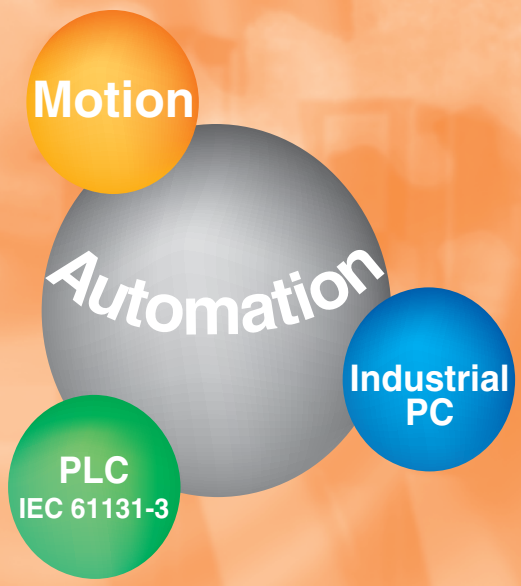
SERAD
FRANCE

Motion control

Motion Plc Controller

MPC Series

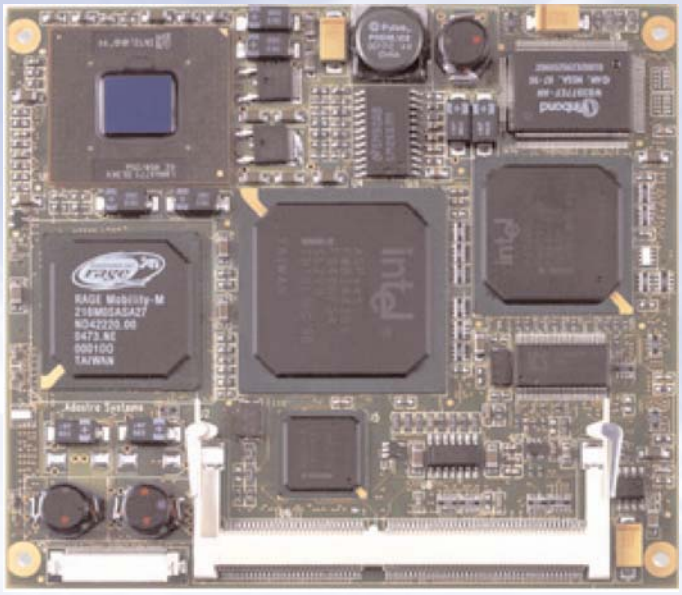
Industrial PC for Automation



The solution for your motion control applications

PC core in an industrial environment

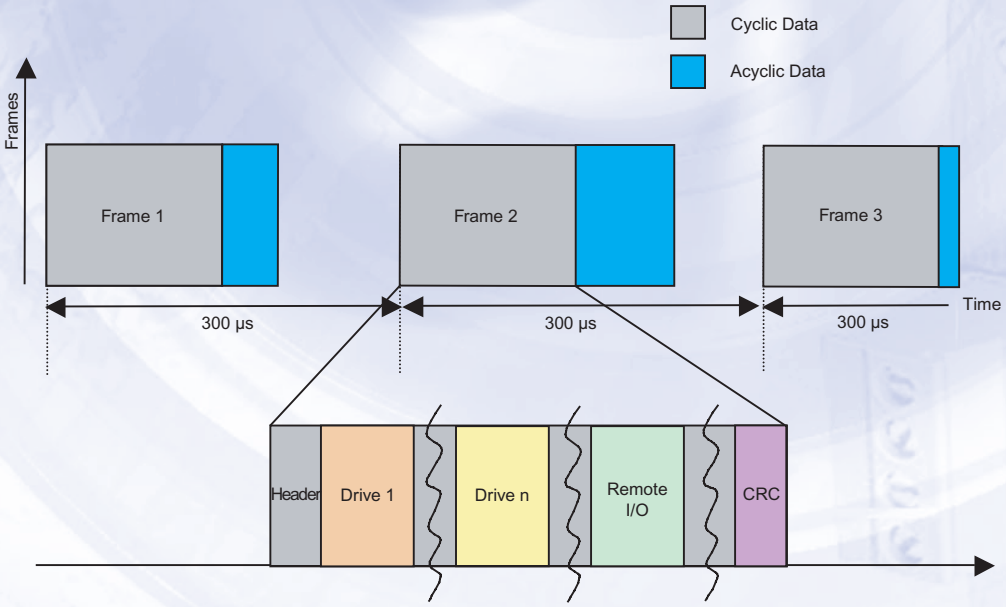
- Power supply 24 Vdc
  - Galvanic isolation
  - Tolerates momentary supply loss
- Intel® Celeron® processor 400 MHz
- Compact Flash memory 64 MB
- RAM memory 64 MB
- RAM saved data memory 128 KB
- Real time clock
- Watchdog
- Real time multi-tasking core
- Operating temperature range from 5 to 45°C



Motion architecture

- **Control up to 40 brushless drives via EtherCAT® 100 Mbit/s industrial Ethernet network**
  - **Real time and deterministic Ethernet**
  - **Transfert of cyclic data (commands and position feedback) : 300 µs update cycle time**
  - **Transfert of acyclic data (motor & drive parameters)**
  - **Jitter lower than 1 µs**

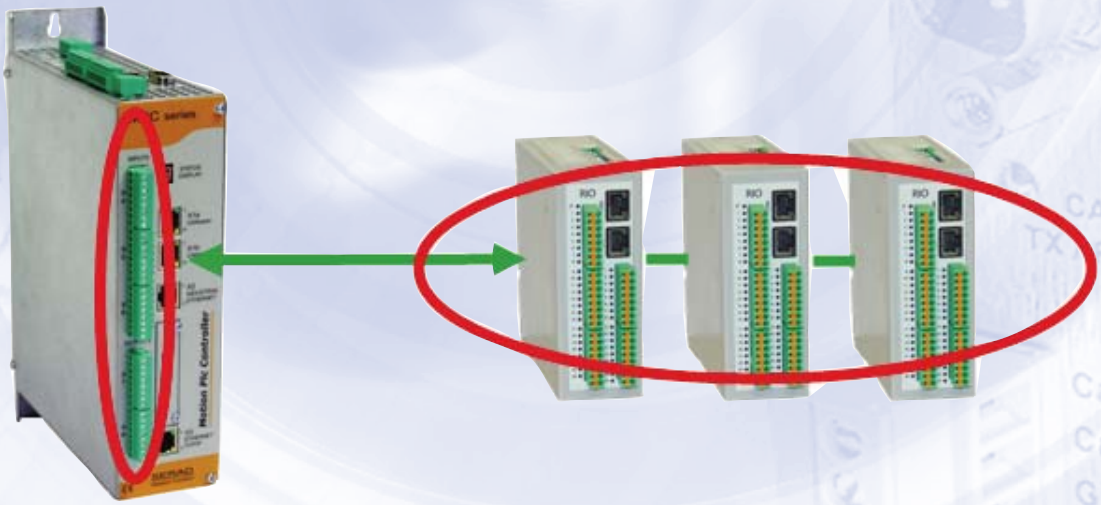
EtherCAT®



Plc architecture

- **Local Inputs / Outputs : optional I/O module**
  - 32 digital inputs PNP 24 Vdc
  - 24 digital outputs PNP 24 Vdc 0,5A
  - LED state visualization
  - Connection by screw connector blocks

- **Remote Inputs / Outputs**
  - CANopen fieldbus
  - EtherCAT® industrial Ethernet
  - Modbus RTU serial link



Local 56 I/O *Remote I/O*

Communication

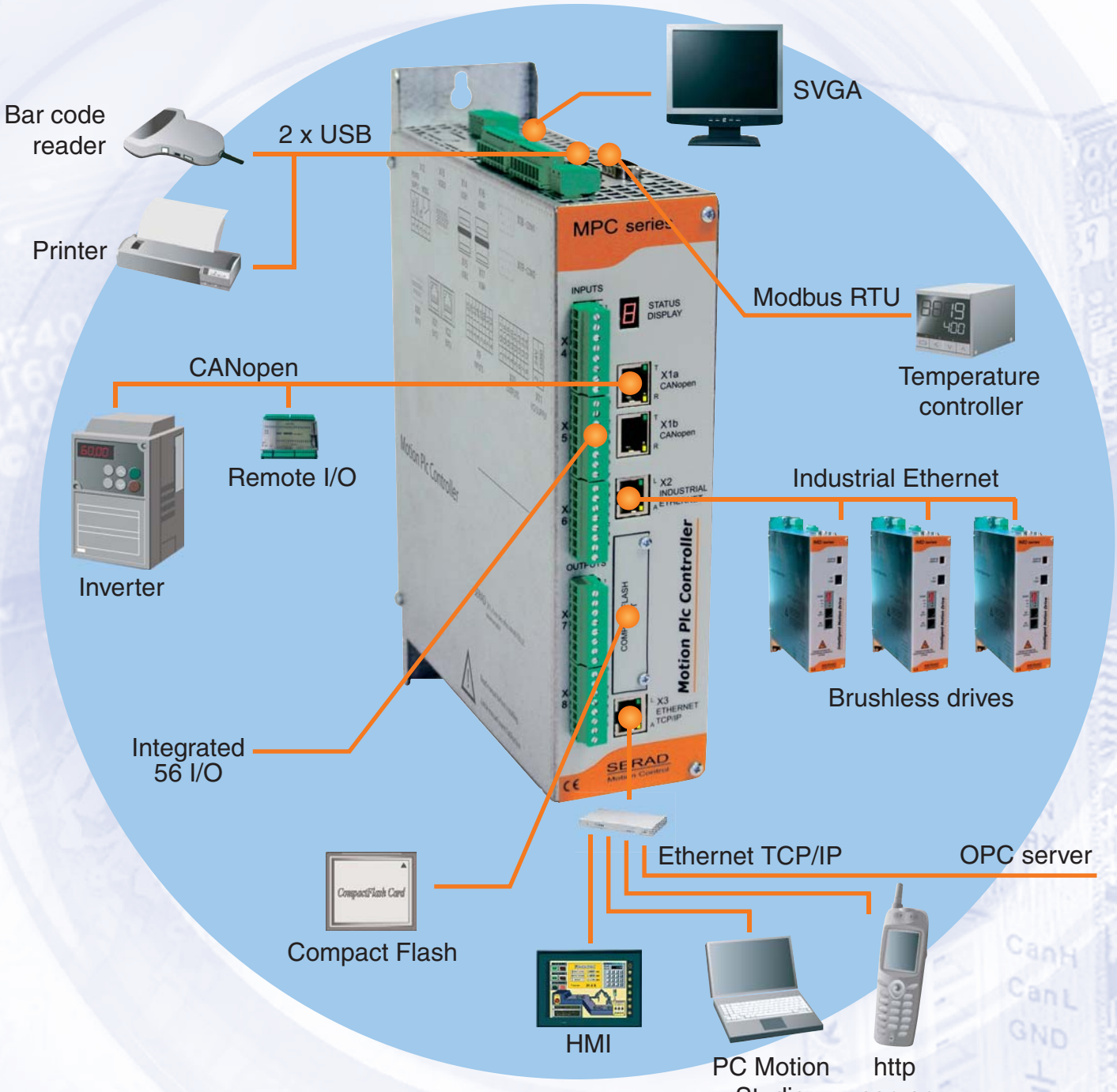
- **Ethernet TCP / IP 100 Mbit/s**
  - **Link with Motion Studio software on PC**
  - **OPC Server**
  - **http Server**
- **EtherCAT® 100 Mbit/s industrial Ethernet**
- **CANopen 1 Mbit/s**
- **CANbus 1 Mbit/s**
- **Modbus RTU master**
- **Modbus RTU slave**
- **RS 232 / RS 485 ports with free protocoles**
- **USB ports**

TCP/IP EtherCAT USB

CANopen MPC CANbus

Modbus RS232 RS485

Operation


Bar code reader
2 x USB
Printer
SVGA
Modbus RTU
Temperature controller
CANopen
Remote I/O
Inverter
Industrial Ethernet
Brushless drives
Integrated 56 I/O
Compact Flash
Ethernet TCP/IP
OPC server
HMI
PC Motion Studio
http server
MPC series
Motion Plc Controller
INPUTS
STATUS DISPLAY
X1a CANopen
X1b CANopen
X2 INDUSTRIAL
X3 ETHERNET TCP/IP
OUTPUTS
SERAD

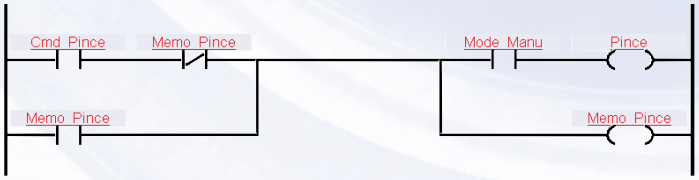
Advanced Motion functions

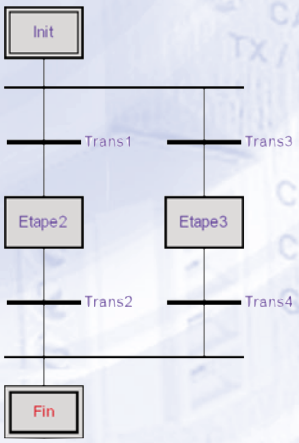
- **Fast and accurate positioning**
  - Absolute movement
  - Relative movement
  - Infinite movement
  - Speed profile modification on the Fly
- **Electronic gearbox**
  - Adjustable ratio
  - Clutch on the Fly
  - Dynamic phase adjustment
- **CAM profiles**
  - Profile definition with graphic tool
  - Sequence of several profiles
  - Master and slave phase adjustment
- **Registration**
  - Position capture less than 10 µs
  - Programmable window
- **Synchronized movements**
- **Triggered movements**
  - On fast digital input
  - On position
- **Linear, circular and helical interpolations**
- **Virtual axes**
- **CAMBOX functions**

Plc IEC 61131-3

infoteam
Software-Experts for…

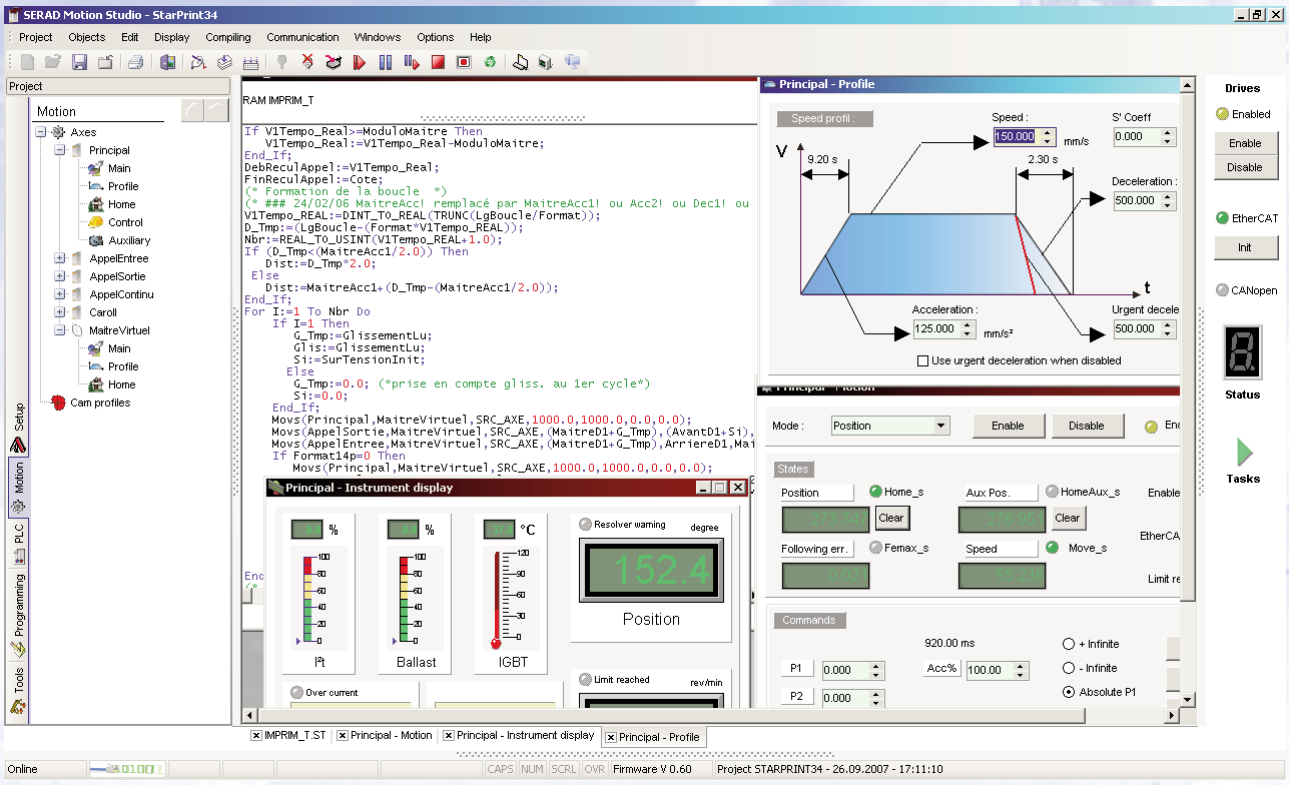
- **Languages**
  - LD ladder
  - SFC sequential functions
  - FBD function blocks
  - ST structured text
  - IL instructions list
- **Functions & function blocks**
- **Data types**
  - BOOL, BYTE, WORD, DWORD
  - SINT, INT, DINT, USINT, UINT, UDINT
  - REAL, STRING, …
- **Variables**
  - Global, external, local, inputs, outputs
- **Tasks**
  - Cyclic
  - Acyclic
  - Interruptive





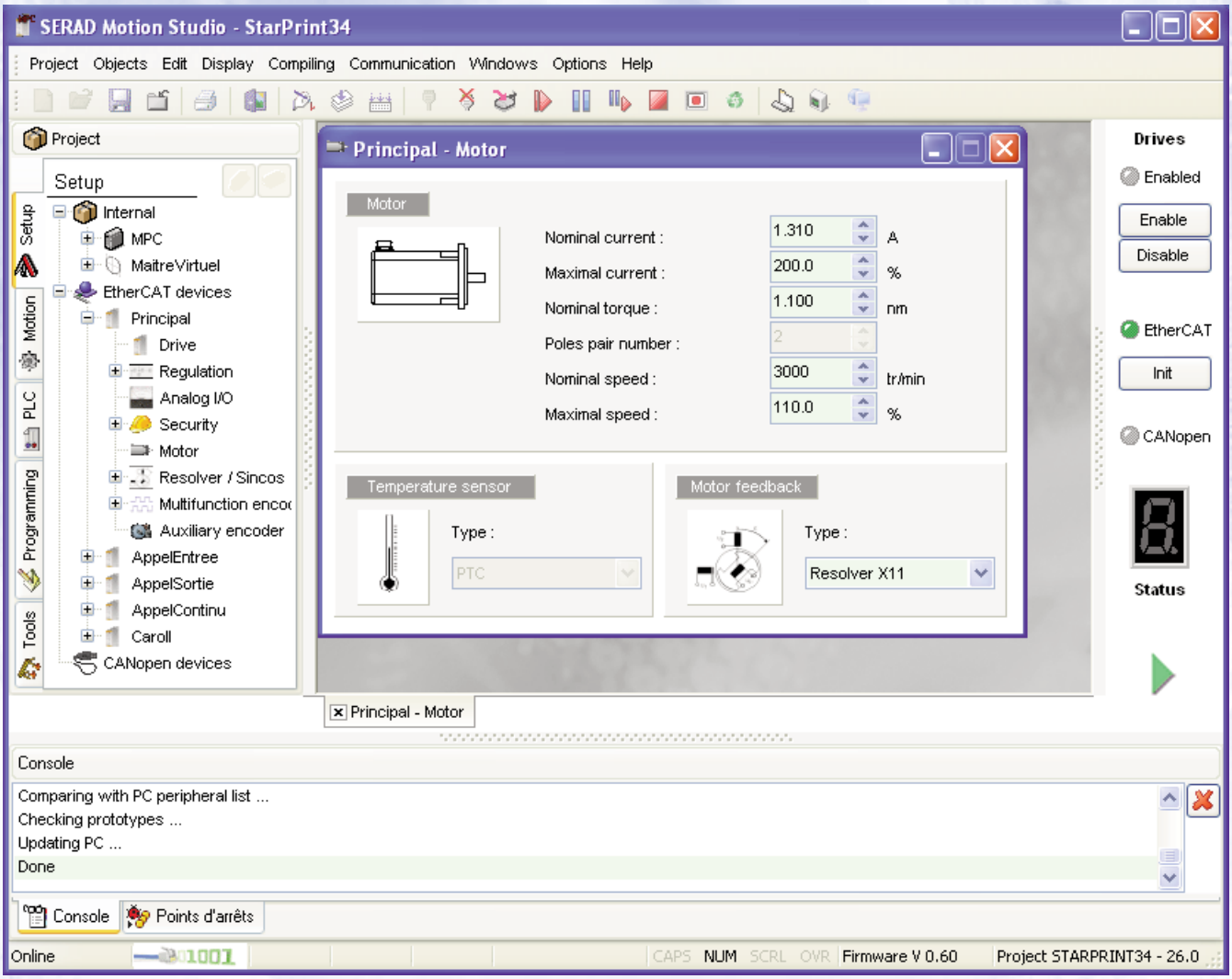
Motion Studio

- Software operating under Windows 2000 / XP
- Easy to use
- Multi-window
- Tool boxes
- Project management
- Simplified setup using tree structure
- Graphical editors
- Setup tools



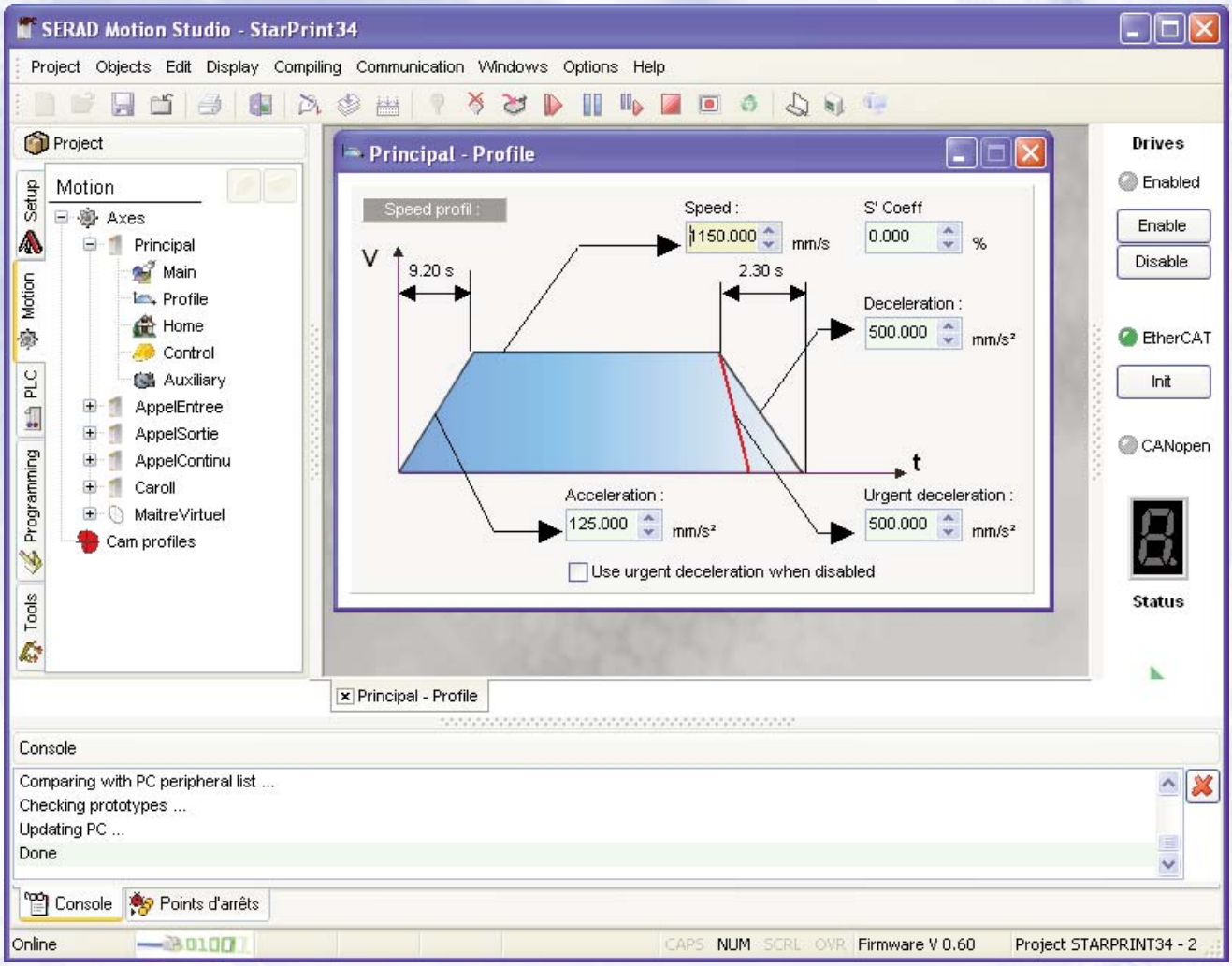
Motion Studio - System setup

- **Intuitive navigator**
- **Tree structured lists**
- **Simple and fast addition of a peripheral**
- **Access to the all axis and I/O parameters**
- **Graphic windows**



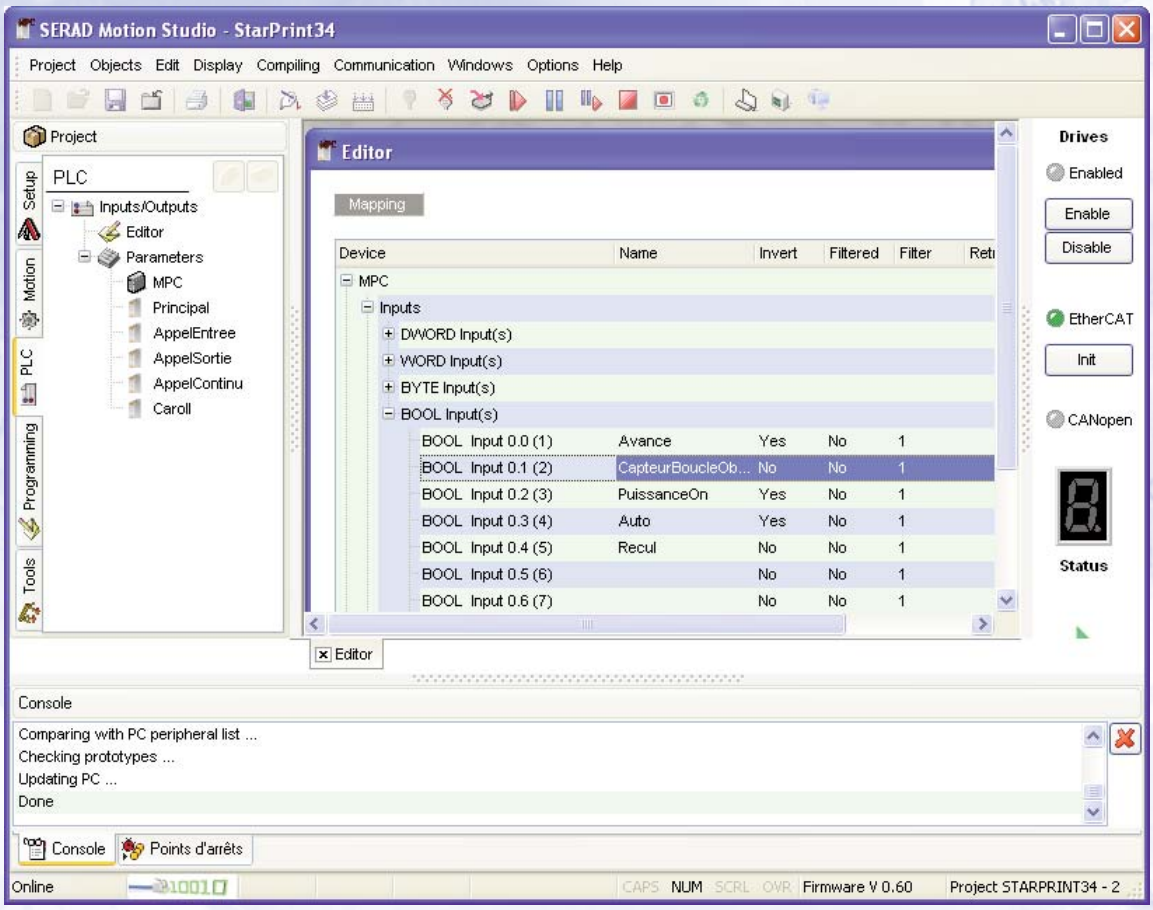
Motion Studio - Motion definition

- Machine mechanics (gearbox ratio …)
- Axis units (mm, degree, revolution …)
- Setup of acceleration, deceleration, velocity
- Choice of homing method
- Axis monitoring (hardware limits, following error)



Motion Studio - Plc definition

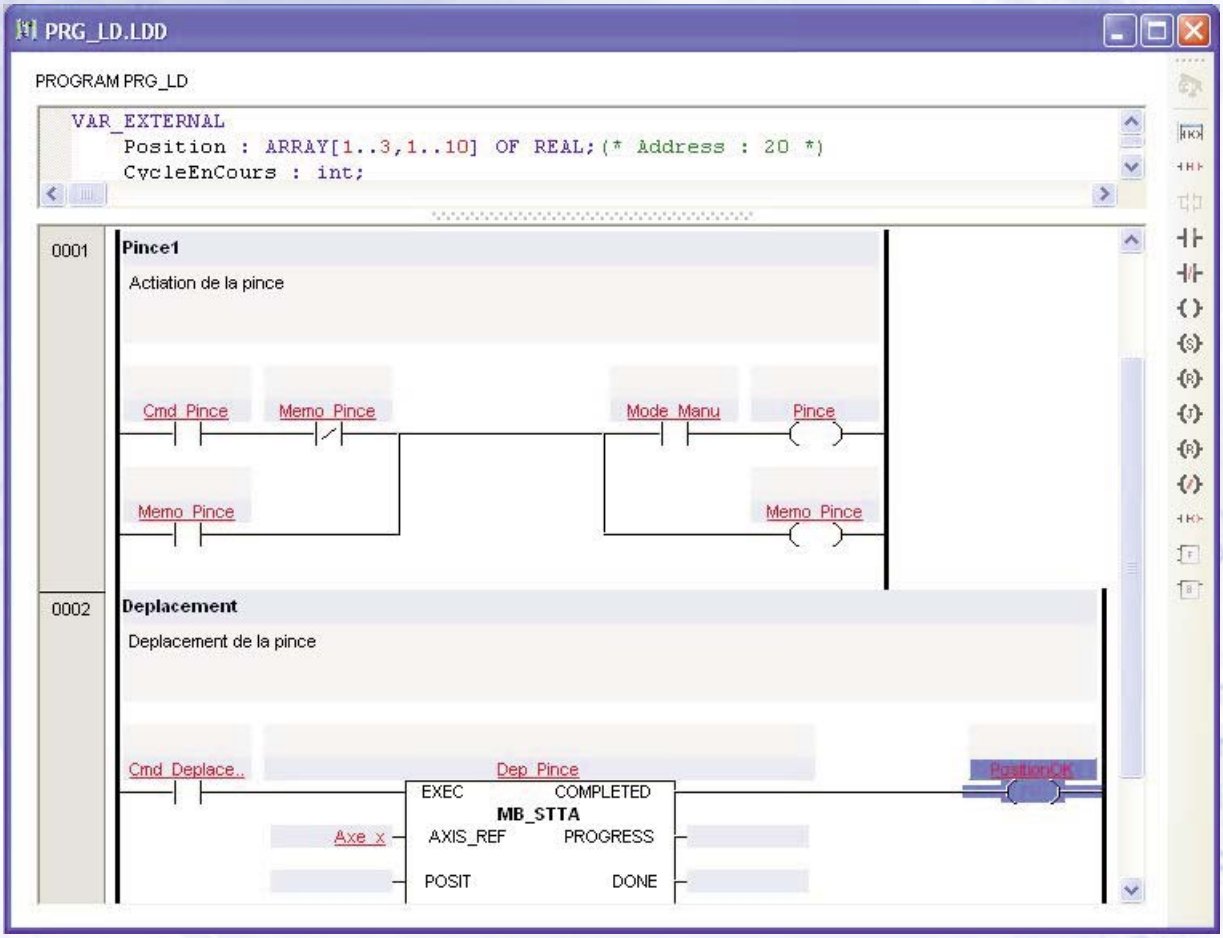
- Tree structured lists for the I/O modules
- Name for each I/O
  (Ex: Start_Button, Clutch_On, Tool_Ok ...)
- Declaration of each channel in positive or negative logic
- Slow or fast filter for each input
- Security state for each output



Motion Studio - Programming

LD Editor - Ladder

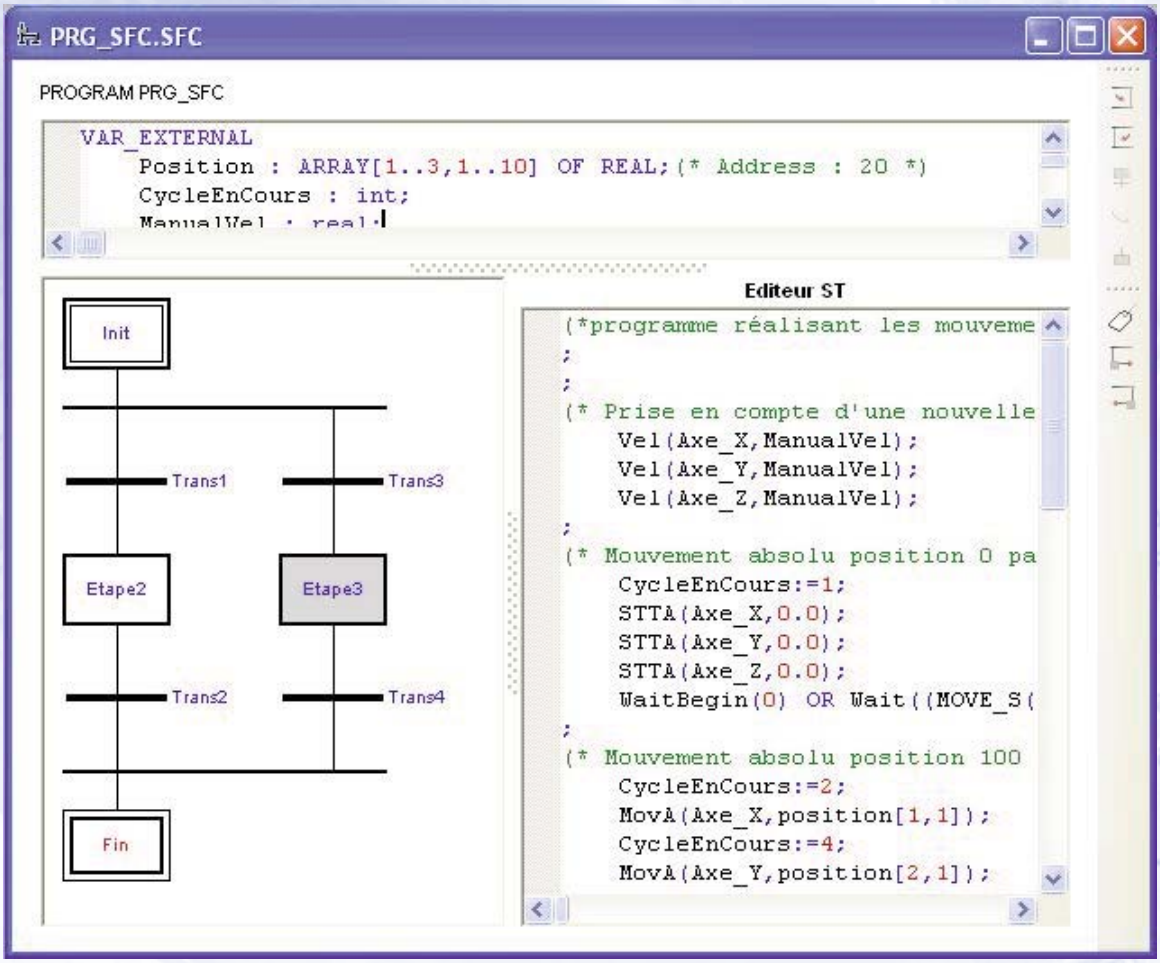
- Comment for each network
- NO, NC contacts
- Normal, negated, set, reset coils
- Jumps and labels
- Function or block function calls



Motion Studio - Programming

SFC Editor – Sequential functions

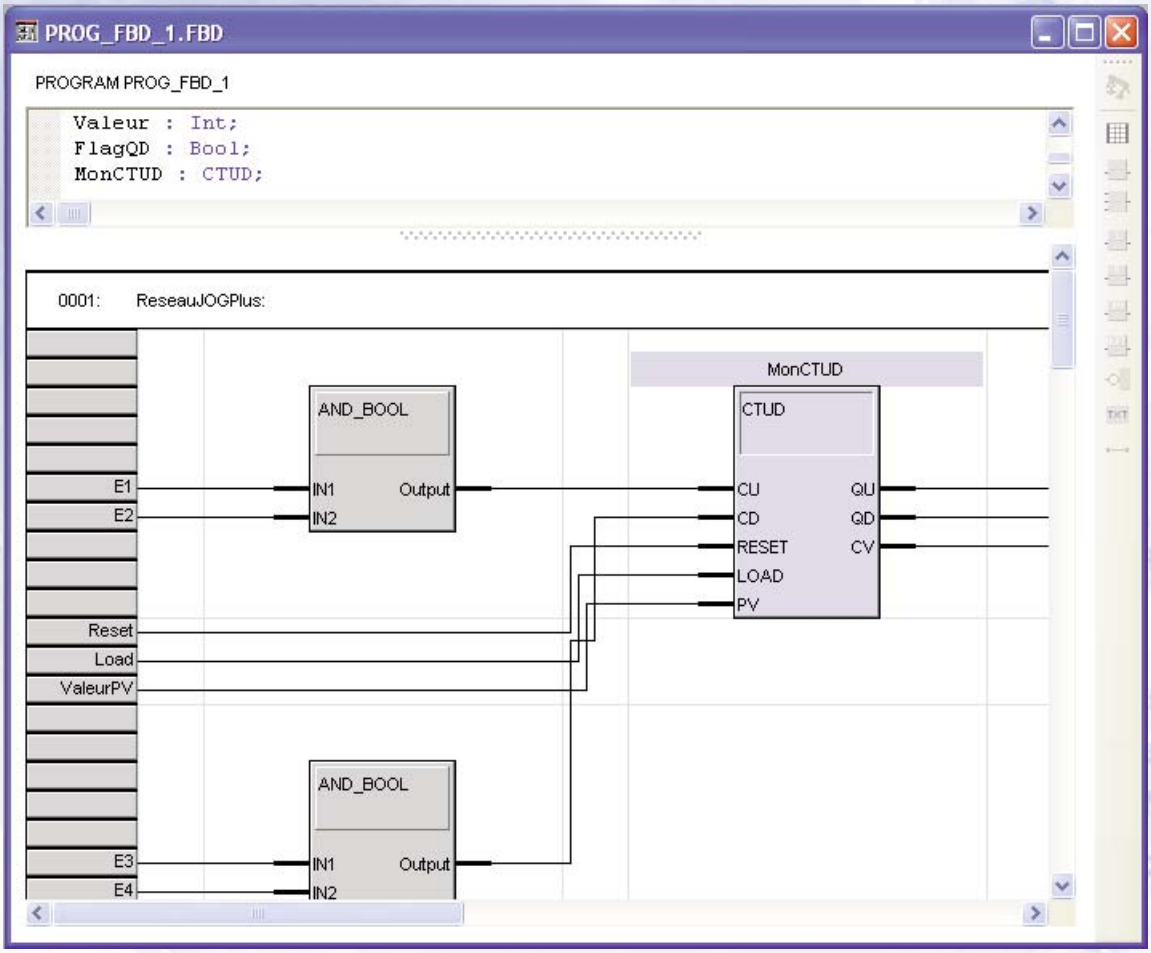
- Powerful graphic tool
- Fast declaration of steps and transition conditions
- Jumps and labels
- Easy commissioning thanks to the integrated trace mode



Motion Studio - Programming

FDB Editor – Function blocks

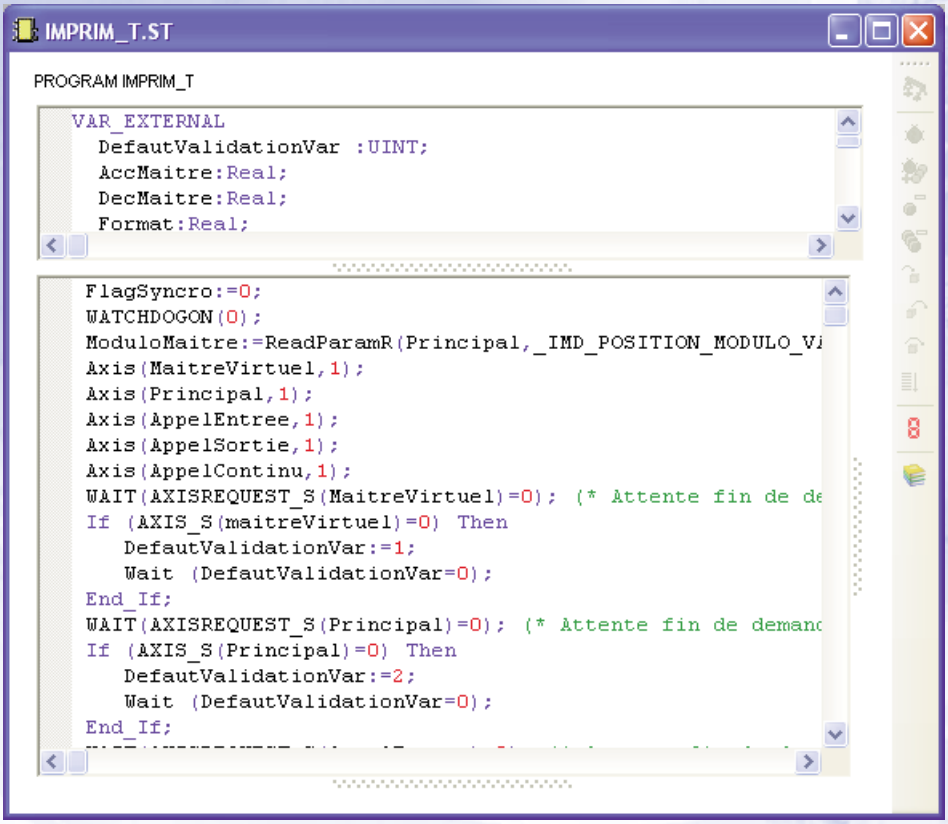
- Powerful graphic tool
- Functions Move / Replace
- Many standard blocks available
- Easy commissioning thanks to the integrated trace mode



Motion Studio - Programming

ST Editor – Structured text

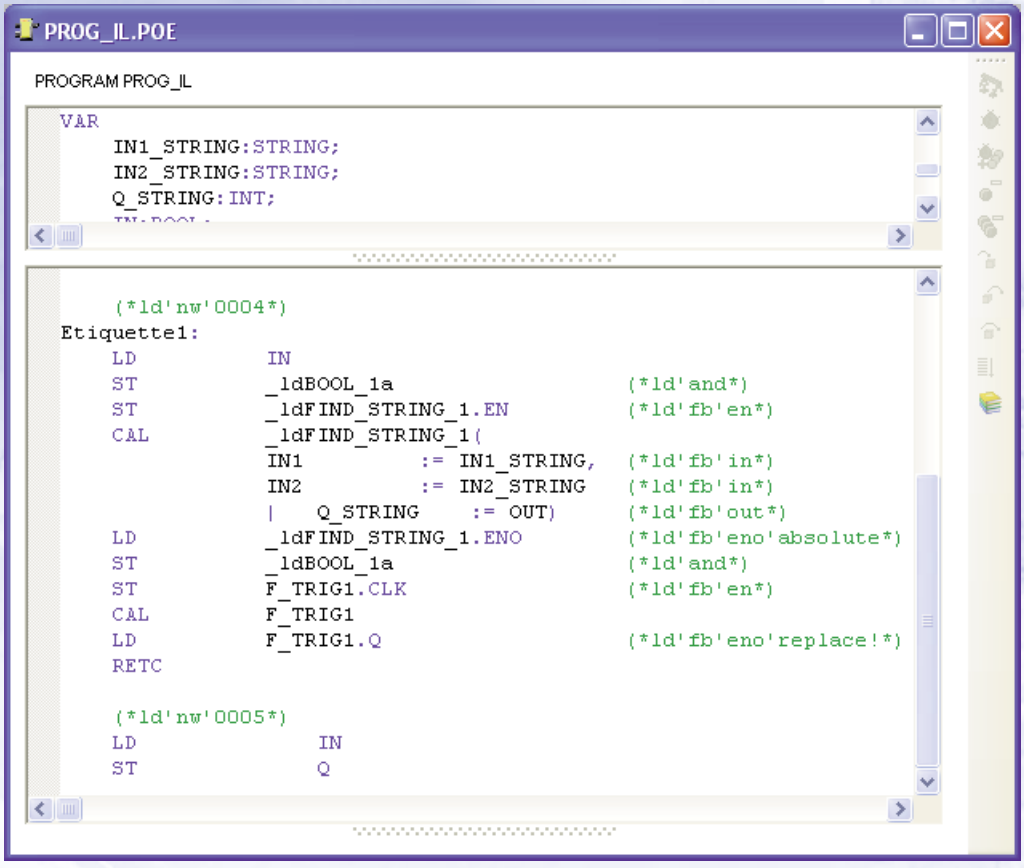
- Syntax highlighting
- Functions Copy / Paste
- Fast text search
- List of variables for simple access
- Easy commissioning thanks to the integrated trace mode



Motion Studio - Programming

IL Editor – Instruction list

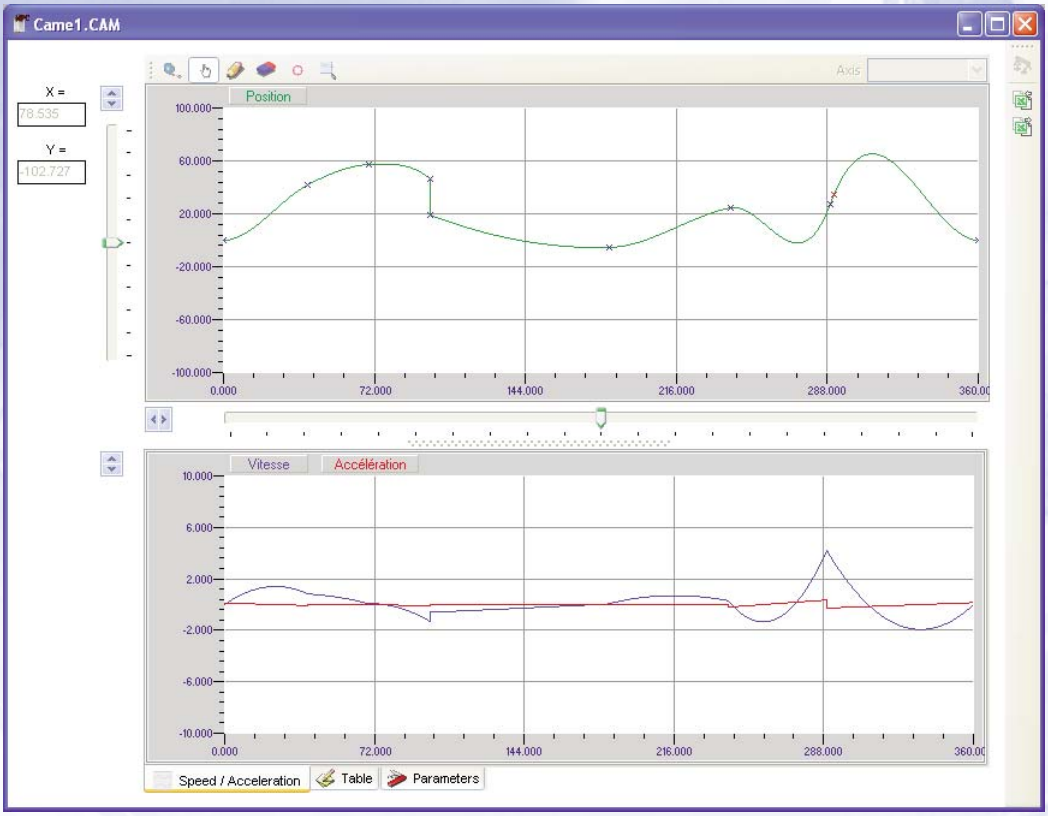
- Syntax highlighting
- Functions Copy / Paste
- Fast text search
- List of variables for simple access
- Easy commissioning thanks to the integrated trace mode



Motion Studio - Programming

CAM profile Editor

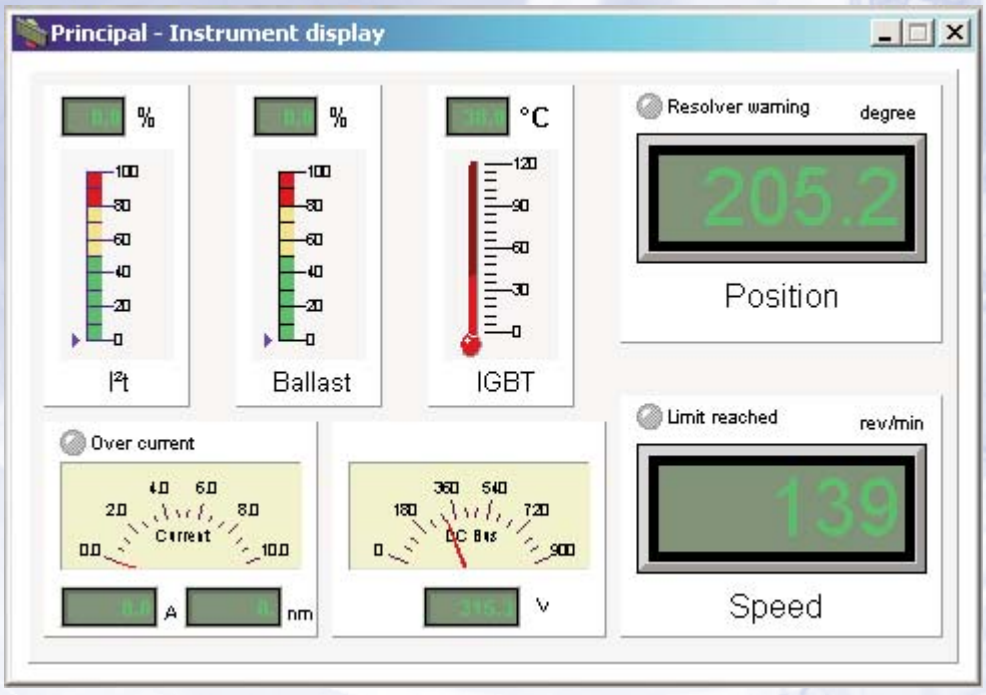
- Advanced graphic tool
- Curves with polynomials in x3
- Addition, modification of dots in a simple and fast way
- Functions Move / Replace / Zoom
- Visualization of position, velocity and acceleration curves



Motion Studio–Setup tools

Instrument panel

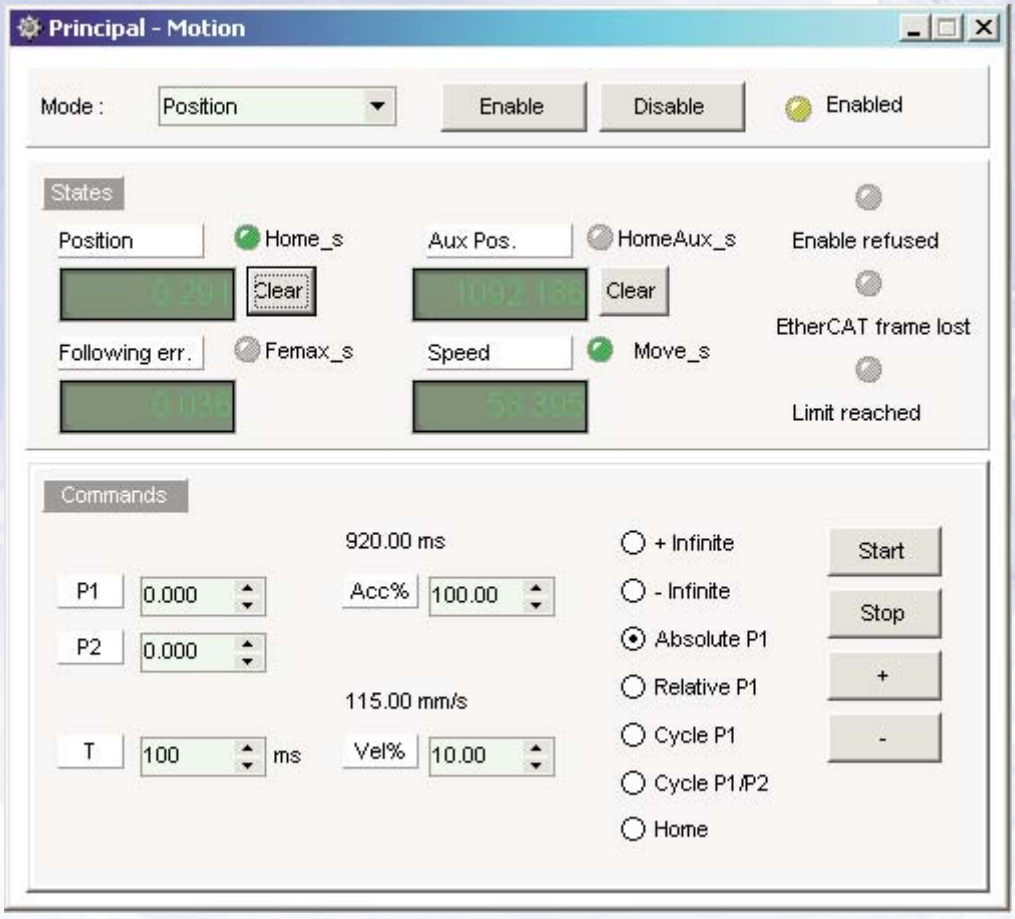
- Visualization of motor position and motor velocity
- Graphs
  - Current and torque
  - I2t control
  - Drive temperature
  - Ballast resistor load
  - Bus voltage



Motion Studio–Setup tools

Motion

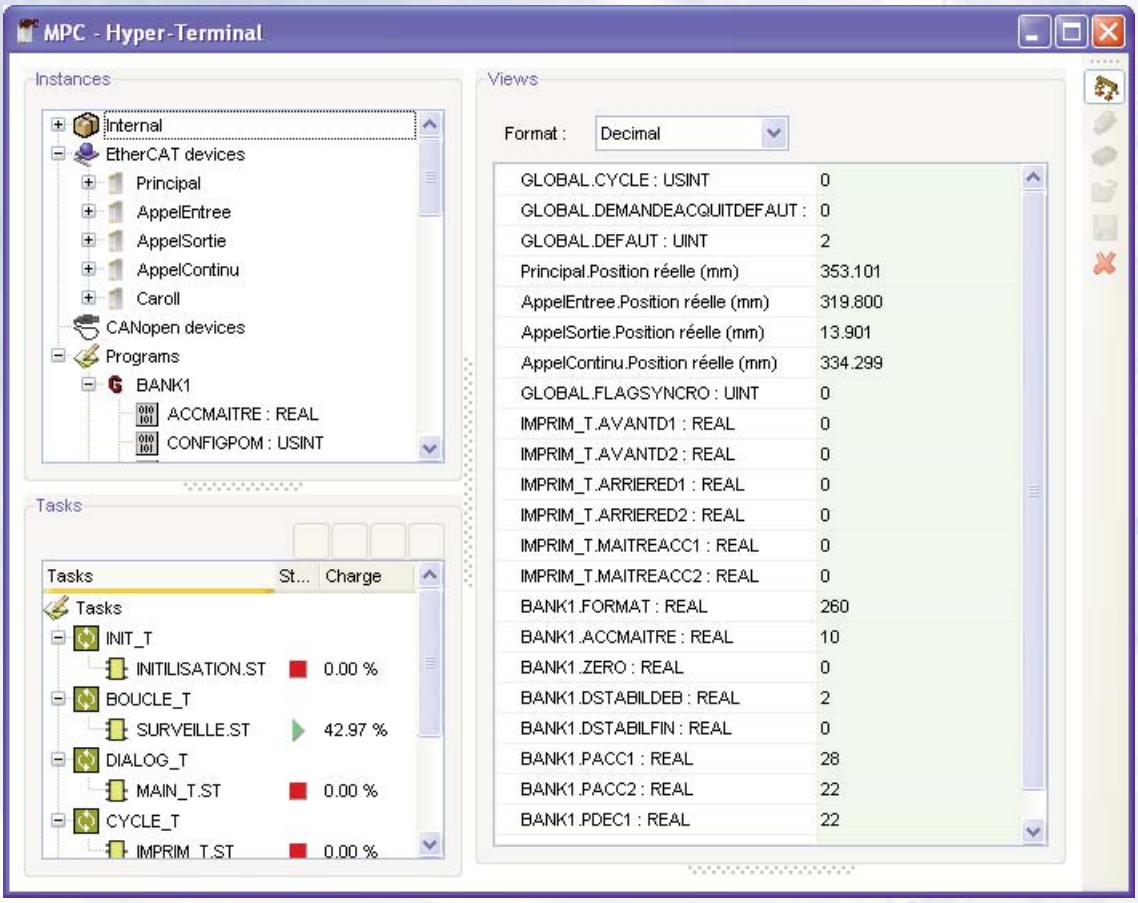
- Position, following error, velocity …
- Visualization of the axis status
- Setup of velocity, acceleration, deceleration
- Jog +/-, go to a position, forward / backward cycle
- Selection of a movement : infinite, absolute or relative
- Start home cycle



Motion Studio–Setup tools

HyperTerminal

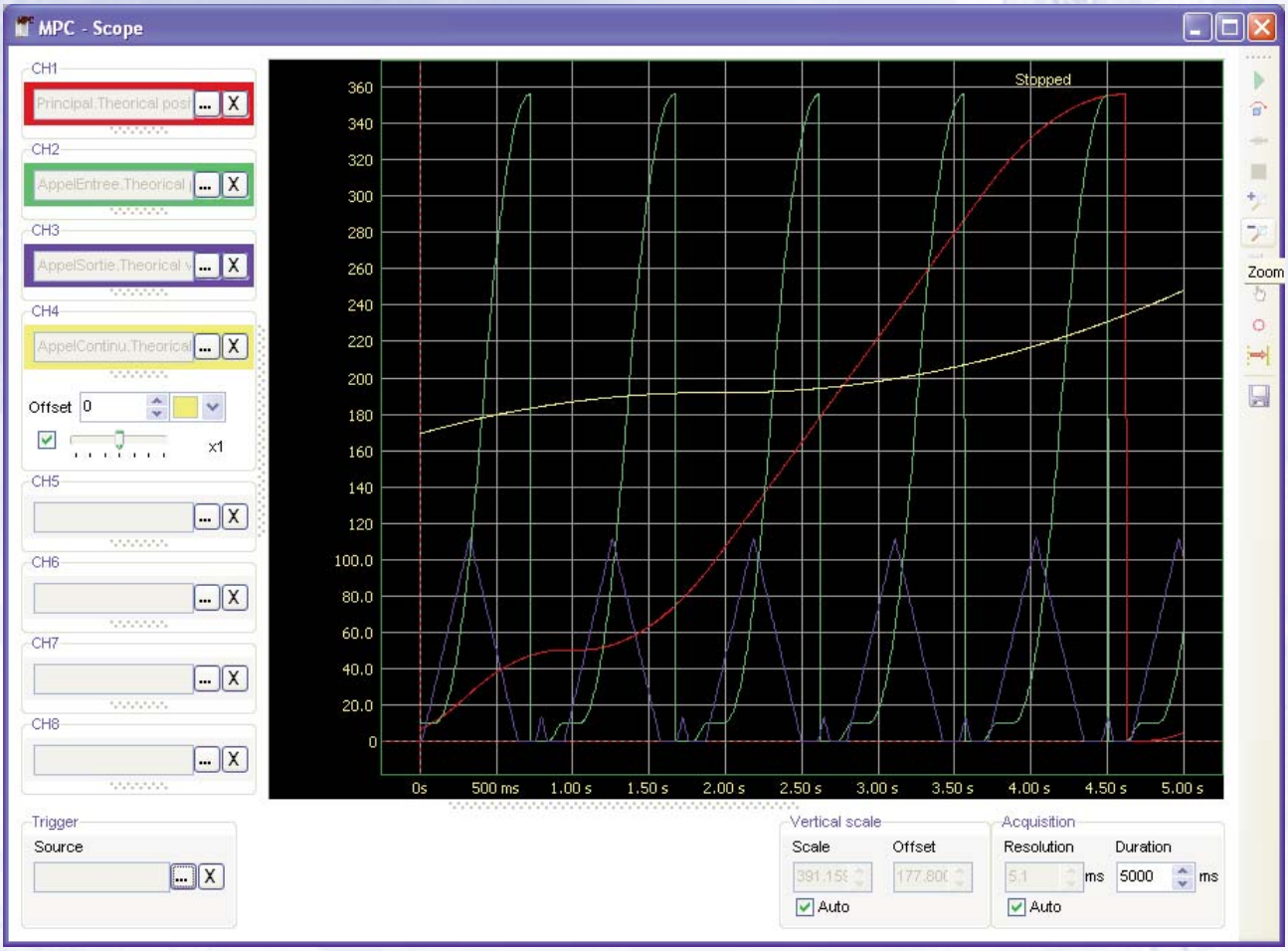
- Program state and trace
- Customized visualization of
  - Variables
  - Parameters
  - Axis and I/O states



Motion Studio–Setup tools

Oscilloscope

- 8 simultaneous channels
- Sampling period of 300 µs
- Visualization of axis and I/O states
- Continuous or event driven trigger
- Automatic curve scaling
- Zoom function



Motion Studio - Integrated help

- On-line help
- Search of keywords
- Hypertext links
- Parameter and instruction lists
- Detailed syntax for each instruction