Data sheet

6ES7142-6BG00-0BB0



SIMATIC ET 200eco PN, DQ 8x 24 V DC/0.5 A, M12-L, 8x M12, single and double assignment, source output (PNP,switching to P potential), substitute value output, channel diagnostics for wire break and short-circuit at the output, shared device with 2 controllers, 0.25 ms isochronous mode, prioritized startup, MSO, MRP, S2 redundancy, I&M0...3, multi-fieldbus, PN IO, Ethernet IP, Modbus TCP, degree of protection IP67 / IP69K

General information	
HW functional status	FS02
Firmware version	V5.1.x
FW update possible	Yes
Vendor identification (VendorID)	002AH
Device identifier (DeviceID)	0306H
Manufacturer ID according to ODVA (VendorID)	04E3H
Device ID according to ODVA (Product code)	0FA6H
Product function	
• I&M data	Yes; I&M0 to I&M3
 Isochronous mode 	Yes
Prioritized startup	Yes
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	STEP 7 V17 or higher with HSP 0363
 PROFINET from GSD version/GSD revision 	GSDML V2.3.x
 Multi Fieldbus Configuration Tool (MFCT) 	from V1.3 SP1
Operating mode	
• DQ	Yes
• MSO	Yes
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
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
Input current	
Current consumption (rated value)	65 mA; without load
from load voltage 1L+ (unswitched voltage)	12 A; Maximum value
from load voltage 2L+, max.	12 A; Maximum value
Power loss	
Power loss, typ.	7 W
Address area	
Address area	
Address space per module	

 Outputs 	1 byte
Hardware configuration	.,,-
Submodules	
Number of configurable submodules, max.	2
Digital outputs	
Number of digital outputs	8
Current-sourcing	Yes
Short-circuit protection	Yes; per channel, electronic
Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	Typ. 2L+ (-52 V)
Controlling a digital input	Yes
Switching capacity of the outputs	
 with resistive load, max. 	0.5 A
 with inductive load, max. 	0.5 A
on lamp load, max.	5 W
Load resistance range	
 lower limit 	48 Ω
• upper limit	4 kΩ
Output voltage	
● for signal "1", min.	2L+ (-0,8 V)
Output current	
for signal "1" rated value	0.5 A
for signal "1" permissible range, max.	0.5 A
• for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	
● "0" to "1", max.	50 μs; at rated load
• "1" to "0", max.	100 μs; at rated load
Parallel switching of two outputs	
• for uprating	No
for redundant control of a load	Yes
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	4.0
Current per module, max. Cable langth	4 A
Cable length	20
unshielded, max. Interfaces	30 m
Interfaces	4
Number of PROFINET interfaces	1
1. Interface	DDOCINET 400 MAN CHAIL A MOODAGE TVO
Interface type	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
Interface types	Voc. 2v M2. 4 pip. D coded
M12 port	Yes; 2x M12, 4-pin, D-coded
Number of ports integrated quiteb	2 Voa
• integrated switch	Yes
Protocols - PROFINITIO Dovices	Von
PROFINET IO Device Open IF communication	Yes
Open IE communication Interface types	Yes
Interface types	
M12 port	Vac
Autorossing	Yes
Autocrossing Transmission rate, may	Yes
Transmission rate, max. Protocols	100 Mbit/s
	Voc
Supports protocol for PROFINET IO	Yes
PROFIsafe EtherNet/ID	No You
EtherNet/IP Medibus TCP	Yes
Modbus TCP	Yes
PROFINET IO Device	

Services	
— IRT	Yes; 250 µs to 4 ms in 125 µs frame
— Prioritized startup	Yes
 Shared device 	Yes
Number of IO Controllers with shared device, max.	2
Redundancy mode	
 PROFINET system redundancy (S2) 	Yes
— on S7-1500R/H	Yes
— on S7-400H	Yes
 PROFINET system redundancy (R1) 	No
H-Sync forwarding	Yes
Media redundancy	
— MRP	Yes
EtherNet/IP	
Services	
— CIP Implicit Messaging	Yes
— CIP Explicit Messaging	Yes
— CIP Safety	No
— Shared device	Yes; 2x EtherNet/IP Scanner
 Number of scanners with shared device, max. 	2
Updating times	
Requested Packet Interval (RPI)	2 ms
Redundancy mode	
— DLR (Device Level Ring)	No
Address area	
— Address space per module, max.	20 byte
— LargeForwardOpen (Class3)	No
Modbus TCP	
Services	
— read coils (code=1)	Yes
— read discrete inputs (code=2)	Yes
— Read Holding Registers (Code=3)	Yes
— write single coil (code=5)	Yes
— write multiple coils (code=15)	Yes
Write Multiple Registers (Code=16)	Yes
— Parameter change by master	No
Modbus TCP Security Protocol	No
Address space per station	
Address space per station, max.	
	20 byte
	20 byte 2 byte
— Access-consistent address space	20 byte 2 byte
Access-consistent address space Updating time	2 byte
— Access-consistent address space Updating time — I/O request interval	
Access-consistent address space Updating time I/O request interval Connections	2 byte 2 ms
— Access-consistent address space Updating time — I/O request interval Connections — Number of connections per slave	2 byte
Access-consistent address space Updating time I/O request interval Connections Number of connections per slave Open IE communication	2 byte 2 ms 12
— Access-consistent address space Updating time — I/O request interval Connections — Number of connections per slave Open IE communication • TCP/IP	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP)
	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes
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	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes
	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes 250 µs
	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes 250 µs 4 ms
— Access-consistent address space Updating time — I/O request interval Connections — Number of connections per slave Open IE communication • TCP/IP • SNMP • LLDP • ARP Isochronous mode Equidistance shortest clock pulse max. cycle Jitter, max.	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes 250 µs
	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes Yes 250 µs 4 ms 10 µs
	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes 250 µs 4 ms
	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes 150 µs 4 ms 10 µs Yes
	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes Yes 250 µs 4 ms 10 µs Yes Yes Yes Yes
— Access-consistent address space Updating time — I/O request interval Connections — Number of connections per slave Open IE communication • TCP/IP • SNMP • LLDP • ARP Isochronous mode Equidistance shortest clock pulse max. cycle Jitter, max. Interrupts/diagnostics/status information Substitute values connectable Alarms • Diagnostic alarm • Maintenance interrupt	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes 150 µs 4 ms 10 µs Yes
	2 byte 2 ms 12 Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes Yes Yes 250 µs 4 ms 10 µs Yes Yes Yes Yes

 Monitoring the supply voltage 	Yes
— parameterizable	Yes
Wire-break	Yes
Short-circuit	Yes; Outputs to M; channel by channel
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
MAINT LED	Yes; Yellow LED
• NS LED	Yes; green/red LED
• MS LED	Yes; green/red LED
• IO LED	Yes; red-green-yellow LED
Channel status display	Yes; green LED
 for channel diagnostics 	Yes; red LED
 For load voltage monitoring 	Yes; green LED
 Connection display LINK TX/RX 	Yes; green LED, only link
Potential separation	
between the load voltages	Yes
between Ethernet and electronics	Yes
Potential separation channels	
between the channels	No
 between the channels and the power supply of the electronics 	Yes
Isolation	
tested with	
• 24 V DC circuits	707 V DC (type test)
Test voltage for interface, rms value [Vrms]	1 500 V; According to IEEE 802.3
Degree and class of protection	
IP degree of protection	IP65/67/69K
Standards, approvals, certificates	
Cuitable for exfets related tripping of standard manifest	Yes; From FS02
Suitable for safety-related tripping of standard modules	
Suitable for safety-related tripping of standard modules Highest safety class achievable for safety-related tripping of stand	dard modules
	dard modules PL d
Highest safety class achievable for safety-related tripping of stand	
Highest safety class achievable for safety-related tripping of stand • Performance level according to ISO 13849-1	PL d
Highest safety class achievable for safety-related tripping of stand Performance level according to ISO 13849-1 Category according to ISO 13849-1	PL d Cat. 3
Highest safety class achievable for safety-related tripping of stand Performance level according to ISO 13849-1 Category according to ISO 13849-1 SIL acc. to IEC 62061 remark on safety-oriented shutdown	PL d Cat. 3 SIL 2
Highest safety class achievable for safety-related tripping of stand Performance level according to ISO 13849-1 Category according to ISO 13849-1 SIL acc. to IEC 62061 remark on safety-oriented shutdown	PL d Cat. 3 SIL 2
Highest safety class achievable for safety-related tripping of stand • Performance level according to ISO 13849-1 • Category according to ISO 13849-1 • SIL acc. to IEC 62061 • remark on safety-oriented shutdown Ambient conditions	PL d Cat. 3 SIL 2
Highest safety class achievable for safety-related tripping of stand Performance level according to ISO 13849-1 Category according to ISO 13849-1 SIL acc. to IEC 62061 remark on safety-oriented shutdown Ambient conditions Ambient temperature during operation	PL d Cat. 3 SIL 2 https://support.industry.siemens.com/cs/de/en/view/39198632
Highest safety class achievable for safety-related tripping of stand Performance level according to ISO 13849-1 Category according to ISO 13849-1 SIL acc. to IEC 62061 remark on safety-oriented shutdown Ambient conditions Ambient temperature during operation min.	PL d Cat. 3 SIL 2 https://support.industry.siemens.com/cs/de/en/view/39198632 -40 °C
Highest safety class achievable for safety-related tripping of stand Performance level according to ISO 13849-1 Category according to ISO 13849-1 SIL acc. to IEC 62061 remark on safety-oriented shutdown Ambient conditions Ambient temperature during operation min. max.	PL d Cat. 3 SIL 2 https://support.industry.siemens.com/cs/de/en/view/39198632 -40 °C
Highest safety class achievable for safety-related tripping of stand • Performance level according to ISO 13849-1 • Category according to ISO 13849-1 • SIL acc. to IEC 62061 • remark on safety-oriented shutdown Ambient conditions Ambient temperature during operation • min. • max. Altitude during operation relating to sea level	PL d Cat. 3 SIL 2 https://support.industry.siemens.com/cs/de/en/view/39198632 -40 °C 60 °C
Highest safety class achievable for safety-related tripping of stand Performance level according to ISO 13849-1 Category according to ISO 13849-1 SIL acc. to IEC 62061 remark on safety-oriented shutdown Ambient conditions Ambient temperature during operation min. max. Altitude during operation relating to sea level Ambient air temperature-barometric pressure-altitude	PL d Cat. 3 SIL 2 https://support.industry.siemens.com/cs/de/en/view/39198632 -40 °C 60 °C
Highest safety class achievable for safety-related tripping of stand • Performance level according to ISO 13849-1 • Category according to ISO 13849-1 • SIL acc. to IEC 62061 • remark on safety-oriented shutdown Ambient conditions Ambient temperature during operation • min. • max. Altitude during operation relating to sea level • Ambient air temperature-barometric pressure-altitude connection method	PL d Cat. 3 SIL 2 https://support.industry.siemens.com/cs/de/en/view/39198632 -40 °C 60 °C Up to max. 5 000 m, at installation height > 2 000 m additional restrictions
Highest safety class achievable for safety-related tripping of stand Performance level according to ISO 13849-1 Category according to ISO 13849-1 SIL acc. to IEC 62061 remark on safety-oriented shutdown Ambient conditions Ambient temperature during operation min. max. Altitude during operation relating to sea level Ambient air temperature-barometric pressure-altitude connection method Design of electrical connection	PL d Cat. 3 SIL 2 https://support.industry.siemens.com/cs/de/en/view/39198632 -40 °C 60 °C Up to max. 5 000 m, at installation height > 2 000 m additional restrictions 4/5-pin M12 circular connectors
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