

**Siemens  
EcoTech**



SIMATIC S7-1500, digital input module DI 16xNAMUR HF, 16 channels in groups of 8; for 8.2 V NAMUR encoder; sensor supply 8.2 V; input delay; parameterizable 0.05 ... 20 ms; integrated counting function up to 20 kHz pulse stretching; chatter monitoring; signal inversion diagnostics; hardware interrupts; all necessary components for shielding included in the scope of supply; front connector (screw terminals or push-in) to be ordered separately

| General information                                      |                            |
|----------------------------------------------------------|----------------------------|
| Product type designation                                 | DI 16xNAMUR HF             |
| HW functional status                                     | From FS01                  |
| Firmware version                                         | V1.0.0                     |
| • FW update possible                                     | Yes                        |
| Product function                                         |                            |
| • I&M data                                               | Yes; I&M0 to I&M3          |
| • Isochronous mode                                       | Yes                        |
| • Prioritized startup                                    | Yes                        |
| Engineering with                                         |                            |
| • STEP 7 TIA Portal configurable/integrated from version | STEP 7 V17 or higher       |
| • STEP 7 configurable/integrated from version            | V5.5 SP3 / -               |
| • PROFIBUS from GSD version/GSD revision                 | V1.0 / V5.1                |
| • PROFINET from GSD version/GSD revision                 | V2.3 / -                   |
| Operating mode                                           |                            |
| • DI                                                     | Yes                        |
| • Counter                                                | Yes                        |
| • 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                        |
| Input current                                            |                            |
| Current consumption, max.                                | 220 mA                     |
| Encoder supply                                           |                            |
| Number of outputs                                        | 16; 2x 8.2 V DC            |
| Short-circuit protection                                 | Yes                        |
| NAMUR encoder supply                                     |                            |
| • 8.2 V                                                  | Yes                        |
| • Short-circuit protection                               | Yes; Per group, electronic |
| • Output current, max.                                   | 100 mA; per group          |
| • Output current per module, max.                        | 200 mA                     |
| Power                                                    |                            |
| Power consumption from the backplane bus                 | 0.6 W                      |
| Power loss                                               |                            |

|                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power loss, typ.                                                                                                                                                                                                                                                                                                                                                            | 3.7 W                                                                                                                                                                                                                                        |
| <b>Digital inputs</b>                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                              |
| Number of digital inputs                                                                                                                                                                                                                                                                                                                                                    | 16; NAMUR                                                                                                                                                                                                                                    |
| Digital inputs, parameterizable                                                                                                                                                                                                                                                                                                                                             | Yes                                                                                                                                                                                                                                          |
| Source/sink input                                                                                                                                                                                                                                                                                                                                                           | P-reading                                                                                                                                                                                                                                    |
| Pulse extension                                                                                                                                                                                                                                                                                                                                                             | Yes; 0.05 s, 0.1 s, 0.2 s, 0.5 s, 1 s, 2 s                                                                                                                                                                                                   |
| Edge evaluation                                                                                                                                                                                                                                                                                                                                                             | Yes; rising edge, falling edge, edge change                                                                                                                                                                                                  |
| Signal change flutter                                                                                                                                                                                                                                                                                                                                                       | Yes; 2 to 32 signal changes                                                                                                                                                                                                                  |
| Flutter observation window                                                                                                                                                                                                                                                                                                                                                  | Yes; 0.5 s, 1 s to 100 s in 1-s steps                                                                                                                                                                                                        |
| <b>Digital input functions, parameterizable</b>                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                              |
| <ul style="list-style-type: none"> <li>• Gate start/stop</li> <li>• Freely usable digital input</li> <li>• Counter <ul style="list-style-type: none"> <li>— Number, max.</li> <li>— Counting frequency, max.</li> <li>— Counting width</li> <li>— Counting direction up/down</li> </ul> </li> </ul>                                                                         | <p>Yes; software/hardware gate</p> <p>Yes</p> <p>4; 4 counters max. 10 kHz or 2 counters max. 20 kHz + 2 counters max. 10 kHz; see manual for details</p> <p>20 kHz; See manual for details</p> <p>32 bit</p> <p>Yes; forward / backward</p> |
| <b>Input voltage</b>                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                              |
| <ul style="list-style-type: none"> <li>• Rated value (DC)</li> </ul>                                                                                                                                                                                                                                                                                                        | 8.2 V                                                                                                                                                                                                                                        |
| <b>Input current</b>                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                              |
| <ul style="list-style-type: none"> <li>• for signal "1", typ.</li> </ul>                                                                                                                                                                                                                                                                                                    | 10 mA                                                                                                                                                                                                                                        |
| <b>for 10 k switched contact</b>                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                              |
| — for signal "0", min.                                                                                                                                                                                                                                                                                                                                                      | 0.35 mA                                                                                                                                                                                                                                      |
| — for signal "0", max.                                                                                                                                                                                                                                                                                                                                                      | 1.2 mA                                                                                                                                                                                                                                       |
| — for signal "1", min.                                                                                                                                                                                                                                                                                                                                                      | 2.1 mA                                                                                                                                                                                                                                       |
| — for signal "1", max.                                                                                                                                                                                                                                                                                                                                                      | 10 mA                                                                                                                                                                                                                                        |
| <b>for unswitched contact</b>                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                              |
| — for signal "0", max. (permissible quiescent current)                                                                                                                                                                                                                                                                                                                      | 0.35 to 1.2 mA                                                                                                                                                                                                                               |
| — for signal "1", typ.                                                                                                                                                                                                                                                                                                                                                      | 2.1 ... 10 mA                                                                                                                                                                                                                                |
| <b>for NAMUR encoders</b>                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                              |
| — for signal "0", min.                                                                                                                                                                                                                                                                                                                                                      | 0.35 mA                                                                                                                                                                                                                                      |
| — for signal "0", max.                                                                                                                                                                                                                                                                                                                                                      | 1.2 mA                                                                                                                                                                                                                                       |
| — for signal "1", min.                                                                                                                                                                                                                                                                                                                                                      | 2.1 mA                                                                                                                                                                                                                                       |
| — for signal "1", max.                                                                                                                                                                                                                                                                                                                                                      | 10 mA                                                                                                                                                                                                                                        |
| <b>Input delay (for rated value of input voltage)</b>                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                              |
| <b>for standard inputs</b>                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |
| — parameterizable                                                                                                                                                                                                                                                                                                                                                           | Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms                                                                                                                                                                                             |
| — 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                                                                                                                                                                                                                                        |
| <b>for interrupt inputs</b>                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                              |
| — parameterizable                                                                                                                                                                                                                                                                                                                                                           | Yes                                                                                                                                                                                                                                          |
| <b>for technological functions</b>                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                              |
| — parameterizable                                                                                                                                                                                                                                                                                                                                                           | Yes                                                                                                                                                                                                                                          |
| <b>for NAMUR inputs</b>                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                              |
| — at "0" to "1", max.                                                                                                                                                                                                                                                                                                                                                       | 20 ms                                                                                                                                                                                                                                        |
| — at "1" to "0", max.                                                                                                                                                                                                                                                                                                                                                       | 20 ms                                                                                                                                                                                                                                        |
| <b>Cable length</b>                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                              |
| <ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>                                                                                                                                                                                                                                                                                                          | 200 m; 200 m for technological functions; depending on input frequency, encoder and cable quality; max. 50 m at 20 kHz                                                                                                                       |
| <b>Encoder</b>                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                              |
| <b>Connectable encoders</b>                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                              |
| <ul style="list-style-type: none"> <li>• NAMUR encoder/changeover contact according to EN 60947</li> <li>• Single contact / changeover contact unconnected</li> <li>• Single contact / changeover contact connected with 10 kΩ</li> <li>• 2-wire sensor <ul style="list-style-type: none"> <li>— permissible quiescent current (2-wire sensor), max.</li> </ul> </li> </ul> | <p>Yes; no CO contact</p> <p>Yes; no CO contact</p> <p>Yes; no CO contact</p> <p>Yes</p> <p>1.2 mA</p>                                                                                                                                       |
| <b>Isochronous mode</b>                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                              |

|                                                                |                                                                        |         |                |
|----------------------------------------------------------------|------------------------------------------------------------------------|---------|----------------|
| Filtering and processing time (TCI), min.                      | 60 µs; At 50 µs filter time                                            |         |                |
| Bus cycle time (TDP), min.                                     | 250 µs                                                                 |         |                |
| Interrupts/diagnostics/status information                      |                                                                        |         |                |
| Diagnostics function                                           | Yes                                                                    |         |                |
| Alarms                                                         |                                                                        |         |                |
| • Diagnostic alarm                                             | Yes                                                                    |         |                |
| • Hardware interrupt                                           | Yes                                                                    |         |                |
| Diagnoses                                                      |                                                                        |         |                |
| • Monitoring the supply voltage                                | Yes                                                                    |         |                |
| • Monitoring of encoder power supply                           | Yes; short-circuit                                                     |         |                |
| • Wire-break                                                   | Yes; to I < 350 µA                                                     |         |                |
| • Short-circuit                                                | No                                                                     |         |                |
| Diagnostics indication LED                                     |                                                                        |         |                |
| • RUN LED                                                      | Yes; green LED                                                         |         |                |
| • ERROR LED                                                    | Yes; red LED                                                           |         |                |
| • Monitoring of the supply voltage (PWR-LED)                   | Yes; green LED                                                         |         |                |
| • Channel status display                                       | Yes; green LED                                                         |         |                |
| • for channel diagnostics                                      | Yes; red LED                                                           |         |                |
| • for module diagnostics                                       | Yes; red LED                                                           |         |                |
| Potential separation                                           |                                                                        |         |                |
| Potential separation channels                                  |                                                                        |         |                |
| • between the channels                                         | No                                                                     |         |                |
| • between the channels, in groups of                           | 8                                                                      |         |                |
| • between the channels and backplane bus                       | Yes                                                                    |         |                |
| • Between the channels and load voltage L+                     | Yes                                                                    |         |                |
| • between the channels and the power supply of the electronics | No                                                                     |         |                |
| Isolation                                                      |                                                                        |         |                |
| Isolation tested with                                          | 707 V DC (type test)                                                   |         |                |
| Standards, approvals, certificates                             |                                                                        |         |                |
| Suitable for safety functions                                  | No                                                                     |         |                |
| Ecological footprint                                           |                                                                        |         |                |
| • environmental product declaration                            | Yes                                                                    |         |                |
| Global warming potential                                       |                                                                        |         |                |
| — global warming potential, (total) [CO2 eq]                   | 18.9 kg                                                                |         |                |
| — global warming potential, (during production) [CO2 eq]       | 12.1 kg                                                                |         |                |
| — global warming potential, (during operation) [CO2 eq]        | 7.66 kg                                                                |         |                |
| — global warming potential, (after end of life cycle) [CO2 eq] | -1.02 kg                                                               |         |                |
| product functions / security / header                          |                                                                        |         |                |
| signed firmware update                                         | No                                                                     |         |                |
| data integrity                                                 | No                                                                     |         |                |
| Ambient conditions                                             |                                                                        |         |                |
| Ambient temperature during operation                           |                                                                        |         |                |
| • horizontal installation, min.                                | -30 °C                                                                 |         |                |
| • horizontal installation, max.                                | 60 °C                                                                  |         |                |
| • vertical installation, min.                                  | -30 °C                                                                 |         |                |
| • vertical installation, max.                                  | 40 °C                                                                  |         |                |
| Altitude during operation relating to sea level                |                                                                        |         |                |
| • Installation altitude above sea level, max.                  | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual |         |                |
| Dimensions                                                     |                                                                        |         |                |
| Width                                                          | 35 mm                                                                  |         |                |
| Height                                                         | 147 mm                                                                 |         |                |
| Depth                                                          | 129 mm                                                                 |         |                |
| Weights                                                        |                                                                        |         |                |
| Weight, approx.                                                | 240 g                                                                  |         |                |
| Classifications                                                |                                                                        |         |                |
|                                                                |                                                                        | Version | Classification |
|                                                                | eClass                                                                 | 14      | 27-24-22-04    |

|        |     |             |
|--------|-----|-------------|
| eClass | 12  | 27-24-22-04 |
| eClass | 9.1 | 27-24-22-04 |
| eClass | 9   | 27-24-22-04 |
| eClass | 8   | 27-24-22-04 |
| eClass | 7.1 | 27-24-22-04 |
| eClass | 6   | 27-24-22-04 |
| ETIM   | 9   | EC001419    |
| ETIM   | 8   | EC001419    |
| ETIM   | 7   | EC001419    |

| Approvals / Certificates |                                |
|--------------------------|--------------------------------|
| General Product Approval | For use in hazardous locations |



KC



|                                |
|--------------------------------|
| For use in hazardous locations |
|--------------------------------|

FM

CCC-Ex



Type Examination Certificate



Miscellaneous

|                   |
|-------------------|
| Marine / Shipping |
|-------------------|



NK / Nippon Kaiji Kyokai



|                   |             |
|-------------------|-------------|
| Marine / Shipping | Environment |
|-------------------|-------------|



CCS (China Classification Society)



last modified:

10/9/2024