Leading the Way with Intelligent Motion Control

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LC Medium PLC

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2024 Motion Control PLC SERIES CATALOGUE

PLC MiniPLC

10

Shenzhen Rtelligent Technology Co.,Ltd

About us



Shenzhen Rtelligent Technology Co., Ltd., located in Shenzhen, China, is a national high-tech enterprise dedicated in R & D, marketing and sales of high performance motion control products based on latest control technologies.

Since its establishment in 2015, the management has been focusing on the field of industrial automation. Our main products include servo system, stepper system, motion control card, etc., which are widely used in high-end intelligent manufacturing indutries such as 3C electronics, new energy, logistics, semiconductor, medical, CNC laser processing, etc. The global sales network covers more than 70 countries and regions, and the annual sales increase year by year.

Rtelligent adheres to deeply understand and meet customer demand, always takes reliable quality and leading technology as its core competitiveness, attaches great importance to and continuously increases R&D investment. At present, it has more than 60 patents for invention, utility model, copyright, trademark information, etc; The products have passed CE and other product quality & safety certification.



Honor & Qualifiication





CONTENTS







Motion Control System Solutions Map



RM500 Sevies PLE Controller A new masterpiece, magnificent debut











High Efficiency & Accuracy

Multi-core 64-bit processor for precise equipment control



Multitasking Management

Simultaneously handles multiple tasks and executes user commands



Bus Control

Highly integrated functions suitable for various applications



Convenient Networking

Integrated Ethernet port for fast data interaction



Flexible Expansion

Option to expand and accurately adapt to specific application



Easy Programming

Enhances development and maintenance with improved quality and efficiency



High Efficiency & Accuracy

Multi-core 64-bit processor for precise equipment control

Simultaneously handles multiple tasks and executes user commands





Bus Control

Highly integrated functions suitable for various applications



- Support EtherCAT bus 8-axis synchronization in 1ms cycle
- Expandable with 8 Rtelligent IO modules
- Supports 16 point input 16 point transistor NPN output

- Support EtherNET
- 2-way RS485
- CANOPEN master station



Application function





Convenient Networking

Integrated Ethernet port for fast data interaction







Option to expand and accurately adapt to specific application

Easy Programming

Enhances development and maintenance with improved quality and efficiency

Programming software



CODESYS V3.5 SP19



Programming language



RM500 Series Medium PLC

Rtelligent RM series programmable logic controllers support functions such as logic control and motion control. Using the CODESYS 3.5 SP19 programming environment, the FB/FC function to realize process encapsulation and multiplexing.Multi-level network communication is possible via RS485, Ethernet, EtherCAT and CANOpen interfaces. The PLC body integrates digital inputs and outputs and supports the expansion of 8 Reit IO modules.

- Power input voltage: DC24V
- Number of digital input points: 16 points of bipolar inputs
- Isolation method: photocoupling
- Input filter parameter range: 1ms~1000ms
- Number of digital output points: 16 NPN output points

Interface and Connection



Panel Indicator Light —

	Mark	Function	Instruction
System Indicator Light	PWR	Power indicator light	Steady light in normal supply
	RUN	Normal operation indicator	Steedy light: on operation Off: out of operation
	ERR	Operation error Indicator	Steedy light: serious operation error Off: no error
	ENET	EtherNet communication status indicator light	Steedy light: successful connection Off: no connection
	ECAT	EtherCAT communication status indicator light	Steedy light: successful connection Off: no connection
	CAN	CANOpen communication status indicator light	Steedy light: successful connection Off: no connection
IO Indicator Light	IN/OUT	IO status indicator light	Steedy light: valid input and output Off: null input and output

in 1ms period

P: Transistor PNP output

IO Input Terminal Signal Definition

Left signal	Left terminal
X0 signal input	1A
X1 signal input	2A
X2 signal input	3A
X3 signal input	4A
Input common SS0	5A
X4 signal input	6A
X5 signal input	7A
X6 signal input	8A
X7 signal input	9A
Input common SS1	10A

IO Output Terminal Signal Definition

Left terminal
1A
2A
3A
4A
5A
6A
7A
8A
9A
10A

EtherCAT Communication Specifications

Items	
Communications protocol	
Support services	
Synchronisation method	
Physical layer	
Duplex mode	
Topological structure	
Transmission medium	
Transmission distance	
Number of slaves	
EtherCAT rrame length	
Process data	

Right terminal	Right signal
1B	X10 signal input
2B	X11 signal input
3B	X12 signal input
4B	X13 signal input
5B	Input common SS2
6B	X14 signal input
7B	X15 signal input
8B	X16 signal input
9B	X17 signal input
10B	Input common SS3

Right terminal	Right signal
1B	Y10 signal output
2B	Y11 signal output
3B	Y12 signal output
4B	Y13 signal output
5B	Output common COM2
6B	Y14 signal output
7B	Y15 signal output
8B	Y16 signal output
9B	Y17 signal output
10B	Output common COM3
4B 5B 6B 7B 8B 9B 10B	Y13 signal output Y13 signal output Output common COM2 Y14 signal output Y15 signal output Y16 signal output Y17 signal output Output common COM3

Specifications

EtherCAT protocol CoE(PDO/SDO) DC-distributed clock 100Mbit/s (100base-TX) Full duplex Linear topology AWG26 category 5 ultra twisted pair screen Less than 100m between nodes Up to 128 44 bytes ~1498 bytes

RS485 and CAN Terminal Signal Definition -

Left terminal	Left signal	Right signal	Right terminal
1A	CAN-H	485A+	1B
2A	CAN-L	485A-	2B
3A	CGND	GND	3B
4A	retain	485B+	4B
5A	retain	485B-	5B

Electrical Parameters

Items	Electrical parameters	
Input voltage	24VDC	
Permissible supply voltage fluctuation range	20.4V~28.8VDC(-15%~+20%)	
24V input power protection	Supports short circuit protection and reverse	
Number of digital input points	16-point bipolar input	
Isolation method	Optocoupling	
Input Impedance	2.4ΚΩ	
Input is ON	Input current greater than 5.8mA/24V for high-speed inputs, 9.9mA/24V for normal inputs	
Input is OFF	Input current less than 4.5mA/19V for high-speed inputs and less than 4mA/17V for normal inputs	
Filtering parameter	1ms~1000ms	
High-speed pulse counting	non	
Input common mode	4 points/common (polarity of input power +/- can be changed)	
Input level	Drain/source type, S/S to 24V is NPN, S/S to GND is PNP	
Isolation	Field and logical grouping isolation	
Number of digital output points	16-point NPN output	
Maximum permissible current	0.5A/point	
Loop supply voltage	24VDC	
Circuit insulation	Optoelectronic insulation	
ON response time	0.5ms	
Output common mode	4 points/common (polarity of output power supply -)	
Output level	Low level NPN, com to negative	
Short-circuit protection	Each circuit supports short-circuit protection and recovery after power failure	

Power Wiring -

Terminal number	Power wiring	
1	DC 24V power positive	
2	DC 24V power supply negative	
3	PE	

Performance Specifications

Items		Specifications		
Program capacity		20M bytes		
Basic items	Data capacity	20M byte, in which 4k byte supports power-off retention		
	Zone X (%I)	128 byte		
	Zone Y (%Q)	128 byte		
	Zone M (%M)	128K byte		
	Axis performance	1ms cycle 8-axis synchronization (execution time of motion control calculation)		
	Electronic CAM, interpolation	Supports		
	Local expansion I/O module	Supports up to 8 local expansion modules		
	Real-time clock	Button battery retention (can be replaced by oneself)		
	Programming software	ogramming software CODESYS V3.5 SP19		
Programme	Programming language	IEC 61131-3 programming language(LD/ST/SFC/CFC)		
		Transmission speed 100Mbps (100base-TX)		
	EthorCAT	Supports protocol, EtherCAT master		
	EllierCAT	Supports up to 128 EtherCAT slave stations. Minimum synchronization period: $500 \mu s$		
		Slave station supports disabling and scanning		
		Transmission speed 100Mbps (100base-TX)		
		Support Modbus-TCP master/slave: as master, support 63 slaves; as slave, support		
		16 masters		
	EtherNet	TCP/UDP free protocol, supports up to 16 connections		
		Socket, maximum number of connections: 4, support TCP/UDP		
		IP address initial value: 192.168.1.3		
	CAN	Communication baud rate: 125000bit/s, 250000bit/s, 500000bit/s, 800000bit/s,		
		100000bit/s		
		Supports the CANOPEN protocol		
		Terminal resistance, built-in 120Ω		
		Maximum transmission distance: 100m (125,000 bit/s)		
Commu-		Supported channels: 2		
nication		Isolation mode: no isolation		
	RS485	Can be used as Modbus master or slave (ASCII/RTU)		
		Number of Modbus-RTU slave stations: supports up to 31 Modbus-RTU slave stations		
		Communication baud rate: 9600bit/s, 19200bit/s, 38400bit/s, 57600bit/s, 115200bit/s		
		Supports serial port free protocol		
		Terminal resistance, external 120Ω		
		Maximum transmission distance: 500m (9600bit/s)		
		IUSB cable distance: 1.5m		
	USB	IUSB communication version: USB2.0, full speed		
	000	IUSB interface: Type-C		
		Master/slave: Only master, not slave		
User	EtherNet	Supports EtherNet monitoring PLC, upload & download user programs		
program upgrade	TF card	Downloading user programs through storage expansion cards is not supported		
	Type-C	It does not support Type-C to monitor PLC, upload or download user programs		

Wiring Diagram





Power terminal wiring diagram

S/S0

X0

X1

X2



COM0

YO

Output terminal wiring diagram

RX3U Series Mini PLC

Rtelligent RX series programmable logic controller RX3U-32MR/MT, switching up to 16 in and 16 out, outputs can be selected from transistor or relay outputs. Comes with a Type-C programming interface, routinely equipped with two RS485 interfaces, a CAN interface, support for Y0-Y2 a total of three 150kHz high-speed pulse output, support for variable-speed, uniform-speed pulse single-axis output, command specifications compatible with the Mitsubishi FX3U series. eed, uniform pulse single-axis output. • Switching up to 16 in 16 out, support transistor or relay outputs for output

- With a Type-C programming interface, two RS485 interfaces and one CAN interface
- Support Y0-Y2 3-channel 150kHz high-speed pulse output. Support variable speed, uniform pulse single-axis output
- Command specification compatible with Mitsubishi FX3U series



ĿŁ sensor PNP input connection

Installation Dimension







	RX3U-32MR	RX3U-32MT		
Input level	Drain/Source, S/S to 24V for NPN, S/S to GND for PNP. High-speed counting only supports S/S connection 24V			
Incommunicado	Isolation (on-site and logical) isolation group, 500VAC, 1 minute, see wiring diagram			
Number of digital output points	16-point relay output	16 point NPN output		
Operating temperature	0°C	0°C~55°C		
Humidity	5%~95%	(no condensation)		
Altitude	-1000m~	+2000m		
Air	Dust-proof, non-corrosive, lower salt spray, humidity, dust and fog environments, SO2<0.5ppm, H2S<0.1ppm, RH<60%, no condensation			
Insulation voltage/High voltage insulation	DC 500V 2M Ω or above/end-to-ground 2200VDC, I/O interface end-to-other end 1500VAC (1 minute)			
Storage temperature	-25~70℃			
Resistance to electrical interference	Pulse width 50ns, repetition frequency 5kHz, 2kV peak voltage/noise voltage 1kvp-p 1us pulse 1minute			
Electrostatic discharge	Contact discharge: ±4KV, Air discharge: ±8KV			
Electrically fast transient pulse groups	Power line: 2KV, 5KHz Signal line: 2KV, 5KHz (I/O coupling clip), 1KV, 5KHz (communication coupling clip)			
Vibration resistance	Frequency 10~57Hz, amplitude 0.1mm; frequency 57~150Hz, acceleration 1.0g, three-dimensional direction each 10 times			
Shock resistance	15g for 11ms, 3 impacts in 3D direction			
Grounding (FG)	Third type of groun	ding (not common to strong electrical system)		

Soft component assignment and power-down hold

• Auxiliary relay M

7680 points (M0-M7679), M500-M1023 permanently held

General use	Outage retention	General use
M0-M499	M500-M1023	M1024-M7679
500 points	524 points	6656 points

Status S

4096 points, S500-S999 permanently held

General use	Outage retention	General use
S0-S499	S500-S999	S1000-S4095
500 points	500 points	3096 points

• Timer T

512 points, T246-T255 remain active

100ms type	10ms type	1ms accumulation type	100ms cumulative type	1ms type
0.1-3276.7 sec	0.01-327.67 sec	0.001-32.767 sec	0.1-3276.7 sec	0.001-32.767 sec
T0-T199	T200-T245	T246-T249 4 points execution interruption	T250-T255	T256-T511
200 points	46 points		6 points	256 points

Counter C

256 points, C100-C199, C220-C255 to remain in use

16-bit incremental counter 0-32767 counts		32-bit increment counter -2,147,483,648-+2,147,483,647		High-speed counter
General use	Outage retention	General use	Outage retention	Outage retention
C0-C99 100 points	C100-C199 100 points	C200-C219 20 points	C220-C234 15 points	C235-C255 21 points

Data register D

D0-D8511 without file registers

General use	Outage retention	General use	Special use
D0-D199	D200-D2199	D2200-D7999	D8000-D8511
200 words	2000 words	5800 words	512 words











Installation Dimension







Power terminal wiring diagram

	COM0
load	Y0
load	Y1
load	Y2

Output terminal wiring diagram

5/S0	
X0	
X1	
X2	



Input terminal wiring diagram

NPN output connection









Card Type IO Module

Rtelligent RE series IO expansion module is a digital input and output expansion module developed based on EtherCAT fieldbus communication. The modules take up little space, are fast, and use pluggable spring crimp terminals for fast wiring.

- Expansion module with IO action indicator panel
- IO terminal voltage range: 18V ~30V
- Digital inputs are bipolar digital, digital outputs are common-negative NPN outputs.
- Isolation mode: optocoupler isolation
- Input default digital filtering is 2ms



Model	Description
RE-1616-N	16 points bipolar digital input/16 points NPN digital output expansion module
RE-3200-N	32 points bipolar digital input expansion module
RE-0032-N	32 points NPN digital output expansion module

Panel Indicator Light

Indicator light	Function	Description
PWR	Power supply indicator	Module power supply normal indicator light is always on
СОМ	COM module online indicator	COM module online indicator module normal communication online is always on, off is always off
ERR	ERR module alarm indicator	Normal status is off, alarm is blinking

21



Output connector









2

Installation Guide



REC1 Coupler

Rtelligent RE series coupler, support EtherCAT industrial bus protocol, REC1 coupler itself comes with 8-way input signal and 8-way output signal. Up to 8 IO modules can be expanded, the actual number and configuration is limited by the power consumption of each module. It has EtherCAT watchdog protection and module dropout protection, and can output alarms and module online prompts.

- Working voltage:DC input voltage 24VDC, working voltage input range: 20V~28V
- X0~X7 are bipolar inputs, and Y0~Y7 are common negative NPN outputs
- Digital input IO terminal voltage range:18V~30V
- Input default digital filtering is 2ms







Panel Indicator Lights

Indicator Light	Function	Remark
PWR	Panel indicator light	Coupler power supply normal indicator light, always on
RUN	EtherCAT run indicator light	The coupler remains lit in EtherCAT op state and flashes in EtherCAT non op state
ERR	ERR EtherCAT ERR indicator light	Coupler EtherCAT error flashing, error free ERR light always off
CF	Coupler alarm indicator light	Normal state is off, if coupler alarm CF flashes

PDO parameter description

Туре	Name	Size
PDO input	Digital input CH1-8bit	8bit
1 DO Input	Device status	32bit
PDO output	Digital output CH1-8bit	8bit
	Output mode after lost link	8bit
	Output value after lost link	8bit
	Device control	32bit

• Digital input CH1-8bit

Digital input PDO, if the corresponding bit is 1, the optocoupler of the input port will conduct, and if 0, it will not conduct

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
X7	X6	X5	X4	X3	X2	X1	X0

Device status

Bits16~Bits31 are the device alarm codes, 0 is the device normal, and if the device alarms, the corresponding alarm bit is 1

Bit31~Bit24							
Reserve							
Bit23	Bit22	Bit21	Bit20	Bit19	Bit18	Bit17	Bit16
Reserve	Module ack error	Module timeout	Module link error	ECAT link error	Module scan error	Memory error	MCU error

Bit0~Bit15 indicate whether modules 1~16 are connected (module 1 is located near the coupler, supporting a maximum of 16 modules), and 1 indicates that the module is connected normally, 0 indicates that the module is not connected (this status is updated in real-time)

- T-	23	2		
-1			ю	=

Real time connection status of expansion module

• Digital output CH1-8bit

Digital output PDO, if the corresponding bit is 1, the optocoupler of the output port will conduct; if it is 0, it will not conduct.

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0

Output mode after lost link

Digital output IO mode configuration, if the corresponding bit is 0, the corresponding IO is mode 0: the device alarm IO maintains the original output; 1 corresponds to IO mode 1: Device alarm the IO output is set by the Output value after loss link; The default output mode after loss link is 0

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0

Output value after lost link

When the digital output IO is in mode 1, the device alarm IO output is set by the Output value after loss link; Output value after loss link defaults to 0

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0

• Device control

Bit31~Bit0	
reserve	

Bit0

Installation Guide











Wiring Diagram





Input connector

Installation Dimension





Fieldbus Communication Slave IO module

EIO11616 is a digital input and output extension module developed by Rtelligent based on EtherCAT bus communication. RTEC1616 has 16 NPN single-ended common anode input ports and 16 common cathode output ports, 4 of which can be used as PWM output functions. In addition, the series of extension modules have two installation ways for customers to choose.

- Communication mode: EtherCAT
- Input and output: Input common anode 16/Output common cathode 16
- Power supply voltage: 24VDC
- PWM output: OUT11-OUT14, adjustable duty cycle 0~100%
- *EIO1616B has no PWM output function, if you need this function, please choose EIO1616

Application Diagram





Installation Dimension





EIO1616









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