

Automation platform

Modicon Premium

A winner across the board



Simply Smart!*

At the heart of Telemecanique's offer, Unity is the new generation software and hardware automation platform.

Its sheer **ingenuity** reduces development times and its processor **flexibility** offers greater execution performance.

Based on **openness** and the collaborative use of tools, Unity has reached a higher level of software development and control system operation that puts your productivity first.



True to the goals of Unity, the Modicon Premium PLC is pushing back every frontier. With its unrivaled processing power and amazing memory capacity, it incorporates more diagnostics and production data.

*Simply Smart: smarter and more intelligent, yet even easier to use.



Multi-sector application

Compact, flexible and optimized for rapid processes, Premium specializes in manufacturing equipment and processes. Premium is especially well-suited to industrial sectors such as automotive, electronics, food & beverage, plastics, metallurgy and glass. Thanks to its ability to integrate distributed architectures, Premium provides ideal solutions for infrastructure projects, particularly in the water and transport sectors.



Transparent
Ready.

Naturally communicative

Transparent Ready is the successful combination of Ethernet and industrial communication technologies. With the benefit of these technologies, Premium can offer you the best of Ethernet whatever the task: web server, sending e-mail, direct database access, equipment synchronization, I/O distribution, etc.



Unrivalled power, powerful memory

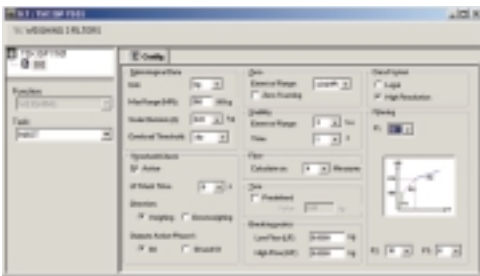
37 ns is all the time it takes Premium to execute a Boolean instruction! It can post record performances for numerical and table instructions too. Whatever application you have, Premium's power and multitasking system will provide you with optimum cycle times.

And when it comes to memory, Premium is also pushing back every frontier. "With their extended capacities, Premium processors enable you to load the entire source project, store your application's diagnostic data, process complex data structures, and even store recipes and production data.

Incorporating application-specific functions

The diversity of installed equipment can often lead to disparate automation systems that are complex to implement, resulting in downtime and lost production.

Premium's wide range of specialized functions ensures the overall performance of your solutions.

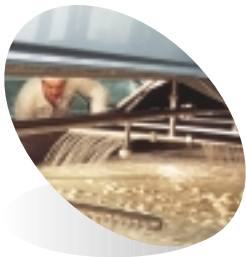


> Weighing



Amazing performance

- TSX 57-5• high-performance processor
- Instruction execution time:
 - Boolean: 37 ns
 - Numerical: 45 ns
 - Floating point: 0.48 µs
- Memory:
 - Program: 7 MB
 - Data: 896 kB
 - Data storage: 8 MB



Process control

- Implementation based on simple configuration
 - > Up to 90 control loops
 - > Calculations performed in floating point format and expressed in physical units.
 - > Several algorithms:
 - simple loop
 - process control loop
 - autoselective loop
 - cascaded loop
 - setpoint programmer
- Advanced control in FDB language for top of the range processors



Weighing

- Implementation of automatic weighing applications
- Sealing device for commercial transactions



> Process control



HMI*

- Web server
 - > Integrated in CPU and ready-to-use for diagnostics
 - > 8 MB of memory available
- E-mail messaging
- > SMS
- > Direct access to relational databases
- > SQL, Oracle, etc.

* Human Machine Interface



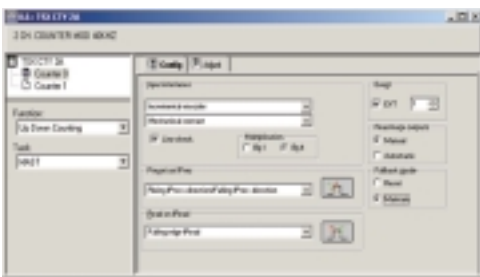
Security

- Machine security modules
 - > Monitoring 12 pushbuttons, emergency stops and limit switches
 - > Safety relay wired independently of the CPU
 - > Electronic acquisition relays for diagnostics
 - > Compliant with standard EN 954 1 category 4
- Easy integration with the Secuflex module

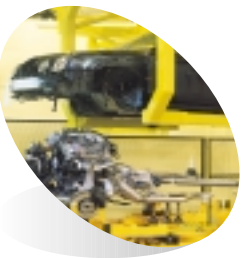


Counting

- Up/down counting
 - > Counting frequency: 40 kHz
 - > Incremental encoder: 40 kHz
- Rapid counting and measurement
 - > Mounting frequency: 1 MHz
 - > Incremental encoders: 500 kHz
 - > 25-bit parallel or SSI absolute encoders
- Electronic cam
 - > 16 to 128 cams
 - > 50 µs for 16 cams
 - > Integrated functions
 - parts counter
 - switching feedforward
 - measurement capture
 - elimination of backlash and position recalibration

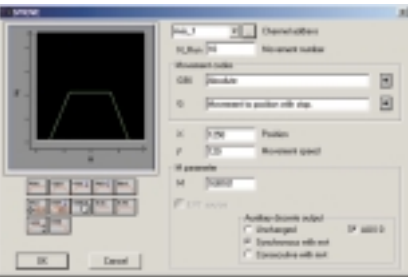


> Counting



Position control

- SERCOS analog or digital setpoint
 - > Single or multiaxis control
 - > Linear or infinite axes
 - > Follower axes by ratio or profile cams
 - > Interpolation
 - > Flying shear
 - > Packaging
- Axis control for stepper motors



> Position

Flexibility

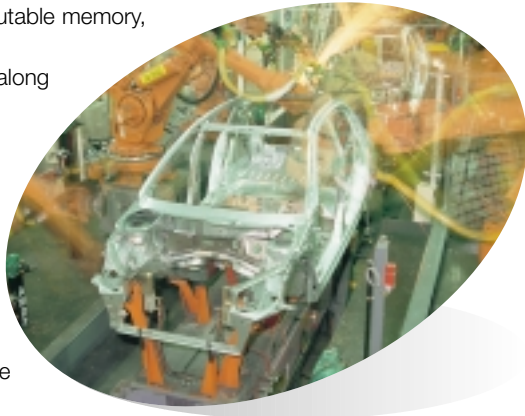
Remove all restrictions

Unrestricted memory access

- Premium ensures optimum memory management. In addition to the internal memory they already have, optional cards can be inserted in each processor to adjust the amount of executable memory, thus expanding their processing capacity.
- These cards can hold the source code and data files, along with the execution code. With no memory segmentation, no blocks or reserved areas, you have full access to the entire memory.
- In addition to traditional symbolic variables, you can use variables without having to worry about their address, and you can even create powerful data structures.

Choose whatever fieldbus you want

- Premium supports Ethernet, CANopen and AS-Interface standards for connecting intelligent devices and remote distributed I/O.
- To be able to meet every possible requirement, other communication standards such as Fip, Modbus Plus, Profibus DP and Interbus are also supported.



Openness

Get the best from Ethernet

Exclusive automation system services

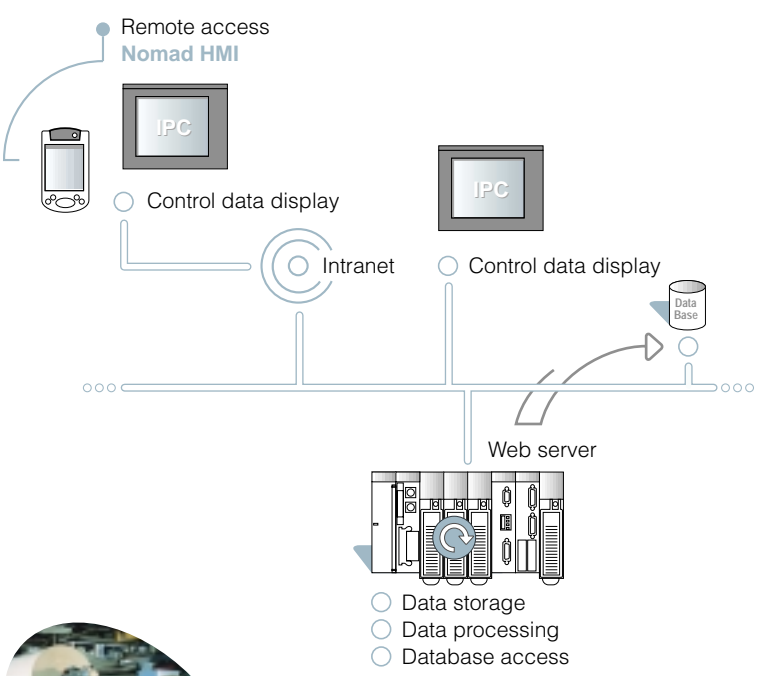
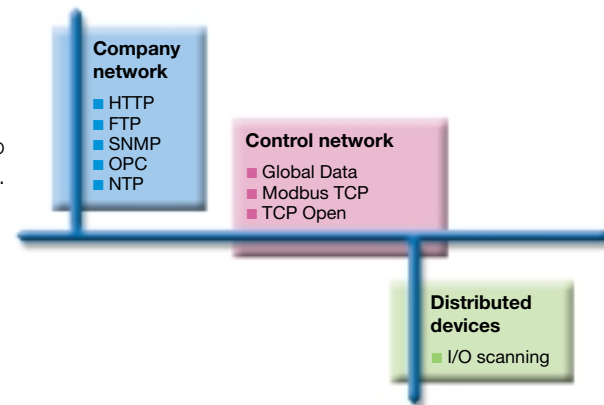
- Messaging: The choice of standard (Modbus TCP, SNMP) and open (Open TCP) protocols ensures interoperability between applications.
- Global Data: By simply setting the relevant parameters, data can be exchanged using a producer/consumer mechanism in a matter of milliseconds.
- I/O scanning: A scanning mechanism can be used to distribute Momentum or Advantys I/O, Altivar drives and any other device with a Modbus server on TCP.
- Faulty Device Replacement: Automatic reconfiguration of any device during maintenance operations ensuring an immediate restart.

HMI function at source

- Web server: A ready-to-use web server makes it possible to access full architecture diagnostics and adjust variables.
- FactoryCast HMI embedded web server: This module incorporates a JAVA machine for executing key HMI functions in the actual module. This module is also active and independent, but has no impact on the PLC's prime function of control.

Simpler information management

- E-mail, SMS: Wherever you are, you can receive an e-mail, SMS or fax about any process or alarm event you choose.
- Databases: Premium populates your remote relational databases (SQL, Oracle, MySQL), providing total traceability.



Adopt a new way of working with Unity

Greater level of standardization and reuse

- Unlocated symbolic variables that are independent of the memory
- Structured data
- User blocks
- PLC functional modules including program code, animation tables and operator screens
- Libraries with automatic version management and program updates
- Automatic reallocation on import/export

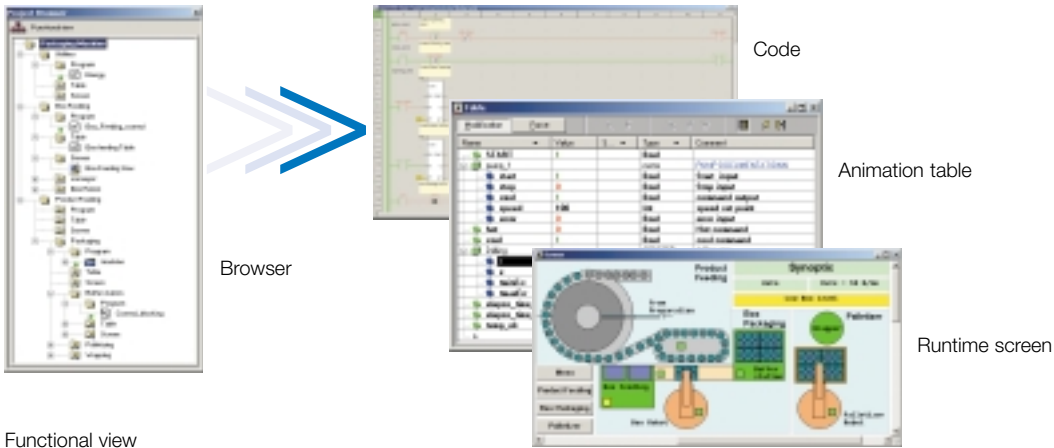


More collaboration

- XML Import/Export of all or part of the application
- Visual Basic for Application (VBA), VB and C++ programming interfaces
- Tool and document integration via hyperlinks

Forget the PLC, just concentrate on the process

- You are free to organize your application into “machine” functions for direct access to the required function using a simple browser. For distributed architectures, Unity Studio extends this functional approach beyond the PLC station, right up to project level.



Benefit from Unity every step of the way

No options, all inclusive

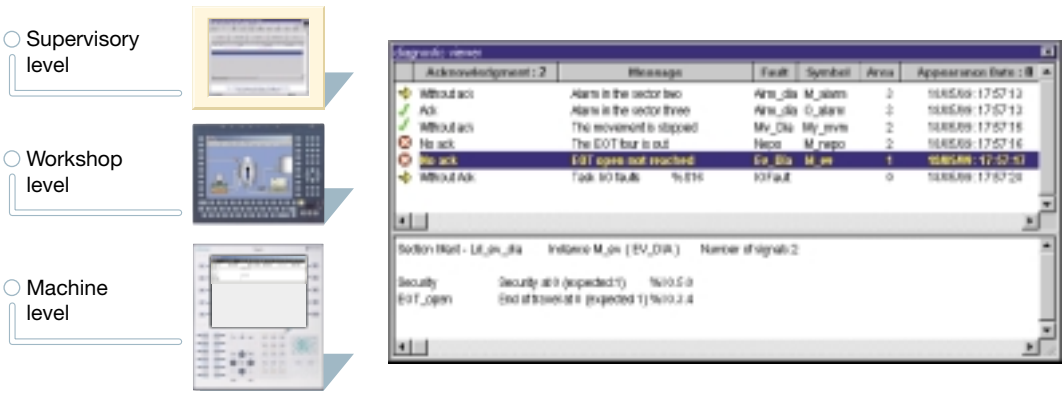
- Unity provides you five IEC 61131-3 languages capable of adapting to your programming routines, while offering ever greater flexibility. No software option is required to use these languages.
- By simply setting parameters, graphic screens can be used to set up complex specialized functions in line with the usage values specific to each application area.

Even more startup tools

- The PLC simulator on PC can be used to test a program in the design office and prepare the startup phase. All debugging tools can be used in simulation mode.
- With its runtime screens, Unity Pro has a powerful graphic tool for representing and monitoring the evolution of PLC variables.

Easy maintenance

- All modules can be replaced while powered up, with the PLC in Run mode, without affecting the rest of the process. No manual or software reconfiguration is necessary, thus making the operation accessible to all operators.
- Unity Pro simplifies diagnostics: by simply setting parameters, system and application error messages are dated at source, stored in the PLC and sent automatically to all the connected devices (Monitor Pro, Vijeo Look, Magelis and web browser).



A range capable of handling different process levels

Powerful communication

- The front panel of every processor has:
- 1 USB or serial port for the programming terminal
 - 1 serial port for connecting to a Magelis display unit
 - 1 PCMCIA slot for a serial link, CANopen bus or network

- You can also choose a version with:
- 1 Ethernet TCP/IP port with a web server
 - 1 Fipio or CANopen master bus

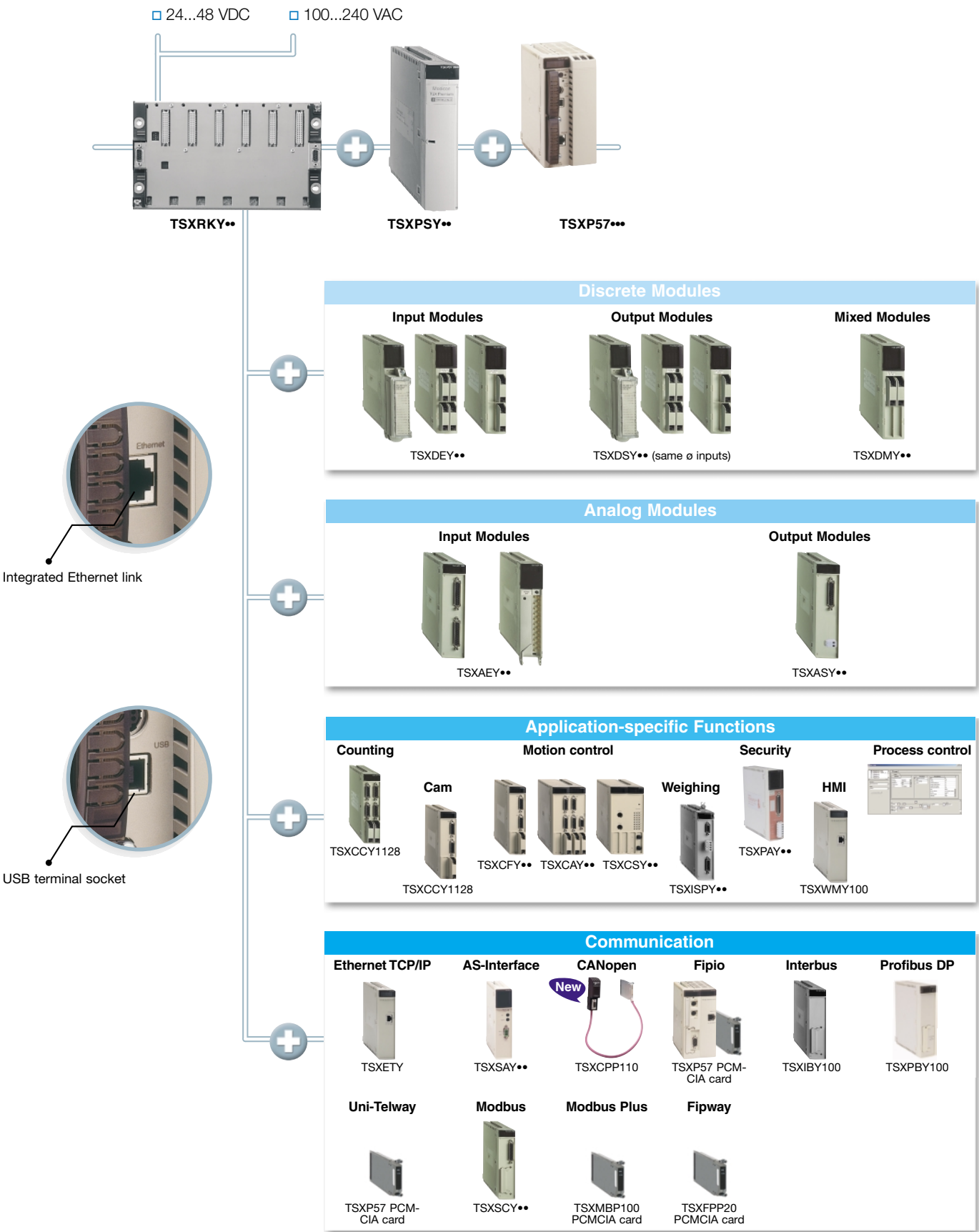
5 power levels

With the ability to integrate a fieldbus and/or an Ethernet TCP/IP port, the 16 processors in the Premium range can certainly meet the requirements of your application.

TSX	57-0•	57-1•	57-2•	57-3•	57-4•	57-5•
In-rack modules						
Discrete I/O	256	512	1024	1024	2048	2048
Analog I/O	12	24	80	128	256	512
Weighing, Counting, Electronic cam	4	8	24	32	64	64
Configurable process control	-	-	30	45	60	90
Advanced process control	-	-	-	-	Yes	Yes
Communication						
Ethernet TCP/IP	1	1	1	3	4	4
Fipio, Modbus Plus	-	1	1	1	1	1
CANopen	1	1	1	1	1	1
Profibus-DP, Interbus	-	-	1	3	4	5
AS-Interface	1	2	4	8	8	8
Memory						
Internal memory	96 kB	96 kB	160 kB	240 kB	440 kB	896 kB
Program capacity with PCMCIA	128 kB	224 kB	768 kB	1.7 MB	2 MB	4 MB
File storage (recipes, logs)	256 kB	256 kB	8 MB	8 MB	8 MB	8 MB
Execution time						
One Boolean instruction	0.19 µs	0.19 µs	0.19 µs	0.12 µs	0.05 µs	0.037 µs
One numerical instruction	0.25 µs	0.25 µs	0.25 µs	0.17 µs	0.06 µs	0.045 µs

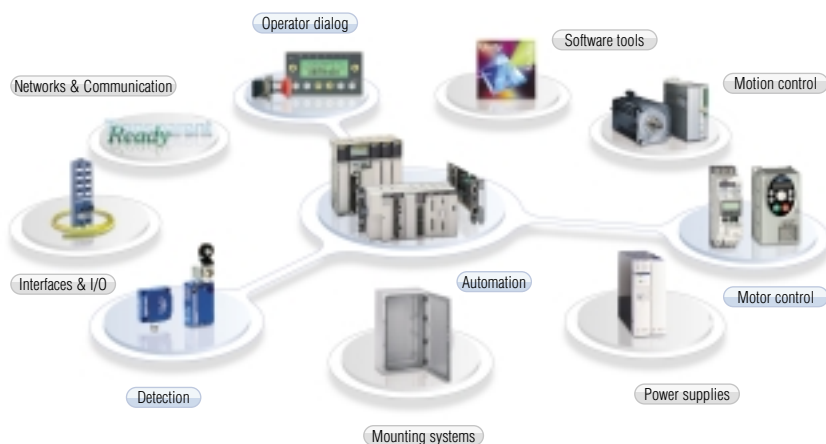


A made-to-order solution



Effective brand solutions from Telemecanique

When used together, Telemecanique products provide quality solutions capable of meeting the requirements of all your **Automation** and **Control** system applications.



Global presence in 130 countries

- Permanent availability, worldwide. With more than 5000 sales outlets in 130 countries, you will always find a complete range of products that meets your needs and conforms to local standards.
- Technical support wherever you are. Schneider Electric provides technical support around the world, with experts at your service to help you achieve the optimum solution for applications.



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Due to possible changes in standards and equipment, the features described in this document in the form of text and images are subject to confirmation by Schneider Electric.

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