



With factories facing increasing competition, the distinction between automation, production monitoring, web services and data exchange with a central databank is rapidly blurring away.

As a result automation engineers must develop always more complex programming tasks mixing TCP/IP services, high level languages such as C/C++, SQL-queries and various PLC programming systems. This heterogeneous environment leads to larger development teams, time consuming maintenance and higher development costs.

At the manufacturing level the device-servers constitute the heart of any data collecting system and as such represent a prime example of this new complexity typically mixing PLC functions to record manufacturing states, TCP/IP protocols to transmit data or alarms and remote calls to SQL servers to store them.

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The Program Generator Sigma for the NetCube® family of device servers is a revolutionary Rapid Application Development environment which allows creating any program "zero-code" based!

Sigma is built around four key concepts:

1. PLC signals, SQL exchanges, data processing and TCP/IP services are all treated likewise.
2. There are no instruction set nor syntax, hence no language to learn.
3. Sigma doesn't use a compiler or libraries.
4. Finally Sigma is a standard NetCube application remotely programmable within any standard browser through its web interface.

- **Necessitate no language to learn**
- **Eliminate compiler and libraries**
- **Everything you need is available in your web browser**

OVERVIEW

Sigma is a modular, event driven framework with a central engine assuring the collaboration between all modules. When you describe an automation process you think in terms of inputs, actions performed and outputs. Irrespective whether they are TCP/IP datagrams, barcodes or balance values, digital Inputs/Outputs, e-mails etc.

You proceed exactly the same within **Sigma**: any application consists of a chain of actions (modules) linked together through inputs and outputs (variables).

User interface

The user interface is web based and consists of three programming pages, one page listing debug informations and one administrative page to save, backup and restore applications. Each page offers detailed contextual help as well as numerous examples for copy and paste.

The three programming pages are respectively

Create variables, where you list all the variables.

The screenshot shows a web form titled "Create new variable". It contains the following fields:

- Name:
- Type of variable:
- Description:
- A "Create new variable" button at the bottom.

Create modules, where you declare the actions you want to perform using the standard modules and describe their "scenarios".

The screenshot shows a web form titled "Instantiate new module". It contains the following fields:

- Name:
- Based on the template module:
- Description:
- A "Create new module" button at the bottom.

Application overview, where you test your application. Here all modules used and their respective variables are displayed graphically. As soon as you change a value all the dependent variables are updated accordingly and change colors allowing easy control of the cycle

The screenshot shows a web form titled "Update the value of a variable" with the following fields:

- Name of variable:
- New value:
- An "Update value of variable" button.

Below the form is a diagram titled "Relationships between variables" showing a table of inputs, modules, and outputs:

Inputs	Module	Outputs
X Y	Multiplication/Z	Z
Z X Y	ReportCalc/ReportCalc	FILE:report

Standard modules



Digital I/O



Test



Timer



Math



Chain actions



Report



External. Pgm.



Scheduler



Com



Timer



Mail client



FTP Client



Query SQL

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