1. Product Description

NX-ERA 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, NX-ERA 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 NX-ERA Series to be applied in small automation systems with high performance requirements, such as manufacturing applications and industrial machines.

The Series has a wide variety of CPUs, I/O and communication modules with features to fit requirements in different kinds of applications. The options available cover from standard automation systems, high-availability applications where redundancy is a major requirement, distributed applications to functional safety systems.

NX6010 has eight 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. Finally, NX-ERA Series has some exclusive features such as Electronic Tag on Display, Easy Plug System and One Touch Diag.

Its main features are:

- 08 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
- Open loop diagnostic
- Under and over range diagnostics
- Display for module diagnostics and input state indication
- Easy Plug System One
- Touch Diag Electronic
- Tag on Display

2. Ordering Information

2.1. Included Items

The product package contains the following items:

- NX6010 Module
- 20-terminal connector with wire holder

2.2. Product Code

The following code should be used to purchase the product:

Code	Description
NX6010	8 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

NX-ERA 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: NX-ERA 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.

One Touch Diag: One Touch Diag is an exclusive feature that NX-ERA Series brings to PLCs. With this new concept, the user can check diagnostic information of any module present in the system directly on CPU's graphic display with one single press in the diagnostic switch of the respective module. OTD is a powerful diagnostic tool that can be used offline (without supervisor or programmer), reducing maintenance and commissioning times.

ETD – Electronic Tag on Display: Another exclusive feature that NX-ERA Series brings to PLCs is the Electronic Tag on Display. This new functionality brings the process of checking the tag names of any I/O pin or module used in the system directly to the CPU's graphic display. Along with this information, the user can check the description, as well. This feature is extremely useful during maintenance and troubleshooting procedures.

iF Product Design Award 2012: NX-ERA Series was the winner of iF Product Design Award 2012 in industry + skilled trades group. This award is recognized internationally as a seal of quality and excellence, considered the Oscars of the design in Europe..

5. Product Features

5.1. General Features

	NX6010
Backplane rack occupation	1 slot
Number of inputs	8 analog inputs
Input type	Thermocouple, type: J, K, B, E, T, R, S and N.
Input state indication	Yes
One Touch Diag (OTD)	Yes
Electronic Tag on Display (ETD)	Yes
Status and diagnostic indication	Display, web pages and CPU's internal memory
Hot swap capability	Yes
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
Isolation Inputs to logic Inputs to protective earth ⏚ Logic to protective earth ⏚	 1500 Vac / 1 minute 1500 Vac / 1 minute 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
Conformal coating	Yes
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

Notes:

Conformal coating: Conformal coating protects the electronic components inside the product from moisture, dust and other harsh elements to electronic circuits.

Wire gauge: Crimp terminals for 0.5 mm^2 wire in each way respecting as described at NX-ERA 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
TYPE APPROVED PRODUCT DNV DNV.COM/AF	DNV Type Approval – DNV-CG-0339 (TAA000013D)
CE	2014/30/EU (EMC) 2014/35/EU (LVD) 2011/65/EU and 2015/863/EU (ROHS)
UK CA	S.I. 2016 No. 1091 (EMC) S.I. 2016 No. 1101 (Safety) S.I. 2012 No. 3032 (ROHS)
c UL us LISTED	UL/cUL Listed – UL 61010-1 UL 61010-2-201 (file E473496)
EAC	TR 004/2011 (LVD) CU TR 020/2011 (EMC)

Table 4: Standards and Certifications

5.3. Thermocouple Mode Features

	NX6010 – 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 Accuracy ±1 °C @ 0 to 80 °C range		
Conversion time 50 Hz 60 Hz	 81 ms 68 ms		
Maximum conversion time 50 Hz 60 Hz	 650 ms 542 ms		
Thermocouple mode: °C 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%
	B	250 to 500 °C	0.45%
		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%
	R	-50 to 0 °C	0.30%
		0 to 200 °C	0.14%
		200 to 1768 °C	0.08%
	S	-50 to 0 °C	0.30%
		0 to 200 °C	0.14%
		200 to 1768 °C	0.08%
	N	-250 to -200 °C	0.30%
		-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%

	NX6010 – Thermocouple Mode		
Thermocouple mode: °F ITS-90 curve		-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%

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 8 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 NX6010 module, NX-ERA CPUs and the NX-ERA Series MasterTool IEC XE programming tool.

NX6010		Compatible Software Version	
Version	Revision	MasterTool IEC XE	NX-ERA CPUs
1.0.0.0 or higher	AA or higher	1.40 or higher	1.3.0.18 or higher

Table 6: Compatibility with Other Products

5.5. Physical Dimensions

Dimensions in mm.

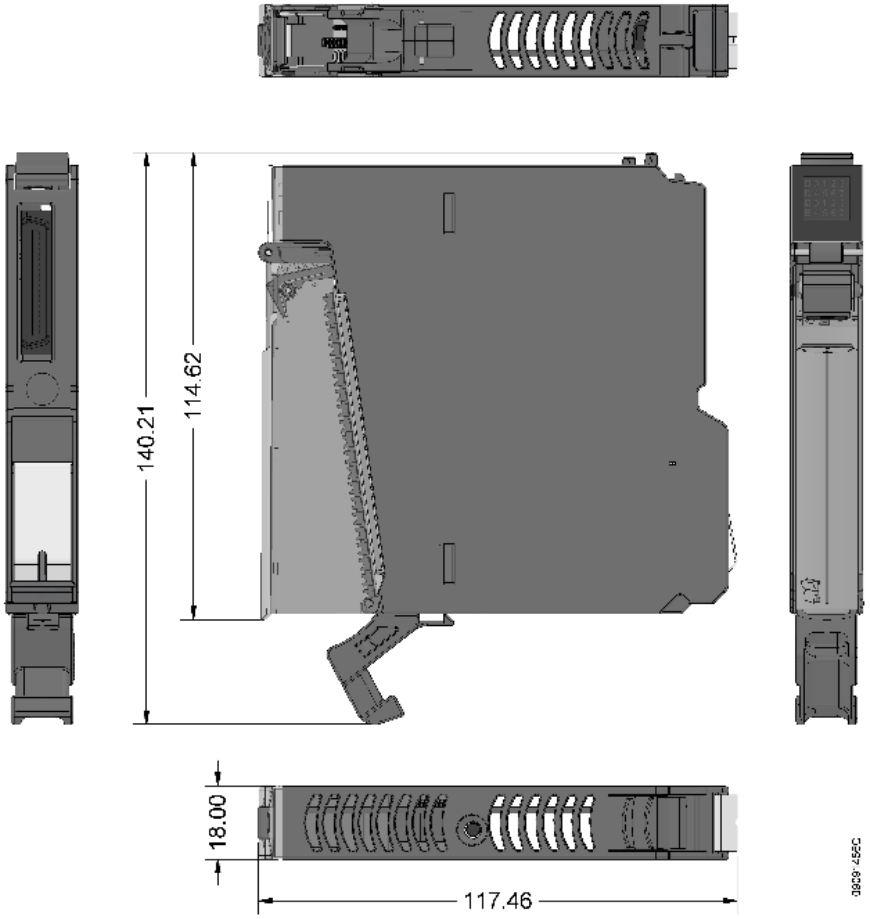

Figure 1: Physical Dimensions

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.

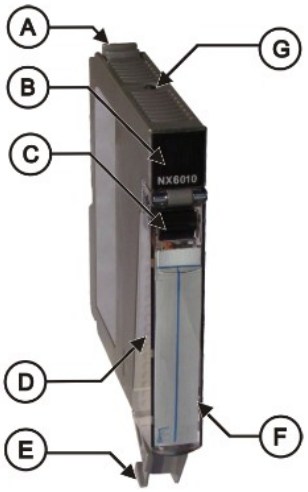

Figure 2: NX6010

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

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 02, input 03 and input 06. Each input presents a different connection, as explain below.

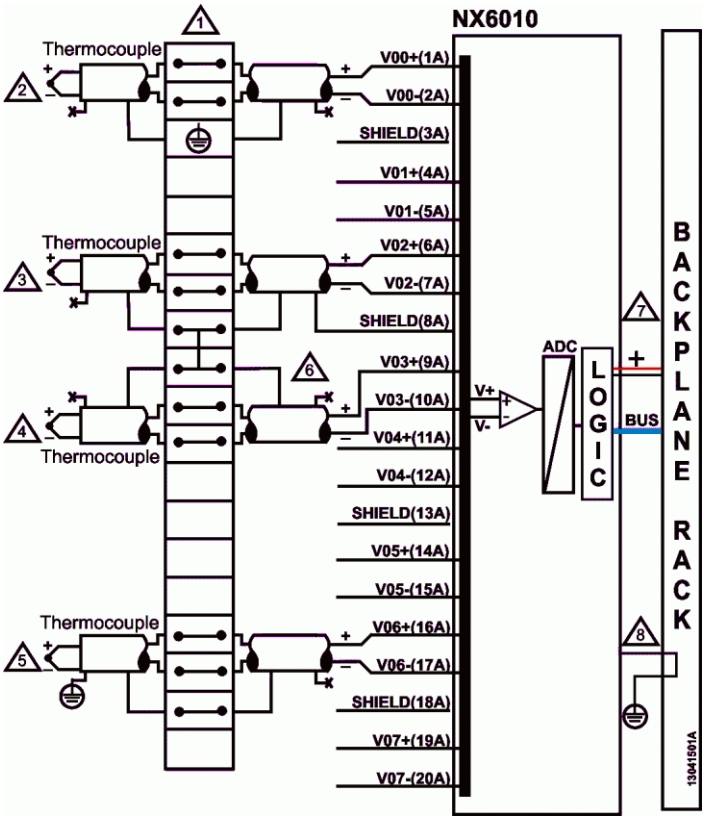

Figure 3: Electric Diagram

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 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.

4. 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.

5. Input 06 is connected to a thermocouple sensor, placed on the field. The cable shielding of the input 06 is connected to the earth close to the device on the field.

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. NX6010 module is connected to the protective earth ⏚ through the backplane rack.

   Protective conductor terminal.

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	Input 04
12	Reference input 04
13	Shield
14	Input 05
15	Reference input 05
16	Input 06
17	Reference input 06
18	Shield
19	Input 07
20	Reference input 07

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 NX-ERA 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

NX-ERA 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.

7. Configuration

This module was developed to be used with NX-ERA Series products. All NX-ERA 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 used to access the module. The table below describes all the variables made available by this module when declared on the CPU or MODBUS Head bus.

In addition to the data in the table, this product 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
%IW(n+8)	WORD	AI 04	Analog Input 04	INT (Reading)	Always
%IW(n+10)	WORD	AI 05	Analog Input 05	INT (Reading)	Always
%IW(n+12)	WORD	AI 06	Analog Input 06	INT (Reading)	Always
%IW(n+14)	WORD	AI 07	Analog Input 07	INT (Reading)	Always

Table 8: Process Data

Note:

Update: The field “Update” indicates if the respective process data is updated by CPU and NX6010 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 NX6010 module through the bus, to improve CPU performance. It is recommended to update only the process data that will be used in the application.

7.1.1. PROFIBUS Data

When the module is inserted on the bus of a PROFIBUS Head, the variable type will be WORD. In this case, we recommend using symbolic variables of type INT, declared with the AT directive at the same addresses as the direct variables. Example, considering the direct variable %IW(n) from the previous table:

```
iChannel_0 AT %IW(n): INT;
```

The values sent by PROFIBUS are of the integer type. For example, on a channel configured as Thermocouple type J (-210°C to 1200°C), the temperature of -210°C will be converted to a value of -2100.

7.2. Module Parameters

Name	Description	Standard Value	Options	Configuration
Noise Suppression Filter	Frequency of the noise suppression filter	60 Hz	50 Hz 60 Hz	Per module

Name	Description	Standard Value	Options	Configuration
Temperature Unit	Defines the temperature unit (°C or °F)	Degree Celsius	Degree Celsius Degree Fahrenheit	Per module
Type	Defines the thermocouple type	Not Configured	Not Configured J K B E T R S N	Per input
Digital Filter	First order digital filter time constant (ms)	Disabled	Disabled 200 ms 1 s 10 s	Per input
Cold Junction Compensation	Enables or disables the cold junction compensation	Enabled	Disabled 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

NX6010 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

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

This module offers five important features to assist users during maintenance: Electronic Tag on Display, One Touch Diag, status and diagnostics indicators, web page with complete status and diagnostics list, and diagnostics mapped to internal memory.

9.1. Electronic Tag on Display and One Touch Diag

Electronic Tag on Display and One Touch Diag are important features that provide to the user the option to check the tag, description and diagnostics related to a given module directly on the CPU display.

Electronic Tag on Display and One Touch Diag are easy-to-use features. To check the tag and diagnostics of a given module, it's required only one short press (shorter than 1 s) on its diagnostic switch. After pressing once, CPU will start to scroll tag information and diagnostic information of the module. To access the respective module description just long press (longer than 1 s) the diagnostics switch of the respective module.

More information about Electronic Tag on Display and One Touch Diag can be found at User Manual of each respective CPU (listed at manual of NX-ERA Series - MU214600).

9.2. Web Page with Complete Status and Diagnostics List

Another way to access diagnostics information on NX-ERA Series is via web pages. NX-ERA Series CPU's has an embedded web page server that provides all NX-ERA 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 NX-ERA Series User Manual - MU214600).

9.3. Status and Diagnostics Indicators

NX-ERA 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 NX-ERA Series I/O modules. These states can be consulted in the table below.

9.3.1. D and E States

D	E	Description	Cause	Solution	Priority
Off	Off	Display failure or module off	- Module disconnected; - External power supply failure; - Hardware failure.	Check: - If the module is completely connected to the rack; - If the rack is powered by an external source; - 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; - Head/Remote in non-ACTIVE state.	Check: - If the CPU is in operation; - If the Fieldbus Master is in operation; - 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

D	E	Description	Cause	Solution	Priority
Off	Blinking 2x	Loss of bus master	Loss of communication between: - The module and the CPU; - The module and the Head/Remote; - The Head/Remote and the Field Network Master.	Check: - If the module is completely connected to the rack; - If the CPU is in RUN mode; - If the Fieldbus Master is in operation; - Network integrity between PROFIBUS Master and Head/Remote.	4
Off	Blinking 3x	Module without calibration	- The module is not calibrated; - There was an error with the calibration value.	The module must return to the manufacturer.	3
Off	Blinking 1x	Missing or parameterization error	The module isn't parameterized.	Check: - If the module parameterization is correct; - Network integrity between PROFIBUS Master and Head/Remote; - Network integrity between PROFINET Controller and	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.

9.3.2. 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 the first 8 I/O and the numerical characters used for the last 8 I/O. In case of NX6010 only the character 0 is on. The figure below shows the relation between numerical characters and the respective input.

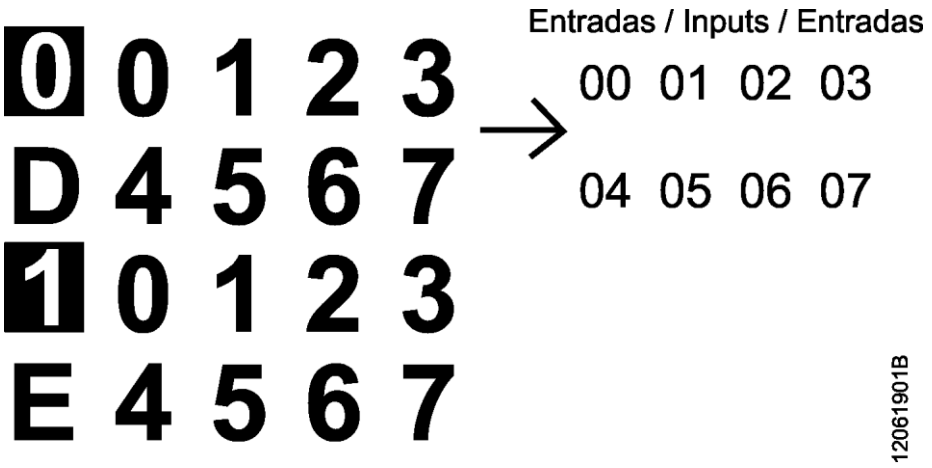

Figure 4: Display

9.4. 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. Messung 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.

9.4.1. General Diagnostics

Direct Variable		Diagnostic Message	Symbolic Variable DG_NX6010.tGeneral.*	Description	PROFIBUS Message Code
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	INPUT 04 W/ DIAG	bActiveDiagnosticsInput04	TRUE – Input 04 has active diagnostics	-
		-		FALSE – Input 04 has no active diagnostics	
	5	INPUT 05 W/ DIAG	bActiveDiagnosticsInput05	TRUE – Input 05 has active diagnostics	-

Direct Variable		Diagnostic Message	Symbolic Variable DG_NX6010.tGeneral.*	Description	PROFIBUS Message Code
Variable	Bit				
		-		FALSE – Input 05 has no active diagnostics	
	6	INPUT 06 W/ DIAG	bActiveDiagnosticsInput06	TRUE – Input 06 has active diagnostics	-
		-		FALSE – Input 06 has no active diagnostics	
	7	INPUT 07 W/ DIAG	bActiveDiagnosticsInput07	TRUE – Input 07 has active diagnostics	-
		-		FALSE – Input 07 has no active diagnostics	
%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	25
		-		FALSE – No fatal error	
	2	CONFIG. MISMATCH	bConfigMismatch	TRUE – Parameterization error	26
		-		FALSE – Parameterization ok	
	3	WATCHDOG ERROR	bWatchdogError	TRUE – Watchdog has been detected	27
		-		FALSE – No watchdog	
	4	OTD SWITCH ERROR	bOTDSwitchError	TRUE – Module has diagnostic switch failure	28
		-		FALSE – Diagnostic switch ok	
	5	CALIBRATION ERROR	bCalibrationError	TRUE – Module without calibration	29
		-		FALSE – Module calibrated	
	6	COLD JUNC. SENS. ERROR	bColdJunctionSensorError	TRUE – High temperature in the cold junction sensor	30
		-		FALSE – Normal temperature in the cold junction sensor	
	7	Reserved			

Table 11: General Diagnostics

9.4.2. Detailed Diagnostics

Direct Variable		Diagnostic Message	Symbolic Variable DG_NX6010.tDetailed .tAnalogInput_XX.*	Description	PROFIBUS Message Code
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	24
		-		FALSE – Input data is ok	
	1	UNDER RANGE	bUnderRange	TRUE – Input data is under range	25
		-		FALSE – Input data is ok	
	2	OPEN LOOP	bOpenLoop	TRUE – Input is open	26
		-		FALSE – Input is ok	
	3	-	bInputNotEnable(1)	TRUE – Input is not enable	-
		-		FALSE – Input is enable	
	4..7	Reserved			

Table 12: Detailed Diagnostics

Notes:

(1): This diagnosis does not apply to the module when declared on the Profibus Heads or PROFINET Heads bus. It is valid only when the module is declared on the UCPs or MODBUS Heads bus.

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 NX6010'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.

9.5. Hot Swap

This product supports hot swap. For further information about how to correctly perform a hot swap, consult NX-ERA Series User Manual - MU214600.

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	NX-ERA Series – Technical Characteristics	English
MU214600	NX-ERA Series User Manual	English
MU299609	MasterTool IEC XE User Manual	English
MP399609	MasterTool IEC XE Programming Manual	English
MU214608	NX-ERA PROFIBUS-DP Head Utilization Manual	English

Table 13: Related Documents