

I/O systems

ET 200 systems without control cabinet

ET 200pro – I/O modules

Digital expansion modules

Technical specifications (continued)

Article number	6ES7141-4BF00-0AA0 ET200PRO, EM 8DI 24V DC	6ES7141-4BF00-0AB0 ET200PRO, EM 8DI 24V DC HF	6ES7141-4BH00-0AA0 ET200PRO, EM 16DI DC 24V
Parameter			
Diagnostic alarm		Yes	
Hardware interrupt		for 6 channels	
Diagnosis: wire break		channel by channel	
Diagnosis: short circuit	Sensor supply to M; module by module	channel by channel	
Galvanic isolation			
Galvanic isolation digital inputs			
• between the channels	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes
Permissible potential difference			
between different circuits	75V DC/60V AC	75V DC/60V AC	75V DC/60V AC
Isolation			
Isolation checked with	500 V DC	500 V DC	500 V DC
Degree and class of protection			
Degree of protection to EN 60529			
• IP65	Yes	Yes	Yes
• IP66	Yes	Yes	Yes
• IP67	Yes	Yes	Yes
Dimensions			
Width	45 mm	45 mm	45 mm
Height	130 mm	130 mm	130 mm
Depth	35 mm	35 mm; without terminal module	35 mm
Weights			
Weight, approx.	140 g	140 g	140 g

Article number	6ES7142-4BD00-0AA0 ET200PRO, EM 4DO 24V DC/2.0A	6ES7142-4BD00-0AB0 ET200PRO, EM 4DO 24VDC/2.0A HF	6ES7142-4BF00-0AA0 ET200PRO, EM 8DO DC24V/0.5A
Product type designation			
FH technology			
Module for failsafe applications	No	No	No
Supply voltage			
Load voltage 2L+			
• Rated value (DC)	24 V	24 V	24 V
• short-circuit protection	Yes; per channel, electronic	Yes; per channel, electronic	Yes; per channel, electronic
• Reverse polarity protection	Yes; against destruction; load increasing	Yes; against destruction; load increasing	Yes; against destruction; load increasing
Input current			
from load voltage 2L+ (without load), max.	20 mA	40 mA	30 mA
from backplane bus 3.3 V DC, max.	20 mA	40 mA	30 mA
Power losses			
Power loss, typ.	2 W	2.5 W	2 W
Address area			
Address space per module			
• with packing	4 bit	4 bit	8 bit
• without packing	1 byte	1 byte	1 byte

Technical specifications (continued)

Article number	6ES7142-4BD00-0AA0 ET200PRO, EM 4DO 24V DC/2.0A	6ES7142-4BD00-0AB0 ET200PRO, EM 4DO 24VDC/2.0A HF	6ES7142-4BF00-0AA0 ET200PRO, EM 8DO DC24V/0.5A
Digital outputs			
Number of digital outputs	4	4	8
short-circuit protection	Yes	Yes	Yes
• Response threshold, typ.	3	3	0,7
Limitation of inductive shutdown voltage to	2L+ (-47 V)	2L+ (-47 V)	2L+ (-47 V)
Controlling a digital input	Yes	Yes	Yes; Isolation between 1L+ and 2L+ is no longer provided, as 1M and 2M are jumpered
Switching capacity of the outputs			
• on lamp load, max.	10 W	10 W	5 W
Load resistance range			
• lower limit	12 Ω	12 Ω	48 Ω
• upper limit	4 kΩ	4 kΩ	4 kΩ
Output voltage			
• for signal "1", min.	2L+ (-0,8 V)	2L+ (-0,8 V)	2L+ (-0,8 V)
Output current			
• for signal "1" rated value	2 A	2 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA
Parallel switching of 2 outputs			
• for increased power	No	No	No
• for redundant control of a load	Yes	Yes	Yes
Switching frequency			
• with resistive load, max.	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	1 Hz	1 Hz	1 Hz
Aggregate current of outputs (per group)			
all mounting positions			
- up to 55 °C, max.	4 A	4 A	4 A
Cable length			
• shielded, max.	30 m	30 m	30 m
• Unshielded, max.	30 m	30 m	30 m
Interrupts/diagnostics/status information			
Substitute values connectable		Yes	
Alarms			
• Diagnostic alarm		Yes	
Diagnostic messages			
• Diagnostic functions	Yes	Yes	Yes
• Diagnostic information readable	Yes	Yes	Yes
• Wire break		Yes	
• Short circuit	Yes; Short-circuit of outputs to ground; module by module	Yes	Yes; Short-circuit of outputs to ground; module by module
Diagnostics indication LED			
• Group error SF (red)	Yes	Yes	Yes
• Status indicator digital output (green)	Yes	Yes	Yes
• Channel error indicator F (red)		Yes	

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Parameter			
Diagnosis: wire break		channel by channel	
Diagnosis: short circuit		channel by channel	
Behavior on CPU/Master STOP		channel by channel	
Galvanic isolation			
between backplane bus and all other circuit components		Yes	
between the channels and backplane bus		Yes	
Galvanic isolation digital outputs			
• between the channels	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes
Permissible potential difference			
between different circuits		75V DC/60V AC	
Isolation			
Isolation checked with	500 V DC	500 V DC	500 V DC
Dimensions			
Width	45 mm	45 mm	45 mm
Height	130 mm	130 mm	130 mm
Depth	35 mm	35 mm; without terminal module	35 mm
Weights			
Weight, approx.	140 g	140 g	140 g

Article number	6ES7143-4BF50-0AA0 ET200PRO, EM 4DI / 4DO DC 24V, 0.5A	6ES7143-4BF00-0AA0 ET200PRO, EM 4 DIO / 4 DO DC 24V, 0.5A
Product type designation		
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
permissible range, lower limit (DC)	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V
Reverse polarity protection	Yes	Yes; Against destruction; encoder power supply outputs applied with reversed polarity
Load voltage 2L+		
• Rated value (DC)	24 V	24 V
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V
• Reverse polarity protection	Yes	Yes; against destruction; load increasing
Input current		
from load voltage 1L+ (unswitched voltage)		20 mA
from load voltage 2L+, max.	20 mA	20 mA

Ordering data	Article No.		Article No.
8 DI digital input module 24 V DC, with module-specific diagnostics, including bus module. Connection module must be ordered separately	6ES7141-4BF00-0AA0	Accessories	
8 DI High Feature digital input module 24 V DC, with channel-specific diagnostics, including bus module. Connection module must be ordered separately	6ES7141-4BF00-0AB0	CM IO 4 x M12 connection module 4 M12 sockets for connecting digital or analog sensors or actuators to ET 200pro	6ES7194-4CA00-0AA0
16 DI digital input module 24 V DC, with module-specific diagnostics, including bus module. Connection module 6ES7194-4CB50-0AA0 must be ordered separately	6ES7141-4BH00-0AA0	CM IO 4 x M12 inverse connection module 4 sockets M12 for connection of digital actuators to ET 200pro (4 DO and 4 DO HF); 2 x M12 single assignment, 2 x M12 double assignment	6ES7194-4CA50-0AA0
4 DO digital output module 24 V DC, 2 A, with module-specific diagnostics, including bus module. Connection module must be ordered separately	6ES7142-4BD00-0AA0	CM IO 4 x M12 P connection module 4 M12 sockets for connecting digital sensors/actuators to ET 200pro; plastic version	6ES7194-4CA10-0AA0
4 DO High Feature digital output module 24 V DC, 2 A, with channel-specific diagnostics, including bus module. Connection module must be ordered separately	6ES7142-4BD00-0AB0	CM IO 8 x M12 connection module 8 M12 sockets for connecting digital sensors or actuators to ET 200pro	6ES7194-4CB00-0AA0
8 DO digital output module 24 V DC, 0.5 A, with module-specific diagnostics, including bus module. Connection module must be ordered separately	6ES7142-4BF00-0AA0	CM IO 8 x M12 P connection module 8 M12 sockets for connecting digital sensors/actuators to ET 200pro; plastic version	6ES7194-4CB10-0AA0
4 DI/4 DO digital input and output module 24 V DC, 0.5 A, with module-specific diagnostics, including bus module. Connection module must be ordered separately	6ES7143-4BF50-0AA0	CM IO 8 x M12D connection module 8 M12 sockets for connecting digital sensors or actuators to ET 200pro	6ES7194-4CB50-0AA0
Digital input and output module 4 DIO / 4 DO 24 V DC, 0.5 A, with module-specific diagnostics, including bus module. Connection module must be ordered separately	6ES7143-4BF00-0AA0	CM IO 8 x M8 connection module 8 sockets M8 for connection of digital sensors or actuators to ET 200pro	6ES7194-4EB00-0AA0
		CM IO 2 x M12 connection module 2 M12 8-pin sockets; for use with: EM 8 DI, 24 V DC and 8 DO, 24 V DC/0.5 A	6ES7194-4FB00-0AA0
		CM IO 1 x M23 connection module 1 socket M23; for use with: EM 8 DI, 24 V DC and 8 DO, 24 V DC/0.5 A	6ES7194-4FA00-0AA0
		Module identification labels For color coding of the CM IOs in the colors of white, red, blue and green; pack with 100 units each	6ES7194-4HA00-0AA0
		M12 sealing cap For protection of unused M12 connections with ET 200pro	3RX9802-0AA00
		Labels 20 x 7, pale turquoise, 340 items per pack	3RT1900-1SB20
		Y circular connector M12 For double connection of sensors via a single cable, 5-pin; cannot be used for F DI 4/8	6ES7194-1KA01-0XA0
		Y cable M12 For double connection of I/O by means of a single-cable on ET200, 5-pin	6ES7194-6KA00-0XA0
		M8 sealing cap For IP 67 modules	3RK1901-1PN00