## **SIEMENS**

## **Data sheet**

6ES7136-6BA01-0CA0



SIMATIC DP, electronic module for ET 200SP, F-DI 8x 24 V DC HF, 15 mm width, up to PLe (ISO 13849-1)/ SIL3 (IEC 61508)

Figure similar

Product type designation		
Firmware version  • FW update possible usable BaseUnits  Color code for module-specific color identification plate  Product function  • I&M data Engineering with  • STEP 7 TIA Portal configurable/integrated from version • STEP 7 TOR FORT ACT ACT ACT ACT ACT ACT ACT ACT ACT AC	General information	
• FW update possible usable BaseUnits BU type A0 Color code for module-specific color identification plate Product function • I&M data Engineering with • STEP 7 TIA Portal configurable/integrated from version • TEP 7 Ton Fortal configurable/integrated from version • PROFINET from GSD version/GSD revision GIR - Configuration in RUN Reparameterization possible in RUN Supply voltage Rated value (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection power supply according to NEC Class 2 required No Input current Current consumption, max: 40 mA; without load Encoder supply Number of outputs 8 24 V encoder supply • 24 V • Short-circuit protection • Output current per module, max. • Output current per module, max.  • Output current per module, max.  • Output current per module, max.  • Output sarea Address area Address space per module • Inputs • Outputs • 1 byte; S7-300/400F CPU, 6 byte • Outputs	Product type designation	F-DI 8x24VDC HF
usable BaseUnits Color code for module-specific color identification plate Product function  • (8M) data Yes; (8M) to (8M)3 Engineering with  • STEP 7 TIA Portal configurable/integrated from version • STEP 7 ton figurable/integrated from version • PROFINET from GSD version/GSD revision  CIR - Configuration in RUN Reparameterization possible in RUN  Reparameterization possible in RUN  Reparameterization possible in RUN  Reparameterization possible in RUN  Reparameterization possible in RUN  Reverse polarity protection  Prower loss Power supply  • 24 V • Short-circuit protection • Output current per channel, max. • Output current per module, max.  Power loss Power loss, typ.  Address area  Address space per module • Inputs • Outputs		
Color code for module-specific color identification plate Product function  • I&M data  Engineering with  • STEP 7 TIA Portal configurable/integrated from version • STEP 7 configurable/integrated from version • STEP 7 configurable/integrated from version • STEP 7 configurable/integrated from version • PROFINET from GSD version/GSD revision  CIR - Configuration in RUN  Reparameterization possible in RUN  No  Supply voltage  Rated value (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) power supply according to NEC Class 2 required No  Input current  Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs 8 24 V encoder supply • 24 V • Short-circuit protection • Yes; Electronic (response threshold 0,7 A to 1.8 A) • Output current per channel, max. • Output current per channel, max. • Output current per module, max.  Power loss  Poutputs • 7 byte; S7-300/400F CPU, 6 byte • Outputs  Lardware configuration	FW update possible	
Product function  • I&M data Engineering with  • STEP 7 TIA Portal configurable/integrated from version • STEP 7 configurable/integrated from version • STEP 7 configurable/integrated from version • STEP 7 configurable/integrated from version • PROFINET from GSD version/GSD revision  CIR - Configuration in RUN  Reparameterization possible in RUN  No  Supply voltage  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) permissible range in the Class 2 required No  Input current  Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs 8  24 V encoder supply  • 24 V • Short-circuit protection • Output current per channel, max. • Output current per channel, max. • Output current per module, max.  Power loss  Power loss, tp.  2 W  Address area  Address space per module • Inputs • Outputs • 5 byte; \$7-300/400F CPU, 4 byte  Hardware configuration	usable BaseUnits	BU type A0
• I&M data  Engineering with  • STEP 7 TIA Portal configurable/integrated from version  • STEP 7 configurable/integrated from version  • STEP 7 configurable/integrated from version  • PROFINET from GSD version/GSD revision  CiR - Configuration in RUN  Reparameterization possible in RUN  Reparameterization possible in RUN  No  Supply voltage  Rated value (DC)  permissible range, lover limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  power supply according to NEC Class 2 required  No  Input current  Current consumption, max.  40 mA; without load  Encoder supply  Adv encoder supply  • 24 V  • Short-circuit protection  • Output current per channel, max.  • Output current per channel, max.  • Output current per module, max.  Power loss  Power loss, typ.  Address area  Address space per module  • Inputs  • Outputs  5 byte; S7-300/400F CPU, 4 byte  Hardware configuration	Color code for module-specific color identification plate	CC01
Engineering with  STEP 7 TIA Portal configurable/integrated from version SIMATIC Safety V17 with HSP 0360 or higher version STEP 7 configurable/integrated from version PROFINET from GSD version/GSD revision SIMATIC Safety V17 with HSP 0360 or higher version SIMATIC Safety V17 with HSP 0360 or higher version SIMATIC Safety V17 with HSP 0360 or higher version SIMATIC Safety V17 with HSP 0360 or higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version set 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version higher version as 6ES7136-6BA00-0CA0 SIMATIC Safety V17 with HSP 0360 or higher version higher version as 6ES7136-6BA00-0CA0 SIMITED SAFETY V17 with HSP 0360 or higher version higher version higher version as 6ES7136-6BA00-0CA0 SIMITED SAFETY V17 with HSP 0360 or higher version high version higher version high version higher version higher version higher version high ve	Product function	
STEP 7 TIA Portal configurable/integrated from version STEP 7 configurable/integrated from version STEP 7 configurable/integrated from version STEP 7 configuration in RUN Reparameterization possible in RUN Reparameterization possible in RUN Reparameterization possible in RUN  Supply voltage Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) Reverse polarity protection power supply according to NEC Class 2 required No Input current Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs 8 24 V encoder supply  • 24 V • Short-circuit protection • Yes; min. L+ (-1.5 V) • Short-circuit protection • Output current per channel, max. • Output current per channel, max.  800 mA; Total current of all encoders  Power loss  Power loss, typ.  Address area  Address area  Address space per module • Inputs • Outputs • Outputs • Outputs • 5 byte; S7-300/400F CPU, 6 byte • Outputs  Hardware configuration	I&M data	Yes; I&M0 to I&M3
version  • STEP 7 configurable/integrated from version  • PROFINET from GSD version/GSD revision  GSDML V2.35  CiR - Configuration in RUN  Reparameterization possible in RUN  No  Supply voltage  Rated value (DC) 24 V  permissible range, lower limit (DC) 19.2 V  permissible range, lower limit (DC) 28.8 V  Reverse polarity protection Yes power supply according to NEC Class 2 required No  Input current  Current consumption, max. 40 mA; without load  Encoder supply  Number of outputs 8  24 V encoder supply  • 24 V • Short-circuit protection Yes; Electronic (response threshold 0.7 A to 1.8 A) • Output current per channel, max. 300 mA • Output current per module, max. 800 mA; Total current of all encoders  Power loss  Power loss, typ. 2 W  Address area  Address space per module • Inputs • Outputs • 5 byte; S7-300/400F CPU, 6 byte • Outputs  Hardware configuration	0 0	
PROFINET from GSD version/GSD revision  GSDML V2.35  CIR - Configuration in RUN  Reparameterization possible in RUN  Supply voltage  Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  power supply according to NEC Class 2 required  No  Input current  Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs  8  24 V encoder supply  • 24 V  • Short-circuit protection  Output current per channel, max.  • Output current per channel, max.  • Output current per module, max.  800 mA; Total current of all encoders  Power loss  Power loss, typ.  Address area  Address space per module  • Inputs  • Outputs  7 byte; S7-300/400F CPU, 6 byte  • Outputs  Hardware configuration		SIMATIC Safety V17 with HSP 0360 or higher
CiR - Configuration in RUN  Reparameterization possible in RUN  No  Supply voltage  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  power supply according to NEC Class 2 required No  Input current  Current consumption, max. 40 mA; without load  Encoder supply  Number of outputs 8  24 V encoder supply  • 24 V • Short-circuit protection Yes; Electronic (response threshold 0.7 A to 1.8 A) • Output current per channel, max. 300 mA • Output current per module, max. 800 mA; Total current of all encoders  Power loss  Power loss, typ. 2 W  Address area  Address space per module • Inputs 7 byte; S7-300/400F CPU, 6 byte • Outputs  Hardware configuration	<ul> <li>STEP 7 configurable/integrated from version</li> </ul>	as 6ES7136-6BA00-0CA0
Reparameterization possible in RUN  Supply voltage  Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  power supply according to NEC Class 2 required  Input current  Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs  8  24 V encoder supply  • 24 V  • Short-circuit protection  • Output current per channel, max.  • Output current per module, max.  800 mA; Total current of all encoders  Power loss  Power loss, typ.  2 W  Address area  Address space per module  • Inputs  • Outputs  7 byte; S7-300/400F CPU, 6 byte  • Outputs  Hardware configuration	PROFINET from GSD version/GSD revision	GSDML V2.35
Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  power supply according to NEC Class 2 required  No  Input current  Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs  8  24 V encoder supply  • 24 V  • Short-circuit protection  • Output current per channel, max.  • Output current per module, max.  800 mA; Total current of all encoders  Power loss  Power loss, typ.  Address space per module  • Inputs  • Outputs  • Outputs  • Outputs  • Outputs  • Short-circuit protection  • Output current per module, max.  • Output current of all encoders  Power loss  Power loss, typ.  Address space per module  • Inputs  • Outputs	CiR - Configuration in RUN	
Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  power supply according to NEC Class 2 required  No  Input current  Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs  8  24 V encoder supply  • 24 V  • Short-circuit protection  • Output current per channel, max.  • Output current per channel, max.  • Output current per module, max.  800 mA; Total current of all encoders  Power loss, typ.  Address space per module  • Inputs  • Outputs  7 byte; S7-300/400F CPU, 6 byte  • Outputs  Hardware configuration	Reparameterization possible in RUN	No
permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection power supply according to NEC Class 2 required No  Input current Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs 8 24 V encoder supply  • 24 V • Short-circuit protection • Output current per channel, max. • Output current per module, max.  Power loss Power loss, typ.  Address area  Address space per module • Inputs • Outputs  7 byte; S7-300/400F CPU, 6 byte • Outputs  Hardware configuration	Supply voltage	
permissible range, upper limit (DC)  Reverse polarity protection  power supply according to NEC Class 2 required  No  Input current  Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs  8  24 V encoder supply  • 24 V  • Short-circuit protection  • Output current per channel, max.  • Output current per module, max.  Power loss  Power loss  Power loss, typ.  Address space per module  • Inputs  • Outputs  7 byte; S7-300/400F CPU, 6 byte  • Outputs  Hardware configuration	Rated value (DC)	24 V
Reverse polarity protection power supply according to NEC Class 2 required  Input current Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs 8 24 V encoder supply  • 24 V • Short-circuit protection • Output current per channel, max. • Output current per module, max.  • Output current per module, max.  Power loss Power loss, typ.  Address space per module • Inputs • Outputs  7 byte; S7-300/400F CPU, 6 byte 5 byte; S7-300/400F CPU, 4 byte  Hardware configuration	permissible range, lower limit (DC)	19.2 V
power supply according to NEC Class 2 required  Input current  Current consumption, max.  Encoder supply  Number of outputs  24 V encoder supply  • 24 V  • Short-circuit protection  • Output current per channel, max.  • Output current per module, max.  • Output current per module, max.  Power loss  Power loss  Power loss, typ.  Address area  Address space per module  • Inputs  • Inputs  • Outputs  • Outputs  7 byte; S7-300/400F CPU, 6 byte  • Outputs  Hardware configuration	permissible range, upper limit (DC)	28.8 V
Input current Current consumption, max.  40 mA; without load  Encoder supply  Number of outputs  24 V encoder supply  • 24 V  • Short-circuit protection  • Output current per channel, max.  • Output current per module, max.  • Output current per module, max.  800 mA; Total current of all encoders  Power loss  Power loss, typ.  2 W  Address area  Address space per module  • Inputs  • Inputs  • Outputs  • Outputs  5 byte; S7-300/400F CPU, 6 byte  • Outputs  Hardware configuration	Reverse polarity protection	Yes
Current consumption, max.  Encoder supply  Number of outputs  24 V encoder supply  • 24 V  Short-circuit protection  Output current per channel, max.  Output current per module, max.  Output current per module, max.  Output current per module, max.  2 W  Address area  Address space per module  Inputs  Outputs  Tyes; min. L+ (-1.5 V)  Yes; min. L+ (-1.5 V)  Yes; Electronic (response threshold 0.7 A to 1.8 A)  300 mA  800 mA; Total current of all encoders  Power loss  Power loss, typ.  2 W  Address space per module  Inputs  Outputs  Tybyte; S7-300/400F CPU, 6 byte  Outputs  Syr-300/400F CPU, 4 byte  Hardware configuration	power supply according to NEC Class 2 required	No
Number of outputs   8	Input current	
Number of outputs  24 V encoder supply  24 V  Short-circuit protection  Output current per channel, max.  Output current per module, max.  Output current per module, max.  Power loss  Power loss, typ.  Address area  Address space per module  Inputs  Outputs  T byte; S7-300/400F CPU, 6 byte  Outputs  Hardware configuration	Current consumption, max.	40 mA; without load
24 V encoder supply  24 V  Short-circuit protection  Output current per channel, max.  Output current per module, max.  Output current per module, max.  800 mA; Total current of all encoders  Power loss  Power loss, typ.  2 W  Address area  Address space per module  Inputs  Outputs  Total current of all encoders  7 byte; S7-300/400F CPU, 6 byte  Outputs  Hardware configuration	Encoder supply	
<ul> <li>24 V</li> <li>Short-circuit protection</li> <li>Output current per channel, max.</li> <li>Output current per module, max.</li> <li>Power loss</li> <li>Power loss, typ.</li> <li>Address area</li> <li>Address space per module</li> <li>Inputs</li> <li>Outputs</li> <li>Toyte; S7-300/400F CPU, 6 byte</li> <li>Outputs</li> <li>Hardware configuration</li> </ul>	Number of outputs	8
<ul> <li>Short-circuit protection</li> <li>Output current per channel, max.</li> <li>Output current per module, max.</li> <li>800 mA; Total current of all encoders</li> </ul> Power loss Power loss, typ. Address area Address space per module <ul> <li>Inputs</li> <li>Outputs</li> <li>Outputs</li> <li>Styte; S7-300/400F CPU, 6 byte</li> <li>Outputs</li> </ul> Hardware configuration Yes; Electronic (response threshold 0.7 A to 1.8 A) 300 mA 800 mA; Total current of all encoders 2 W Address space per module <ul> <li>Inputs</li> <li>Outputs</li> <li>Outputs</li> <li>Outputs</li> <li>Dyte; S7-300/400F CPU, 6 byte</li> </ul> 5 byte; S7-300/400F CPU, 4 byte Hardware configuration	24 V encoder supply	
<ul> <li>Output current per channel, max.</li> <li>Output current per module, max.</li> <li>800 mA; Total current of all encoders</li> </ul> Power loss Power loss, typ. <ul> <li>2 W</li> </ul> Address area Address space per module <ul> <li>Inputs</li> <li>Outputs</li> <li>Outputs</li> <li>5 byte; S7-300/400F CPU, 6 byte</li> </ul> Hardware configuration Sylve: S7-300/400F CPU, 4 byte Hardware configuration	• 24 V	Yes; min. L+ (-1.5 V)
Output current per module, max.  Power loss  Power loss, typ.  2 W  Address area  Address space per module  Inputs  Outputs  Outputs  Outputs  Address space per module  Spac	<ul> <li>Short-circuit protection</li> </ul>	Yes; Electronic (response threshold 0.7 A to 1.8 A)
Power loss, typ. 2 W  Address area  Address space per module  Inputs 7 byte; S7-300/400F CPU, 6 byte Outputs 5 byte; S7-300/400F CPU, 4 byte  Hardware configuration	<ul> <li>Output current per channel, max.</li> </ul>	300 mA
Power loss, typ. 2 W  Address area  Address space per module  Inputs  Outputs  Outputs  Address space per module  Style; S7-300/400F CPU, 6 byte  Style; S7-300/400F CPU, 4 byte  Hardware configuration	Output current per module, max.	800 mA; Total current of all encoders
Address area  Address space per module  Inputs Outputs  Outputs  To byte; S7-300/400F CPU, 6 byte  Stoyte; S7-300/400F CPU, 4 byte  Hardware configuration	Power loss	
Address space per module  Inputs Outputs  Outputs  Outputs  T byte; S7-300/400F CPU, 6 byte  5 byte; S7-300/400F CPU, 4 byte  Hardware configuration	Power loss, typ.	2 W
<ul> <li>Inputs</li> <li>Outputs</li> <li>Outputs</li> <li>byte; S7-300/400F CPU, 6 byte</li> <li>Styte; S7-300/400F CPU, 4 byte</li> </ul> Hardware configuration	Address area	
Outputs 5 byte; S7-300/400F CPU, 4 byte  Hardware configuration	Address space per module	
Hardware configuration	• Inputs	7 byte; S7-300/400F CPU, 6 byte
	<ul> <li>Outputs</li> </ul>	5 byte; S7-300/400F CPU, 4 byte
Automatic encoding Yes	Hardware configuration	
	Automatic encoding	Yes

Electronic coding element type F	Yes
Digital inputs	
Number of digital inputs	8
Source/sink input	Yes; P-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input voltage	
Rated value (DC)	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+15 to +30 V
Input current	
	3.7 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes
— at "0" to "1", min.	0.4 ms
— at "0" to "1", max.	20 ms
— at "1" to "0", min.	0.4 ms
— at "1" to "0", max.	20 ms
for technological functions	
— parameterizable	No
Cable length	
• shielded, max.	1 000 m
unshielded, max.	500 m
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
Diagnostic alarm	Yes
Hardware interrupt	No
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
<ul> <li>between the channels</li> </ul>	No
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
between the channels and the power supply of the     cleatronics.	No
electronics	
Isolation	707 V DO /h
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
Performance level according to ISO 13849-1	PLe
Category according to ISO 13849-1	Cat. 4
• SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair	
<ul> <li>Low demand mode: PFDavg in accordance with SIL3</li> </ul>	< 2.00E-05
High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	0 °C
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
vertical installation, min.	0 °C

<ul> <li>vertical installation, max.</li> </ul>	50 °C
Altitude during operation relating to sea level	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	4 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	29 g

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