

SIMATIC DP, HART analog output, SM 332, 2 AO, 0/4 - 20 mA
HART, to HART rev. 5.0, for ET200M with IM 153-2, 1 x 20-pole



Supply voltage

Load voltage L+

- | | |
|-------------------------------|------|
| • Rated value (DC) | 24 V |
| • Reverse polarity protection | Yes |

Input current

- | | |
|---|--------|
| from load voltage L+ (without load), max. | 150 mA |
| from backplane bus 5 V DC, max. | 100 mA |

Power loss

- | | |
|------------------|-------|
| Power loss, typ. | 3.5 W |
|------------------|-------|

Analog outputs

- | | |
|--|------|
| Number of analog outputs | 2 |
| Voltage output, short-circuit protection | Yes |
| Current output, no-load voltage, max. | 19 V |
| Cycle time (all channels) max. | 5 ms |

Output ranges, current

- | | |
|-----------------|-----|
| • 0 to 20 mA | Yes |
| • 4 mA to 20 mA | Yes |

Connection of actuators

• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with current outputs, max.	650 Ω
• with current outputs, inductive load, max.	7.5 mH
Destruction limits against externally applied voltages and currents	
• Voltages at the outputs towards MANA	max. 17 V / -0.5 V
• Current, max.	60 mA / -1 A
Cable length	
• shielded, max.	400 m
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit; Output value; 8 bit (+ sign) read back value
• Conversion time (per channel)	40 ms
Settling time	
• for resistive load	2.5 ms
• for capacitive load	4 ms
• for inductive load	2.5 ms
Errors/accuracies	
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.03 %
Temperature error (relative to output range), (+/-)	0.01 %/K
Crosstalk between the outputs, min.	130 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.005 %
Operational error limit in overall temperature range	
• Current, relative to output range, (+/-)	0.55 %
Basic error limit (operational limit at 25 °C)	
• Current, relative to output range, (+/-)	0.15 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes; Parameterizable
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes; Parameterizable
Diagnostic messages	
• Diagnostic information readable	Yes
• Overrange	Yes
• Wire-break	Yes; as of output value > 0.5 mA
• Wire-break in actuator cable	Yes
• HART communication active	Yes; green LED (H)

Diagnostics indication LED	
• Group error SF (red)	Yes; Additional group message per channel
• Channel fault indicator F (red)	Yes; per channel
Ex(i) characteristics	
Module for Ex(i) protection	Yes
Maximum values of output circuits (per channel)	
• Co (permissible external capacity), max.	230 nF
• Io (short-circuit current), max.	66 mA
• Lo (permissible external inductivity), max.	7.5 mH
• Po (power of load), max.	506 mW
• Uo (output no-load voltage), max.	19 V
• Um (fault voltage), max.	60 V; DC
• Ta (permissible ambient temperature), max.	60 °C
Potential separation	
Potential separation analog outputs	
• between the channels	Yes
• between the channels and backplane bus	Yes
• Between the channels and load voltage L+	Yes
Permissible potential difference	
between the outputs (UCM)	60 V DC/30 V AC
between M internally and the outputs	60 V DC/30 V AC
Isolation	
tested with	
• Channels against backplane bus and load voltage L+	1500 V AC
• Load voltage L+ against backplane bus	500 V DC
Standards, approvals, certificates	
FM approval	Available soon
Use in hazardous areas	
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC
• Type of protection acc. to FM	Class I, Division 2, Group A, B, C, D T4; Class I, Zone 2, Group IIC T4
• Type of protection acc. to KEMA	II3 (2) G Eex nA [ib] IIC T4
• Test number KEMA	97 ATEX 2359 X
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	

Weight, approx.

280 g

last modified:

11/19/2019