## SIEMENS

## Data sheet

## 6ES7131-6BF00-0CA0



SIMATIC ET 200SP, digital input module, DI 8x 24 V DC High Feature, input type 3 (IEC 61131), sink input, (PNP, sink input) Packing unit: 1 unit, suitable for BU type A0, color code CC01, input delay 0.05..20 ms; Channel diagnostics for: Encoder power supply short circuit, wire break, supply voltage, channel fault LED

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General information				
Product type designation	DI 8x24 V DC HF			
HW functional status	From FS07			
Firmware version				
<ul> <li>FW update possible</li> </ul>	Yes			
usable BaseUnits	BU type A0			
Color code for module-specific color identification plate	CC01			
Product function				
● I&M data	Yes; I&M0 to I&M3			
<ul> <li>Isochronous mode</li> </ul>	Yes			
Engineering with				
STEP 7 TIA Portal configurable/integrated from version	V13 SP1 / -			
<ul> <li>STEP 7 configurable/integrated from version</li> </ul>	V5.5 / -			
<ul> <li>PCS 7 configurable/integrated from version</li> </ul>	V8.1 SP1			
<ul> <li>PROFIBUS from GSD version/GSD revision</li> </ul>	One GSD file each, Revision 3 and 5 and higher			
<ul> <li>PROFINET from GSD version/GSD revision</li> </ul>	GSDML V2.3			
Operating mode				
• DI	Yes			
Counter	No			
Oversampling	No			
• MSI	Yes			
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			
Encoder supply				
Number of outputs	8			
Output voltage, min.	19.2 V			
Short-circuit protection	Yes			
24 V encoder supply				
• 24 V	Yes			
<ul> <li>Short-circuit protection</li> </ul>	Yes; per channel, electronic			
<ul> <li>Output current per channel, max.</li> </ul>	700 mA			
Output current per module, max.	700 mA			
Power loss				
Power loss, typ.	1.5 W; 24 V, 8 inputs supplied via encoder supply			
Address area				
Address space per module				

Image:	• Inputs	1 byte; + 1 byte for QI information			
Automatic encoding     Yes       • Methanical coding element     Yes       • Methanical coding element     Type A       Sensitive     4       Selection of Baselulation for connection variants     4       • Avide connection     BU type A0       • 2.wire connection     BU type A0       • 2.wire connection     BU type A0       • 4.wire connection     BU type A0 with AUX terminals or potential distributor module       BU type A0     Yes       SourceSink input     Yes       Pulse densition     Yes       SourceSink input     Yes       Pulse densition     Yes       SourceSink input     Yes       Pulse densition     Yes       Fige evaluation     Yes       Potential distributor     Y					
• Wechanical coding element         Yes           • Type of mechanical coding element         Type A           Submodules         •           • Number of configurable submodules, max.         4           Submodules         •           • 1 vire connection         BU type A0           • 2 vire connection         BU type A0 with AUX terminals or potential distributor module           • 4 vire connection         BU type A0 with AUX terminals or potential distributor module           • 1 vire connection         BU type A0 with AUX terminals or potential distributor module           • 1 vire connection         BU type A0 + Potential distributor module           • 1 vire connection         Potential distributor module           • 1 vire connection         Yes           • 1 vire vire vire vire vire vire vire vire					
• Type of mechanical coding element     Type A       • Number of configurable submodules, max.     4       Selection of Beaching to connection variants     8       • Jurite connection     BU type A0       • Source/sink input     Presenting       • Longth     2       • Longth     2       • Longth     2       • Failed value (DC)     24 V       • For signal '10'     -30 to 15 V       • For signal '11', tpn     2.5 mA       Input characteria inputs     -       • For signal '11', tpn     2.5 mA       Input characteria inputs     -       • For signal '11', tpn     2.5 mA       Input characteria inputs     -       • For signal '11', tpn     2.5 mA       Input characteria inputs     -       • To signal '11', tpn     2.0 for signal '12 (2 / 12 / 2 / 2 / 0 ms (in each case + delay of signa input selection input selection input selection input selection input selection input selection	6				
Submabules         -           • Number of configurable standards         B           • Swite connection         BU type A0           • Swite connection         BU type A0 with AUX terminals or potential distributor module           • Javier connection         BU type A0 with AUX terminals or potential distributor module           • Javier connection         BU type A0 with AUX terminals or potential distributor module           • Javier connection         BU type A0 with AUX terminals or potential distributor module           • Digital inputs         8           Optigital inputs         8           Sourcosistik (input         Preading           Input characteristic curve in accordance with IEC 61131, type 3         Yes           • Longth         2 + 5 Cons, 100 ms, 200 ms, 500 ms, 15, 2 + 2           • Edge evaluation         Yes, rising edge, falling edge, edge change           • Input voltage         -           • Tor signal '1', typ.         2.5 mA           • Input delay (for rate voltage)         for signal '1', typ.           • at '0' to 1'', max.         2.0 ms           - at '1' to 0'', max.         2.0 ms           - at '1' to 0'', max.         2.0 ms           • shelefed, max.         1000 m           • unshielded, max.         0.05 ms           • Sore info	-				
Aumber of configurable submodules, max.     Selection of BaseJunit for connection variants     Selection of BaseJunit for connection variants     Selection of BaseJunit for connection variants     Seconcelion     Bul type A0     Bul type A0     Bul type A0 +Potential distributor module     Seconcelion     Seco		Туре А			
Selection of BaseUnit for connection variants <ul> <li>1-wire connection</li> <li>BU type A0</li> <li>2-wire connection</li> <li>BU type A0 + Potential distributor module</li> <li>4-wire connection</li> <li>BU type A0 + Potential distributor module</li> <li>Digital inputs</li> <li>8</li> <li>Digital inputs</li> <li>8</li> <li>Digital inputs</li> <li>1-wire connection</li> <li>BU type A0 + Potential distributor module</li> <li>BU type A0 + Potential distributor module</li> <li>But type A0 + Potential distributor module</li> <li>Press connection</li> <li>But type A0 + Potential distributor module</li> <li>Press type A0 + Potential distributor module</li> <li>Press connection</li> <li>Press type A0 + Potential distributor module</li> <li>Press type A0 + Potential distributor module</li> <li>Press type A0 + Potential distributor module</li> <li>Press connection</li> <li>Press type A0 + Potential distributor module</li>       &lt;</ul>		4			
• I-wire connection     BU type A0       • 2-wire connection     BU type A0 with AUX terminals or potential distributor module       • 4-wire connection     BU type A0 + Potential distributor module       • Optical input     8       Optical input     8       SourceSrick input     8       Input characteristic curve in accordance with IEC 61131, type 3     Yes       Pulse extension     Yes; Pulse duration from 4 µs       • Length     2 x; 50 ms, 100 ms, 200 ms, 50 ms, 1 s, 2 x       Edge exatation     Yes; raising edge, falling edge, edge change       Input characteristic curve in accordance with IEC 61131, type 3     Yes; raising edge, falling edge, edge change       • for signal 1°     - 30 to 45 V       • for signal 1°     - 30 to 45 V       • for signal 1°     - 30 to 45 V       • for signal 1°     - 30 to 45 V       • for signal 1°     - 30 to 50 x       • for signal 1°     - 30 to 50 x       • for signal 1°     - 30 to 50 x       • for signal 1°, typ.     25 mA       • for signal 1°, typ.     0.5 ms       • a tor 10 *1', rin.     0.05 ms       • a tor 10 *1', rin.     0.05 ms       • a tor 10 *1', rin.     0.05 ms       • a tor 10 *1'', rin.     0.05 ms       • a tor 10 *1'', rin.     0.05 ms       • a tor 10 *1'', rin.     <		4			
- 2-wise connection     BU type A0       - 3-wise connection     BU type A0 with AUX terminals or potential distributor module       - 4-wise connection     BU type A0 + Potential distributor module       Digital inputs     8       Variable of digital inputs     8       Digital inputs, parametrizable     Yes       Source/sink input     P-reading       Input characteristic curve in accordance with IEC 61131, type 3     Yes       Pulse extension     2 + 50 ms, 100 ms, 200 ms, 500 ms, 15, 2 ± 3       Edge evaluation     Yes, rising edge, falling edge, edge change       Input dealy (for rate value (CC)     24 V       • for signal '1'     -10 to 5V       • for signal '1'     -11 to 50V       Input dealy (for rate value (CC)     24 V       • for signal '1'     -10 to 5V       • for signal '1'     -10 to 5V       • for signal '1'     -10 to 5V       • for signal '1'     -10 to 500 µs, depending on line length)       • at '1' to 0'', max.     20 ms       • at '1' to 0'', max.     20 ms       • at '1' to 0'', min.     -20 ms       • at '1' to 0'', max.     20 ms       • at '1' to 0'', max.     20 ms       • at '1' to 0'', max.     20 ms       • at '1' to 0'', min.     -20 ms       • at '1' to 0'', max.     800 ms					
- Swite connection     - BU type A0 + Potential distributor module      Digital inputs     Number of digital inputs     Ves     Sourceshnk input     Input characterizable     Yes     Sourceshnk input     Input characterizable     Yes     Yes     Ves     Sourceshnk input     Input characterizable     Yes     Yes     Yes     Yes     Ves     Ves					
e Averice connection         BU type A0 + Potential distributor module           Digital inputs         8           Digital inputs         8           Digital inputs         9           Source/sink input         Preading           Input otheracteristic curve in accordance with IEC 61131, type 3         Yes           Puise extension         Yes; Puise duration from 4 µs         2.8           Edge evaluation         Yes; roling edge, falling edge, edge change         Imput voltage           Input voltage         9         2.5 cm s., 10 m. 32 0 m. s. 10 s., 2 s.         2 s.           Input voltage         9         2.5 cm s., 10 m. 32 0 m. s. 1 s., 2 s.         2 s.           Input voltage         9         2.5 cm s., 10 m. 32 0 m. s. 1 s., 2 s.         2 s.           Input voltage         9         2.5 m A         10 to 4.0 s. 1 f. 6 / 3.2 / 12.8 / 20 ms (in each case + delay of or signal '1', tor, m.         2.0 ms           Input voltage         Yes; 0.0 s / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 0.5 m.         2.0 ms           Input voltage         Yes; 0.0 s / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 0.5 m.         2.0 ms           Input voltage         Yes; 0.0 s / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 0.5 m.         2.0 ms           Input delay (for rated valu					
Digital inputs         8           Number of digital inputs         8           Sourcesink input         Preading           Number of digital inputs         9           Sourcesink input         Preading           Input obtarcetratistic curve in accordance with IEC 61131.         Yes           Puise extension         •           • Length         2 s; 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s           Edge evaluation         Yes           • for signal '1"         +11 to +30v           Input deals (for rated value of input voltage)         6 or signal '1", typ.           • for signal '1", typ.         2.5 mA           Input deals (for rated value of input voltage)         for standard inputs           - parameterizable         '41 to +30v           Input deals (for rated value of input voltage)         for signal '1", typ.           - at '0" to '1", min.         0.05 ms           - at '1" to '0", max.         20 ms           Coble length         1.000 m           • sheleded, max.         600 m           Encodar         Yes           Connectable encoders         -2 wire sensor           - wire sensor         Yes           - blagnostic information readable         Yes           • blagnostic alarm					
Number of digital inputs         8           Digital inputs, parameterizable         Yes           Source/sink input         Preading           Input characteristic curve in accordance with IEC 61131.         Yes           Yes         Pulse duration from 4 µs           Length         2.5 Oms, 10 ms, 20 ms, 50 ms, 15, 2 s           Edge evaluation         Yes; rising edge, failing edge, odge change           Input voltage         Yes; rising edge, failing edge, odge change           Input voltage         - Act 40 value (DC)           4 rest value (DC)         24 V           5 for signal '1"         +11 to +30V           Input voltage         - S signal '1", typ:           5 or signal '1", typ:         2.5 mA           Input delay (for relet value of input voltage)         for standard inputs           - parameterizable         Yes: 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs. depending on line length)           - at '0" to '1", min.         0.05 ms           - at '1" to '0", nin.         20 ms           - at '1" to '0", min.         20 ms           - at '1" to '0", min.         0.00 m           - permissible quiescent current (2-wire sensor), max.         200 ms           - permissible quiescent current (2-wire sensor), max.         420 µs </td <td></td> <td>BU type A0 + Potential distributor module</td>		BU type A0 + Potential distributor module			
Digital inputs         Yes           Source/sink input         Preading           Input chracteristic curve in accordance with IEC 61131, type 3         Yes; Pulse duration from 4 µs           Pulse extension         2 s; 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s           Edge evaluation         Yes; rising edge, failing edge, edge change           Input voltage         *           • Rated value (DC)         24 V           • for signal °1"         -           • for signal °1", fyp.         25 mA           Input voltage         *           • for signal °1", fyp.         25 mA           Input voltage         *           • for signal °1", fyp.         25 mA           Input voltage         *           • for signal °1", fyp.         25 mA           Input voltage         *           • for signal °1", fyp.         25 mA           Input voltage         *           • at °0" to "1", min.         0.05 ms           • at °1" to "0, max.         20 ms           Cable length         •           • shelded, max.         600 m           • anshelded, max.         600 m           • and processing time (TC), min.         420 µs           Subled, max.         8 µs	Digital inputs				
Source/sink input         Preading           Input obtaracteristic curve in accordance with IEC 61131, type 3         Yes           Puble extension         Yes: Puble duration from 4 μs           • Length         2: \$50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s           Edge evaluation         Yes: fingle dge, failing edge, edge change           • Input voltage         Yes           • Rated value (DC)         24 V           • for signal 1°"         -30 to +5 V           • for signal 1°", typ.         2.5 mA           Input voltage         ***           • for signal 1°", typ.         2.5 mA           Input voltage         ***           • for signal 1°", typ.         2.5 mA           Input voltage         ****           • at "0" to "1", min.         0.05 ms           - at "1" to "0", min.         0.05 ms           - at "1" to "0", max.         20 ms           Connectable encoders         ****           • shielded, max.         600 m           • or the "1" nin.         0.05 ms           • at "1" to "0", min.         0.05 ms           • at "1" to "0", min.         0.05 ms           • at "1" to "0", min.         0.05 ms           • at max.         600 m           Elable le	Number of digital inputs	8			
Input characteristic curve in accordance with IEC 61131, ype 3         Yes           Pulse extension         2 ± 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s           Edge evaluation         Yes; rising edge, failing edge, edge change           Input voltage         2 ± 50 ms, 100 ms, 200 ms, 1 s, 2 s           Rated value (DC)         24 V           • for signal "1"         -30 to +5 V           • for signal "1", typ.         2.5 mA           Input voltage         For signal "1", typ.           • for signal "1", typ.         2.5 mA           Input voltage (for rated value of input voltage)         for standard inputs           • for standard inputs         - parameterizable           • at 70" to "1", min.         0.05 ms           - at 71" to "0", max.         20 ms           - at 1"1 to "0", max.         20 ms           • Shielded, max.         0.05 ms           • at 1"1" to "0", max.         20 ms           • Comectable encoders         -           • Connectable quescent current (2-wire sensor), max.         20 ms           • Just we sensor         Yes           • Just yot ing and processing time (TCI), min.         420 µs           Bus cycle time (TDP), min.         500 µs           • Diagnostic afarm         Yes           • Just p	Digital inputs, parameterizable	Yes			
type 3         Yes: Pulse duration from 4 μs           Pulse extension         Yes: Fulse duration from 4 μs           Edge evaluation         Yes: fining edge, failing edge, edge change           Input votage         Yes: fining edge, failing edge, edge change           Input votage         30 to 45 V           • for signal "0"         -30 to 45 V           • for signal "1", typ.         2.5 mA           Input delay (for rated value of input votage)         for standard inputs           • for signal "1", typ.         2.5 mA           Input delay (for rated value of input votage)         for standard inputs           • for signal "1", typ.         2.5 mA           Input delay (for rated value of input votage)         for standard inputs           • at "0" to "1", min.         0.05 ms           - at "0" to "1", max.         20 ms           - at "1" to "0", max.         800 m           Encoder         Encoder           Connectable encoders         Yes	Source/sink input	P-reading			
Pulse extension       Yes; Pulse duration from 4 µs         • Length       2 s; 50 ms, 100 ms, 200 ms, 200 ms, 500 ms, 1 s, 2 s         Edge evaluation       Yes; rising edge, failing edge, edge change         Input voltage       -         • Rated value (DC)       24 V         • for signal "0"       -30 to 45 V         • for signal "1", typ.       2.5 mA         Input delay (for rated value of input voltage)       -         for standard inputs       -         - parameterizable       Yes: 0.5 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)         - at "0" to "1", min.       0.05 ms         - at "0" to "1", max.       20 ms         - at "1" to "0", min.       0.05 ms         - at "1" to "0", max.       20 ms         • Shielded, max.       1000 m         • unshielded, max.       1000 m         • Using and processing time (TCI), min.       420 µs         Survir sensor       Yes         - permissible quiescent current (2-wire sensor), max.       1.5 mA         Bas cycle time (TDP), min.       500 µs         Bas cycle time (TDP), min.       500 µs         Usignostic struction       Yes         Alarms       9 µs         Diagnostic infor	Input characteristic curve in accordance with IEC 61131,	Yes			
<ul> <li>Length</li> <li>2 s; 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s</li> <li>Edge evaluation</li> <li>Yes; rising edge, edge change</li> <li>Input voltage</li> <li>A tated value (DC)</li> <li>2 4 V</li> <li>6 ro signal "1"</li> <li>10 to 50 V</li> <li>4 for signal "1", typ.</li> <li>2 s m A</li> <li>Input delay (for rated value of input voltage)</li> <li>for signal "1", min.</li> <li>a t "0" to "1", max.</li> <li>2 ms</li> <li>a t "1" to "0", max.</li> <li>2 ms</li> <li>c as t "1" to "0", min.</li> <li>a t "1" to "0", max.</li> <li>2 ms</li> <li>c as t "1" to "0", max.</li> <li>2 ms</li> <li>c as t "1" to "0", max.</li> <li>2 ms</li> <li>a t "1" to "0", max.</li> <li>2 ms</li> <li>a t "1" to "0", max.</li> <li>2 ms</li> <li>a t "1" to "0", min.</li> <li>a shielded, max.</li> <li>600 m</li> <li>Encoder</li> <li>Connectable encoders</li> <li>2 wire sensor</li> <li>a wire sensor</li> <li>a straid quiescent current (2-wire sensor), max.</li> <li>a to "10", min.</li> <li>500 µs</li> <li>a straid on the sensor implication in the sensor implication is the sensor impl</li></ul>	type 3				
Edge evaluation       Yes; rising edge, falling edge, edge change         Input voltage       •         • Rated value (DC)       24 V         • for signal "0"       -30 to 45 V         • for signal "1", typ.       2.5 mA         Input delay (for rated value of input voltage)       •         for standard inputs       -         - parameterizable       Yes: 0.5 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)         - at "0" to "1", min.       0.05 ms         - at "1" to "0", min.       0.05 ms         - permissible quiescent current (2-wire sensor)       1.5 mA         max.       1000 m         • 2-wire sensor       1.5 mA         - permissible quiescent current (2-wire sensor), max.       1.5 mA         Bus cycle time (TDP), min.       420 µs         Sub cycle time (TDP), min.       420 µs         Diagnostic sfunction	Pulse extension	Yes; Pulse duration from 4 µs			
Input voltage         44 V           • Rated value (DC)         24 V           • for signal "0"         -30 to +5 V           • for signal "1"         +111 to +30V           Input current         •           • for signal "1", typ.         2.5 mA           Input delay (for rated value of input voltage)         for signal "1", typ.           for signal "1", typ.         2.5 mA           Input delay (for rated value of input voltage)         for signal "1", typ.           for signal "1", typ.         2.5 mA           Input delay (for rated value of input voltage)         for signal "1", typ.           for signal "1", typ.         2.5 mA           Input delay (for rated value of input voltage)         for signal "1", typ.           - at "0" to "1", min.         0.05 ms           - at "1" to "0", max.         20 ms           Cable length         1000 m           • shielded, max.         1000 m           • unshielded, max.         600 m <b>Encoder</b> Yes <b>Connectable encoders</b> Yes           • 2.virte sensor         Yes           - at "1" to "0", min.         500 µs           uitter, max.         80 µs           Interrupts/diagnostics/status information         Yes	• Length	2 s; 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s			
• Rated value (DC)             • 4V             • for signal ''0"             • 30 to +5V             • for signal ''1"             • 110 + 30V            Input current             • for signal ''1"             • 110 + 30V            Input delay (for rated value of input voltage)             for standard inputs             • parameterizable             • at '0" to '1", min.             0.5 ms             - at '0" to '1", min.             0.5 ms             - at '0" to '1", min.             0.5 ms             - at '0" to '1", max.             20 ms             - at '1" to '0", min.             - at '0" to '1", max.             20 ms             - at '1" to '0", max.             20 ms             Cable length             • shielded, max.             1 000 m             vushielded.max.             1 000 m             vushielded.max.             1.5 mA             max.             Is on Max             1.5 mA             max.             Is cochronous mode             Filtering and processing time (TCI), min.             Bus cycle time (TDP), min.             dagnastics function             Ves             Alarms             Ves             Alarns             Ves             Alarns             Ves             Alarns             Ves             Alarns             Ves             Alarns             Ves             Alarnselinderiniterupt             Ves: channel by channel             Ve	Edge evaluation	Yes; rising edge, falling edge, edge change			
• for signal "0"       -30 to +5 V         • for signal "1"       +11 to +30V         Input current       •         • for signal "1", typ.       2.5 mA         Input delay (for rated value of input voltage)       for standard inputs         parameterizable       Yes; 0.05 / 0.1 / 0.4 / 0.8 / 16 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)         at "0" to "1", min.       0.05 ms         at "1" to "0", max.       20 ms         Cable length       - at "1" to "0", max.         Cable length       - at "1" to "0", max.         Connectable encoders       • shielded, max.         600 m       Encoder         Connectable encoders       Yes         permissible quiescent current (2-wire sensor), max.       15 mA         Bus cycle time (TDP), min.       420 µs         Bus cycle time (TDP), min.       8 µs         Interrupts/diagnostics/status information       500 µs         Diagnostic alarm       Yes; channel by channel         • Diagnostic alarm       Yes; Parameterizable, channels 0 to 7         Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-brea	Input voltage				
• for signal "0"       -30 to +5 V         • for signal "1", typ.       +11 to +30V         Input delay (for rated value of input voltage)       for standard inputs         • parameterizable       Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)         - at "0" to "1", min.       0.05 ms         - at "0" to "1", max.       20 ms         - at "1" to "0", max.       20 ms         Cable length       • shielded, max.         • shielded, max.       1000 m         • unshielded, max.       600 m         Encoder       Yes         Connectable encoders       Yes         • 2-wire sensor       1.5 mA         - permissible quiescent current (2-wire sensor), max.       8 µs         Interrupts/diagnostics/status information       500 µs         Diagnostics function       Yes; channel by channel         • Diagnostic site function readable       Yes; channel by channel         • Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break	· •	24 V			
• for signal "1"       +11 to +30V         Input current       • for signal "1", typ.       2.5 mA         Input delay (for rated value of input voltage)       • for signal "1", typ.       2.5 mA         • for signal "1", typ.       2.5 mA       • for signal "1", typ.         • or standard inputs       • or standard inputs       • or standard inputs         • at "0" to "1", min.       0.05 ms       20 ms         • at "1" to "0", min.       0.05 ms       20 ms         • at "1" to "0", max.       20 ms       20 ms         Cable length       • 1000 m       600 m         • shielded, max.       600 m       600 m         Encoder       • 2.4 wire sensor       Yes         • 2.4 wire sensor       Yes       1.5 mA         • as.       500 µs.       500 µs.         Sub cycle time (TDP), min.       420 µs       500 µs.         Bus cycle time (TDP), min.       8 µs       1.5 mA         • Diagnostics function       Yes.       7.4 larms         • Diagnostic structurent (2-wire sensor), max.       8 µs       1.5 mA         • Source time (TDP), min.       420 µs       500 µs.         Bus cycle time (TDP), min.       8 µs       1.5 mA         • Diagnostic structurent (2-wire sensor), max		-30 to +5 V			
Input current         • for signal "1", typ.       2.5 mA         Input delay (for rated value of input voltage)         for standard inputs	-	+11 to +30V			
• for signal *1*, typ.       2.5 mA         Input delay (for rated value of input voltage)       for standard inputs         parameterizable       Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)         at "0" to "1", min.       0.05 ms         at "0" to "1", max.       20 ms         at "1" to "0", min.       0.05 ms         at "1" to "0", max.       20 ms         Cable length       • shielded, max.         • shielded, max.       1000 m         • unshielded, max.       600 m         Encoder       Connectable encoders         permissible quiescent current (2-wire sensor), max.       1.5 mA         Bus cycle time (TDP), min.       420 µs					
Input delay (for rated value of input voltage)         for standard inputs		2.5 mA			
for standard inputs       Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)					
parameterizable     Yes: 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)       at "0" to "1", min.     0.05 ms       at "0" to "1", max.     20 ms       at "1" to "0", min.     0.05 ms       at "1" to "0", max.     20 ms       Cable length     1000 m       • shielded, max.     1000 m       • unshielded, max.     600 m       Encoder     Connectable encoders       • 2-wire sensor     Yes       permissible quiescent current (2-wire sensor), max.     1.5 mA       Bus cycle time (TDP), min.     500 µs       Bus cycle time (TDP), min.     500 µs       Juiter, max.     8 µs       Interrupts/diagnostics/status information     Yes       Diagnostic stortion     Yes       Alarms        • Diagnostic information readable     Yes       • Diagnostic information readable     Yes       • Monitoring the supply voltage     Yes       • Monitoring of encoder power supply     Yes; channel by channel       • Ves     Yes       • Monitoring of encoder power supply     Yes; Channel by channel       • Ves     Yes       • Monitoring of encoder power supply     Yes; Channel by channel       • Ves; Channel by channel     Yes; Channel by channel					
<ul> <li>of 30 to 500 µs, depending on line length)</li> <li>- at "0" to "1", min.</li> <li>0.05 ms</li> <li>- at "1" to 70", min.</li> <li>0.05 ms</li> <li>- at "1" to 70", max.</li> <li>20 ms</li> <li>Cable length</li> <li>• shielded, max.</li> <li>600 m</li> <li>• unshielded, max.</li> <li>600 m</li> <li>• unshielded, max.</li> <li>600 m</li> <li>• cable and the max</li> <li>600 m</li> <li>• cable and the max</li> <li>0.05 ms</li> <li>2. wire sensor</li> <li>- permissible quiescent current (2-wire sensor), max.</li> <li>1.5 mA</li> <li>Isochronous mode</li> <li>Filtering and processing time (TCI), min.</li> <li>80 µs</li> <li>Interrupts/diagnostics/status information</li> <li>Diagnostic function</li> <li>Yes</li> <li>Alarms</li> <li>Oliagnostic information readable</li> <li>Yes</li> <li>- parameterizable</li> <li>Yes</li> <li>- parameterizable</li> <li>Yes</li> <li>- parameterizable</li> <li>Yes</li> <li>Winchring of neoder power supply</li> <li>Yes; Channel by channel</li> <li>Yes; C</li></ul>		Yes: 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay			
	parameterizabio				
	— at "0" to "1". min.				
	-	20 ms			
at "1" to "0", max.       20 ms         Cable length					
Cable length       1000 m         • shielded, max.       600 m         Encoder       600 m         Connectable encoders       • 2-wire sensor         • 2-wire sensor       Yes         permissible quiescent current (2-wire sensor), max.       1.5 mA         Isochronous mode       1.5 mA         Filtering and processing time (TCI), min.       420 µs         Bus cycle time (TDP), min.       500 µs         Jitter, max.       8 µs         Interrupts/diagnostics/status information       Yes         Diagnostics function       Yes; channel by channel         • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel         • Monitoring of encoder power supply       Yes; Channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED					
• shielded, max.       1 000 m         • unshielded, max.       600 m         Encoder       -         Connectable encoders       -         • 2-wire sensor       Yes        pernissible quiescent current (2-wire sensor), max.       1.5 mA         Isochronous mode       -         Filtering and processing time (TCI), min.       420 μs         Bus cycle time (TDP), min.       500 μs         Jitter, max.       8 μs         Interrupts/diagnostics/status information         Diagnostic function       Yes         Alarms       -         • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnosses       -         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED					
• unshielded, max.         600 m           Encoder         Connectable encoders           • 2-wire sensor         Yes           permissible quiescent current (2-wire sensor), max.         1.5 mA           Isochronous mode         Filtering and processing time (TCI), min.           Filtering and processing time (TCI), min.         420 μs           Bus cycle time (TDP), min.         500 μs           Jitter, max.         8 μs           Interrupts/diagnostics/status information         Diagnostics/status information           Diagnostic function         Yes; channel by channel           • Diagnostic information readable         Yes; channel by channel           • Hardware interrupt         Yes; channel by channel           • Diagnostic information readable         Yes           • Monitoring the supply voltage         Yes           • Monitoring of encoder power supply         Yes; channel by channel           • Wire-break         Yes; channel by channel           • Monitoring of the supply voltage (PWR-LED)         Yes; green PWR LED		1 000 m			
Encoder         Connectable encoders       Yes         - permissible quiescent current (2-wire sensor), max.       1.5 mA         Isochronous mode       Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.       420 µs         Bus cycle time (TDP), min.       500 µs         Jitter, max.       8 µs         Interrupts/diagnostics/status information         Diagnostics function       Yes; channel by channel         • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses       Yes         • Diagnostic information readable       Yes         • Diagnostic information readable       Yes; channel by channel         • Monitoring the supply voltage       Yes         - parameterizable       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel         • Wire-break       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED					
Connectable encoders       Yes         • 2-wire sensor       Yes         permissible quiescent current (2-wire sensor), max.       1.5 mA         Isochronous mode       1.5 mA         Filtering and processing time (TCI), min.       420 µs         Bus cycle time (TDP), min.       500 µs         Jitter, max.       8 µs         Interrupts/diagnostics/status information       Yes         Alarms       Ves; channel by channel         • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses       Yes         • Monitoring the supply voltage       Yes; channel by channel         • Wire-break       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED		000 m			
• 2-wire sensor       Yes         — permissible quiescent current (2-wire sensor), max.       1.5 mA         Isochronous mode       1.5 mA         Filtering and processing time (TCI), min.       420 μs         Bus cycle time (TDP), min.       500 μs         Jitter, max.       8 μs         Interrupts/diagnostics/status information       Yes         Alarms       Ves; channel by channel         • Diagnostic alarm       Yes; Parameterizable, channels 0 to 7         Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         — parameterizable       Yes; channel by channel         • Wire-break       Yes; channel by channel         • Monitoring of encoder power supply       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED					
— permissible quiescent current (2-wire sensor), max.       1.5 mA         Isochronous mode       1.5 mA         Filtering and processing time (TCI), min.       420 μs         Bus cycle time (TDP), min.       500 μs         Jitter, max.       8 μs         Interrupts/diagnostics/status information       Yes         Diagnostic function       Yes         Alarms       • Diagnostic alarm         • Diagnostic information readable       Yes; channel by channel         • Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel         • Wire-break       Yes; channel by channel         • Wire-break       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED					
max.       Isochronous mode         Filtering and processing time (TCI), min.       420 μs         Bus cycle time (TDP), min.       500 μs         Jitter, max.       8 μs         Interrupts/diagnostics/status information       Ves         Diagnostic sfunction       Yes         Alarms          • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         - parameterizable       Yes; channel by channel         • Wire-break       Yes; channel by channel         • Wire-break       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED					
Isochronous mode         Filtering and processing time (TCI), min.         Bus cycle time (TDP), min.       500 μs         Jitter, max.       8 μs         Interrupts/diagnostics/status information         Diagnostics function       Yes         Alarms       •         • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses       •         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel         • Short-circuit       Yes; Channel by channel         • Short-circuit       Yes; Channel by channel         • Short-circuit       Yes; Channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED		1.5 mA			
Filtering and processing time (TCI), min.       420 μs         Bus cycle time (TDP), min.       500 μs         Jitter, max.       8 μs         Interrupts/diagnostics/status information       Diagnostics function         Diagnostic function       Yes         Alarms       •         • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses       •         • Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel         • Wire-break       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED					
Bus cycle time (TDP), min.       500 μs         Jitter, max.       8 μs         Interrupts/diagnostics/status information       Interrupts/diagnostics/status information         Diagnostics function       Yes         Alarms       • Diagnostic alarm         • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses       •         • Diagnostic information readable       Yes         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel, optional protective circuit for preventing wire-break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm         • Short-circuit       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED	Isochronous mode				
Jitter, max.       8 μs         Interrupts/diagnostics/status information         Diagnostics function       Yes         Alarms          • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses          • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         - parameterizable       Yes; channel by channel         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED	Filtering and processing time (TCI), min.	420 µs			
Jitter, max.       8 μs         Interrupts/diagnostics/status information         Diagnostics function       Yes         Alarms          • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses          • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         - parameterizable       Yes; channel by channel         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Short-circuit       Yes; channel by channel         • Monitoring of the supply voltage (PWR-LED)       Yes; green PWR LED	Bus cycle time (TDP), min.	500 µs			
Diagnostics function       Yes         Alarms       • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses       •         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel         • Short-circuit       Yes; channel by channel         Diagnostics indication LED       Yes; green PWR LED					
Diagnostics function       Yes         Alarms       • Diagnostic alarm       Yes; channel by channel         • Hardware interrupt       Yes; Parameterizable, channels 0 to 7         Diagnoses       •         • Diagnostic information readable       Yes         • Monitoring the supply voltage       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel         • Short-circuit       Yes; channel by channel         Diagnostics indication LED       Yes; green PWR LED					
Alarms• Diagnostic alarm • Hardware interruptYes; channel by channel Yes; Parameterizable, channels 0 to 7Diagnoses• Diagnostic information readable • Monitoring the supply voltage • parameterizableYes• Monitoring of encoder power supply • Wire-breakYes; channel by channel Yes; channel by channel 		Vec			
<ul> <li>Diagnostic alarm</li> <li>Hardware interrupt</li> <li>Yes; channel by channel</li> <li>Yes; Parameterizable, channels 0 to 7</li> <li>Diagnoses</li> <li>Diagnostic information readable</li> <li>Monitoring the supply voltage</li> <li>parameterizable</li> <li>Monitoring of encoder power supply</li> <li>Wire-break</li> <li>Short-circuit</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> <li>Yes; channel by channel</li> <li>Yes; channel by channel</li> <li>Yes; Channel by channel, optional protective circuit for preventing wire-break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> </ul>					
<ul> <li>Hardware interrupt</li> <li>Yes; Parameterizable, channels 0 to 7</li> <li>Diagnoses</li> <li>Diagnostic information readable</li> <li>Monitoring the supply voltage</li> <li>- parameterizable</li> <li>Monitoring of encoder power supply</li> <li>Wire-break</li> <li>Short-circuit</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> <li>Yes; channel by channel</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> </ul>		Ves: channel by channel			
Diagnoses <ul> <li>Diagnostic information readable</li> <li>Monitoring the supply voltage</li> <li>Monitoring the supply voltage</li> <li>Parameterizable</li> <li>Monitoring of encoder power supply</li> <li>Wire-break</li> <li>Wire-break</li> <li>Short-circuit</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> <li>Yes; channel by channel</li> <li>Yes; break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> <li>Yes; green PWR LED</li> <li>Yes; green PWR LED</li></ul>	-				
<ul> <li>Diagnostic information readable</li> <li>Monitoring the supply voltage</li> <li>Monitoring the supply voltage</li> <li>Parameterizable</li> <li>Monitoring of encoder power supply</li> <li>Wire-break</li> <li>Wire-break</li> <li>Short-circuit</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> </ul>					
<ul> <li>Monitoring the supply voltage</li> <li>Monitoring of encoder power supply</li> <li>Monitoring of encoder power supply</li> <li>Wire-break</li> <li>Wire-break</li> <li>Short-circuit</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> <li>Yes; Channel by channel, optional protective circuit for preventing wire-break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm</li> <li>Short-circuit</li> <li>Yes; channel by channel</li> </ul>	<u> </u>	Ver			
— parameterizable       Yes         • Monitoring of encoder power supply       Yes; channel by channel         • Wire-break       Yes; Channel by channel, optional protective circuit for preventing wire- break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm         • Short-circuit       Yes; channel by channel         Diagnostics indication LED       Yes; green PWR LED	-				
Monitoring of encoder power supply     Wire-break     Wire-break     Short-circuit     Short-circuit     Monitoring of the supply voltage (PWR-LED)     Yes; green PWR LED					
Wire-break     Yes; Channel by channel, optional protective circuit for preventing wire- break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm     Short-circuit     Yes; channel by channel     Yes; channel by channel     Yes; green PWR LED					
break diagnostics in the case of simple encoder contacts: 25 kOhm to 45 kOhm       • Short-circuit     Yes; channel by channel       Diagnostics indication LED       • Monitoring of the supply voltage (PWR-LED)     Yes; green PWR LED					
• Short-circuit         45 kOhm           • Short-circuit         Yes; channel by channel           Diagnostics indication LED         Yes; green PWR LED	Wire-break				
Short-circuit Yes; channel by channel Diagnostics indication LED     Monitoring of the supply voltage (PWR-LED) Yes; green PWR LED					
Diagnostics indication LED     Monitoring of the supply voltage (PWR-LED) Yes; green PWR LED	e Short airquit				
Monitoring of the supply voltage (PWR-LED)     Yes; green PWR LED		res, channel by channel			
Channel status display     Fes, green LED	Channel status display	Yes; green LED			

<ul> <li>for channel diagnostics</li> </ul>	Yes; red LED
for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
between the channels	No
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
<ul> <li>between the channels and the power supply of the electronics</li> </ul>	No
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	No
Ambient conditions	
Ambient temperature during operation	
<ul> <li>horizontal installation, min.</li> </ul>	-30 °C; < 0 °C as of FS07
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
<ul> <li>vertical installation, min.</li> </ul>	-30 °C; < 0 °C as of FS07
<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>	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	28 g
last modified:	1/16/2021 🖸