Distributor

TECO

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TECO GO ECO

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TECO

AP Series

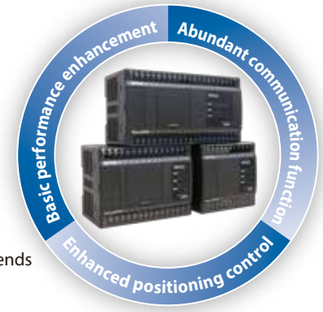
Programmable Logic Controller

AP Advanced PLC

TECO developed fast-speed, high-quality, reliably new generation of Programmable Logic Controller (PLC)

Main feature

- Apply to stand-alone automation equipment
- Enhanced high-speed counter and pulse output and interpolation function for positioning control
- Abundant communication function, such as support for multiple protocols



Basic performance enhancement

- Full series dimension 90mm height designed to meet small and medium PLC product design trends
- Fast instruction execution speed: 0.18us / step (ANB)
- Large program memory capacity
  Program memory: 4~24K steps size, With complete basic / application instructions, arithmetic instructions such as ADD / SUB / MUL / DIV...etc, triangular instructions such as SIN / COS / TAN...etc, matrix input, seven-segment display output... and other simple communication commands, as well as with the floating-point PID control instruction
- Easy for expanded the I/O points
  AP100 main module is divided into: 10/14/20/30 points, 20/30 points main module can adapted to expansion card, 30 points main module adapted to expansion module, expandable up to 128 points.
  AP200 main module is divided into: 24/32/40/60 points, all main module can adapted to expansion card, all main module adapted to expansion module, expandable up to 256 points
  AP300 main module is divided into: 24/32/40/60 points, all main module can adapted to expansion card, all main module adapted to expansion module, expandable up to 384 points
- Provided with powerful function such as Real Time Clock, PWM, Run/Stop switch, Flash Memory, etc.
- Easy for maintenance and installation, and use Din rail (track) installation
- Various types of expansion cards such as Digital、analog、communication function...etc
- The Expansion Module and existed program are compatible with TP03 series's.

High-speed counter, pulse output positioning control function

- Built-in two high-speed PWM pulse output of 200kHz, which can control a servo or stepper motor drive
- Built-in high-speed counter function, the maximum frequency of 20kHz (AP100) / 100kHz (AP200) / 200kHz (AP300) high-speed counter, and have a single-phase or two-phase high-speed counter input with interrupt capability
- Built in motion Instruction of linear interpolation(AP200/AP300) & circular Interpolation(AP300)

Abundant communication function

- Four communication ports: PG、MiniUSB、RS485 & expansion card, all provided standard Modbus protocol, User can easily form a network architecture. Which the built PG and MiniUSB port can be used as a PC program to write the corresponding interface connectivity.
- Computer link function: One PC can control 255 sets of AP-PLC, The programming editor use the Ladder Diagram、Instruction List、Sequential Function Chart、programming editor is very user friendly
- provides MODBUS (RTU mode) protocol, you can use the convenient instruction and establish communication between the inverter and the human-machine interface
- Support MODBUS (RTU mode), TCP / IP, CANopen etc... Protocol

AP Series

Programmable Logic Controller

Category	Voltage Range	Points Range
AP-100 Series	DC 20.4~28.8V AC85~264V	10 ~ 30 Points
AP-200 Series	DC 20.4~28.8V AC85~264V	24 ~ 60 Points
AP-300 Series	DC 20.4~28.8V AC85~264V	24 ~ 60 Points

AP Series Main Module Model Description

AP - 2 60 B R - A R*

- AP — Series Name
- 2 — Category: 1:100 Series; 2:200 Series; 3:300 Series
- 60 — Input & Output Points
  - AP100: 10:10 Points; 14:14 Points; 20:20 Points; 30:30 Points
  - AP200/AP300: 24:24 Points; 32:32 Points; 40:40 Points; 60:60 Points
- B — Basic type
- R — Output Type: R: Relay; T: NPN Transistor; P: PNP Transistor (Order by MOQ)
- A — Power supply: A: AC 85~264V; D: DC20.4V~28.8V (Order by MOQ)
- R* — AP200 series built in RTC function; None: AP200 series not built in RTC function

Specification

Item \ Series	AP100 Series BR/BT/BP	AP200 Series BR/BT/BP	AP300 Series BR/BT/BP
Basic module outline	Brick type		
Run/stop switch	Built in		
Safety certification	CE / UL		
Memory retentive	Flash memory		Lithium battery
Program Capacity	4K steps (Flash)	8K steps (Flash)	24K steps (RAM)
Operation control	Reciprocating scan the program in the memory		
Input/ output	Scanning from Start to End (End instruction) then from Start to End again		
Program Software	AP-PCLINK		
Program type	Ladder Diagram / Instruction List / Sequential Function Chart		
Scan time – **Basic Instruction**	36(ANB/ORB etc. : 0.18 μs/step, LD/AND/OR etc. : 0.44μs/step)		
Scan time – **Application Instruction**	149	158	165
Monitoring / debugging	Program execution time display, bit / character, device settings		
Self-diagnosis	Input / output checks, the system performs time-out check is not legitimate command checks the program syntax checking and password settings		
Commu-nication port – **PC**	RS422 function, linked with editing software for PC		
Commu-nication port – **RS485**	Built in one communication port		
Commu-nication port – **Mini USB**	linked with editing software for PC		
Commu-nication port – **expansion card**	Except AP100 Series10 points and 14 points is not expandable, The rest can be used by AP Series AP-485BD, AP-232BD communications and other expansion cards		
Commu-nication function – **RS485 communication interface**	Built in 1 communication port，for HMI，Modbus mater/slave function(4800bps~500kbps)		
Commu-nication function – **protocol**	USB slave，Profibus-DP slave，DeviceNet slave，TCP/IP，CanOpen		
High Speed input (X0~X5 / X10~X13) – **High speed counter**※1	Single phase (Max: 20kHz)×6 Pt. two-phase (Max: 10kHz)×2 Pt.	Single phase (Max: 100kHz)×4 Pt. &(Max: 20kHz)×2Pt. two-phase (Max: 50kHz)×2 Pt. & (Max: 10kHz)×1Pt.	Single phase (Max: 200kHz)×6Pt. &(Max: 20kHz)×4Pt. two-phase (Max: 100kHz)×3Pt. & (Max: 10kHz)×2Pt.
High Speed input (X0~X5 / X10~X13) – **Interrupt input**	6 Pt.(correspondence I00*~I50*)：Minimum pulse width of 50 μs		
Pulse output※2 – **Pulse output**	2 Pt. Y0~Y1，With acceleration / deceleration, no interpolation function	2Pt. Y0~Y1，With acceleration / deceleration, linear interpolation function	4Pt. Y0~Y3，With acceleration / deceleration, linear/ circular interpolation function
Pulse output※2 – **PWM output**	2 Pt. Y0~Y1		4Pt. Y0~Y3
Pulse output※2 – **High speed output**	2 Pt. Y0~Y1：200kHz(Max)		4 Pt. Y0~Y3：200kHz(Max)
Real Time Clock	AP-110 / AP-114: none; AP-120 / AP-130: Optional RTC expansion card	Optional RTC expansion card or ordering RTC models	Built in RTC
Real Time Clock	Second(D8013)、Minute(D8014)、Hour(D8015)、day(D8016)、month(D8017)、year(D8018)、week(D8019) And with 30s offset		
The maximum expansion of digital and analog input / output Points. Number (Analog Module is 12Bits resolution)	AP-110 / AP-114: No expanded		
	AP-120: Expansion card: DI/O: 4, AI/O: 2/1	Expansion card: DI/O: 4, AI/O: 2/1 Expansion Module: DI/O: 256, AI/O: 56/8	Expansion card: DI/O: 4, AI/O: 2/1 Expansion Module: DI/O: 384, AI/O: 56/8
	AP-130: Expansion card: DI/O: 4, AI/O: 2/1, Expansion Module: DI/O: 128, AI/O: 56/8		

Item \ Series	AP100 Series BR/BT/BP	AP200 Series BR/BT/BP	AP300 Series BR/BT/BP
Expansion card number	AP-110, AP-114: none; AP-120, AP-130: 1	AP-224, AP-232, AP-240, AP-260: 1	AP-324, AP-332, AP-340: 1; AP-360: 2
Type of Expansion card – **Digital I/O**	AP110/AP114：none，Rest AP Series：AP-4DBD，AP-4RBD，AP-2D2TBD		
Type of Expansion card – **Analog I/O (10Bits resolution)**	AP110/AP114：none，Rest AP100 &AP200 Series：AP-2AIBD，AP-1AOBD，AP-3MABD		AP-2AIBD，AP-1AOBD，AP-3MABD，(Only the 2A1BD can mount the AP360's second slot)
Type of Expansion card – **Communication**	AP110/AP114：none，Rest AP Series：AP-485BD，AP-232BD，AP-ENBD		
Type of Expansion card – **Other**	AP110/AP114：none，other AP Series：AP-RTCBD		
Expansion Module	AP110/AP114/AP120：none，Rest AP Series：DIO/AIO/ Temperature compatible with TP03 series Expansion Module and TP02 series Digital Expansion Module，Not compatible with TP02 series Analog Expansion Module		
Type of Expansion Module – **Digital Module**	AP110/114/120：None, AP130：128 Pt.	256 Pt. ※3	384 Pt. ※3
Type of Expansion Module – **Analog Module (12Bits resolution)**	AP110/AP114/AP120：none，Rest AP Series：7 sets of TP03-8AD and 4 sets of TP03-2DA		
Type of Expansion Module – **Maximum analog I/O**	AP110/AP114/AP120：none，Rest AP Series：56 input channels / 8 output channels		
Relay & Register – **Digital I/O Relay**	X000~X377(Octal)：256 Pt. Y000~Y377(Octal)：256 Pt. (The actual expansion X000~X377 , Y000~Y377)		
Relay & Register – **Auxiliary Relay**	General Auxiliary Relay: M0~M1535(1536Pt.)		General Auxiliary Relay: M0~M7679(7680Pt.)
Relay & Register – **Auxiliary Relay**	Special Auxiliary Relay: M8000~M8511(512Pt.)		
Relay & Register – **Step Relay**	S0~S1023(1024Pt.)		S0~S4095(4096Pt.)
Relay & Register – **Timer**	100Pt. (100ms：44Pt.，10ms：46Pt.，1ms accumulating function：4Pt.，100ms accumulating function：6Pt.)	256Pt. (100ms：200Pt.，10ms：46Pt.，1ms accumulating function：4Pt.，100ms accumulating function：6Pt.)	512Pt. (100ms：200Pt.，10ms：46Pt.，1ms：256Pt.，1ms accumulating function：4Pt.，100ms accumulating function：6Pt.)
Relay & Register – **Counter**	136Pt. (16bit：100Pt.，32bit：36Pt.)	256Pt. (16bit：200Pt.，32bit：56Pt.)	512Pt. (16bit：200Pt.，32bit：312Pt.)
Relay & Register – **Data Register D**	General Register：D000~D511(512Pt.)	General Register：D000~D2047(2048Pt.)	General Register：D000~D7999(8000Pt.)
Relay & Register – **Data Register D**	Special Register：D8000~D8511(512Pt.)		
Relay & Register – **Data Register W**	none		32768Pt.：W0-W32767
Relay & Register – **Index Register**	32Pt.：V00~V15/Z00~Z15		
Relay & Register – **Stack pointer**	Mark N0~N7(8Pt.)，Pointer P0~P127(128Pt.)，Input Interrupt I00*~I50*(6Pt.) Timer interrupt I6**~I8**(3Pt.)，Counter Interrupt I010~I060(6Pt.)		
Relay & Register – **Special Register**	F0~F1999：2000Pt.（AP-PCLINK cannot monitor this range）		
Constant – **Decimal (K)**	16 bits：-32768~32767 , 32 bits：-2147483648~2147483647		
Constant – **Hexadecimal (H)**	16 bits：0~FFFFH , 32 bits：0~FFFFFFFFH		
Constant – **Float(E)**	-3402823×10^{32} ~ -1175494×10^{-44}，0，1175494×10^{-44} ~ 3402823×10^{32}		

※1：High-speed counter depending on different models, in a certain voltage range in order to respond to the corresponding frequency.

※2：Only transistor output has this feature.

※3：When connect the expansion I/O modules. Must review the power supply capacity

Product List of Main Module

Category	Model	Power Supply Range	Input		Output		Terminal Block	Dimension W×H×D (mm)
			Pt.	Category	Pt.	Category		
AP-100 Series Main Module	AP-110BR-A	100-240VAC -15%,+10%	6	NPN/ PNP	4	Relay	Japan Type, Single row, fixed Terminal Blocks, Pitch: 7.62mm	95×90×70(Fig 1)
	AP-114BR-A		8		6			95×90×70(Fig 1)
	AP-120BR-A		12		8			124×90×70(Fig 2)
	AP-130BR-A		16		14			175×90×70(Fig 3)
	AP-110BT-A		6		4	Transistor		95×90×70(Fig 1)
	AP-114BT-A		8		6			95×90×70(Fig 1)
	AP-120BT-A		12		8			124×90×70(Fig 2)
	AP-130BT-A		16		14			175×90×70(Fig 3)
	AP-110BR-D ※	24VDC -15%,+20%	6	NPN/ PNP	4	Relay		95×90×70(Fig 1)
	AP-114BR-D ※		8		6			95×90×70(Fig 1)
	AP-120BR-D ※		12		8			124×90×70(Fig 2)
	AP-130BR-D ※		16		14			175×90×70(Fig 3)
	AP-110BT-D ※		6		4	Transistor		95×90×70(Fig 1)
	AP-114BT-D ※		8		6			95×90×70(Fig 1)
	AP-120BT-D ※		12		8			124×90×70(Fig 2)
	AP-130BT-D ※		16		14			175×90×70(Fig 3)
AP-200 Series Main Module	AP-224BR-A	100-240VAC -15%,+10%	12	NPN/ PNP	12	Relay	Japan Type, Dual rows, Pluggable Terminal Blocks, Pitch: 7.62mm	124×90×85(Fig 4)
	AP-232BR-A		16		16			124×90×85(Fig 4)
	AP-240BR-A		24		16			150×90×85(Fig 5)
	AP-260BR-A		36		24			175×90×85(Fig 6)
	AP-224BT-A		12		12	Transistor		124×90×85(Fig 4)
	AP-232BT-A		16		16			124×90×85(Fig 4)
	AP-240BT-A		24		16			150×90×85(Fig 5)
	AP-260BT-A		36		24			175×90×85(Fig 6)
	AP-224BR-D ※	24VDC -15%,+20%	12	NPN/ PNP	12	Relay		124×90×85(Fig 4)
	AP-232BR-D ※		16		16			124×90×85(Fig 4)
	AP-240BR-D ※		24		16			150×90×85(Fig 5)
	AP-260BR-D ※		36		24			175×90×85(Fig 6)
	AP-224BT-D ※		12		12	Transistor		124×90×85(Fig 4)
	AP-232BT-D ※		16		16			124×90×85(Fig 4)
	AP-240BT-D ※		24		16			150×90×85(Fig 5)
	AP-260BT-D ※		36		24			175×90×85(Fig 6)
AP-300 Series Main Module	AP-324BR-A	100-240VAC -15%,+10%	12	NPN/ PNP	12	Relay		124×90×85(Fig 7)
	AP-332BR-A		16		16			124×90×85(Fig 7)
	AP-340BR-A		24		16			150×90×85(Fig 8)
	AP-360BR-A		36		24			175×90×85(Fig 9)
	AP-324BT-A		12		12	Transistor		124×90×85(Fig 7)
	AP-332BT-A		16		16			124×90×85(Fig 7)
	AP-340BT-A		24		16			150×90×85(Fig 8)
	AP-360BT-A		36		24			175×90×85(Fig 9)
	AP-324BR-D ※	24VDC -15%,+20%	12	NPN/ PNP	12	Relay		124×90×85(Fig 7)
	AP-332BR-D ※		16		16			124×90×85(Fig 7)
	AP-340BR-D ※		24		16			150×90×85(Fig 8)
	AP-360BR-D ※		36		24			175×90×85(Fig 9)
	AP-324BT-D ※		12		12	Transistor		124×90×85(Fig 7)
	AP-332BT-D ※		16		16			124×90×85(Fig 7)
	AP-340BT-D ※		24		16			150×90×85(Fig 8)
	AP-360BT-D ※		36		24			175×90×85(Fig 9)

※ Order by MOQ

Appearance reference

AP-100 Series Main Module

Fig 1-AP-110/140

Fig 2-AP-120

Fig 3-AP-130

AP100 Series Main Module: 10/14/20/30 Pt. 20/30 suit for Expansion card. 30 pt expandable up to 128 Pt.

AP-200 Series Main Module

Fig 4-AP-224/232

Fig 5-AP-240

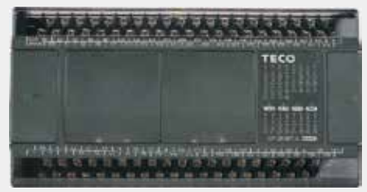


Fig 6-AP-260

AP200 Series Main Module: 24/32/40/60 Pt., expandable up to 256 Pt.

AP-300 Series Main Module

Fig 7-AP-324/332

Fig 8-AP-340

Fig 9-AP-360

AP300 Series Main Module: 24/32/40/60 Pt., expandable up to 384 Pt.

Expansion Module Product List of Expansion module

Model	Power Supply Range	Input / Output	Description	Dimension W×H×D (mm)
AP-8EMR	None	4/4	8 Pt. digital Input/output module (Relay)	W45×H90×D85mm
AP-8EMT		4/4	8 Pt. digital Input/output module (NPN Transistor)	
AP-8EMP		4/4	8 Pt. digital Input/output module (PNP Transistor)	
AP-8EYR		0/8	8 Pt. digital output module (Relay)	
AP-8EYT		0/8	8 Pt. digital output module (NPN Transistor)	
AP-8EYP		0/8	8 Pt. digital output module (PNP Transistor)	
AP-8EXD		8/0	8 Pt. digital input modules	
AP-16EMR	None	8/8	16 Pt. digital Input/output module (Relay)	W57×H90×D85mm
AP-16EMT		8/8	16 Pt. digital Input/output module (NPN Transistor)	
AP-16EMP		8/8	16 Pt. digital Input/output module (PNP Transistor)	
AP-16EYR		0/16	16 Pt. digital output module (Relay)	
AP-16EYT		0/16	16 Pt. digital output module (NPN Transistor)	
AP-16EYP		0/16	16 Pt. digital output module (PNP Transistor)	
AP-16EXD		16/0	16 Pt. Digital input module	
AP-32EMR-A	85~264 VAC	16/16	32 Pt. digital Input/output module (Relay)	W124×H90×D85mm
AP-32EMT-A		16/16	32 Pt. digital Input/output module (NPN Transistor)	
AP-32EMP-A		16/16	32 Pt. digital Input/output module (PNP Transistor)	
AP-4RD	20.4~28.8 VDC	4/0	PT-100 Temperature input × 4 Channels	W57×H90×D85mm
AP-4RD-K		4/0	PT-1000 Temperature input × 4 Channels	
AP-4TM		4/0	J/K Temperature input × 4 Channels	
AP-2DA		0/2	0~10V, ±10V, 0~20mA, 4~20mA analog output × 2 Channels	
AP-3MA		2/1	0~10V, 0~20mA analog input ×2 Channels, 0~10V, ±10V, 0~20mA, 4~20mA analog output ×1Channel	
AP-8AD		8/0	0~10V, 0~20mA analog input×8 Channels	
TP03-01SPS-A	85~264VAC	N.A	Expansion power supply	W57×H90×D83mm

Product List of Expansion Card

Model	Description	Current consumption	Remark
AP-0CV	Built in Expansion card slot cover	NA	Fig 10
AP-485BD	RS485 multifunction communication interface	DC 3.3V / 3mA	Fig 11
AP-232BD	RS232 multifunction communication interface	DC 3.3V / 11mA	Fig 12
AP-COBD	CANopen communication interface for AP300 module	DC 3.3V / 160mA DC 5V / 130mA	Fig 13
AP-ENBD	Ethernet network communication interface	DC 3.3V / 170mA	Fig 14
AP-4DBD	Digital input × 4 pt.	DC 3.3V / 13mA	Fig 15
AP-4RBD	Relay output × 4 pt.	DC 24V / 30mA	Fig 16
AP-2D2TBD	Digital input × 2pts. Transistor output × 2 pts.	DC 3.3V / 8mA DC 5V / 14mA	Fig 17
AP-RTCBD	Real time clock		Fig 18
AP-2AIBD	0~10V Analog input interface × 2 channels (10 Bit)	DC 24V / 2mA	Customize
AP-1AOBD	Analog output interface × 1 channel (10 Bit)	DC 24V / 23mA	Customize
AP-3MABD	0~10V Analog input interface× 2 channels (10 Bit), Analog output interface× 1 channel (10 Bit)	DC 24V / 25mA	Fig 19
AP-CAMBD	Electronic cam motion control (one-axis)	DC 3.3V / 190mA DC 5V / 70mA	Order by MOQ

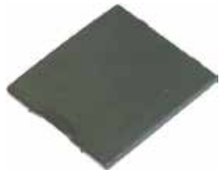


Fig10: Expansion card slot cover

Fig11: AP-485BD

Fig12: AP-232BD

Fig13: AP-COBD

Fig14: AP-ENBD

Fig15: AP-4DBD

Fig16: AP-4RBD

Fig17: AP-2D2TBD

Fig18: AP-RTCBD

Fig19: AP-3MABD

Communication module

Model	Power Supply Range	Description	Dimension
TP03-PBUS	20.4~28.8VDC	Profibus-DP Slave station	38×90×59 mm
TP03-DNET		DeviceNet Slave station	
EN01		TCP/IP	

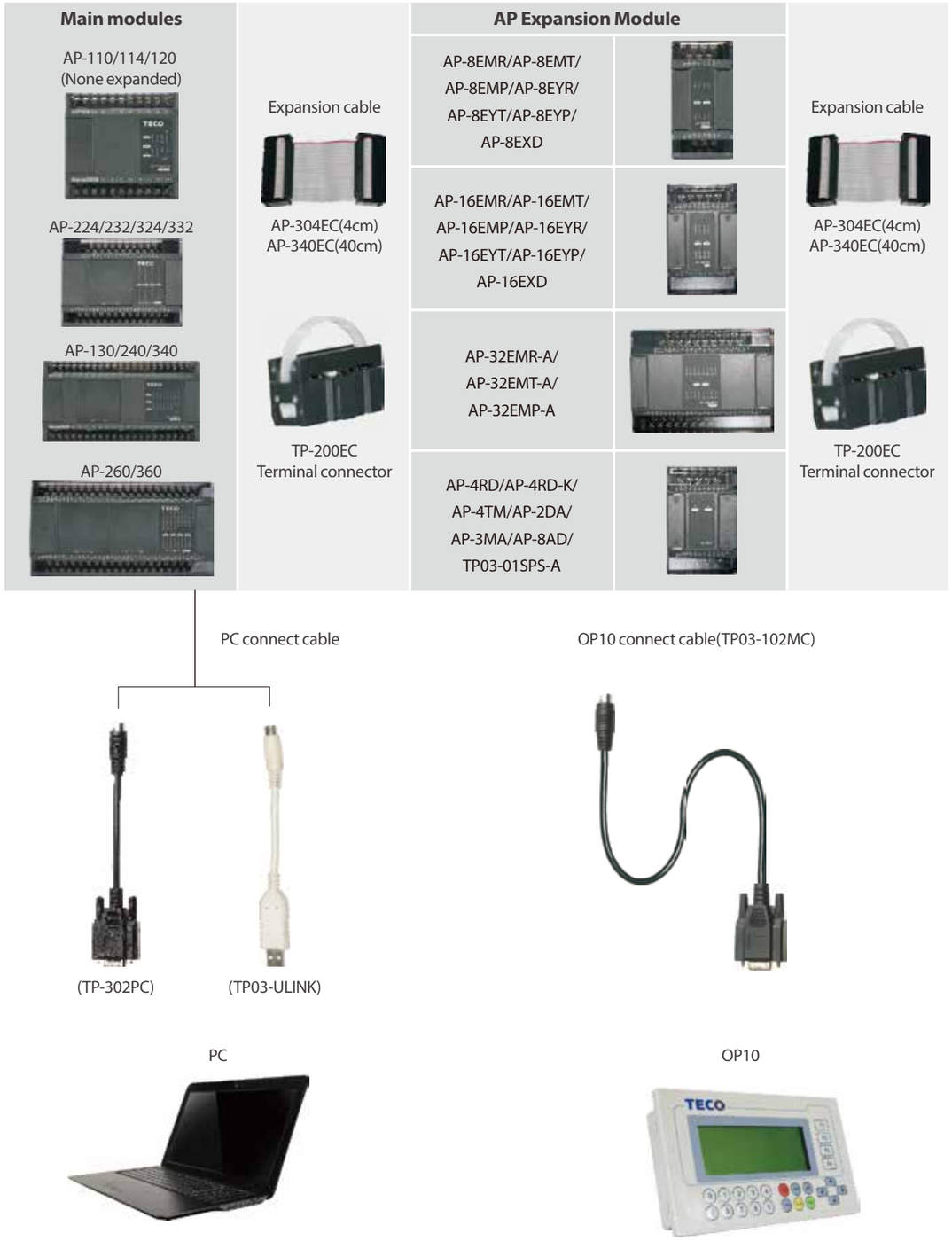
PC Editing Software

Category	Description
AP-PCLINK	PLC Programming software

List of accessory

Category	Model	Description	Remark	Figure
Main Module	TP-200EC	Terminal connector	Built in	
	AP-0CV	Expansion card cover		
		RS-485 terminal		
		Installation Instructions		
Expansion Module	AP-304EC	4 cm Expansion cable	Built in	
	AP-340EC	40 cm Expansion cable	Optional	
PC communication cable	TP-302PC	1.8 M, D-SUB cable (Black)	Optional	
	TP03-ULINK	1.8 M, USB cable		
OP10 communication cable	TP03-102MC	1.8 M, PLC & OP10 cable (Gray)	Optional	Appearance same with the TP-302PC, only wiring color is gray
	OP10-PL01	1.8 M, Download cable		

Note:

Terminal connector placed on the Main Module's or the last Expansion Module's expansion slot to connectors to form a complete circuit of the Main & Expansion Module,

System Architecture