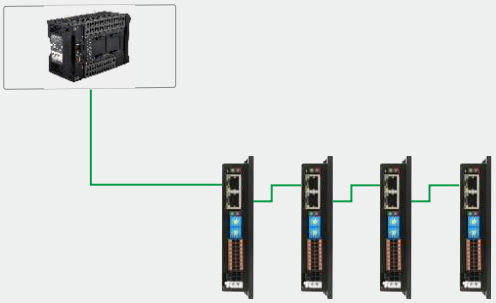
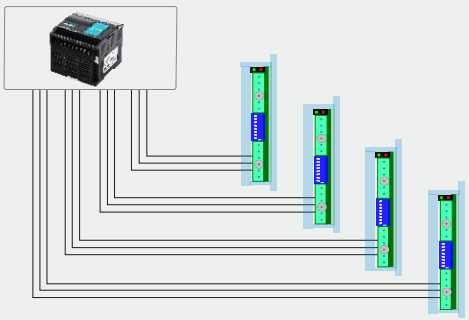
FieldBus Communication Driver Solution

Overview of fieldbus control

FieldBus communication: The control command is sent to the driver through the fieldbus communication, and the driver executes the corresponding command action	Overview	**Pulse control:** The control commands are converted to pulses and sent to the driver. The driver counts the pulses. The motor is driven by pulses to complete the command action.
Simple/efficient wiring flexible control function/positioning, fixed speed, torque control, etc. Easy to build multi-axis control system/convenient debugging All interfaces require a unified fieldbus protocol type	Features	Wiring alignment is relatively more/ Prone to signal interference Single control function / Pulse positioning Suitable for small control systems Simple and intuitive, low stand-alone cost
	Diagram	

Simtach fieldbus stepper products series

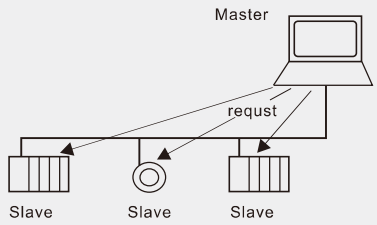
NT Series - 485 Communication	EP Series - TCP Communication	EC Series - EtherCAT Communication
Modbus RTU	Modbus TCP	EtherCAT

Modbus RTU

Serial communication protocol based on 485 interface

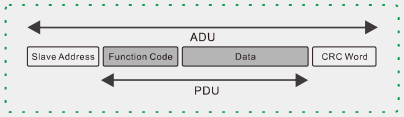
Overview of Modbus RTU protocol

Diagram



Modbus RTU broadcast mode block diagram

Command format



Command format:
Slave address + function code + data + CRC check

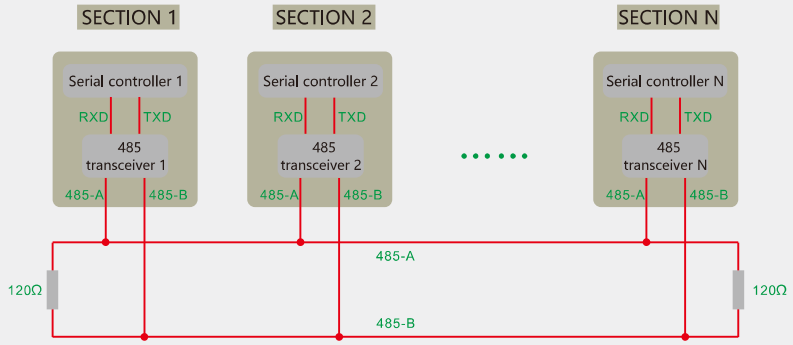
Function code:
0X03 Read hold register
0X06 Write a single register
0X10 Write multiple registers

Features

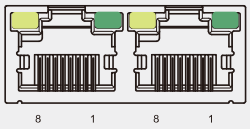
- Broadcast mode
- One master multiple slaves
- Host query and slave response
- Slaves have no priority arbitration rights
- Simple hardware
- Reliable serial communication

485 grids

Two-wire half-duplex wiring diagram



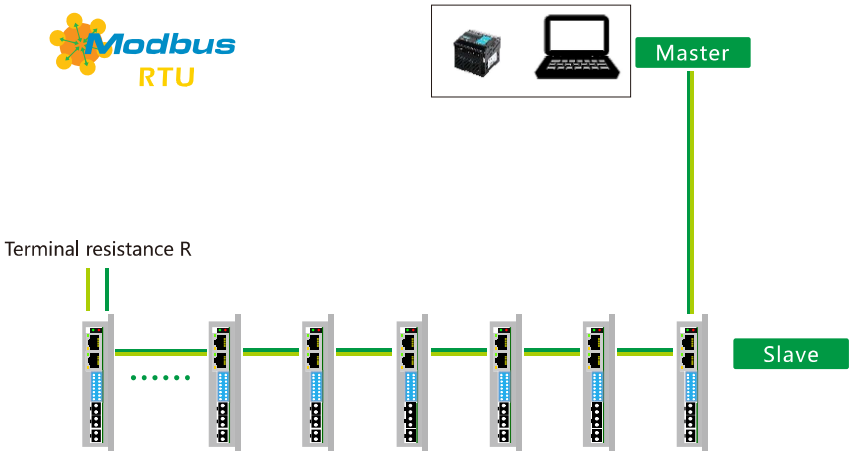
Rj45 wiring definition



Dual RS-485 interface

No.	Definition	Color	No.	Definition	Color
1	RS485-A	Orange &White	5	-	Blue &White
2	RS485-B	Orange	6	—	Green
3	GND	Green &White	7	—	Brown &White
4	—	Blue	8	—	Brown

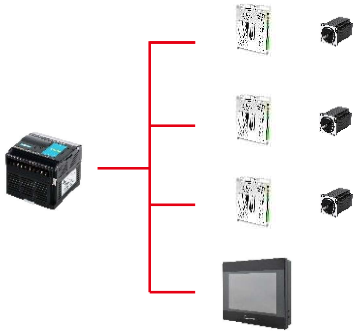
NT series 485 networking diagram



Three Applications of NT Series Stepper Driver

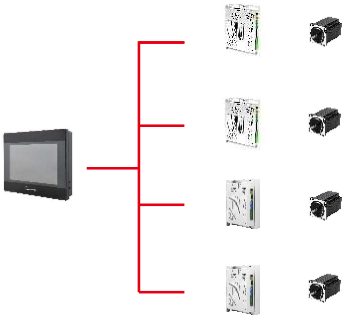
PLC master + NT driver slave

Master+Slave: PLC+NT driver
Easy networking
PLC with 485 communication
Support up to 31 slave stations
Optional touch screen for slave station, quick interaction



Touch screen master + NT driver slave

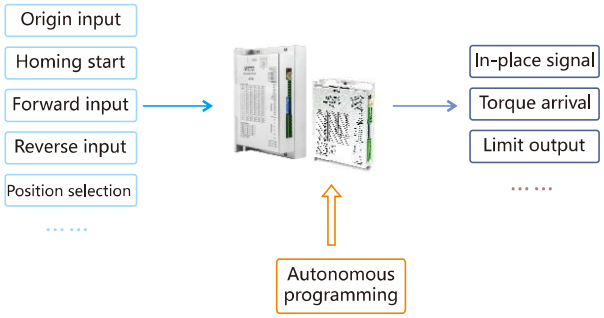
Master + Slave: Touch screen + NT driver
Easy networking
Streamline cost control
Commonly used macro instruction programming mode
For simple logic loop control



NT driver automatic programming mode

Driver automatic programming mode

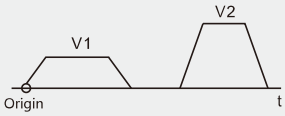
No networking required
Use the integrated motion control instructions inside the driver
With external IO control
Fixed speed/positioning/multi-stage position/auto-homing etc functions.



Function in self-programming mode

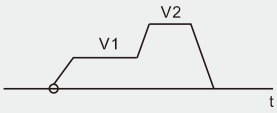
IO positioning operation

IO forward and backward
One or more target position
With homing function



IO speed control operation

IO forward and backward
One or more target speeds



IO torque mode

IO forward and backward
Target torque switching
With homing function

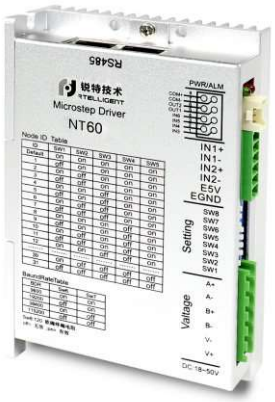
Torque-position mode

IO forward and backward
Target torque and position switching
With homing function

NT series specifications

Model	Peak current	Weight	Power voltage	Dimension	Communication mode	Maximum baud rate	Matched motor
NT60	6A	300g	24-50VDC	118×76×33mm	485	115200	Below 60mm open/closed loop
NT86	8A	700g	18-80VAC	151×97×52mm	485	115200	86mm open/closed loop
NT110	8A	1400g	110-230VAC	151×141×58mm	485	115200	110mm open/closed loop

NT60

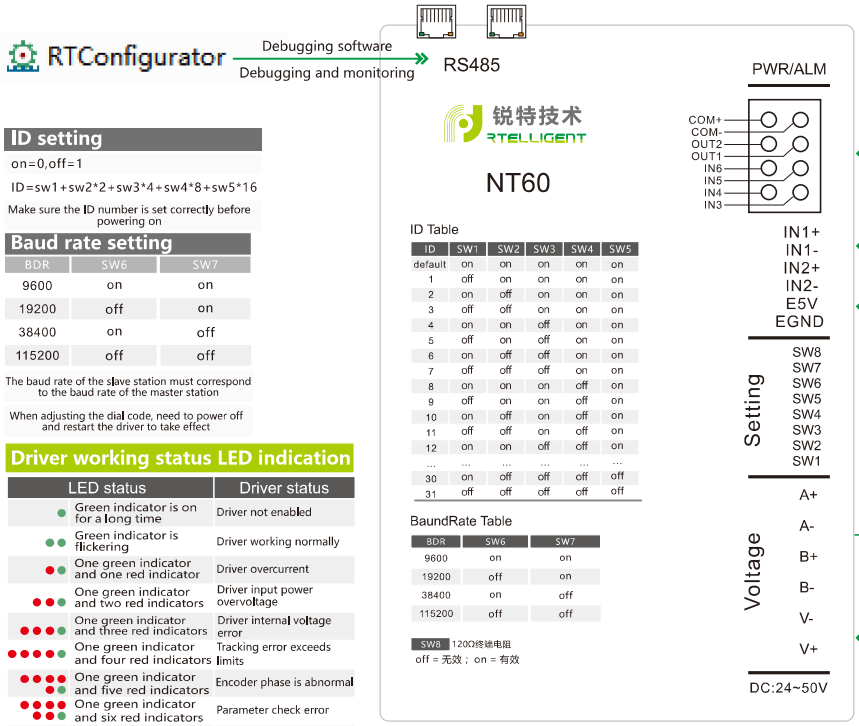


485 fieldbus stepper driver NT60, based on RS-485 network to run Modbus RTU protocol, integrated intelligent motion control function.

NT60 matches open loop or closed loop stepper motors base below 60mm.

- Control mode: fixed length/fixed speed/homing/multi-speed/multi-position
- Debugging software: RTConfigurator (multiplexed RS485 interface)
- Power voltage: 24-50V DC
- Typical applications: single axis electric cylinder, assembly line, connection table, multi-axis positioning platform, etc.

Driver function description



ID Table

ID	SW1	SW2	SW3	SW4	SW5
default	on	on	on	on	on
1	off	on	on	on	on
2	on	off	on	on	on
3	off	off	on	on	on
4	on	on	off	on	on
5	off	on	off	on	on
6	on	off	off	on	on
7	off	off	off	on	on
8	on	on	on	off	on
9	off	on	on	off	on
10	on	off	on	off	on
11	off	off	on	off	on
12	on	on	off	off	on
...	...	...	...	...	...
30	on	off	off	off	off
31	off	off	off	off	off

BaundRate Table

BDR	SW6	SW7
9600	on	on
19200	off	on
38400	on	off
115200	off	off

SW8 120Ω终端电阻
off = 无效； on = 有效

ID setting

on=0,off=1

ID=sw1+sw2*2+sw3*4+sw4*8+sw5*16

Make sure the ID number is set correctly before powering on

Baud rate setting

BDR	SW6	SW7
9600	on	on
19200	off	on
38400	on	off
115200	off	off

The baud rate of the slave station must correspond to the baud rate of the master station

When adjusting the dial code, need to power off and restart the driver to take effect

Driver working status LED indication

LED status	Driver status
Green indicator is on for a long time	Driver not enabled
Green indicator is flickering	Driver working normally
One green indicator and one red indicator	Driver overcurrent
One green indicator and two red indicators	Driver input power overvoltage
One green indicator and three red indicators	Driver internal voltage error
One green indicator and four red indicators	Tracking error exceeds limits
One green indicator and five red indicators	Encoder phase is abnormal
One green indicator and six red indicators	Parameter check error
One green indicator and seven red indicators	Motor phase failure alarm

Input interface

Input 1	IN1+	Differential input or encoder input interface
	IN1-	
Input 2	IN2+	
	IN2-	
Input 3	IN3	Single-ended common anode input
Input 4	IN4	
Input 5	IN5	
Input 6	IN6	
	COM+	Common input

Output interface

Output 1	OUT1	
Output 2	OUT2	
	COM-	Common output

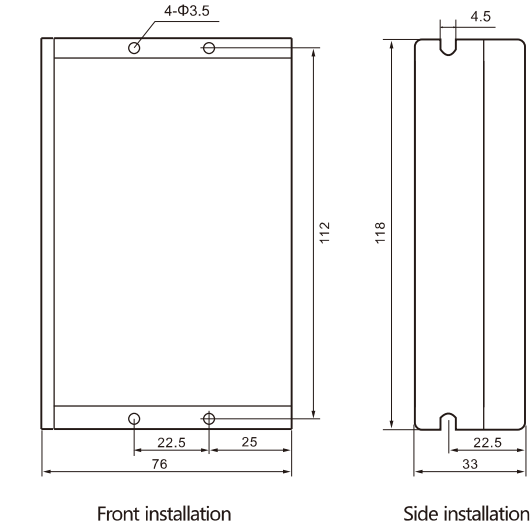
Motor interface

A+	Motor Phase A	Arbitrarily change the phase A or B winding sequence, the motor will be reversed
A-		
B+	Motor Phase B	
B-		

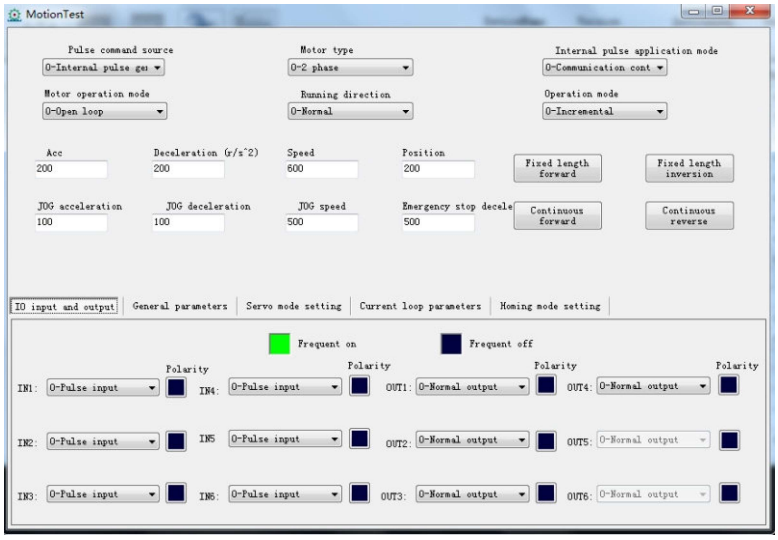
Power supply interface

V+	Power positive	24~50V
V-	Power negative	Power over 150W

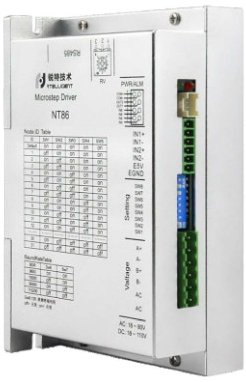
Installation size



Debugging software interface



NT86

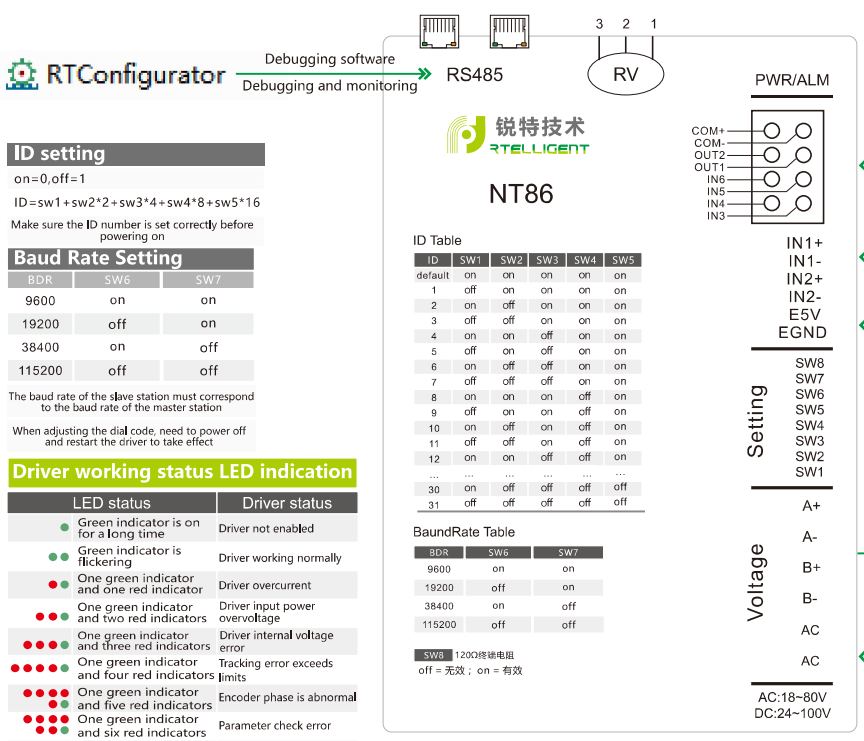


485 fieldbus steppper driver NT86, based on RS-485 network to run Modbus RTU protocol, integrated intelligent motion control function.

NT86 matches open loop or closed loop 86mm stepper motors.

- Control mode: fixed length/fixed speed/homing/multi-speed/ multi-position/potentiometer speed regulation
- Debugging software: RTConfigurator (multiplexed RS485 interface)
- Power voltage: 24-100V DC, 18-80V AC
- Typical applications: single axis electric cylinder, assembly line, connection table, multi-axis positioning platform, etc.

Driver function description



ID setting

on=0,off=1

ID=sw1+sw2*2+sw3*4+sw4*8+sw5*16

Make sure the ID number is set correctly before powering on

Baud Rate Setting

BDR	SW6	SW7
9600	on	on
19200	off	on
38400	on	off
115200	off	off

The baud rate of the slave station must correspond to the baud rate of the master station

When adjusting the dial code, need to power off and restart the driver to take effect

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3	off	off	on	on	on
4	on	on	off	on	on
5	off	on	off	on	on
6	on	off	off	on	on
7	off	off	off	on	on
8	on	on	on	off	on
9	off	on	on	off	on
10	on	off	on	off	on
11	off	off	on	off	on
12	on	on	off	off	on
...	...	...	...	...	...
30	on	off	off	off	off
31	off	off	off	off	off

BaundRate Table

BDR	SW6	SW7
9600	on	on
19200	off	on
38400	on	off
115200	off	off

SW8 120Ω终端电阻
off = 无效； on = 有效

Driver working status LED indication

LED status	Driver status
Green indicator is on for a long time	Driver not enabled
Green indicator is flickering	Driver working normally
One green indicator and one red indicator	Driver overcurrent
One green indicator and two red indicators	Driver input power overvoltage
One green indicator and three red indicators	Driver internal voltage error
One green indicator and four red indicators	Tracking error exceeds limits
One green indicator and five red indicators	Encoder phase is abnormal
One green indicator and six red indicators	Parameter check error
One green indicator and seven red indicators	Motor phase failure alarm

Input interface

Input 1	IN1+ / IN1-	Differential input or encoder input interface
Input 2	IN2+ / IN2-	
Input 3	IN3	Single-ended common anode input
Input 4	IN4	
Input 5	IN5	
Input 6	IN6	
	COM+	Common input

Output interface

Output 1	OUT1	
Output 2	OUT2	
	COM-	Common output

Motor interface

A+ / A-	Motor Phase A	Arbitrarily change the phase A or B winding sequence, the motor will be reversed
B+ / B-	Motor Phase B	

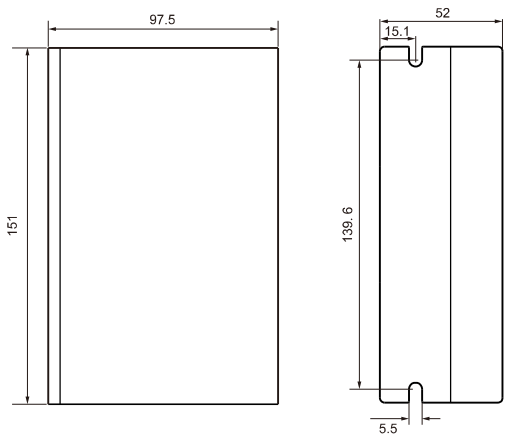
Power supply interface

AC / AC	AC input	18-80VAC /24-100VDC Power over 150W

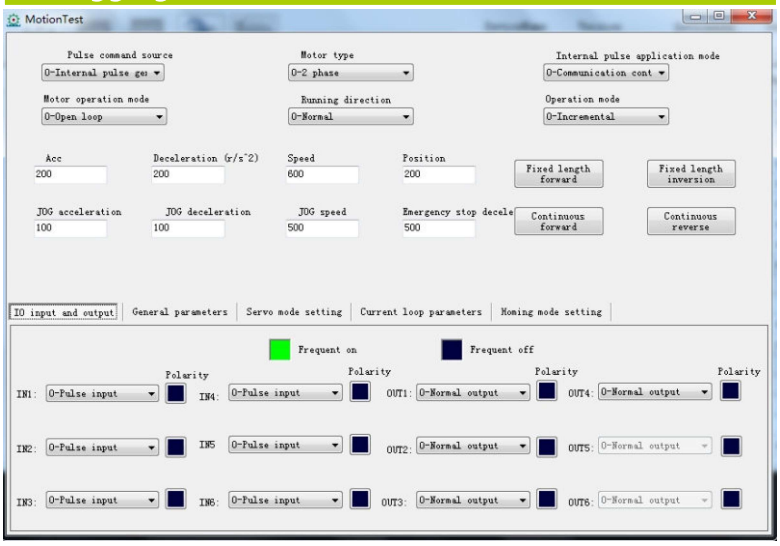
Potentiometer interface RV

RV1/RV2/RV3	Three-terminal of potentiometer

Installation size



Debugging software interface

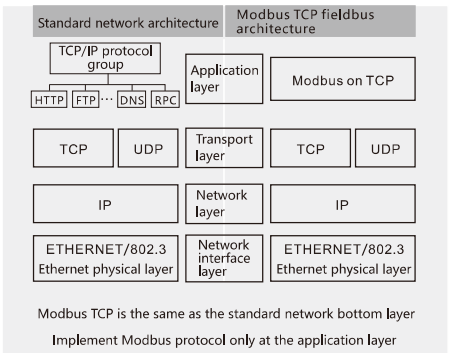


Modbus TCP

Industrial Ethernet FiledBus communication protocol based on TCP/IP

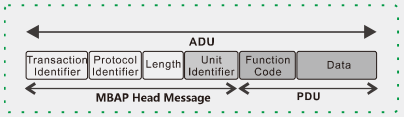
Overview of Modbus TCP protocol

Diagram



Modbus TCP is the same as the standard network bottom layer

Implement Modbus protocol only at the application layer



Command format:

Slave address + function code + data + CRC check

Function code:

0X03 Read hold register

0X06 Write a single register

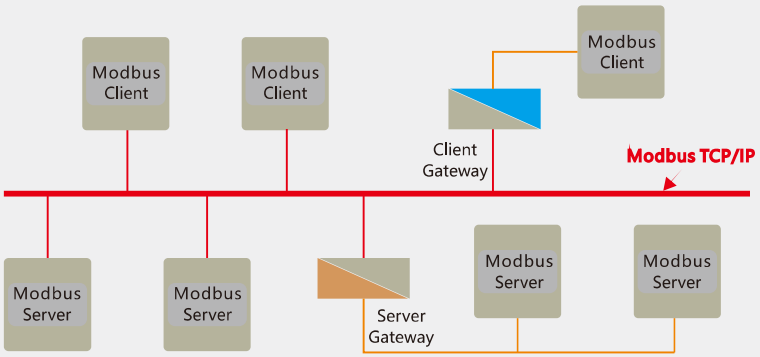
0X10 Write multiple registers

Features

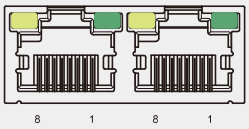
- Compatible with standard Ethernet
- Low cost of network implementation
- Easy to interconnect with various systems
- High-speed data transfer rate
- The supporting equipment is relatively mature
- Convenient for remote debugging and monitoring

TCP network interface

TCP network wiring diagram



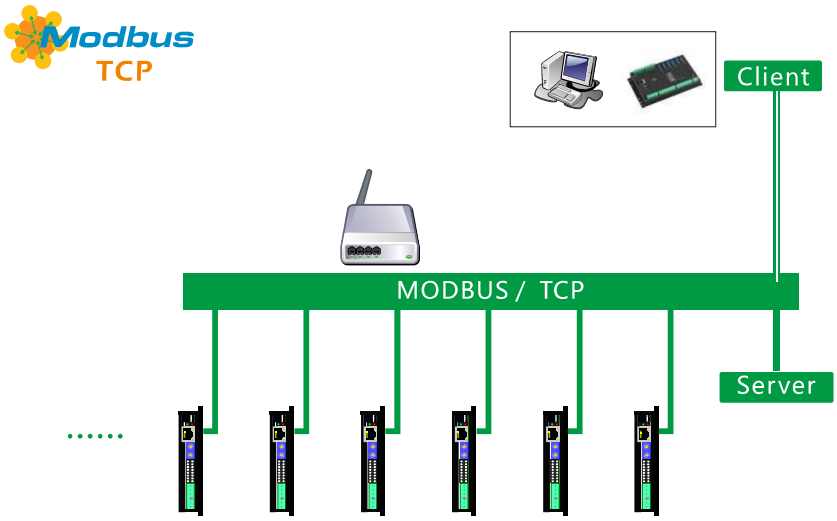
Rj45 wiring definition



Standard 100Base-TX interface

No.	Definition	Color	No.	Definition	Color
1	TX+	Orange &White	5	–	Blue &White
2	TX–	Orange	6	RX–	Green
3	RX+	Green &White	7	—	Brown &White
4	––	Blue	8	—	Brown

EP series network diagram



EPR60

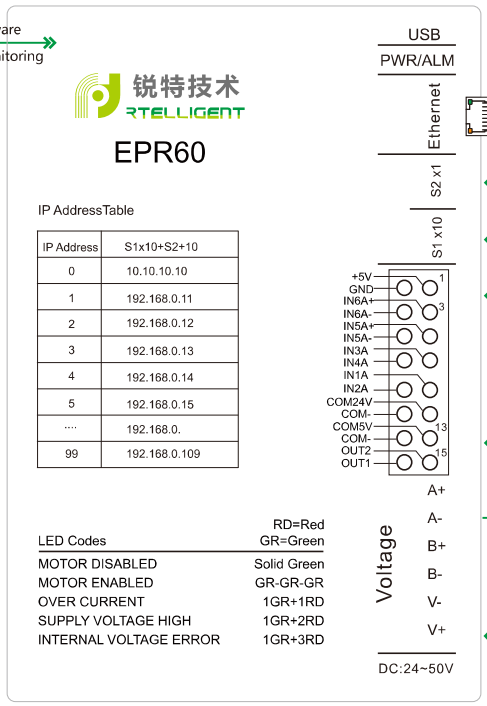
The Ethernet fieldbus-controlled stepper driver EPR60 runs on the Modbus TCP protocol based on standard Ethernet interface and integrates a rich set of motion control functions.

The EPR60 is compatible with open-loop stepper motors base below 60mm.

- Control mode: fixed length/fixed speed/homing/multi-speed/multi-position
- Debugging software: RTConfigurator (USB interface)
- Power voltage: 24-50V DC
- Typical applications: assembly lines, warehousing logistics equipment, multi-axis positioning platforms, etc.

Driver function description

RTConfigurator — Debugging software → Debugging and monitoring



Ethernet interface

IP address setting

Input and output interface

Motor cable

Power supply: 24-50V

IP setting

IP Add = S1*10 + S2 + 10

Make sure the IP number is set correctly before powering on

IP AddressTable

IP Address	S1x10+S2+10
0	10.10.10.10
1	192.168.0.11
2	192.168.0.12
3	192.168.0.13
4	192.168.0.14
5	192.168.0.15
....	192.168.0.
99	192.168.0.109

Driver working status LED indication

LED status	Driver status
Green indicator is on for a long time	Driver not enabled
Green indicator is flickering	Driver working normally
One green indicator and one red indicator	Driver overcurrent
One green indicator and two red indicators	Driver input power overvoltage
One green indicator and three red indicators	Driver internal voltage error
One green indicator and four red indicators	Tracking error exceeds limits
One green indicator and five red indicators	Encoder phase is abnormal
One green indicator and six red indicators	Parameter check error
One green indicator and seven red indicators	Motor phase failure alarm

LED Codes	RD=Red GR=Green
MOTOR DISABLED	Solid Green
MOTOR ENABLED	GR-GR-GR
OVER CURRENT	1GR+1RD
SUPPLY VOLTAGE HIGH	1GR+2RD
INTERNAL VOLTAGE ERROR	1GR+3RD

Input interface

3	IN6+	Differential input or encoder input interface
4	IN6-	
5	IN5+	
6	IN5-	
7	IN3	Single-ended common anode input
8	IN4	
9	IN1	
10	IN2	
11	COM+	Common input

Output interface

16	OUT1	Single-ended common cathode input
15	OUT2	
12/14	COM-	Common output

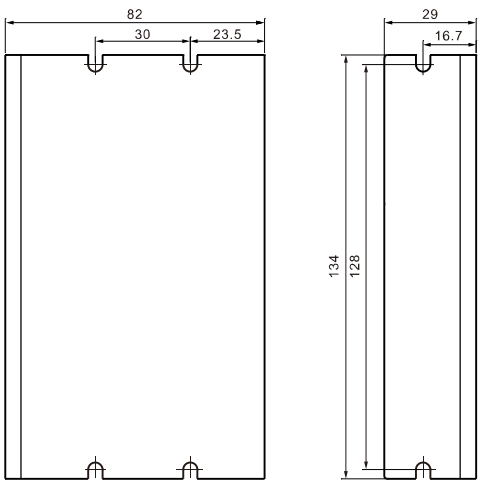
Motor interface

A+	Motor Phase A	Arbitrarily change the phase A or B winding sequence, the motor will be reversed
A-		
B+	Motor Phase B	
B-		

Power supply interface

V+	Power positive	24–48V
V-	Power negative	Power over 150W

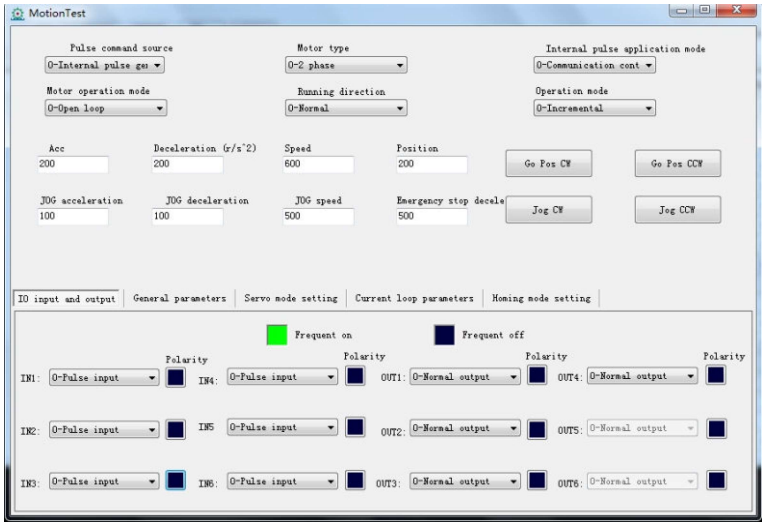
Installation size



Front installation

Side installation

Debugging software interface

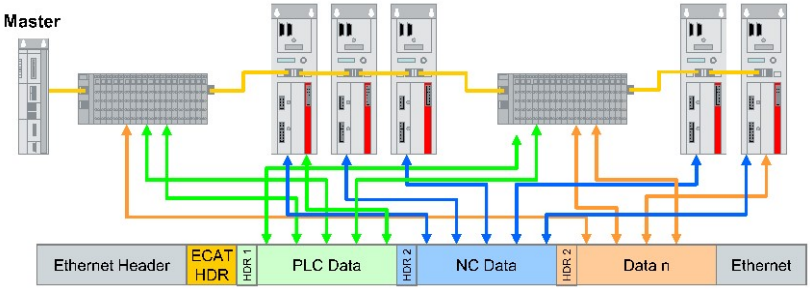


EtherCAT

Real-time FieldBus communication protocol based on industrial Ethernet

EtherCAT overview

ECAT principle

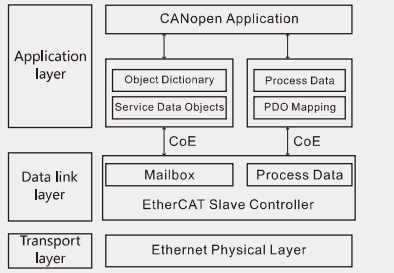


Features

- Efficient transmission mechanism and speed
- Flexible network topology
- Automatic node address configuration for easy maintenance
- Open technology
- Simple hardware, high cost performance
- Suitable for modular collaborative development

CANopen over EtherCAT protocol overview

CoE diagram



EtherCAT modifies the communication mechanism of Ethernet to ensure the real-time performance of the network

CiA402 control mode

Profile Position Mode (PP):
Set position, speed, acceleration and deceleration parameters, and execute relative or absolute position commands from the internal buffer of the driver

Profile Velocity Mode (PV):
Set speed, acceleration and deceleration parameters, and execute the speed command by the internal buffer of the driver on commands from the internal buffer of the driver

Cyclic Synchronous Position Mode (CSP)
The main controller generates a position trajectory and sends the target position (0x607A) to the driver in each PDO update cycle.

Homing Mode (HM)
The relevant parameters need to be set according to the format

PDO and SDO parameters

Process Data Object (PDO):

Process data object

Used to transmit real-time data

Configure the relevant parameters of the driver as PDO parameters, and realize real-time reading and writing of status and commands between the master station and the slave station in each synchronization cycle

For example, parameters such as target position in CSP mode

Service Data Object (SDO):

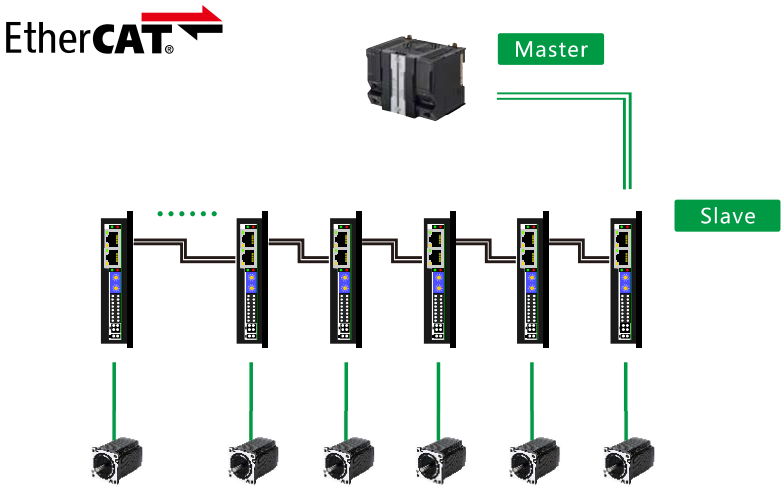
Service Data Objects

Used to configure static parameters,

Configure the driver parameters that do not need to be changed in real time as SDO parameters, and set the relevant parameters of the slave driver on the master station.

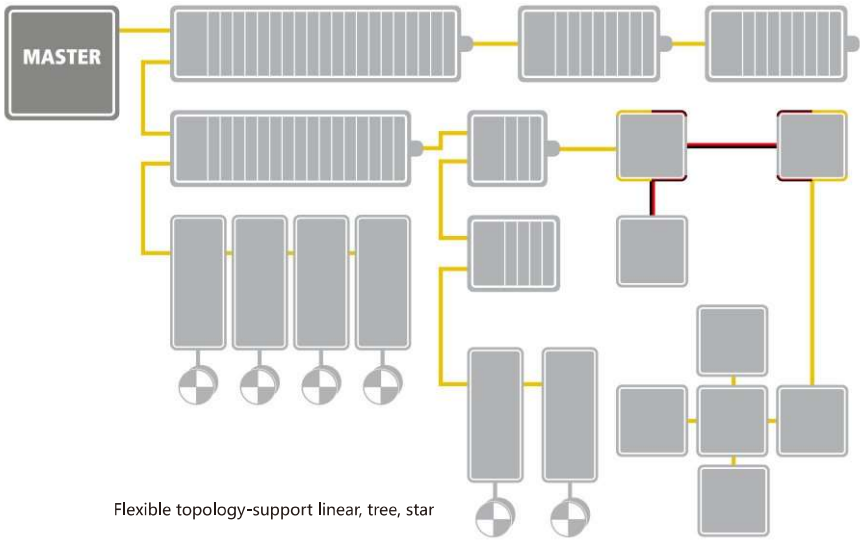
For example, working current and other parameters.

EtherCAT network diagram



EtherCAT Slave Stepper Driver

EtherCAT topology



Flexible topology-support linear, tree, star

Simtach ECAT FieldBus stepper technical specifications

Model	Peak current	Weight	Input voltage range	Dimension	Input and output	Matching motor
ECR42	2A	400g	24-50VDC	134×82×29mm	Six inputs, two outputs	Open loop 20、28、35、39、42
ECR60	6A	400g	24-80VDC	134×82×29mm	Six inputs, two outputs	Open loop 50、60
ECR86	7A	550g	18-80VAC	151×97×35mm	Six inputs, two outputs	Open loop 86
ECT42	2A	400g	24-50VDC	134×82×29mm	Four inputs, two outputs	Closed loop 20、28、42
ECT60	6A	400g	24-80VDC	134×82×29mm	Four inputs, two outputs	Closed loop 57、60
ECT86	7A	550g	18-80VAC	151×97×35mm	Four inputs, two outputs	Closed loop 86

Regularly supported master station brands

BECKHOFF　OMRON　KEYENCE 基恩士　CODESYS　• • •

Zmotion® 正运动技术　INOVANCE　DELTA 台达　XINJE　• • •

ECR60

The EtherCAT fieldbus stepper driver ECR60 is based on the CoE standard framework and complies with the CiA402 standard. The data transmission rate can reach 100Mb/s, and supports linear, ring and other network topologies.

ECR60 matches open loop stepper motors base below 60mm

- Control mode: PP, PV, CSP, HM, etc.
- Power supply voltage: 24-80V DC
- Input and output: 2-channel differential inputs/4-channel 24V common anode inputs; 2-channel optocoupler isolated outputs
- Typical applications: assembly lines, lithium battery equipment, solar equipment, 3C electronic equipment, etc.

Driver function description

Working status LED indication-PWR/ALM

LED status	Driver status
Green indicator is on for a long time	Driver not enabled
Green indicator is flickering	The driver is working normally
One green indicator and one red indicator	Driver overcurrent
One green indicator and two red indicators	Driver input power overvoltage
One green indicator and three red indicators	Driver internal voltage error
One green indicator and six red indicators	Parameter check error
One green indicator and seven red indicators	Motor phase failure alarm

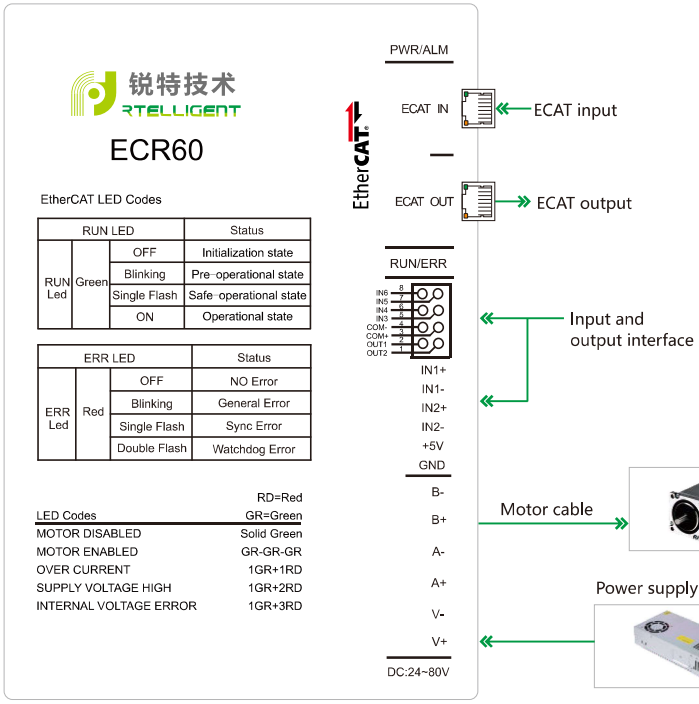
Communication status LED indication-RUN/ERR

LED status		Communication status
RUN GREEN	Not bright	Initialization
	Slow flash	Pre-operational
	Single flash	Safe-operational
	Constant bright	Operational
ERR RED	Not bright	No error
	Slow flash	General error
	Single flash	Sync error
	Double flash	Watchdog error

Slow flash: on for 200ms, off for 200ms; repeat
Single flash: on for 200ms, off for 1s; repeat
Double flash: on for 200ms, off for 200ms, then on for 200ms, off for 1s; repeat

Power supply interface

V-	Power positive	24~80V Power over 150W
V+	Power negative	



Input interface

Input 1	IN1+	Differential input signal
	IN1-	
Input 2	IN2+	5V level input
	IN2-	
Input 3	IN3	Single-ended common anode input
Input 4	IN4	
Input 5	IN5	
Input 6	IN6	
	COM+	24V common input

Internal power output interface

	+5V	Internal 5V power output Supply current 80mA
	GND	

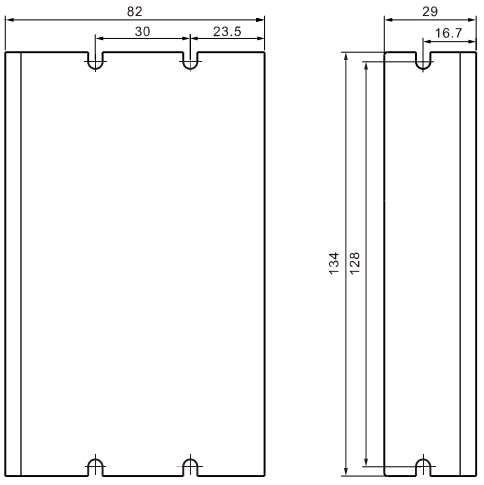
Output interface

Output 1	OUT1	Single-ended common cathode output
Output 2	OUT2	
	COM-	Common output

Motor interface

A+	Motor Phase A	Arbitrarily change the phase A or B winding sequence, the motor will be reversed
A-		
B+	Motor Phase B	
B-		

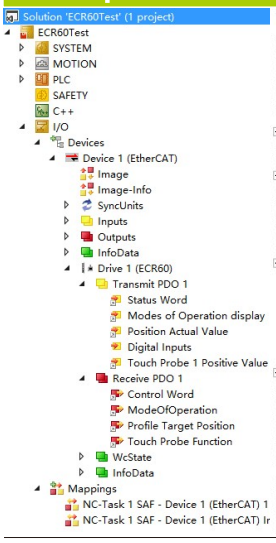
Installation size



Front installation

Side installation

Main parameters and address



Index	Name	Flags	Value
2000	Peak Current	RW P	0x0BB8 (3000)
2001	Motor Resolution	RW P	0x2710 (10000)
2002	Idle Time	RW P	0x03E8 (1000)
2003	Idle Current Percentage	RW P	0x0032 (50)
2005:0	Outputs Function	RW P	> 2 <
2006	Outputs Polarity	RW P	0x0003 (3)
2007:0	Inputs Function	RW P	> 6 <
2008	Inputs Polarity	RW P	0x003F (63)
2009	Filter Time	RW P	0x6400 (25600)
200A	Soft lock Time	RW P	0x03E8 (1000)
200B:0	Current loop parameters	RW P	> 4 <
200B:01	AutoPI enable	RW P	0x0001 (1)
200B:02	Iloop_Kp	RW P	0x03E8 (1000)
200B:03	Iloop_Ki	RW P	0x00C8 (200)
200B:04	Iloop_Kc	RW P	0x0100 (256)
200C:0	Motor parameters	RW P	> 6 <
200D	Invert motor direction	RW P	0x0000 (0)
200E	Alarm Code	RO P	0x0000 (0)
200F	Status Code	RO P	0x0000 (0)
2010	Zero Position	RW P	0x0000 (0)
2011	Control mode	RW P	0x0000 (0)
2020	Encoder Resolution	RW P	0x0FA0 (4000)
2021	Encoder Counter in one rev	RO P	0x0000 (0)

ECR86

The EtherCAT fieldbus stepper driver ECR86 is based on the CoE standard framework and complies with the CiA402 standard. The data transmission rate can reach 100Mb/s, and supports linear, ring and other network topologies.

ECR86 matches open loop stepper motors base below 86mm

- Control mode: PP, PV, CSP, HM, etc.
- Power supply voltage: 24-100V DC / 18-80V AC
- Input and output: 2-channel differential inputs/4-channel 24V common anode inputs; 2-channel optocoupler isolated outputs
- Typical applications: assembly lines, lithium battery equipment, solar equipment, 3C electronic equipment, etc.

Driver function description

Working status LED indication-PWR/ALM

LED status	Driver status
Green indicator is on for a long time	Driver not enabled
Green indicator is flickering	The driver is working normally
One green indicator and one red indicator	Driver overcurrent
One green indicator and two red indicators	Driver input power overvoltage
One green indicator and three red indicators	Driver internal voltage error
One green indicator and six red indicators	Parameter check error
One green indicator and seven red indicators	Motor phase failure alarm

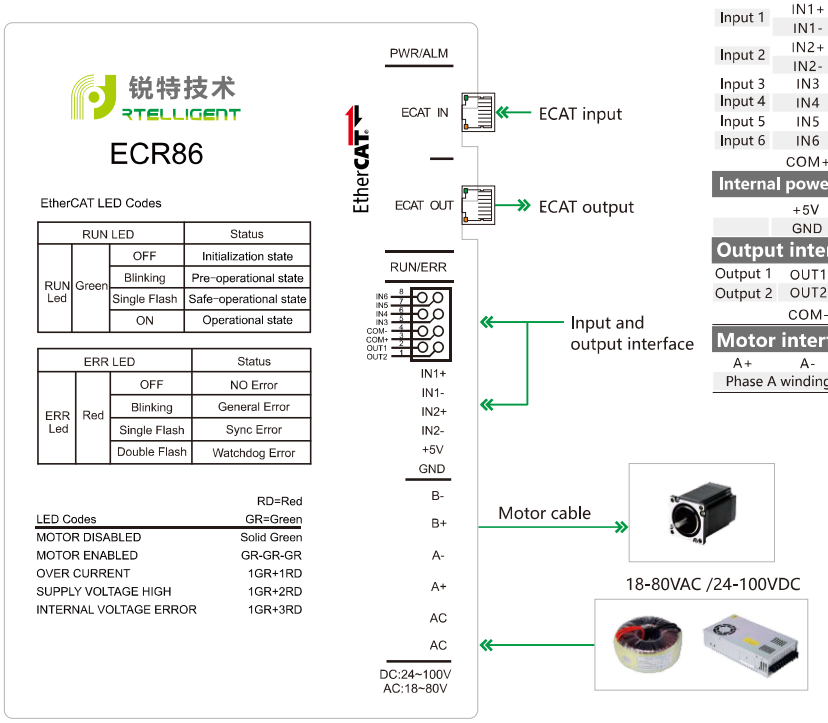
Communication status LED indication-RUN/ERR

LED status		Communication status
RUN GREEN	Not bright	Initialization
	Slow flash	Pre-operational
	Single flash	Safe-operational
	Constant bright	Operational
ERR RED	Not bright	No error
	Slow flash	General error
	Single flash	Sync error
	Double flash	Watchdog error

Slow flash: on for 200ms, off for 200ms; repeat
Single flash: on for 200ms, off for 1s; repeat
Double flash: on for 200ms, off for 200ms, then on for 200ms, off for 1s; repeat

Power supply interface

AC	24-100VDC/18-80VAC
AC	Power over 150W



Input interface

Input 1	IN1+	Differential input signal
	IN1-	
Input 2	IN2+	5V level input
	IN2-	
Input 3	IN3	Single-ended common anode input
Input 4	IN4	
Input 5	IN5	
Input 6	IN6	
	COM+	24V common input

Internal power output interface

	+5V	Internal 5V power output
	GND	Supply current 80mA

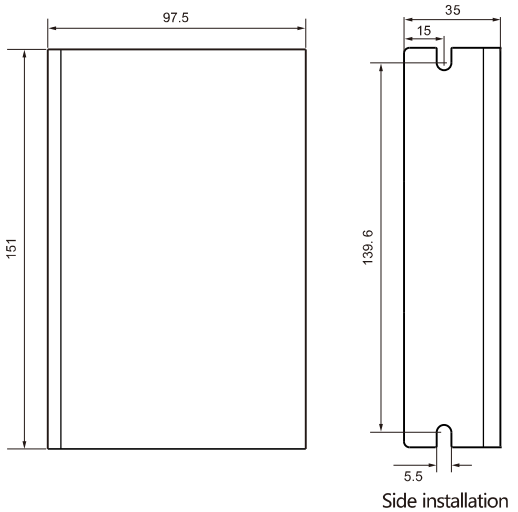
Output interface

Output 1	OUT1	Single-ended common cathode output
Output 2	OUT2	
	COM-	Common output

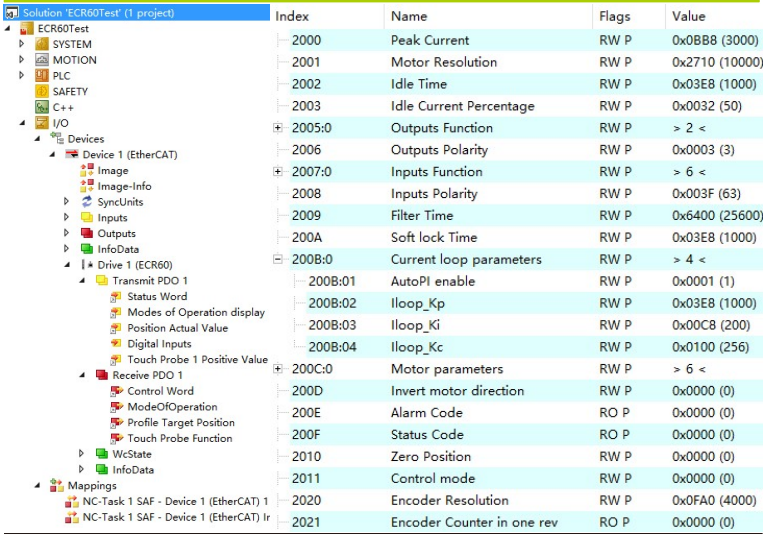
Motor interface

A+	A-	B+	B-
Phase A winding		Phase B winding	

Installation size



Main parameters and address



Index	Name	Flags	Value
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2001	Motor Resolution	RW P	0x2710 (10000)
2002	Idle Time	RW P	0x03E8 (1000)
2003	Idle Current Percentage	RW P	0x0032 (50)
2005:0	Outputs Function	RW P	> 2 <
2006	Outputs Polarity	RW P	0x0003 (3)
2007:0	Inputs Function	RW P	> 6 <
2008	Inputs Polarity	RW P	0x003F (63)
2009	Filter Time	RW P	0x6400 (25600)
200A	Soft lock Time	RW P	0x03E8 (1000)
200B:0	Current loop parameters	RW P	> 4 <
200B:01	AutoPI enable	RW P	0x0001 (1)
200B:02	Iloop_Kp	RW P	0x03E8 (1000)
200B:03	Iloop_Ki	RW P	0x00C8 (200)
200B:04	Iloop_Kc	RW P	0x0100 (256)
200C:0	Motor parameters	RW P	> 6 <
200D	Invert motor direction	RW P	0x0000 (0)
200E	Alarm Code	RO P	0x0000 (0)
200F	Status Code	RO P	0x0000 (0)
2010	Zero Position	RW P	0x0000 (0)
2011	Control mode	RW P	0x0000 (0)
2020	Encoder Resolution	RW P	0x0FA0 (4000)
2021	Encoder Counter in one rev	RO P	0x0000 (0)

ECT60

The EtherCAT fieldbus closed loop stepper driver ECT60 is based on the CoE standard framework and complies with the CiA402 standard. The data transmission rate can reach 100Mb/s, and supports linear, ring and other network topologies.

ECT60 matches closed loop stepper motors base below 60mm

- Control mode: PP, PV, CSP, HM, etc.
- Power supply voltage: 24-80V DC
- Input and output: 4 channels 24V common anode input; 2 channels optocoupler isolated output
- Typical applications: assembly lines, lithium battery equipment, solar equipment, 3C electronic equipment, etc.

Driver function description

Working status LED indication-PWR/ALM

LED status	Driver status
Green indicator is on for a long time	Driver not enabled
Green indicator is flickering	The driver is working normally
One green indicator and one red indicator	Driver overcurrent
One green indicator and two red indicators	Driver input power overvoltage
One green indicator and three red indicators	Driver internal voltage error
One green indicator and four red indicators	Tracking error exceeds limits
One green indicator and six red indicators	Parameter check error
One green indicator and seven red indicators	Motor phase failure alarm

Communication status LED indication-RUN/ERR

LED status		Communication status
RUN GREEN	Not bright	Initialization
	Slow flash	Pre-operational
	Single flash	Safe-operational
	Constant bright	Operational
ERR RED	Not bright	No error
	Slow flash	General error
	Single flash	Sync error
	Double flash	Watchdog error

Slow flash: on for 200ms, off for 200ms; repeat
Single flash: on for 200ms, off for 1s; repeat
Double flash: on for 200ms, off for 200ms, then on for 200ms, off for 1s; repeat

Power supply interface

V-	Power positive	24~80VDC Power over 150W
V+	Power negative	

锐特技术 RTELLIGENT

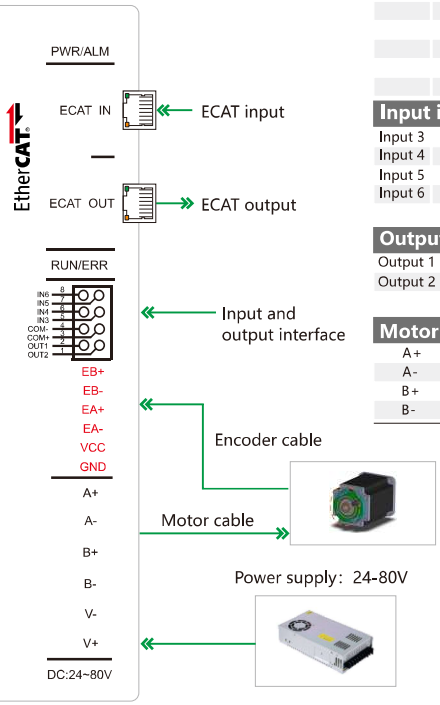
ECT60

EtherCAT LED Codes

RUN LED		Status
RUN Led	Green	OFF: Initialization state
		Blinking: Pre-operational state
		Single Flash: Safe-operational state
		ON: Operational state

ERR LED		Status
ERR Led	Red	OFF: NO Error
		Blinking: General Error
		Single Flash: Sync Error
		Double Flash: Watchdog Error

LED Codes	RD=Red GR=Green
MOTOR DISABLED	Solid Green
MOTOR ENABLED	GR-GR-GR
OVER CURRENT	1GR+1RD
SUPPLY VOLTAGE HIGH	1GR+2RD
INTERNAL VOLTAGE ERROR	1GR+3RD
TRACKING ERROR EXCEEDS LIMITS	1GR+4RD



Encoder interface

	EB+	Encoder phase A/B signal
	EB-	
	EA+	
	EA-	
	VCC	Encoder 5V power supply Provided internally by the driver
	GND	

Input interface

Input 3	IN3	Single-ended common anode input
Input 4	IN4	
Input 5	IN5	
Input 6	IN6	
	COM+	24V common input

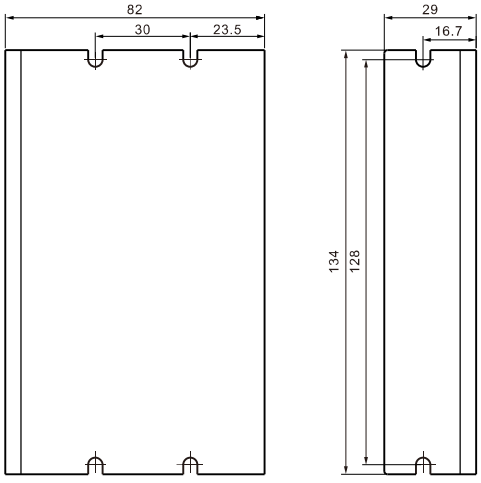
Output interface

Output 1	OUT1	Single-ended common cathode output
Output 2	OUT2	
	COM-	Common output

Motor interface

A+	Closed loop motor cable phase sequence fixed
A-	
B+	Need to connect according to the motor identification
B-	

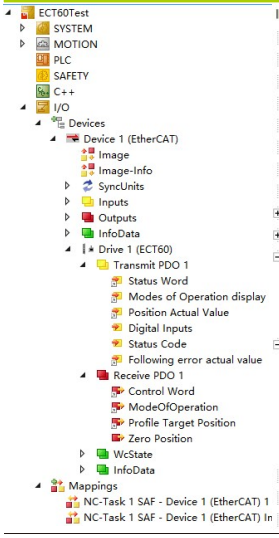
Installation size



Front installation

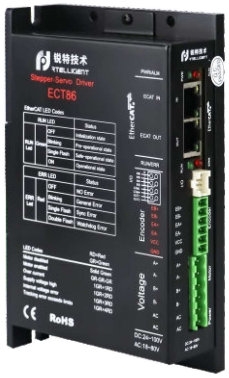
Side installation

Main parameters and address



Index	Name	Flags	Value
200D	Invert motor direction	RW P	0x0000 (0)
200E	Alarm Code	RO P	0x0000 (0)
200F	Status Code	RO P	0x0084 (132)
2010	Zero Position	RW P	0x0000 (0)
2011	Control mode	RW P	0x0000 (0)
2020	Encoder Resolution	RW P	0x0FA0 (4000)
2021	Encoder Counter in one rev	RO P	0x0000 (0)
2022	Position Trae Error Limit	RW P	0x00000FA0 (4000)
2023:0	Position loop parameters	RW P	> 5 <
2024:0	InPosition parameters	RW P	> 3 <
2025:0	Servo Filters	RW P	> 3 <
2025:01	FV1_HZ	RW P	0x00C8 (200)
2025:02	FV2_HZ	RW P	0x0258 (600)
2025:03	FPOUT_HZ	RW P	0x07D0 (2000)
2026:0	Servo mode2 parameters	RW P	> 5 <
2026:01	PVIA_Kp	RW P	0x07D0 (2000)
2026:02	PVIA_Ki	RW P	0x03E8 (1000)
2026:03	PVIA_Kv1	RW P	0x00C8 (200)
2026:04	PVIA_Kv2	RW P	0x0190 (400)
2026:05	PVIA_Kvff	RW P	0x0000 (0)
2043	Speed Reference	RO P	0
2044	Speed Feedback	RO P	0
2048	Bus Voltage	RO P	0x60D1 (24785)

ECT86



The EtherCAT fieldbus closed loop stepper driver ECT86 is based on the CoE standard framework and complies with the CiA402 standard. The data transmission rate can reach 100Mb/s, and supports linear, ring and other network topologies.

ECT86 matches closed loop stepper motors base below 86mm

- Control mode: PP, PV, CSP, HM, etc.
- Power supply voltage: 24-100V DC/18-80V AC
- Input and output: 4 channels 24V common anode input; 2 channels optocoupler isolated output
- Typical applications: assembly lines, lithium battery equipment, solar equipment, 3C electronic equipment, etc.

Driver function description

Working status LED indication-PWR/ALM

LED status	Driver status
Green indicator is on for a long time	Driver not enabled
Green indicator is flickering	The driver is working normally
One green indicator and one red indicator	Driver overcurrent
One green indicator and two red indicators	Driver input power overvoltage
One green indicator and three red indicators	Driver internal voltage error
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One green indicator and seven red indicators	Motor phase failure alarm

Communication status LED indication-RUN/ERR

LED status		Communication status
RUN GREEN	Not bright	Initialization
	Slow flash	Pre-operational
	Single flash	Safe-operational
	Constant bright	Operational
ERR RED	Not bright	No error
	Slow flash	General error
	Single flash	Sync error
	Double flash	Watchdog error

Slow flash: on for 200ms, off for 200ms; repeat
Single flash: on for 200ms, off for 1s; repeat
Double flash: on for 200ms, off for 200ms, then on for 200ms, off for 1s; repeat

Power supply interface

AC	24–100VDC/18-80VAC
AC	Power over 150W

锐特技术 RTELLIGENT

ECT86

EtherCAT LED Codes

RUN LED		Status
RUN Led	Green	OFF: Initialization state
		Blinking: Pre-operational state
		Single Flash: Safe-operational state
		ON: Operational state

ERR LED		Status
ERR Led	Red	OFF: NO Error
		Blinking: General Error
		Single Flash: Sync Error
		Double Flash: Watchdog Error

LED Codes	RD=Red GR=Green
MOTOR DISABLED	Solid Green
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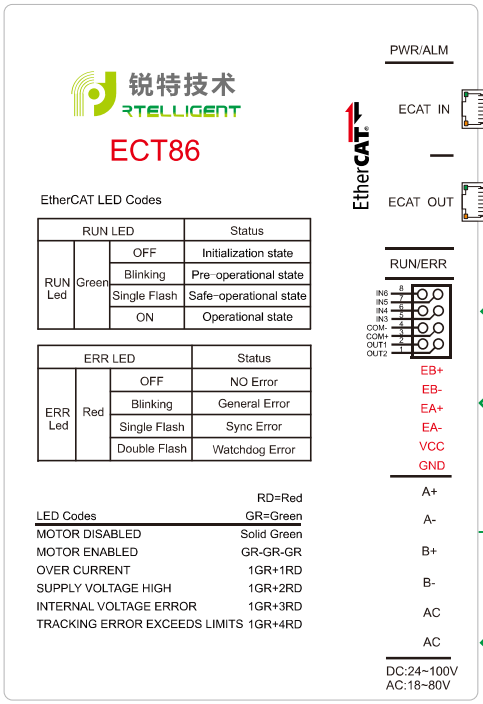
OVER CURRENT	1GR+1RD
SUPPLY VOLTAGE HIGH	1GR+2RD
INTERNAL VOLTAGE ERROR	1GR+3RD
TRACKING ERROR EXCEEDS LIMITS	1GR+4RD



Encoder interface

	EB+	Encoder phase A/B signal
	EB−	
	EA+	
	EA-	
	VCC	Encoder 5V power supply Provided internally by the driver
	GND	

Input interface

Input 3	IN3	Single-ended common anode input
Input 4	IN4	
Input 5	IN5	
Input 6	IN6	
	COM+	24V common input

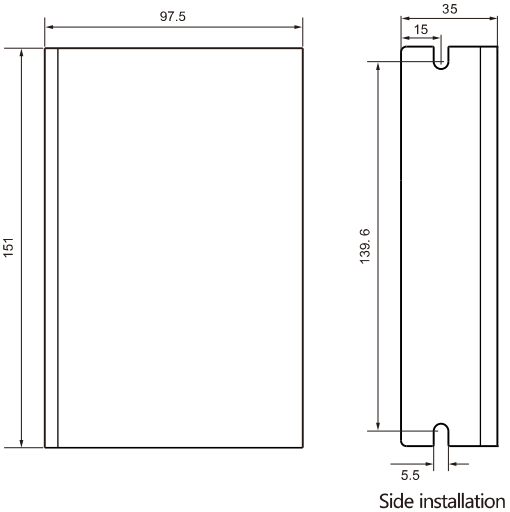
Output interface

Output 1	OUT1	Single-ended common cathode output
Output 2	OUT2	
	COM-	Common output

Motor interface

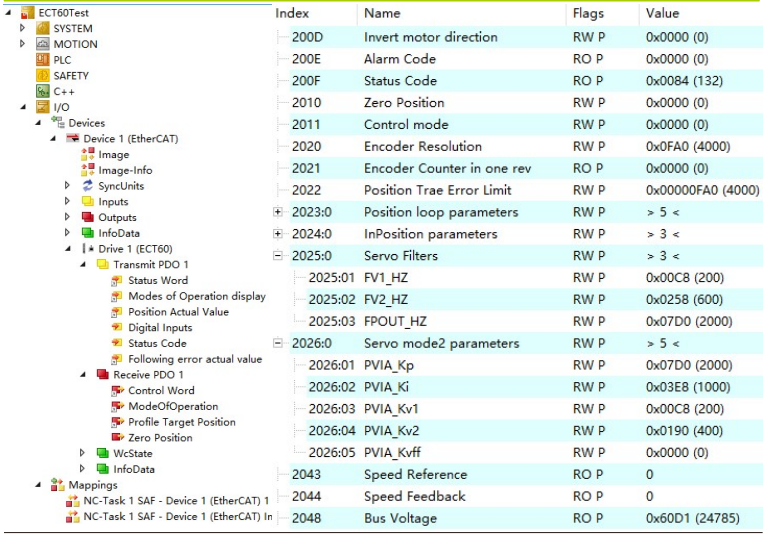
A+	Closed loop motor cable phase sequence fixed
A-	
B+	Need to connect according to the motor identification
B-	

Installation size



Side installation

Main parameters and address



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200E	Alarm Code	RO P	0x0000 (0)
200F	Status Code	RO P	0x0084 (132)
2010	Zero Position	RW P	0x0000 (0)
2011	Control mode	RW P	0x0000 (0)
2020	Encoder Resolution	RW P	0x0FA0 (4000)
2021	Encoder Counter in one rev	RO P	0x0000 (0)
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2026:02	PVIA_Ki	RW P	0x03E8 (1000)
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2026:04	PVIA_Kv2	RW P	0x0190 (400)
2026:05	PVIA_Kvff	RW P	0x0000 (0)
2043	Speed Reference	RO P	0
2044	Speed Feedback	RO P	0
2048	Bus Voltage	RO P	0x60D1 (24785)