Data sheet

6ES7143-5BF00-0BA0



SIMATIC ET 200AL, DIQ 4+DQ 4x 24 V DC/0.5 A, 8XM8, Degree of protection IP67

General information		
Product type designation	DIQ 4+DQ 4x24VDC/0.5A	
HW functional status	FS06	
Firmware version	V2.0.x	
Product function		
● I&M data	Yes; I&M0 to I&M3	
Engineering with		
 STEP 7 TIA Portal configurable/integrated from version 	STEP 7 V13 SP1 or higher	
 STEP 7 configurable/integrated from version 	From V5.5 SP4 Hotfix 3	
 PROFIBUS from GSD version/GSD revision 	GSD as of Revision 5	
 PROFINET from GSD version/GSD revision 	GSDML V2.3.1	
Supply voltage		
power supply according to NEC Class 2 required	No	
Load voltage 1L+		
Rated value (DC)	24 V	
 permissible range, lower limit (DC) 	20.4 V	
 permissible range, upper limit (DC) 	28.8 V	
Reverse polarity protection	Yes; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up	
Load voltage 2L+		
Rated value (DC)	24 V	
 permissible range, lower limit (DC) 	20.4 V	
 permissible range, upper limit (DC) 	28.8 V	
 Reverse polarity protection 	Yes; against destruction; load increasing	
nput current		
Current consumption (rated value)	40 mA; 40 mA (1L+) / 20 mA (2L+); without load	
from load voltage 1L+ (unswitched voltage)	4 A; Maximum value	
from load voltage 2L+, max.	4 A; Maximum value	
Encoder supply		
Number of outputs	4	
24 V encoder supply		
Short-circuit protection	Yes; per module, electronic	
 Output current, max. 	0.7 A; Total current of all encoders	
Power loss		
Power loss, typ.	2.5 W	
Digital inputs		
Number of digital inputs	4; Parameterizable as DIQ	
Input characteristic curve in accordance with IEC 61131, type 3	Yes	
Number of simultaneously controllable inputs		

- up to 55 °C, max. Input voltage • Rated value (DC) • for signal "0" • for signal "1" +11 to +30V Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs - at "0" to "1", min at "0" to "1", max at "1" to "0", min at "1" to "0", max. Cable length • unshielded, max. Digital outputs Number of digital outputs • in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs • on lamp load, max. 5 W Load resistance range • lower limit 48 Ω
Rated value (DC) for signal "0" for signal "1" #11 to +30V Input current for signal "1", typ. 3.2 mA Input delay (for rated value of input voltage) for standard inputs - at "0" to "1", min. - at "0" to "1", max. - at "1" to "0", min. - at "1" to "0", max. 4.8 ms - at "1" to "0", max. 4.8 ms Cable length unshielded, max. Digital outputs Number of digital outputs in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs on lamp load, max. 5 W Load resistance range
for signal "0" for signal "1" for signal "1", typ. Input current for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs
input current input current input delay (for rated value of input voltage) for standard inputs
Input current • for signal "1", typ. 3.2 mA Input delay (for rated value of input voltage) for standard inputs — at "0" to "1", min. 1.2 ms — at "0" to "1", max. 4.8 ms — at "1" to "0", min. 1.2 ms — at "1" to "0", max. 4.8 ms Cable length • unshielded, max. 30 m Digital outputs Number of digital outputs 8; 4 DQ fixed, 4 DIQ parameterizable 4; 2 load groups for 4 outputs each output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection Yes; per channel, electronic • Response threshold, typ. 0.7 A Limitation of inductive shutdown voltage to 2L+ (-47 V) Switching capacity of the outputs • on lamp load, max. 5 W Load resistance range
● for signal "1", typ. 3.2 mA Input delay (for rated value of input voltage) for standard inputs — at "0" to "1", min. 1.2 ms — at "0" to "1", max. 4.8 ms — at "1" to "0", min. 1.2 ms — at "1" to "0", max. 4.8 ms Cable length ● unshielded, max. 30 m Digital outputs Number of digital outputs 8; 4 DQ fixed, 4 DIQ parameterizable • in groups of 4; 2 load groups for 4 outputs each output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection Yes; per channel, electronic • Response threshold, typ. 0.7 A Limitation of inductive shutdown voltage to 2L+ (-47 V) Switching capacity of the outputs ● on lamp load, max. 5 W Load resistance range
Input delay (for rated value of input voltage) for standard inputs — at "0" to "1", min. — at "0" to "1", max. — at "1" to "0", min. — at "1" to "0", max. — at "1" to "0", max. A8 ms Cable length • unshielded, max. Digital outputs Number of digital outputs • in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs • on lamp load, max. 1.2 ms 4.8 ms 2.0 ms 4.2 ms 4.8 ms 2.1 ms 4.8 ms 4.9 ms 4.2 Load groups for 4 outputs each 4.1 Load groups for 4 outputs each 4
for standard inputs — at "0" to "1", min. — at "0" to "1", max. — at "1" to "0", min. — at "1" to "0", min. — at "1" to "0", max. Cable length • unshielded, max. Digital outputs Number of digital outputs • in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs • on lamp load, max. 1.2 ms 4.8 ms 2.4 ms 4.8 ms 2.1 ms 4.8 ms 2.1 ms 4.8 ms 2.1 language 4.2 load groups for 4 DIQ parameterizable 4.2 load groups for 4 outputs each output characteristic acc. to IEC 61131, type 0.5 Yes Short-circuit protection • Response threshold, typ. 2.1 minutestion of inductive shutdown voltage to 2.1 minutestion of the outputs • on lamp load, max. 5 W Load resistance range
- at "0" to "1", min at "0" to "1", max at "1" to "0", min at "1" to "0", min at "1" to "0", max. Cable length • unshielded, max. Digital outputs Number of digital outputs • in groups of - output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection - Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs • on lamp load, max. 1.2 ms 4.8 ms 4.8 ms Cable length 4.2 ms 4.8 ms Signal output deam 4.8 ms Augustance 4.8 mogustance 4.8 mogustance 4.8 mogustance 4.8 mogustance 4.9 Load groups for 4 outputs 4.2 lo
- at "0" to "1", max. - at "1" to "0", min. - at "1" to "0", max. 4.8 ms Cable length • unshielded, max. Number of digital outputs • in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs • on lamp load, max. 4.8 ms 1.2 ms 4.8 ms 20 m 20 m 21 parameterizable 4; 2 load groups for 4 outputs each 7 yes; per channel, electronic 21 parameterizable 4; 2 load groups for 4 outputs each 22 per channel, electronic 5 W Load resistance range
- at "1" to "0", min at "1" to "0", max. Cable length ● unshielded, max. So m Digital outputs Number of digital outputs ● in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection ● Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs ● on lamp load, max. 1.2 ms 4.8 ms 4.8 ms 30 m Digital outputs 8; 4 DQ fixed, 4 DIQ parameterizable 4; 2 load groups for 4 outputs each Yes Yes Yes 2L+ (-47 V) Switching capacity of the outputs ● on lamp load, max. 5 W Load resistance range
— at "1" to "0", max. Cable length ● unshielded, max. 30 m Digital outputs Number of digital outputs ● in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection ● Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs ● on lamp load, max. 4.8 ms 4.8 ms 4.8 ms 4.8 ms 4.8 ms 4.8 ms 4.9 DQ fixed, 4 DIQ parameterizable 4; 2 load groups for 4 outputs each 7 ves Yes 9 per channel, electronic 2 L+ (-47 V) Switching capacity of the outputs ● on lamp load, max. 5 W Load resistance range
Cable length ● unshielded, max. 30 m Digital outputs Number of digital outputs 8; 4 DQ fixed, 4 DIQ parameterizable ● in groups of 4; 2 load groups for 4 outputs each output characteristic acc. to IEC 61131, type 0.5 Yes Short-circuit protection Yes; per channel, electronic ● Response threshold, typ. 0.7 A Limitation of inductive shutdown voltage to 2L+ (-47 V) Switching capacity of the outputs 5 W Load resistance range 5 W
 unshielded, max. Digital outputs Number of digital outputs in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs on lamp load, max. Load resistance range 8; 4 DQ fixed, 4 DIQ parameterizable 4; 2 load groups for 4 outputs each Yes Yes O.7 A Limitation of inductive shutdown voltage to 2L+ (-47 V) Switching capacity of the outputs on lamp load, max. 5 W
Digital outputs Number of digital outputs 8; 4 DQ fixed, 4 DIQ parameterizable ● in groups of 4; 2 load groups for 4 outputs each output characteristic acc. to IEC 61131, type 0.5 Yes Short-circuit protection Yes; per channel, electronic ● Response threshold, typ. 0.7 A Limitation of inductive shutdown voltage to 2L+ (-47 V) Switching capacity of the outputs 5 W Load resistance range 5 W
Number of digital outputs • in groups of • in groups of output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to • on lamp load, max. Signal Pixel Additional Pixel Pix
 in groups of 4; 2 load groups for 4 outputs each output characteristic acc. to IEC 61131, type 0.5 Yes Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs on lamp load, max. 5 W Load resistance range
output characteristic acc. to IEC 61131, type 0.5 Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs on lamp load, max. Load resistance range
Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs on lamp load, max. Switching capacity of the outputs
● Response threshold, typ. Limitation of inductive shutdown voltage to Switching capacity of the outputs ● on lamp load, max. Load resistance range
Limitation of inductive shutdown voltage to 2L+ (-47 V) Switching capacity of the outputs ● on lamp load, max. 5 W Load resistance range
Switching capacity of the outputs • on lamp load, max. 5 W Load resistance range
on lamp load, max. 5 W Load resistance range
Load resistance range
·
▼ UWC
• upper limit 4 kΩ
Output voltage
• for signal "1", min. L+ (-0.8 V)
Output current
• for signal "1" rated value 0.5 A
• for signal "0" residual current, max. 0.5 mA
Switching frequency
with resistive load, max. 100 Hz
with inductive load, max. 0.5 Hz
• on lamp load, max. 1 Hz
Total current of the outputs
Current per group, max. 2 A
Cable length
• unshielded, max. 30 m
Encoder
Connectable encoders
• 2-wire sensor Yes
— permissible quiescent current (2-wire sensor), max. 1.5 mA
Interrupts/diagnostics/status information
Substitute values connectable Yes; channel by channel, parameterizable
Alarms
Diagnostic alarm Yes; Parameterizable
Diagnoses
Short-circuit Yes; Outputs to M; encoder supply to M; module by module
Diagnostics indication LED
Channel status display Yes; green LED
• for module diagnostics Yes; green/red LED
• For load voltage monitoring Yes; green LED
Potential separation
between the load voltages Yes
Potential separation channels
between the channels, in groups of 4; DIQ channels are isolated from DQ channels
• between the channels and backplane bus Yes
• between the channels and the power supply of the No; DIQ channels are non-isolated and DQ channels are isolated from supply of the
electronics voltage 1L+

Isolation				
Isolation tested with	707 V DC (type test)			
Degree and class of protection	(21)			
IP degree of protection	IP65/67			
Standards, approvals, certificates				
Suitable for safety-related tripping of standard modules	Yes; from FS01			
Highest safety class achievable for safety-related tripping of standard modules				
Performance level according to ISO 13849-1	PL d			
Category according to ISO 13849-1	Cat. 3	Cat. 3		
SIL acc. to IEC 62061	SIL 2	SIL 2		
 remark on safety-oriented shutdown 	https://support.industry.siemens.com/cs/de/en/view/39198632			
product functions / security / header				
signed firmware update	Yes			
data integrity	Yes	Yes		
Ambient conditions				
Ambient temperature during operation				
• min.	-30 °C			
• max.	55 °C	55 °C		
Altitude during operation relating to sea level				
 Ambient air temperature-barometric pressure-altitude 	Up to max. 5 000 m, at installat	ion height > 2 000 m addi	tional restrictions	
connection method				
Design of electrical connection for the inputs and outputs	M8, 3-pole	M8, 3-pole		
Design of electrical connection for supply voltage	M8, 4-pole	M8, 4-pole		
ET-Connection				
ET-Connection	M8, 4-pin, shielded	M8, 4-pin, shielded		
Dimensions				
Width	30 mm			
Height	159 mm	159 mm		
Depth	40 mm			
Weights				
Weight, approx.	145 g			
Classifications				
		Version	Classification	

	Version	Classification
eClass	14	27-24-26-04
eClass	12	27-24-26-04
eClass	9.1	27-24-26-04
eClass	9	27-24-26-04
eClass	8	27-24-26-04
eClass	7.1	27-24-26-04
eClass	6	27-24-26-04
ETIM	9	EC001599
ETIM	8	EC001599
ETIM	7	EC001599
IDEA	4	3566
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

Functional Saftey

Manufacturer Declaration











Marine / Shipping









NK / Nippon Kaiji Kyokai



Marine	/ Shir	pning

CCS (China Classification Society)



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