OFFICIAL MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

6ES7453-3AH00-0AE0

Siemens official documentation for the exact article number.

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Data sheet 6ES7453-3AH00-0AE0

SIMATIC S7-400, FM 453 FUNCTION MODULE FOR POSITIONING WITH SERVO AND STEPPER MOTORS (3 CHANNELS) INCL. CONFIG. PACKAGE ON CD

Figure similar

Supply voltage	
Auxiliary voltage 1L+, load voltage 2L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V; Dynamic 18.5 V
• permissible range, upper limit (DC)	28.8 V; dynamic 30.2 V
Input current	
from load voltage1L+, max.	1 A; with 24 V position encoder; 1 A for 5 V position encoder
from load voltage 2L+ to 4L+, max.	2 A; Per channel
from backplane bus 5 V DC, max.	1.6 A; Rated current
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	300 mA
• Cable length, max.	35 m; at max. 210 mA; 25 m at max. 300 mA
24 V encoder supply	
• 24 V	Yes

• Cable length, max.	100 m; at max. 300 mA
Power loss	
Power loss, typ.	8 W
Digital inputs	
Number of digital inputs	6; for each channel/axis
Functions	configurable
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5 V (max. 3 mA)
• for signal "1"	11 to 30 V (max. 7 mA)
Input delay (for rated value of input voltage)	
for standard inputs	
— at "0" to "1", max.	15 µs; via input voltage range, 8 µs at 24 V DC
— at "1" to "0", max.	45 µs; via input voltage range
Digital outputs	
Number of digital outputs	4; for each channel/axis
Functions	configurable
Short-circuit protection	Yes
Output voltage	
• Rated value (DC)	24 V
• for signal "1", min.	UP - 0,3 V
Output current	
• for signal "1" rated value	0.5 A; at 40 °C; 0.1 A at 60 °C
• for signal "1" permissible range for 0 to 40 °C, min.	5 mA
• for signal "1" permissible range for 0 to 40 °C, max.	0.6 A
• for signal "1" permissible range for 40 to 60 °C, min.	5 mA
• for signal "1" permissible range for 40 to 60 °C, max.	0.12 A
• for signal "0" residual current, max.	2 mA
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.25 Hz
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Absolute encoder (SSI)	Yes
Encoder signals, incremental encoder (symmetrical)	
• Input signal	5 V difference signal (phys. RS 422)

• Input frequency, max.	1 MHz; for 10 m cable length; 0.5 MHz for 35 m cable length
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Clock frequency, max.	1.25 Mbit/s at 10 cable length (2.5 Mbit/s available soon)
• Cable length, shielded, max.	250 m; At max. 156 kbit/s
Drive interface	
Signal Input	
• Type	Drive interface step, signal input "READY 1"
• Function	"Power section ready" where Ui < 1 V, Ii = 2mA
Analog drive	
Setpoint signal	
— Rated voltage range	-10 to +10V
— Output current	-3 to +3 mA
— Cable length, max.	30 m
Output controller enable	
— Switching voltage, max.	50 V
— Switching current, max.	1 A
— Switching capacity, max.	30 V·A
Stepper drive	
• Differential output voltage, min.	2 V; RL = 100 Ohm
• Differential output voltage for signal "0", max.	1.1 V; Io = 30 mA
• Differential output voltage for signal "1", min.	3.7 V; Io = -30 mA
• Load resistance, min.	55 Ω
• Output current, max.	60 mA
• Pulse frequency	200 kHz; 500 kHz available soon
• Cable length, shielded, max.	35 m; 35 m with symm. transmission; 10 m with asymm. transmission
Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	Yes; Optocoupler
Potential separation digital outputs	
• Potential separation digital outputs	Yes; Optocoupler
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	55 °C
Ambient temperature during storage/transportation	

• min.	-40 °C
• max.	70 °C

Connection method	
required front connector	1x 48-pin

Dimensions	
Width	50 mm
Height	290 mm
Depth	210 mm

Weights	
Weight, approx.	1 620 g

last modified: 03/30/2017