MULTIFUNCTIONAL CONTROLLER
With Embedded PLC

NEXUS N2 controls two/four digital axes by its 12-bit analogue output. Its powerful embedded PLC can be programmed both in Ladder and in Instruction List language. NEXUS N2 user interface can be completely configured according to the application requirements. The user interface and PLC program graphical pages are stored into the wide Flash Memory area in the microprocessor.

NEXUS N2 can be programmed over the mini USB port, allowing for high speed in the communication, an important feature for programmers when developing projects. Modbus RTU communication protocol is available on both communication ports, thus allowing NEXUS N2 to operate as Master over COM1 RS485 port, and as Slave over COM2 RS232 port at the same time. By means of the SD card it is possible to upload and save recipes, or working and axes data, and to manage the upgrades of application software.

The Real Time Clock with date keeping is accessible through PLC instructions and it allows to handle scheduled activities, such as programmed maintenance operations, productivity control and so on.

NEXUS BOX N2, the inside-board mounting version, can be profitably coupled to a touch-screen HMI terminal.

**HARDWARE**
- CPU 32 bit RISC
- Flash Memory 512 kB
- Memory for PLC programming: 64 kB Flash
- Memory for graphical pages: 192 kB in memoria Flash
- RAM for PLC data: 8 kB
- RAM for recipes: 1MB

**INTERFACE TO THE FIELD**
- DIGITAL INPUTS: 32 optoisolated inputs + 4 inputs devoted for interrupt command
- DIGITAL OUTPUTS: 32 50 mA optoisolated inputs
- I/O EXPANSION MODULES: 16 inputs + 16 outputs 500 mA – Fixing on DIN bar
- INCREMENTAL ENCODERS: 2 bidirectional count inputs, 5V Line Driver (RS422), with zero reference reading, 500 KHz frequency
- AXIS COMMAND: 2/4 differential analogue outputs ±10Vcc - 12 bit - Optional: 10 V analogue outputs
- Possibility to handle axes ON/OFF
- ANALOGUE INPUTS: 2/4 analogue inputs 0÷±5 V- 10 bits – Optional: 10 V analogue inputs, common type
- ALARMS: 1 contact for system watch-dog
- COMMUNICATION: 2 RS232 serial ports, or 1 serial port RS232 + 1 serial port RS485

**USER INTERFACE**
- Polyester 41-key-KEYBORD each key having programmable functions, i.e.:
  - 8 keys in the display area
  - 10 function keys with custom label possibility
  - 8 navigation keys
  - 1 key for reset function or alarm display
- Numerical pad
- START and STOP push-buttons with LEDs
- 25 programmable signalling LEDs
- Rear-lighted GRAPHICAL DISPLAY 240 x 128 pixel
- 128 expandable text pages
- 25 graphical bit-map backgrounds 240x128 pixel
- 256 messages, each by 30 bytes.
- Storable data structures with indexed access (recipes)
**GENERAL SPECIFICATIONS**

- Front protection degree: IP65
- Supply: 24 Vdc ±15% 30 Watt max.
- Connections:
  - Extractable terminal box: supply, digital I/O
  - Canon connectors: encoder, analogue I/O, serial ports
- On request: digital outputs on relay modules
- Lithium battery 5 years life

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Type</th>
<th>Axes No.</th>
<th>Input/Output connections</th>
<th>Memory</th>
<th>Serial line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nexus N2</td>
<td>2 = 2 axes</td>
<td>32 + 32 I/O</td>
<td>128 kB</td>
<td>2 RS232 serial ports</td>
</tr>
<tr>
<td>Nexus Box N2</td>
<td>4 = 4 axes</td>
<td>terminal box connections</td>
<td></td>
<td>1 RS232 + 1 RS485 serial ports</td>
</tr>
<tr>
<td>Optional:</td>
<td></td>
<td>- external relays connections</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 4 analogue inputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SSI serial interface</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Panel cut off
A = Holes Ø 4.5 mm*
New graphical design and a powerful man-machine interface are the main features of the controller VEGA+. The wide TFT color display is rear-lighted. Its touch screen functions are easily set by means of a dedicated program. VEGA+, controls one or two digital axes with 12 bit analogue output; its mighty embedded PLC can be programmed both in Ladder and in Mnemonic language. VEGA+ hardware specifications are consistent with VEGA prior version, while its software was enhanced to handle the touch screen functionalities. VEGA PLC programs and tasks are compatible with VEGA+ applications.

**HARDWARE**
- CPU 32 bit RISC 65 MIPS
- Flash memory 256 Kbyte
- RAM for user programs, data and pages: 512 Kbyte - optional 128 Kbyte NV RAM

**INTERFACE TO THE FIELD**
- DIGITAL INPUTS: 16 optoisolated inputs + 2 devoted to the interrupt command
- DIGITAL OUTPUTS: 16 50 mA optoisolated outputs I max 50 mA
- INCREMENTAL ENCODERS: 2 5V- Line Driver (RS422) bidirectional count inputs with zero reference reading, 500 KHz frequency
- AXIS COMMAND: 2 12-bit ±10Vdc differential analogue outputs. Possibility to command ON/OFF axes
- ANALOGUE INPUTS: 4 0-5 V analogue inputs with 10 bit resolution - Optional: 10 V analogue outputs
- ALARMS: 1 contact for system watch-dog
- COMMUNICATION: 2 RS232 serial ports or 1 RS232 + 1 RS485 serial port – optional 1 USB port
- EXPANSION MODULES: 16 inputs + 16 outputs 500 mA
- DIN bar fixing
- Modbus RTU communication protocol in master or slave mode

**USER INTERFACE**
- Polyester 33-key-KEYBOARD, each key having programmable functions, i.e.:
  - 4 keys in the display area
  - 9 function keys with signalling LEDs
  - 4 direction keys
  - 1 key for the reset function or alarm display
  - Numerical pad
  - START and STOP push-buttons with LEDs
- TFT COLOR DISPLAY Touch Screen 432 x 240 pixel, 4.2 inch, 65000 colours
  - 64 expandable text pages
  - 256 messages, each by 20 bytes
  - Storable data structures with indexed access (recipes)
  - Texts handled in four languages
  - Images by 128x128 pixel for icons and animation
  - Graphical touch screen push-buttons
GENERAL SPECIFICATIONS
- Front protection degree: IP65
- Supply: 24 Vdc ±15% 24 Watt max.
- Connections:
  - Extractable terminal box: supply, digital I/O
  - Canon connectors: encoder, analogue I/O, serial ports
  - On request: digital outputs on relay modules
  - Lithium battery 5 years life (Except type with NV RAM)

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>VE GA+</th>
<th>1 axis</th>
<th>M</th>
<th>512K RAM</th>
<th>R</th>
</tr>
</thead>
</table>

| | | | | |
| | | | | |

Serial Ports
- \( R \) = 2 RS232 serial ports
- \( S \) = 1 RS232 + 1 RS485 serial ports
- \( T \) = 1 RS232 + 1 RS422 serial ports
- \( U \) = 2 RS232 serial ports + 1 USB
- \( V \) = 1 RS232 + 1 RS485 serial ports + 1 USB
- \( Z \) = 1 RS232 + 1 RS422 serial ports + 1 USB

RAM Capacity
- 512 KB RAM
- 128 KB NV RAM

Input/Outputs Connections
- \( M \) = 16 + 16 I/O terminal box connections
- \( R \) = 16 + 16 I/O on external relay modules

Controlled Axes
- 1 axis
- 2 axes

Type
- VE GA+
Small-sized and compact-shaped NEOS N1 features a single axis controller with great potential. Its embedded PLC allows to configure several functional options, tailoring NEOS for any application in the counting and positioning field as well as for the development of simple logic circuits. The Integrated Development Environment Elap CmStudio allows to create the PLC program and to configure the user graphical interface.

**HARDWARE**
- CPU 8 bit 4 MIPS
- Flash memory 32 Kbyte
- RAM/Flash memory for user programs, pages and data: 3.6 Kbyte for the PLC + 32 Kbyte for pages and recipes

**USER INTERFACE**
- Polyester KEYBOARD with 20 keys, 9 with programmable functions, i.e.: 5 keys in the display area and/or function keys 2 navigation keys 1 reset or alarm display key numerical pad
- LCD GRAPHIC LED DISPLAY, rear-lighted 128x64 pixel expansible text pages messages storable data structures with indexed access (recipes) images up to 16x16 pixel for icons and animation

**INTERFACE TO THE FIELD**
- DIGITAL INPUTS: 6 optoisolated inputs
- DIGITAL OUTPUTS: 4 500-mAmp optoisolated outputs 2 1-Amp solid state NPN outputs
- INCREMENTAL ENCODERS: 5 Vdc Line driver (RS422) bidirectional count input with zero reference reading, frequency 400 KHz Optional: 5 or 12 Vdc push-pull/NPN open collector, 12 Vdc line driver
- AXIS COMMAND: 1 ±10Vdc differential analog output 12 bit resolution. ON/OFF axes control possible
- COMMUNICATION: 1 serial port RS232 or RS485
- VERSION SA: 1 potentiometer input + 3 PNP inputs
ORDERING INFORMATION

<table>
<thead>
<tr>
<th>NEOS N1</th>
<th>1 axis</th>
<th>6+6 I/O</th>
<th>5 Vdc LD</th>
<th>R</th>
</tr>
</thead>
</table>

Serial line
- R = 1 serial port RS232
- S = 1 serial port RS485

Count input
- 5 Vdc line driver/push pull/open collector
- 12 Vdc line driver/push pull/open collector

Inputs/outputs
- 6 + 6 I/O PNP
- 3i+6o PNP (version SA)

Axes number
- 1 = axis
The PLC controllers series **NEXUS** and **VEGA** can be supplied in the **BOX version for inside board mounting**. **NEXUS BOX N2** and **VEGA BOX** can be employed together with operator terminals to develop complex controlling systems.

**NEXUS BOX N2**

2/4 axes controller

- **INSIDE BOARD VERSION**
- Fixing plate dimensions mm 300x190
- **2 to 4 digital axes managed** by means of ±10Vdc (0± ±5 Vdc) digital outputs with 12 bit resolution
- CPU 32 bit RISC ● Input signals: 5 Vdc line driver
- **PLC ● IDE CMStudio for PLC programming (ladder or IL).**
- Supply voltage: 24 Vdc ±15% 36 Watt ● Connections on terminal box or on external relay modules
- **Modbus RTU communication protocol ● Master RS485 + Slave RS232 option**
- **PLC program saved on EEPROM**
- **PLC program memory 64 kB ● Programming via USB 2.0 mini port ● Real Time Clock**
- **Flash memory 1 MB for the backup or the RAM data ● SD card slot max. 2 GB for data backup/upload, receipt and programs—SD card included**

**OPTIONAL:** ● 4 0-5V analogue inputs ● 4 10V analogue inputs ● 0± ±10 Vdc analogue outputs

**VEGA BOX**

1/2 axes controller

- **INSIDE BOARD VERSION**
- Fixing plate dimensions mm 233 x 154
- CPU 32 bit RISC 65 MIPS
- **1 or 2 digital axes managed by ±10Vcc (0± ±5 Vdc) differential analogue outputs, 12 bit resolution**
- Input signals: r 5 Vdc line driver
- **PLC ● IDE CMStudio for PLC programming (ladder or IL).**

- Dimensions: mm 158x210x60
- Supply voltage: 24 Vdc ±15% 24 Watt max.
- Connections on terminal box or on external relay modules
- **Modbus RTU communication protocol**

**OPTIONAL:** ● 4 0-5V analogue inputs ● 4 10V analogue inputs ● 0± ±10 Vdc analogue outputs

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