SIEMENS

SIMATIC

S7-1500/ET 200MP
Digital input module DI 32x24VDC BA
(6ES7521-1BL10-0AA0)

Manual
Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

**DANGER**
indicates that death or severe personal injury will result if proper precautions are not taken.

**WARNING**
indicates that death or severe personal injury may result if proper precautions are not taken.

**CAUTION**
indicates that minor personal injury can result if proper precautions are not taken.

**NOTICE**
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

**WARNING**
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.
Preface

Purpose of the documentation

This product manual supplements the system manuals:

- S7-1500 Automation System
- ET 200MP Distributed I/O System

Functions that relate in general to the systems are described in these system manuals.

The information provided in this product manual and in the system/function manuals supports you in commissioning the systems.

Changes compared to previous version

Compared to the previous version, this product manual includes detailed information on the module functions, for example, as of which STEP 7 version the function is supported.

Conventions

The term "CPU" is used in this manual both for the CPUs of the S7-1500 automation system, as well as for interface modules of the ET 200MP distributed I/O system.

Please also observe notes marked as follows:

---

Note

A note contains important information on the product described in the documentation, on the handling of the product or on the section of the documentation to which particular attention should be paid.

---
Security Information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens’ products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. You can find more information about industrial security on the Internet [http://www.siemens.com/industrialsecurity].

To stay informed about product updates as they occur, sign up for a product-specific newsletter. You can find more information on the Internet [http://support.automation.siemens.com].

Open Source Software

Open-source software is used in the firmware of the product described. Open Source Software is provided free of charge. We are liable for the product described, including the open-source software contained in it, pursuant to the conditions applicable to the product. Siemens accepts no liability for the use of the open source software over and above the intended program sequence, or for any faults caused by modifications to the software.

For legal reasons, we are obliged to publish the original text of the license conditions and copyright notices. Please read the information relating to this in the appendix.
Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>4</td>
</tr>
<tr>
<td>1 Documentation guide</td>
<td>7</td>
</tr>
<tr>
<td>2 Product overview</td>
<td>9</td>
</tr>
<tr>
<td>2.1 Properties</td>
<td>9</td>
</tr>
<tr>
<td>3 Wiring</td>
<td>11</td>
</tr>
<tr>
<td>3.1 Wiring and block diagram</td>
<td>11</td>
</tr>
<tr>
<td>4 Address space</td>
<td>13</td>
</tr>
<tr>
<td>4.1 Address space</td>
<td>13</td>
</tr>
<tr>
<td>5 Diagnostics alarms</td>
<td>18</td>
</tr>
<tr>
<td>5.1 Status and error displays</td>
<td>18</td>
</tr>
<tr>
<td>6 Technical specifications</td>
<td>20</td>
</tr>
<tr>
<td>A Dimensional drawing</td>
<td>23</td>
</tr>
<tr>
<td>B Open Source Software</td>
<td>25</td>
</tr>
</tbody>
</table>
The documentation for the SIMATIC S7-1500 automation system and the SIMATIC ET 200MP distributed I/O system is arranged into three areas. This arrangement enables you to access the specific content you require.

**Basic information**
System Manual and Getting Started describe in detail the configuration, installation, wiring and commissioning of the SIMATIC S7-1500 and ET 200MP systems. The STEP 7 online help supports you in the configuration and programming.

**Device information**
Manuals contain a compact description of the module-specific information, such as properties, terminal diagrams, characteristics, technical specifications.

**General information**
The function manuals contain detailed descriptions on general topics regarding the SIMATIC S7-1500 and ET 200MP systems, e.g. diagnostics, communication, Motion Control, Web server.

You can download the documentation free of charge from the Internet

Changes and supplements to the manuals are documented in a Product Information.

---

<table>
<thead>
<tr>
<th>Function manuals on general topics</th>
<th>Device information with detailed information about the modules</th>
<th>Information about the system</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Diagnostics</td>
<td>• CPUs</td>
<td>• Getting Started S7-1500</td>
</tr>
<tr>
<td>• Communication</td>
<td>• Interface modules</td>
<td>• S7-1500/ET 200MP System Manual</td>
</tr>
<tr>
<td>• Motion Control</td>
<td>• Digital modules</td>
<td>• TIA Portal online help</td>
</tr>
<tr>
<td>• Web server</td>
<td>• Analog modules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cycle and reaction times</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PROFINET</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PROFIBUS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ...</td>
<td></td>
</tr>
</tbody>
</table>
Manual Collection S7-1500 / ET 200MP

The Manual Collection contains the complete documentation on the SIMATIC S7-1500 automation system and the ET 200MP distributed I/O system gathered together in one file.


My Documentation Manager

The My Documentation Manager is used to combine entire manuals or only parts of these to your own manual.
You can export the manual as PDF file or in a format that can be edited later.


Applications & Tools

Applications & Tools supports you with various tools and examples for solving your automation tasks. Solutions are shown in interplay with multiple components in the system - separated from the focus in individual products.


CAx Download Manager

The CAx Download Manager is used to access the current product data for your CAx or CAe systems.
You configure your own download package with a few clicks.
In doing so you can select:

- Product images, 2D dimension drawings, 3D models, internal circuit diagrams, EPLAN macro files
- Manuals, characteristics, operating manuals, certificates
- Product master data

You can find the CAx Download Manager on the Internet [http://support.automation.siemens.com/WW/view/en/42455541].
Product overview

2.1 Properties

Part number:

6ES7521-1BL10-0AA0

View of the module

Figure 2-1 View of the DI 32x24VDC BA module
Properties

The module has the following technical properties:

- 32 digital inputs; electrically isolated in groups of 16
- Rated input voltage 24 VDC
- Suitable for switches and 2-/3-/4-wire proximity switches
- Hardware compatible with digital input module DI 16x24VDC BA (6ES7521-1BH10-0AA0)

The module supports the following functions:

<table>
<thead>
<tr>
<th>Function</th>
<th>Firmware version of the module</th>
<th>Configuration software</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>STEP 7 (TIA Portal)</td>
</tr>
<tr>
<td>Firmware update</td>
<td>V1.0.0 or higher</td>
<td>V13 or higher</td>
</tr>
<tr>
<td>Identification data I&amp;M0 to I&amp;M3</td>
<td>V1.0.0 or higher</td>
<td>V13 or higher</td>
</tr>
<tr>
<td>Module internal shared input (MSI)</td>
<td>V1.0.0 or higher</td>
<td>V13 Update 3 or higher (PROFINET IO only)</td>
</tr>
<tr>
<td>Configurable submodules / submodules for Shared Device</td>
<td>V1.0.0 or higher</td>
<td>V13 Update 3 or higher (PROFINET IO only)</td>
</tr>
</tbody>
</table>

You can configure the module with STEP 7 (TIA Portal) and with a GSD file.

Accessories

The following accessories are supplied with the module and can also be ordered separately as spare parts:

- Front connector (push-in terminals) including cable tie
- Labeling strips
- U connector
- Universal front door

3.1 Wiring and block diagram

This section contains the block diagram of the module and outlines various connection options.

Abbreviations used

Meaning of the abbreviations used in the following figure:

- M: Ground connector
- CHx: Channel or display for the channel status

The figure below shows you how to connect the module and the assignment of the channels to the addresses (input byte a to input byte d).

![Block diagram and terminal assignment](image)

- **①** Backplane bus interface

Figure 3-1   Block diagram and terminal assignment
4.1 Address space

The module can be configured in various ways in STEP 7. Depending on the configuration, additional/different addresses are assigned in the process image of the inputs.

Configuration options of DI 32x24VDC BA

You can configure the module with STEP 7 (TIA Portal) or with a GSD file.

When you configure the module by means of the GSD file, the configurations are available under different abbreviations/module names.

The following configurations are possible:

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Short designation/ module name in the GSD file</th>
<th>Configuration software, e.g., with STEP 7 (TIA Portal)</th>
<th>Integrated in hardware catalog STEP 7 (TIA Portal)</th>
<th>GSD file in STEP 7 (TIA Portal) V12 or higher or STEP 7 V5.5 SP3 or higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x 32-channel without value status</td>
<td>DI 32x24VDC BA</td>
<td>V13 or higher</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4 x 8-channel without value status</td>
<td>DI 32x24VDC BA S</td>
<td>V13 Update 3 or higher (PROFINET IO only)</td>
<td>X (PROFINET IO only)</td>
<td></td>
</tr>
<tr>
<td>1 x 32-channel with value status for module-internal Shared Input with up to 4 submodules</td>
<td>DI 32x24VDC BA MSI</td>
<td>V13 Update 3 or higher (PROFINET IO only)</td>
<td></td>
<td>X (PROFINET IO only)</td>
</tr>
</tbody>
</table>
Address space for configuration as 1 x 32-channel DI 32x24VDC BA

The figure below shows the address space assignment for configuration as a 1 x 32-channel module. You can freely assign the start address for the module. The addresses of the channels are based on the start address.

The letters "a" to "d" are printed on the module. "EB a", for example, stands for module start address input byte a.

Assignment in the process image input (PII)

<table>
<thead>
<tr>
<th>IB a</th>
<th>Input value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Channel 0 through 7 (input CH0 through CH7)</td>
</tr>
<tr>
<td>8</td>
<td>Channel 8 through 15 (input CH8 through CH15)</td>
</tr>
</tbody>
</table>

Figure 4-1 Address space for configuration as 1 x 32-channel DI 32x24VDC BA

Address space for configuration as 4 x 8-channel DI 32x24VDC BA S

For the configuration as a 4 x 8-channel module, the channels of the module are divided into multiple submodules. The submodules can be assigned to different IO controllers when the module is used in a Shared Device.

Unlike the 1 x 32-channel module configuration, each of the four submodules has a freely assignable start address.

Assignment in the process image of the input (PII)

<table>
<thead>
<tr>
<th>IB a</th>
<th>Input value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Channel 0 to 7 (input CH0 to CH7) 1st submodule</td>
</tr>
<tr>
<td>8</td>
<td>Channel 8 to 15 (input CH8 to CH15) 2nd submodule</td>
</tr>
<tr>
<td>23</td>
<td>Channel 16 to 23 (input CH16 to CH23) 3rd submodule</td>
</tr>
<tr>
<td>31</td>
<td>Channel 24 to 31 (input CH24 to CH31) 4th submodule</td>
</tr>
</tbody>
</table>

Figure 4-2 Address space for configuration as 4 x 8-channel DI 32x24VDC BA S
Address space for configuration as 1 x 32-channel DI 32x24VDC BA MSI

The channels 0 to 31 of the module are copied to up to 4 submodules with configuration 1 x 32-channel module (Module-internal Shared Input, MSI). Channels 0 to 31 are then available with identical input values in different submodules. These submodules can be assigned to up to four IO controllers when the module is used in a Shared Device. Each IO controller has read access to the same channels.

The number of usable submodules depends on the interface module used. Please observe the information in the manual for the particular interface module.

Value status (Quality Information, QI)

The meaning of the value status depends on the submodule involved.

For the 1st submodule (=basic submodule), the value status is not relevant.

For the 2nd to 4th submodule (=MSI submodule), the value status 0 indicates that the value is incorrect or the basic submodule has not yet been configured (not ready for operation).
The figure below shows the assignment of the address space with submodules 1 and 2.

| Address space | 4.1 Address space |

Assignment in the process image input (PII) for 1st and 2nd submodule

<table>
<thead>
<tr>
<th>Input value of 1st submodule (basic submodule):</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB a</td>
</tr>
<tr>
<td>IB (a+1)</td>
</tr>
<tr>
<td>IB (a+2)</td>
</tr>
<tr>
<td>IB (a+3)</td>
</tr>
<tr>
<td>IB (a+4)</td>
</tr>
<tr>
<td>IB (a+5)</td>
</tr>
<tr>
<td>IB (a+6)</td>
</tr>
<tr>
<td>IB (a+7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input value of 2nd submodule (MSI submodule):</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB b</td>
</tr>
<tr>
<td>IB (b+1)</td>
</tr>
<tr>
<td>IB (b+2)</td>
</tr>
<tr>
<td>IB (b+3)</td>
</tr>
<tr>
<td>IB (b+4)</td>
</tr>
<tr>
<td>IB (b+5)</td>
</tr>
<tr>
<td>IB (b+6)</td>
</tr>
<tr>
<td>IB (b+7)</td>
</tr>
</tbody>
</table>

Channel 0 through 7 (input CH0 through CH7)
Channel 8 through 15 (input CH8 through CH15)
Channel 16 through 23 (input CH16 through CH23)
Channel 24 through 31 (input CH24 through CH31)
Channel 0 through 7 (value status QI0 through QI7)
Channel 8 through 15 (value status QI8 through QI15)
Channel 16 through 23 (value status QI16 through QI23)
Channel 24 through 31 (value status QI24 through QI31)

0 = value read in on channel is faulty

Figure 4-3    Address space for configuration as 1 x 32-channel DI 32x24VDC BA MSI with value status
The figure below shows the assignment of the address space with submodules 3 and 4.

Assignment in the process image input (PII) for 3rd and 4th submodule

<table>
<thead>
<tr>
<th>Submodule</th>
<th>Binary Address</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB c</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>IB (=c+1)</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>IB (=c+2)</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>IB (=c+3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IB (=c+4)</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>IB (=c+5)</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>IB (=c+6)</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>IB (=c+7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Input value of 3rd submodule (MSI submodule):
- Channel 0 through 7 (input CH0 through CH7)
- Channel 8 through 15 (input CH8 through CH15)
- Channel 16 through 23 (input CH16 through CH23)
- Channel 24 through 31 (input CH24 through CH31)

Input value of 4th submodule (MSI submodule):
- Channel 0 through 7 (value status Q10 through Q17)
- Channel 8 through 15 (value status Q18 through Q15)
- Channel 16 through 23 (value status Q16 through Q23)
- Channel 24 through 31 (value status Q24 through Q31)

0 = value read in on channel is faulty

Figure 4-4  Address space for configuration as 1 x 32-channel DI 32x24VDC BA MSI with value status
The module has no selectable diagnostics. Diagnostics alarms, for example, cannot be output with STEP 7 (TIA Portal).

5.1 Status and error displays

LED displays

The figure below shows you the LED displays (status and error displays) of the DI 32x24VDC BA.

Figure 5-1 LED displays of the module DI 32x24VDC BA
Meaning of the LED displays

The tables below explain the meaning of the status and error displays.

LED RUN/ERROR

Table 5-1 RUN/ERROR status and error displays

<table>
<thead>
<tr>
<th>LED</th>
<th>Meaning</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Voltage missing or too low at backplane bus.</td>
<td>• Switch on the CPU and/or the system power supply modules. • Verify that the U connectors are inserted. • Check to see if too many modules are inserted.</td>
</tr>
<tr>
<td>Flashes</td>
<td>Module is starting up.</td>
<td>---</td>
</tr>
<tr>
<td>On</td>
<td>Module is ready.</td>
<td></td>
</tr>
<tr>
<td>Flashes</td>
<td>Hardware defective.</td>
<td>Replace the module.</td>
</tr>
</tbody>
</table>

LED CHx

Table 5-2 CHx status display

<table>
<thead>
<tr>
<th>LED CHx</th>
<th>Meaning</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>0 = Status of the input signal.</td>
<td>---</td>
</tr>
<tr>
<td>On</td>
<td>1 = Status of the input signal.</td>
<td>---</td>
</tr>
</tbody>
</table>
## Technical specifications of the DI 32x24VDC BA

| Product type designation | DI 32x24VDC BA  
|--------------------------|----------------------------  
| **General information**  |  
| Hardware version         | E01  
| Firmware version         | V1.0.0  
| **Product function**     |  
| I&M data                 | Yes; I&M0 to I&M3  
| **Engineering with**     |  
| STEP 7 TIA Portal can be configured/integrated as of version | V13 / V13  
| STEP 7 can be configured/integrated as of version | V5.5 SP3 / -  
| **Operating mode**       |  
| MSI                      | Yes  
| **Supply voltage**       |  
| Type of supply voltage   | DC  
| Rated value (DC)         | 24 V  
| Permitted range, low limit (DC) | 20.4 V  
| Permitted range, high limit (DC) | 28.8 V  
| **Power**                |  
| Power taken from the backplane bus | 1.05 W  
| **Power loss**           |  
| Power loss, typ.         | 3 W  
| **Digital inputs**       |  
| Number of inputs         | 32  
| Sinking/sourcing input   | Sinking input  
| Input characteristic curve acc. to IEC 61131, type 3 | Yes  
| **Input voltage**        |  
| Rated value, DC          | 24  
| for signal "0"           | -30 to +5 V  
| for signal "1"           | 11 to 30 V  
| Permitted voltage at input, min. | -30 V; -3 V permanently; -30 V brief reverse polarity protection  
| Permitted voltage at input, max. | 30 V  
| **Input current**        |  
| for signal "1", typ.     | 2.7 mA  

Digital input module DI 32x24VDC BA (6ES7521-1BL10-0AA0)
<table>
<thead>
<tr>
<th><strong>Input delay (for rated value of input voltage)</strong></th>
<th>6ES7521-1BL10-0AA0</th>
</tr>
</thead>
<tbody>
<tr>
<td>For standard inputs</td>
<td></td>
</tr>
<tr>
<td>• Configurable</td>
<td>No</td>
</tr>
<tr>
<td>• with &quot;0&quot; to &quot;1&quot;, min.</td>
<td>3 ms</td>
</tr>
<tr>
<td>• with &quot;0&quot; to &quot;1&quot;, max.</td>
<td>4 ms</td>
</tr>
<tr>
<td>• with &quot;1&quot; to &quot;0&quot;, min.</td>
<td>3 ms</td>
</tr>
<tr>
<td>• with &quot;1&quot; to &quot;0&quot;, max.</td>
<td>4 ms</td>
</tr>
<tr>
<td>For interrupt inputs</td>
<td>No</td>
</tr>
<tr>
<td>• Configurable</td>
<td>No</td>
</tr>
</tbody>
</table>

**Cable length**
- Cable length shielded, max. 1000 m
- Cable length unshielded, max. 600 m

**Encoders**
- Connectable encoders
  - 2-wire sensor Yes
    - Permitted quiescent current (2-wire sensor), max. 1.5 mA

**Isochronous mode**
- Isochronous mode (application synchronized up to terminal) No

**Interrupts/diagnostics/status information**
- **Interrupts**
  - Diagnostics interrupt No
  - Hardware interrupt No
- **Diagnostics alarms**
  - Diagnostics No
  - Monitoring of the supply voltage No
  - Wire break No
  - Short-circuit No
  - Fuse blown No
- **Diagnostics indicator LED**
  - RUN LED Yes; green LED
  - ERROR LED Yes; red LED
  - MAINT LED No
  - Monitoring of the supply voltage No
  - Channel status display Yes; green LED
  - For channel diagnostics No
  - For module diagnostics No
**Technical specifications**

<table>
<thead>
<tr>
<th></th>
<th>6ES7521-1BL10-0AA0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical isolation</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Electrical isolation of channels</strong></td>
<td></td>
</tr>
<tr>
<td>Between the channels</td>
<td>No</td>
</tr>
<tr>
<td>Between the channels, in groups of</td>
<td>16</td>
</tr>
<tr>
<td>Between the channels and the backplane bus</td>
<td>Yes</td>
</tr>
<tr>
<td>Between the channels and the supply voltage of the electronics</td>
<td>No</td>
</tr>
<tr>
<td><strong>Permitted potential difference</strong></td>
<td></td>
</tr>
<tr>
<td>Between different circuits</td>
<td>75 VDC / 60 VAC (basic isolation)</td>
</tr>
<tr>
<td><strong>Isolation</strong></td>
<td></td>
</tr>
<tr>
<td>Isolation tested with</td>
<td>707 VDC (type test)</td>
</tr>
<tr>
<td><strong>Distributed mode</strong></td>
<td></td>
</tr>
<tr>
<td>Prioritized startup</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>25 mm</td>
</tr>
<tr>
<td>Height</td>
<td>147 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>129 mm</td>
</tr>
<tr>
<td><strong>Weights</strong></td>
<td></td>
</tr>
<tr>
<td>Weight, approx.</td>
<td>260 g</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>Supplied incl. 40-pin push-in front connector</td>
</tr>
</tbody>
</table>
The dimensional drawing of the module on the mounting rail, as well as a dimensional drawing with open front cover, are provided in this appendix. Always observe the specified dimensions for installation in cabinets, control rooms, etc.

Figure A-1  Dimensional drawing of the DI 32x24VDC BA module
Dimensional drawing

Figure A-2  Dimensional drawing of the DI 32x24VDC BA module, side view with open front cover
Open Source Software

For resellers: In order to avoid infringements of the license conditions by the reseller or the buyer, these instructions and license conditions have to be forwarded to the buyers.

License Conditions and Disclaimers for Open Source Software and other Licensed Software

In the product "Digital Modules, Analog Modules, Technological Modules, Communication Modules and Power Supply Modules of the SIMATIC S7-1500, ET 200MP", Copyright Siemens AG, 2013 - 2014 (hereinafter "Product"), the following Open Source Software is used either unchanged or in a form that we have modified, and additionally the other License Software noted below.

Liability for Open Source Software

Open Source Software is provided free of charge. We are liable for the Product including Open Source Software contained in accordance with the license conditions applicable to the Product. Any liability for use of Open Source Software beyond the program flow intended for the Product is explicitly excluded.

We do not provide any technical support for the Product if it has been modified.

Please read the license conditions and copyright notes for Open Source Software as well as other licensed software:

<table>
<thead>
<tr>
<th>Component</th>
<th>Open Source Software [Yes/No]</th>
<th>Acknowledgements</th>
<th>Copyright Information / File</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dinkumware C/C++ Library - 5.01</td>
<td>NO</td>
<td></td>
<td>LICENSE AND COPYRIGHT INFORMATION FOR COMPONENT DINKUMWARE C/C++ LIBRARY - 5.01</td>
</tr>
<tr>
<td>GNU GCC libc - 4.3.2</td>
<td>YES</td>
<td></td>
<td>LICENSE AND COPYRIGHT INFORMATION FOR COMPONENT GNU GCC LIBGCC - 4.3.2</td>
</tr>
<tr>
<td>GNU GCC libstdc++ / libsupc++ - 4.3.2</td>
<td>YES</td>
<td></td>
<td>LICENSE AND COPYRIGHT INFORMATION FOR COMPONENT GNU GCC LIBSTDCC++ / LIBSUPC++ - 4.3.2</td>
</tr>
</tbody>
</table>
LICENSING CONDITIONS AND COPYRIGHT NOTICES

Commercial Software: Dinkumware C/C++ Library - 5.01
Enclosed you’ll find the license conditions and copyright notices applicable for Commercial Software Dinkumware C/C++ Library - 5.01

License conditions:

Copyright (c) 1991-1999 Unicode, Inc. All Rights reserved.
This file is provided as-is by Unicode, Inc. (The Unicode Consortium). No claims are made as to fitness for any particular purpose. No warranties of any kind are expressed or implied. The recipient agrees to determine applicability of information provided. If this file has been provided on optical media by Unicode, Inc., the sole remedy for any claim will be exchange of defective media within 90 days of receipt. Unicode, Inc. hereby grants the right to freely use the information supplied in this file in the creation of products supporting the Unicode Standard, and to make copies of this file in any form for internal or external distribution as long as this notice remains attached.

© Copyright William E. Kempf 2001 Permission to use, copy, modify, distribute and sell this software and its documentation for any purpose is hereby granted without fee, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. William E. Kempf makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Copyright © 1994 Hewlett-Packard Company Permission to use, copy, modify, distribute and sell this software and its documentation for any purpose is hereby granted without fee, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. Hewlett-Packard Company makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Copyrights:

Copyright 1992 - 2006 by p.j. plauger and jim brodie. all rights reserved.
Copyright 1992-2006 by p.j. plauger. all rights reserved.ip
Copyright 1992-2006 by p.j. plauger. portions derived from work copyright 1994 by hewlett-packard company. all rights reserved
Copyright 1992-2006 by dinkumware, ltd. all rights reserved
Copyright 1992-2006 by dinkumware, ltd. portions derived from work copyright 2001 by william e. kempf. all rights reserved
Copyright 1994 hewlett-packard company
Copyright 1994 by hewlett-packard company
Copyright william e. kempf 2001
Copyright 1989-2006 by p.j. plauger. all rights reserved
Copyright (c) by p.j. plauger. all rights reserved.
Copyright (c) by dinkumware, ltd. all rights reserved.
Copyright (c) unincos, inc. all rights reserved.
(c) Copyright william e. kempf 2001
Copyright (c) hewlett-packard company
Copyright (c) by p.j. plauger. all rights reserved.
Copyright 2006 by dinkumware, ltd.
copyright (c) by p.j. plauger, licensed by dinkumware, ltd. all rights reserved.
the dinkum c++ library reference is copyright (c) by p.j. plauger, this code is protected by copyright. all rights reserved.
the dinkum c++ library reference is copyright (c) by p.j. plauger. this code is protected by copyright. all rights reserved.
dinkum complete library, c++ package (c++ compilers only) the dinkum complete library and the dinkum complete library reference are copyright (c) by p.j. plauger. all rights reserved.

LICENSE CONDITIONS AND COPYRIGHT NOTICES

Open Source Software: GNU GCC libgcc - 4.3.2
Enclosed you’ll find the license conditions and copyright notices applicable for Open Source Software GNU GCC libgcc - 4.3.2

License conditions:

GCC is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2, or (at your option) any later version.

In addition to the permissions in the GNU General Public License, the Free Software Foundation gives you unlimited permission to link the compiled version of this file into combinations with other programs, and to distribute those combinations without any restriction coming from the use of this file. (The General Public License restrictions do apply in other respects; for example, they cover modification of the file, and distribution when not linked into a combine executable.)

GCC is distributed in the hope that it will be useful, but WITHOUT ANY WARRAN-
TY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A
PARTICULAR PURPOSE. See the GNU General Public License for more details

You should have received a copy of the GNU General Public License along with
GCC; see the file COPYING. If not, write to the Free Software Foundation,
51 Franklin Street, Fifth Floor, Boston, MA

---

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991
Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Everyone is permitted to copy and distribute verbatim copies of this license
document, but changing it is not allowed.

Preamble
The licenses for most software are designed to take away your freedom to share
and change it. By contrast, the GNU General Public License is intended to

guarantee your freedom to share and change free software—-to make sure the
software is free for all its users. This General Public License applies to most of
the Free Software Foundation's software and to any other program whose authors
commit to using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to your

programs, too.

When we speak of free software, we are referring to freedom, not price. Our
General Public Licenses are designed to make sure that you have the freedom to
distribute copies of free software (and charge for this service if you wish), that you
receive source code or can get it if you want it, that you can change the software or
use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you
these rights or to ask you to surrender the rights. These restrictions translate to
certain responsibilities for you if you distribute copies of the software, or if you
modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee,
you must give the recipients all the rights that you have. You must make sure that
they, too, receive or can get the source code. And you must show them these terms
so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you
this license which gives you legal permission to copy, distribute and/or modify the
software.
Open Source Software

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language.

(Hereinafter, translation is included without limitation in the term "modification".)

Each license is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: If the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program as a whole. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices.
Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version of or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU, SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice has found. <one line to give the program's name and a brief idea of what it does> Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type 'show w'. This is free software, and you are welcome to redistribute it under certain conditions; type 'show c' for details.

The hypothetical commands 'show w' and 'show c' show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than 'show w' and 'show c'; they could even be mouse-clicks or menu items—whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

Copyrights:
Copyright (C) 2003 Free Software Foundation, Inc.
Copyright (C) 2005, 2006 Free Software Foundation
Copyright (C) 2007 Free Software Foundation, Inc.

LICENSE CONDITIONS AND COPYRIGHT NOTICES

Open Source Software: GNU GCC libc++/ llibuspc++ - 4.3.2
Enclosed you’ll find the license conditions and copyright notices applicable for Open Source Software GNU GCC libc++/ llibuspc++ - 4.3.2

License conditions:
GCC is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2, or (at your option) any later version.
GCC is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details. You should have received a copy of the GNU General Public License along with GCC; see the file COPYING. If not, write to the Free Software Foundation, 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.
As a special exception, you may use this file as part of a free software library without restriction. Specifically, if other files instantiate templates or use macros or inline functions from this file, or you compile this file and link it with other files to produce an executable, this file does not by itself cause the resulting executable to be covered by the GNU General Public License. This exception does not invalidate any other reasons why the executable file might be covered by the GNU General Public License.
This library is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this library; see the file COPYING. If not, write to the Free Software Foundation, 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.

As a special exception, you may use this file as part of a free software library without restriction. Specifically, if other files instantiate templates or use macros or inline functions from this file, or you compile this file and link it with other files to produce an executable, this file does not by itself cause the resulting executable to be covered by the GNU General Public License. This exception does not however invalidate any other reasons why the executable file might be covered by the GNU General Public License.

This library is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2, or (at your option) any later version. This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details. You should have received a copy of the GNU General Public License along with this library; see the file COPYING. If not, write to the Free Software Foundation, 51 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

As a special exception, you may use this file as part of a free software library without restriction. Specifically, if other files instantiate templates or use macros or inline functions from this file, or you compile this file and link it with other files to produce an executable, this file does not by itself cause the resulting executable to be covered by the GNU General Public License. This exception does not however invalidate any other reasons why the executable file might be covered by the GNU General Public License. ---

GNU GENERAL PUBLIC LICENSE Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software—to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights. We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what is defined as a work.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately credit the author, indicate a continuation of the tradition of free software development, and include a copy of this License in the distributed software. You receive the Program, we promise you may do so.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

   a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

   b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

   c) If the modified program normally runs commands interactively when run, you must cause it, when started for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of whom wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.
Open Source Software

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange, or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange, or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly permitted or required by this License, and you must include a copy of this License, a notice stating you made changes, and giving the reasons for any changes, in the files where it makes sense to copy it, and in the distributed program itself (if any). The purpose of this requirement is to ensure that nothing can be done with a modification without授权 or the contributors' consent. The precise meaning of any term or word in this document cannot be disputed. Particularly, use of 'such' shall include every aspect of the software, rather than only the field of user interfaces. Any who use the software hereunder must abide by the requirement to distribute source code of their modifications.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or redistributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License is to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims, but to protect the rights contained in this License under valid patent claims.

Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces that are generally available or proprietary interfaces with not generally available, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and “any later version”, you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR YOUR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

When you distribute software, whether or not the distributed software and the software you distribute are covered by this License, you promise that, to the extent permitted by applicable law, you will offer adequate facilities and facilities for copy in all media for the copying of the distributed software, and will accompany the distributed software with these facilities. You must comply with the terms in this License for the distributed software, but otherwise you are not obligated to modify this License.

Here's how to apply these terms to your new programs:

If you develop a new program and want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms. To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does: > Copyright (C) <year> <name of author>
This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'. This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items---whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a `copyright disclaimer' for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.  

<signature of Ty Coon>, 1 April 1989  
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

Distributed under the Boost Software License, Version 1.0.  
(See accompanying file LICENSE_1_0.txt or copy at http://www.boost.org/LICENSE_1_0.txt)

---  
Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization obtaining a copy of the software and accompanying documentation covered by this license (the "Software") to use, reproduce, display, distribute, execute, and transmit the Software, and to prepare derivative works of the Software, and to permit third-parties to whom the Software is furnished to do so, all subject to the following:

The copyright notices in the Software and this entire statement, including the above license grant, this restriction and the following disclaimer, must be included in all copies of the Software, in whole or in part, and all derivative works of the Software, unless such copies or derivative works are solely in the form of machine-executable object code generated by a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Permission to use, copy, modify, distribute and sell this software and its documentation for any purpose is hereby granted without fee, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. Silicon Graphics makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Permission to use, copy, modify, sell, and distribute this software is hereby granted without fee, provided that the above copyright notice appear in all copies, and that both that copyright notice and this permission notice appear in supporting documentation. None of the above authors, nor IBM Haifa Research Laboratories, make any representation about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Permission to use, copy, modify, distribute and sell this software and its documentation for any purpose is hereby granted without fee, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. Hewlett-Packard Company makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Copyrights:

(C) Copyright Jeremy Siek 2000
Copyright &copy; 1994 Hewlett-Packard Company
Copyright &copy; 1998 by Information Technology Industry Council.
Copyright &copy; 2007 Free Software Foundation, Inc.
Copyright (C) Microsoft Corporation 1984-2002. All rights reserved.
Open Source Software

Digital input module DI 32x24VDC BA (6ES7521-1BL10-0AA0)
Manual, 09/2014, A5E32363711-AB