

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6ES7953-8LL31-0AA0

SIMATIC MICRO MEMORY CARD

Used with the applicable PLC System configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official manufacturer documentation

SIMATIC S7-400 advanced controller

Function modules

FM 458-1 DP application module

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FM 458-1 DP basic module**Overview**

- Basic module for handling arithmetic, closed-loop control and open-loop control tasks
- PROFIBUS DP interface for connection of distributed I/O and drives
- Modular design with expansion modules for I/O and communication

Technical specifications

Article number	6DD1607-0AA2 FM458-1 DP APPLICATION MODULE
Product type designation	
Supply voltage	
Rated value (DC)	
• 5 V DC	Yes
• 24 V DC	Yes
permissible range (ripple included), lower limit (DC)	4.8 V
permissible range (ripple included), upper limit (DC)	5.25 V
Input current	
Current consumption, typ.	1.5 A
Current consumption, max.	3 A
Memory	
Backup	
• present	Yes; SRAM
Battery	
Backup battery	
• Battery operation	Yes
• Backup current, max.	15 µA
Hardware configuration	
Slots	
• Required slots	1
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
• Resolution	500 ms
Digital inputs	
Number of digital inputs	8; Connector X2
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-1 to +6 V
• for signal "1"	13.5 V to 33 V

Article number	6DD1607-0AA2 FM458-1 DP APPLICATION MODULE
Input current	
• for signal "0", max. (permissible quiescent current)	0 mA
• for signal "1", typ.	3 mA; at 24 V
Input delay (for rated value of input voltage) for standard inputs	
- at "0" to "1", max.	5 µs
Interfaces	
PROFIBUS DP	
• equidistance	Yes; With connection to interrupt tasks
• Direct data exchange (slave-to-slave communication)	Yes
Interrupts/diagnostics/ status information	
Alarms	
• Alarms	Yes
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	No; only via optional interface modules
Weights	
Weight, approx.	1 000 g

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FM 458-1 DP basic module

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Ordering data	Article No.		Article No.
FM 458-1 DP application module Basic module for computing, closed-loop control and open-loop control tasks; with PROFIBUS DP interface	6DD1607-0AA2	RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbit/s Without PG interface With PG interface	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0
Micro Memory Card for FM 458-1 DP basic module 2 MB 4 MB 8 MB	6ES7953-8LL31-0AA0 6ES7953-8LM31-0AA0 6ES7953-8LP31-0AA0	RS 485 bus connector with angled cable outlet Max. transfer rate 12 Mbit/s Without PG interface With PG interface	6ES7972-0BA42-0XA0 6ES7972-0BB42-0XA0
FM 458-1 DP Know-How-Protect for protection of technological application modules against unauthorized copying	6DD1607-0GA0	RS 485 bus connector with 90° cable outlet for FastConnect connection system Max. transfer rate 12 Mbit/s Without PG interface • 1 unit • 100 units With PG interface • 1 unit • 100 units	6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0
SC 64 interface cable To connect FM 458-1 to the serial port of a programming device/ PC	6DD1684-0GE0	PROFIBUS FastConnect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m Preferred lengths: 20 m 50 m 100 m	6XV1830-0EH10 6XV1830-0EN20 6XV1830-0EN50 6XV1830-0ET10
SB10 interface module To connect 8 binary I/Os to FM 458-1 DP	6DD1681-0AE2		
SB61 interface module To connect 8 binary I/Os to FM 458-1 DP, input voltage: 24/48 V DC	6DD1681-0EB3		
SU12 interface module To connect 10 signals to FM 458-1 DP	6DD1681-0AJ1		

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EXM 438-1 input/output expansion**Overview**

- Optional plug-in expansion module for the FM 458-1 DP basic module
- For input and output of time-critical signals
- With digital and analog inputs/outputs
- Incremental and absolute value encoders can be connected
- 4 high-resolution analog outputs
- Fan-free operation up to 40°C

Technical specifications

Article number	6DD1607-0CA1 EXM 438-1 I/O EXPANSION
Product type designation	
Supply voltage	
Rated value (DC)	
• 5 V DC	Yes
• 24 V DC	Yes; to be set up externally
Input current	
Current consumption, typ.	1.5 A
Encoder supply	
Output voltage	about 14 V (non-isolated)
short-circuit protection	Yes; Electronic
Output current	
• Rated value	100 mA
Hardware configuration	
Slots	
• Required slots	1
Digital inputs	
Number of digital inputs	16
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-1 to +6 V or input open
• for signal "1"	+13 to +33 V
Input current	
• for signal "0", max. (permissible quiescent current)	0 mA
• for signal "1", typ.	3 mA
Input delay (for rated value of input voltage) for standard inputs	
- at "0" to "1", max.	200 µs
Digital outputs	
Number of digital outputs	8
short-circuit protection	Yes; electronic/thermal
• Response threshold, typ.	250 mA
Limitation of inductive shutdown voltage to	Supply voltage +1 V

Article number	6DD1607-0CA1 EXM 438-1 I/O EXPANSION
Output voltage	
• for signal "0", max.	3 V
• for signal "1", max.	Supply voltage -2.5 V
Output current	
• for signal "1" rated value	50 mA
• for signal "1" permissible range for 0 to 40 °C, min.	100 mA
• for signal "0" residual current, max.	20 µA
• Total switching current	80 % at 50 °C all outputs 50 mA
Output delay with resistive load	
• "0" to "1", max.	15 µs
Analog inputs	
Number of analog inputs	5; Differential inputs
Input ranges (rated values), voltages	
• -10 V to +10 V	Yes; -10 V: +/-4 LSB; to +10 V: +/-4 LSB (1 LSB = 4.88 mV)
• Input resistance (-10 V to +10 V)	470 kΩ
Analog outputs	
Number of analog outputs	8; 4 outputs 16 bit; 4 outputs 12 bit
Voltage output, short-circuit protection	Yes; relative to frame
Voltage output, short-circuit current, max.	16 bits: 27 mA; 12 bits: 100 mA
Output ranges, voltage	
• -10 to +10 V	Yes
Analog value creation	
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	4 AO: 16 bits, 4 AO: 12 bits, 5 AI: 12 bits
• Conversion time (per channel)	4 AO (16 bits): 2 µs; 4 AO (12 bits): 4 µs; 5 AI: 45 µs
Encoder	
Number of connectable encoders, max.	12; 8 incremental encoders (synchronizable), 4 absolute encoders