



SIMATIC S7-200 SMART, Digital I/O SM DR16, 8DI/8DO, 8 DI 24 V DC, Sink/Source, 8 DO, relay 2 A

General information	
Product type designation	SM DR16, DI 8x24 V DC, DQ 8x relay/2 A
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, typ.	80 mA; Current for 24 V DC input power
from backplane bus 5 V DC, typ.	115 mA; For 5 V DC from CPU module
Digital inputs	
Number of digital inputs	8
• in groups of	2
Parallel switching of inputs	Yes
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
horizontal installation	
— up to 50 °C, max.	8
vertical installation	
— up to 40 °C, max.	8
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	< 5 V DC
• for signal "1"	+15 to +30 V
Input current	
• for signal "0", max. (permissible quiescent current)	1 mA
• for signal "1", min.	2.5 mA
• for signal "1", max.	5 mA
• for signal "1", typ.	4 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— at "0" to "1", max.	200 µs
— at "1" to "0", max.	200 µs
Cable length	
• shielded, max.	500 m
• unshielded, max.	300 m
Digital outputs	
Number of digital outputs	8
Short-circuit protection	No
Output current	

<ul style="list-style-type: none"> <li>• for signal "1" rated value</li> </ul>	2 A
<b>Output delay with resistive load</b>	
<ul style="list-style-type: none"> <li>• "0" to "1", max.</li> </ul>	10 ms
<ul style="list-style-type: none"> <li>• "1" to "0", max.</li> </ul>	10 ms
<b>Parallel switching of two outputs</b>	
<ul style="list-style-type: none"> <li>• for logic links</li> </ul>	No
<ul style="list-style-type: none"> <li>• for uprating</li> </ul>	No
<ul style="list-style-type: none"> <li>• for redundant control of a load</li> </ul>	No
<b>Relay outputs</b>	
<ul style="list-style-type: none"> <li>• Number of relay outputs</li> </ul>	8
<ul style="list-style-type: none"> <li>• Rated supply voltage of relay coil L+ (DC) <ul style="list-style-type: none"> <li>— Reverse polarity protection</li> </ul> </li> </ul>	24 V Yes
<ul style="list-style-type: none"> <li>• Current consumption of relays (coil current of all relays), max.</li> </ul>	80 mA
<b>Switching capacity of contacts</b>	
<ul style="list-style-type: none"> <li>— with inductive load, max.</li> </ul>	2 A
<ul style="list-style-type: none"> <li>— on lamp load, max.</li> </ul>	30 W; 30 W with DC, 200 W with AC
<ul style="list-style-type: none"> <li>— with resistive load, up to 50 °C, max.</li> </ul>	2 A
<ul style="list-style-type: none"> <li>— with resistive load, up to 60 °C, max.</li> </ul>	2 A
<ul style="list-style-type: none"> <li>— with resistive load, max.</li> </ul>	2 A
<ul style="list-style-type: none"> <li>— Thermal continuous current, max.</li> </ul>	2 A
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	500 m
<ul style="list-style-type: none"> <li>• unshielded, max.</li> </ul>	150 m
<b>Interrupts/diagnostics/status information</b>	
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>• for status of the inputs</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for status of the outputs</li> </ul>	Yes
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	Yes; Optocoupler
<b>Potential separation digital outputs</b>	
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	Yes; Relay, dry contact
<b>Isolation</b>	
Isolation tested with	500 V AC for 1 minute for input isolation; 1500 V AC for 1 minute for output isolation
<b>EMC</b>	
<b>Interference immunity against discharge of static electricity</b>	
<ul style="list-style-type: none"> <li>• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 <ul style="list-style-type: none"> <li>— Test voltage at air discharge</li> <li>— Test voltage at contact discharge</li> </ul> </li> </ul>	Yes; ±4 kV contact discharge (to IEC 801-2/IEC 1000-4-2; ESD), ±8 kV air discharge (to IEC 801-2/IEC 1000-4-2; ESD) 8 kV 4 kV
<b>Interference immunity against high-frequency electromagnetic fields</b>	
<ul style="list-style-type: none"> <li>• Interference immunity against high-frequency radiation acc. to IEC 61000-4-3 <ul style="list-style-type: none"> <li>— Frequency range of the RF radiation</li> </ul> </li> </ul>	Yes 80 to 1000 MHz, 10 V/m, 1.4 to 2.0 GHz, 3 V/m, 2.0 to 2.7 GHz, 1 V/m (In the range of 87 MHz to 187 MHz, 174 MHz to 230 MHz and 470 MHz to 790 MHz: 3V/m )
<b>Interference immunity to cable-borne interference</b>	
<ul style="list-style-type: none"> <li>• Interference immunity on supply lines acc. to IEC 61000-4-4</li> </ul>	Yes; 2 kV acc. to IEC 61000-4-4, burst
<ul style="list-style-type: none"> <li>• Interference immunity on signal cables acc. to IEC 61000-4-4</li> </ul>	Yes; ±2 kV acc. to IEC 61000-4-4, Burst
<b>Interference immunity against voltage surge</b>	
<ul style="list-style-type: none"> <li>• Interference immunity on supply lines acc. to IEC 61000-4-5</li> </ul>	Yes; With upstream protective element
<ul style="list-style-type: none"> <li>• asymmetric interference <ul style="list-style-type: none"> <li>— Test voltage on supply cables</li> <li>— Test voltage on signal cables &gt;30m</li> </ul> </li> </ul>	2 kV 2 kV
<b>Interference immunity against conducted variable disturbance induced by high-frequency fields</b>	
<ul style="list-style-type: none"> <li>• Interference immunity against high frequency current feed acc. to IEC 61000-4-6</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>	Yes; 10 V/m, with 80% amplitude modulation at 1 kHz

— Test voltage at 80% amplitude modulation with 1kHz in the range 9 kHz to 80 MHz	10 V
<b>Emission of radio interference acc. to EN 55 011</b>	
<ul style="list-style-type: none"> <li>• Emission of radio interference</li> <li>• Limit class A, for use in industrial areas</li> </ul>	Interference emission to EN 50081-2, testing to EN 55011, Class A, Group 1 Yes
<b>Degree and class of protection</b>	
IP degree of protection	IP20
<b>Standards, approvals, certificates</b>	
CE mark	Yes
<b>Ambient conditions</b>	
Relative humidity	
<ul style="list-style-type: none"> <li>• Operation at 25 °C without condensation, max.</li> </ul>	95 %
<b>Dimensions</b>	
Width	45 mm
Height	100 mm
Depth	81 mm
<b>Weights</b>	
Weight, approx.	201.9 g
<b>last modified:</b>	3/12/2021 