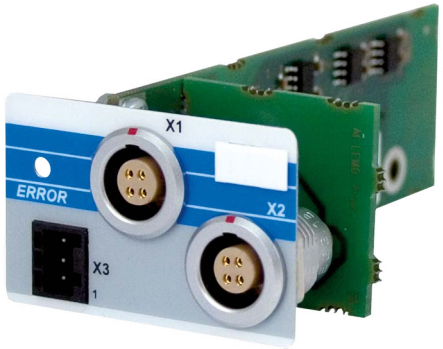
AO Insertable Module
MSR 241



This analog module is used to output voltages in the range of ±10 V. The module has 2 channels, each with a short-circuit proof reference voltage of -10 ... +10 V. In addition, each channel has a 24 V supply voltage.

On the diagnostic connector, the output signals can be measured.

Analog Channel Specifications

Number of channels	2	
Measurement range [Volt]	±10 V DC	
Measurement range [Digit]	-100.000 ... +100.000 in 0.1 mV increments	
Resolution [bits]	16	
Resolution [Volt]	333.3 µV/LSB	
Output voltage capacity	maximum 10 mA	
Capacitive load of the output voltage	< 100 nF	
Short-circuit proof	yes	
Settling time -10 V ... +10 V	typically 150 µs (with a load of 10 kW || 100 nF)	
Ambient temperature Analog channel accuracy of final value	0 ... +40 °C typically ±0.008 %	0 ... +60 °C typically ±0.023 %
Status display	ERROR (red) (located on the base)	
Galvanic isolation	500 V DC	

Settling Time

Hardware settling time -10 ... +10 V/+10 ... -10 V	typically 150 µs (with a load of 10 kW || 100 nF)	

Analog Channel Accuracy

Integral non-linearity error	typically ±0.003 %	maximum ±0.005 %
Temperature drift 0 ... +40 °C 0 ... +60 °C	 typically ±0.005 % typically ±0.02 %	 maximum ±0.02 % maximum ±0.04 %
Cross talk between both channels	typically 0	maximum ±0.0015 %
total error 0 ... +40 °C 0 ... +60 °C	 typically ±0.008 % typically ±0.023 %	 maximum ±0.0265 % maximum ±0.0465 %
Additional error under load 0 ... 1 mA	typically ±0.001 %	
Additional error under load 0 ... 10 mA	typically ±0.015 %	
Long-term drift 1000 h	typically ±0.0065 %	

Supply Voltage 0 ... +60 °C

Output voltage	+23.343 V ... 24.330 V ... 25.127 V
Output current/channel	maximum 100 mA
Total current/base module	maximum 800 mA
Galvanic isolation	500 V DC

Diagnostic Connector

Voltage range	±10 V
Load capacity	10 mA
Short-circuit proof	yes

Article Number and Miscellaneous

Article number	18-001-241
Hardware version	1.x

Environmental Conditions

Storage temperature	-30 ... +85 °C	
Operating temperature	0 ... +60 °C	
Humidity	0-95 %, non-condensing	
EMC stability	in accordance with EN 61000-6-2:2001 (industrial area)	
Shock resistance	EN 60068-2-27	150 m/s²
Protection type	EN 60529	IP00