SIEMENS

Data sheet 6ES7138-6CG00-0BA0

SIMATIC ET 200SP, TM timer DIDQ 10x 24V time-controlled digital inputs and outputs 4 DI, 6DQ with time stamp Count, PWM, oversampling

General information	
Product type designation	TM Timer DIDQ 10x24V
HW functional status	From FS03
usable BaseUnits	BU type A0
Product function	
● I&M data	Yes; I&M 0
● Isochronous mode	Yes
Engineering with	
● STEP 7 TIA Portal configurable/integrated from version	V13 Update 3
● STEP 7 configurable/integrated from version	V5.5 SP3 / -
Supply voltage	
Load voltage L+	
● Rated value (DC)	24 V
● permissible range, lower limit (DC)	19.2 V
● permissible range, upper limit (DC)	28.8 V
● Reverse polarity protection	Yes; against destruction
Input current	
Current consumption, max.	50 mA; without load
Encoder supply	
Number of outputs	1
24 V encoder supply	
● 24 V	Yes; L+ (-0.8 V)
● Short-circuit protection	Yes
● Output current, max.	500 mA; Observe derating
Power loss	
Power loss, typ.	1.5 W
Address area	
Address space per module	
● Inputs	26 byte
● Outputs	32 byte
Hardware configuration	
Automatic encoding	Yes
● Mechanical coding element	Yes
● Type of mechanical coding element	type B
Digital inputs	
Number of digital inputs	4
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131,	Yes

type 3	
Digital input functions, parameterizable	
● Digital input with time stamp	Yes
— Number, max.	4
● Counter	Yes
— Number, max.	3
● Counter for incremental encoder	Yes
— Number, max.	1
● Digital input with oversampling	Yes
— Number, max.	4
● HW enable for digital input	Yes
— Number, max.	1
● HW enable for digital output	Yes
— Number, max.	3
Input voltage	
● Type of input voltage	DC
● Rated value (DC)	24 V
● for signal "0"	-5 ... +5 V
● for signal "1"	+11 to +30V
● permissible voltage at input, min.	-30 V; -5 V continuous, -30 V brief reverse polarity protection
● permissible voltage at input, max.	30 V
Input current	
● for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
● Minimum pulse width for program reactions	3 µs for parameterization "none"
for standard inputs	
— parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 ms
— at "0" to "1", min.	4 µs
— at "1" to "0", min.	4 µs
Cable length	
● shielded, max.	1 000 m; Depending on sensor, cable quality and rate of change
● unshielded, max.	600 m; Depending on sensor, cable quality and rate of change
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	6
Current-sinking	Yes; With High Speed output
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
● Response threshold, typ.	1.7 A with Standard output, 0.5 A with High Speed output
Limitation of inductive shutdown voltage to	-0.8 V
Digital output functions, parameterizable	
● Digital output with time stamp	Yes
— Number, max.	6
● PWM output	Yes
— Number, max.	6
● Digital output with oversampling	Yes
— Number, max.	6
Switching capacity of the outputs	
● with resistive load, max.	0.5 A; 0.1 A with High Speed output
● on lamp load, max.	5 W; 1 W with High Speed output
Load resistance range	
● lower limit	48 Ω; 240 ohm with High Speed output
● upper limit	12 kΩ
Output voltage	
● Type of output voltage	DC
● for signal "0", max.	1 V; With High Speed output
● for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
● for signal "1" rated value	0.5 A; 0.1 A with High Speed output, observe derating

● for signal "1" permissible range, max.	0.6 A; 0.12 A with High Speed output, observe derating
● for signal "1" minimum load current	2 mA
● for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
● "0" to "1", max.	1 µs; With High Speed output, 5 µs with Standard output
● "1" to "0", max.	1 µs; With High Speed output, 6 µs with Standard output
Switching frequency	
● with resistive load, max.	10 kHz
● on lamp load, max.	10 Hz
Total current of the outputs	
● Current per module, max.	3.5 A; Observe derating
Cable length	
● shielded, max.	1 000 m; depending on load and cable quality
● unshielded, max.	600 m; depending on load and cable quality
Encoder	
Connectable encoders	
● Incremental encoder (asymmetrical)	Yes
● 24 V initiator	Yes
● 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
● Input voltage	24 V
● Input frequency, max.	50 kHz
● Counting frequency, max.	200 kHz; with quadruple evaluation
● Cable length, shielded, max.	600 m; Depending on input frequency, encoder and cable quality; max. 200 m at 50 kHz
● Incremental encoder with A/B tracks, 90° phase offset	Yes
● pulse encoder	Yes
Interface types	
● Input characteristic curve in accordance with IEC 61131, type 3	Yes
Isochronous mode	
Bus cycle time (TDP), min.	375 µs
Jitter, max.	1 µs
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
● Diagnostic alarm	Yes
Diagnoses	
● Monitoring the supply voltage	Yes
● Short-circuit	Yes
Diagnostics indication LED	
● Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
● Channel status display	Yes
● for module diagnostics	Yes; green/red DIAG LED
Integrated Functions	
Counter	Yes
● Number of counters	3
● Counting frequency, max.	200 kHz; with quadruple evaluation
Counting functions	
● Continuous counting	Yes
Potential separation	
Potential separation channels	
● between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	

Suitable for safety functions	No
Ambient conditions	
Ambient temperature during operation	
● horizontal installation, min.	-30 °C
● horizontal installation, max.	60 °C; Observe derating
● vertical installation, min.	-30 °C
● vertical installation, max.	50 °C; Observe derating
Altitude during operation relating to sea level	
● Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Decentralized operation	
to SIMATIC S7-1500	Yes
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	45 g

last modified: 12/28/2021