

HCM series human machine interface

Instruction Manual



Instructions for use

This manual is only used as the instruction of HCM series human-machine interface, and it does not guarantee that it has universal operating rules with other models or products of other manufacturers. If it is unclear, it can be used after consulting our company. Please read and correctly understand this manual before using HCM series human-machine interface.

- This product is only applicable to SHIMADEN series instruments.
- This product is an electrified industrial product, so the user is required to have the corresponding electrical qualification and ability.
- Unauthorized disassembly of products or illegal operations and tests may lead to product damage and even endanger personal safety.
- Removing the back cover of this product without authorization will be deemed as your waiver of product warranty service.
- Our company has the right to make changes to this series of products, instruction documents, etc. without further notice to customers.

In addition to this manual, generally applicable statutory rules or other binding regulations shall also be observed or implemented.

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1 Product introduction



HCM series human-machine interface is specially used to cooperate with SHIMADEN instrument products. It can communicate with single or multiple SHIMADEN instruments at the same time. It can directly operate the start and stop of the instrument on the touch screen, and set the parameters supported by communication such as temperature, curve, PID, ev alarm, etc., making the instrument operation easier. In addition, the functions of history record, operation record, data export, regular start and stop, authority management and so on are extended, which improves the convenience of using the instrument. It can also realize the functions of dual screen control and forwarding to third-party devices according to user requirements.

1-1 Product features

- Graphical window, touch operation;
- Built in SHIMADEN instrument supporting program, customers do not need to program, connect and use;
 - It can connect up to 32 instruments at the same time, and start and stop with one key;
 - Supporting instrument functions: temperature, curve, PID, ev alarm and other settings;
 - Extended support functions: group control, scheduled start and stop, data recording, formula saving, permission management;
 - Data records can be exported as CSV files, and trend curves can be exported as PNG pictures;
 - Support external keyboard, mouse and micro printer;
 - Various sizes available: 7", 10", 15"

1-2 Code selection table

	Code	Specifications				
Series name	HCM7	7", 800×480, Plastic shell			Resistive touch screen, cortex A8 high-speed processor, RS485 interface, USB interface, front panel IP65 protection grade.	
	HCM10	10", 1024×600, Aluminum shell				
	HCM15	15", 1920×1080, Aluminum shell				
Adaptive		-xxx	xxx:M57(MRM57)/S10(SRS10A)/F23(FP23)/F93(FP93)			
Program		-N	The adapted instrument has no program function			
		-P	The applicable instrument has program function			
Record		0	None			
		1	Record and export with USB flash disk			
Print		0	None			
		1	Preset RS232 micro printer driver			
Number of instruments			08	Up to 8 ch		
			16	Up to 16 ch		
			32	Up to 32 ch		
Special			0	None		
			9	Special instructions		

Note: the default adaptation instrument is the basic model with communication function. If there is an option function that needs to be added to the human-machine interface, please explain when ordering.

1-3 Specification parameters

Product Name: HCM series human-machine interface

Panel size: 7 ", 10", 15"

Input voltage: 24VDC

Power consumption: 5W (HCM7), 6W (HCM10), 15W (HCM15)

Touch type: 4-wire resistive touch

Working environment temperature: 0~45°C

Working humidity requirements: 5%~90%@40°C (no condensation)

Opening size: 192×138mm(HCM7)

260×202mm(HCM10)

384×247mm(HCM15)

1-4 External interface

RS485 serial port: communicate with the SHIMADEN instrument, MODBUS-RTU protocol, data format 8n1, baud rate, the highest baud rate of the instrument is used by default.

Maximum baud rate	Instrument model
38400	FP30 series, SRS10A series, MRM57 modular and others
19200	FP23, SR23, FP93, SR90 series and others

Communication parameters can also be modified in the [User] > [System] window. After the communication setting of the human-machine interface is modified, the instrument should also be set to the same parameters, and the two are consistent to ensure normal communication.

be careful! The higher the baud rate, the smaller the communication

delay, but the transmission distance and anti-interference become worse. On the contrary, the communication delay becomes larger, and the transmission distance and anti-interference become stronger.

USB port: used for historical data export, program update, connecting mouse and keyboard, etc. the U disk used for export or update must be in FAT32 format.

1-5 Clock hold

The button battery CR2032 is built into the human-machine interface product to maintain the clock. The prompt of time reset appears repeatedly when the battery is powered on. You can contact the dealer to replace the battery. Do not disassemble it by yourself, so as to avoid internal damage and affect the warranty.

The correction of time can be modified by yourself in the [User] > [System] window.

1-6 First power on

When it is used for the first time, set the communication parameters of the instrument and assign the station number, and then connect the communication line to power up the human-machine interface.

Each time the human-machine interface is powered on, it will search the connected instruments. The instrument channel that is not correctly connected will be closed, and the corresponding instruments on the human-machine interface will display the "no connection" status. Solution: after troubleshooting the communication connection, power on the human-machine interface again.

In the process of use, if the number of instrument channels increases or decreases, the human-machine interface should also be powered on again for searching.

If the communication between the human-machine interface and the instrument is interrupted, the instrument can still operate independently, but the extended functions of the human-machine interface, such as recording, timing, etc., will not operate normally.

1-7 Other matters

- before power on, please carefully check whether the wiring is correct and whether there is virtual connection. Please use shielded wire for cables and the shielding layer is reliably grounded.
- the touch screen is resistive, please use the touch pen equipped with it

to operate. Do not use sharp objects to avoid damage.

- please avoid harsh working environment such as high temperature, high humidity, strong magnetic high frequency, high concentration gas, dust, vibration, etc.
- damage caused by non quality problems such as flooding, burning, falling and touching is not covered by the warranty.
- for the definition and value range of instrument parameters and other parameter information, please refer to the relevant product manuals of SHIMADEN. This manual does not repeat the instructions.

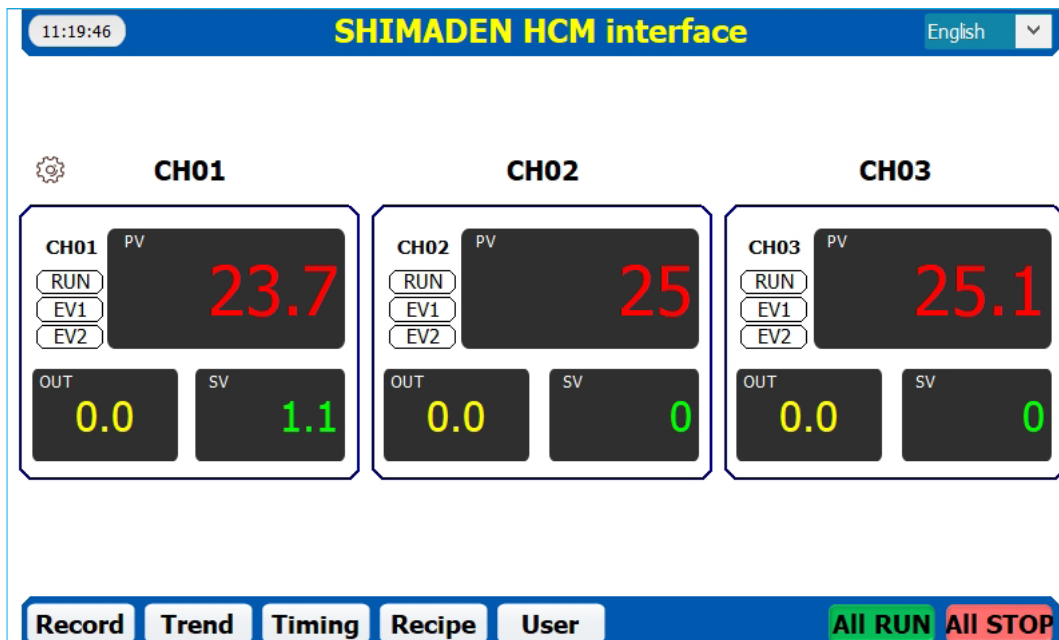
2 Operation interface

HCM series human-machine interface has two types of windows:

One is the record, trend, timing, recipe, user and other public windows under the [group] window. The parameters in this kind of window are valid for each instrument and are the common window of all instruments.

One is the run, set, curve, PID and other separate windows that can be accessed by clicking on a separate circuit. The parameters in this kind of window are only valid for that instrument.

2-1 Group window



The [Group] window displays the measured value PV, the set value SV, the output percentage out, and the status of the operation and ev alarm lights for each circuit. After the human-machine interface is powered on, first enter the group window. If a single instrument is connected, it will skip the [Group] window and directly enter the [Run] window.

If you want to specifically operate the instrument of a circuit, directly click the displayed value of that circuit in the [group] window, and a special menu of the circuit will pop up. You can enter the run, set, curve, PID and other windows of the circuit through the menu. These windows belong to separate windows, and the functions inside are only applicable to the current circuit.

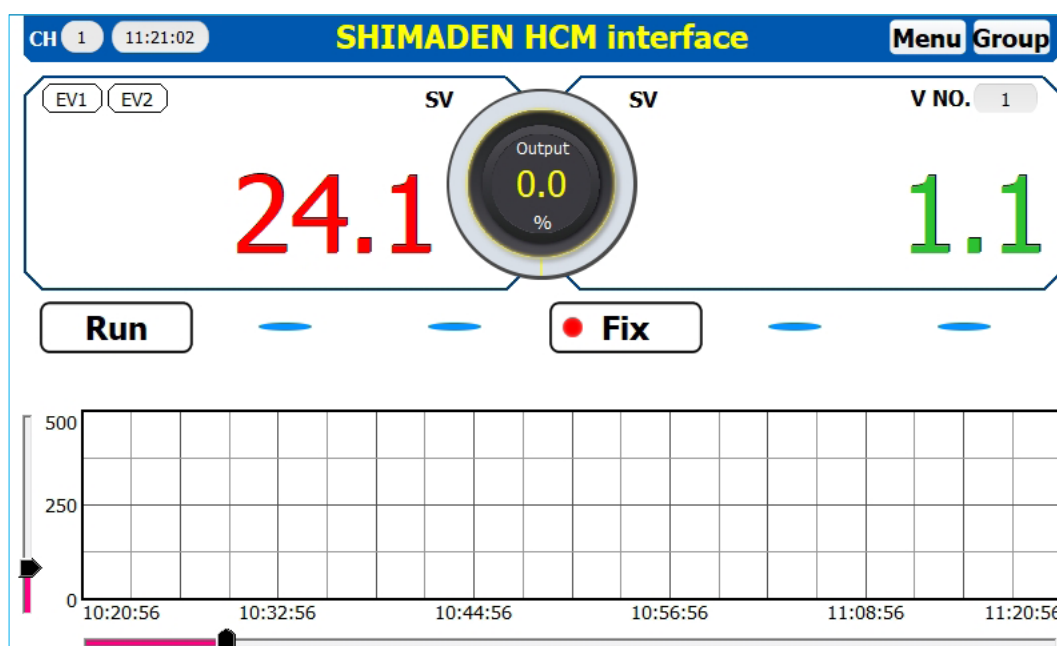
Through a row of keys at the bottom of the [Group] window, you can enter the record, trend, timing, recipe, user and other windows correspondingly. These windows are public windows, and the functions in them are applicable to all circuits at the same time.

By default, the serial number of "chxx" is used for the names of all circuits. In order to facilitate management and memory, users can define the names of circuits by themselves in the [Group] window. Clicking the names of circuits will pop up the input keyboard.

<ALL RUN>: Start all channel;

<ALL STOP>: Stop all channel;

2-2 Run window



Click the displayed value position of any circuit in the [Group] window, and then enter the [Run] window through the pop-up menu. The settings in this window are only valid for the current instrument circuit.

Set SV value: In the FIX mode, directly click the green setting value setting in the [RUN] window; In PROG mode, enter the curve window setting;

<SV NO>: In FIX mode, it is used to set which group of SV is used for instruments with multiple groups of SV;

<RUN>: Start / stop the current instrument channel;

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<AT>: Turn on / off the automatic PID setting function; (it can only be turned on when the instrument is running, and the setting is successful until the self-tuning light is automatically off)

<MAN>: Turn on / off the function of manually adjusting the output percentage; (it can only be turned on when the instrument is running. After it is turned on, the output percentage turns red, and click directly to modify it.)

<FIX/PROG>: Used to switch FIX / PROG mode;

<HLD>: When the instrument is in PROG mode and running, the HLD function can be turned on. After opening, the SV of the circuit will remain at the current curve value until the holding function is turned off.

<ADV>: When the instrument is in PROG mode and running, the ADV function can be turned on. After opening, the curve of the circuit will skip the current step and enter the next step, and then the < skip > key will reset automatically.

2-3 Set window

CH 1 11:21:32 SHIMADEN HCM interface			Menu Group		
Range	05	Proportional cycling	30	PID NO.	PID1
SC_L	0	Soft start time	0	P	3.1
SC_H	800	Key lock	0	I	120
Unit	°C			D	30
Decimal point	1	EV NO.	EV1	MR	0.0
SV_L	0	EV Type	7	Output_L	0.0
SV_H	800	Fix EV value	200	Output_H	100.0
Compensation	0.00	Hysteresis	2	SF	0.40
PV bias value	0	Output type	NO		
PV filter time	0	Latching	OFF		
Out properties	Reverse	Standby action	0		

The [Set] window is used to set some basic parameters in the instrument. The parameters listed will be different according to the model of the instrument. The settings in this window are only valid for the current instrument circuit.

<RANGE>: Select the appropriate range type code according to the input type of the sensor, and the instrument must be in standby mode to modify the range type. Not all instruments support the use of communication to modify the range type, and some must be modified on the instrument, such as FP93, fp30, FP23, Sr90, etc. Note: modifying the range will initialize most

parameters in the instrument.

PID: Sometimes PID parameters will be placed in a separate window according to the needs of the page.

2-4 PTN window

The [PTN] window includes the settings of curve related parameters. In this window, users can read and view the curve in the instrument, or set the temperature rise curve according to their own production process and write it into the instrument. Instruments without program function do not have this window. The settings in this window are only valid for the current instrument circuit.

According to the different instruments, some instruments will have < read >, < write > keys in the [PTN] window, such as srs10a, FP23, etc; Some do not have these two keys, such as FP93, mrm57, etc.

If there are < read >, < write > keys, when viewing the curve, you need to click the < read > key to refresh the data from the instrument; When setting the curve, you need to click the < write > key to transfer the data to the instrument.

If there are no < read >, < write > keys, the human-machine interface and the table will read and write in real time when operating the curve.

CH 1 11:22:18 SHIMADEN HCM interface Menu Group

<< 1 >> Read Send Preview End step 3 !

ep N°	0	1	2	3	4	5	6	7	8	9	10
SV	0	0	0	0							
Time	—	0000	0000	0000							
PID	—	0	0	0							
ep N°	11	12	13	14	15	16	17	18	19	20	21
SV											
Time											
PID											
ep N°	22	23	24	25	26	27	28	29	30	31	32
SV											
Time											
PID											

Start mode SV Start PTN Exe-cutions 1 EV1 Action value 200 EV2 Action value 200

Time unit HH:MM Number of PTN 4 Start PTN NO. 1 Guarantee oak zone 3

<READ>: Read the PTN in the instrument to the human-machine interface.

<SEND>: Write the PTN on the human-machine interface into the instrument.

Number of PTN: Set the number of PTN of the instrument. Note:

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changing the number of curves will reset the set curve to the factory value.

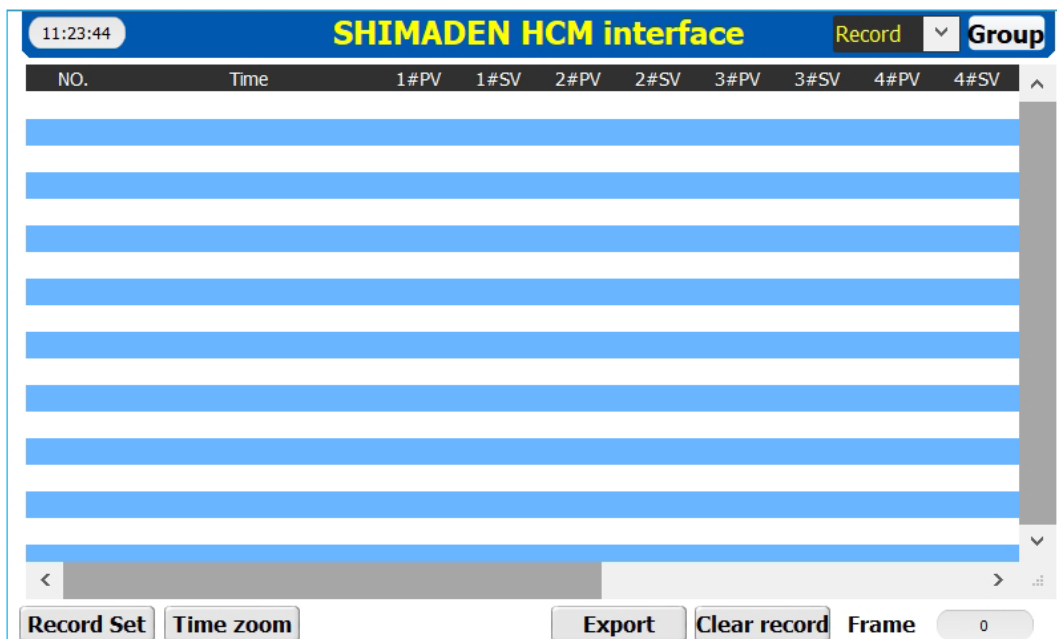
Step time: 4-digit value. When the time format is "hour: minute", the first two digits are hours and the last two digits are minutes; When the time format is "minutes: seconds", the first two digits are minutes and the last two digits are seconds. The maximum value of the first two digits is 99, and the maximum value of the last two digits is 59. Step time example: to set 200 minutes, convert the dual unit format to 0320 (3 hours and 20 minutes), and directly enter 0320 in the input box. (the time format of fp30 is different, please refer to the description of time in the window)

2-5 Record window

The [Record] window contains four sub windows: Historical Record, Historical Curve, EV Record and Operation Record. This window is for all instrument circuits.

(1) Historical Record window

Record and save the measured value (PV) and set value (SV) of each channel in the human-machine interface and display them in the form of a list. When it is used for the first time, it is disabled. Click the < record set > key to pop up a window, as shown in the following figure. Select the < start > key to open the record; Select the < stop > key to close the record. After the record is opened, "R" will be displayed at the top of the window as an indication.

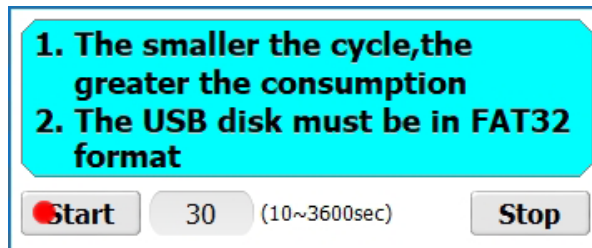


<Record set>: Turn on or off the recording function and adjust the recording cycle.

<Time zoom>: Set the time range of data to be displayed in the list.

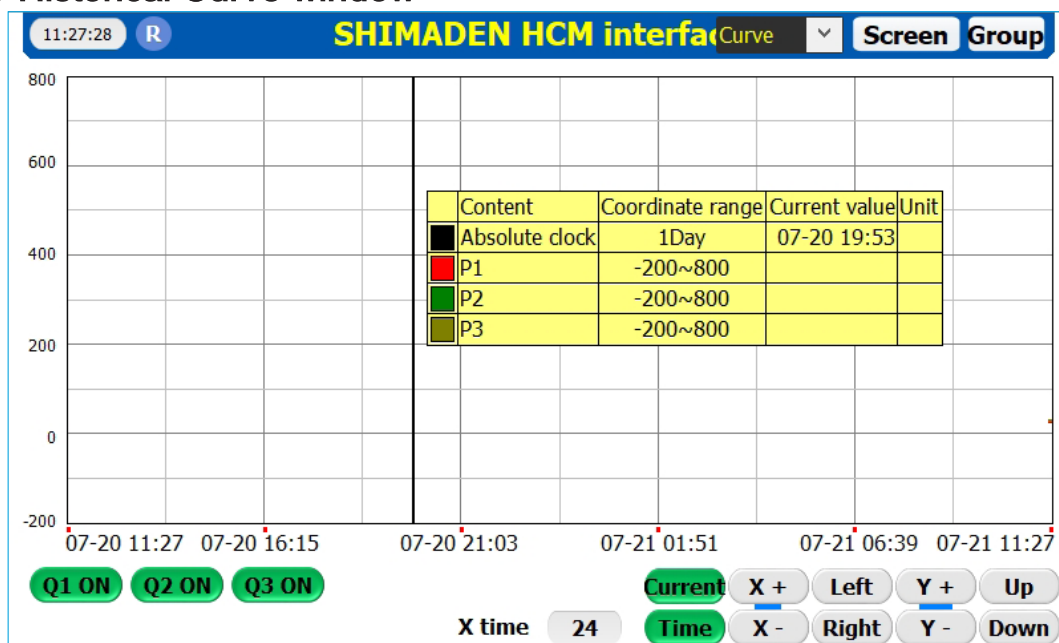
<Export>: Export the data stored in the human-machine interface to the U disk (FAT32 format) in CSV file. The exported data includes: history record, EV record and operation record.

<Clear record>: Clear the history record in the HMI.



The recording cycle is adjustable from 10 to 3600, with a default of 30 seconds. Note: the recording function will occupy a certain storage space, and the smaller the cycle, the greater the resource consumption, so please start and set the recording cycle according to the actual demand.

(2) Historical Curve window



Show the historical records in the form of line graph. You can control the display and hiding of each curve by pressing the key.

<Q1>~<Q8>: Toggles the display and hiding of each curve.

<Current>: Toggles the display and hiding of the information box. The information box can indicate the current position value.

<Time>: Set the time range for the line chart to display data.

<X +>, <X ->: Controls the enlargement and reduction of the x-axis direction of the line diagram.

Record the alarm information of equipment power on and instrument alarm point action, which will be exported to the U disk together with the historical record when exporting.

<Clear record>: Clear the alarm records stored in the HMI.

(4) Operation Record window

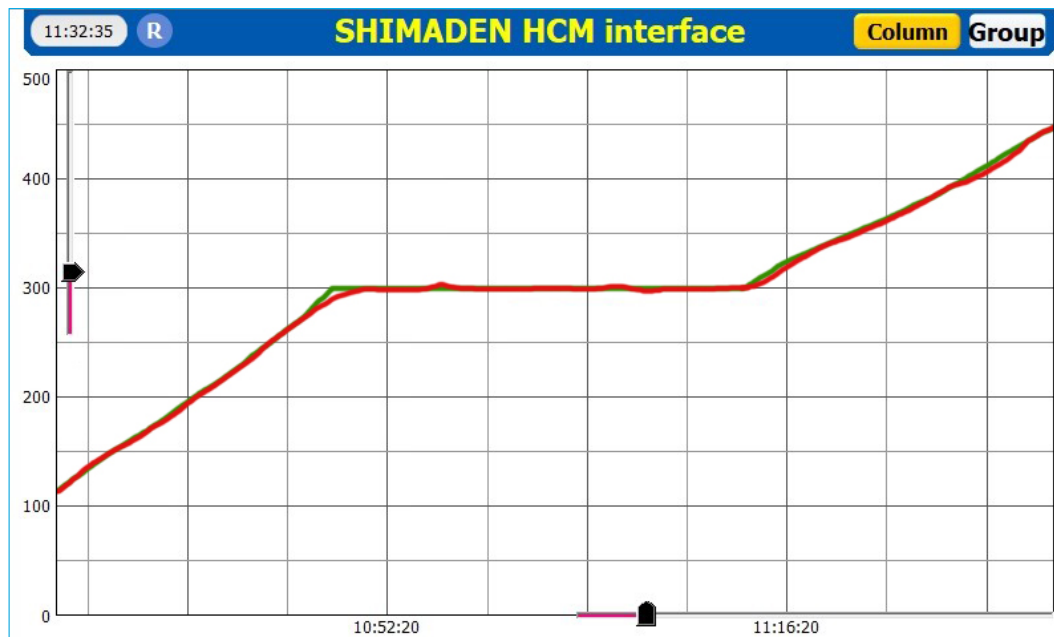
Record the user's operation action information, which will be exported to the U disk when the history is exported. Operation records cannot be cleared manually.

NO.	Operation time	Operation Description
1	2022-07-21 11:31:30	Press the button:All STOP
2	2022-07-21 11:31:30	Press the button:All STOP
3	2022-07-21 11:31:22	Press the button:All RUN
4	2022-07-21 11:31:22	Press the button:All RUN
5	2022-07-21 11:29:11	Press the button:RUN/STOP
6	2022-07-21 11:29:11	Press the button:RUN/STOP
7	2022-07-21 11:29:11	Press the button:RUN/STOP
8	2022-07-21 11:29:09	Open 1# Menu
9	2022-07-21 11:29:09	Open 1# Menu
10	2022-07-21 11:29:08	Open 1# Menu
11	2022-07-21 11:29:00	Press the button:All RUN
12	2022-07-21 11:29:00	Press the button:All RUN
13	2022-07-21 11:28:38	Open 2# Menu
14	2022-07-21 11:28:38	Open 2# Menu
15	2022-07-21 11:28:38	Open 2# Menu
16	2022-07-21 11:28:30	Set FIX SV
17	2022-07-21 11:28:25	Open 2# Menu
18	2022-07-21 11:28:25	Open 2# Menu

2-6 Trend window

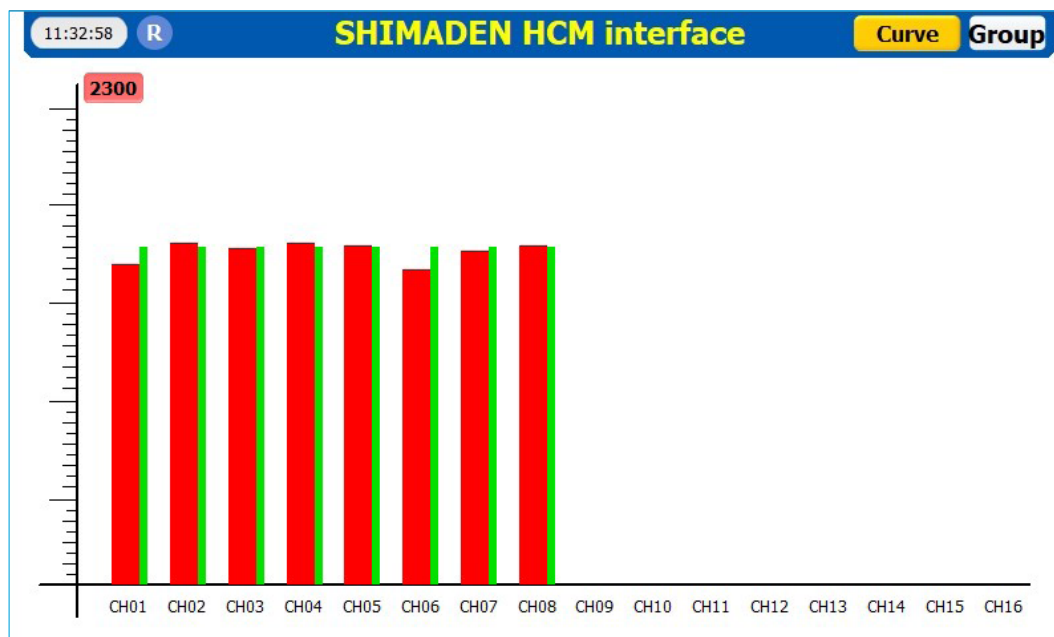
[Trend] window includes two sub windows: curve window and column window, which are oriented to all instrument circuits. The [Trend] window can display the graphic trend of multiple instrument circuits at the same time, which is convenient for horizontal comparison.

(1) Curve window



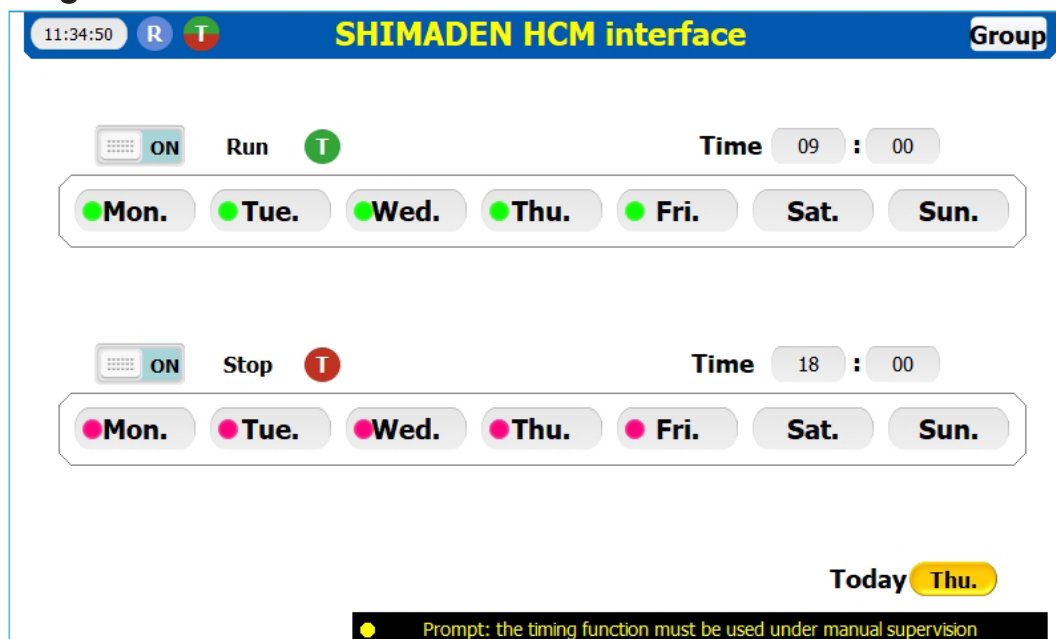
The measured values of multiple circuits are displayed in curve, and the display range can be freely adjusted through the sliding bars on the left and bottom.

(2) Column window



The measured values and set values of multiple circuits are displayed in column.

2-7 Timing window



[Timing] window is used to set the timing start and stop of the instrument. The user can set the date and time of action in a week, and cycle in weeks. After the timer is turned on, "T" will be displayed at the top of the window as an indication.

Before using the timing function, check and confirm that the supporting equipment and process links can adapt to the timing automatic start and stop of the instrument to ensure that it will not bring risks.

When setting, first turn on the switch, and then set the date and time to act.

<Run>: When it is on, the timing Run function is on, and when it is off, it is off.

<Stop>: When it is on, the timing Stop function is on, and when it is off, it is off.

Note: the timing function cannot completely replace manual work, please use it under manual supervision.

2-8 Recipe window

11:35:20 R T SHIMADEN HCM interface Group

Recipe Name	SV01	TM01	PID01	SV02	TM02	PID02	SV03	TM03	PID03	SV04	TM04	PID04	SV05
Recipe 1	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 2	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 3	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 4	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 5	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 6	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 7	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 8	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 9	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Recipe 10	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

< >

Recipe Save !

Write (End step 3)

Write current recipe to CH 1 ~CH 1 PTN 1 th.

In order to facilitate the adjustment of the PTN, the human-machine interface provides the recipe function. Users can preset up to 10 groups of PTN in the [Recipe] window. When using, select the required recipe, and then write it to the specified instrument. For the convenience of management and memory, the recipe name can be customized and modified.

<Recipe Save>: Used for saving the modified formula.

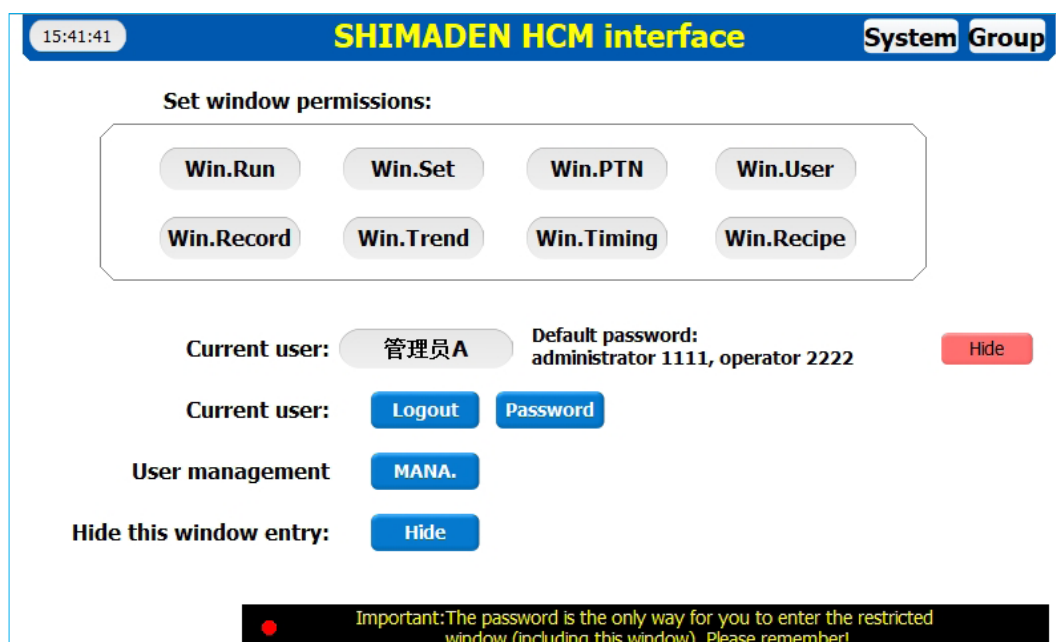
<Write> : Write the selected curve recipe into the curve of the specified instrument.

When writing the instrument, first select the recipe, then set the number of instruments to be written (the start number cannot be greater than the end number), and the number of PTN, and then click the < write > key to wait for the completion of writing.

2-9 User window

The [User] window contains two windows: the authority main window and the system sub window, which are oriented to all instrument circuits.

(1) User main window



[User] window is mainly used for window management and user management. Users can set whether each window needs permission to enter, add or delete users, change passwords, etc.

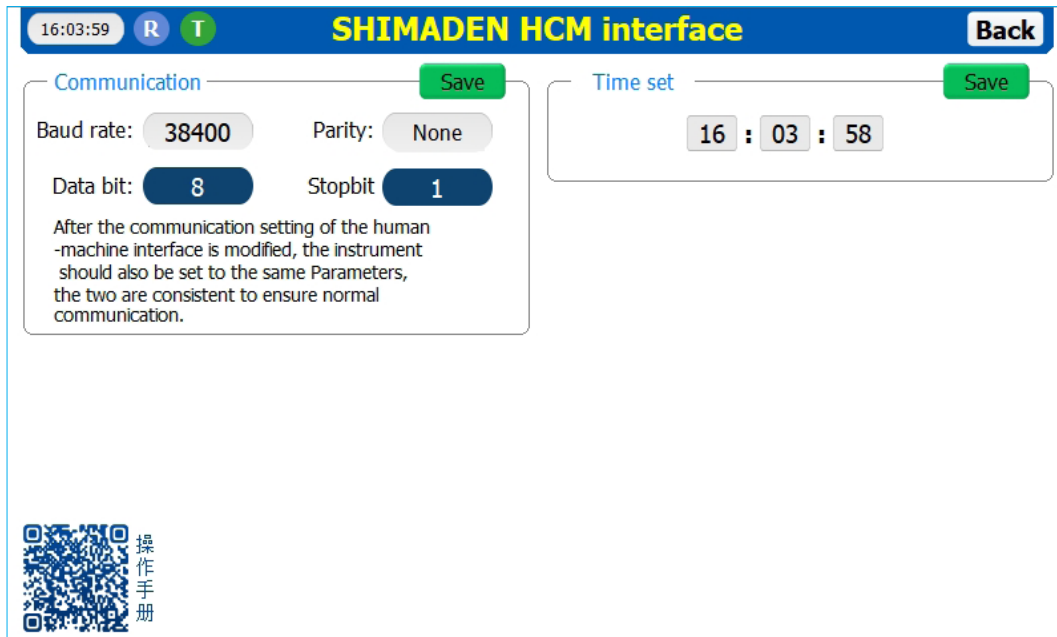
By default, the system can enter all windows without logging in. Before adjusting the window permissions, the user needs to log in first. The system has two accounts by default: administrator a, with the initial password of 1111; Operator B, initial password 2222. After successful login, users can change their passwords by themselves. Please remember the modified passwords, otherwise they cannot be retrieved.

<Login>: It is used when the user logs in. If there is no operation for 3 minutes after the user logs in, the system will automatically log out the user.

<MANA.>: It is used to manage users, add, delete, modify, etc. For administrators only.

<Hide>: Used to hide the [User] window itself. When hidden, you cannot enter the window. To restore the display of the [User] window, press the clock in the upper left corner of any window for about 5 seconds.

(2) System sub window



16:03:59 R T SHIMADEN HCM interface Back

Communication Save

Baud rate: 38400 Parity: None

Data bit: 8 Stopbit: 1

After the communication setting of the human-machine interface is modified, the instrument should also be set to the same Parameters, the two are consistent to ensure normal communication.

Time set Save

16 : 03 : 58

操作手册

The system sub window can be used to adjust the system time and communication parameters.

Communication settings: The data bit is fixed as 8, the stop bit is fixed as 1, and the baud rate and check bit can be modified as needed. The communication parameters of human-machine interface and instrument must be consistent to ensure normal communication.

time setting: It is used to adjust the time of the human-machine interface system, set the time, save it, and take effect immediately.



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Due to product optimization and other reasons, the contents of this manual may be changed without notice.

For relevant operation of the instrument, please refer to the instrument operation manual, communication protocol manual, operation flow chart and other data.

Data download method:

1、 Log in to www.yhxml.com website and select the corresponding model of instrument data to download in the download center.

2、 Wechat followed the official account of "岛电仪表" and directly replied to the download information of instrument model.