7.3.7 Electronics Block ET 200B-8DI/8DO (6ES7 133-0BH01-0XB0)

Characteristics

The ET 200B-8DI/8DO electronics block has the following characteristics:

- 8 inputs, non-floating
- 8 outputs, non-floating
- Input voltage: 24 V DC
- Input delay: 3 ms
- Load voltage: 24 V DC
- Possible terminal blocks: TB1/DC, TB1-4/DC or TB3/DC

Dimensional Drawing

See Figure 7-18 for the precise dimensions.

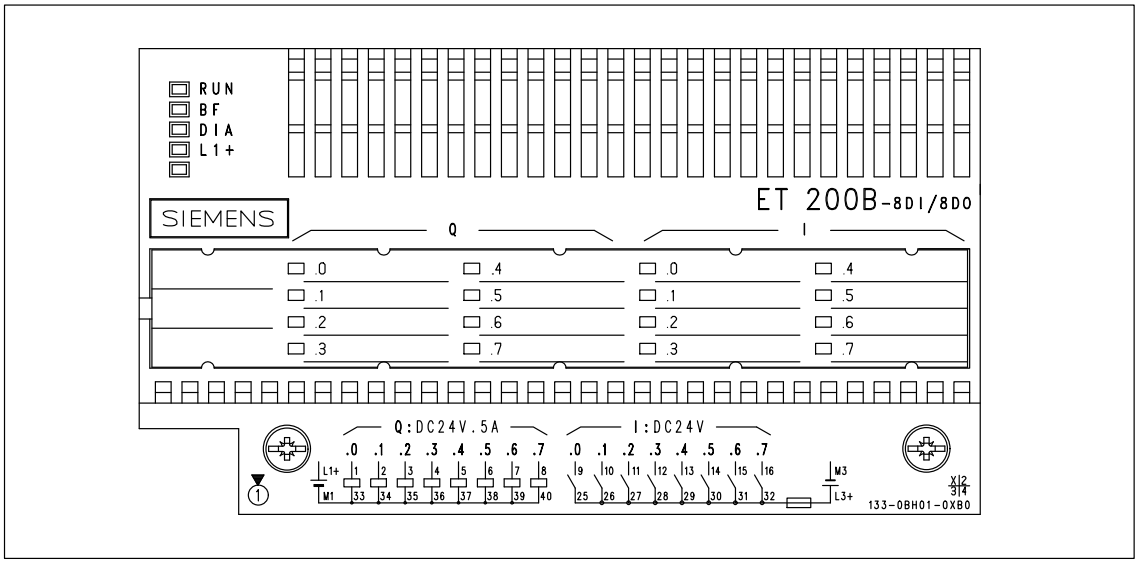


Figure 7-38 Front Elevation: ET 200B-8DI/8DO (6ES7 133-0BH01-0XB0)

Block Diagram

Simplified diagram of potential for the ET 200B-8DI/8DO and TB1/DC or TB3/DC:

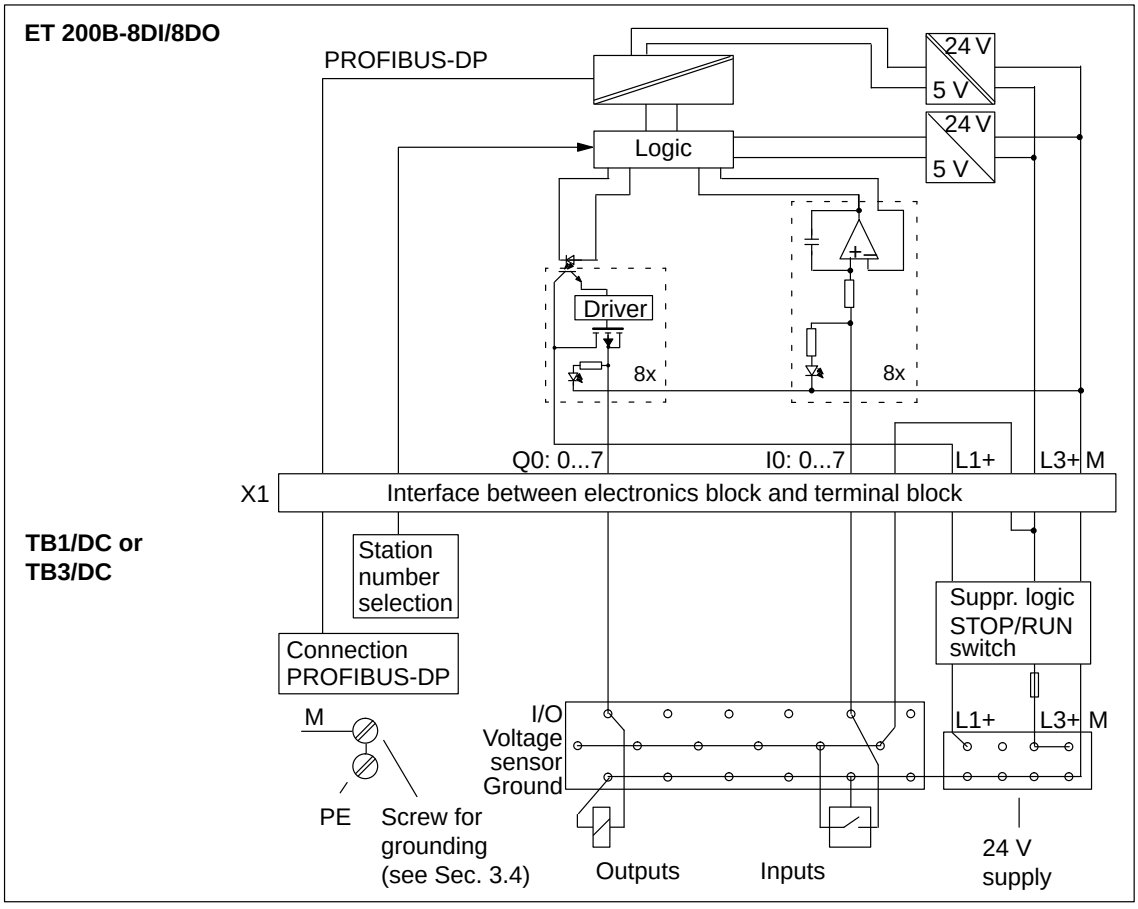


Figure 7-39 Block Diagram: ET 200B-8DI/8DO (6ES7 133-0BH01-0XB0) and TB1/DC or TB3/DC

Block Diagram Simplified diagram of the potential for the ET 200B-8DI/8DO and TB1-4/DC:

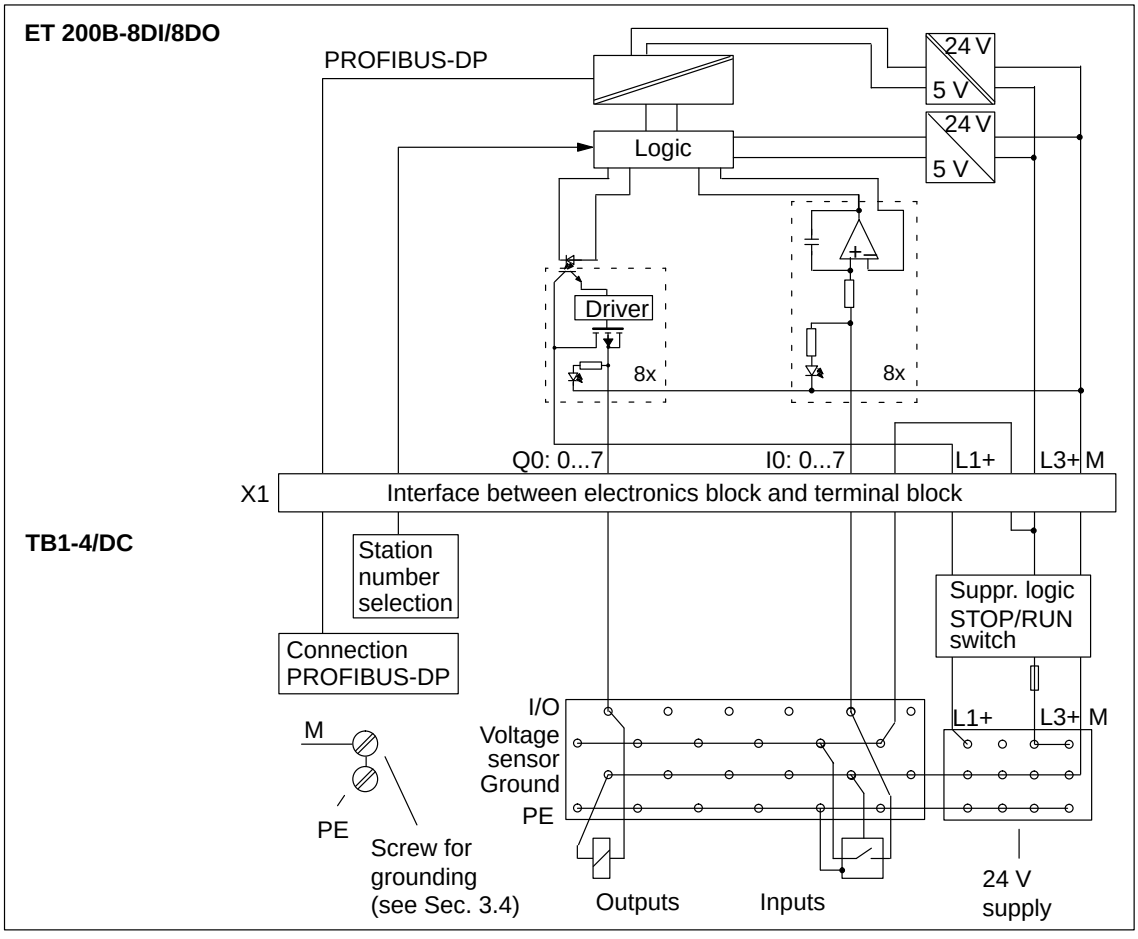


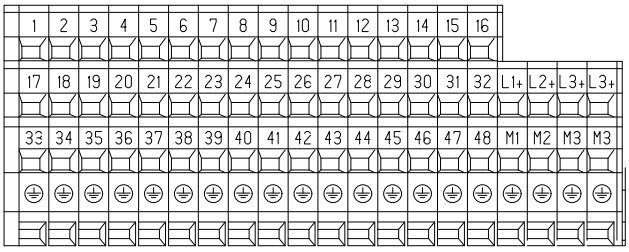
Figure 7-40 Block Diagram: ET 200B-8DI/8DO (6ES7 133-0BH01-0XB0) and TB1-4/DC

Pin Assignment

The table below shows the pin assignment of the terminal blocks for ET 200B-8DI/8DO. For the sake of clarity, the table also shows the terminal numbering of the terminal blocks, taking the TB1-4/DC by way of example.

Table 7-9 Pin Assignment of Terminal Blocks TB1/DC; TB1-4/DC and TB3/DC for ET 200B-8DI/8DO (6ES7 133-0BH01-0XB0)

Terminal numbering TB1-4/DC



Terminal tier 1		Terminal tier 2		Terminal tier 3		Terminal tier 4[1]	
1	Q0: Output .0	17	24 V (sensor voltage, internally jumpered, connected to L3+)	33	Ground (outputs) (internally jumpered, connected to M1, M2, M3)	⏚	PE (internally jumpered, but not connected to PE screw)
2	Q0: Output .1	18		34		⏚	
3	Q0: Output .2	19		35		⏚	
4	Q0: Output .3	20		36		⏚	
5	Q0: Output .4	21		37		⏚	
6	Q0: Output .5	22		38		⏚	
7	Q0: Output .6	23		39		⏚	
8	Q0: Output .7	24		40		⏚	
9	I0: Input .0	25		41	Ground (sensor voltage) (internally jumpered, connected to M1, M2, M3)	⏚	
10	I0: Input .1	26		42		⏚	
11	I0: Input .2	27		43		⏚	
12	I0: Input .3	28		44		⏚	
13	I0: Input .4	29		45		⏚	
14	I0: Input .5	30		46		⏚	
15	I0: Input .6	31		47		⏚	
16	I0: Input .7	32		48		⏚	
-		L1+	Voltage supply **L1+** for channel group Q0: .0 to .7	M1	Ground supply **M1** for channel group Q0: .0 to .7	⏚	PE (internally jumpered, but not connected to PE screw)
-		L2+	not used	M2	not used	⏚	
-		L3+	Voltage supply, internal logic **and** sensor voltage 24 V	M3	Ground connection, internal logic **and** sensor voltage	⏚	
-		L3+	Voltage supply, internal logic **and** sensor voltage 24 V	M3	Ground connection, internal logic **and** sensor voltage	⏚	

[1] TB1-4/DC only

Important Note on Wiring

The following notes are important as regards the wiring of the ET 200B-8DI/8DO:

- The terminals for PE on the 4-tier terminal block are not connected to the PE connection of terminal block TB1-4/DC.
- L1+ and L3+ are **not** internally interconnected.
- L3+ and terminals 25 ... 32 are interconnected, as are M1, M2, M3 and terminals 33 ... 48.
- The two L3+ terminals are also interconnected.

Fuse

The 24 V sensor supply is protected by fuse F1 (1.6 A) in the terminal blocks. Nevertheless, make sure that the current does not exceed the specifications in the technical data for the electronics block.

Technical Data

The technical data of electronics block ET 200B-8DI/8DO is listed in the tables below.

Technical specifications	
Baud rates*	9.6/19.2/93.75/187.5/500/ 1500/3000/6000/ 12000 kbaud
Bus protocol	PROFIBUS-DP
FREEZE and SYNC capability	Yes
Galvanic isolation to SINEC L2-DP bus	Yes
Power losses	Max. 3.8 W
Weight (EB and TB)	Approx. 650 g (22.75 oz.)
Dimensions (EB and TB: W x H x D)	160 x 130 x 60 mm (6.24 x 5.07 x 2.34 in.)
Diagnostics functions	
Voltage monitoring	Green “RUN” LED
Bus monitoring SINEC L2-DP	Red “BF” LED
Group diagnostics for short-circuit, load voltage failure	Red “DIA” LED
Load voltage monitoring	Green “L1+” LED
Status of inputs and outputs	Green LEDs
Supply voltage for sensor supply, load voltage supply and internal logic	
Supply voltage (L1+,L3+)	
• Rated value	24 V DC
• Permissible range	18.5 to 30.2 V
• Value for t < 0.5 s	35 V
Current consumption from L3+	
• Logic	Typ. 70 mA
• Sensors	Max. 500 mA
I^2t (for inrush current)	$\leq$ 0.05 A^2s
Inputs	
Number of inputs	8
Galvanic isolation to internal electronic circuits	No
Input voltage	
• Rated value	24 V DC
• For “0” signal	– 30 V to 5 V
• For “1” signal	13 V to 30 V

Inputs, continued	
Input current for “1” signal	Typ. 4 mA at 24 V Min. 2 mA
Delay of inputs	3 ms
Connection of 2-wire BERO	Possible
• Quiescent current	$\leq$ 1.5 mA
Connection of mechanical switches	Possible
Cable length of sensors	
• Unshielded	Max. 100 m (328 ft.)
Outputs	
Number of outputs	8
Galvanic isolation	No
• In groups of	8
Output voltage	
• For “0” signal	Max. 2 V (idle)
• For “1” signal	Min. (supply voltage – 3 V)
Output current	
• For “0” signal	Max. 1 mA
• For “1” signal	Max. 0.5 A
Delay of outputs	
• From “0” to “1”	Approx. 20 µs
• From “1” to “0”	Max. 0.5 ms
Switching frequency	
• Resistive load	Max. 100 Hz
• Inductive load	Max. 0.5 Hz
• Lamp load	Max. 8 Hz
Short-circuit protection	Yes
Load current	
• Total current	Max. 2 A
Lamp load	Max. 5 W
Setting a digital input	Possible
Limit of inductive cutoff voltage	Typ. (L1+) – 55 V
Cable length	Max. 100 m (328 ft.)

* In operation with the IM 308-B, the maximum baud rate is 1500 kbaud.