

SIMATIC DP, HART analog output, SM 332, 2 AO, 0/4 - 20 mA
HART, as of 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
Current output, no-load voltage, max.	19 V
Cycle time (all channels) max.	5 ms
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	No
• 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; + sign
• 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

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

Alarms

- Diagnostic alarm Yes; Parameterizable

Diagnostic messages

- Overrange Yes
- Wire-break Yes; as of output value > 0.5 mA
- HART communication active Yes; green LED (H)

Diagnostics indication LED

- Group error SF (red) Yes; red LED
- 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

Degree and class of protection

IP degree of protection IP20

Standards, approvals, certificates

FM approval Yes

Use in hazardous areas

- 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
- Test number KEMA

ATEX II 3 G (2) GD Ex nA [ib Gb] [ib IIIC Db] IIC T4 Gc
DEKRA 14 ATEX 0053X

Connection method

required front connector 20-pin

Dimensions

Width	40 mm
Height	125 mm
Depth	120 mm

Weights

Weight, approx. 290 g

last modified: 05/13/2020