## **SIEMENS**

## **Data sheet**



SIMATIC S7-1500, digital output module DQ16x24 V DC/0.5A HF; 16 channels in groups of 8; 4 A per group; single-channel diagnostics; substitute value: switching cycle counter for connected actuators. the module supports the safety-oriented shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. front connector (screw terminals or push-in) to be ordered separately

Figure similar

Ceneral information Product type designation HW functional status From FS02 V1.1.0  • FW update possible Product function • FW update possible Product function • I&M data • Isochronous mode • Prioritized startup Fingineering with • STEP 7 TIA Portal configurable/integrated from version • STEP 7 TIA Portal configurable/integrated from version • PROFIBUS from GSD version/GSD revision • PROFIBUS from GSD version/GSD revision • PROFINET from GSD version/GSD revision • PROFINET from GSD version/GSD revision • PWM • Cam control (switching at comparison values) • Oversampling • MSO • Integrated operating cycle counter  Premissible range, lower limit (DC) permissible range, low		
HW functional status From FS02 Firmware version From FS02 Firmware version From FS02 Firmware version From FS02 Firmware version From FS02 From FS	General information	
Firmware version  Fiv update possible  Fivoduct function  I &M data  I & Isochronous mode  Frointized startup  Fes  STEP 7 TIA Portal configurable/integrated from version  FROFIBUS from GSD version/GSD revision  PROFIBUS from GSD version/GSD revision  PROFINET from GSD version/GSD revision  DQ  DQ  DQ With energy-saving function  FOWN  Cam control (switching at comparison values)  Oversampling  No  No  Oversampling  No  Integrated operating cycle counter  Yes  Supply voltage  Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, lower limit (DC)  permissible range, lower limit (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  permissible range, lower limit		
Product function  ● I&M data  ● Isochronous mode  Prioritized startup  STEP 7 TIA Portal configurable/integrated from version  ● STEP 7 Tonfigurable/integrated from version  ● PROFIBUS from GSD version/GSD revision  PROFIBUS from GSD version/GSD revision  ● PROFIBUS from GSD version/GSD revision  ● DQ  ● DWM  No  ● Cam control (switching at comparison values)  ● Oversampling  ● MSO  ● Integrated operating cycle counter  Supply voltage  Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  permissible range, lower lost (DC)  permissible range, lower lost (DC)  permissible range, lower limit (DC)  permissible ran		
Product function  • I&M data • Isochronous mode • Prioritized startup  Product function  • I&M data • Isochronous mode • Prioritized startup  Product function  • STEP 7 TIA Portal configurable/integrated from version • STEP 7 TIA Portal configurable/integrated from version • STEP 7 To for function GSD version/GSD revision • PROFIBUS from GSD version/GSD revision • PROFIBUS from GSD version/GSD revision • PROFINET from GSD version/GSD revision • PROFINET from GSD version/GSD revision • DQ • DQ		- · · · · · · ·
I IkM data  I IkM data  I Isochronous mode  I		Yes
● Isochronous mode ● Prioritized startup  Engineering with ● STEP 7 TIA Portal configurable/integrated from version ● STEP 7 Tonfigurable/integrated from version ● STEP 7 configurable/integrated from version ● PROFIBUS from GSD version/GSD revision ● PROFINET from GSD version/GSD revision ● PROFINET from GSD version/GSD revision ● DQ ● DQ Yes ● DQ with energy-saving function ● PWM ● Cam control (switching at comparison values) ● Oversampling ● MSO ● Integrated operating cycle counter  Supply voltage  Rated value (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) Reverse polarity protection Pyes; through internal protection with 7 A per group Input current  Current consumption, max.  output voltage / header  Rated value (DC) Power Power available from the backplane bus  1.1 W  Power loss Power loss, typ.  Doil and starture  2 W  Digital outputs  Transistor		
Prioritized startup  Engineering with  STEP 7 TIA Portal configurable/integrated from version  STEP 7 Tonfigurable/integrated from version  PROFIBUS from GSD version/GSD revision  PROFINET from GSD version/GSD revision  PROFINET from GSD version/GSD revision  PROFINET from GSD version/GSD revision  POQ version version  POQ Yes  DQ with energy-saving function  PWM No  Cam control (switching at comparison values)  No  Oversampling  MSO  Integrated operating cycle counter  Supply voltage  Rated value (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  Input current  Current consumption, max  output voltage / header  Rated value (DC)  Power available from the backplane bus  1.1 W  Power loss  Power loss, typ.  Digital outputs  Transistor		
Engineering with  • STEP 7 IA Portal configurable/integrated from version  • STEP 7 configurable/integrated from version  • PROFIBUS from GSD version/GSD revision  • POW  • DQ  • DQ  • DQ  • DQ		
STEP 7 TIA Portal configurable/integrated from version STEP 7 configurable/integrated from version PROFIBUS from GSD version/GSD revision PROFIBUS from GSD version/GSD revision PROFINET from GSD version/GSD revision PROFINE from GSD version/GSD revis		Yes
version  • STEP 7 configurable/integrated from version  • PROFIBUS from GSD version/GSD revision  • PROFIBUS from GSD version/GSD revision  • PROFINET from GSD version/GSD revision  • PROFINET from GSD version/GSD revision  • PROFINET from GSD version/GSD revision  • PQ  • DQ with energy-saving function  • PWM  • Cam control (switching at comparison values)  • Oversampling  • MSO  • Integrated operating cycle counter  Supply voltage  Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  Input current  Current consumption, max.  30 mA  output voltage / header  Rated value (DC)  Power  Power available from the backplane bus  1.1 W  Power loss  Power loss  Power loss  Power loss, typ.  2 W  Digital outputs  Transistor		
PROFIBUS from GSD version/GSD revision PROFINET from GSD version/GSD revision V2.3 / -  Operating mode  DQ PQ DQ yes DQ with energy-saving function PWM No Cam control (switching at comparison values) Oversampling NSO Integrated operating cycle counter  Supply voltage Rated value (DC) Permissible range, lower limit (DC) Permissible range, upper limit (DC) Reverse polarity protection PROVED SAB V Supply voltage  Rated value (DC) Reverse polarity protection Supply voltage  Rated value (DC) Reverse polarity protection Supply voltage  Rated value (DC) Reverse polarity protection Supply voltage / header  Rated value (DC) Power Power loss Power loss Power loss, typ. Digital outputs Transistor	version	V13 SP1 / -
PROFINET from GSD version/GSD revision  Operating mode  DQ Yes DQ with energy-saving function PWM Cam control (switching at comparison values) Oversampling MSO Integrated operating cycle counter  Supply voltage  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection  Input current  Current consumption, max.  Output voltage / header  Rated value (DC) Power  Power available from the backplane bus  1.1 W  Power loss Power loss, typ.  Digital outputs  Transistor	<ul> <li>STEP 7 configurable/integrated from version</li> </ul>	V5.5 SP3 / -
Operating mode  • DQ • DQ with energy-saving function • PWM • Cam control (switching at comparison values) • Oversampling • MSO • Integrated operating cycle counter  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) Reverse polarity protection  Input current  Current consumption, max.  Output voltage / header  Rated value (DC) Power  Power available from the backplane bus  1.1 W  Power loss  Power loss, typ.  2 W  Digital outputs  Transistor		
DQ with energy-saving function     PVM No     Cam control (switching at comparison values)     Oversampling No     MSO Yes     Integrated operating cycle counter Yes  Supply voltage  Rated value (DC) 24 V permissible range, lower limit (DC) 19.2 V permissible range, upper limit (DC) 28.8 V Reverse polarity protection Yes; through internal protection with 7 A per group  Input current  Current consumption, max. 30 mA  cutput voltage / header  Rated value (DC) 24 V  Power  Power available from the backplane bus 1.1 W  Power loss  Power loss, typ. 2 W  Digital outputs  Type of digital output  Transistor		V2.3 / -
DQ with energy-saving function PWM Cam control (switching at comparison values) Oversampling MSO Integrated operating cycle counter  Supply voltage  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes; through internal protection with 7 A per group  Input current  Current consumption, max.  Output voltage / header  Rated value (DC) Power  Power available from the backplane bus 1.1 W  Power loss Power loss, typ. 2 W  Digital outputs  Transistor	Operating mode	
PWM Cam control (switching at comparison values) Oversampling No MSO Integrated operating cycle counter  Supply voltage Rated value (DC) Permissible range, lower limit (DC) Permissible range, upper limit (DC) Reverse polarity protection Yes; through internal protection with 7 A per group Input current Current consumption, max.  Output voltage / header Rated value (DC) Power Power available from the backplane bus 1.1 W Power loss Power loss, typ.  Digital outputs Transistor	• DQ	Yes
Cam control (switching at comparison values) Oversampling  MSO MSO Integrated operating cycle counter  Supply voltage  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes; through internal protection with 7 A per group  Input current  Current consumption, max. 30 mA  output voltage / header  Rated value (DC) Power  Power available from the backplane bus 1.1 W  Power loss Power loss, typ. 2 W  Digital outputs  Transistor	<ul> <li>DQ with energy-saving function</li> </ul>	No
Oversampling  MSO  MSO  Integrated operating cycle counter  Supply voltage  Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  Input current  Current consumption, max.  Output voltage / header  Rated value (DC)  Power  Power available from the backplane bus  Power loss  Power loss, typ.  Digital outputs  Transistor	• PWM	No
MSO     Integrated operating cycle counter  Supply voltage  Rated value (DC)     permissible range, lower limit (DC)     permissible range, upper limit (DC)     permissible range, upper limit (DC)     Reverse polarity protection  Input current  Current consumption, max.  Output voltage / header  Rated value (DC)  Power  Power available from the backplane bus  1.1 W  Power loss  Power loss, typ.  2 W  Digital outputs  Transistor	` "	No
● Integrated operating cycle counter  Supply voltage  Rated value (DC) 24 V permissible range, lower limit (DC) 19.2 V permissible range, upper limit (DC) 28.8 V Reverse polarity protection Yes; through internal protection with 7 A per group  Input current  Current consumption, max. 30 mA  output voltage / header  Rated value (DC) 24 V  Power  Power available from the backplane bus 1.1 W  Power loss  Power loss, typ. 2 W  Digital outputs  Type of digital output Transistor	· -	
Supply voltage  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Input current Current consumption, max.  Current consumption, max.  30 mA  output voltage / header  Rated value (DC)  Power Power available from the backplane bus 1.1 W  Power loss Power loss, typ. 2 W  Digital outputs  Type of digital output  Transistor		
Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) Reverse polarity protection  Input current  Current consumption, max.  Output voltage / header  Rated value (DC)  Power  Power available from the backplane bus  1.1 W  Power loss  Power loss, typ.  2 W  Digital outputs  Type of digital output  Transistor	Integrated operating cycle counter	Yes
permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes; through internal protection with 7 A per group  Input current Current consumption, max. 30 mA  output voltage / header Rated value (DC) Power Power available from the backplane bus 1.1 W  Power loss Power loss, typ. Digital outputs Type of digital output  Transistor	Supply voltage	
permissible range, upper limit (DC) Reverse polarity protection  Input current  Current consumption, max.  Output voltage / header  Rated value (DC)  Power  Power available from the backplane bus  Power loss, typ.  Digital outputs  Type of digital output  28.8 V  Yes; through internal protection with 7 A per group  100 Max    Yes; through internal protection with 7 A per group  100 Max    Yes; through internal protection with 7 A per group  110 Max    Yes; through internal protection with 7 A per group  111 Max    Yes; through internal protection with 7 A per group  110 Max    Yes; through internal protection with 7 A per group  111 Max    Yes; through internal protection with 7 A per group  111 Max    Yes; through internal protection with 7 A per group  111 Max    Yes; through internal protection with 7 A per group  122 Max    Yes; through internal protection with 7 A per group  123 Max    Yes; through internal protection with 7 A per group  124 Max    Yes; through internal protection with 7 A per group  124 Max    Yes; through internal protection with 7 A per group  124 Max    Yes; through internal protection with 7 A per group  124 Max    Yes; through internal protection with 7 A per group  124 Max    Yes; through internal protection with 7 A per group  124 Max    Yes; through internal protection with 7 A per group  124 Max    Yes; through internal protection with 7 A per group  124 Max    Yes; through internal protection with 7 A per group  124 Max    Yes	Rated value (DC)	24 V
Reverse polarity protection  Input current  Current consumption, max.  Output voltage / header  Rated value (DC)  Power  Power available from the backplane bus  Power loss, typ.  Digital outputs  Type of digital output  Yes; through internal protection with 7 A per group  Yes; through internal protection with 7 A per group  1.1 W  9 W  1.1 W  Power loss  Transistor	permissible range, lower limit (DC)	19.2 V
Input current  Current consumption, max. 30 mA  output voltage / header  Rated value (DC) 24 V  Power  Power available from the backplane bus 1.1 W  Power loss  Power loss, typ. 2 W  Digital outputs  Type of digital output Transistor	permissible range, upper limit (DC)	28.8 V
Current consumption, max.  Output voltage / header  Rated value (DC)  Power  Power available from the backplane bus  1.1 W  Power loss  Power loss, typ.  Digital outputs  Type of digital output  Transistor	Reverse polarity protection	Yes; through internal protection with 7 A per group
output voltage / header Rated value (DC) 24 V  Power Power available from the backplane bus 1.1 W  Power loss Power loss, typ. 2 W  Digital outputs Type of digital output Transistor	Input current	
Rated value (DC)  24 V  Power  Power available from the backplane bus  1.1 W  Power loss  Power loss, typ.  2 W  Digital outputs  Type of digital output  Transistor	Current consumption, max.	30 mA
Power available from the backplane bus  1.1 W  Power loss  Power loss, typ.  2 W  Digital outputs  Type of digital output  Transistor	output voltage / header	
Power available from the backplane bus  1.1 W  Power loss  Power loss, typ.  2 W  Digital outputs  Type of digital output  Transistor	Rated value (DC)	24 V
Power loss Power loss, typ. 2 W  Digital outputs Type of digital output Transistor	Power	
Power loss, typ. 2 W  Digital outputs  Type of digital output Transistor	Power available from the backplane bus	1.1 W
Digital outputs  Type of digital output  Transistor	Power loss	
Type of digital output Transistor	Power loss, typ.	2 W
	Digital outputs	
Number of digital outputs 16	Type of digital output	Transistor
	Number of digital outputs	16

Current-sourcing	Yes
Current-sourcing Digital outputs, parameterizable	Yes
9 1 11	Yes; Clocked electronically
Short-circuit protection	1 A
Response threshold, typ.  Limitation of industive abutdown voltage to	
Limitation of inductive shutdown voltage to	L+ (-53 V)
Controlling a digital input	Yes
Switching capacity of the outputs	0.5 A
with resistive load, max.	
• on lamp load, max.	5 W
Load resistance range  • lower limit	40.0
	48 Ω 12 kΩ
upper limit     Output valtage	12 K12
Output voltage	1+(00)
• for signal "1", min.	L+ (-0.8 V)
Output current	0.5 A
• for signal "1" rated value	0.5 A
for signal "1" permissible range, max.     for signal "0" recidual current, max.	0.5 MA
for signal "0" residual current, max.  Output delay with resistive load	U.S IIIA
• "0" to "1", max.	100 με
• "1" to "0", max.	100 μs
Parallel switching of two outputs	500 μs
For logic links	Yes
-	No
<ul> <li>for uprating</li> <li>for redundant control of a load</li> </ul>	Yes
Switching frequency	res
with resistive load, max.	100 Hz
with resistive load, max.      with inductive load, max.	
on lamp load, max.	0.5 Hz; According to IEC 60947-5-1, DC-13 10 Hz
Total current of the outputs	ΙΟ ΠΖ
·	0.5. At son additional description in the manual
<ul><li>Current per channel, max.</li><li>Current per group, max.</li></ul>	0.5 A; see additional description in the manual     A; see additional description in the manual
Current per group, max.     Current per module, max.	8 A; see additional description in the manual
Cable length	o A, see additional description in the mandal
• shielded, max.	1 000 m
unshielded, max.  unshielded, max.	600 m
Isochronous mode	000 III
	TO
Execution and activation time (TCO), min.	70 µs
Bus cycle time (TDP), min.	250 μs
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
Diagnostic alarm	Yes
Maintenance interrupt	Yes
Diagnoses	
Monitoring the supply voltage	Yes
Wire-break	Yes
Short-circuit	Yes
Group error	Yes
Diagnostics indication LED	V LED
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
MAINT LED	Yes; Yellow LED
Monitoring of the supply voltage (PWR-LED)	Yes; green LED
Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
for module diagnostics	Yes; red LED
Potential separation	
Potential separation channels	
<ul> <li>between the channels</li> </ul>	No
<ul> <li>between the channels</li> <li>between the channels, in groups of</li> <li>between the channels and backplane bus</li> </ul>	No 8

Isolation		
Isolation tested with	707 V DC (type test)	
Standards, approvals, certificates		
Suitable for safety functions	No	
Suitable for safety-related tripping of standard modules	Yes; From FS02	
Highest safety class achievable for safety-related tripping of standard modules		
<ul> <li>Performance level according to ISO 13849-1</li> </ul>	PL d	
<ul> <li>Category according to ISO 13849-1</li> </ul>	Cat. 3	
<ul> <li>SIL acc. to IEC 62061</li> </ul>	SIL 2	
Ambient conditions		
Ambient temperature during operation		
<ul> <li>horizontal installation, min.</li> </ul>	-30 °C; From FS03	
<ul> <li>horizontal installation, max.</li> </ul>	60 °C	
<ul> <li>vertical installation, min.</li> </ul>	-30 °C; From FS03	
<ul> <li>vertical installation, max.</li> </ul>	40 °C	
Altitude during operation relating to sea level		
<ul> <li>Installation altitude above sea level, max.</li> </ul>	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	
Dimensions		
Width	35 mm	
Height	147 mm	
Depth	129 mm	
Weights		
Weight, approx.	230 g	
last modified:	3/3/2022 🗗	