If you do not want to use the displayed calibration values, you can either return to the start screen and start a new calibration procedure by pressing the "Restart" button, or exit calibration altogether by pressing the "Cancel" button.

6.12 Analog output module SM 332; AO 8 x 12 bit; (6ES7332-5HF00-0AB0)

Order number

6ES7332-5HF00-0AB0

Order number: "SIPLUS S7-300 module"

6AG1332-5HF00-2AB0

Properties

- 8 outputs in one group
- The output can be selected by individual channel
  - Voltage output
  - Current output
- Resolution 12 bits
- Programmable diagnostics and diagnostic interrupt
- Programmable diagnostic interrupt
- Electrically isolated from the backplane bus interface and load voltage
- Supports parameter reassignment in RUN

Diagnostics

For information on diagnostics messages at the "group diagnostics" parameter, refer to chapter Diagnostic messages of analog output modules (Page 246).

Terminal assignment

The diagrams below show various wiring options. These examples apply to all channels (channel 0 to 7).

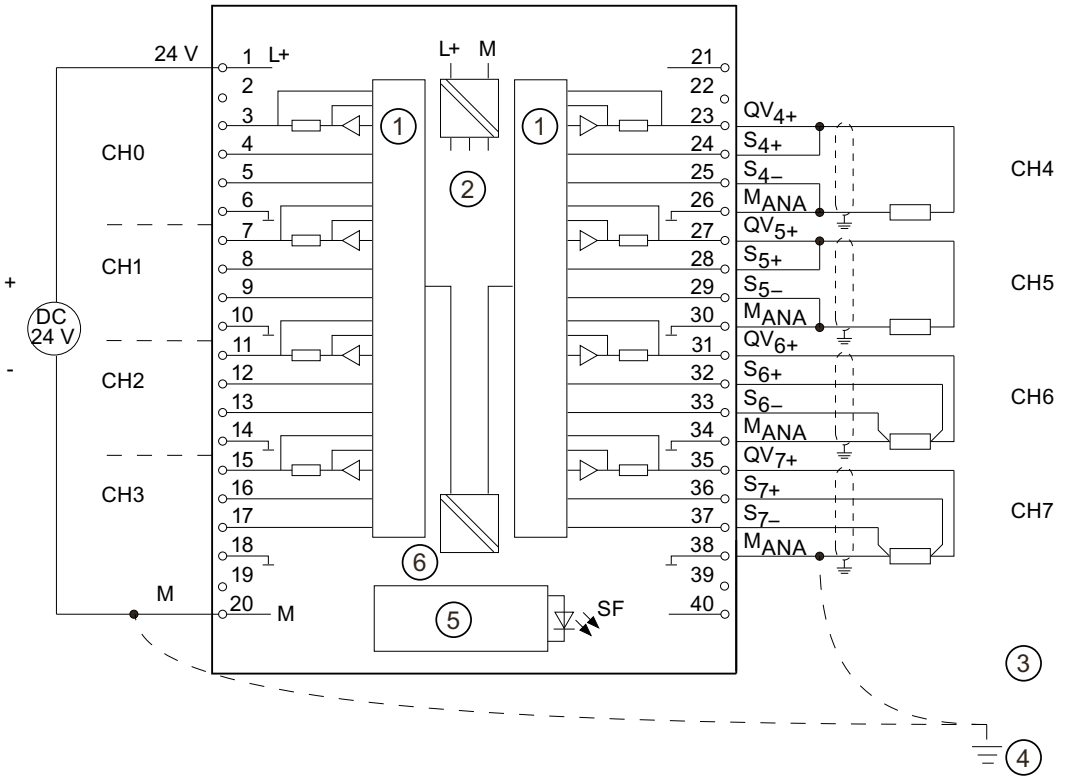
NOTE

When you switch the rated load voltage (L+) off and on, the outputs can return incorrect voltage/current values for the duration of about 500 ms.

Wiring: 2 and 4-wire connection for voltage output

The following image depicts:

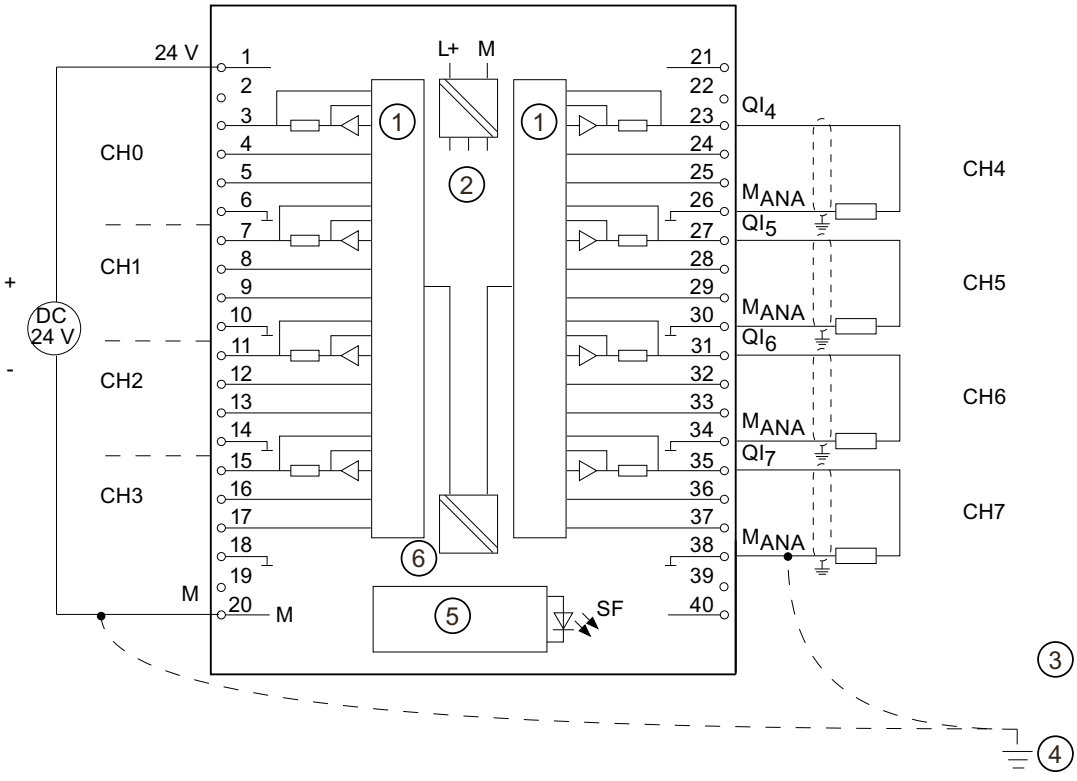
- 2-wire connection, no compensation for line impedance and
- 4-wire connection with compensation for line impedance



① DAC
② Internal supply
③ Equipotential bonding
④ Functional ground
⑤ Backplane bus interface
⑥ Electrical isolation

Figure 6-41 Wiring and block diagram

Wiring: Current output



① DAC
② Internal supply
③ Equipotential bonding
④ Functional ground
⑤ Backplane bus interface
⑥ Electrical isolation

Figure 6-42 Wiring and block diagram

Technical specifications

Technical specifications	
Dimensions and weight	
Dimensions W x H x D (mm)	40 x 125 x 117
Weight	ca. 272 g
Module-specific data	
Supports parameter reassignment in RUN	Yes
Reaction of non-programmed outputs	Return the output value which was valid before the parameterization
Supports isochronous mode	no
Number of inputs	8
Cable length • shielded	max. 200 m
Voltages, currents, electrical potentials	

Technical specifications	
Rated load voltage L+ • Reverse polarity protection	24 V DC yes
• Electrical isolation • between channels and the backplane bus • between channels and electronics power supply • between channels • between channels and load voltage L+	 yes yes no yes
Maximum potential difference • between S- and M_{ANA} (CMV)	 3 V DC
Isolation test voltage	500 V DC
Current consumption • from the backplane bus • From supply voltage L+	 max. 100 mA max. 340 mA
Power loss of the module	typ. 6.0 W
Generation of analog values	
Resolution, including sign • ± 10 V; ± 20 mA; 4 mA to 20 mA; 1 V to 5 V • 0 V to 10 V; 0 mA to 20 mA; • Conversion time (per channel)	 11 bits + sign 12 Bit max. 0.8 ms
Transient recovery time • with resistive load • with capacitive load • with inductive load	 0.2 ms 3.3 ms 0.5 ms (1 mH) 3.3 ms (10 mH)
Interference frequency suppression, error limits	
• Crosstalk between outputs	> 40 dB
Operational limit (across entire temperature range, relative to measurement range end value in the selected output range)	
• Voltage output • Current output	±0.5 % ± 0.6 %
Basic error limit (operational limit at 25 °C, relative to the measurement range end value in the selected output range)	
• Output voltage • Output current • Temperature error (relative to output range) • Linearity error (relative to output range) • Repeat accuracy (in transient state at 25 °C, relative to output range) • Output ripple; bandwidth 0 kHz to 50 kHz (relative to output range)	± 0.4 % ± 0.5 % ± 0.002 %/K + 0.05 % ±0.05 % ±0.05 %
Status, interrupts, diagnostics	
Interrupts • Diagnostic interrupt	 programmable
Diagnostic functions • Group error display • Reading diagnostics information	programmable red LED (SF) supported
Actuator selection data	
Output ranges (rated values)	

Technical specifications	
• Voltage	± 10 V 0 V to 10 V 1 V to 5 V
• Current	± 20 mA 0 mA to 20 mA 4 mA to 20 mA
Load impedance (in the rated output range)	
• For voltage outputs – Capacitive load	Min. 1 kΩ Max. 1 µF
• For current outputs – at CMV < 1 V – with inductive load	max. 500 Ω max. 600 Ω max. 10 mH
Voltage output • Short-circuit protection • Short-circuit current	 yes max. 25 mA
Current output • noload voltage	 max. 18 V
• Destruction limit against external voltages/currents • Voltage at outputs to M_{ANA} • Current	max. 18 V continuous; 75 V for a duration of max. 1 s (duty factor 1:20) max. 50 mA d.c.
Wiring of the actuators • for voltage output 4–wire connection • for current output 2–wire connection	using a 40-pin front connector supported supported

Configuration in RUN

Special considerations must be given if you use the Configuration in RUN function.
SF LED is lit:
Status before re-configuration diagnostics on, SF LEDs lit among others (on CPU, IM or module), although diagnostics are no longer pending and the module is operating correctly.
Solution:

- Only change the configuration when no diagnostics are pending for the module or
- Pulling and plugging the module.

6.12.1 SM 332; AO 8 x 12 Bit - Output ranges

Introduction

You can configure the outputs for operation as voltage or current outputs, or disable them. You program the outputs at the "output type" parameter in *STEP 7*.

Output type "Voltage" and output range "± 10 V" are set by default at the module. You can always use this combination of output type and range without having to program the SM 332; AO 8 x 12 Bit in *STEP 7*.

Table 6-32 Output ranges

Selected type of output	Output range
Voltage	1 V to 5 V 0 V to 10 V ± 10 V
Current	0 mA to 20 mA 4 mA to 20 mA ± 20 mA

See also

Representation of analog values for analog output channels (Page 233)

6.12.2 Programmable parameters

Introduction

For general information on programming analog modules, refer to the chapter Programming analog modules (Page 244).

The table below provides an overview of configurable parameters, including defaults:

Table 6-33 Overview of the parameters of SM 332; AO 8 x 12 Bit

Parameter	Range of values		Default	Parameter type	Scope
Enable • Diagnostic interrupt	yes/no		no	dynamic	Module
Diagnostics • Group diagnostics	Yes/no		No	static	Channel
Output • Output type • Output range	disabled Voltage Current See chapter output ranges (Page 371)		V ± 10 V	dynamic	Channel
Reaction to CPU STOP	ASS HLV	Outputs zero current/voltage Hold last value	ASS	dynamic	Channel

Assigning parameters to channels

The parameters can be set separately at each output channel of SM 332; AO 8 x 12 Bit. You can assign separate parameters to each output channel.