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**HY17S68 Series  
HY17S68-DK03 IDE  
Hardware User's Manual**



# HY17S68 Series

## HY17S68-DK03 IDE

### Hardware User's Manual

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#### 1. Package Contents

HY17S68-DK03 is an integrated hardware development kit, including ICE (In-Circuit Emulator) Board, Control Box, LCD Board and USB Cable, the integrated hardware development kit helps to develop the application program of HY17P68 Series MCU in DMM(Digital Multi-function Meter) products, through the NB/PC end connection for program compilation and debugging functions, the relevant hardware equipment is as follows:



Model No.	Part Name	Description	Quantity
HY17S68-DK03	1. HY17S68-IM03	HY17S68-L216 ICE Board	1
	2. HY17000-CM01	HY17S Control Box	1
	3. HY10000-AM02	LCD Board(For DMM)	1
	4. Cable line	USB Type A to Mini. B Cable	1
	5. Interface line	6pin/2.54 (2.54mm pitch)	1

Table 1-1

Note: HY17S68-DK03 development tool is mainly dedicated to the development of HY17P68 DMM(Digital Multi-function Meter) products.



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## **2. Safety Precautions**

- Do not place heavy objects on the display panel, in order to avoid damage caused by stress.
- Place the application display boards at steady place, so as to avoid falling damage.
- Do not use this product with the input voltage which is not meeting the electrical specifications, in order to avoid working abnormally or damage.
- Avoid application display boards being touched by liquid, dirt and avoid being exposed to moisture during operation. This application should be kept in a dry environment, so as not to affect the function and performance.
- Remove the power supply when not using it.
- When following status occurred, please remove the power supply immediately, and contact our engineer.
  - Power Supply line is worn or damaged.
  - Power source (battery) connected but no any light on while operating.
  - Component off.



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### 3. Software Installation Requirements

#### 3.1. IDE Software Installation Requirements

Minimum System Requirements of operating HY17S68 IDE hardware development tool:

- (1) PC/NB hardware requirement  
IBM PC compatible X86 system CPU  
512 MB Memory (1GB recommended)  
1GB Hard disk
- (2) Supported product model  
HY17P68 series products
- (3) Hardware support models  
HY17S68-DK03: HY17S68 IDE hardware development tool  
(HY17000-CM01 supports firmware version above W15P02.0)
- (4) Software supported version  
HY17P IDE V1.2 version above : HY17P Series Assembly Language IDE software  
H08 CIDE V1.2 version above : HYCON 8-bit MCU C Language IDE software
- (5) Operating system requirements  
Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10
- (6) Applicable interface mode  
USB Port with HID-compliant device  
HY17S68-DK03's USB Port driver uses the Windows standard HID driver  
(Figure 3-1), so user can use it without installing a separate driver.



Figure 3-1



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#### 4. Description of the hardware tool

##### 4.1. Schematic architecture description

- HY17000-CM01 (control box) is the connecting device between HY17S68-IM03 ICE Board and HY17P Series IDE software.
- Connect with HY17S68-IM03 ICE board through Interface line (6Pin/2.54mm).
- Connect with HY17P Series IDE software through USB line, the connection diagram is as follows:



Figure 4-1

##### 4.2. Description of control box

The control box (model: HY17000-CM01) is universal for HY17P series products (as shown in Figure 4-2). The following is the introduction of the control box:



Figure 4-2

##### (1) Power LED

Function : POWER LED

Item	Name	Description
L1	Power LED	Green light, when the USB Port is connected to a computer or a 5V power supply through a USB cable, when the green light is on, it means that the control box is normally powered.



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#### (2) Debug Port

Function: IDE communication interface, used to connect with the Debug interface of the ICE Board to control the chip.

The function is defined as follows:

Item	Name	Description
1	VSS	Power ground
2	SCK	SCK Pin of Control Box and ICE board
3	VDD	Power output 4.5V
4	CS	CS Pin of Control Box and ICE board
5	SDI	SDI Pin of Control Box and ICE board
6	SDO	SDO Pin of Control Box and ICE board

#### (3) USB Port

Function : USB Port

Description: Mini B Cable connector



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#### 4.3. Description of In-Circuit Emulator(ICE) Board

The ICE board (model: HY17S68-IM03) is commonly used for HY17P68 (see Figure 4-3). This ICE board is mainly used for IDE hardware tools, which can be used to emulate chips and develop debugging. The following describes the appearance and functions of the ICE board:

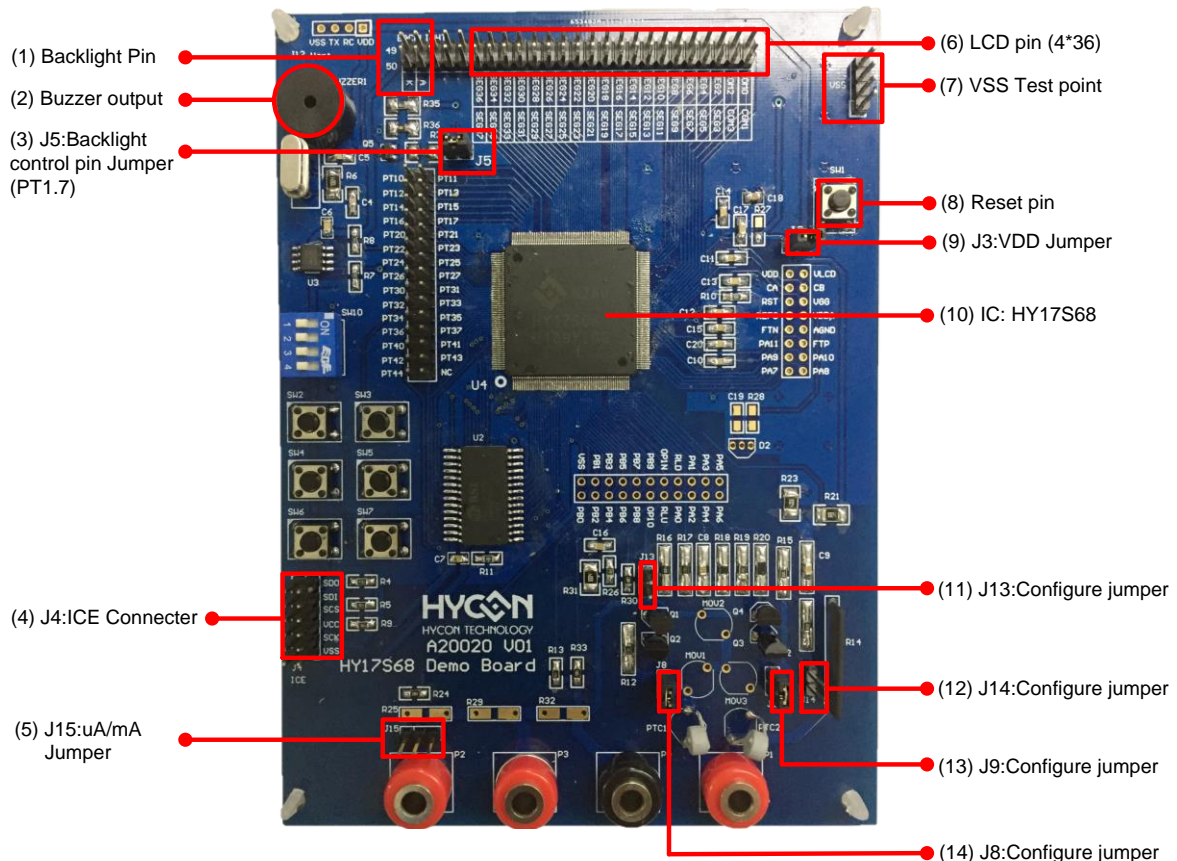


Figure 4-3

(1) Backlight pin

Function: LCD backlight end (A.K pin)

(2) Buzzer output

Function: can make the buzzer sound

(3) J5: Backlight control pin Jumper

Function: When Jumper is short-circuited, select the preset backlight control pin as PT1.7

J5		When shorted, the backlight control pin is PT1.7
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(4) J4: ICE Connector

Function: connect with the control box (HY17000-CM01) to emulate the operation of the chip.

(5) J15: uA/ mA Jumper





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Function: measuring current usage

J15		Right shorted, current range mA measurement
		Left shorted, current range uA measurement

(6) LCD pin (4COM\*36SEG)

Function: Mainly control the use of LCD display

(7) VSS Test point

Function: Use for grounding test

(8) Reset pin

Function: Reset ICE to use.

(9) J3:VDD Jumper

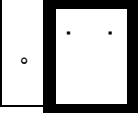
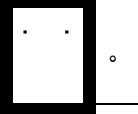
Function: Provide HY17S68 power supply (4.5V)

(10) IC: HY17S68

Function: Emulation chip, used to emulate the use of HY17P68

(11) ~ (14) Configure jumper

Function: According to different measurement functions, the configuration settings of Jumper are as follows:

Function	J13	J14	J9	J8	J15
DC mV AC mV	Open	Open	Short	Open	Open
DCV ACV	Short	Open	Open	Open	Open
DC Current AC Current	Open	Open	Open	Open	 mA measurement
					 uA measurement
Resistor	Open	Open	Short	Short	Open
Continuity	Open	Open	Short	Short	Open
Diode	Open	Open	Short	Short	Open
Capacitor	Open	Open	Short	Short	Open
Frequency (CNT Input)	Open	Short	Short	Short	Open
Thermocouple	Open	Open	Short	Open	Open



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## 4.4. ICE board circuit diagram

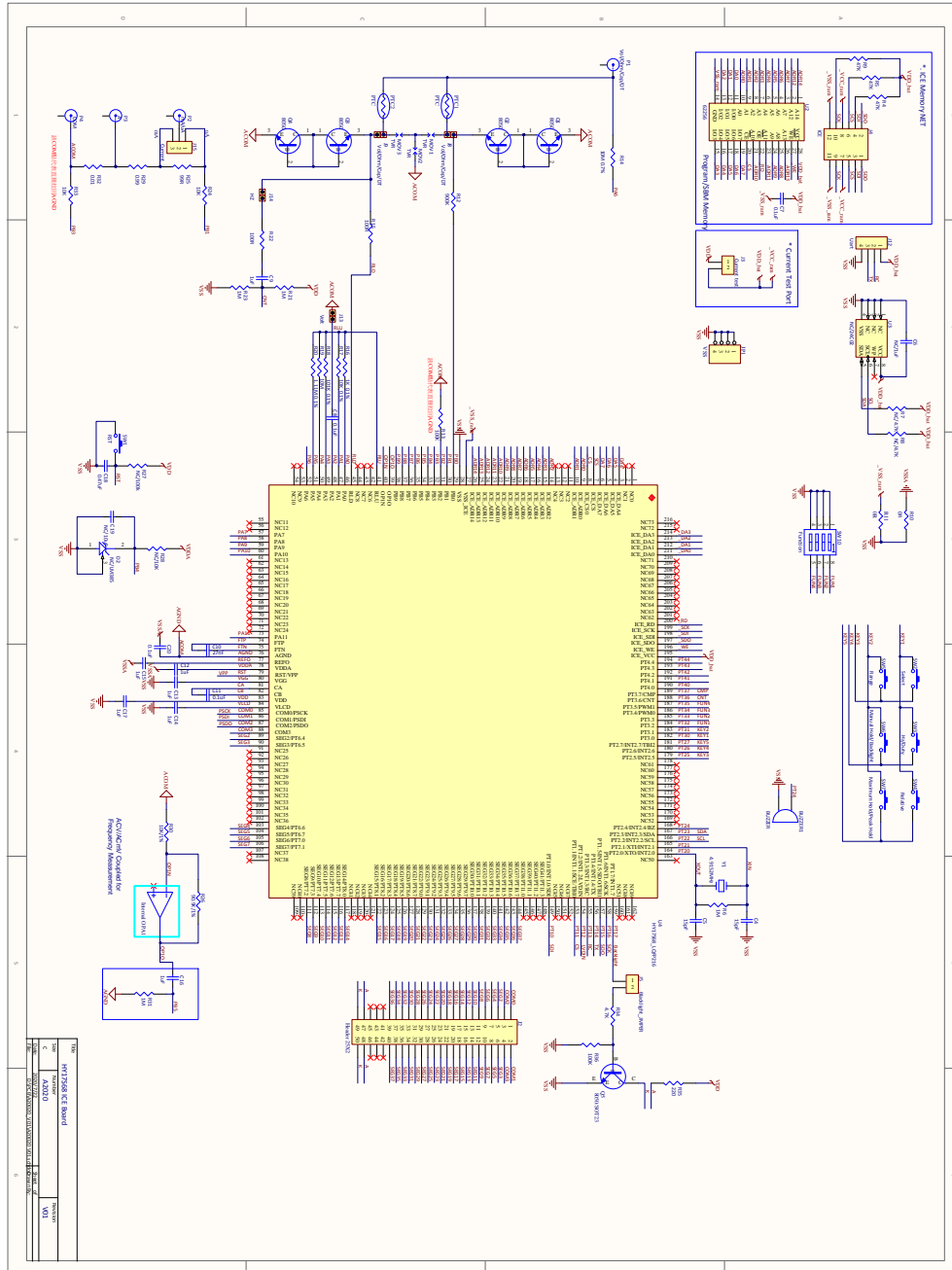


Figure 4-4

Note : The ICE board circuit diagram is placed in the IDE software folder,  
"A20020 V01\_HY17S68-IM03\_HY17S68-L216 ICE Board.pdf"  
The Assembly IDE folder path is: "HYCON\HY17P IDE\ICESchematic"  
The H08 CIDE folder path is: "HYCON\H08 CIDE\ICESchematic\HY17P"



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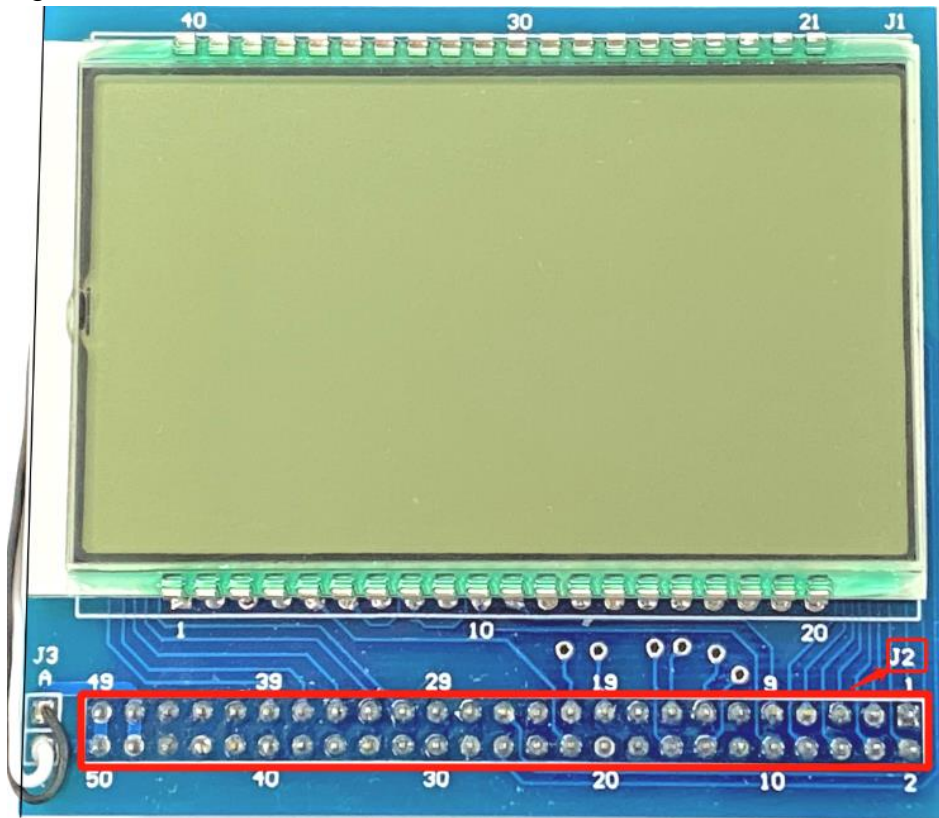
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#### 4.5. LCD Board Introduction

The LCD panel(HY10000-AM02) on HY17S68-L216 ICE Board is HYCON self-owned mold, it's symbol and pin diagram is shown in below graph. It's panel specification is as follows:

- (1) Operating Voltage: 3.0V
- (2) Visible Angle: 60 degree
- (3) Operating Frequency: 60Hz
- (4) Bias:1/3 bias
- (5) Waveform:1/4 duty
- (6) Pin: 90 degree



J2 pin assignment

Pin No.	1	2	3	4	5	6	7	8	9	10	11
Pin Name	COM0	COM1	COM2	COM3	SEG4	SEG3	SEG6	SEG5	SEG8	SEG7	SEG10
Pin No.	12	13	14	15	16	17	18	19	20	21	22
Pin Name	SEG9	SEG12	SEG11	SEG14	SEG13	SEG16	SEG15	SEG18	SEG17	SEG19	SEG2
Pin No.	23	24	25	26	27	28	29	30	31	32	33
Pin Name	SEG21	SEG20	SEG23	SEG22	SEG25	SEG24	SEG27	SEG26	SEG29	SEG28	SEG31
Pin No.	34	35	36	37	38	39	40	41	42	43	44
Pin Name	SEG30	SEG33	SEG32	SEG35	SEG34	SEG37	SEG36				
Pin No.	45	46	47	48	49	50					
Pin Name			A	A	K	K					

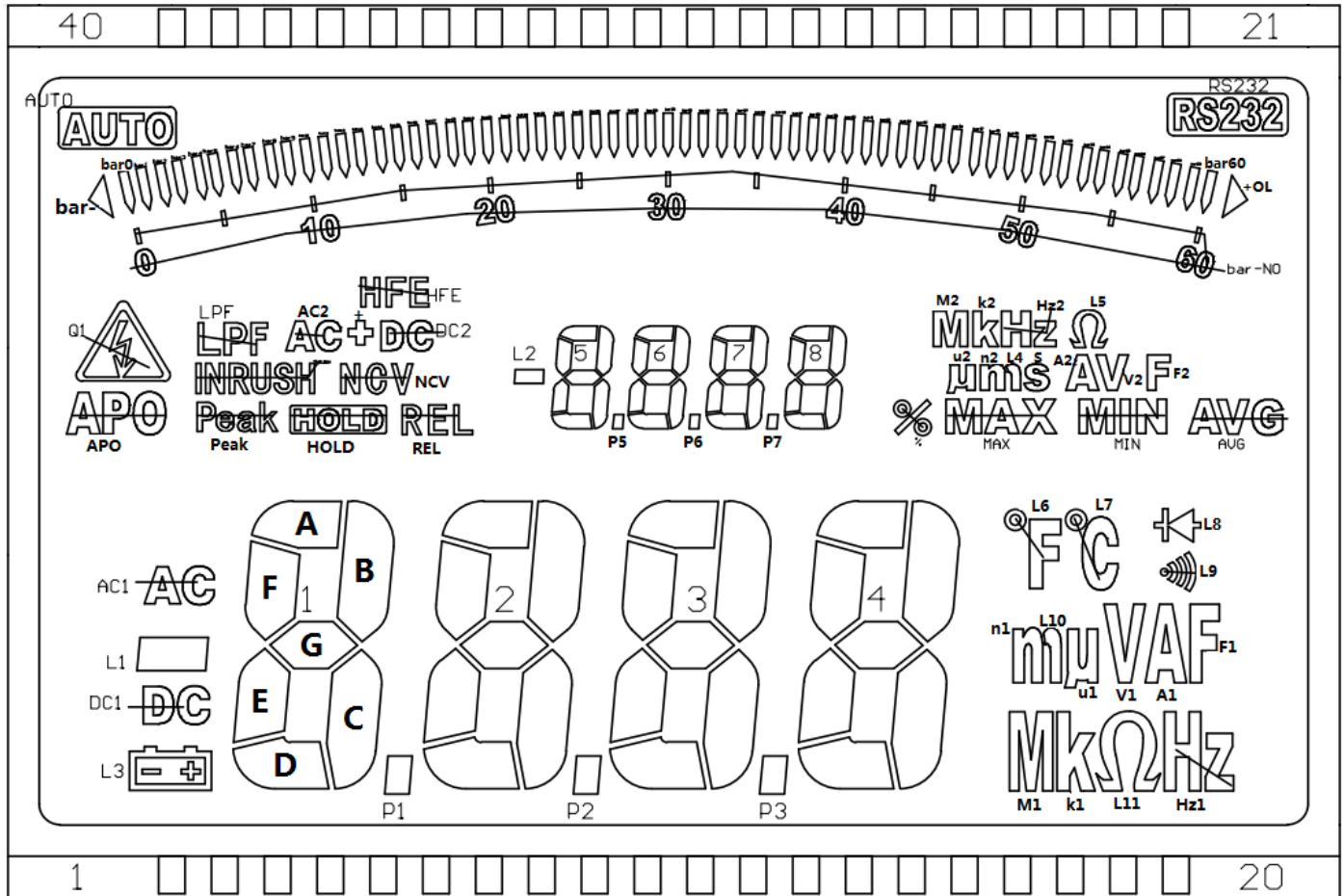


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#### ● HY10000-AM02: LCD Logical Table



	SEG2	SEG3	SEG4	SEG5	SEG6	SEG7	SEG8	SEG9	SEG10	SEG11	SEG12	SEG13
COM0	AC1	1A	1B	2A	2B	3A	3B	4A	4B	L7	L8	L9
COM1	L1	1F	1G	2F	2G	3F	3G	4F	4G	n1	V1	F1
COM2	DC1	1E	1C	2E	2C	3E	3C	4E	4C	L10	u1	A1
COM3	L3	1D	P1	2D	P2	3D	P3	4D	M1	k1	L11	H1
	SEG14	SEG15	SEG16	SEG17	SEG18	SEG19	SEG20	SEG21	SEG22	SEG23	SEG24	SEG25
COM0	L6	S	MAX	%	bar-NO	bar58,57	bar44,43	bar42,41	8C	8D	7C	7D
COM1	MIN	A2	L4	u2	bar59,60	bar56,55	bar46,45	bar40,39	8G	8E	7G	7E
COM2	F2	V2	n2	M2	+OL	bar54,53	bar48,47	bar38,37	8B	8F	7B	7F
COM3	AVG	L5	H2	k2	RS232	bar52,51	bar50,49	bar36,35	bar34,33	8A	bar32,31	7A
	SEG26	SEG27	SEG28	SEG29	SEG30	SEG31	SEG32	SEG33	SEG34	SEG35	SEG36	SEG37
COM0	6C	6D	5C	5D	bar19,20	bar17,18	L2	P5	P6	P7	APO	Q1
COM1	6G	6E	5G	5E	bar21,22	bar16,15	DC2	REL	NCV	HOLD	Peak	bar-
COM2	6B	6F	5B	5F	bar23,24	bar13,14	HFE	+	AC2	INRUSH	LPF	bar0
COM3	bar30,29	6A	bar27,28	5A	bar25,26	bar12,11	bar9,10	bar7,8	bar5,6	bar3,4	bar2,1	AUTO



[illegible]



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#### 4.6. Control box and ICE board hardware connection steps

- (1) Confirm that J3 (VDD Jumper) of the ICE board is short-circuited together.
- (2) The Interface lines are respectively connected to the Debug port of the control box and the ICE Connector (J4) of the ICE board.
- (3) Use USB Cable to connect to the USB Port of the control box and the USB Port of the computer (the Power LED will be on at this time).
- (4) After Step1~3 (as shown in Figure 4-5), it means that the hardware of the control box and the ICE board are properly connected.

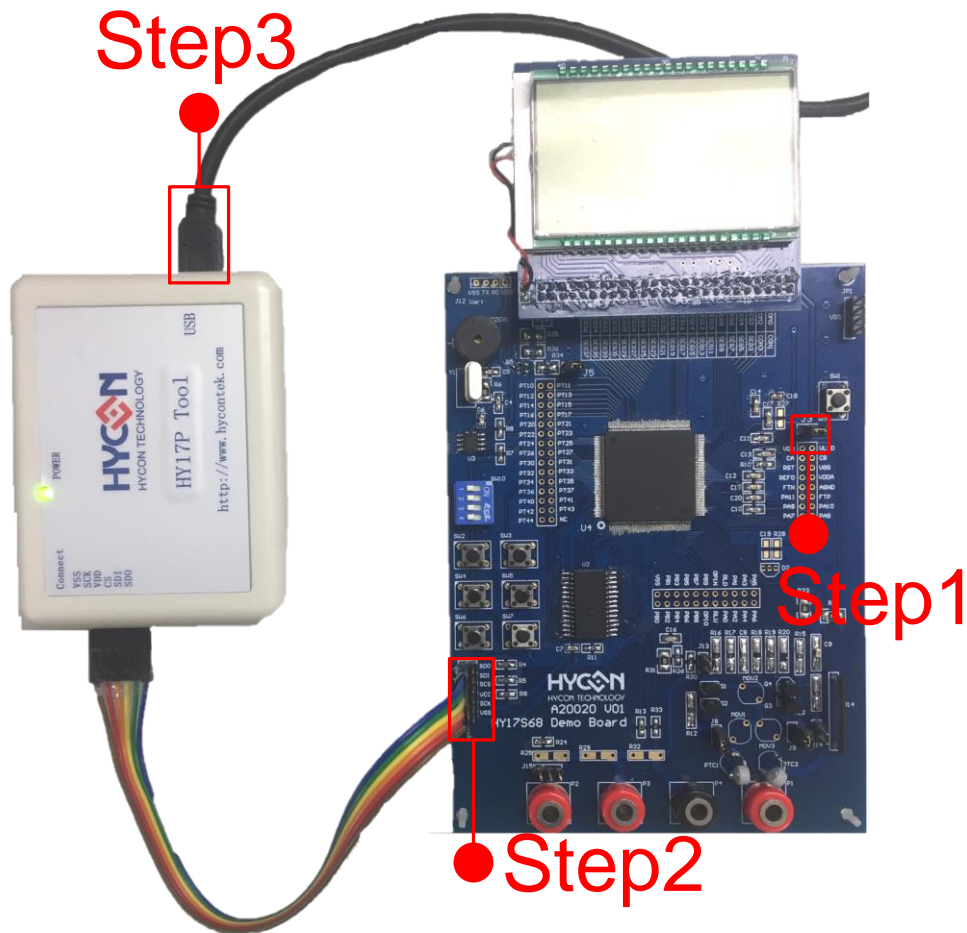


Figure 4-5



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#### 5. Revision Record

Version	Page	Date	Summary
V01	All	2020/07/31	First version
V02	P12	2023/02/27	4.5.Increase LCD Board Introduction