SIEMENS

Product data sheet 6ES7331-7TB00-0AB0

SIMATIC DP, HART ANALOG INPUT SM 331,
2 AI, 0/4 - 20MA HART,
FOR ET200M WITH IM153-2, 1 X 20 PIN

Supply voltage	
Load voltage L+	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Input current	
from backplane bus 5 V DC, max.	100 mA
from supply voltage L+, max.	180 mA
Output voltage	
Power supply to the transmitters	
present	Yes
Rated value (DC)	15 V ; at 22 mA
short-circuit proof	Yes ; approx. 30 mA
No-load voltage (DC)	29.6 V
Power losses	
Power loss, typ.	4.5 W

Analog inputs	
Number of analog inputs	2
permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
Current	Yes
Input ranges (rated values), currents	
0 to 20 mA	Yes
Input resistance (0 to 20 mA)	50 Ω
4 to 20 mA	Yes
Input resistance (4 to 20 mA)	50 Ω
Cable length	
Cable length, shielded, max.	400 m
Analog value creation	
Measurement principle	Sigma Delta
Integrations and conversion time/ resolution per channel	
Resolution with overrange (bit including sign), max.	16 bit ; 10 to 15 bits + sign
Integration time, parameterizable	Yes
Integration time, ms	2.5 / 16.67 / 20 / 100 ms
Basic conversion time, including integration time, ms	2.5 / 16.67 / 20 / 100 (1 channel enabled); 7.5 / 50 / 60 / 300 (2 channels enabled)
Interference voltage suppression for interference frequency f1 in Hz	10 / 50 / 60 / 400 Hz
Encoder	
Connection of signal encoders	
for current measurement as 2-wire transducer	Yes
for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Linearity error (relative to input area)	+/- 0.01 %
Temperature error (relative to input area)	+/- 0.01 %
Crosstalk between the inputs, min.	130 dB
Repeat accuracy in settled status at 25 °C (relative to input area)	+/- 0.05 %
Operational limit in overall temperature range	

Current, relative to input area	+/- 0,45 % ; From 0/4 to 20 mA
Basic error limit (operational limit at 25 °C)	
Current, relative to input area	+/- 0,1 % ; From 0/4 to 20 mA
Interference voltage suppression for f = n x (fl +/- 1%), fl = interference frequency	
Series mode interference (peak value of interference < rated value of input range), min.	60 dB
Common mode interference, min.	130 dB
Interrupts/diagnostics/status information	
Alarms	
Diagnostic alarm	Yes ; Parameterizable
Limit value alarm	Yes ; Parameterizable, channels 0 and 1
Diagnostic messages	
Diagnostic functions	Yes ; can be set in parameters, red LED, alarm message
Diagnostic information readable	Yes
Overrange	Yes ; Red LED, signal
Wire break in signal transmitter cable	Yes ; Red LED, signal
Short circuit of the signal encoder cable	Yes ; Red LED, signal
HART communication active	Yes ; green LED (H)
Diagnostics indication LED	
Group error SF (red)	Yes
Channel error indicator F (red)	Yes
Ex(i) characteristics	
Module for Ex(i) protection	Yes
Max. values of input circuits (per channel)	
Co (permissible external capacity), max.	62 nF
Io (short-circuit current), max.	96.1 mA
Lo (permissible external inductivity), max.	3 mH
Po (power of load), max.	511 mW
Uo (output no-load voltage), max.	26 V
Um (fault voltage), max.	250 V ; DC
Ta (permissible ambient temperature), max.	0.6 °C
Galvanic isolation	
between the channels and backplane bus	Yes

Galvanic isolation analog inputs	
Galvanic isolation analog inputs	Yes
Galvanic isolation analog outputs	
between the channels	Yes
between the channels and the load voltage L+	Yes
Permissible potential difference	
between the inputs (UCM)	60 V DC/30 V AC
Isolation	
tested with	
Channels against backplane bus and load voltage L+	1500 V AC
Channels among one another	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
Test number KEMA	KEMA 97; ATEX3039 X
Type of protection acc. to KEMA	II3 (2) G Eex nA [ib] IIC T4
Ambient conditions	
Operating temperature	
max.	60 °C
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weight	
Weight, approx.	260 g
Status	Jun 23, 2012