

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6ES7132-0BH11-0XB0

ET 200 DIGITAL OUTPUT MODULE

Used with the applicable PLC System configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official manufacturer documentation

PROFIBUS-DP Distributed I/O



ET 200B (continued)

Design (continued)

The following digital electronics blocks are available for 120/230 V AC:

- 16DI; with 16 inputs
- 16DO; with 16 outputs for 0.5 A
- 16 RO; with 16 relay outputs
- 8DI/8RO; with 8 inputs and 8 relay outputs

The following analog electronics blocks are available:

- 4/8AI; with 4/8 inputs; ± 80 mV; ± 250 mV; ± 500 mV; ± 1000 mV; Pt100, Ni100, thermocouples.
- 4A1; with 4 inputs; ± 1.25 V; + 2.5V; ± 10 V; 0 (4) to 20 mA.
- 4A0; with 4 outputs; ± 10 V; +10V; ± 20 mA; 0 (4) to 20 mA.

A compensation box is also required to connect thermo-couples to analog electronics blocks.

Addressing

The address of the compact ET200B I/O station is set on the terminal block using two decimal switches.

Principle of operation

The inputs and outputs of the compact ET 200B block can be accessed from the user program in the programmable controller in the same manner as the inputs and outputs of the central controller.

The communication across PROFIBUS is handled completely by the master interface module in the central controller and the integrated PROFIBUS-DP interface in the ET 200B.

Trouble-free ET 200B operation is verified by way of diagnostic functions.

The ET 200B diagnostics:

- Short-circuits (outputs)
- Bus errors, i.e. faulty data transmission and
- 24 V DC load voltage supply.

The diagnostic data is evaluated as follows:

- At the block by the diagnostic LED on the ET 200B
- At the block with direct connection of a programming device or PC with COM PROFIBUS parameterization software (included in both TISOFT and SoftShop programming packages)
- At the block with direct connection of an ET 200 handheld unit
- Centrally via the CPU in the programmable controller with the STEP 5 and STEP 7 user program

ET 200B with hardware disable

One version of the digital 8DI/8DO modules allows the outputs to be disabled directly as a result of a parameterizable signal level of a corresponding input.

This allows a fast, reproducible response to time critical events.

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Parameterization

When an ET 200B is connected to master modules not parameterized with COM PROFIBUS (operation on third-party master modules), a fixed pre-assigned GSD file can be loaded into the configuring tool of the third-party manufacturer and can be used for simple parameterization of the station.



PROFIBUS-DP Distributed I/O

ET 200B (continued)

Technical specifications

Electronics blocks (digital inputs)	6ES7 131-0BH00-0XB0	6ES7 131-0BL00-0XB0	6ES7 131-0BL10-0XB0	6ES7 131-0HF00-0XB0
Number of inputs	16	32	32	16
Isolation	No	No	No	Yes
Input voltage U _E				
• Rated value	24 V DC	24 V DC	24 V DC	120/230 V AC
• For signal "0"	-30 to +5 V	-30 to +5 V	-30 to +5 V	0 to 40 V
• For signal "1"	+13 to 30 V	+13 to 30 V	+13 to 30 V	+85 to 264 V
Input current with signal "1"	4 mA	4 mA	4 mA	3 to 16 mA
Delay of inputs	2 to 3.5 ms	3 ms	0.2 ms	0 to 25 ms
Data transfer rate	12 Mbit/s	12 Mbit/S	12 Mbit/S	12 Mbit/s
Cable length	max. 100 m	100 m	100 m	600 m
Sensor supply				
• Voltage	18.5 to 30 V	18.5 to 30V	18.5 to 30 V	—
• Current	0.5 A	1 A	1 A	—
Terminal block	TB1/DC, TB1-4/DC, TB3/DC, TB3-4/DC	TB2/DC, TB2-4/DC, TB4/DC, TB4-4/DC	TB2/DC, TB2-4/DC, TB4/DC, TB4-4/DC	TB6/AC
Electronics blocks (digital outputs)	6ES7 132-0BH01-0XB0	6ES7 132-0BH11-0XB0	6ES7 132-0BL01-0XB0	6ES7 132-0HF00-0XB0
Number of outputs	16	16	32	16
Isolation	No	Yes	Yes	Yes
Output voltage U _A				
• Rated value	24 V DC	24 V DC	24 V DC	120/230 V AC
• With signal "0"	2 V (no load)	2 V (no load)	2 V (no load)	—
• With signal "1"	U _E -3V	U _E -3V	U _E -3V	—
Output Current	2 x 2 A and 6 x 0.5 A per group	2 A; in groups of 4	0.5 A; in groups of 8	0.5 A in groups of 4
Total current per group	max. 4 A	4 A	2 A	—
Short-circuit protection	Electronic	Electronic	Electronic	Electronic
Data transfer rate	max. 12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Cable length	max. 100 m	100 m	100 m	600 m
Switching frequency				
• With resistive load	max. 100 Hz	100 Hz	100 Hz	10 Hz
• With inductive load	max. 0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• With lamp load	max. 8 Hz	8 Hz	8 Hz	1 Hz
Terminal block	TB1/DC, TB1-4/DC, TB3/DC, TB3-4/DC	TB2/DC, TB2-4/DC, TB4/DC, TB4-4/DC	TB2/DC, TB2-4/DC, TB4/DC, TB4-4/DC	TB6/AC
Electronics blocks (mixed module)	6ES7 133-0BN01-0XB0	6ES7 133-0BN11-0XB0	6ES7 133-0BH01-0XB0	6ES7 133-0HH00-0XB0 ¹⁾
Number of inputs	24	24	8	8
Isolation	No	No	No	Yes
Input voltage U _E				
• Rated value	24 V DC	24 V DC	24 V DC	120/230 V AC
• For signal "0"	-30 to +5 V	-30 to +5 V	-30 to +5 V	0 to 40 V
• For signal "1"	+13 to 30 V	+13 to 30 V	+13 to 30 V	+85 to 264 V
Input current with signal "1"	4 mA	4 mA	4 mA	3 to 16 mA
Delay of inputs	3 ms	0.2 ms	2 to 3.5 ms	0 to 25 ms
Cable length	max. 100 m	100 m	100 m	600 m
Data transfer rate	max. 12 Mbit/s	12 Mbit/S	12 Mbit/S	12 Mbit/s
Number of outputs	8	8	8	8 (relay; 2 high-current and 6 low-current)
Isolation	Yes	Yes	No	Yes
Output voltage U _A				
• Rated value	24 V DC	24 V DC	24 V DC	120 V AC
• With signal "0"	2 V (no load)	2 V (no load)	2 V (no load)	24 to 150 V DC
• With signal "1"	U _E -3V	U _E -3V	U _E -3V	—
Output Current	0.5 A; in one group	0.5 A; in one group	0.5 A; in one group	4 A (2 connections) 2 A (6connections)
• Total current per group	max. 2 A	2 A	2 A	—
• Total switching current	max. —	—	—	16 A
Short-circuit protection	max. Electronic	Electronic	Electronic	No
Switching Frequency				
• With resistive load	max. 100 Hz	100 Hz	100 Hz	10 Hz
• With inductive load	max. 0.5 Hz	0.5 Hz	0.5 Hz	2 Hz
• With lamp load	max. 8 Hz	8 Hz	8 Hz	—
Cable length	max. 100 m	100 m	100 m	100 m
Terminal block	TB2/DC, TB2-4/DC, TB4/DC, TB4-4/DC	TB2/DC, TB2-4/DC, TB4/DC, TB4-4/DC	TB1/DC, TB1-4/DC, TB3/DC, TB3-4/DC	TB6/AC

¹⁾ 230 V AC (24 V to 150 V DC) available soon

PROFIBUS-DP

Distributed I/O



ET 200B (continued)

Technical specifications (continued)				
Electronics blocks (mixed module) (continued)		6ES7 133-0BL00-0XB0		
Number of inputs		16		
Isolation		No		
Output voltage U_E		24 V DC		
• Rated value		-30 to + 5 V		
• For signal "0"	max.	+ 13 to 30 V		
• For signal "1"	max.	4 mA		
Input current with Signal "1"		3 ms		
Delay of inputs		100 m		
Cable length		12 Mbit/s		
Data transfer rate				
Number of outputs		16		
Isolation		Yes		
Output voltage U_A rated value		24 V DC		
Output current		0.5 A; in groups of 8		
		8 x 0.5 A per group		
• Total current per group	max.	2 A		
Short-circuit protection	max.	Electronic		
Switching Frequency		100 Hz		
• With resistive load	max.	0.5 Hz		
• With inductive load	max.	8 Hz		
• With lamp load	max.	100M		
cable length	max.	TB2/DC, TB2-4/DC,		
Terminal block		TB4/DC, TB4-4/DC		
Electronics blocks (relay modules)		6ES7 132-0GF00-0XB0	6ES7 132-0HH00-0XB0 ¹⁾	
Number of outputs		8 (relays)	16 (relays; 4 high-current and 12 low-current)	
Isolation		Yes; in groups of 1	Yes; in groups of 1	
Output voltage U_A		24 V to 60 V DC	120 V AC	
• Rated value			61 to 150 V DC	
Output current		2A with 24 V DC	4 A (2 connections)	
			2 A (12 connections)	
Short-circuit protection		No	No	
Data transfer rate		12 Mbit/s	12 Mbit/s	
Cable length		100 m	600 m	
Switching frequency				
• Resistive	max.	10 Hz	10 Hz	
• Inductive	max.	2 Hz	2 Hz	
Terminal block		TB1/DC, TB1-4/DC, TB3/DC, TB3-4/DC	TB6/AC	
Electronics blocks (analog inputs/outputs)		6ES7 134-0KH01-0XB0	6ES7 134-0HF01-0XB0	6ES7 134-0HF01-0XB0
Number of inputs		8 (voltage/thermocouples or 4 (Pt 100, Ni 100))	4	—
Input ranges		±80 mV; ±250 mV; ±500 mV; ±1000 mV; Ni 100, Pt 100 thermocouples type J, K, L, E, N, T, U, R meas.	±1.25 V, ±2.5 V; ±5 V, ±10 V; 0 (4) to 20 mA	—
Isolation		No	No	—
Input resistance		10 MΩ	100 kΩ	—
• Voltage measurement	min.	—	125 Ω	—
• Current measurement		11 bit am't. + sign	11 bit am't. + sign	—
Resolution		12 bit two's compl.	12 bit two's compl.	—
Measuring and conversion principle		Integrating voltage/time conversion	Successive approximation	—
Encoding time		2.5/16.7/20/100 ms parameterizable	Max. 0.1 ms/channel	—
Overrange		17.5%	—	—

¹⁾ 230 V AC (61 V to 150 V DC) available soon



PROFIBUS-DP Distributed I/O

ET 200B (continued)

Technical specifications (continued)				
Electronics blocks (digital inputs) Analog inputs/output (continued)		6ES7 134-0KH01-0XB0	6ES7 134-0HF01-0XB0	6ES7 135-0HF01-0XB0
Data transfer rate	max.	12 Mbit/s	12 Mbit/s	12 Mbit/s
Cable length	max.	100 m	100 m	100 m
Number of outputs		—	—	4
Output ranges		—	—	±10 V; +10V; ±20 mA; 0 (40) to 20 mA
Isolation		—	—	No
Load resistance	max.	—	—	300Ω
Resolution		—	—	11 bit two's compl.
Conversion time		—	—	1 ms/channel
Overrange		—	—	17.5%
Short-circuit protection		—	—	Electronic
Type of connection		2 wire and 4 wire systems	2 wire system	2 wire and 4 wire systems
Terminal block		TB8	TB8	TB8
Terminal block and Electronics block		TB1/DC, TB1-4/DC, TB3/DC, TB3-4/DC	TB2/DC, TB2-4/DC, TB4/DC, TB4-4/DC	TB6/AC TB8
Supply voltage		24 V DC	24 V DC	120/230 V AC
• Rated value		18.5 to 30 V	18.5 to 30 V	85 to 264 V
• Permissible range (including ripple)				
Connection method		TB1: screw-type terminals TB3: spring-type terminals	TB2: screw-type terminals TB4: spring-type terminals	Screw-type terminals Spring-type terminals
Isolation between electronics block and PROFIBUS-DP		Yes	Yes	Yes
Current consumption with 24 V DC				
• Internal (logic) approx.		100 to 170 mA	100 to 200 mA	60 to 210 mA
Ambient temperature		0 to 60° C/ 32°F to 140°F	0 to 60° C/ 32°F to 140°F	0 to 60° C/ 32°F to 140°F
Degree of protection		IP 20	IP 20	IP 20
Dimensions (WxHxD) in mm/in		160 x 130 x 59/ 6.24 x 5.07 x 2.3	235 x 130 x 50/ 9.1 x 5.07 x 2.3	160 x 130 x 59/ 6.24 x 5.07 x 2.3
Weight (complete) approx.		0.6 kg	0.8 kg	0.6 kg

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Technical specifications general			
Transmission rate	max.	12 Mbit/s	Degree of protection
Suitable electronics blocks		* Digital inputs • Digital outputs • Digital inputs/outputs • Analog inputs • Analog outputs	Ambient temperature on vertical wall (preferred mounting position) • With horizontal mounting • With other mounting
Connections		Screw-type and spring-loaded connections, fixed wiring: 3-wire and 4-wire connections.	Relative humidity
Galvanic isolation		Yes, between PROFIBUS-DP and internal electronics	Atmospheric pressure
Supply voltage		24 V DC 120/230 V AC	Mechanical stress • Vibrations • Shock
			IP 20 0 to 60°C/32°F to 140°F 0 to 40°C/32°F to 104°F 15 to 95% (RH severity level 2 in accordance with IEC 1131-2) 795 to 1080 hPa IEC 68, Part 2-6 10-57 Hz (const. amplitude 0.075 mm) 57-150 Hz (constant acceleration 1 g) IEC 68, Part 2-27 half-sine, 15 g, 11 ms

PROFIBUS-DP

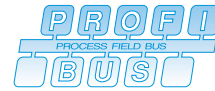
Distributed I/O



ET 200B (continued)

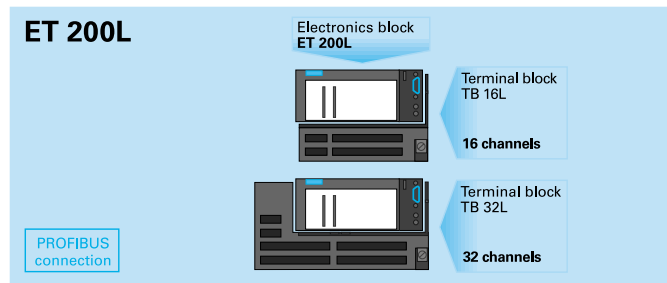
Ordering data			
Terminal block TB1/DC with 3 tier screw-type terminals ¹⁾ for digital 24 V DC electronics blocks with a width of 160 mm (e.g. 16DI) TB1-4/DC with 4-tier screw-type terminals ²⁾ for digital 24 V DC electronics blocks with a width of 160 mm (e.g. 16DI) TB2/DC with 3-tier screw-type terminals ¹⁾ for digital 24 V DC electronics blocks with a width of 235 mm (e.g. 32DI) TB2-4/DC with 4-tier screw-type terminals ²⁾ for digital 24 V DC electronics blocks with a width of 235 mm (e.g. 32DI) TB3/DC with 3-tier spring-type terminals ¹⁾ for digital 24 V DC electronics blocks with a width of 160 mm (e.g. 16DI) TB3-4/DC with 4-tier spring-type terminals ¹⁾ for digital 24 V DC electronics blocks with a width of 160 mm (e.g. 16DI) TB4DC with 3-tier spring-type terminals ¹⁾ for digital 24 V DC electronics blocks with a width of 235 mm (e.g. 32DI) TB4-4/DC with 4-tier spring-type terminals ¹⁾ for digital 24 V DC electronics blocks with a width of 235 mm (e.g. 32DI) TB6/AC with 3-tier screw-type terminals ¹⁾ for digital 24 V DC electronics blocks with a width of 235 mm TB8 with spring-type terminals ¹⁾ for electronics blocks with analog inputs/outputs (analog terminal block) Bus connection plug for PROFIBUS Max. data trans.rate 12 Mbit/s, degree of protection IP 20; with vertical outgoing cable • without PG port • with PG port Mini fuse for terminal blocks (10 of each) • TR5-T; 1.6 A/125 V for TB1/DC, TB1-4/DC, TB#/DC, TB8 • TR5-T; 2.5 A/250 V for TB2/DC, TB2-4/DC, TB4/DC • TR5-T; 1.0 A/250 V for TB6/AC Shield connection element Auxiliary part for terminal block TB8; allows large-area shield connection with analog signals Terminal elements for cable connection to the shield connection element (2 of each); Shield diameter: • 2 x 2 to 6mm • 1 x 3 to 8 mm • 1 x 4 to 13 mm	6ES7 193-0CA10-0XA0 6ES7 193-0CA20-0XA0 6ES7 193-0CB10-0XA0 6ES7 193-0CB20-0XA0 6ES7 193-0CA30-0XA0 6ES7 193-0CA4X0-0XA0 6ES7 193-0CB30-0XA0 6ES7 193-0CB40-0XA0 6ES7 193-0CC10-0XA0 6ES7 193-0CD40-0XA0 6ES7 972-0BA10-0XA0 6ES7 972-0BB10-0XA0 6ES7 193-0DA00-0XA0 6ES7 193-0DB00-0XA0 6ES7 193-0DC00-0XA0 6ES7 193-0CD40-7XA0 6ES7 390-5AB00-0AA0 6ES7 390-5BA00-0AA0 6ES7 390-5CA00-0AA0	Electronics block with digital inp./outp. for 24 V DC 16DI: 16 inputs, width 160 mm 32DI: 32 inputs, width 235 mm • Input delay 3 ms • Input delay 0.2 ms 32DO: 32 outputs, width 235 mm 16DO: with 16 outputs • Output current 0.5 A/2A, width 160 mm • Output current 2A, width 235 mm 24DI/8DO: with 24 inputs and 8 outputs, width 235 mm • Input delay 3 ms • Input delay 0.2 ms 8DI/8DO: with 8 input and 8 outputs, 160 mm width 8DI/8DO: with 8 inputs and 8 outputs as well as integrated hardware disable of the outputs, width 170 mm 16DI/16DO: with 16 inputs and 16 outputs, width 235mm 8RO: with 8 relay outputs 24 to 60 V DC, width 160 mm Electronics Block with dig. inp./outp. for 120/230 V AC, width 235 mm 16DI: with 16 inputs 16DO: with 16 outputs 16RO: with 16 relay outputs 8DI/8RO: with 8 inputs and 8 relay outputs Electronics block with analog inputs/outputs, width 160 mm 4I/8AI: with 4/8 inputs ±80 mV; ±250 mV; ±500 mV; ±1000 mV; Pt 100, Ni100, thermocouples type J, K, L, E, N, T, V 4AI: with 4 inputs; ±1.25 V; ±2.5 V; ±5 V; ±10 V; 0 (4) to 20 mA 4AO: with 4 outputs ±10 V; +10 V; ±20 mA; 0 (4) to 20 mA Labeling strips (DIN A4) For electronics blocks 8DI/8DO, 16 DI and 16 DO (10 of each) For electronics blocks 32 DI, 24 DI/8DO, 32 DO and 16DI/16DO (7 of each) For electr. blocks 8 RO (10 of each) For electr. blocks 16 DO/2A (7 of each) For electr. blocks 120/230 V AC (7 of each) For analog electr. blocks (10 of each) Manual for the ET 200B I/O distributed station German English French Spanish Italian	6ES7 131-0BH00-0XB0 6ES7 131-0BL00-0XB0 6ES7 131-0BL10-0XB0 6ES7 132-0BL01-0XB0 6ES7 132-0BH01-0XB0 6ES7 132-0BH11-0XB0 6ES7 133-0BN01-0XB0 6ES7 133-0BN11-0XB0 6ES7 133-0BH01-0XB0 6ES7 133-0BH10-0XB0 6ES7 133-0BL00-0XB0 6ES7 132-0GF00-0XB0 6ES7 131-0HF00-0XB0 6ES7 132-0HF00-0XB0 6ES7 132-0HH00-0XB0 6ES7 133-0HH00-0XB0 6ES7 134-0KH01-0XB0 6ES7 134-0HF01-0XB0 6ES7 135-0HF01-0XB0 6ES7 193-0BB00-0XA0 6ES7 193-0BD00-0XA0 6ES7 193-0BA00-0XA0 6ES7 193-0BC00-0XA0 6ES7 193-0BF00-0XA0 6ES7 193-0BE00-0XA0 6ES5 998-4ET11 6ES5 998-4ET21 6ES5 998-4ET31 6ES5 998-4ET41 6ES5 998-4ET51

PROFIBUS-DP Distributed I/O

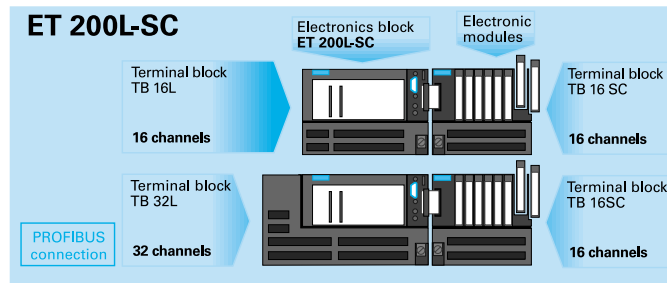


ET 200L

Block I/O
not expandable



Block I/O
expandable
with SIMATIC
Smart Connect



One and Two point
modular I/O

NEW!

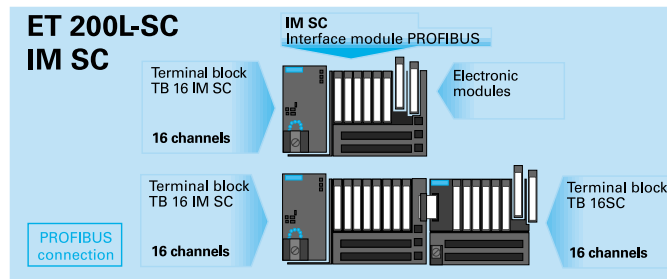


Fig. 4/6 ET 200L complete system

Application

The ET 200L is a small, compact I/O station with environmental rating IP 20.

The ET 200L is used primarily in areas requiring few inputs/outputs as well as in cases where space is restricted.

The ET 200L is a passive station (slave) connected to the PROFIBUS-DP.

It is available with digital inputs or outputs in 3 form factors:

Block I/O:
ET 200L (Not expandable)

Modular I/O:
ET 200L-SC:
ET 200L terminal block with special electronics block, expandable with one SIMATIC Smart Connect (SC) TB16SC terminal block. This additionally allows discretely modular expansion with up to 16 digital and analog input/output channels.

Finely graded modular I/O
IM SC:

PROFIBUS-DP connection directly to the smart connect (SC) electronic modules. The IM SC terminal block (TB16IM-SC) accommodates 8 SC modules with up to 16 channels of digital or analog signals. The TB 16IM-SC is also expandable to the TB16SC which allows an additional 8 SC modules.