



Introduction of OTAZ ATA2 Series PLC

The OTAZ ATA₂ series plc is a new generation of plc equipped with excellent function comparable to large plc's worldwide. The compact design, flexible configuration, and powerful instruction set combine to make the OTAZ plc a perfect solution for controlling various applications. OTAZ PLC can support 32 modules and communication ports with Rs485 and Rs232. It is also possible to communicate with a Wi-Fi module. All digital inputs and outputs are high-speed.

Appearance of Main Unit

All the OTAZ PLC units have the same physical structure.



Figure 1.1 shows a front view of OTAZ PLC



(12) Indicator expansion slot

(13) The label provides information about the type of PLC (transistor/relay) and its serial number.

Figure 1.2 Show OTAZ PLC from the side

Appearance of module



The table in Figure 1.3 displays the different types of cases compatible with the ATA2 Standard series.

There are 4 types of cases for expansion units/modules. One type uses the same case as the main unit of the 70mm. All expansion cables (left) of expansion units/modules are flat ribbon cables. which were soldered directly on the PCB, and the expansion header (right) is a 10 10-pin header, with this to connect the right adjacent expansion units/modules.

In the following, each of the four types of expansion units/modules is described as an example:

ATA2 Series technical data

Specification		ATA2-14SM(T/R)	
	program(LADDER)	30kb	
Memory	Element comment	64kb	
	type	Flash(don't need for battery to save the program	
Maximum digital I/O	input contact X	X0-X255(256)	
points	Output contact Y	Y0-Y255(256)	
Maximum expansion	•	32	
module	Analog/Digital	52	
Maximum Analog I/O			
points	V,mA,TC,RTD,loadcell	32 number of analog points on expansion module	
Internal relay (M)	adjustable	M0-M4095(4096)	
step relay	system bit	S0-S1023(1024)	
Timor	32bit configurable as retentive or Non-retentive	T0-T511(512)	
i inter	Timer mode	On DLY, Of DLY, On-Of DLY, PWM	
	Rate	0.1ms-1s	
High-speed timer(HST)	32bit configurable as retentive or Non-retentive	HST0-HST15(16)	
Counter	32bit configurable as retentive or Non-retentive	C0-C511(512)	
High-speed	Built-in(32bit) support via expansions(16bit)	CH0-CH63(64)	
counter(HSC)	counter mode	UP*2, PLS/DIR*2 , UP/DN*2 , A/B*2	
	counting frequency	50KHZ	
	Built-in		
	support via expansions	- CH0-CH127(128)	
High-speed output HSO (Transistor type only)	Pulse mode	PLS generator , PWM generator (0-1000) , PLS only , PLS/DIR , UP/DN , A/B	
	Pulse frequency	50KHZ	
	W0-W8191 (8192)	Integer 16 bit: -32768~32767	
Register	D0-D2047 (2048)	Integer 32 bit: 2147483648 2147483647	
Ŭ	F0-F2047 (2048)	Float: Float pointer	
Interrupt		All digital inputs (Rising,Falling,Both) , HST , HSC , Power off Modbus/Wi-Fi/Ethernet/Can/OTAZ bus ; (Send Receive)	
Serial communication port	Built-in Modbus: RTU , ASCII	Port0&3: 2*RS232 (DB9F) Port1: 1*RS485 (3pin plugin Triblock) Port2: 1*RS485 (3pin plugin Triblock)	
RTC		Yes (Gregorian and solar calendar)	

Installation

The ATA2-PLC series equipment is designed to be easy to install. You can install an ATA2-PLC either on a panel or a standard rail.

Danger

indicates that death or severe personal injury will result if proper precautions are not taken.

Warning

1.ATA₂ PLC's are open type controllers. It is required that you install the ATA₂ in a housing cabinet, or electric control room. Entry to the housing, cabinet, or electric control room should be limited to auth-orized personnel.

2.Failure to follow these installation requirements could result in death, severe personal injury and/or property damage.

3. Always follow these requirements when installing ATA2

Caution

1.Environmental specifications of ATA₂ PLC cannot exceed those listed in this manual. In addition, do not operate this equipment in environments with oil smoke, conductive dust, high temperatures, high humidity, corrosion gases, inflammable gases, rain or condensation, and high vibrations and shock.

2.with a safety alert symbol, indicates that minor personal injury can result if prope precautions are not taken.

Separate the ATA2-PLC devices from heat, high voltage, and electrical noise. Consider also the routing of the wiring for the devices in the panel. Avoid placing low-voltage signal wires and communications cables in the same tray with AC power wiring and high-energy, rapidly-switched DC wiring.

When configuring the layout of the ATA2-PLC inside your panel, consider the heat-generating devices and locate the electronic-type devices in the cooler areas of your cabinet. Reduced exposure to a high-temperature environment will extend the operating life of any electronic device.

Fixation of ATA2-PLC, which can be fixed by screws, should place vertically and start from the main unit on the left to the expansion unit on the right. A typical figure of placement is shown below:





The heat in ATA2-PLC is ventilated via air circulation. There should be more than 30mm of space, both below and above the PLC.



Figure 2.1 shows the distance between the PLC and the duct for convenient wiring

Installing and Removing the ATA2-PLC

Mount: Hold PLC facing its front, and press it down with a 25-degree tilt onto the DIN RAIL. Swing it down until the upper edge of the DIN RAIL groove on the PLC back touches the upper tab of DIN RAIL. Then use this locked-in point as a pivot to press the PLC forward on the bottom and lock it in position. The procedure is illustrated below:



Dismount: Use a long screwdriver to reach in the hole on the DIN RAIL tab. Pull out the tab to "pulled out" position to remove PLC, as shown in the figure below:



Mount by screws

In environments with larger vibration (more than 0.5G), the unit must be secured by M3 or M4 screws.



Figure 2.2 shows positions and size of screw holes in ATA2-PLC model

Specifications Power Supply and Wiring Diagrams

When designing the wiring for your ATA₂ PLC, provide a single disconnect switch that simultaneously removes power from the ATA₂ PLC power supply, from all input circuits, and from all output circuits. Provide over-current protection, such as a fuse or circuit breaker, to limit fault currents on supply wiring. Consider providing additional protection by placing a fuse or other current limit in each output circuit.

		Technical data				
Model		Voltage range	Max power consumption	Internal Fuse	Hold-up time (loss of power)	
unit	CPU	14MT		2.8W	2A,125V	30ms
Main	ATA2_S	14MR	24VDC,±10%	3.6W		
		16X	Power is provided through plc	2.6W	300mA,90V	10ms
expansion ATA2_16S		16XYT		3.8w		
	expansion ATA2_16S	16XYR		4.08W		
		16YT		3.6W		
		16YR		4.08W		
ansio	expansion ATA2_8S		2.8W			
expansion ATA2_85		8XYT	Power is provided through plc	2.6W	300mA,90V	10ms
		8XYR		2.8W		
		8YT		2.4W		
		8YR		2.6W		

Figure 3_1 Specifications power supply

Guidelines for inductive loads

You should equip inductive loads with suppression circuits to limit voltage rise when the control output turns off. Suppression circuits protect your outputs from premature failure due to the high voltages associated with turning off inductive loads. In addition, suppression circuits limit the electrical noise generated when switching inductive loads. Placing an external suppression circuit so that it is electrically across the load, and physically located near the load is most effective in reducing electrical noise.

ATA₂ PLC DC outputs include internal suppression circuits that are adequate for the inductive loads in most applications. Since ATA₂ PLC relay output contacts can be used to switch either a DC or an AC load, internal protection is not provided.

Warning

The use of non-isolated or single insulation supplies to supply low-voltage circuits from an AC line can result in hazardous voltages appearing on circuits that are expected to be touch-safe, such as communications circuits and low-voltage sensor wiring.

Caution

Wiring of 24V+ input power must be connected to the terminal labeled by +, while the 24V- end is connected to the – terminal, Please use wires with diameters of 0.25mm² - 1mm².

The G let terminals on main unit and all digital expansion units/modules must be connected to the EG (Earth Ground).

ATA₂ PLC Series power supply diagram





Guidelines for Expansion power module

We use the power module for two reasons

1- When the module must be far from the PLC, it can increase the distance between the module and the CPU up to 20m.

2- When the number of modules is more than 5, an external power supply is needed to supply the required current of the modules, which can be applied to the modules through the Expansion power module.



Figure 3_3 shows the wiring of an Expansion power module

Digital input (DI)

All digital inputs of ATA₂ PLC Standard series can be high speed, and all input has an external interrupt.

Each encoder occupies two to four inputs, which can have different configurations, which include:

- ➤ Up*2counter
- ➢ p/dir*2counter
- > up/down*2counter
- ➤ a/b*2counter

		Technical data					
Model		Number of inputs Typ	Turno	Input current threshold		Switch	
			туре	OFF	ON	frequency	
Main unit CPU ATA		14MT	- 8 Sink/Source	Sink/Sourco	<3mA	>11mA	50Khz
		14MR					
expansion module	expansion ATA2_16S	16X	16	Sink/Source	<4mA	>11mA	50Khz
		16XYT	8				
		16XYR	8				
	expansion ATA2_8S	8X	8	Sink/Source	<3mA	>8mA	50Khz
		8XYT	4				
		8XYR	4				

Figure 4_1 Specifications Digital input

Structural and wiring digital input



Wiring of 24VDC single-end SOURCE input

Wiring of 24VDC single-end SINK input





Figure 4_2 shows digital inputs wiring of ATA₂ PLC Series

Digital Output (DO)

All digital Transistor Outputs of ATA₂ PLC Standard series can be high-speed.

ATA₂ PLC digital outputs can be used to generate pulses with different configurations .which include:

- High speed pulse generator
- High speed PWM pulse generator
- Continuous pulse generator
- High speed pulse clear
- Read write position

		Technical data				
Model		Number of Type	Voltage Range	Switching Frequensi		
					High speed	
Main unit	CPU ATA2_S	14MT	c	Transistor	5~30VDC	50 Khz
		14MR	6	Relay	30VDC & 250VAC	For ON/OFF, not for frequent exchange
expansion ATA2_16S	16XYT	8	Transistor	5~30VDC	50Khz	
	expansion ATA2_16S	16XYR	8	Relay	30VDC & 250VAC	For ON/OFF, not for frequent exchange
		16YT	16	Transistor	5~30VDC	50Khz
		16YR	16	Relay	30VDC & 250VAC	For ON/OFF, not for frequent exchange
expansic	expansion ATA2_8S	8XYT	4	Transistor	5~30VDC	50Khz
		8XYR	4	Relay	30VDC & 250VAC	For ON/OFF, not for frequent exchange
		8YT	8	Transistor	5~30VDC	50Khz
		8YR	8	Relay	30VDC & 250VAC	For ON/OFF, not for frequent exchange

Figure 5_1 Specification Digital Output

Structural and wiring digital output



Wiring of transistor single-end SINK output

Wiring of relay single-end output





Figure 5_2 shows the digital outputs wiring of ATA₂ PLC 16 expansion module



Figure 5_3 shows the digital outputs wiring of the ATA₂ PLC 8 expansion module

Communication Ports

ATA₂ PLC has four communication ports, including two RS485 and two RS232 ports, and it can also communicate with the Wi-Fi module.

The serial communication interfaces have the following characteristics:

- Have an isolated port.
- Support Point-to-Point protocols.
- Are configured and programmed through extended instructions and library functions.
- Display transmit and receive activity through LEDs.

the communication Ports have two LED indicators:

- Transmit LED (Tx): The transmit LED illuminates when data is being transmitted out of the communication port.
- Receive LED (Rx): This LED illuminates when data is being received by the communication port.



Figure 6_1 shows communication ports

DB-9 Female Connector				
PIN#	PORT0 [RS-232]	PORT1 [RS-232]	PORT2 [RS-485]	
1	_	_	DATA+	
2	TX	-	—	
3	RX	_	—	
4	-	—	—	
5	GND	GND	GND	
6	_	_	DATA-	
7	_	RX	—	
8	—	TX	—	
9	—	—	—	

RS-485 male Connector				
+ (G				
PIN#	PORT 1 [RS-485]	PORT 2 [RS-485]		
(A)+ DATA+ DATA+				
(B)-	DATA-	DATA-		
G	GND	GND		

Figure 6_2 shows the communication pins table

Communication cable:

If you make RS232 cables by yourself and the definition of each pin is unclear, use a multimeter to measure TXD and RXD.

The pin 5 is SG; Measure the pin 2 (red probe) and pin 5 (black probe) with a multimeter. If it is approximately -9V, it means that pin 2 is the transmission pin; If it is approximately 0V, it means that pin 2 is the receiving pin.

Measure the pin 3 (red probe) and the pin 5 (black probe) by a multimeter. If it is approximately -9V, it means that pin 3 is the transmission pin; If it is approximately 0V, it means that pin 3 is the receiving pin.

Warning

Do not connect pin 9 in D-sub to any other source or pin

9P D-sub female \longrightarrow 9P D-sub male RS232 communication cable :





9P D-sub male/Femal \longrightarrow RS-485 communication cable :



Rs-485 communication port \longrightarrow RS-485 communication cable :

