4.28 Analog Output Module SM 332; AO 4 x 12 bits; (6ES7332-5HD01-0AB0)

Order number

6ES7332-5HD01-0AB0

Characteristics

The analog output module SM 332; AO 4 x 12 bits has the following characteristic features:

- 4 Output channels
- The individual output channels can be programmed as
  - Voltage outputs
  - Current outputs
- Resolution 12 bits
- Programmable diagnostics
- Programmable diagnostic interrupt
- Programmable substitute value output
- Isolated against backplane bus interface and load voltage

Terminal connection and block diagram of analog output module SM 332; AO 4 x 12 bits

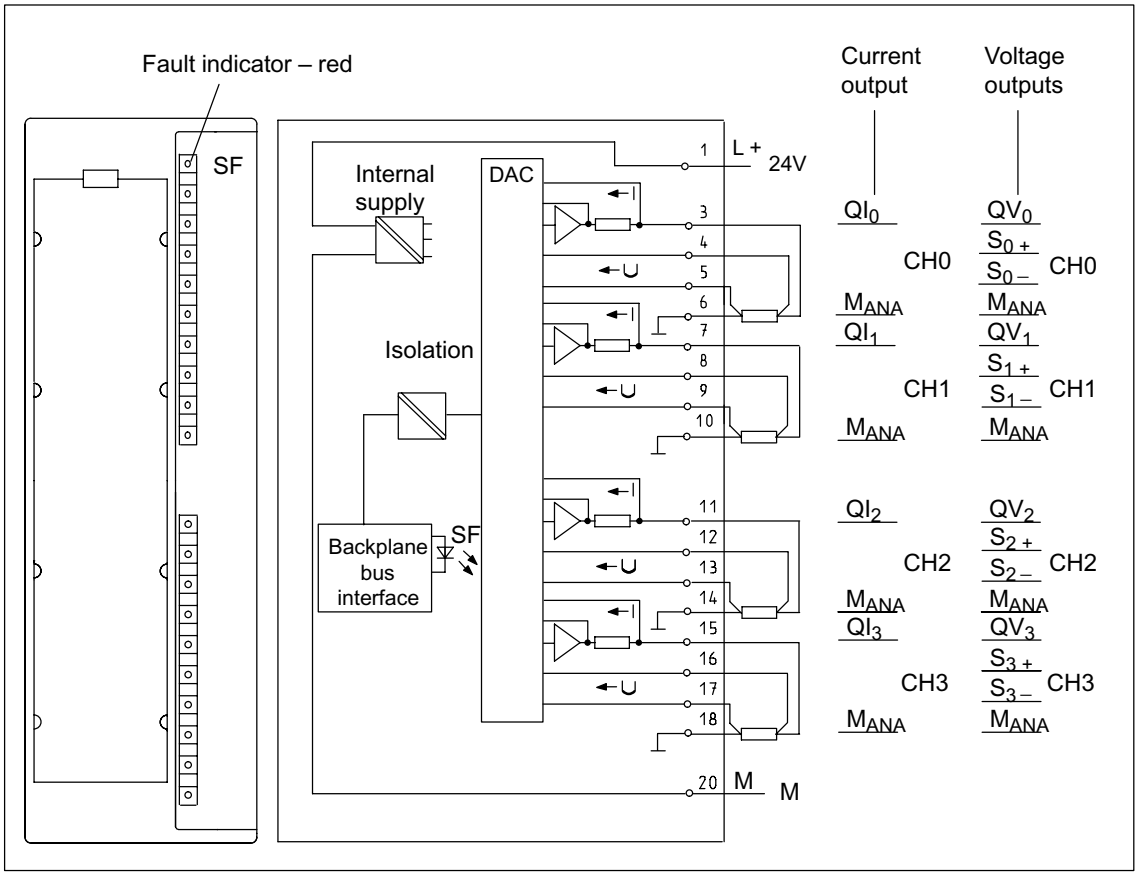

Figure 4-53 Module View and Block Diagram of the Analog Output Module SM 332; AO 4 x 12 bits

Technical specifications of the SM 332; AO 4 x 12 bits

Dimensions and Weight	
Dimensions W x H x D (in millimeters)	40 x 125 x 117
Weight	Approx. 220 g
Data for Specific Module	
Supports clocked operation	No
Number of outputs	4
Length of cable	
• Shielded	max. 200 m
Voltages, Currents, Potentials	
Rated load voltage L +	24 VDC
• Reverse polarity protection	Yes
Isolation	
• Between channels and backplane bus	Yes
• Between channels and power supply of the electronics	Yes
• Between the channels	No
• Between channels and load voltage L+	Yes
Permitted potential difference	
• Between S– and M_{ANA} (U_{CM})	3 VDC
• Between M_{ANA} and $M_{internal}$ (U_{ISO})	75 VDC / 60 VAC
Insulation tested with	500 VDC
Current consumption	
• From the backplane bus	max. 60 mA
• From the load voltage L+ (no load)	max. 240 mA
Power dissipation of the module	typ. 3 W

Analog value generation	
Resolution including sign	
• ± 10 V; ± 20 mA; 4 to 20 mA; 1 to 5 V	11 bits + sign
• 0 to 10 V; 0 to 20 mA	12 bits
Conversion time (per channel)	max. 0.8 ms
Settling time	
• For resistive load	0.2 ms
• For capacitive load	3.3 ms
• For inductive load	0.5 ms (1 mH) 3.3 ms (10 mH)
Suppression of interference, Limits of Error	
Crosstalk between the outputs	> 40 dB
Operational limit (in the entire temperature range, with reference to the output range)	
• Voltage outputs	± 0.5 %
• Current outputs	± 0.6 %
Basic error (operational limit at 25° C, referred to output range)	
• Voltage outputs	± 0.4 %
• Current outputs	± 0.5 %
Temperature error (with reference to the output range)	± 0.002 %/K
Linearity error (with reference to the output range)	± 0.05 %
Repeatability (in steady state at 25 °C, referred to output range)	± 0.05 %
Output ripple; range 0 to 50 kHz (referred to output range)	± 0.05 %
Status, interrupts, diagnostics	
Interrupts	
• Diagnostic interrupt	Parameters can be assigned
Diagnostic functions	Programmable
• Group error display	Red LED (SF)
• Diagnostic information readable	Possible
Substitute value can be applied	Yes, programmable

Data for Selecting an Actuator	
Output ranges (rated values)	
• Voltage	±10 V 0 to 10 V 1 to 5 V
• Current	±20 mA 0 to 20 mA 4 to 20 mA
Load resistance (in the nominal range of the output)	
• For voltage outputs	min. 1 kΩ
– capacitive load	max. 1 µF
• For current outputs	max. 500 Ω
– At U_{CM}< 1V	max. 600 Ω
– Inductive load	max. 10 mH
Voltage outputs	
• Short-circuit protection	Yes
• Short-circuit current	max. 25 mA
Current outputs	
• No-load voltage	max. 18 V

Destruction limit against voltages/currents applied from outside	
• Voltage at outputs to M_{ANA}	max. 18 V continuous; 75 V for max. 1 s (duty factor 1:20)
• Current	max. 50 mA DC
Connection of actuators	
• For voltage output	
– Four-conductor connection (measuring circuit)	Possible
• For current output	
– Two-conductor connection	Possible

4.28.1 Commissioning the SM 332; AO 4 x 12 bits

Note

When switching on and off the rated load voltage (L+), wrong intermediate values can occur across the output for approximately 10 ms.

Parameter

You will find a description of the general procedure for assigning parameters to analog modules in Section 4.7.

You will find an overview of the programmable parameters and their default values in Table 4-42, on page 4-43.