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Data sheet 6ES7138-6DB00-0BB1



SIMATIC ET 200SP, TM Pulse 2x24V PWM and pulse output 2 channels 2 A for proportional valves and DC motors

General information	
Product type designation	TM Pulse 2x24 V
HW functional status	From FS03
Firmware version	V1.0
● FW update possible	Yes
usable BaseUnits	BU type B1
Color code for module-specific color-coded label	CC40
Product function	
● I&M data	Yes; I&M 0
● Isochronous mode	Yes
Engineering with	
● STEP 7 TIA Portal configurable/integrated from version	V13 SP1 + HSP
● STEP 7 configurable/integrated from version	V5.5 SP4 and higher
● PROFIBUS from GSD version/GSD revision	GSD Revision 5
● PROFINET from GSD version/GSD revision	GSDML V2.31
Supply voltage	
Rated value (DC)	24 V
Load voltage L+	
● Rated value (DC)	24 V
● permissible range, lower limit (DC)	19.2 V
● permissible range, upper limit (DC)	28.8 V
● Short-circuit protection	Yes
● Reverse polarity protection	Yes; against destruction
Input current	
Current consumption, max.	70 mA; without load
Encoder supply	
Number of outputs	2; A common 24V encoder supply for both channels
24 V encoder supply	
● 24 V	Yes; L+ (-0.8 V)
● Short-circuit protection	Yes; per module, electronic
● Output current, max.	300 mA
Power loss	
Power loss, typ.	1.7 W
Address area	
Address space per module	
● Inputs	16 byte; 8 per channel
● Outputs	24 byte; 12 per channel
Hardware configuration	
Automatic encoding	Yes

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● Mechanical coding element	Yes
● Type of mechanical coding element	type C
Digital inputs	
Number of digital inputs	2; 1 per channel
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
● Freely usable digital input	Yes
● HW enable for digital output	Yes
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)	
for standard inputs	
— Parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
Digital outputs	
Type of digital output	P- and M-switching
Number of digital outputs	2; 1 per channel
Current-sinking	Yes
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
● Response threshold, typ.	6.8 A with Standard output, 2 A with High Speed output
Limitation of inductive shutdown voltage to	-0.8 V
Controlling a digital input	Yes
Accuracy of pulse duration	±100 ppm ±0.5 µs with High Speed output, ±100 ppm ±9 µs with Standard output
minimum pulse duration	1.5 µs; With High Speed output, 10 µs with Standard output
Digital output functions, parameterizable	
● Freely usable digital output	Yes
● PWM output	Yes
— Number, max.	2; 1 per channel
— Cycle duration, parameterizable	Yes; Max. 85 s
— ON period, min.	0 %
— ON period, max.	100 %
— Resolution of the duty cycle	0.0036 %; For S7 analog format, min. 20 ns
● Connection of a proportional valve	Yes
● Dithering	Yes
— Frequency adjustable	Yes
— Amplitude adjustable	Yes
● Current measurement	Yes
● Current control	Yes
● Connection of a DC motor	Yes
● ON-delay	Yes
● OFF-delay	Yes
● Frequency output	Yes
● Pulse train	Yes
● Pulse output	Yes
Switching capacity of the outputs	
● with resistive load, max.	2 A
● on lamp load, max.	10 W; 1 W with High Speed output
Load resistance range	
● lower limit	12 Ω; 240 ohm with High Speed output

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● upper limit	12 kΩ
Output voltage	
● Type of output voltage	DC
● for signal "0", max.	1 V
● for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
● for signal "1" rated value	2 A; 0.1 A with High Speed output, observe derating
Output delay with resistive load	
● "0" to "1", typ.	0 µs; With High Speed output, 4.5 µs with Standard output
● "0" to "1", max.	0.8 µs; With High Speed output, 9 µs with Standard output
● "1" to "0", typ.	0 µs; With High Speed output, 4.5 µs with Standard output
● "1" to "0", max.	0.8 µs; With High Speed output, 9 µs with Standard output
Parallel switching of two outputs	
● for uprating	Yes
Switching frequency	
● with resistive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
● with inductive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
● on lamp load, max.	10 Hz
Total current of the outputs	
● Current per channel, max.	2 A
● Current per group, max.	4 A
● Current per module, max.	4 A
Interfaces	
Number of RS 485 interfaces	0
Isochronous mode	
Bus cycle time (TDP), min.	250 µs; with 1 channel configuration, 375 µs with 2 channel configuration
Jitter, max.	1 µs; typically ±
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes; Parameterizable
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	No
Potential separation	
Potential separation channels	
● between the channels	No
● 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
Absolute humidity	

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● dew point, min.	-60 °C; suitable for dry room applications
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	50 g

Classifications

	Version	Classification
eClass	16	27-24-26-05
eClass	14	27-24-26-05
eClass	12	27-24-26-05
eClass	9.1	27-24-26-05
eClass	9	27-24-26-05
eClass	8	27-24-26-05
eClass	7.1	27-24-26-05
eClass	6	27-24-26-05
ETIM	10	EC001601
ETIM	9	EC001601
ETIM	8	EC001601
ETIM	7	EC001601
IDEA	4	3567
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

Miscellaneous | Manufacturer Declaration

General Product Approval

China RoHS

For use in hazardous locations

FM

For use in hazardous locations

CCC-Ex | Type Examination Certificate | Miscellaneous | CCC-Ex

Maritime application

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ABS

BUREAU VERITAS

DNV

LRS

NK / Nippon Kaiji Kyokai

RINA

Maritime application			Environment
RMRS	CCS (China Classification Society)	KR (Korean Register of Shipping)	EPD

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