

# SIEMENS

## Product data sheet

## 6ES7677-1DD10-0BH0



SIMATIC S7-MODULAR EMBEDDED CONTROLLER,  
EC31-HMI/RTX,  
EC31 HW (6ES7677-1DD10-0BA0) WITH 1 GB RAM,  
4 GB FLASH DISK AND PREINSTALLED SW:  
WINDOWS EMBEDDED STANDARD;  
SIMATIC WINAC RTX,  
SIMATIC SOFTNET-S7/ LEAN,  
WINCC FLEXIBLE RT 2048 PT,  
INCL SMARTACCESS, RECIPES,  
ARCHIVES INTERFACES: 1. IF: 2 X PROFINET,  
2. IF: 1 X FAST ETHERNET,  
3. IF: 2 X USB, MMC SLOT,  
DOCUMENTATION ON DVD, RESTORE DVD

### General information

|                          |      |
|--------------------------|------|
| Hardware product version | 01   |
| Firmware version         | V2.0 |

### PC configuration

|                     |                                        |
|---------------------|----------------------------------------|
| Computer platform   | SIMATIC S7 modular embedded controller |
| Processor selection | Intel Core Duo 1.2 GHz                 |
| Main memory         | 1 GB RAM                               |
| Operating systems   | Windows Embedded Standard 2009         |

### Installed software

|               |                                                                          |
|---------------|--------------------------------------------------------------------------|
| Visualization | WinCC flexible RT 2008 SP2, incl. Sm@rtAccess, recipes, archives options |
| Control       | SIMATIC WinAC RTX 2010                                                   |
| Communication | Yes                                                                      |

### Supply voltage

|                                     |        |
|-------------------------------------|--------|
| Rated value, 24 V DC                | Yes    |
| permissible range, lower limit (DC) | 20.4 V |

|                                          |                                                     |
|------------------------------------------|-----------------------------------------------------|
| permissible range, upper limit (DC)      | 28.8 V                                              |
| <b>Mains buffering</b>                   |                                                     |
| Mains/voltage failure stored energy time | 5 ms                                                |
| <b>Input current</b>                     |                                                     |
| Rated value at 24 V DC                   | 800 mA ; without backplane bus and USB power supply |
| <b>Power losses</b>                      |                                                     |
| Power loss, typ.                         | 34 W                                                |
| <b>Memory</b>                            |                                                     |
| Memory type                              | 512 KB non-volatile memory for retentive data       |
| <b>Work memory</b>                       |                                                     |
| integrated                               | 1 Gbyte                                             |
| <b>CPU processing times</b>              |                                                     |
| for bit operations, min.                 | 0.0040 µs ; typ.                                    |
| for fixed point arithmetic, min.         | 0.0030 µs ; typ.                                    |
| for floating point arithmetic, min.      | 0.0040 µs ; typ.                                    |
| <b>CPU-blocks</b>                        |                                                     |
| <b>DB</b>                                |                                                     |
| Number, max.                             | Max. code size and max. data size: 4 MB each        |
| Size, max.                               | 64 kbyte                                            |
| <b>FB</b>                                |                                                     |
| Number, max.                             | Max. code size and max. data size: 4 MB each        |
| Size, max.                               | 64 kbyte                                            |
| <b>FC</b>                                |                                                     |
| Number, max.                             | Max. code size and max. data size: 4 MB each        |
| Size, max.                               | 64 kbyte                                            |
| <b>OB</b>                                |                                                     |
| Number, max.                             | Max. code size and max. data size: 4 MB each        |
| Size, max.                               | 64 kbyte                                            |
| Number of free cycle OBs                 | 1 ; OB 1                                            |
| Number of time alarm OBs                 | 1 ; OB 10                                           |
| Number of delay alarm OBs                | 1 ; OB 20                                           |
| Number of time interrupt OBs             | 9 ; OB 30-38                                        |
| Number of process alarm OBs              | 1 ; OB 40                                           |

|                                        |                          |
|----------------------------------------|--------------------------|
| Number of startup OBs                  | 2 ; OB 100, 102          |
| Number of asynchronous error OBs       | 7 ; OB 80, 82-85, 86, 88 |
| Number of synchronous error OBs        | 2 ; OB 121, 122          |
| Nesting depth                          |                          |
| per priority class                     | 24                       |
| additional within an error OB          | 24                       |
| Counters, timers and their retentivity |                          |
| S7 counter                             |                          |
| Number                                 | 2048                     |
| Retentivity                            |                          |
| adjustable                             | Yes                      |
| lower limit                            | 0                        |
| upper limit                            | 2047                     |
| preset                                 | 8                        |
| Counting range                         |                          |
| adjustable                             | Yes                      |
| lower limit                            | 0                        |
| upper limit                            | 999                      |
| IEC counter                            |                          |
| present                                | Yes                      |
| Type                                   | SFB                      |
| S7 times                               |                          |
| Number                                 | 2048                     |
| Retentivity                            |                          |
| adjustable                             | Yes                      |
| lower limit                            | 0                        |
| upper limit                            | 2047                     |
| Time range                             |                          |
| lower limit                            | 10 ms                    |
| upper limit                            | 9990 s                   |
| IEC timer                              |                          |
| present                                | Yes                      |
| Type                                   | SFB                      |

|                                    |                                              |
|------------------------------------|----------------------------------------------|
| Data areas and their retentivity   |                                              |
| retentive data area, total         | 512 KB                                       |
| Flag                               |                                              |
| Number, max.                       | 16 kbyte                                     |
| of which retentive without battery | MB 0 to MB 16383                             |
| Retentivity preset                 | MB 0 to MB 15                                |
| Number of clock memories           | 8                                            |
| Data blocks                        |                                              |
| Number, max.                       | Max. code size and max. data size: 4 MB each |
| Size, max.                         | 64 kbyte                                     |
| Address area                       |                                              |
| I/O address area                   |                                              |
| Inputs                             | 16 kbyte                                     |
| Outputs                            | 16 kbyte                                     |
| of which, distributed              |                                              |
| Inputs                             | 8 kbyte                                      |
| Outputs                            | 8 kbyte                                      |
| Process image                      |                                              |
| Inputs, adjustable                 | 8 kbyte                                      |
| Outputs, adjustable                | 8 kbyte                                      |
| Inputs, default                    | 512 byte                                     |
| Outputs, default                   | 512 byte                                     |
| Subprocess images                  |                                              |
| Number of subprocess images, max.  | 15                                           |
| Digital channels                   |                                              |
| Inputs                             | 128000                                       |
| Outputs                            | 128000                                       |
| Analog channels                    |                                              |
| Inputs                             | 8000                                         |
| Outputs                            | 8000                                         |
| Time of day                        |                                              |
| Clock                              |                                              |
| Hardware clock (real-time clock)   | Yes                                          |

|                                                                 |                                                                  |
|-----------------------------------------------------------------|------------------------------------------------------------------|
| Clock synchronization                                           |                                                                  |
| supported                                                       | Yes                                                              |
| to PC-CP, slave                                                 | Yes                                                              |
| on Ethernet via NTP                                             | Yes                                                              |
| Interfaces                                                      |                                                                  |
| Number of USB interfaces                                        | 2                                                                |
| serial interface                                                | 0                                                                |
| Industrial Ethernet                                             |                                                                  |
| Industrial Ethernet interface                                   | X1: 2 ports 10/100 Mbit/s (ERTEC-based) X2: 1 port 10/100 Mbit/s |
| 1st interface                                                   |                                                                  |
| Type of interface                                               | PROFINET                                                         |
| Physics                                                         | 2x RJ45                                                          |
| Automatic detection of transmission speed                       | Yes                                                              |
| Autonegotiation                                                 | Yes                                                              |
| Autocrossing                                                    | Yes                                                              |
| Number of connection resources                                  | 32                                                               |
| Functionality                                                   |                                                                  |
| PROFINET IO Device                                              | No                                                               |
| PROFINET IO Controller                                          | Yes                                                              |
| PROFINET CBA                                                    | Yes                                                              |
| Open IE communication                                           | Yes                                                              |
| PROFINET IO Controller                                          |                                                                  |
| Services                                                        |                                                                  |
| PG/OP communication                                             | Yes                                                              |
| S7 routing                                                      | Yes                                                              |
| S7 communication                                                | Yes                                                              |
| Isochronous mode                                                | Yes                                                              |
| Number of connectable IO devices, max.                          | 256                                                              |
| Max. number of connectable IO devices for RT                    | 256                                                              |
| of which in line, max.                                          | 256                                                              |
| Number of IO devices with IRT and the option "high flexibility" | 256                                                              |
| of which in line, max.                                          | 61                                                               |

|                                                                                  |                                                                                                                                |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Number of IO Devices with IRT and the option "high performance", max.            | 256                                                                                                                            |
| of which in line, max.                                                           | 64                                                                                                                             |
| IRT, supported                                                                   | Yes                                                                                                                            |
| Prioritized startup supported                                                    | Yes                                                                                                                            |
| Number of IO Devices, max.                                                       | 32                                                                                                                             |
| Activation/deactivation of IO Devices                                            | Yes                                                                                                                            |
| Maximum number of IO devices that can be activated/deactivated at the same time. | 8                                                                                                                              |
| IO Devices changing during operation (partner ports), supported                  | Yes                                                                                                                            |
| Max. number of IO devices per tool                                               | 8                                                                                                                              |
| Device replacement without swap medium                                           | Yes                                                                                                                            |
| Send cycles                                                                      | Adjustable: 250 µs, 500 µs and 1 ms                                                                                            |
| Updating times                                                                   | 250 µs - 128 ms (with signal cycle 250 µs); 500 µs - 256 ms (with signal cycle 500 µs); 1 ms - 512 ms (with signal cycle 1 ms) |
| <b>Address area</b>                                                              |                                                                                                                                |
| Inputs, max.                                                                     | 16 kbyte                                                                                                                       |
| Outputs, max.                                                                    | 16 kbyte                                                                                                                       |
| User data per address area, max.                                                 | 2 kbyte                                                                                                                        |
| User data consistency, max.                                                      | 256 byte                                                                                                                       |
| <b>PROFINET CBA</b>                                                              |                                                                                                                                |
| acyclic transmission                                                             | Yes                                                                                                                            |
| Cyclic transmission                                                              | Yes                                                                                                                            |
| <b>Open IE communication</b>                                                     |                                                                                                                                |
| Open IE communication, supported                                                 | Yes                                                                                                                            |
| Number of connections, max.                                                      | 32                                                                                                                             |
| Local port numbers used at the system end                                        | 0, 20, 21, 23, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535                                    |
| <b>PROFINET functions</b>                                                        |                                                                                                                                |
| Detection of accessible nodes, supported                                         | Yes ; DCP                                                                                                                      |
| Assignment of the IP address, supported                                          | Yes ; DCP                                                                                                                      |
| Assignment of the device name, supported                                         | Yes ; DCP                                                                                                                      |
| Topology recognition, supported                                                  | Yes ; LLDP, LLDP MIB, SNMP                                                                                                     |

|                                                              |                                                               |
|--------------------------------------------------------------|---------------------------------------------------------------|
| Extended network diagnostics with Standard MIB II, supported | Yes ; Standard MIB II, SNMP                                   |
| <b>2nd interface</b>                                         |                                                               |
| Type of interface                                            | Integrated Ethernet interface                                 |
| Physics                                                      | Ethernet RJ45                                                 |
| Automatic detection of transmission speed                    | Yes                                                           |
| Autonegotiation                                              | Yes                                                           |
| Autocrossing                                                 | No                                                            |
| Number of connection resources                               | 32                                                            |
| <b>Functionality</b>                                         |                                                               |
| PROFINET IO Controller                                       | No                                                            |
| PROFINET IO Device                                           | No                                                            |
| PROFINET CBA                                                 | No                                                            |
| <b>PROFINET functions</b>                                    |                                                               |
| Detection of accessible nodes, supported                     | Yes ; DCP                                                     |
| Assignment of the IP address, supported                      | Yes ; DCP                                                     |
| Assignment of the device name, supported                     | Yes ; DCP                                                     |
| Topology recognition, supported                              | Yes ; LLDP, LLDP MIB, SNMP                                    |
| Extended network diagnostics with Standard MIB II, supported | Yes ; Standard MIB II, SNMP                                   |
| <b>Communication functions</b>                               |                                                               |
| PG/OP communication                                          | Yes                                                           |
| <b>Global data communication</b>                             |                                                               |
| supported                                                    | No                                                            |
| <b>S7 basic communication</b>                                |                                                               |
| supported                                                    | No                                                            |
| <b>S7 communication</b>                                      |                                                               |
| supported                                                    | Yes                                                           |
| as server                                                    | Yes                                                           |
| as client                                                    | Yes                                                           |
| <b>Open IE communication</b>                                 |                                                               |
| TCP/IP                                                       | Yes ; Via integrated PROFINET interface (X1) and loadable FBs |
| Number of connections, max.                                  | 32                                                            |

|                                                      |                                                                           |
|------------------------------------------------------|---------------------------------------------------------------------------|
| Data length, max.                                    | 32 kbyte                                                                  |
| ISO-on-TCP (RFC1006)                                 | Yes ; Via integrated PROFINET interface (X1) and loadable FBs             |
| Number of connections, max.                          | 32                                                                        |
| Data length, max.                                    | 32 kbyte                                                                  |
| UDP                                                  | Yes ; Via integrated PROFINET interface (X1) and loadable FBs             |
| Number of connections, max.                          | 32                                                                        |
| Data length, max.                                    | 1472 byte                                                                 |
| Number of connections                                |                                                                           |
| overall                                              | 64                                                                        |
| usable for PG communication                          |                                                                           |
| reserved for PG communication                        | 1                                                                         |
| usable for OP communication                          |                                                                           |
| reserved for OP communication                        | 1                                                                         |
| S7 message functions                                 |                                                                           |
| Number of login stations for message functions, max. | 62 ; The alarm functions cannot currently be used for central bus modules |
| Process diagnostic messages                          | Yes ; Alarm_S                                                             |
| Test commissioning functions                         |                                                                           |
| Status/control                                       |                                                                           |
| Status/control variable                              | Yes                                                                       |
| Forcing                                              |                                                                           |
| Forcing                                              | No                                                                        |
| Diagnostic buffer                                    |                                                                           |
| present                                              | Yes                                                                       |
| EMC                                                  |                                                                           |
| Emission of radio interference acc. to EN 55 011     |                                                                           |
| Limit class A, for use in industrial areas           | Yes                                                                       |
| Degree and class of protection                       |                                                                           |
| IP20                                                 | Yes                                                                       |
| Standards, approvals, certificates                   |                                                                           |
| CE mark                                              | Yes                                                                       |
| CSA approval                                         | Yes ; Included in cULus                                                   |

|                                                |                                               |
|------------------------------------------------|-----------------------------------------------|
| cULus                                          | Yes                                           |
| C-TICK                                         | Yes                                           |
| FM approval                                    | Yes                                           |
| Ambient conditions                             |                                               |
| Operating temperature                          |                                               |
| Min.                                           | 0 °C                                          |
| max.                                           | 50 °C                                         |
| Storage/transport temperature                  |                                               |
| Min.                                           | -40 °C                                        |
| max.                                           | 70 °C                                         |
| Vibrations                                     |                                               |
| Operation, checked according to IEC 60068-2-6  | Yes                                           |
| Transport tested checked to IEC 60068-2-6      | Yes                                           |
| Shock test                                     |                                               |
| checked according to IEC 60068-2-27            | Yes                                           |
| checked according to IEC 60068-2-29            | Yes                                           |
| Shock testing                                  |                                               |
| checked according to IEC 60068-2-29            | Yes                                           |
| Operation, checked according to IEC 60068-2-29 | Operation, tested according to IEC 60068-2-27 |
| Storage/transport, checked to IEC 60068-2-29   | Yes                                           |
| Configuration                                  |                                               |
| Configuration software                         |                                               |
| STEP 7                                         | Yes                                           |
| programming                                    |                                               |
| Programming language                           |                                               |
| LAD                                            | Yes                                           |
| FBD                                            | Yes                                           |
| STL                                            | Yes                                           |
| SCL                                            | Yes                                           |
| CFC                                            | Yes                                           |
| GRAPH                                          | Yes                                           |
| HiGraph®                                       | Yes                                           |
| Dimensions                                     |                                               |

|        |              |
|--------|--------------|
| Width  | 160 mm       |
| Height | 125 mm       |
| Depth  | 115 mm       |
| Status | Jul 17, 2012 |