Coolmay®
Automation Expert

TK80 series HMI user manual

Thank you for purchasing the Coolmay TK80 series touch screen. This manual mainly explains the product characteristics, general specifications, hardware interfaces, and software setting methods of the MT series touch screen. For detailed programming, please refer to the Coolmay TK80 series (Vcool) touch screen user manual.

High strength performance configuration

- Serial port isolation, stable communication, and ability to adapt to various complex interference environments;
- Based on Linux system, the system is stable, efficient, secure, and reliable;
- Industrial grade high-performance Cortex A7 processor with up to 1GHz main frequency;
- High capacity 256MB FLASH+256MB DDR3, supporting external USB and SD card storage.

Diversified functional modules

- Supports multiple sets of formulas, multiple window functions, data collection, and data alarm functions
- Support macro instructions based on C language development
- Supports Chinese and English input
- Supports common PLC communication protocols on the market
- Supports up to 50 languages for Windows display
- Rich functionality and diverse controls

Complete interface embedding

- Supports multiple communication methods (RS232/RS485, Ethernet)
- Supports USB download, serial port download, Ethernet download, and USB update configuration

A brand new password mechanism

- Configuration file encryption
- Installment payment, HMI protection
- Multiple confidentiality mechanisms, safer and more reliable

Product information

◆Naming rules

TK80 ① 70 ② H ③ - SD ④

1. Product series TK80 series touch screen
2. HMI size 37:3.5 inches 43:4.3 inches 50:5 inches 70:7 inches 100:10 inches 150:15 inches
3. HMI version H: Basic version HV: Basic vertical screen HD: HD version HDV: HD vertical screen
4. HMI optional SD card can be installed except for 8037

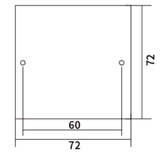
Model	TK8037H	TK8043H	TK8050H	TK8070H/HD	TK8100H	TK8150H
Display panel	3.5"TFT LCD	4.3"TFT LCD	5.0"TFT LCD	7.0"TFT LCD	10.1"TFT LCD	15.0"TFT LCD
Resolution	320*240	480*272	800*480	800*480/1024*600	1024*600	1024*768
Dimension(mm)	88*88*25	134*102*32	151*96*36	210*146*36	275*194*36	386*300*40
Cut-out size	72*72mm	120*94mm	143*86mm	192*138mm	262*180mm	366*280mm
Display	73*56mm	97*56mm	108*65mm	154*87mm	222*125mm	305*229mm
Power comsumption	100mA/24V	150mA/24V	150mA/24V	200mA/24V	280mA/24V	500mA/24V
Weight	0.3kg	0.33kg	0.33kg	0.54kg	0.7kg	3.3kg
Brightness	300cd/m²	400cd/m²	300cd/m²			450cd/m²
Colour	1677W True Color					
Backlight type	LED (0-100 adjustable)					
Backlight life	60000 hours					
Power	12-24VDC±10%<150mA@24VDC					15-24VDC±10% <500mA@24VDC
ROM	128MB (TK8070HD and TK8100H is 256MB)					
RAM	NAND Flash 128MB (TK8070HD and TK8100H is 256MB)					
CPU	Dual core 1GHz					
Operating system	Based on Linux system					
Download port	Type-C、RS232、RS485、Network interface			Type-C、RS232、RS485*2 Network interface	Type-B、RS232、RS485、Network interface	Type-C、RS232、RS485*2 Network interface
EtherNet port	Equipped with Ethernet port (supports downloading programs from the network port and supports Modbus TCP protocol)					
Serial port protocol	Comes with 1 RS232 and 1 RS485 (Supports MODBUS protocol, free port, and Conventional PLC communication protocol)			Comes with 1 RS232 and 2 RS485(Supports MODBUS protocol, free port, and conventional PLC communication protocol)	Comes with 1 RS232 and 1 RS485(Supports MODBUS protocol, free port, and conventional PLC communication protocol)	Comes with 1 RS232 and 2 RS485(Supports MODBUS protocol, free port, and conventional PLC communication protocol)
Shell material	ABS+PC	PBT+PC			ABS+PC	Aluminum alloy + galvanized sheet
USB interface	USB 2.0×1 (USB interface, can be connected to an external U disk for updating programs and uploading and downloading historical data)					
SD card	SD card is optional except for TK8037H					
Perpetual calendar	Yes					
Input voltage	Normally DC24±10%VDC, it can also be specially made into DC12V/DC5V power input.					

(Continued from the table above)

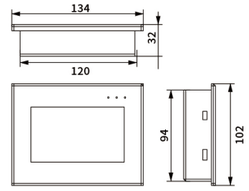
Item	Content
Pressure test	500VAC for 1 minute
Protection level	IP65 (front panel)
Working temperature	-20~60℃
Working humidity	20~90%RH
storage temperature	-20~70℃
Cooling method	Natural air cooling
Contrast	400:1
Allow power outage	Within 20ms
System diagnostics	Power failure detection
Certificate	CE
FCC	Compliant with FCC Class A
Anti interference test	Voltage 1500Vp-p, pulse period 1 μ s. Lasting for 1 second
Shockproof test	10-25Hz (2G in X, Y, Z directions for 30 minutes)
Insulation resistance	Over 10M Ω @ 500VDC
Touch panel	4-wire resistance screen

Mechanical Design Reference

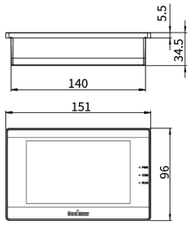
◆ Installation dimensions



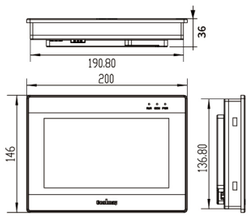
Wall installation
TK8037H



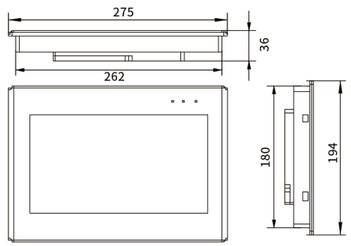
TK8043H



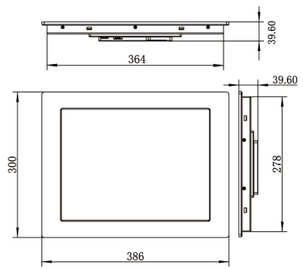
TK8050H



TK8070H/HD



TK8100H



TK8150H

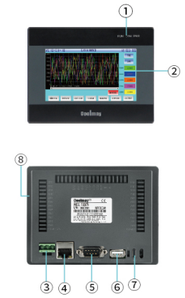
Figure 1 Installation dimensions diagram

Model	Installation dimensions A(mm)	Installation dimensions B(mm)	Dimensions W*H*D(mm)
TK8037H	72	72	88*88*25
TK8043H	120	94	134*102*32
TK8050H	143	86	151*96*36
TK8070H/HD	192	138	200*146*36
TK8100H	262	180	275*194*36
TK8150H	366	280	386*300*40
※ More specifications can be customized			

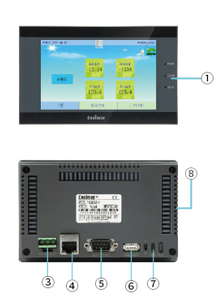
Electrical design reference

◆Product structure

TK8037H



TK8043H



TK8050H

TK8070H/HD

TK8100H

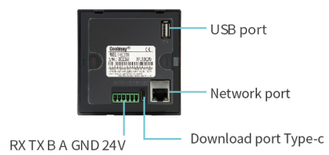
TK8150H

① PWR:Indicator light COM: PLC and touch screen Flash during communication ② LCD ③ Terminal block for power supply ④ Network port (built-in) ⑤ RS232/RS485 ⑥ USB Port ⑦ Touch screen programming port ⑧ Four mounting buckle holes on the side

Figure 2 Product structure

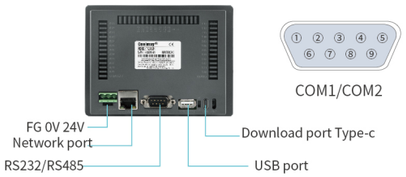
◆ Hardware interface

TK8037H



Pin number	Description
RS232 Communication Port Definition	
RXD	Receive
TXD	Send
GND	Ground wire/DC24V-
RS485 Communication Port Definition	
A	485+
B	485-
DC24V power supply	
24V	DC24V+
GND	Ground wire/DC24V-

TK8043H



Pin number	Signal	Description
RS232 Communication Port Definition		
2	RXD	Receive
3	TXD	Send
5	GND	Ground wire
RS485 Communication Port Definition		
1	A	485+
6	B	485-

TK8050H

COM1/COM2

FG 0V 24V
Network port
USB port
Touch screen download port Type-c
Touch Screen RS232/RS485

Pin number	Signal	Description
RS232 Communication Port Definition		
2	RXD	Receive
3	TXD	Send
5	GND	Ground wire
RS485 Communication Port Definition		
1	A	485+
6	B	485-

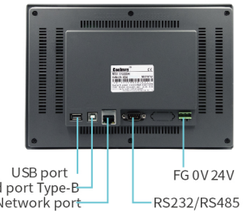
TK8070H/HD

COM

Network port
USB port
Download port Type-c
FG 0V 24V
RS232
RS485
RS485

Pin number	Signal	Description
RS232 Communication Port Definition		
2	RXD	Receive
3	TXD	Send
5	GND	Ground wire
RS485 Communication Port Definition		
The first RS485	A1	485+
	B1	485-
The second RS485	A	485+
	B	485-

TK8100H



COM1

USB port
Download port Type-B
Network port
FG 0V 24V
RS232/RS485

Pin number	Signal	Description
RS232 Communication Port Definition		
2	RXD	Receive
3	TXD	Send
5	GND	Ground wire
RS485 Communication Port Definition		
1	A	485+
6	B	485-

TK8150H

COM

Network port
USB port
Download port Type-c
FG 0V 24V
RS232
RS485

Pin number	Signal	Description
RS232 Communication Port Definition		
2	RXD	Receive
3	TXD	Send
5	GND	Ground wire
RS485 Communication Port Definition		
The first RS485	A1	485+
	B1	485-
The second RS485	A	485+
	B	485-

Software parameter settings

The software supports adding two different protocols and can communicate with two serial devices simultaneously.
Note: COM1 indicates the use of RS232, while COM2 indicates the use of RS485.

Selection of human-machine interface parameters:

Landscape signal	Human machine interface parameters (landscape)
TK8037H	TK8037H[320*240]
TK8043H	TK8043H[480*272]
TK8050H	TK8050H[800*480]
TK8070H	TK8070H[800*480]
TK8070HD	TK8070HD[1024*600]
TK8100H	TK8100H[1024*600]
TK8150H	TK8150H[1024*768]

Instructions for connecting touch screen with PLC of various brands

Section 1: Coolmay CX Series

RS232 connection:

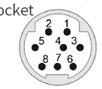
(1)Vcool software settings:

Parameter item	Recommended settings
Communication protocol	CoolMay PLC(3U/3G)/FX3U
Port	COM1
Baud rate	9600
Data bits	7
Check bit	EVEN
Stop bit	1

(2) Use of HMI and Coolmay CX/MX series PLC RS232 communication line connection diagram "CX2N download cable"

TK80 series touch screen side connection 9-hole D-shaped female base

Coolmay PLC side connection 8-pin male socket



2	RXD	5	RXD
3	TXD	4	TXD
5	GND	8	GND

RS485 connection:

(1)Vcool software settings:

Parameter item	Recommended settings
Communication protocol	CoolMay PLC(3U/3G)/FX3U
Port	COM2
Baud rate	9600
Data bits	7
Check bit	EVEN
Stop bit	1

(2) HMI and coolmay CX/MX series PLC RS485 communication line connection diagram

TK80 series touch screen side connection 9-hole D-shaped female base

Coolmay PLC side connection 5PIN terminal

1	A	A	485-
6	B	B	485+

Note: TK8037H communication line configuration:
1. To communicate with Coolmay FX2NC series/DX2N series/Mitsubishi PLC, use "customized line for communication with DX2N (FX2NC) PLC";
2. To communicate with Coolmay FX3GC series/CX3G series/CX2N series/DCX2N series PLC, use the "customized line for communication with CX2N PLC".

Section 2 Panasonic FP Series

(1)Vcool software settings:

Parameter item	Recommended settings
Communication protocol	Matsushita FP Series
Port	COM1
Baud rate	9600
Data bits	8
Check bit	ODD
Stop bit	1

(2) Connection diagram of HMI and Panasonic series PLC communication line

TK80 series touch screen side connection 9-hole D -shaped female base

Panasonic PLC side connection terminal

2	RXD	5	SD
3	TXD	4	RD
5	GND	8	SG

Section 3: Xinjie PLC Series

(1)Vcool software settings:

Parameter item	Recommended settings
Communication protocol	xinje Electronic/Thinget XC Series
Port	COM1
Baud rate	19200
Data bits	8
Check bit	EVEN
Stop bit	1

(2) Connection diagram of HMI and Xinjie series PLC communication line

TK80 series touch screen side connection 9-hole D-shaped female base

Xinjie PLC side connection 8-pin terminal

2	RXD	5	SD
3	TXD	4	RD
5	GND	8	SG

Section 4 Omron C Series

(1)Vcool software settings

Parameter item	Recommended settings
PLC type	Omron C/CPM/CP/CS/CJ Series
Communication port type	RS232
Data bits	7
Stop bit	2
Check bit	Even
Baud rate	9600
Controller ID	0

(2) Vcool (COM1) - Omron PLC communication line connection diagram

TK80 series touch screen side connection 9-hole D-shaped female base

Omron PLC side connection 9-pin D-type male seat

2	RXD	2	RXD
3	TXD	3	TXD
5	GND	9	GND

Section 5 Siemens S7-200 Series

(1)Vcool software settings

Parameter item	Recommended settings
PLC type	Siemens S7-200 Series
Port	COM2
Baud rate	9600
Data bits	8
Check bit	EVEN
Stop bit	1

(2) HMI (COM2) S7-200 series communication line connection diagram

TK80 series touch screen side connection 9-hole D-shaped female base

S7-200 series PLC side connection 9-hole circular male seat

1	A	3	A
6	B	8	B

Section 6 Mitsubishi FX Series

(1)Vcool software settings

Parameter item	Recommended settings
PLC type	Mitsubishi FX Series
Port	COM1
Baud rate	9600
Data bits	7
Check bit	EVEN
Stop bit	1

(2) HMI (COM1) and FX series PLC communication line connection diagram
(Using Mitsubishi programming cable such as SC-11)

TK80 series touch screen side connection 9-hole D-shaped female base

FX series PLC side connected 8-pin male socket

2	RXD
3	TXD
5	GND

Pin number	Signal	Description
1	RXD-	Receive negative
2	RXD+	Receive positive
3	GND	Ground wire
4	TXD-	External transmission negative
5	+5V	External power supply+5V
6	CCS	Communication direction control line
7	TXD+	External sending positive
8	NC	Empty foot

Programming software Coolmay Vcool touch screen programming software
For detailed information, refer to the ‘Coolmay TK80 Series (Vcool) User Manual’

TIPS

TK80 series HMI User Manual

—— Please read carefully the related manuals beofre using our products, and use this product under the enviromental conditions specified in this manual.

1. Power on after confirmed the voltage (24VDC, >18W) and right wiring to avoid damage
2 Tighten the screws or the rail while mounting the product to avoid falling off.
3 Avoid wiring or plug the cable with electricity, or it Is easy to cause electric shock or circuit damage. When the product emits odor or abnormal sound, please immediately switch off the power. While processing screw holes or wiring, do not drop the metal chips and wire head into the ventilation hole or the controller, which may cause product failure and disoperation
4 Ground terminals FG on HMI must right ground connection to improve anti-inerference ability.
5 Please do not disassemble the product or modify the wiring. Or it may cause malfunction, loss or fire
6 While installing or disassembling the product, ensure to turn off all power. Or it may cause malfunction and breakdown.

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Scan the QR code of coolmay cloud disk and follow the WeChat official account for more technical support