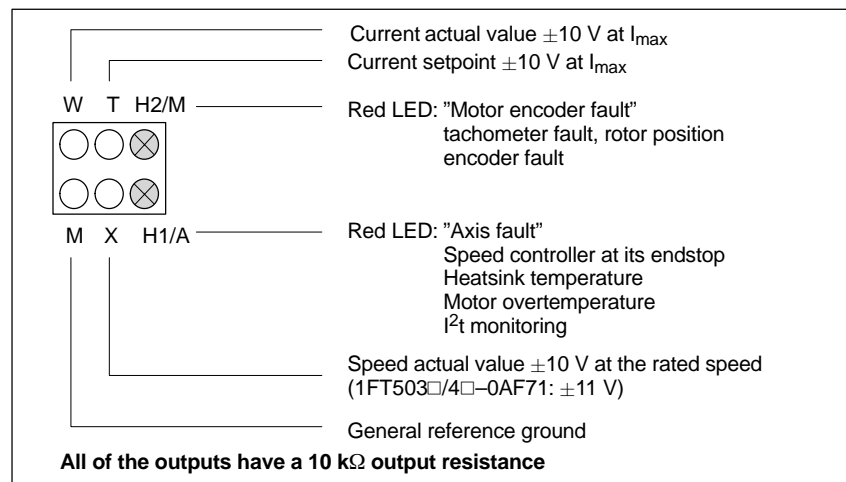


Fig. 8-2 Test sockets, standard interface

Sequence when the temperature or I^2t monitoring responds

- **I^2t monitoring**
 - A pre-alarm is output at terminal 5.x of the NE module min. 250 ms before the limiting becomes active (this is saved)
 - Fault H1 is displayed when the limiting becomes active.
- **Heatsink temperature monitoring:**
 - When the heatsink shutdown (trip) temperature is reached, a pre-alarm is output at terminal 5.x of the NE module (this is not saved)
 - After typ. 4 s, the pulses are inhibited, fault H1 is displayed and a signal is output at term. 72/term. 73/term. 74 of the NE module (this is saved)

Motor overtemperature

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VS

8.2 Troubleshooting

Table 8-1 Troubleshooting

Fault, user-friendly interface	Fault, standard interface	Possible fault cause
1	H1	RMS torque too high? Ambient temperature > 40 °C?
2	H2	Actual value cable and shield connection correctly connected? Encoder in the motor defective?
3	H1	Motor overloaded, RMS torque too high?
4	H2	Refer to F2
5	H1	Axis mechanically locked? RMS torque too high?
6	H1	Motor incorrectly connected? External moment of inertia too high? RMS torque too high (mechanically locked)?
7	–	Motor feeder cable interrupted, motor cable short-circuit/ground fault (Vce monitoring saved up to POWER-ON) Fault cannot be removed → replace the module
F	–	5V level fault → replace module

