

# INOVANCE

## AM600 Motion Controller

Ether**CAT**<sup>®</sup>



# EtherCAT Servo overview

## PM Servo Motors

### MSH1 Series

Frames sizes  
40, 60, 80 mm  
0.16 to 3.2 Nm



### ISMH Series

Frames sizes  
40, 60, 80, 100, 130, 180 mm  
0.3 to 50 Nm



### ISMG Series

200 x 200 mm  
260 x 260 mm  
35 to 440 Nm

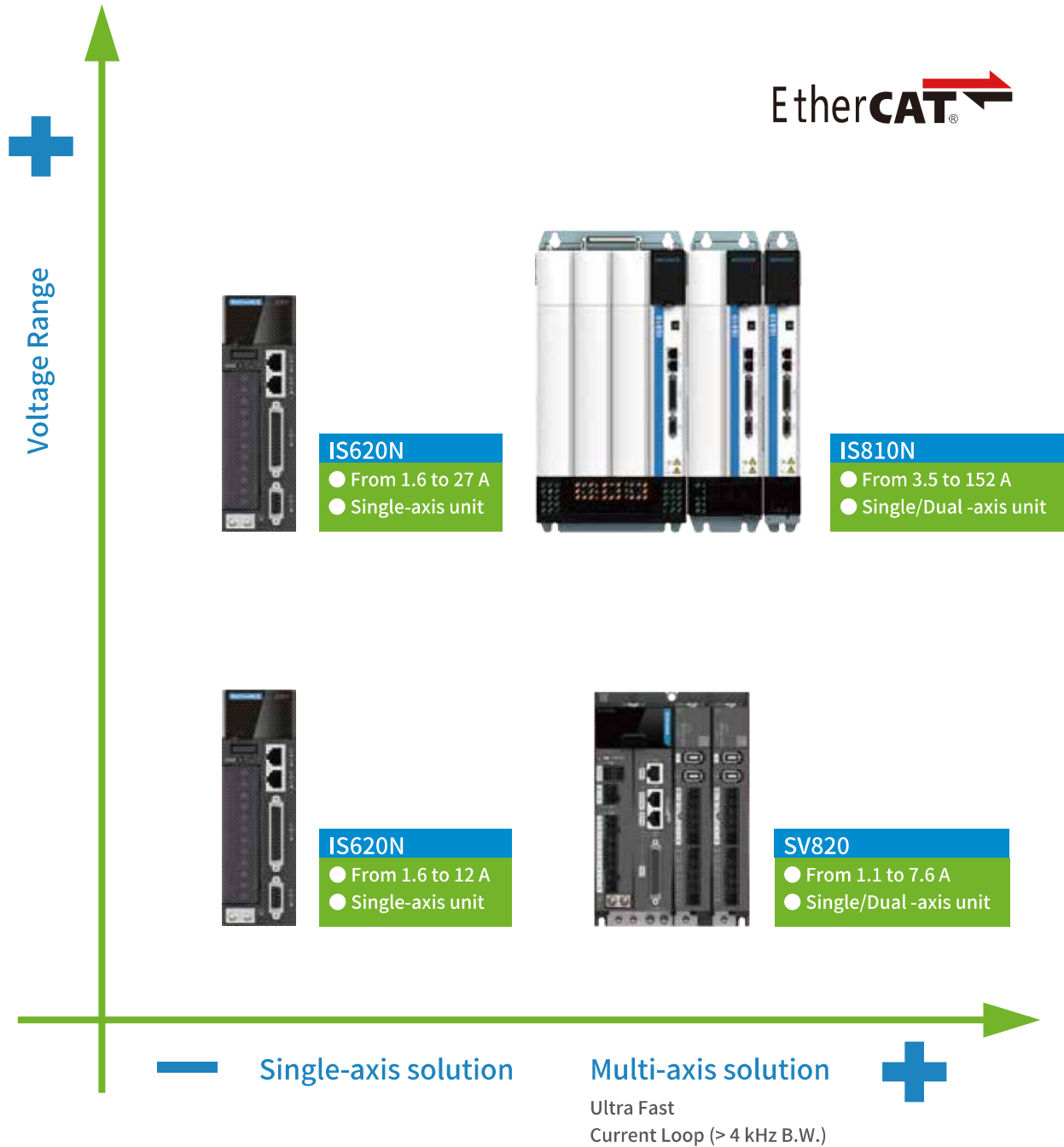


### ISMT Series

Frames sizes  
85, 160, 208 mm  
60 to 120 Nm

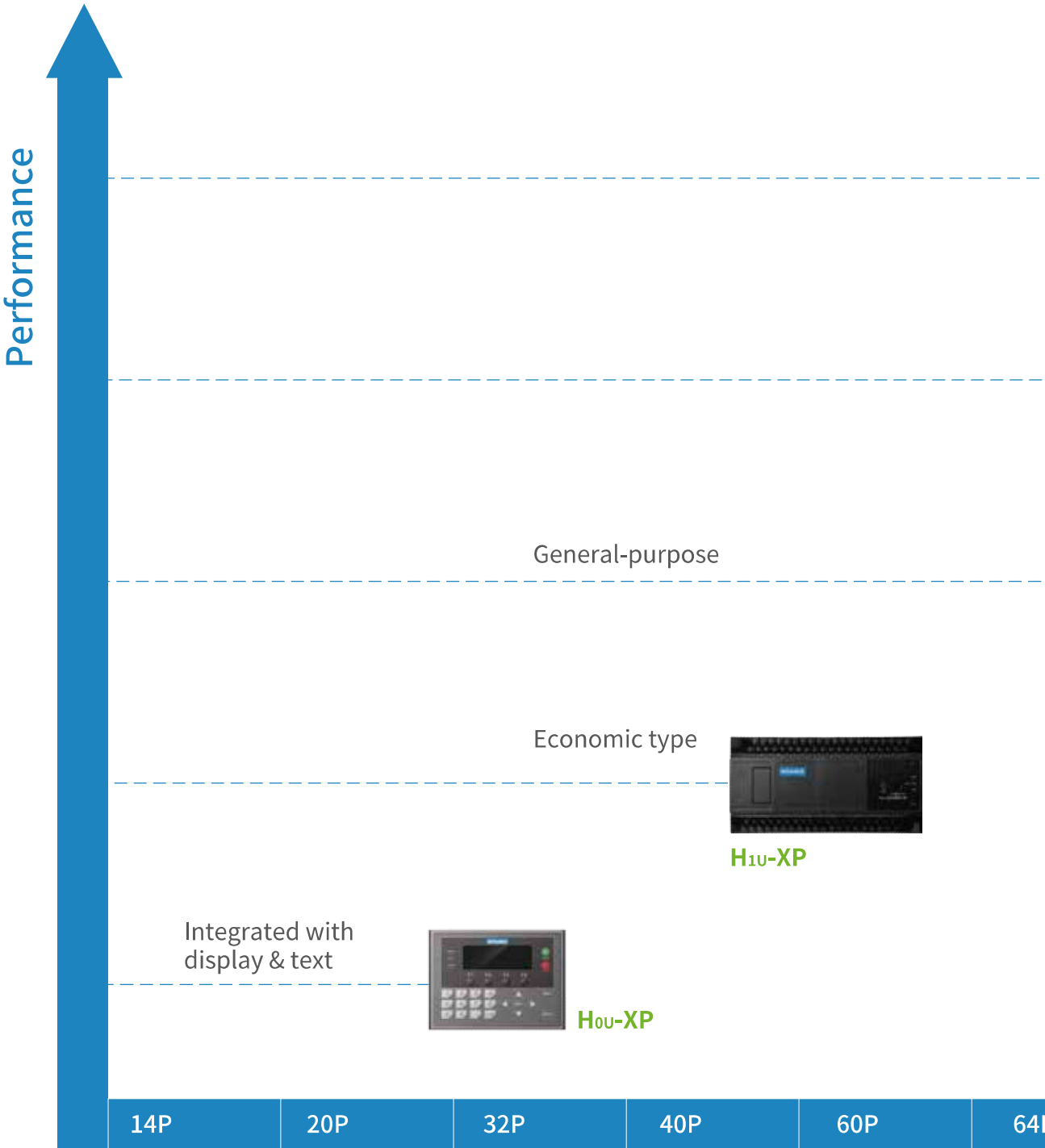


## Inovance EtherCAT Servo Platform



# AM600 Hardware Overview

Inovance PLC Range



NEW

## Centralized Motion Controller & PLC



AM600



H3U-XP

High End PLC (+ 3 axes pulse linear & circular, E Cam)

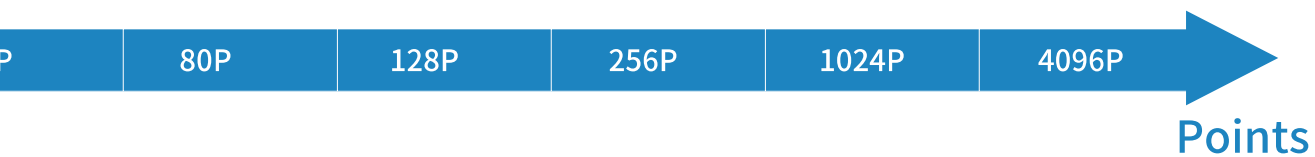


H2U-XP

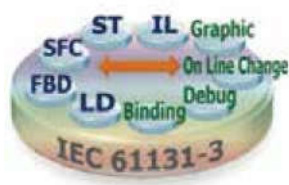
General-purpose PLC + HMI (+ basic pulse control)



HMI

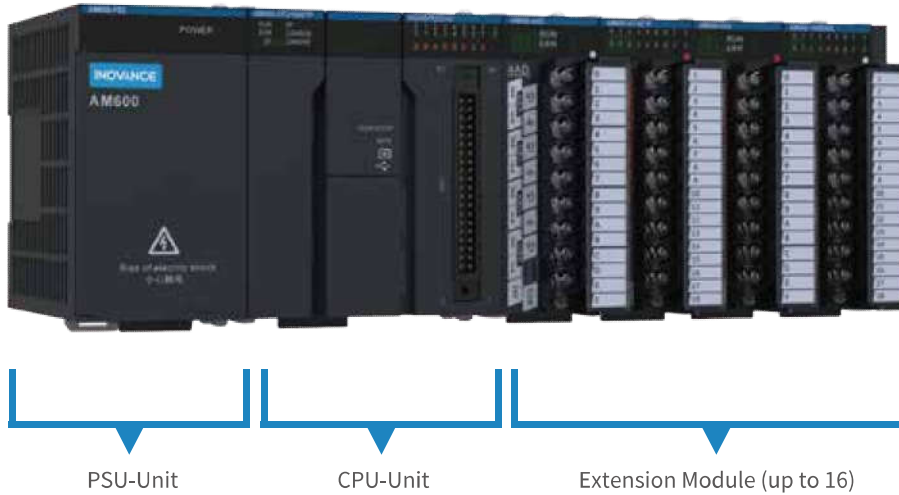


## AM600 Centralized Motion Controller



AM600 is a centralized motion controller with built-in PLC functionality. Standard EtherCAT port to control up to 32 axes in point-to-point positioning. PLCopen library for single axis and interpolation movement are standard features. Every axis can be programmed to move using linear, circular or electronic cams (up to 8 simultaneously). IEC61131-3 and Codesys programming are part of the InoProShop software tools. Additional modules can be added to the main CPU module to be able to manage different IO input types. CANopen functionality and Ethernet port are also in standard package. Supported also EtherCAT connection with third party device.

## AM600 Motion Controller Overview



## AM600 Module Setup

- AM600-CPU1608TP
- AM600-Power Supply Unit (AM600-PS2-INT)
- AM600 EtherCAT Bus Coupler Slave Module (up to 125 modules)



- Extension Modules
  - DI/DO module
  - AI/AO module
  - PTC module
  - Relay module



## AM600 Features & Functions

- Up to 32 axes for point-to-point positioning (up to 8 for interpolation motion)
- ARM-Cortex A8 1 GHz
- Math precision IEEE 457 Double
- Built-in EtherCAT port
- Up to 16 additional I/O modules for every CPU
- Linear, circular, spherical interpolation (up to 8 axes)
- CAM functionality
- Built-in Ethernet Interface
- Modbus TCP/IP
- CANopen/Modbus RTU interface
- IEC 61131-3 programming language
- Encoder input
- Simulated encoder output
- Multitasking functionality
- RoHS, CE certified

NEW

PLCOpen library for point-to-point positioning and interpolation

NEW

Extended EtherCAT slave module for additional I/O

NEW

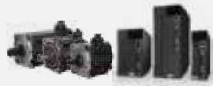
InoProShop PC software tools based on IEC61131-3



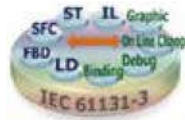
DIN rail mounting



- EtherCAT CiA 402 Motion Profile supported
  - CSP
  - CSV
  - CST
  - HM
  - PP
  - PV
  - PT
- PLCOpen functionality
  - PTP
  - Interpolated Motion
  - Cam Generator
  - Homing Function
- Up to 125 slave station can be added
- InoProShop software with IEC61131-3 programming language



InoProShop Software Tools  
Based on IEC 61131-3



EtherCAT CiA 402 Profile **EtherCAT**



PC-based  
software  
InoProShop

**EtherCAT**  
**CANopen**



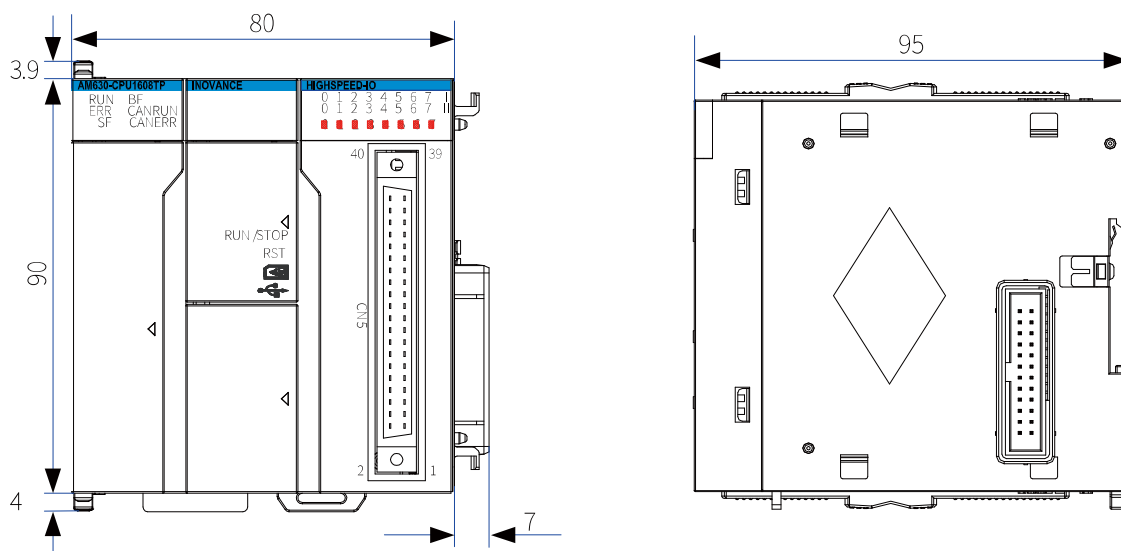
## AM600 – CPU1608TP EtherCAT

### Main Features:

- 24 VDC voltage input
- SD Memory card
- Built-in EtherCAT port
- Two RS485 interfaces, supporting MODBUS protocol
- CANopen slave protocol
- MODBUS TCP master /slave
- 16-point high-speed input
- 8-point high-speed output
- 4 Mbytes user program storage
- Standard Ethernet cable for programming
- Programming software tools: InoProShop
- Physical dimension: W x H x D = 80 x 90 x 95 mm

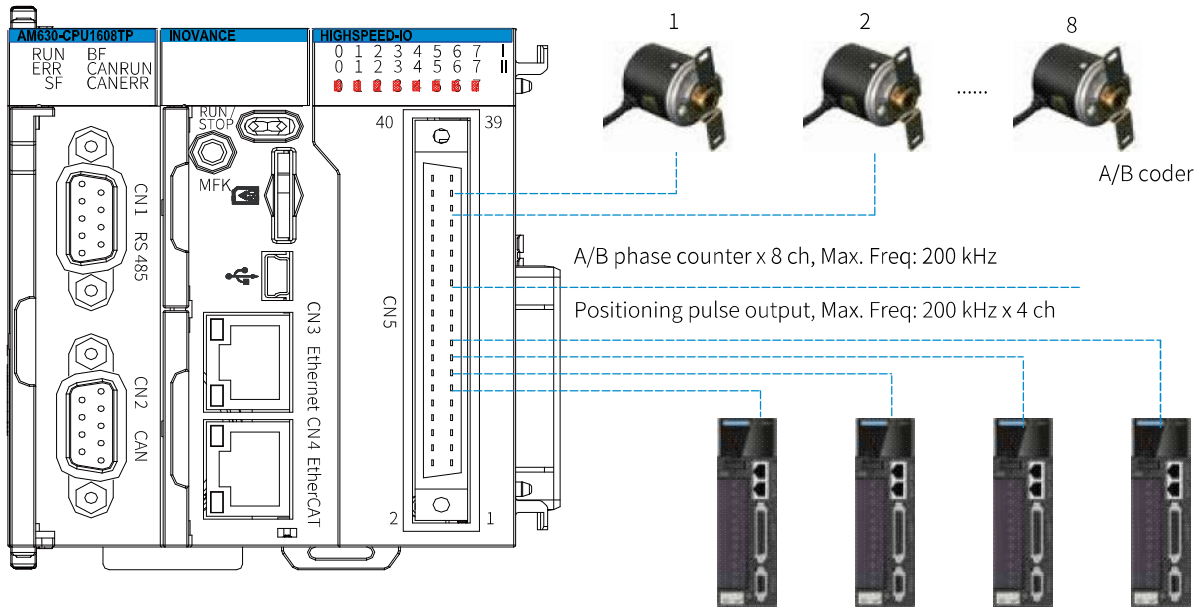


### Dimensions:



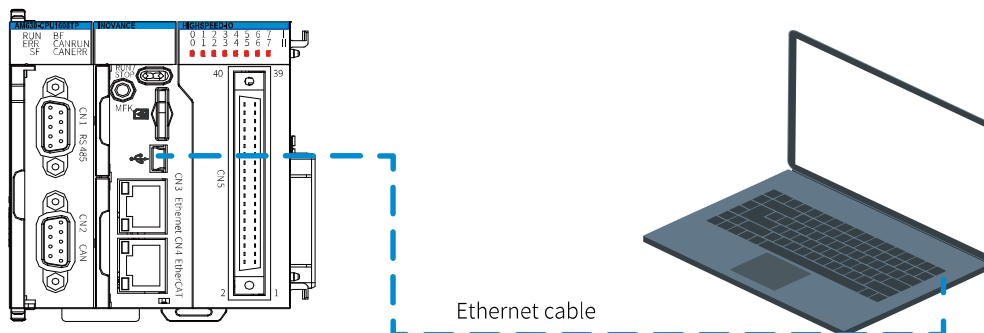
## AM600 CPU module is equipped with :

- 8-channel A/B phase pulse counter; each channel 200 kHz at maximum
- Pulse frequency/width measure, +/-2 uS accurate
- Ethernet communication cable for commissioning and service



## Connection via Ethernet monitoring

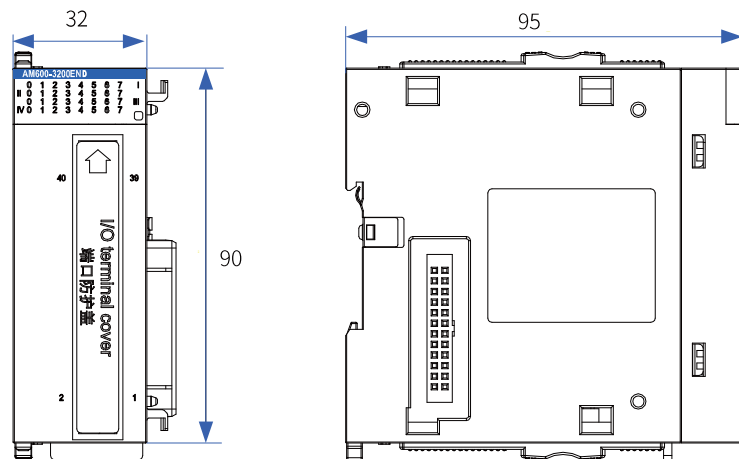
- Diagram of networking
- The Ethernet interface of the CPU module can perform point-to-point connection to a computer, HMI, and etc, using an Ethernet cable.












## AM600 Extension Modules

- AM600 extension modules are compact (32 mm thickness) and can be added to main CPU or at EtherCAT Slave Bus Coupler.
- A lot of different extension modules can be added (DI,DO,AI,AO,Relay,PTC).
- W x H x D = 32 x 90 x 95 mm



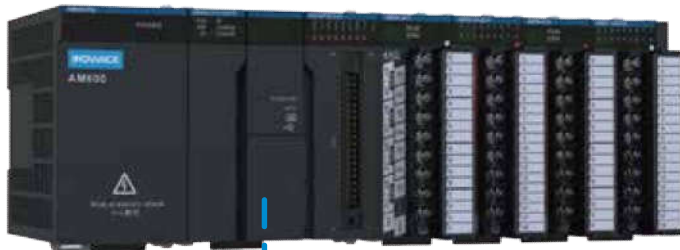
Model	Part Number	Product Description
AM600-1600END 	01440027	16 DI extension module: Input voltage: 24 VDC Input Type: sink/source mode (also for H3U)
AM600-3200END 	01440023	32 DI extension module: Input voltage: 24 VDC Input Type: Sink/source mode
AM600-0016ETN 	01440018	16 DO extension module: Output type: NPN transistor Maximum current: 500 mA @ 24 VDC (also for H3U)
AM600-0016ETP 	01440003	16 DO extension module: Output Type: PNP transistor Maximum current: 500 mA @ 24 VDC (also in H3U)
AM600-0032ET 	01440025	32 DO extension module: Output Type: NPN transistor Maximum current: 500mA @ 24 VDC
AM600-0016ER-INT 	01440017	16 DO extension module: Output type: Relay Rated current: 2A @ 250V DC (also for H3U)

Model	Part Number	Product Description
AM600-1600END 	01440027	16 DI extension module: Input voltage: 24 VDC Input Type: sink/source mode (also for H3U)
AM600-3200END 	01440023	32 DI extension module: Input voltage: 24 VDC Input Type: Sink/source mode
AM600-0016ETN 	01440018	16 DO extension module: Output type: NPN transistor Maximum current: 500 mA @ 24 VDC (also for H3U)
AM600-0016ETP 	01440003	16 DO extension module: Output Type: PNP transistor Maximum current: 500 mA @ 24 VDC (also in H3U)
AM600-0032ET 	01440025	32 DO extension module: Output Type: NPN transistor Maximum current: 500 mA @ 24 VDC

## AM600 EtherCAT Bus Coupler Slave Module

- EtherCAT bus slave coupler extension (need AM600 master system)
- UP to 16 DI/DO modules or up to 8 AI/AO modules can be added for each RTU-ECTA.
- Supported service: CoE (PDO, SDO)
- Baud rate: 100 Mbit/s (100 Base-TX)

### AM600 System (master)



Up to 125 modules

RTU\_ECTA-Module ①

+

AM600-PS2-INT ②

+

Extension Module ③



②

①

③

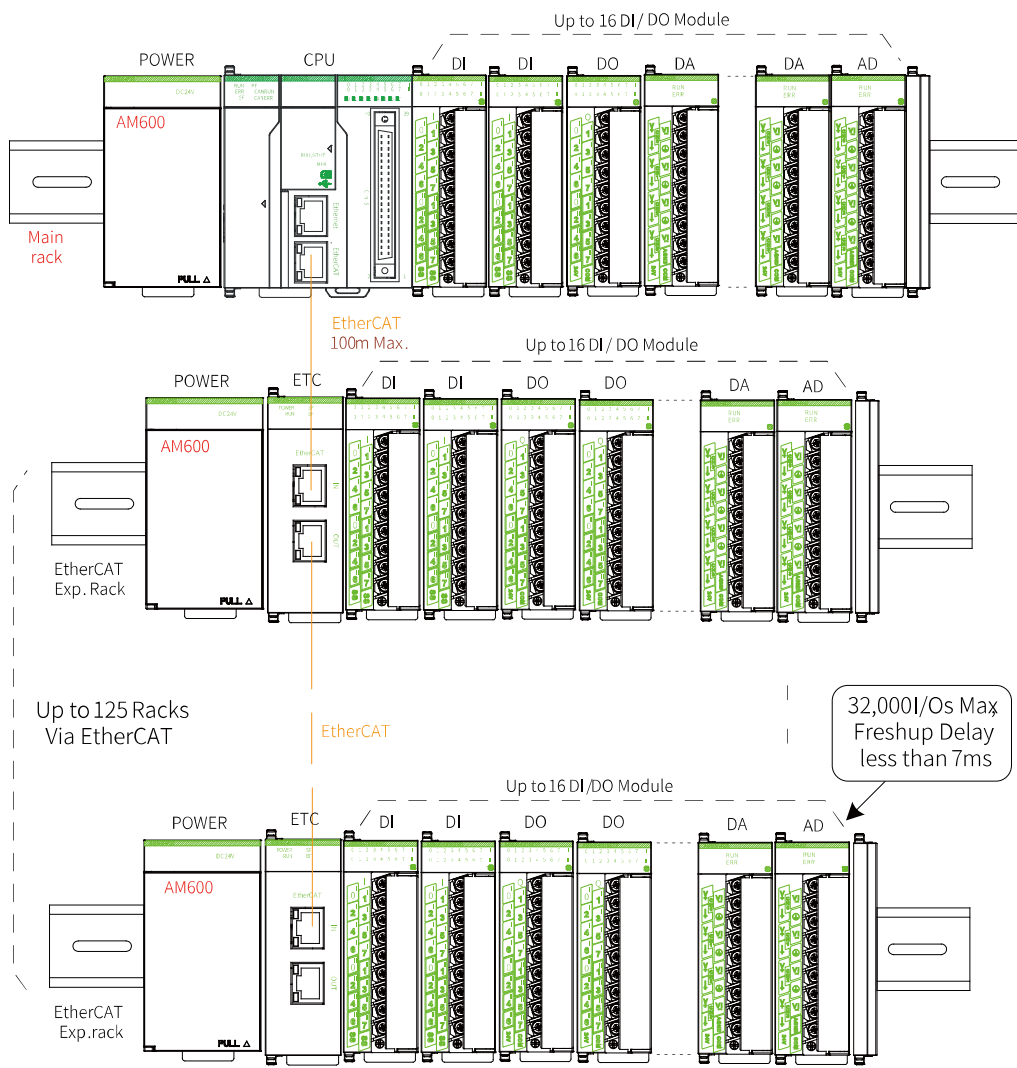
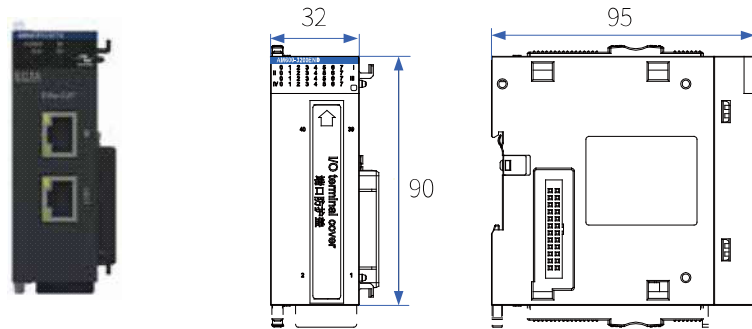
CE



## AM600 EtherCAT Bus Coupler Slave Module

- AM600 EtherCAT bus coupler module can be added to main CPU and can be use to create local area for additional I/O module.
- Up to 125 modules can be added.

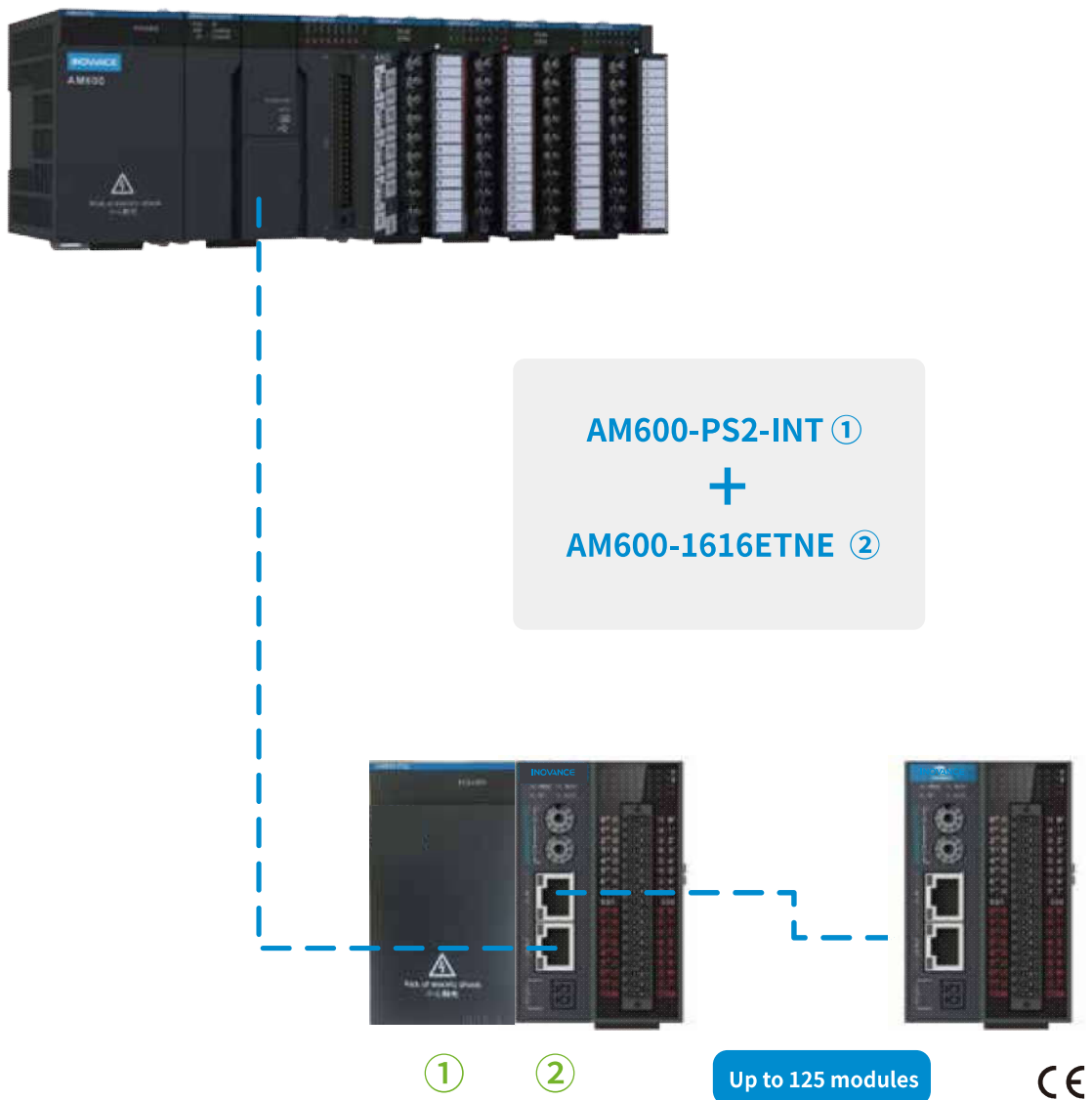
### Dimensions:



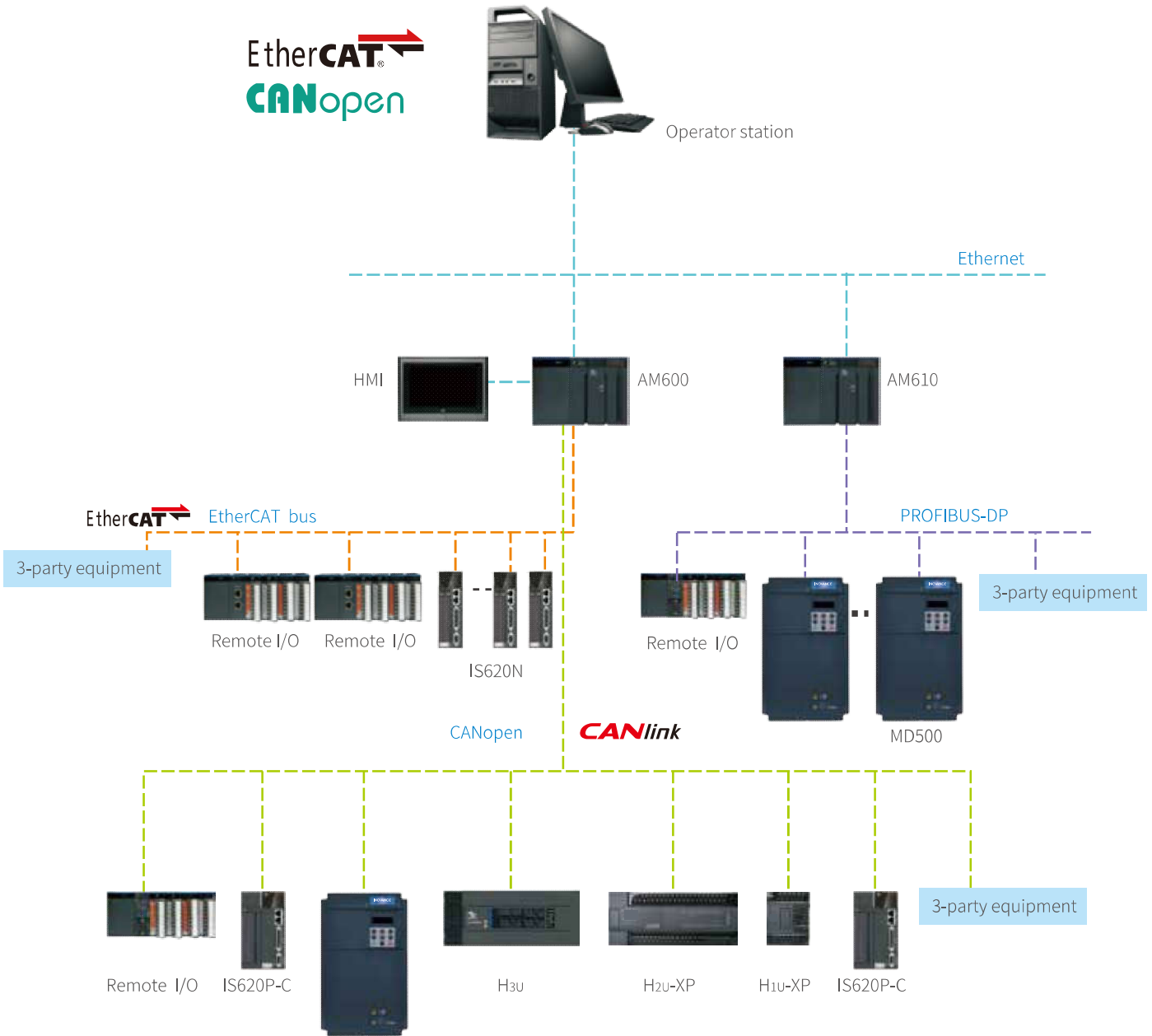
## Extension Module with EtherCAT Bus Coupler Integrated Onboard

- Main Features: Used with the AM600 CPU module.
- It has 16-point digital NPN output and 16-point digital input.
- Up to 125 slave modules can be connected.
- Normal output load for each point: 0.5 A /point
- Digital Input: Sink/source Mode
- Supported service: CoE (PDO, SDO)
- Baud rate: 100 Mbit/s (100Base-TX)
- EtherCAT bus coupler integrated onboard

### AM600 System (master)



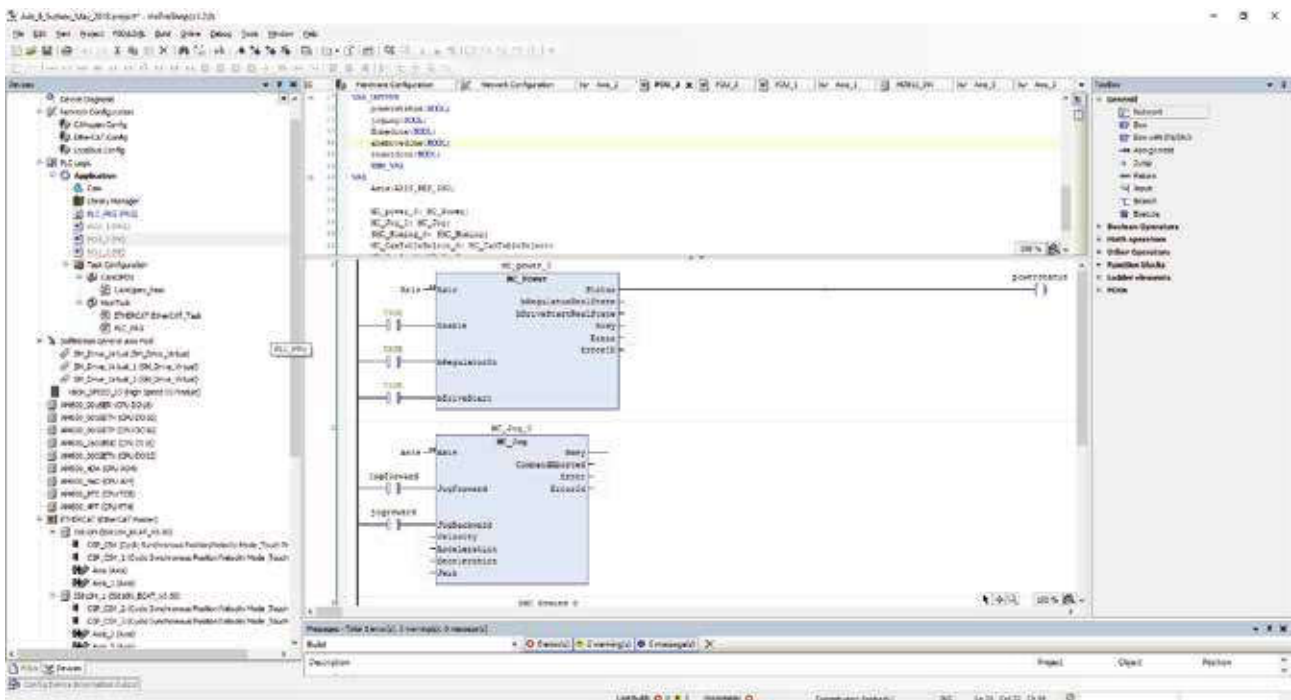
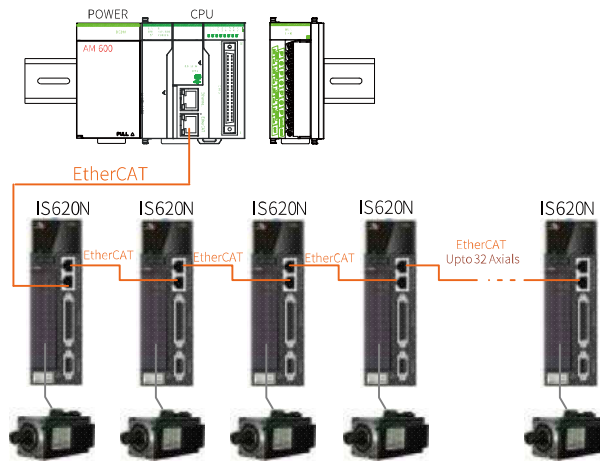
## AM600 Motion Controller Framework Overview



# AM600 Software Overview

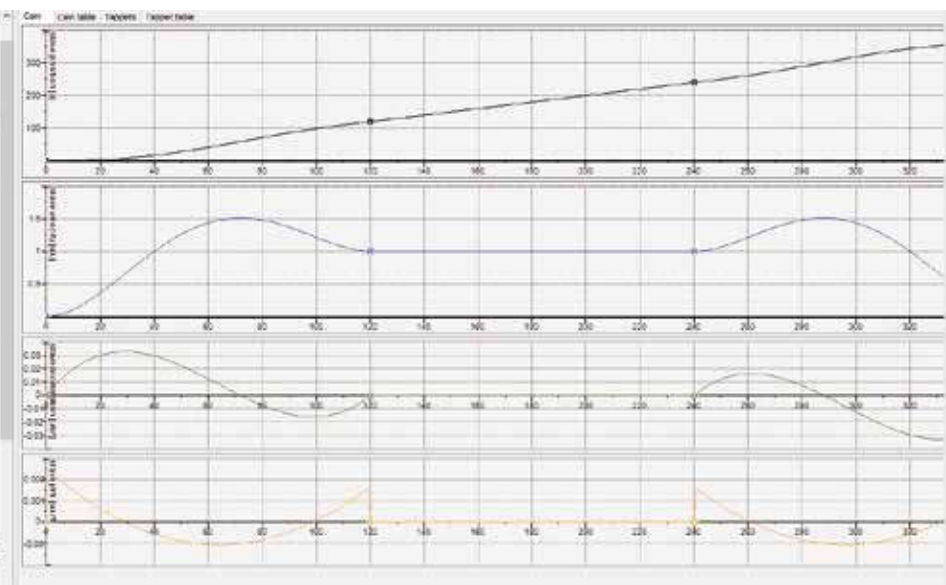
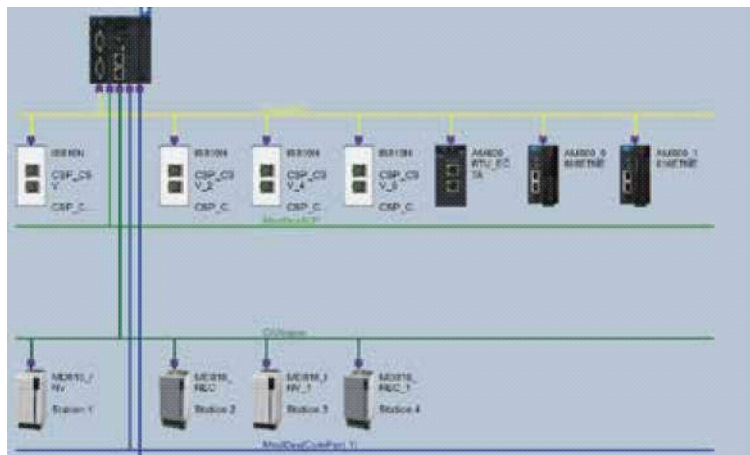
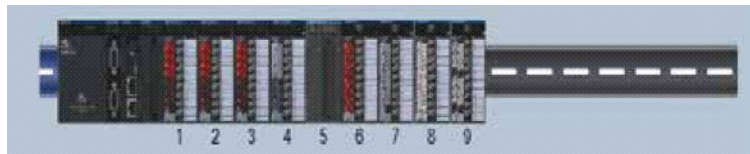
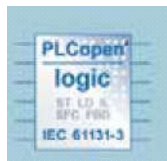
## InoProShop Software

- CAM Tools as standard
- VScope tracing for monitoring and commissioning
- IEC61131-3 standard programming language for industrial application
- Multi-Task functionality
- Possibility to create Operator interface



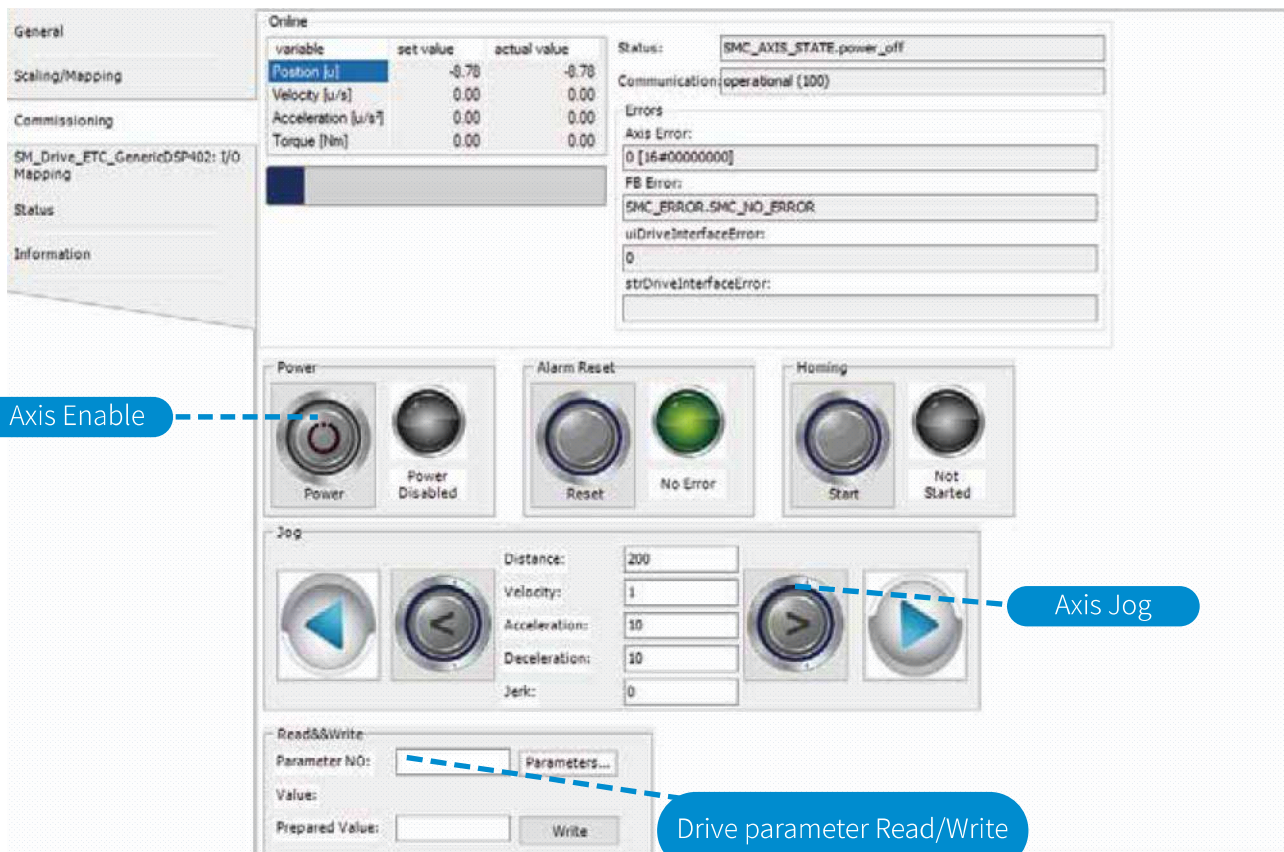
- EtherCAT CiA 402 for motion profile
- Extended I/O Module controlled by EtherCAT communication
- CANOpen protocol supported (slave mode)
- Modbus RTU (master/slave)
- Modbus TCP/IP (master/slave)
- PLCOpen library (part 1-2-4)

TC2 - Motion Control

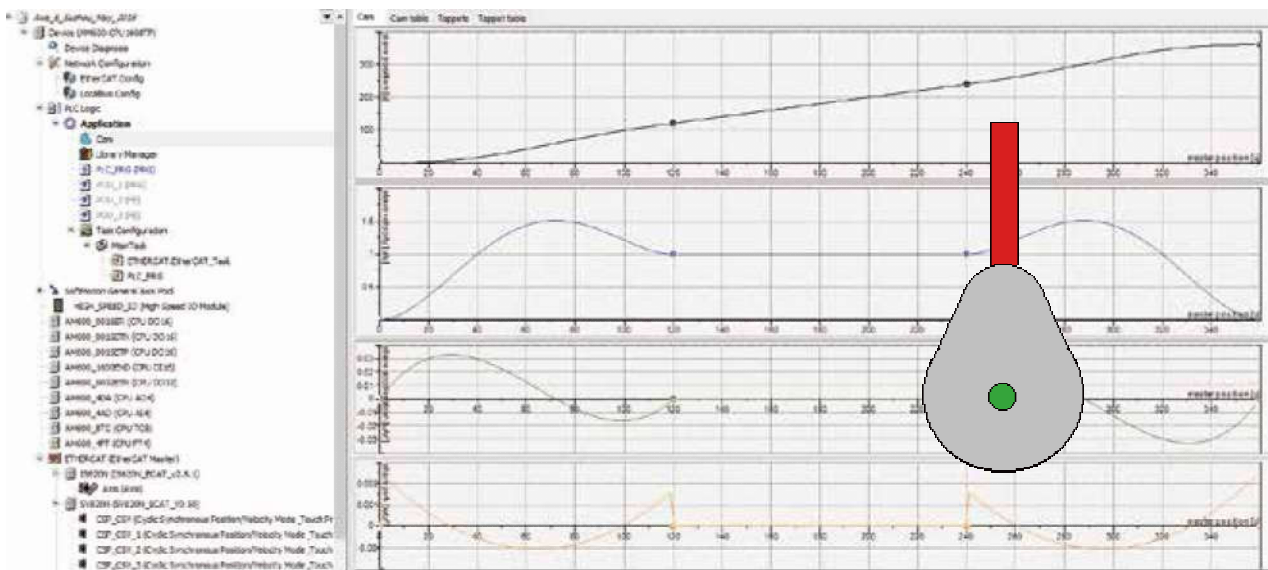




- Easy Axis Tune
- Automatic axis tuning without necessity to write dedicated program



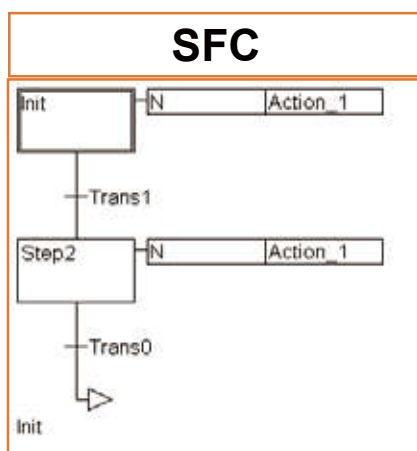
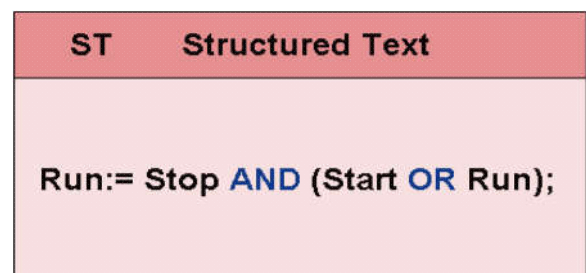
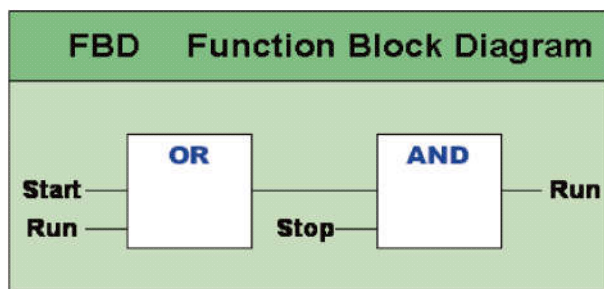
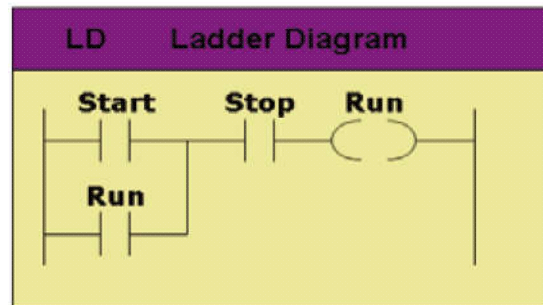
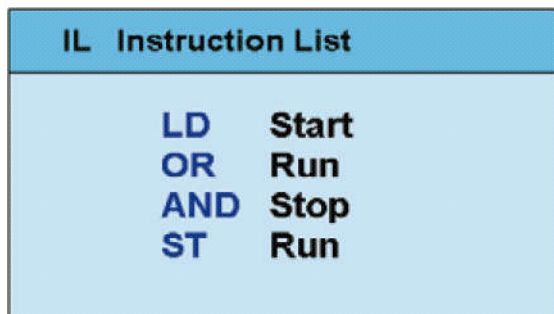
# CAM Generator Editor





## IEC 61131-3 Standard – Languages Supported by INoProShop Platform

- Instruction List (IL)
- Structured Text (ST)
- Function Block Diagram (FBD)
- Ladder Diagram (LD)
- Sequential Function Control (SFC),



## AM600 CPU and accessories

Product Family	Model
CPU EtherCAT Module	
AM600 CPU EtherCAT	AM600-CPU1608TP
Power supply unit for AM600	
PSU 24 Vdc module	AM600-PS2-INT
Digital Input (DI) for "Local" and "Remote*1" configuration	
AM600 - DI extension module	AM600-3200END
AM600 - DI extension module	AM600-1600END-INT
Digital Output (DO) for "Local" and "Remote*1" configuration	
AM600 - DO extension module	AM600-0016ER-INT
AM600 - DO extension module	AM600-0016ETN-INT
AM600 - DO extension module	AM600-0016ETP-INT
AM600 - DI extension module	AM600-0032ETN
Analog Input output (IO) for "Local" and "Remote*1" configuration	
AM600 - Analog extension module	AM600-4AD-INT
AM600 - Analog extension module	AM600-4DA-INT
Extension module with "INTEGRATED" bus coupler	
AM600 - IO extension module with inbuilt EtherCAT coupler	AM600-0808ETNE
Extension module with "INTEGRATED" bus coupler	
AM600 - IO extension module with inbuilt EtherCAT coupler	AM600-1616ETNE
EtherCAT bus coupler	
AM600 - EtherCAT coupler for remote I/O	AM600-RTU-ECTA
Thermistor module (input)	
AM600 - Thermistor extension module	AM600-4PT
AM600 - Thermistor extension module	AM600-8TC

Part No.	CE	Product Description
01440014	Yes	AM600 CPU module, 24 VDC power supply, high-speed inputs x 16, high-speed outputs x 8, RS485 port x 2, CANopen port x 1, EtherCAT port x 1, Ethernet port x 1, USB x 1 (Requires 24Vdc PSU)
01440010	Yes	Power source module, input: 220 VAC, output: 2A/24 VDC (also for H3U)
01440023	Yes	32 inputs, input voltage: 24 VDC, sink/source mode
01440005	Yes	16 inputs, input voltage: 24 VDC, sink/source mode (also for H3U)
01440017	Yes	16 outputs, relay, rated current: 2A @ 250 VDC (also for H3U)
01440018	Yes	16 outputs, NPN transistor, maximum current: 500 mA @ 24 VDC (also for H3U)
01440003	Yes	16 outputs, PNP transistor, maximum current: 500 mA @ 24 VDC (also in H3U)
01440025	Yes	32 outputs, NPN transistor, maximum current: 500 mA @ 24 VDC
01440006	Yes	4 analog inputs, resolution: 16 bit, error precision: 0.1% (also for H3U)
01440007	Yes	4 analog outputs, resolution: 16 bit, error precision: 0.1% (also for H3U)
01440027	Yes	8 inputs, input voltage: 24 VDC, sink/source mode; 8 outputs, NPN transistor, maximum current: 500 mA @ 24 VDC; Integrated with EtherCAT coupler, require input voltage 24 VDC
01440030	Yes	16 inputs, input voltage: 24 VDC, sink/source mode; 16 outputs, NPN transistor, maximum current: 500 mA @ 24 VDC; Integrated with EtherCAT Coupler, require input supply 24 VDC
01440033	Yes	EtherCAT coupler, max 16 extension modules, require 24 VDC PSU
01440008	Yes	4 channel PT thermistor input extension module (PT100/500/1000)
01440026	Yes	8 channel TC thermistor input (TC type- B,E,N,J,K,R,S,T)

# Driven by Technology

AC Drives



AC MultiDrives



MV Drives



Single-Axis Servos



Multi-Axes Servos

EtherCAT<sup>®</sup>



Robotics & Motion Controllers

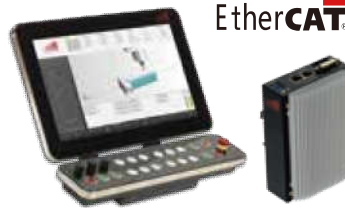


PLCs & HMIs



CNC Machine Tool Solutions

EtherCAT<sup>®</sup>



Electric Vehicle Inverters



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Forward, Always Progressing

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