

## Data sheet

SM 331S - SPEED-Bus (331-7BF70)

Technical data

Order no.	331-7BF70
Туре	SM 331S - SPEED-Bus
General information	
Note	-
Features	8x fast AI 16 Bit Voltage +/- 10 V Potential isolation between the channels 25 µs1000 µs sampiling rate (parameterizable) Memory: 8192 value/channel Oscilloscope-/FIFO-Function Alarm parameterizable For 20 pole front connectors
SPEED-Bus	yes
Current consumption/power loss	
Current consumption from backplane bus	530 mA
Power loss	4 W
Technical data analog inputs	
Number of inputs	8
Cable length, shielded	50 m
Rated load voltage	DC 24 V
Current consumption from load voltage L+ (without load)	62 mA
Voltage inputs	yes
Min. input resistance (voltage range)	120 kOhm
Input voltage ranges	-10 V +10 V
Operational limit of voltage ranges	+/-0.6%
Operational limit of voltage ranges with SFU	-
Basic error limit voltage ranges	+/-0.4%
Basic error limit voltage ranges with SFU	-
Destruction limit voltage	max. 30V
Current inputs	-
Max. input resistance (current range)	-
Input current ranges	-
Operational limit of current ranges	-
Operational limit of current ranges with SFU	-
Grundfehlergrenze Strombereiche	-
Radical error limit current ranges with SFU	-
Destruction limit current inputs (electrical current)	-
Destruction limit current inputs (voltage)	-
Resistance inputs	-
Resistance ranges	-
Operational limit of resistor ranges	-
Operational limit of resistor ranges with SFU	-
Basic error limit	-
Basic error limit with SFU	-
Destruction limit resistance inputs	-

## YASKAWA

Resistance thermometer ranges     -       Operational limit of resistance thermometer ranges     -       Deparational limit of resistance thermometer ranges     -       Basic error limit thermoresistor ranges with SPU     -       Basic error limit thermoresistor ranges     -       Thermoccupie inputs     -       Thermoccupie ranges     -       Operational limit of thermoccupie ranges     -       Operational limit of thermoccupie ranges with SPU     -       Basic error limit thermoccupie ranges with SPU     -       Destruction limit resistance thermocupie ranges with SPU     -       Basic error limit thermoccupie ranges with SPU     -       Destruction limit remorcupie ranges with SPU     -       Destruction limit thermoccupie ranges with SPU     -       Destruction limit thermoccupie ranges with SPU     -       Destruction limit thermoccupie ranges with SPU     -       Rescription of thermoccupie ranges with SPU     -       Rescription of limit thermoccupie ranges with SPU     -       Technical timp attrue compensation     -       Technical timp attrue compensation     -       Technical timit of thermoccupie ranges     -       Resolution in bit     16       Measurement principle     successive approximation       Basic error intereleancy     -       Initial data ac	Resistance thermometer inputs	-
Operational limit of resistance thermometer ranges with SFU         -           Basic error limit thermoresistor ranges         -           Basic error limit thermoresistor ranges with SFU         -           Destruction limit resistance thermometer inputs         -           Thermocouple ranges         -           Operational limit of thermocouple ranges         -           Operational limit of thermocouple ranges with SFU         -           Basic error limit thermocouple ranges with SFU         -           Destruction limit thermocouple ranges         -           Programmable temperature compensation         -           Textendal unit of temperature compensation         -           Textendal unit of temperature measurement         -           Resolution in bit         16           Measuremer principle         successive approximation           Basic conversion Time         25 µs all channels           Nole suppression for frequency         -           Initial data size         16 Bryte           Status information, alarms, diagnostics         Status information, alarms, diagnostics </td <td>Resistance thermometer ranges</td> <td>-</td>	Resistance thermometer ranges	-
Basic error limit thermoresistor ranges with SFU       -         Basic error limit thermoresistor ranges with SFU       -         Thermoccupie ranges       -         Operational limit of thermoccupie ranges       -         Operational limit of thermoccupie ranges       -         Basic error limit thermoccupie ranges       -         Basic error limit thermoccupie ranges       -         Basic error limit thermoccupie ranges       -         Programmable temperature compensation       -         Temperature compensation       -         Temperature error internal compensation       -         Resolution in bit       16         Measurement principle       successive approximation         Basic error limit hermoccupie ranges       -         Italial data size       16 Byte         Status dipplay       none         Internal       yes         Interupis       yes <td>Operational limit of resistance thermometer ranges</td> <td>-</td>	Operational limit of resistance thermometer ranges	-
Basic error limit thermoresistor ranges with SFU       -         Basic error limit thermoresistor ranges with SFU       -         Thermoccupie ranges       -         Operational limit of thermoccupie ranges       -         Operational limit of thermoccupie ranges       -         Basic error limit thermoccupie ranges       -         Basic error limit thermoccupie ranges       -         Basic error limit thermoccupie ranges       -         Programmable temperature compensation       -         Temperature compensation       -         Temperature error internal compensation       -         Resolution in bit       16         Measurement principle       successive approximation         Basic error limit hermoccupie ranges       -         Italial data size       16 Byte         Status dipplay       none         Internal       yes         Interupis       yes <td>Operational limit of resistance thermometer ranges with SFU</td> <td>-</td>	Operational limit of resistance thermometer ranges with SFU	-
Destruction limit resistance thermometer inputs     -       Thermocouple inputs     -       Thermocouple ranges     -       Operational limit of thermocouple ranges with SFU     -       Basic error limit thermocouple ranges with SFU     -       Basic error limit thermocouple ranges with SFU     -       Destruction limit thermocouple ranges with SFU     -       Terror limit thermocouple ranges with SFU     -       Destruction limit thermocouple ranges with SFU     -       Terror limit thermocouple ranges     -       Terror limit thermocouple ranges     -       Terror limit thermocouple ranges     -       Terror limit compensation     -       Ternor limit or informal compensation     -       Ternor limit or informal compensation     -       Testing limit thermocouple ranges     -       Basic conversion time     25 ps all channels       Noles suppression for frequency     -       Initia data size     16 Byte       Status display     none       Interrupts     yes       Degrastic information read-out     possible       Suppositio functions     yes </td <td></td> <td>-</td>		-
Destruction limit resistance thermometer inputs     -       Thermocouple inputs     -       Thermocouple ranges     -       Operational limit of thermocouple ranges with SFU     -       Basic error limit thermocouple ranges with SFU     -       Basic error limit thermocouple ranges with SFU     -       Destruction limit thermocouple ranges with SFU     -       Terror limit thermocouple ranges with SFU     -       Destruction limit thermocouple ranges with SFU     -       Terror limit thermocouple ranges     -       Terror limit thermocouple ranges     -       Terror limit thermocouple ranges     -       Terror limit compensation     -       Ternor limit or informal compensation     -       Ternor limit or informal compensation     -       Testing limit thermocouple ranges     -       Basic conversion time     25 ps all channels       Noles suppression for frequency     -       Initia data size     16 Byte       Status display     none       Interrupts     yes       Degrastic information read-out     possible       Suppositio functions     yes </td <td>Basic error limit thermoresistor ranges with SFU</td> <td>-</td>	Basic error limit thermoresistor ranges with SFU	-
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Thermocouple ranges       -         Operational limit of thermocouple ranges       -         Operational limit of thermocouple ranges with SFU       -         Basic error limit thermocouple ranges with SFU       -         Destruction limit thermocouple ranges with SFU       -         Destruction limit thermocouple ranges with SFU       -         Destruction limit thermocouple ranges with SFU       -         Programmable temperature compensation       -         Temperature compensation       -         Technical unit of temperature compensation       -         Technical unit of temperature measurement       -         Resolution in bit       16         Measurement principle       successive approximation         Basic conversion time       25 µs all channels         Noise suppression for frequency       -         Interrupts       yes         Status display       none         Interrupt       yes, parameterizable         Diagnostic interrupt       yes, parameterizable         Diagnostic interrupt       yes         Diagnostic interrupt       yes         Diagnostic functions       yes         Diagnostic functions       yes         Diagnostic functions       yes	· · · · ·	-
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Basic error limit thermocouple ranges with SFU       -         Destruction limit thermocouple inputs       -         Programmable temperature compensation       -         External temperature compensation       -         Internal temperature compensation       -         Temperature error internal compensation       -         Technical unit of temperature measurement       -         Resolution in bit       16         Measurement principle       successive approximation         Basic conversion time       25 µs all channels         Noise suppression for frequency       -         Initial data size       16 Byte         Status Information, alarms, diagnostics       Status Glaplay         Interrupts       yes, parameter/zable         Diagnostic functions       yes         Process alarm       yes, parameter/zable         Diagnostic functions       yes         Batween channels       yes         Despote display       none         Interrupt       yes         Diagnostic functions       yes         Diagnostic functions       yes         Batween channels       yes         Between channels and power supply       yes         Between channels and power supply       <		-
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Basic conversion time       25 µs all channels         Noise suppression for frequency       -         Initial data size       16 Byte         Status information, alarms, diagnostics       -         Status display       none         Interrupts       yes         Process alarm       yes, parameterizable         Diagnostic interrupt       yes, parameterizable         Diagnostic interrupt       yes, parameterizable         Diagnostic interrupt       yes         Supply voltage display       none         Group error display       red SF LED         Channel error display       none         Isolation       yes         Between channels of groups to       1         Between channels and backplane bus       yes         Between channels and power supply       yes         Max. potential difference between inputs (Ucm)       DC 30 V         Max. potential difference between inputs and Mana (Ucm)       -         Max. potential difference between mana and Mintern (Uiso)       -         Max. potential difference between inputs and Mana (Ucm)       -         Max. potential difference between minuts and Mana (Ucm)       -         Max. potential difference between minuts and Mintern (Uiso)       C 75 V/ AC 50 V		
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Max. potential difference between circuits-Max. potential difference between inputs (Ucm)DC 30 VMax. potential difference between Mana and Mintern (Uiso)-Max. potential difference between inputs and Mana (Ucm)-Max. potential difference between inputs and Mintern (Uiso)DC 75 V/ AC 50 VMax. potential difference between Mintern and outputs-Insulation tested withDC 500 VDatasizes	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Isolation         Between channels         Between channels of groups to	yes yes, parameterizable yes, parameterizable yes possible none red SF LED none yes 1
Max. potential difference between inputs (Ucm)DC 30 VMax. potential difference between Mana and Mintern (Uiso)-Max. potential difference between inputs and Mana (Ucm)-Max. potential difference between inputs and Mintern (Uiso)DC 75 V/ AC 50 VMax. potential difference between Mintern and outputs-Insulation tested withDC 500 VDatasizes	Status display Interrupts Process alarm Diagnostic interrupt Diagnostic functions Diagnostics information read-out Supply voltage display Group error display Channel error display Isolation Between channels Between channels of groups to Between channels and backplane bus	yes yes, parameterizable yes, parameterizable yes possible none red SF LED none yes 1 yes
Max. potential difference between Mana and Mintern (Uiso)       -         Max. potential difference between inputs and Mana (Ucm)       -         Max. potential difference between inputs and Mintern (Uiso)       DC 75 V/ AC 50 V         Max. potential difference between Mintern and outputs       -         Insulation tested with       DC 500 V         Datasizes       -	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Isolation         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply	yes yes, parameterizable yes, parameterizable yes possible none red SF LED none yes 1 yes
Max. potential difference between inputs and Mana (Ucm)       -         Max. potential difference between inputs and Mintern (Uiso)       DC 75 V/ AC 50 V         Max. potential difference between Mintern and outputs       -         Insulation tested with       DC 500 V         Datasizes       -	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Isolation         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply         Max. potential difference between circuits	yes yes, parameterizable yes, parameterizable yes possible none red SF LED none yes 1 1 yes yes 2
Max. potential difference between inputs and Mintern (Uiso)       DC 75 V/ AC 50 V         Max. potential difference between Mintern and outputs       -         Insulation tested with       DC 500 V         Datasizes       -	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Isolation         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply         Max. potential difference between inputs (Ucm)	yes yes, parameterizable yes possible none red SF LED none yes 1 yes yes - DC 30 V
Max. potential difference between Mintern and outputs     -       Insulation tested with     DC 500 V       Datasizes     -	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Isolation         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply         Max. potential difference between inputs (Ucm)         Max. potential difference between Mana and Mintern (Uiso)	yes yes, parameterizable yes possible none red SF LED none yes 1 1 yes yes - DC 30 V -
Insulation tested with DC 500 V Datasizes	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Isolation         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply         Max. potential difference between inputs (Ucm)         Max. potential difference between mana and Mintern (Uiso)         Max. potential difference between inputs and Mana (Ucm)	yes yes, parameterizable yes possible none red SF LED none yes 1 yes 1 yes - DC 30 V -
Datasizes	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Isolation         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply         Max. potential difference between inputs (Ucm)         Max. potential difference between inputs and Mintern (Uiso)         Max. potential difference between inputs and Mana (Ucm)         Max. potential difference between inputs and Mintern (Uiso)	yes yes, parameterizable yes possible none red SF LED none yes 1 1 yes yes - DC 30 V - DC 75 V/ AC 50 V
	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Isolation         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply         Max. potential difference between inputs (Ucm)         Max. potential difference between inputs and Mana (Ucm)         Max. potential difference between inputs and Mana (Ucm)         Max. potential difference between inputs and Mintern (Uiso)	yes yes, parameterizable yes possible none red SF LED none yes 1 yes 1 yes - DC 30 V - - DC 75 V/ AC 50 V -
Input bytes 16	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Channel error display         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply         Max. potential difference between inputs (Ucm)         Max. potential difference between inputs and Mintern (Uiso)         Max. potential difference between Mintern and outputs         Insulation tested with	yes yes, parameterizable yes possible none red SF LED none yes 1 yes 1 yes - DC 30 V - - DC 75 V/ AC 50 V -
	Status display         Interrupts         Process alarm         Diagnostic interrupt         Diagnostic functions         Diagnostics information read-out         Supply voltage display         Group error display         Channel error display         Channel error display         Isolation         Between channels         Between channels of groups to         Between channels and backplane bus         Between channels and power supply         Max. potential difference between inputs (Ucm)         Max. potential difference between inputs and Mintern (Uiso)         Max. potential difference between Mintern and outputs         Insulation tested with         Datasizes	yes           yes, parameterizable           yes           possible           none           red SF LED           none           yes           1           yes           yes           0           yes           1           yes           2           yes           30 V           -           DC 30 V           -           DC 75 V/ AC 50 V           -           DC 500 V

## YASKAWA

Output bytes	0
Parameter bytes	41
Diagnostic bytes	16
Housing	
Material	PPE
Mounting	DIN rail SPEED-Bus
Mechanical data	
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm
Net weight	210 g
Weight including accessories	-
Gross weight	-
Environmental conditions	
Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C
Certifications	
UL certification	yes
KC certification	-