# 1.  Product Description

Nexto Series is a powerful and complete Programmable Logic Controller (PLC) Series with unique and innovative features. Due to its flexibility, smart design, enhanced diagnostics capabilities and modular architecture, Nexto is suitable for control systems ranging from medium to high-end large applications. Finally, its compact size, high density of points per module and superior performance, allow Nexto Series to be applied in small automation systems with high performance requirements, such as manufacturing applications and industrial machines.

In this context, Nexto Jet is a selection of I/O modules that uses the existing CPUs and modules from Nexto Series to provide the best solution for applications in verticals like infrastructure, building, water, wastewater, food, machines and several OEM projects. Nexto Jet is ideal for systems with no hot-swapping and conformal coating requirements.

Finally, the module NJ6011 has four thermocouple analog inputs which can be individually configured to different kinds of thermocouple. Also, this module provides different temperature scales either in Celsius or Fahrenheit. Besides, due to its configurable filters, it also can be used in automation processes, where both low pass filter and notch filter are commonly required and it is a module that uses one rack position.



Its main features are:

- 04 inputs in a single width module
- Supports 8 different types of thermocouple: J, K, B, E, T, R, S and N
- Galvanic isolation between inputs and internal logic
- Protection against surge voltage
- Individual configuration per input
- Software configuration filters
- Open loop diagnostic
- Under and over range diagnostics
- Display for module diagnostics and input state indication
- Easy Plug System

> **ATTENTION**
>
> Starting from product revision AD, it was included the connector frontal cover (which was previously exclusive of NX models), thus adding the Easy Plug System feature to this product.

# 2.  Ordering Information

## 2.1.  Included Items

The product package contains the following items:

- NJ6011 Module
- 20-terminal connector with wire holder

## 2.2.  Product Code

The following code should be used to purchase the product:

| Code | Description |
|---|---|
| NJ6011 | 4 AI Thermocouple Module |

Table 1: Product Code

# 3.  Related Products

The following product must be purchased separately when necessary:

| Code | Description |
|---|---|
| NX9403 | 20-terminal connector with cable guides |

Table 2: Related Products

# 4.  Innovative Features

Nexto Series brings to the user many innovations regarding utilization, supervision and system maintenance. These features were developed focusing a new concept in industrial automation.

**Easy Plug System:** Nexto Series has an exclusive method to plug and unplug I/O terminal blocks. The terminal blocks can be easily removed with a single movement and with no special tools. In order to plug the terminal block back to the module, the frontal cover assists the installation procedure, fitting the terminal block to the module.

# 5.  Product Features

## 5.1.  General Features

| | NJ6011 |
|---|---|
| **Backplane rack occupation** | 1 slot |
| **Number of inputs** | 4 analog inputs |
| **Input type** | Thermocouple, type: J, K, B, E, T, R, S and N |
| **Input state indication** | Yes |
| **One Touch Diag (OTD)** | No |
| **Electronic Tag on Display (ETD)** | No |
| **Status and diagnostic indication** | Display, web pages and CPU's internal memory |
| **Hot swap capability** | No |
| **Module protection** | Yes, protection against surge voltages |
| **Wire gauge** | 0,5 mm$^2$ (20 AWG) |
| **Minimum wire temperature rating** | 75 °C |
| **Wire material** | Copper only |

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| | NJ6011 |
|---|---|
| **Isolation** | |
| **Inputs to protective earth** ⏚ | 1500 Vac / 1 minute |
| **Inputs to logic** | 1500 Vac / 1 minute |
| **Logic to protective earth** ⏚ | 1250 Vac / 1 minute |
| **Current consumption from backplane rack** | 270 mA |
| **Maximum power dissipation** | 3 W |
| **IP level** | IP 20 |
| **Operating temperature** | 0 to 60 °C |
| **Storage temperature** | -25 to 75 °C |
| **Operating and storage relative humidity** | 5% to 96%, non-condensing |
| **Module dimensions (W x H x D)** | 18.00 x 114.62 x 117.46 mm |
| **Package dimensions (W x H x D)** | 25.00 x 122.00 x 147.00 mm |
| **Net weight** | 200 g |
| **Gross weight** | 250 g |

Table 3: General Features

**Note:**

**Wire gauge:** Crimp terminals for 0.5 mm$^2$ wire in each way respecting as described at Nexto Series User Manual - MU214600.

## 5.2. Standards and Certifications

| Standards and Certifications | |
|---|---|
| **IEC** | 61131-2: Industrial-process measurement and control - Programmable controllers - Part 2: Equipment requirements and tests |
| CE | 2014/30/EU (EMC)<br>2014/35/EU (LVD)<br>2011/65/EU and 2015/863/EU (ROHS) |
| UKCA | S.I. 2016 No. 1091 (EMC)<br>S.I. 2016 No. 1101 (Safety)<br>S.I. 2012 No. 3032 (ROHS) |
| cULus LISTED | UL/cUL Listed – UL 61010-1<br>UL 61010-2-201 (file E473496) |

Table 4: Standards and Certifications

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## 5.3. Thermocouple Mode Features

| | NJ6011 – Thermocouple Mode | | |
|---|---|---|---|
| **Temperature drift** | ±0.001% / °C of full scale rating | | |
| **Data format** | 16 bits in two's complement, justified to the left | | |
| **Converter resolution** | 16 bits monotonicity guaranteed, no missing codes | | |
| **Measurement unit** | Configurable: °C or °F | | |
| **Input impedance** | > 1 MΩ | | |
| **Continuous maximum voltage without damage** | 30 Vdc | | |
| **Noise suppression filter** | 60 Hz or 50 Hz | | |
| **Low pass filter** | First order digital filter | | |
| **Low pass filter time constant** | 200 ms, 1 s, 10 s or disabled | | |
| **Maximum common mode voltage** | ±1500 mVdc | | |
| **Common mode rejection** | 120 dB @ 60 Hz | | |
| **Crosstalk between channels @ 100 Hz** | -30 dB min | | |
| **Open thermocouple detection** | Indicated in the diagnostics | | |
| **Cold junction compensation** | Compensation range 0 to 80 °C <br> Accuracy ±1 °C @ 0 to 80 °C range | | |
| **Conversion time** <br> **50 Hz** <br> **60 Hz** | <br> 81 ms <br> 68 ms | | |
| **Maximum conversion time** <br> **50 Hz** <br> **60 Hz** | <br> 324 ms <br> 272 ms | | |
| **Thermocouple mode: °C** <br> **ITS-90 curve** | Model | Temperature | Accuracy @ 25 °C |
| | J | -210 to 1200 °C | 0.10% |
| | K | -250 to -200 °C | 0.22% |
| | | -200 to 1372 °C | 0.10% |
| | | 250 to 500 °C | 0.45% |
| | B | 500 to 1050 °C | 0.22% |
| | | 1050 to 1800 °C | 0.12% |
| | E | -230 to 1000 °C | 0.15% |
| | T | -220 to -180 °C | 0.45% |
| | | -180 to 400 °C | 0.25% |
| | | -50 to 0 °C | 0.30% |
| | R | 0 to 200 °C | 0.14% |
| | | 200 to 1768 °C | 0.08% |
| | | -50 to 0 °C | 0.30% |
| | S | 0 to 200 °C | 0.14% |
| | | 200 to 1768 °C | 0.08% |
| | | -250 to -200 °C | 0.30% |
| | N | -200 to -150 °C | 0.15% |
| | | -150 to 1300 °C | 0.08% |
| | Model | Temperature | Accuracy |
| | J | -346 to 2192 °F | 0.10% |
| | K | -418 to -328 °F | 0.22% |

| NJ6011 – Thermocouple Mode | | |
|---|---|---|
| | -328 to 2501 °F | 0.10% |
| B | 482 to 932 °F | 0.45% |
| | 932 to 1922 °F | 0.22% |
| | 1922 to 3272 °F | 0.12% |
| E | -382 to 1832 °F | 0.15% |
| T | -364 to -292 °F | 0.45% |
| | -292 to 752 °F | 0.25% |
| R | -58 to 32 °F | 0.30% |
| | 32 to 392 °F | 0.14% |
| | 392 to 3214 °F | 0.08% |
| S | -58 to 32 °F | 0.30% |
| | 32 to 392 °F | 0.14% |
| | 392 to 3214 °F | 0.08% |
| N | -418 to -328 °F | 0.30% |
| | -328 to -238 °F | 0.15% |
| | -238 to 2372 °F | 0.08% |

The leftmost cell spanning the rows: **Thermocouple mode: °F ITS-90 curve**

Table 5: Thermocouple Mode Features

**Notes:**

**Noise suppression filter:** This parameter enables or disables a filter that rejects a particular frequency in the measurements, but this rejection includes a delay per enabled input for data acquisition, which depends on the selected frequency. It is important to consider the delays presented while developing an application. The value of the selected filter in this parameter will be applied to all module reading inputs.

**Conversion time:** Each module channel corresponds to an enabled input.

**Maximum conversion time:** The conversion time shown in the table above refers to the total conversion time for the 4 channels according to the selected noise suppression filter.

**Accuracy:** The informed accuracy is in percentage of the maximum temperature value of each thermocouple type. Example: For thermocouple type R in the range 0 to 200 °C the percentage error is 0.14% of the 1768 °C maximum temperature, in this case the accuracy is 2.48 °C.

## 5.4. Compatibility with Other Products

The following table brings information regarding the compatibility between NJ6011 module and others Nexto Series Products.

| NJ6011 | | Compatible Software Version | | | |
|---|---|---|---|---|---|
| **Version** | **Revision** | **NX3004** | **NX3005** | **NX30x0** | **MasterTool IEC XE** |
| 1.0.0.12 or higher | AA or higher | 1.6.1.0 or higher | 1.6.1.0 or higher | 1.6.1.0 or higher | 3.02 or higher |

Table 6: Compatibility with Other Products

**Note:**

**Revision:** If the software is upgraded in the field the product revision indicated on the label will no longer match the actual revision of the product.

> **ATTENTION**
>
> The CPUs and racks of Nexto Series support the use of Nexto Jet Modules. The Nexto Jet is formed by I/Os modules and when used in configuration with CPUs of Nexto Series, no other I/O type of Nexto Series can be used in the same bus.

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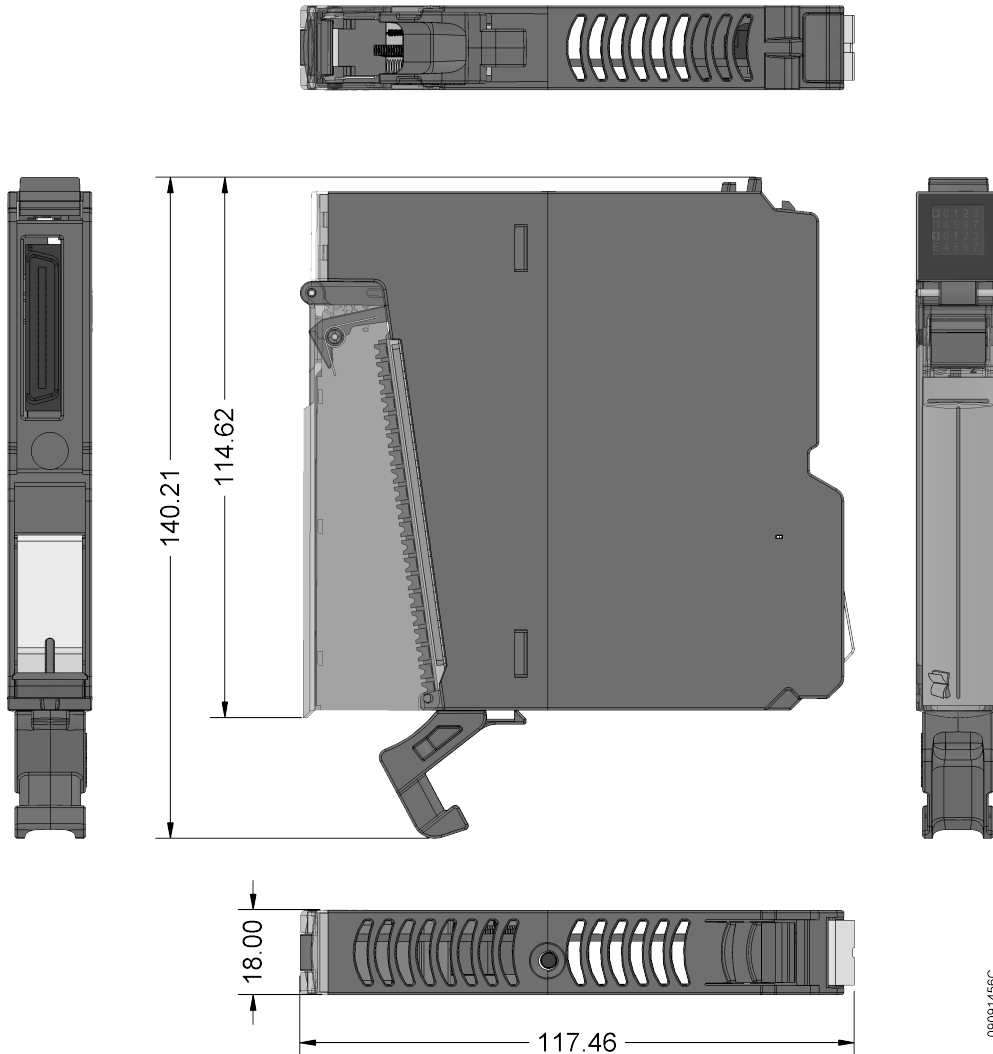## 5.5.    Physical Dimensions

Dimensions in mm.

Figure 1: Physical Dimensions

# 6. Installation

For the correct installation of this product, it is necessary to use a rack (backplane rack) and it must be carried out according to the mechanical and electrical installation instructions that follow.

## 6.1. Product Identification

This product has some parts that must be observed before installation and use. The following figure identifies each of these parts.
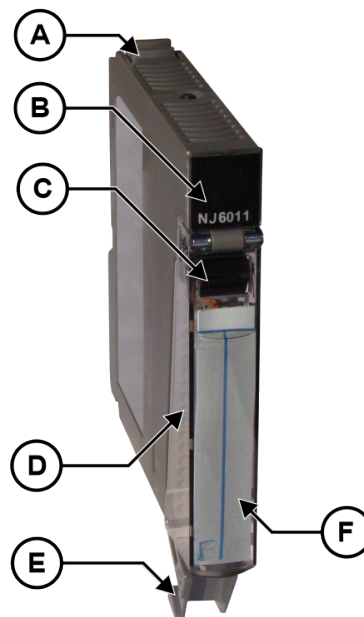


Figure 2: NJ6011

Ⓐ   Fixing lock.
Ⓑ   Status and diagnostic display.
Ⓒ   Terminal block extraction lever.
Ⓓ   Front cover.
Ⓔ   20 pin terminal block with wire holder.
Ⓕ   Label for module identification.

The product has in its mechanics a label that identifies it and in it are presented some symbols whose meaning is described below:

⚠   Attention! Before using the equipment and installing, read the documentation.

⎓   Direct Current.

## 6.2. Electrical Installation

The figure below shows an example where four inputs are used: input 00, input 01, input 02 and input 03. Each input presents a different connection, as explain below.
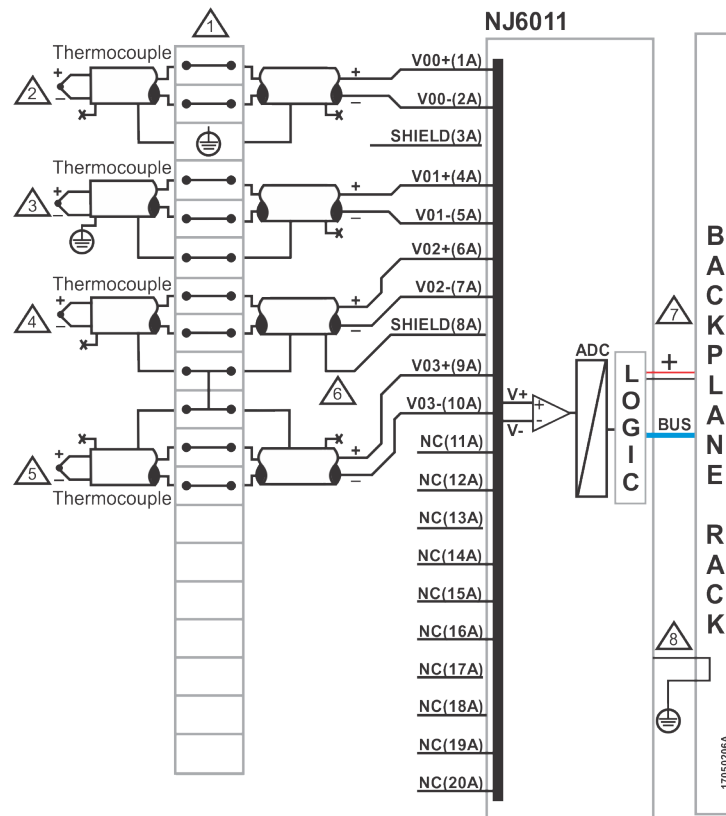
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Figure 3: Electric Diagram

**Diagram Notes:**

△1 The diagram above has the representation a set of terminal blocks where each symbol represents a different kind of terminal block: ⊡ represents a standard feed-through terminal block, ⊕ represents a grounding terminal block, and ⊡ represents a feed-through terminal block with connection to other terminal block.

△2 Input 00 is connected to a thermocouple sensor, placed on the field. The cable shielding of this input is connected to the grounding terminal block.

△3 Input 01 is connected to a thermocouple sensor, placed on the field. The cable shielding of this input is connected to the earth close to the device on the field.

△4 Input 02 is connected to a thermocouple sensor, placed on the field. The cable shielding of this input and input 03 is connected to the shield pin which is shared between these two inputs.

△5 Input 03 is connected to a thermocouple sensor, placed on the field. The cable shielding of this input and input 02 is connected to the shield pin which is shared between these two inputs.

△6 There is one shield pin for each pair of inputs.

△7 The module power supply is derived from the connection to the backplane rack and does not require external connections.

△8 NJ6011 module is connected to the protective earth ⊕ through the backplane rack.

⏚ Protective conductor terminal.

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## 6.3.   Connector Pinout

The following table shows the description of each connector terminal:

| Terminal | Description |
|---|---|
| 1 | Input 00 |
| 2 | Reference input 00 |
| 3 | Shield |
| 4 | Input 01 |
| 5 | Reference input 01 |
| 6 | Input 02 |
| 7 | Reference input 02 |
| 8 | Shield |
| 9 | Input 03 |
| 10 | Reference input 03 |
| 11 | Not Connected |
| 12 | Not Connected |
| 13 | Not Connected |
| 14 | Not Connected |
| 15 | Not Connected |
| 16 | Not Connected |
| 17 | Not Connected |
| 18 | Not Connected |
| 19 | Not Connected |
| 20 | Not Connected |

Table 7: Connector Pinout

## 6.4.   Mechanical and Electrical Assembly

The mechanical and electrical mounting and the connector pin insertion and removing for single hardware width I/O modules are described at Nexto Series User Manual – MU214600.

**ATTENTION**

Products with broken warranty seal are not covered in warranty.

**CAUTION**

The device is sensitive to static electricity (ESD). Always touch in a metallic grounded object before handling it.

**DANGER**

Nexto Series can operate with voltage up to 250 Vac. Special care must be taken during the installation, which should only be done by qualified technical personnel. Do not touch on the wiring field when in operation.

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# 7. Configuration

This module was developed to be used with Nexto Series products. All Nexto Series products are configured in MasterTool IEC XE. All configuration data of a given module can be accessed through a double click in it on the Graphical Editor.

## 7.1. Process Data

Process Data are the variables that are used to access the module. The list below describes all variables delivered by NJ6011.

The table below presents the variables organizational structure in the CPU memory.

Besides these data, this module also provides a set of variables containing information related to diagnostics which are also described in this document.

| Variable | Size | Process Data | Description | Type | Update |
|---|---|---|---|---|---|
| %IW(n) | WORD | AI 00 | Analog Input 00 | INT (Reading) | Always |
| %IW(n+2) | WORD | AI 01 | Analog Input 01 | INT (Reading) | Always |
| %IW(n+4) | WORD | AI 02 | Analog Input 02 | INT (Reading) | Always |
| %IW(n+6) | WORD | AI 03 | Analog Input 03 | INT (Reading) | Always |

Table 8: Process Data

**Note:**

**Update:** The field "Update" indicates if the respective process data is updated by CPU and NJ6011 module by default. When defined as "Always", it means that the process data is always updated. When defined as "Selectable", it means that the user can select if the respective process data will be updated or not. All these process data are exchanged between CPU and NJ6011 module through the bus, to improve CPU performance. It is recommended to update only the process data that will be used in the application.

## 7.2. Module Parameters

| Name | Description | Standard Value | Options | Configuration |
|---|---|---|---|---|
| Noise Suppression Filter | Frequency of the noise suppression filter | 60 Hz | 50 Hz<br>60 Hz | Per module |
| Temperature Unit | Defines the temperature unit (°C or °F) | Degree Celsius | Degree Celsius<br>Degree Fahrenheit | Per module |
| Temperature Unit | Defines the temperature unit (°C or °F) | Degree Celsius | Degree Celsius<br>Degree Fahrenheit | Per module |
| Type | Defines the thermocouple type | Not Configured | Not Configured<br>J<br>K<br>B<br>E<br>T<br>R<br>S<br>N | Per input |

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| Name | Description | Standard Value | Options | Configuration |
|---|---|---|---|---|
| Digital Filter | First order digital filter time constant (ms) | Disabled | Disabled<br>200 ms<br>1 s<br>10 s | Per input |
| Digital Filter | First order digital filter time constant (ms) | Disabled | Disabled<br>200 ms<br>1 s<br>10 s | Per input |
| Cold Junction Compensation | Enables or disables the cold junction compensation | Enabled | Disabled<br>Enabled | Per input |
| Cold Junction Compensation | Enables or disables the cold junction compensation | Enabled | Disabled<br>Enabled | Per input |
| %Q Start Address of Module Diagnostics Area | Defines the start address of the module diagnostics | - | | Per module |

Table 9: Module Parameters

# 8.    Usage

## 8.1.    General Purpose Input Read

NJ6011 has one variable for each input, which will be presented in the temperature scale defined in the Temperature Unit, where the value is multiplied for 10. Thus, a 25 °C temperature, for example, is read as 250.

# 9.    Maintenance

Altus recommends that all modules' connections should be checked and any dust or any kind of dirt located in the module's enclosure should be removed at least every 6 months.

This module offers important features to assist users during the maintenance: Status and Diagnostics Indicators, Web Page with Complete Status and Diagnostics List, and Diagnostics Mapped to Variables.

## 9.1.    Web Page with Complete Status and Diagnostics List

Another way to access diagnostics information on Nexto Series is via web pages. Nexto Series CPU's has an embedded web page server that provides all Nexto status and diagnostics information, which can be accessed using a simple browser.

More information about web page with complete status and diagnostics list can be found at User Manual of each respective CPU (listed at Nexto Series User Manual  - MU214600).

## 9.2.    Status and Diagnostics Indicators

Nexto I/O modules have a display with the following symbols: D, E, ⓪, ①  and numerical characters. The states of the symbols D, E, ⓪ and ① are common for all Nexto Series I/O modules. These states can be consulted in the table below.

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### 9.2.1. D and E States

| D | E | Description | Cause | Solution | Priority |
|---|---|---|---|---|---|
| Off | Off | Display failure or module off | - Module disconnected;<br>- External power supply failure;<br>- Hardware failure. | Check:<br>- If the module is completely connected to the rack;<br>- If the rack is powered by an external source;<br>- If the module has external power. | - |
| On | Off | Normal use | - | - | 9 (Lower) |
| Blinking 1x | Off | Active diagnostics | There is at least one active diagnostic related to the module. | Check what the active diagnostic is. More information can be found at section Diagnostics Through Variables. | 8 |
| Blinking 2x | Off | No I/O data update | - CPU in STOP mode;<br>- Head/Remote in non-ACTIVE state. | Check:<br>- If the CPU is in operation;<br>- If the Fieldbus Master is in operation;<br>- The integrity of the network between the MODBUS Client and the Head-/Remote. | 7 |
| Blinking 3x | Off | Reserved | - | - | 6 |
| Blinking 4x | Off | Non-fatal fault | Failure in some hardware or software component, which does not have impact on the basic functionality of the product. | Check the module's diagnostic information. If it is a hardware failure, have the part replaced. If it's software, contact Technical Support. | 5 |
| Off | Blinking 2x | Loss of bus master | Loss of communication between:<br>- The module and the CPU;<br>- The module and the Head/Remote;<br>- The Head/Remote and the Field Network Master. | Check:<br>- If the module is completely connected to the rack;<br>- If the CPU is in RUN mode;<br>- If the Fieldbus Master is in operation;<br>- Network integrity between PROFIBUS Master and Head/Remote. | 4 |
| Off | Blinking 3x | Module without calibration | - The module is not calibrated;<br>- There was an error with the calibration value. | The module must return to the manufacturer. | 3 |

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| D | E | Description | Cause | Solution | Priority |
|---|---|---|---|---|---|
| Off | Blinking 1x | Missing or parameterization error | The module isn't parameterized. | Check:<br>- If the module parameterization is correct;<br>- Network integrity between PROFIBUS Master and Head/Remote;<br>- Network integrity between PROFINET Controller and Head/Remote. | 2 |
| Off | Blinking 4x | Fatal hardware fault | Hardware fault. | The module must return to the manufacturer. | 1 (Higher) |

Table 10: Status of Symbols D and E

**Notes:**

**Field net master:** There are different field net solutions, using different nomenclatures to refer to the net master. Examples: Profibus Master, MODBUS Client, PROFINET Controller, etc.

**Module without calibration:** Only valid for modules that have calibration, typically analog modules. Modules that do not have calibration will never show such an indication through the symbols D and E.

### 9.2.2.  0, 1 and Numerical Characters

The meaning of the numerical characters can be different for specific modules. In case of analog modules, the numerical characters show the respective state of each input. When the numerical character is on, the respective input is configured and enabled, and if the numerical character is off, the respective input is disabled. The relationship between the input number and its respective numerical character can be found on the following figure.

The segments 0 and 1 are used to group the numerical characters used for inputs. In NJ6011 module's case, only the character 0 is used and the characters that are placed at the right side of character 0 represent the inputs from 00 a 03, where character 0 represents the input 00 and character 3 represents the input 03. The figure below shows the relationship between the numerical characters and the respective inputs.
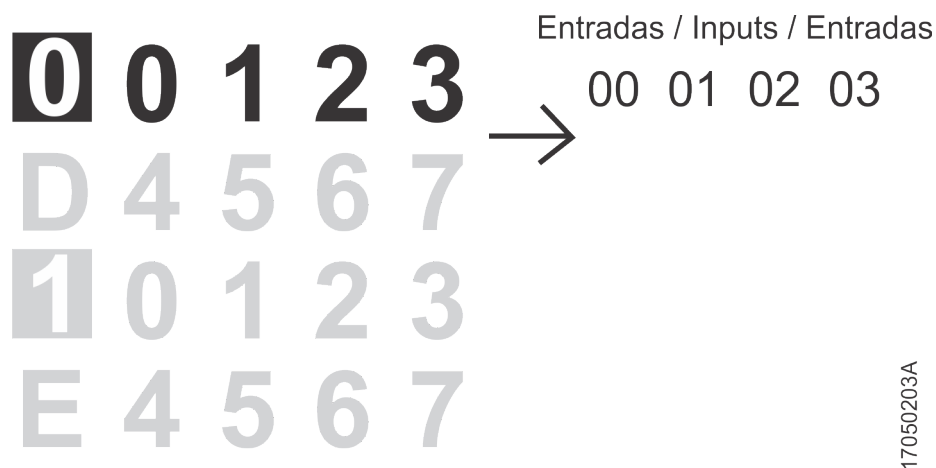


Figure 4: Display

## 9.3.  Diagnostics Through Variables

All diagnostics in this module can be accessed through variables that can be handled by the user application or even forwarded to a supervisory system using a communication channel. There are two different ways to access diagnostics in the user application: using symbolic variables with AT directive or addressing memory. Altus recommends use symbolic variables

for diagnostic accessing. The table below shows all available diagnostics for this module and their respective memory address, description, symbolic variable and string that will be shown on the CPU graphical display and web.

### 9.3.1. General Diagnostics

| Direct Variable | | Diagnostic Message | Symbolic Variable DG_NJ6011.tGeneral.* | Description |
|---|---|---|---|---|
| **Variable** | **Bit** | | | |
| **%QB(n)** | 0 | INPUT 00 W/ DIAG | bActiveDiagnosticsInput00 | TRUE – Input 00 has active diagnostics |
| | | - | | FALSE – Input 00 has no active diagnostics |
| | 1 | INPUT 01 W/ DIAG | bActiveDiagnosticsInput01 | TRUE – Input 01 has active diagnostics |
| | | - | | FALSE – Input 01 has no active diagnostics |
| | 2 | INPUT 02 W/ DIAG | bActiveDiagnosticsInput02 | TRUE – Input 02 has active diagnostics |
| | | - | | FALSE – Input 02 has no active diagnostics |
| | 3 | INPUT 03 W/ DIAG | bActiveDiagnosticsInput03 | TRUE – Input 03 has active diagnostics |
| | | - | | FALSE – Input 03 has no active diagnostics |
| | 4..7 | Reserved | | |
| **%QB(n+1)** | 0 | MODULE W/ DIAGNOSTICS | bActiveDiagnostics | TRUE – Module has active diagnostics |
| | | NO DIAG | | FALSE – Module has no active diagnostics |
| | 1 | MODULE W/ FATAL ERROR | bFatalError | TRUE – Fatal error |
| | | - | | FALSE – No fatal error |
| | 2 | CONFIG. MISMATCH | bConfigMismatch | TRUE – Parameterization error |
| | | - | | FALSE – Parameterization ok |
| | 3 | WATCHDOG ERROR | bWatchdogError | TRUE – Watchdog has been detected |
| | | - | | FALSE – No watchdog |
| | 4 | Reserved | | |
| | 5 | CALIBRATION ERROR | bCalibrationError | TRUE – Module without calibration |
| | | - | | FALSE – Module calibrated |
| | 6 | COLD JUNC. SENS. ERROR | bColdJunctionSensorError | TRUE – High temperature in the cold junction sensor |
| | | - | | FALSE – Normal temperature in the cold junction sensor |
| | 7 | Reserved | | |

Table 11: General Diagnostics

### 9.3.2. Detailed Diagnostics

| Direct Variable | | Diagnostic Message | Symbolic Variable DG_NJ6011.tDetailed .tAnalogInput_XX.* | Description |
|---|---|---|---|---|
| Variable | Bit | | | |
| %QB (n+2 +XX*2 ) | 0..7 | Reserved | | |
| %QB (n+2+ 2*XX +1) | 0 | OVER RANGE | bOverRange | TRUE – Input data is over range |
| | | - | | FALSE – Input data is ok |
| | 1 | UNDER RANGE | bUnderRange | TRUE – Input data is under range |
| | | - | | FALSE – Input data is ok |
| | 2 | OPEN LOOP | bOpenLoop | TRUE – Input is open |
| | | - | | FALSE – Input is ok |
| | 3 | - | bInputNotEnable | TRUE – Input is not enabled |
| | | - | | FALSE – Input is enabled |
| | 4..7 | Reserved | | |

Table 12: Detailed Diagnostics

**Notes:**

**Under Range:** This diagnostic turns true when the input value is 1% of the full scale rating below the scale. E.g. for the thermocouple type J -210 to 1200 °C scale, under range diagnostic turns true for measurements below -222 °C.

**Over Range:** This diagnostic turns true when the input value is 1% of the full scale rating above the scale. E.g. for the thermocouple type J -210 to 1200 °C scale, over range diagnostic turns true for measurements above 1212 °C.

**Open loop:** This diagnostic is true when the module detects that there is a condition of broken cable, in this condition the over range diagnostic can also occur due to the form of open loop detection.

**Direct representation variable:** "n" is the address defined in the field %Q Start Address of Module Diagnostics Area on the NJ6011's configuration screen – Module Parameters tab in the MasterTool IEC XE, "XX" is the channel of analog input.

**Symbolic Variable:** Some symbolic variables serve to accessing diagnostics. This diagnostics are stored into the addressing memory, then the AT directive is used to map the symbolic variables in the addressing memory. The AT directive is a reserved word in the MasterTool IEC XE that uses this directive to declare the diagnostics automatically on a symbolic variables. All symbolic variables declared automatically can be found inside of Diagnostics object.

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## 10. Manuals

For further technical details, configuration, installation and programming, the table below should be consulted.

The table below is only a guide of some relevant documents that can be useful during the use, maintenance, and programming of this product.

| Code | Description | Language |
|---|---|---|
| CE114000 | Nexto Series – Technical Characteristics | English |
| CT114000 | Série Nexto – Características Técnicas | Portuguese |
| CS114000 | Serie Nexto – Características Técnicas | Spanish |
| MU214600 | Nexto Series User Manual | English |
| MU214000 | Manual de Utilização Série Nexto | Portuguese |
| MU299609 | MasterTool IEC XE User Manual | English |
| MU299048 | Manual de Utilização MasterTool IEC XE | Portuguese |
| MP399609 | MasterTool IEC XE Programming Manual | English |
| MP399048 | Manual de Programação MasterTool IEC XE | Portuguese |
| MU214608 | Nexto PROFIBUS-DP Head Utilization Manual | English |
| MU214108 | Manual de Utilização da Cabeça PROFIBUS-DP Nexto | Portuguese |

Table 13: Related Documents

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