8000t 浮吊称重系统说明书

Chapter 1

硬件部分

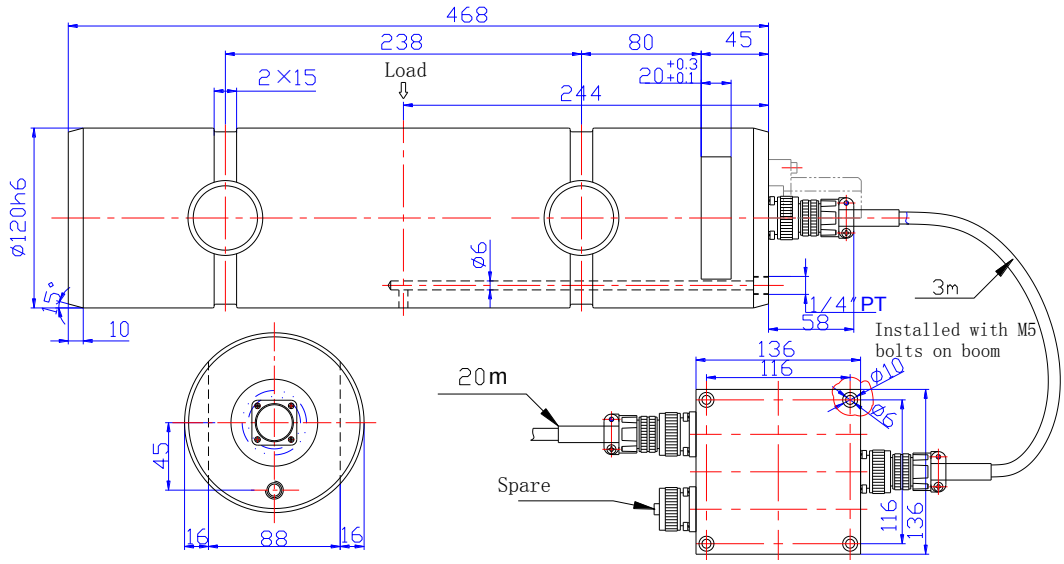
1.1 称重传感器

本系统配置的数字传感器列表如下

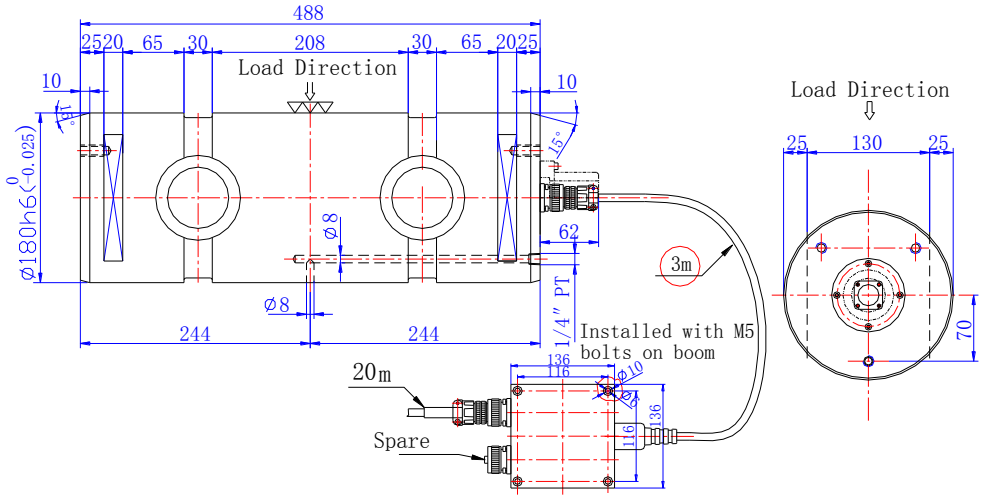
安装位置	传感器型号	生产厂家	数量	单位
前主钩 No1~No4 MainHoist	XZBEU-ADSS 100t	宁波柯力	8	只
后主钩 No5~No8 MainHoist	XZBEU-ADSS 150t		8	只
小钩 AuxHoist	XZBEU-ADSS 35t		10	只
变幅	XZBEUB-ADSS 150t		4	只

1.1.1 安装

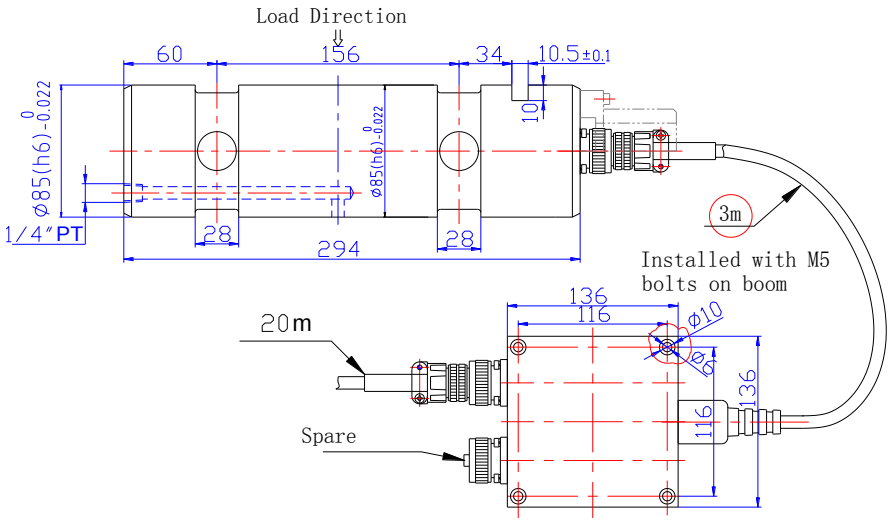
1)前主钩 No1~No4 MainHoist



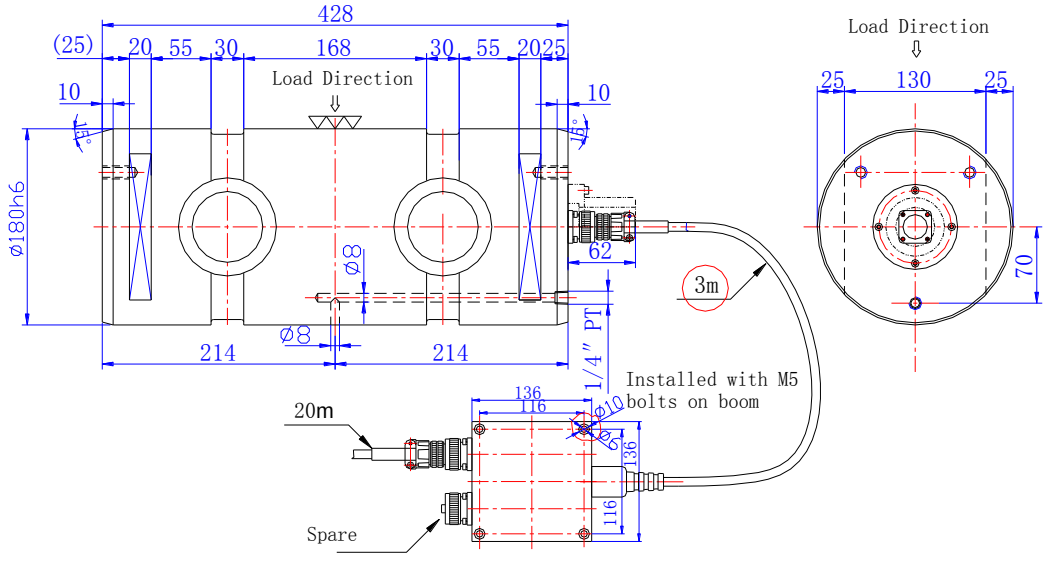
2)后主钩 No5~No8 MainHoist



3)小钩 AuxHoist

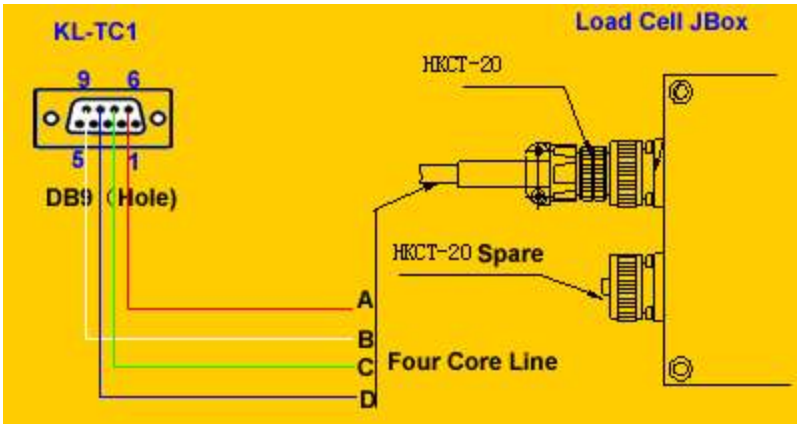


4)变幅 Boom



1.1.2 地址设置方法

将数字传感器的电源正（红），电源负（白），信号 A(绿)，信号 B(蓝)分别与 KL-TC1 仪表的 DB9 孔式插头的 6,9,7,8，如下示意图：



Switch to address modification by pressing the key of 【Address modification】 The indicator shows

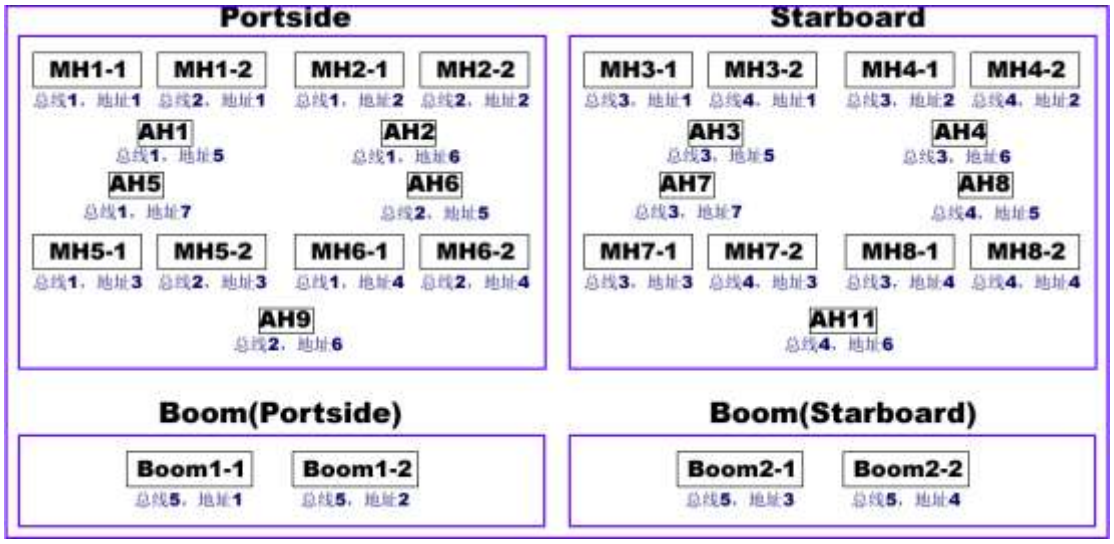
Mode 6 Modify address

current adr: [01]
Set New adr:[02]

EXIT:set PAGE:mode

Press digital keys to input new address，and press【Enter】to confirm or or press【Cancel】to exit. If modification is successful, the new address will be displayed on current address column. After pressing【Input】，or else it will show “NO”

1.1.3 传感器地址和总线布局图

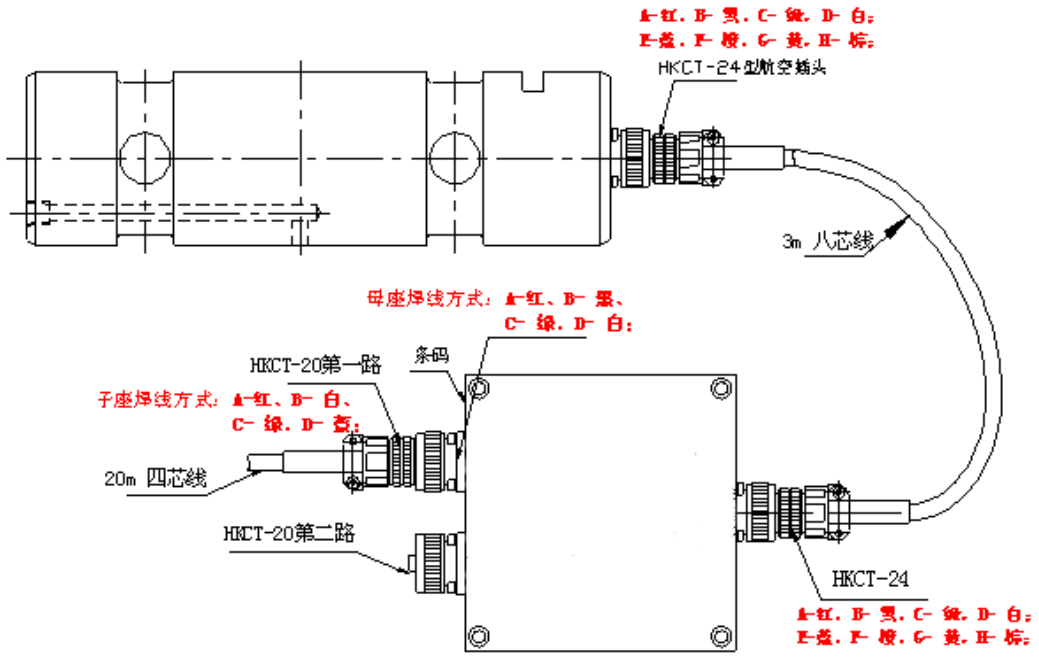


列表如下：

Port Side	Starboard Side

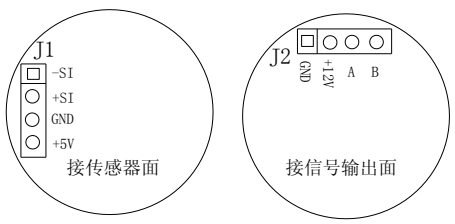
总线1	MainHook1-1	1	总线3	MainHook3-1	1
	MainHook2-1	2		MainHook4-1	2
	MainHook5-1	3		MainHook7-1	3
	MainHook6-1	4		MainHook8-1	4
	AuxHook1	5		AuxHook3	5
	AuxHook2	6		AuxHook4	6
	AuxHook5	7		AuxHook7	7
总线2	MainHook1-2	1	总线4	MainHook3-2	1
	MainHook2-2	2		MainHook4-2	2
	MainHook5-2	3		MainHook7-2	3
	MainHook6-2	4		MainHook8-2	4
	AuxHook6	5		AuxHook8	5
	AuxHook9	6		AuxHook11	6
总线 5					
	Boom1-1	1		Boom2-1	3
	Boom1-2	2		Boom2-2	4

1.1.4 传感器和数字模块接线方式：



列表如下：

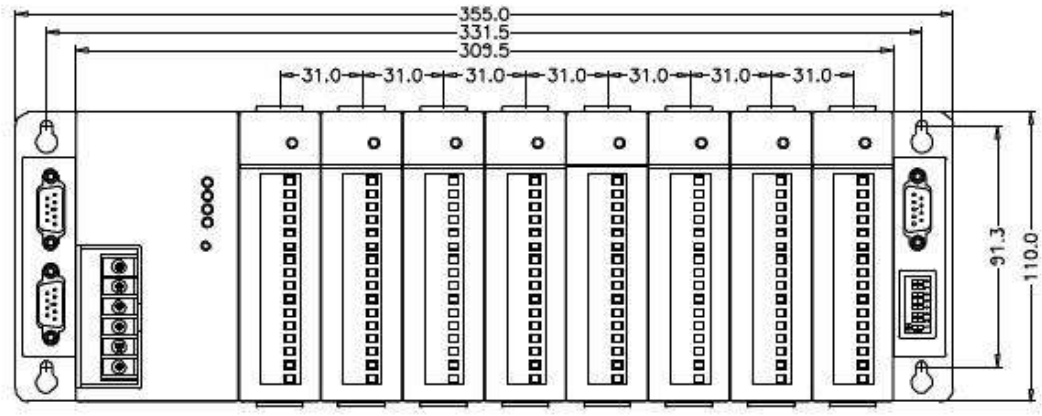
C3 型模块			
		第一路	第二路
接传感器端	激励正： +5V	红	蓝
	激励负： GND	黑	橙
	信号正： +SI	绿	黄
	信号负： -SI	白	棕
信号输		一路	二路



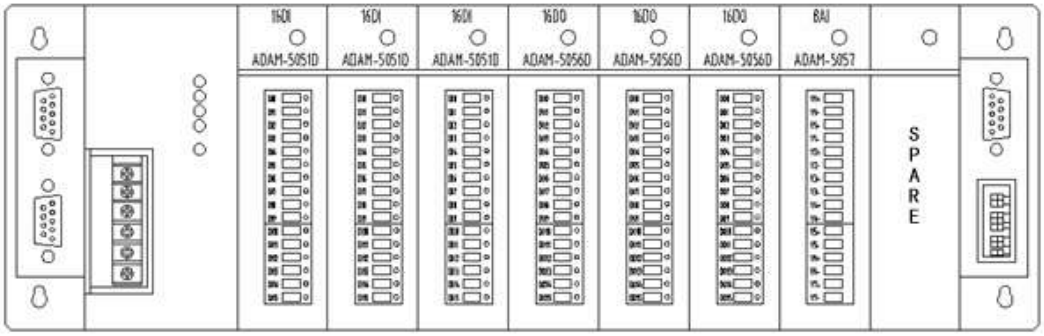
出端	电源正：+12V	红	蓝	
	电源负：GND	黑	橙	
	信号正：A	绿	黄	
	信号负：B	白	棕	

1.2 Adam5000E

1.2.1 Appearance and Dimensions（unit：mm）



1.2.2 模块分布



1.2.3 I/O 点分布

1）5051D

DI0	MH1 Up	DI0	AH1 Up	DI0	AH9 Up
DI1	MH1 Down	DI1	AH1 Down	DI1	AH9 Down
DI2	MH2 Up	DI2	AH2 Up	DI2	Spare(AH10 Up)
DI3	MH2 Down	DI3	AH2 Down	DI3	Spare(AH10 Down)

DI4	MH3 Up	DI4	AH3 Up	DI4	AH11 Up
DI5	MH3 Down	DI5	AH3 Down	DI5	AH11 Down
DI6	MH4 Up	DI6	AH4 Up	DI6	Spare(AH12 Up)
DI7	MH4 Down	DI7	AH4 Down	DI7	Spare(AH12 Down)
DI8	MH5 Up	DI8	AH5 Up	DI8	Boom Up(Portside)
DI9	MH5 Down	DI9	AH5 Down	DI9	Boom Down(Portside)
DI10	MH6 Up	DI10	AH6 Up	DI10	Boom Up(Starboard)
DI11	MH6 Down	DI11	AH6 Down	DI11	Boom Down(Starboard)
DI12	MH7 Up	DI12	AH7 Up	DI12	Spare
DI13	MH7 Down	DI13	AH7 Down	DI13	Spare
DI14	MH8 Up	DI14	AH8 Up	DI14	Spare
DI15	MH8 Down	DI15	AH8 Down	DI15	Spare

2）5056D

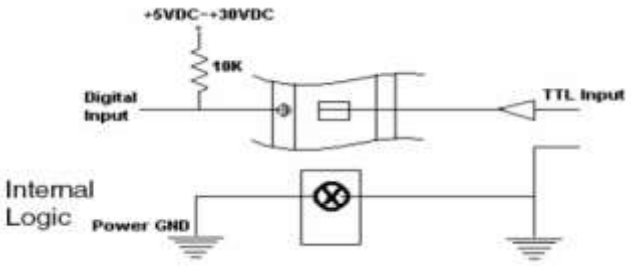
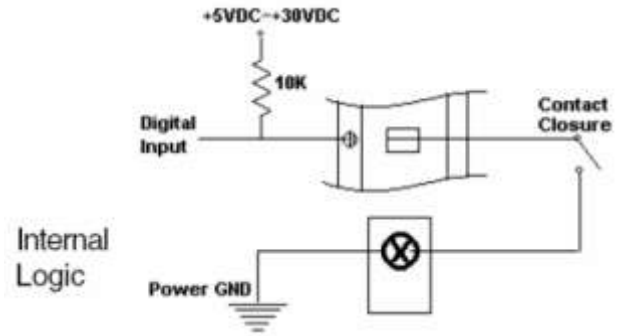
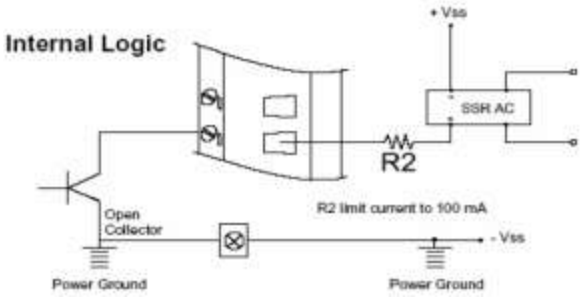
DO0	MH1 90% load	DO0	AH1 overload	DO0	Comm.Error
DO1	MH2 90% load	DO1	AH2 overload	DO1	90% Moment(Portside)
DO2	MH3 90% load	DO2	AH3 overload	DO2	100% Moment(Portside)
DO3	MH4 90% load	DO3	AH4 overload	DO3	90% Moment(Starboard)
DO4	MH5 90% load	DO4	AH5 overload	DO4	100% Moment(Starboard)
DO5	MH6 90% load	DO5	AH6 overload	DO5	Spare
DO6	MH7 90% load	DO6	AH7 overload	DO6	Spare
DO7	MH8 90% load	DO7	AH8 overload	DO7	Spare
DO8	MH1 over load	DO8	AH9 overload	DO8	Spare
DO9	MH2 overload	DO9	Spare(AH10 overload)	DO9	Spare
DO10	MH3 overload	DO10	AH11 overload	DO10	Spare
DO11	MH4 overload	DO11	Spare(AH12 overload)	DO11	Spare
DO12	MH5 overload	DO12	Boom 90% load(Portside)	DO12	Spare
DO13	MH6 overload	DO13	Boom 90% load(Starboard)	DO13	Spare
DO14	MH7 overload	DO14	Boom over load(Portside)	DO14	Spare
DO15	MH8 overload	DO15	Boom over load(Starboard)	DO15	Spare

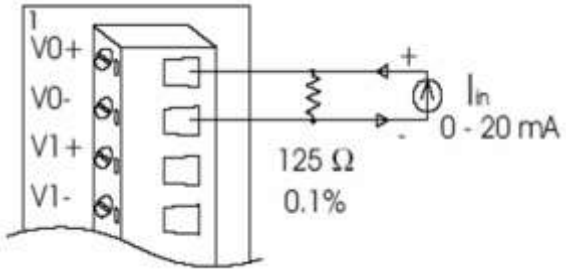
3)5017

v0+	Boom Angle(Portside)
V0-	
V1+	Boom Angle(Starboard)

V1-	
V2+	Spare
V2-	
V3+	Spare
V3-	
V4+	Spare
V4-	
V5+	Spare
V5-	
V6+	Spare
V6-	
V7+	Spare
V7-	

模块描述：

Name	Spec	Reference	Application wiring
5051D	16-ch. DI w/LED	Non-isolated	 **1、TTL**  **2、Contact Closure**
5056D	16-ch. DO w/LED	Non-isolated	

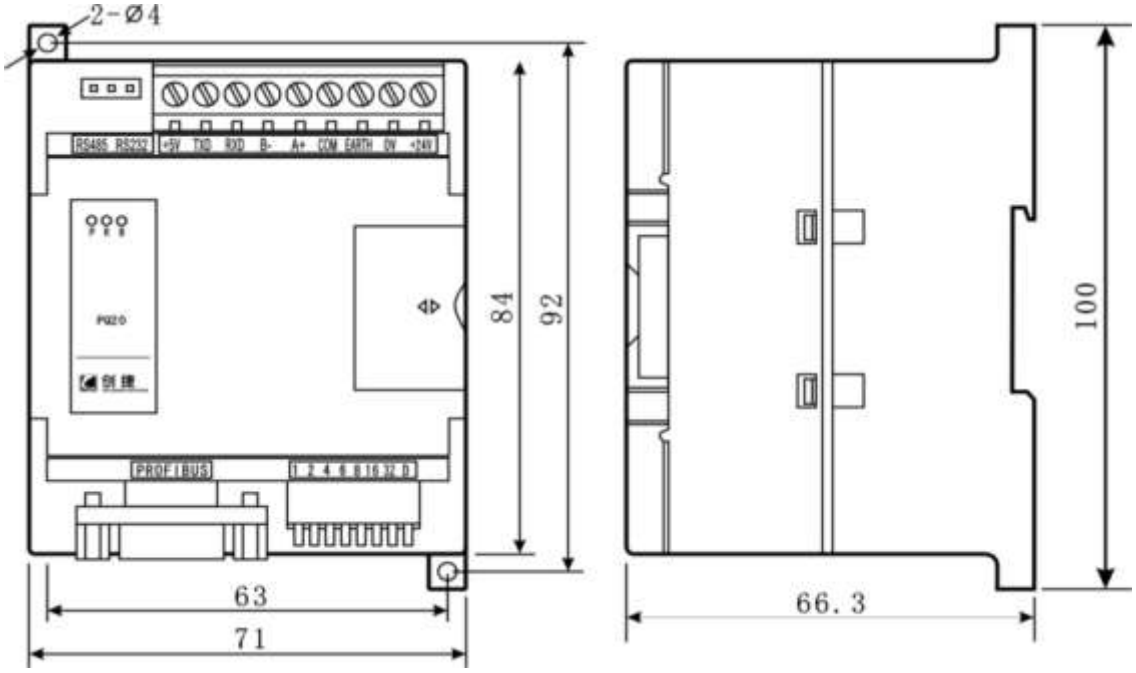
5017	8-ch. AI	Isolated	

Adam-5000E 与 Robust Panel PC 连接

NO.	Adam-5000E	Adam-4520	Remark
1	+Vs	(R)+Vs	24VDC
2	GND	(B)GND 10	0VDC
3	DATA+	DATA+	
4	DATA-	DATA-	

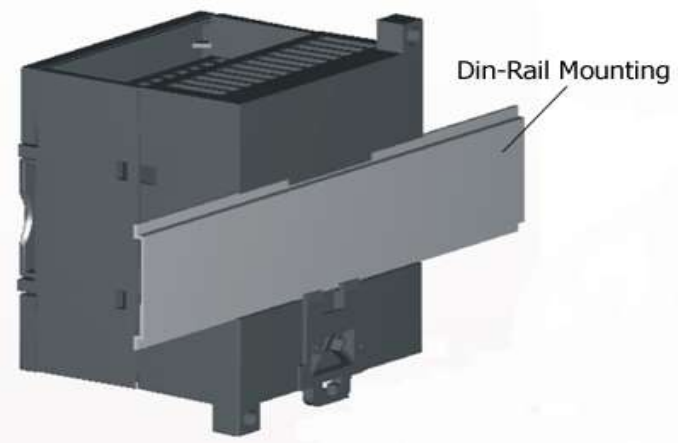
1.3 PQ20

1.3.1 Appearance and Dimensions（**unit：mm**）

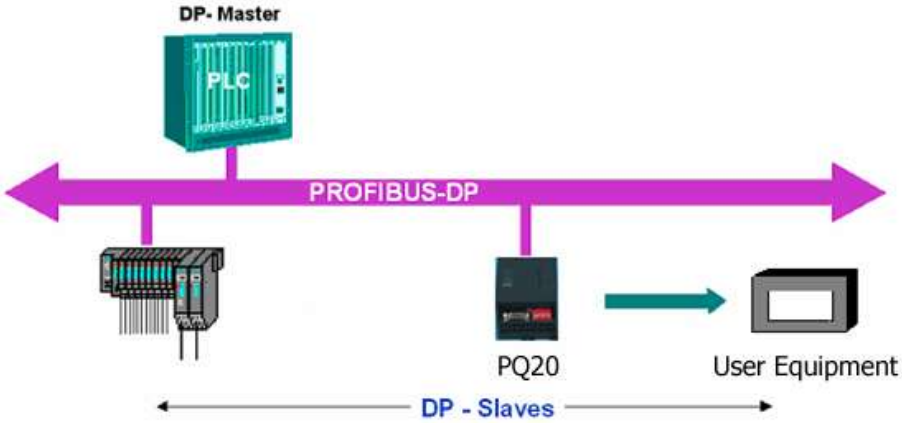


1.3.2 Placement Options

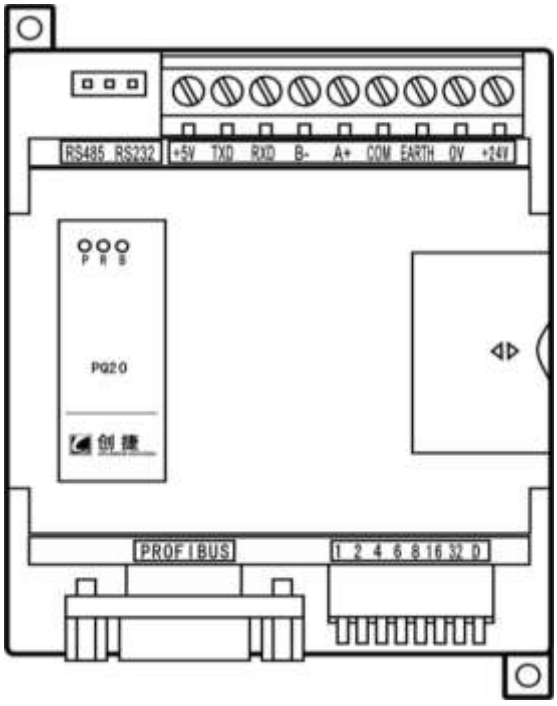
As follows：



The entire system operating environment:



1.3.3 PQ20 indicator and terminal description



PQ20 Top View

Indicator signification:

P Power indicator (Green)

Labeling	signification	
	Bright	Extinguished
P	module power normal	power off or module power damage

R Communication indicator (Green)

Labeling	signification	
	flashing	no flashing
R	Bridge module run normally	Bridging modules run abnormally

B PROFIBUS communication indicator (Red)

Labeling	signification	
	Bright	Extinguished
B	PROFIBUS communication abnormal	PROFIBUS communication normal

Modules power on at the beginning, three of the bright lights or Extinguished state as follows:

P, R, B lights are bright when power on; in 0.5 Second R light is off, in 6 Second B light is off if the module and PROFIBUS master properly connected, and R light flashing. Meanwhile, PROFIBUS master red LED is extinguished.

1.3.4 Top terminals

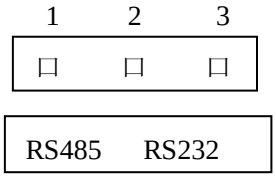
communication terminal

Pin NO.	Symbol	Signification
1	+5V	Power: +5V
2	232 TXD	RS232 send signals(connect forward RXD)
3	232 RXD	RS232） receive signals(connect forward TXD)
4	485-	RS485 differential signal B
5	485+	RS485 differential signal A
6	COM	Public terminal

power terminal

Pin NO.	Symbol	Signification
1	+24V	Power: +24V
2	0V	Power: -24V
3	EARTH	Grounding terminal

RS232、RS485 Select terminal



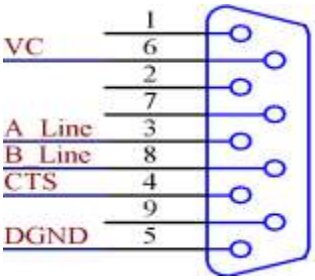
Link 1&2 to select RS485 communication mode, Link 2&3 to select RS232 communication mode.

1.3.5 Bottom terminals

1) PROFIBUS interface

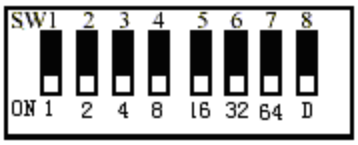
User system use plug DB9 for leading PROFIBUS interface, recommended PROFIBUS standards lead the way.

Plug DB9 outer metal parts reliable grounding. DB9 Standard as follow figure:



User refer to DB9 diagram when using non-standard DB9, pay attention to the signal lead. Meanwhile shield cable should be contact with Plug DB9 outer metal parts. This time only consider two signal wire that is A_line and B_line. Our suggestion is to use standard DB9 connector which produced by SIEMENS to connect to the system.

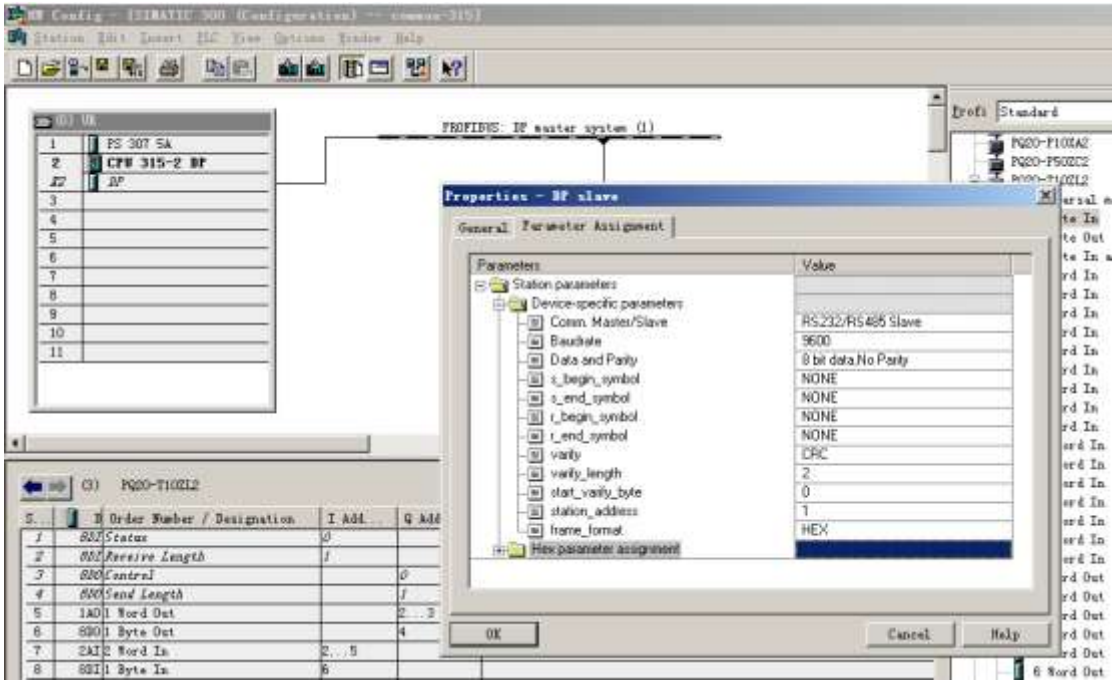
2) S1 slave address set up



Address range 3-126, SW8 unused. When address value "ON" equal is the sum of weights, such as: 7 = 1 +2 +4, set the slave address should be SW1, SW2, SW3 allocated to ON.

1.3.6 Specific parameters

Selection in PLC interface shown below：



1.3.6 Exchange Data

Slave→Master

NO.	Name	Comment	PLC(IB171=78)
1.	MH1# load	Unit: 1 t	IB172, IB173
2.	MH2# load		IB174, IB175
3.	MH3# load		IB176, IB177
4.	MH4# load		IB178, IB179
5.	MH 5# load		IB180, IB181
6.	MH 6# load		IB182, IB183
7.	MH 7# load		IB184, UB185
8.	MH 8# load		IB186, IB187
9.	Boom 1# load		IB188, IB189
10.	Boom 2# load		IB190, IB191
11.	AH 1# load	Unit:0.1t	IB192, IB193
12.	AH 2# load		IB194, IB195
13.	AH 3# load		IB196, IB197
14.	AH 4# load		IB198, IB199
15.	AH 5# load		IB200, IB201
16.	AH 6# load		IB202, IB203
17.	AH 7# load		IB204, IB205
18.	AH 8# load		IB206, IB207
19.	AH 9# load		IB208, IB209
20.	AH 10# load		IB210, IB211
21.	AH 11# load		IB212, IB213
22.	AH 12# load		IB214, IB215
23.	Limit for main hoist (Portside)	Unit:1t	IB216, IB217

24.	Limit for main hoist(Starboard)		IB218, IB219
25.	Moment (Portside)	Unit: %	IB220, IB221
26.	Moment (Starboard)		IB222, IB223
27.	Warning 6	Bit0------90% Moment(Portside)	IB225
		Bit1------100%Moment(Portside)	
		Bit2------90% Moment(Starboard)	
		Bit3------100% Moment(Starboard)	
		Bit4------Spare	
		Bit5------Spare	
		Bit6------Spare	
		Bit7------Spare	
		Bit8------Spare	IB224
		Bit9------Spare	
		Bit10------Spare	
		Bit11------Spare	
		Bit12------Spare	
		Bit13------Spare	
		Bit14------Spare	
		Bit15------Spare	
28.	Spare		IB226, IB227
29.	Spare		IB228, IB229
30.	Spare		IB230, IB231
31.	Limit for Aux. hoist(Portside)	Unit:0.1t	IB232, IB233
32.	Limit for Aux. hoist(Starboard)	Unit:0.1t	IB234, IB235
33.	Boom Hoist NO.1 Angle	Unit: 0.1°	IB236, IB237
34.	Boom Hoist NO.2 Angle		IB238, IB239
35.	Warning 1	Bit0--90% load of MH1	IB241
		Bit1--90% load of MH2	
		Bit2--90% load of MH3	
		Bit3--90% load of MH4	
		Bit4--90% load of MH5	
		Bit5--90% load of MH6	
		Bit6--90% load of MH7	
		Bit7--90% load of MH8	
36.		Bit8--90% load of AH1	IB240
		Bit9--90% load of AH2	
		Bit10--90% load of AH3	
		Bit11--90% load of AH4	
		Bit12--90% load of AH5	
		Bit13--90% load of AH6	
		Bit14--90% load of AH7	
		Bit15--90% load of AH8	

37.	Warning 2	Bit0--90% load of AH9	IB243
		Bit1--spare	
		Bit2--90% load of AH11	
		Bit3--spare	
		Bit4--Overload of MH1	
		Bit5--Overload of MH2	
		Bit6--Overload of MH3	
		Bit7--Overload of MH4	
38.		Bit8--Overload of MH5	IB242
		Bit9--Overload of MH6	
		Bit10--Overload of MH7	
		Bit11--Overload of MH8	
		Bit12--Overload of AH1	
		Bit13--Overload of AH2	
		Bit14--Overload of AH3	
		Bit15--Overload of AH4	
39.	Warning 3	Bit0--Overload of AH5	IB245
		Bit1--Overload of AH6	
		Bit2--Overload of AH7	
		Bit3--Overload of AH8	
		Bit4--Overload of AH9	
		Bit5--spare	
		Bit6—Overload of AH11	
		Bit7--spare	
40.		Bit8--Comm Error of MH1-1	IB244
		Bit9--Comm Error of MH1-2	
		Bit10--Comm Error of MH2-1	
		Bit11--Comm Error of MH2-2	
		Bit12--Comm Error of MH3-1	
		Bit13--Comm Error of MH3-2	
		Bit14—Comm Error of MH4-1	
		Bit15--Comm Error of MH4-2	
41.	Warning 4	Bit0--Comm Error of MH5-1	IB247
		Bit1--Comm Error of MH5-2	
		Bit2—Comm Error of MH6-1	
		Bit3--Comm Error of MH6-2	
		Bit4—Comm Error of MH7-1	
		Bit5--Comm Error of MH7-2	
		Bit6—Comm Error of MH8-1	
		Bit7—Comm Error of MH8-2	
42.		Bit8--Comm Error of AH1	IB246
		Bit9--Comm Error of AH2	

		Bit10—Comm Error of AH3	
		Bit11—Comm Error of AH4	
		Bit12--Comm Error of AH5	
		Bit13—Comm Error of AH6	
		Bit14--Comm Error of AH7	
		Bit15--Comm Error of AH8	
43.	Warning 5	Bit0--Comm Error of AH9	IB249
		Bit1--spare	
		Bit2—Comm Error of AH11	
		Bit3--spare	
		Bit4--Comm Error of Boom 1-1	
		Bit5--Comm Error of Boom 1-2	
		Bit6--Comm Error of Boom 2-1	
		Bit7--Comm Error of Boom 2-2	
44.		Bit8--spare	IB248
		Bit9--spare	
		Bit10--spare	
		Bit11--spare	
		Bit12--spare	
		Bit13--spare	
		Bit14--spare	
		Bit15--spare	

Master→Slave

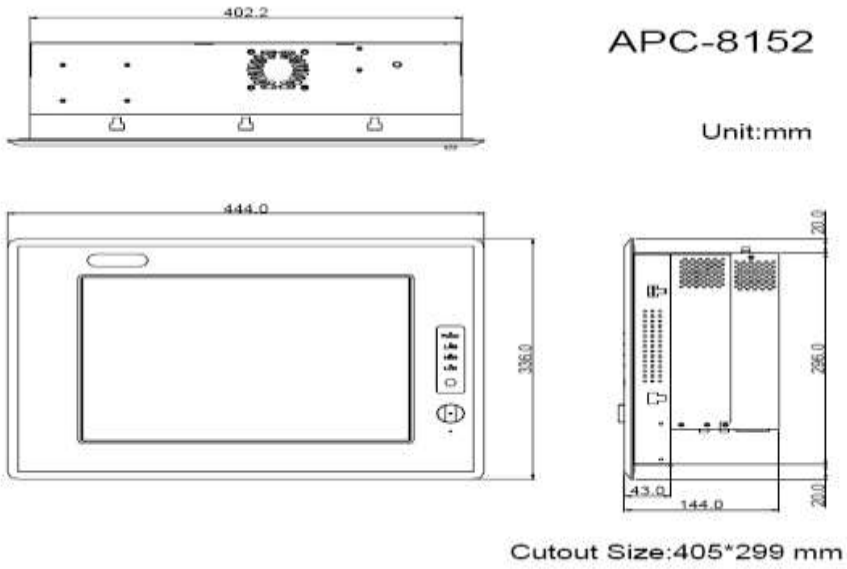
NO.	Name	Comment	PLC(QB119=30)
1	Motion 1	Bit0--MH1 Up	QB121
		Bit1--MH1 Down	
		Bit2--MH2 Up	
		Bit3--MH2 Down	
		Bit4--MH3 Up	
		Bit5--MH3 Down	
		Bit6--MH4 Up	
		Bit7--MH4 Down	
2		Bit8--MH5 Up	QB120
		Bit9--MH5 Down	
		Bit10--MH6 Up	
		Bit11--MH6 Down	
		Bit12--MH7 Up	
		Bit13--MH7 Down	
		Bit14--MH8 Up	
		Bit15--MH8 Down	
3	Motion 2	Bit0--AH1 Up	QB123
		Bit1--AH1 Down	

		Bit2--AH2 Up	
		Bit3--AH2 Down	
		Bit4--AH3 Up	
		Bit5--AH3 Down	
		Bit6--AH4 Up	
		Bit7--AH4 Down	
		Bit8--AH5 Up	QB122
		Bit9--AH6 Down	
		Bit10--AH6 Up	
		Bit11--AH6 Down	
		Bit12--AH7 Up	
		Bit13--AH7 Down	
		Bit14--AH8 Up	
		Bit15--AH8 Down	
4		Bit0--AH9 Up	QB125
		Bit1--AH9 Down	
		Bit2--Spare	
		Bit3--Spare	
		Bit4--AH11 Up	
		Bit5--AH11 Down	
		Bit6--Spare	
		Bit7--Spare	
5		Bit8—Boom(Portside) Up	QB124
		Bit9--Boom(Portside)Down	
		Bit10--Boom(Starboard)Up	
		Bit11--Boom(Starboard)Down	
		Bit12--Spare	
		Bit13--Spare	
		Bit14--Spare	
		Bit15--Spare	
6	Trim information(port)	Unit: 0.1°	QB126,QB127
7	Heel information(fwd)		QB128,QB129
8	Main Hoist 1# Height	Unit: 0.1m	QB130,QB131
9	Main Hoist 2# Height		QB132,QB133
10	Main Hoist 3# Height		QB134,QB135
11	Main Hoist 4# Height		QB136,QB137
12	Main Hoist 5# Height		QB138,QB139
13	Main Hoist 6# Height		QB140,QB141
14	Main Hoist 7# Height		QB142,QB143
15	Main Hoist 8# Height		QB144,QB145
16	Trim information(starboard)	Unit: 0.1°	QB146,QB147
17	Heel information(bwd)		QB148,QB149

1.4 Robust Panel PC

Model:APC-8152

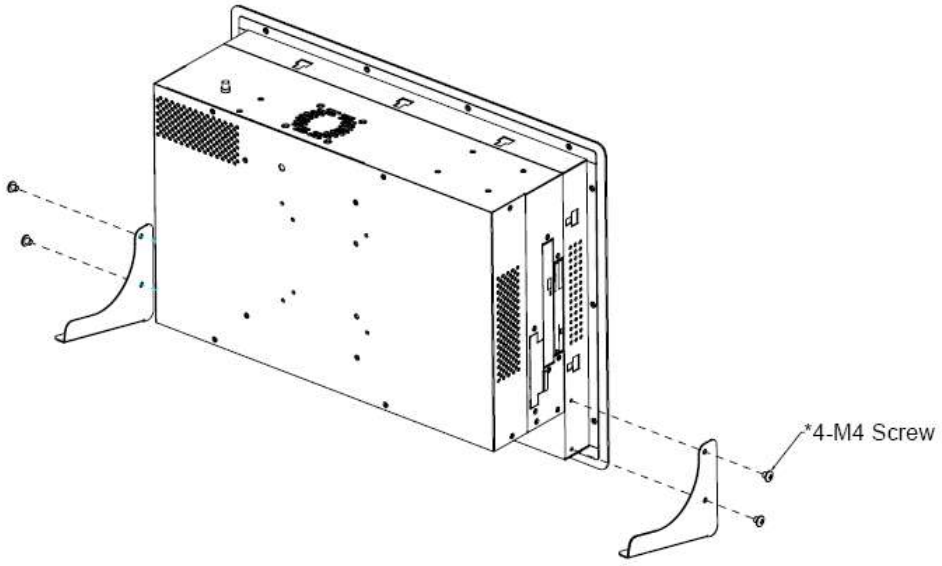
1.4.1 Dimension



1.4.2 Easy Stand Installation

There're two L-shape easy stands come with the product. Refer to the following instructions to install.

1)Fasten the L-shape easy stands with the screws on both sides of the monitor. See the drawing below:



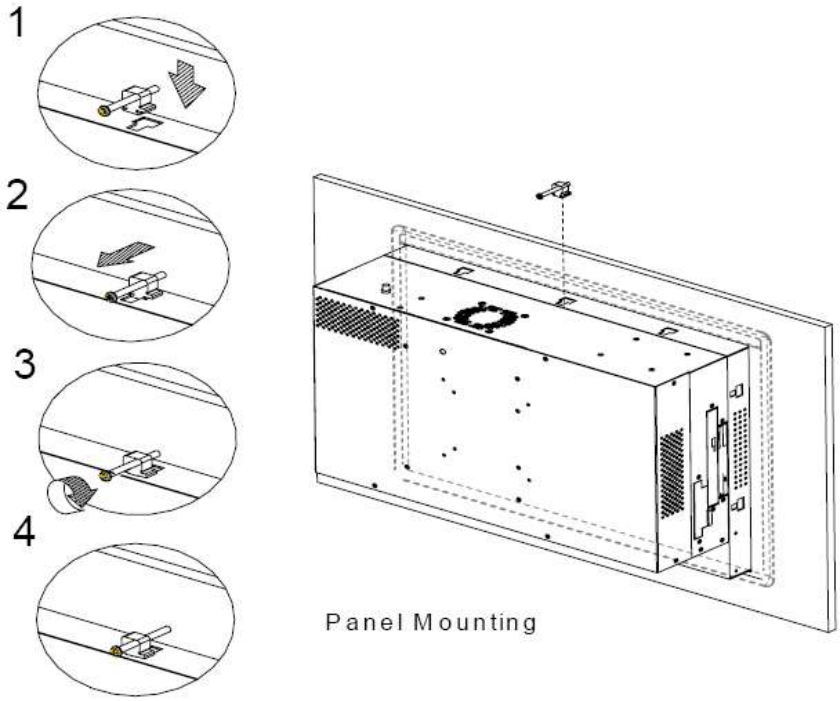
Some screw sets will come with the product for user to mount the monitor on the wall. See the steps below for installing.

Step 1: Bore the screw into the screw nut.

Step 2: Locate the screw set into the hole around the monitor as the right illustration and pull it back to lock the screw set on the hole.

Step 3: Turn the screw around to make it tight until it is closed to the wall.

Step 4: Lock the monitor to the wall with the screw set which mean you've done a good job.

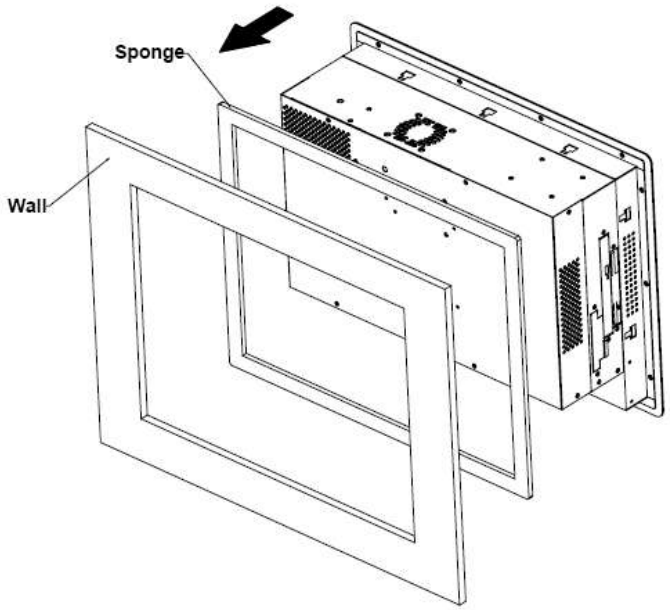


2) **Waterproof sponge Installation**

The following illustration shows you how to lodge the waterproof sponge in the back of the monitor set.

A)Lodge the Sponge in the back of the monitor set

B)Locate the monitor set on the wall



1.5 APC Smart-UPS

Chapter 2

软件部分

2.1 数据库

SQL Server 2000 Desktop Engine (MSDE 2000) 是一个数据库引擎，以 SQL Server 技术为基础所建构的。MSDE 2000 是一个非常可靠的储存引擎和查询处理器，可作为企业应用程式的桌面扩充程式。SQL Server 和 MSDE 2000 之间共用的一般技术基础，让开发人员建置的应用程式，可以从手提式电脑顺利地扩充至多处理器丛集。

MSDE 2000 设计在幕后执行，支援交易的桌面应用程式，它并没有自己的使用界面 (UI) 或工具。使用者透过内嵌的应用程式与 MSDE 2000 互动。

2.2 软件安装与卸载

2.2.1 安装 MSDE

MSDE(MSDE 全称是 MS SQL Server Desktop Engine,俗称 MSSQL 的桌面版，它是一个基于 SQL Server 核心技术构建的数据引擎)

1)插入安装光盘，运行 Setup,出现如下画面：

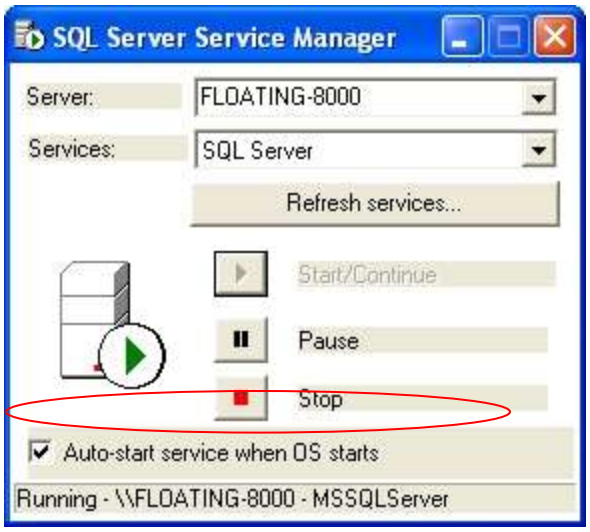
根据提示，选择“Step 1:Install MSDE”，如果系统从未安装过 MSDE 软件，请根据提示一步一步安装，正确安装完成后，请重新启动电脑。

2)重新启动电脑，进入系统后，请注意右下角状态栏,如下图中的红色圈所示：

表示数据库服务已经启动。

MSDE 运行状态有以下 3 种状态：

 Stopped  Running  Paused

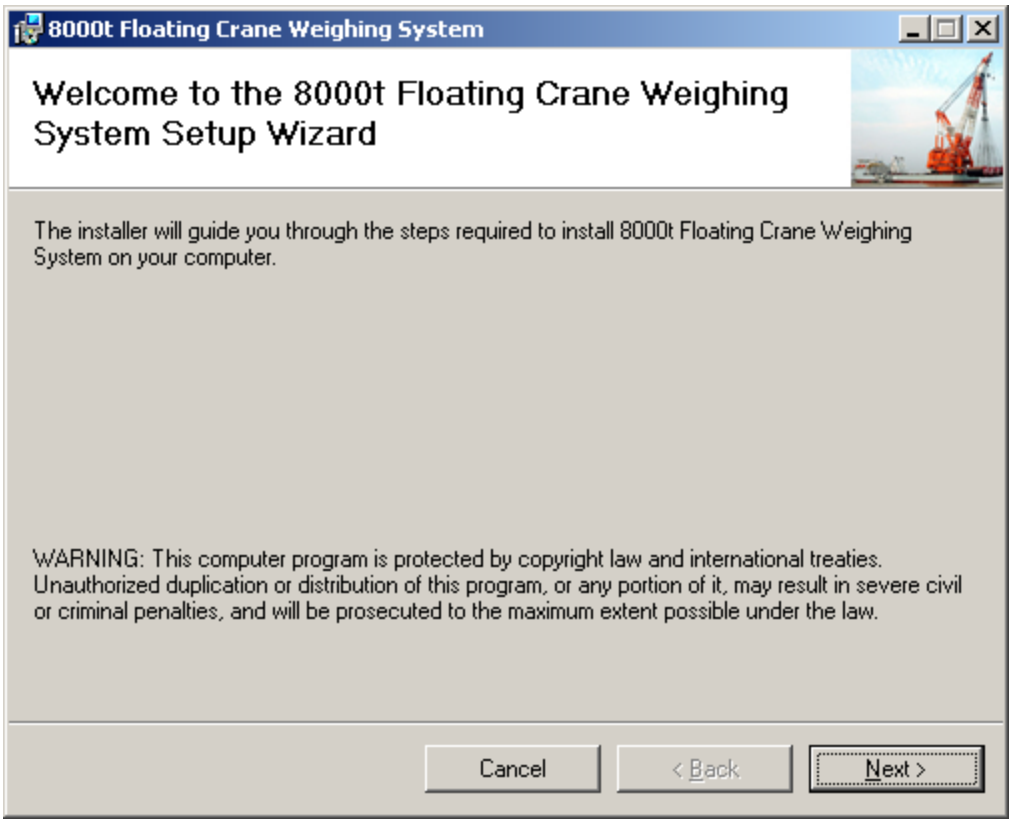


请按上面图形将”Auto-start service when OS starts”选项勾选上。

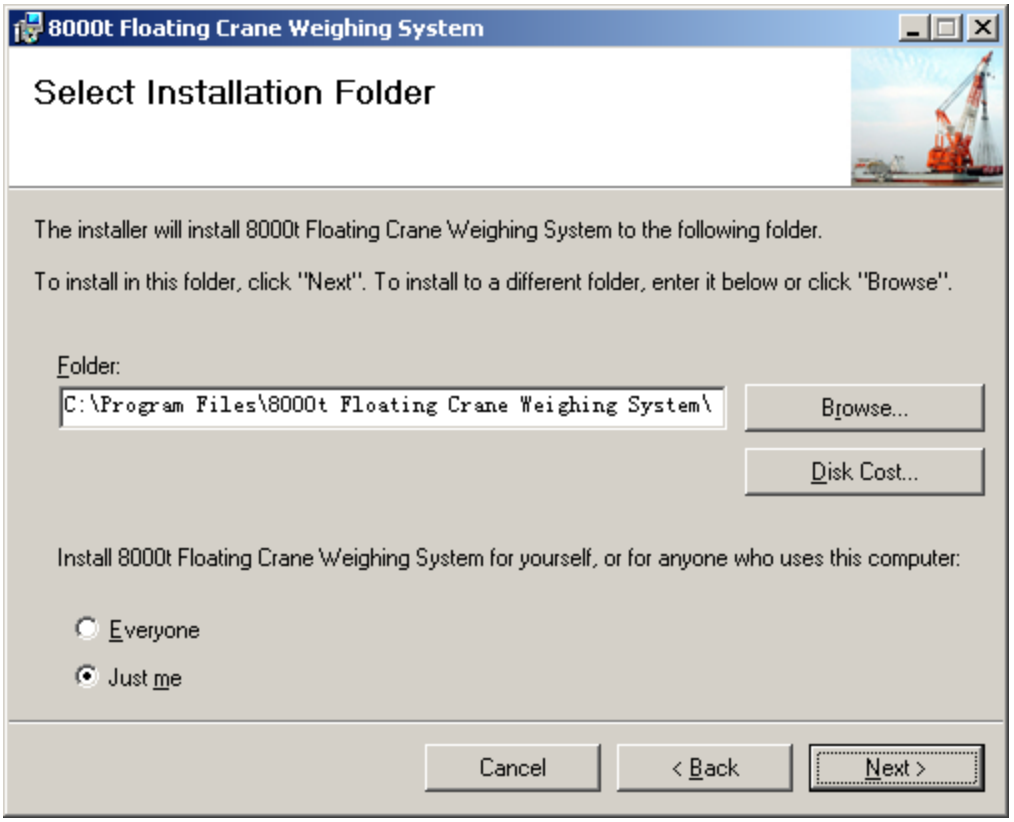
注意：如果系统 Stopped 或 Paused 状态，请点击按钮  ,将数据库服务启动，使其处于 Running 状态。

2.2.2 安装应用程序

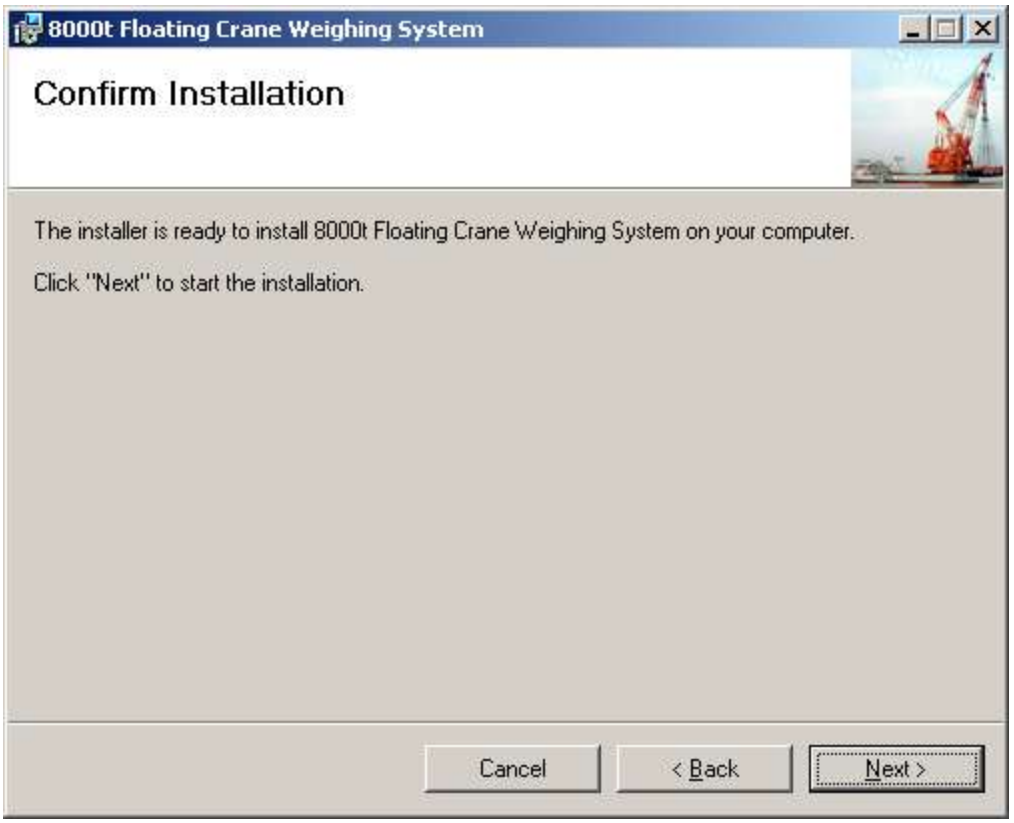
运行“Step 2:Install Application”安装向导出现后，请根据提示，点击按钮"Next >";



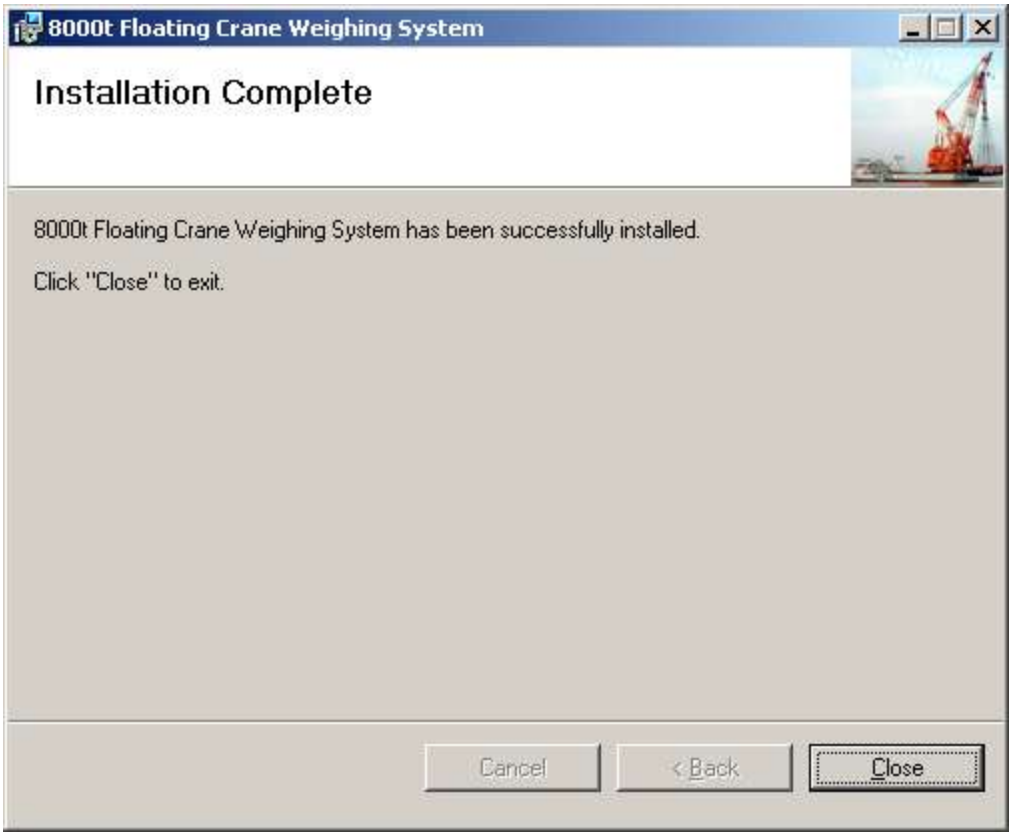
(3) 可以使用“Browse”来选择安装目录。目录确认后，点击 "Next>";



(4)确认安装提示窗口，点击按钮"Next >"，继续安装;

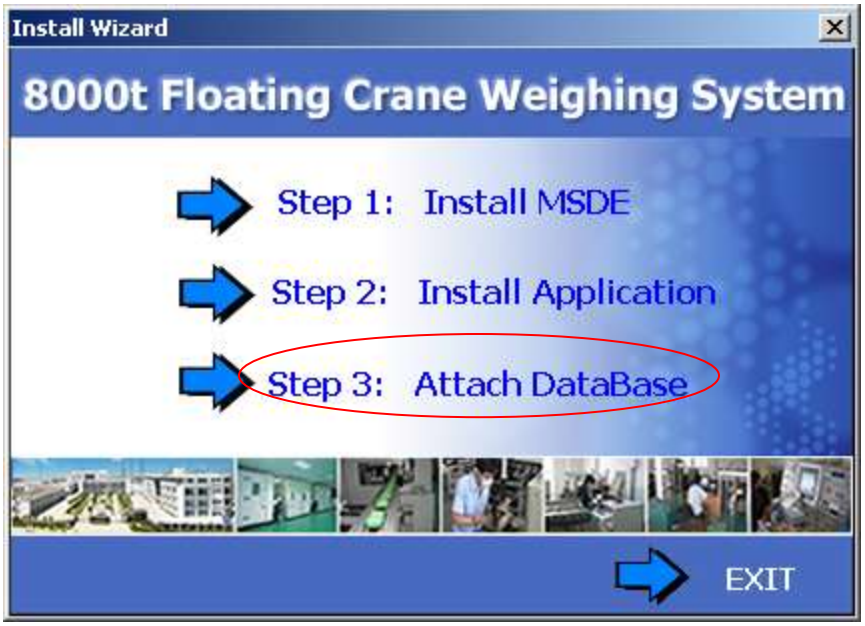


(5) 安装完成提示窗口，点击按钮"Closed"，完成安装;



以上的安装完成后，你可以在桌面上看到如下的图标。

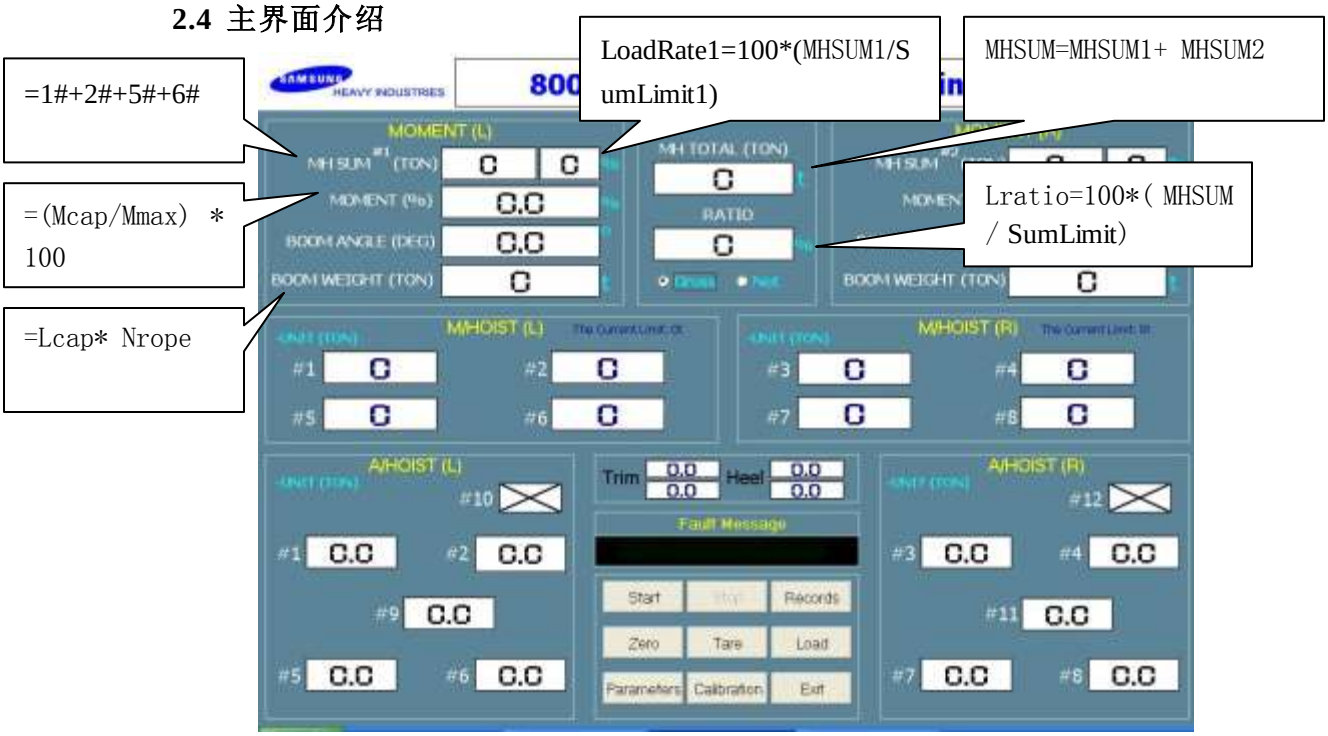
2.2.3 附加数据库



点击“Step 3:Attach DataBase”,选择需要将称重数据存放的位置后,按提示操作。

完成以上步骤后，所有安装步骤已经完成。

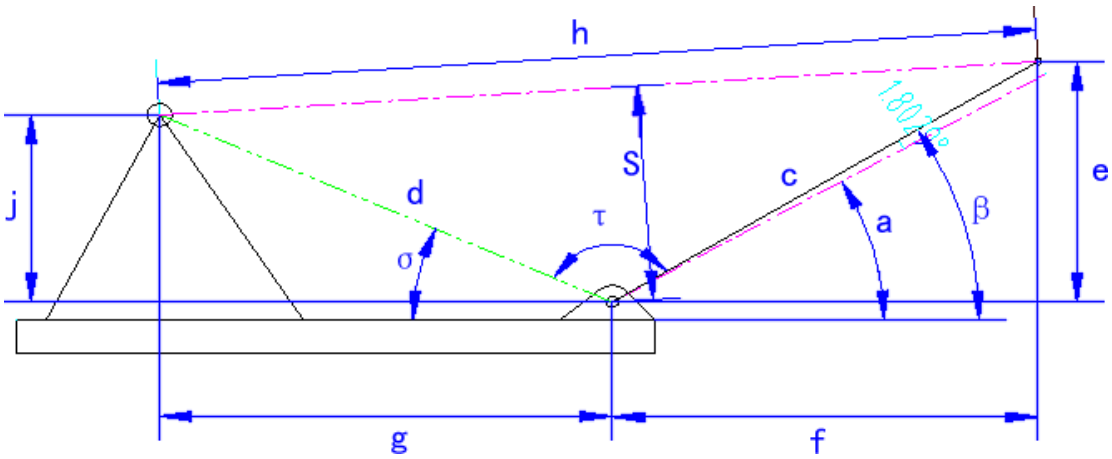
2.4 主界面介绍



MainForm GUI

Description	Formular	Abbreviation	Units	REMARKS
Weight of mainHoist(1#)		WmHoist1	Ton	
Weight of mainHoist(2#)		WmHoist2	Ton	
Weight of mainHoist(5#)		WmHoist5	Ton	
Weight of mainHoist(6#)		WmHoist6	Ton	
Limit of mainHoist(1#)		LmHoist1	Ton	main hook capacity.pdf
Limit of mainHoist(2#)		LmHoist2	Ton	
Limit of mainHoist(5#)		LmHoist5	Ton	
Limit of mainHoist(6#)		LmHoist6	Ton	
Total weight of mainHoist(Portside)	=WmHoist1+WmHoist2+WmHoist5+WmHoist6	MHSUM1	Ton	
Total weight of mainHoist(Starboard)	=WmHoist3+WmHoist4+WmHoist7+WmHoist8	MHSUM2	Ton	
Total Limit of mainHoist(Portside)		SumLimit1	Ton	main hook capacity with inclination.pdf
Total Limit of mainHoist(Starboard)		SumLimit2	Ton	
Load Rate(Portside)	=(MHSUM1/ SumLimit1) * 100	LoadRate1	%	
Load Rate(Starboard)	=(MHSUM2/ SumLimit2) * 100	LoadRate2	%	
Total weight of mainHoist	= MHSUM1+ MHSUM2	MHSUM	Ton	
Total Limit of mainHoist	= SumLimit1+ SumLimit2	SumLimit	Ton	
Load Rate	=(MHSUM / SumLimit) * 100	Lratio	%	
Moment(Portside)	=(Mcap/Mmax) * 100	Mdisp	%	
Weight of Boom	= Lcap* Nrope	Mcap	Ton	

2.5 力矩计算介绍（以 Portside 为例）



其中常量部分：

c = 158929mm

g = 114000mm

j = 47500mm

Mmax = 467664.7 (Max. Moment)

Nrope = 32 (No. of wire rope)

1）测量α (Portside 臂架角度),测量 Lcap（Captured Load）=load_1+load_2

2）计算β，β=α+1.8029

3）计算σ， σ=ATAN(j/g)*180/PI()

4）计算τ， τ=180-β-σ

5）计算 d，d=(g^2+j^2)^0.5

6）计算 e，e=c*SIN(β*PI()/180)

7）计算 f,f=c*COS(β*PI()/180)

8）计算 h，h=((e-j)^2+(f+g)^2)^0.5

9）计算 S,S=c*d*SIN(τ*PI()/180)/h

10）计算 Mcap（Captured Moment），Mcap= Lcap * Nrope* S

11）计算 Mdisp（Displayed Moment），Mdisp=(Mcap/Mmax) * 100

12）

Warning moment 1　　Mdisp∈ [90，100)

Warning moment 2　　Mdisp≧100

2.6 补偿介绍

校准传感器过程中，要求：钩子向上运动，停下后做标定。

校准传感器过程中，要求：钩子向上运动，停下后做标定。

1)补偿参数表设定，用户设置

Range	钩子向下参数 K1	臂架上升引起钩子向上参数 K2
0~300t	K11	K21
300~600t	K12	K22
600~900t	K13	K23

≥900t	K14	K24

2)补偿延时时间 t,单位:秒 (Delayed time)

3)钢丝绳参数 w1,单位:Ton/m (Rope weight in every single unit)

4)传感器值 F_m，单位 Ton (Load cell value)

5)包含钢丝绳重量的补偿后值 Fc，单位 Ton (Compensation with rope weight)

6)最终显示的重量值 F_D，单位 Ton (Displaying value on monitor)

7)记录向上时所受的力 F_{up}，单位 Ton (Rope tension when Hook up)

8)起升高度 h1,单位：m (Hook lifting height)

9)钩子高度 h2,单位：m (Hook height)

10)钢丝绳长度 L,单位:m (Rope length)

L = (h1-h2)

2.4.1 自动补偿方式 (Calculation of compensation)：

1) 钩子向上(Hook up)

$F_{up} = F_m$

$Fc = F_m$

$F_D = Fc$ -L*w1

2）钩子向下，且在时间 t 内 (Hook down ,and in t seconds)

AutoAdjust_K1 $= F_{up} / F_m$

$Fc = F_m$

$F_D = Fc$ -L*w1

3） 时间 t 后(after t seconds)

$Fc = F_m$ *AutoAdjust_K1

$F_D = Fc$ -L*w1

5）钩子如果向上，转到第一步计算(if Hook up,goto step 1)

2.4.2 使用用户设置参数表补偿方式：

1） 钩子向上运动(Hook up)

$Fc = F_m$

$F_D = Fc$ -L*w1

2） 钩子向下，时间 t 内 (Hook down ,and in t seconds)

$Fc = F_m$

F_D = F_C-L*w1

3） 根据 F_m 值的范围，来确定参数 K1 是 K11~K14 中的一个 (Set K1 value depend on Range of F_m)

K1∈(K11,K12,K13,K14)

4） 时间 t 后 (after t seconds)

$Fc = F_m$*(1+K1)

$F_D = Fc$ -L*w1

5）钩子向上，转到第一步计算(if Hook up,goto step 1)

2.4.3 不使用补偿方式

$Fc = F_m$

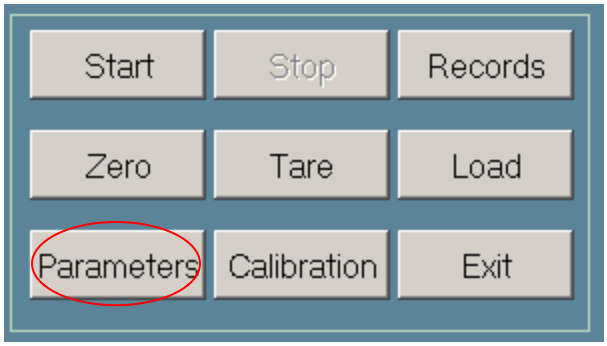
$F_D = Fc$ -L*w1

2.4.4 不考虑钢丝绳重量

$Fc = F_m$

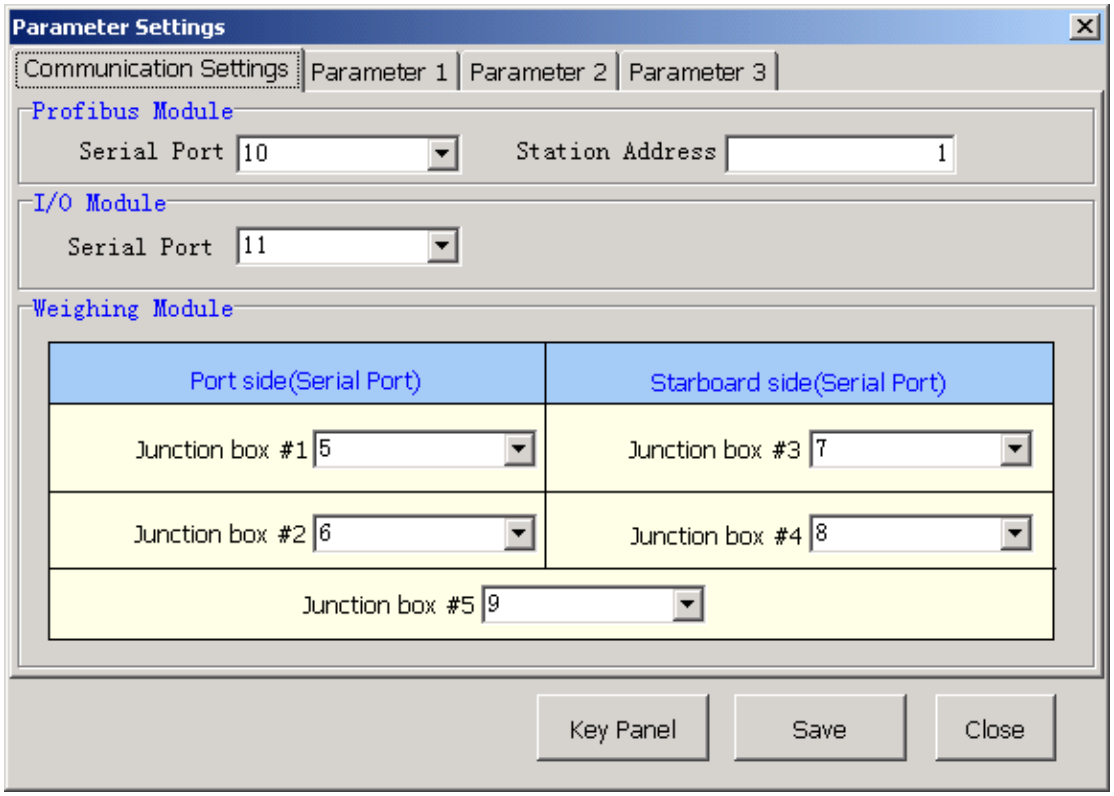
$F_D = Fc$

2.7 软件中配置内容



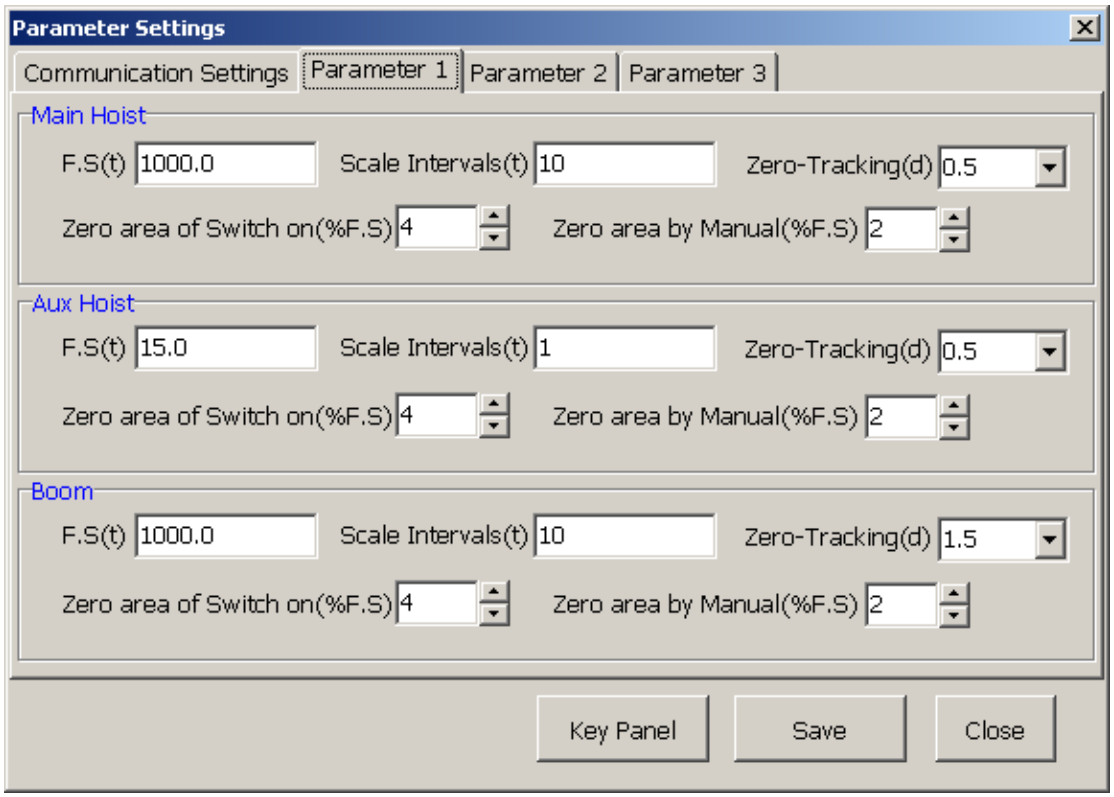
点击“Parameters”,如下所示：

1）Communication Settings:



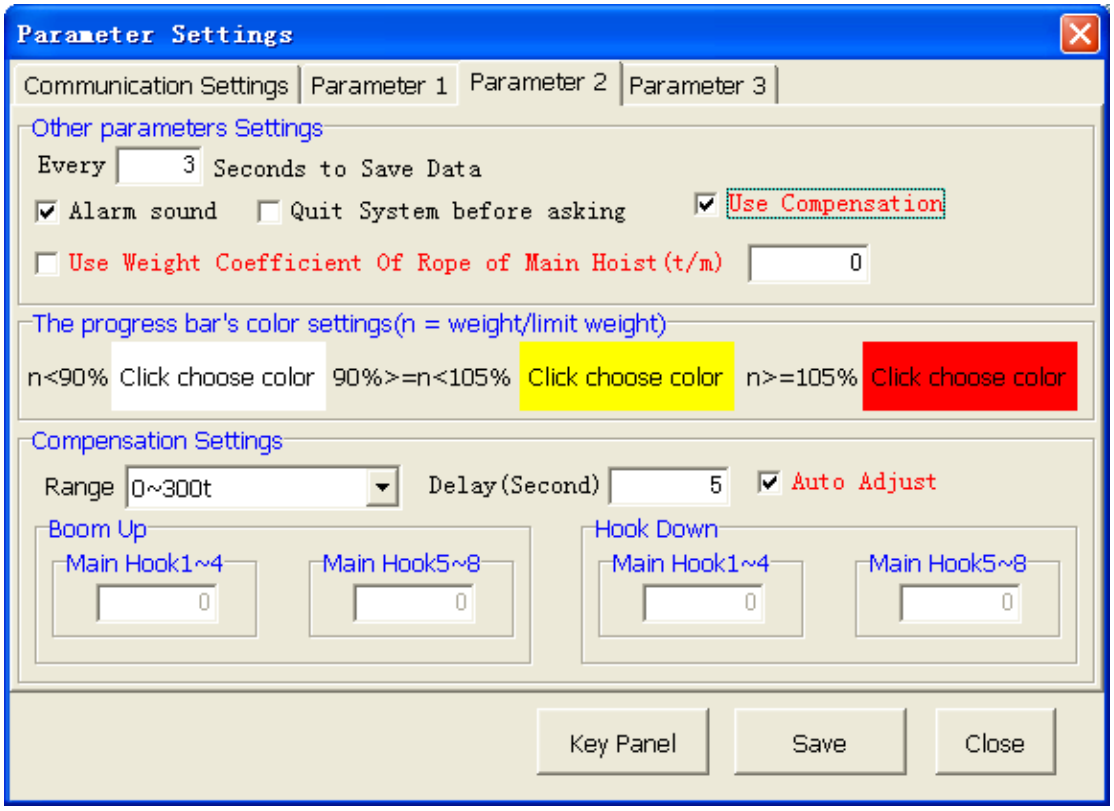
这里的 Weighing Module 设置参数请根据“1.1.3 传感器地址和总线布局图”。

2）Parameter 1:



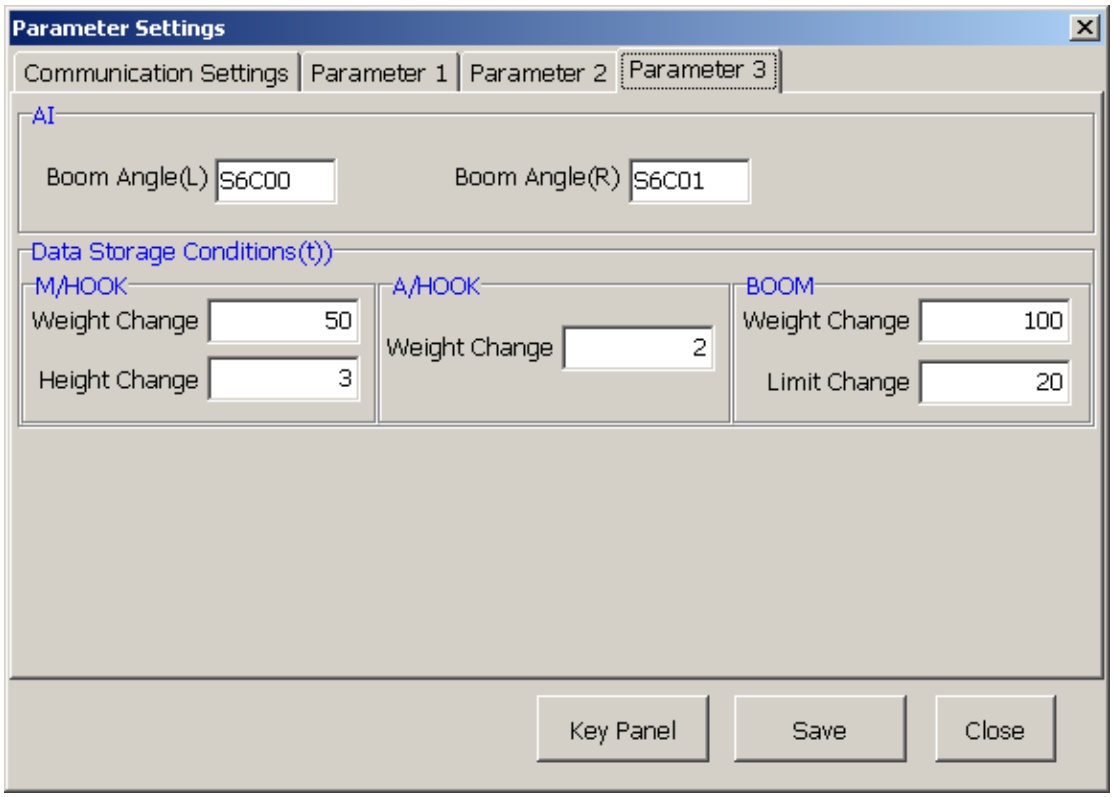
对 Main Hoist,Aux Hoist,Boom 重量传感器的 F.S 进行设置，显示分度，自动零点跟踪，开机置零范围，手动置零范围进行设置。

3）Parameter 2:



臂架运动、钩子运动补偿参数设置，主钩钢丝绳重量比重系数设置。

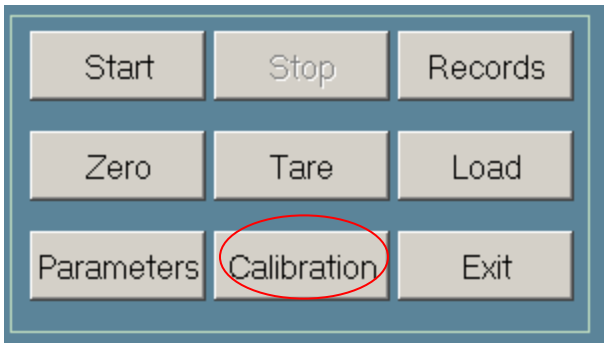
3）Parameter 3:



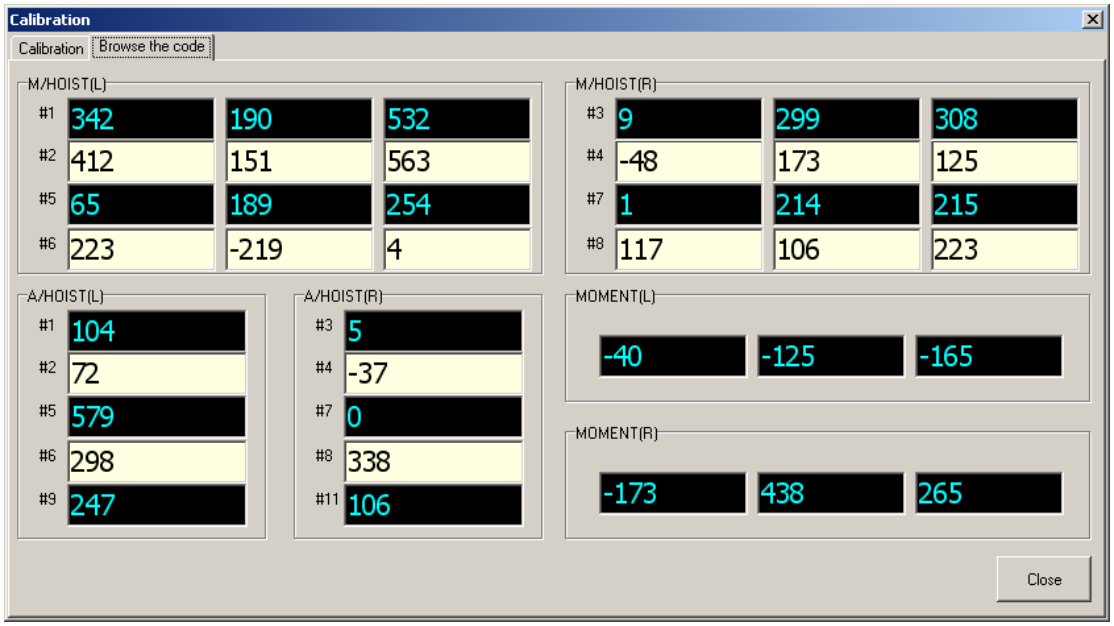
1)设置臂架角度采集的通道。设置的范围为:S6C00~S6C07

2）数据存储条件设置。

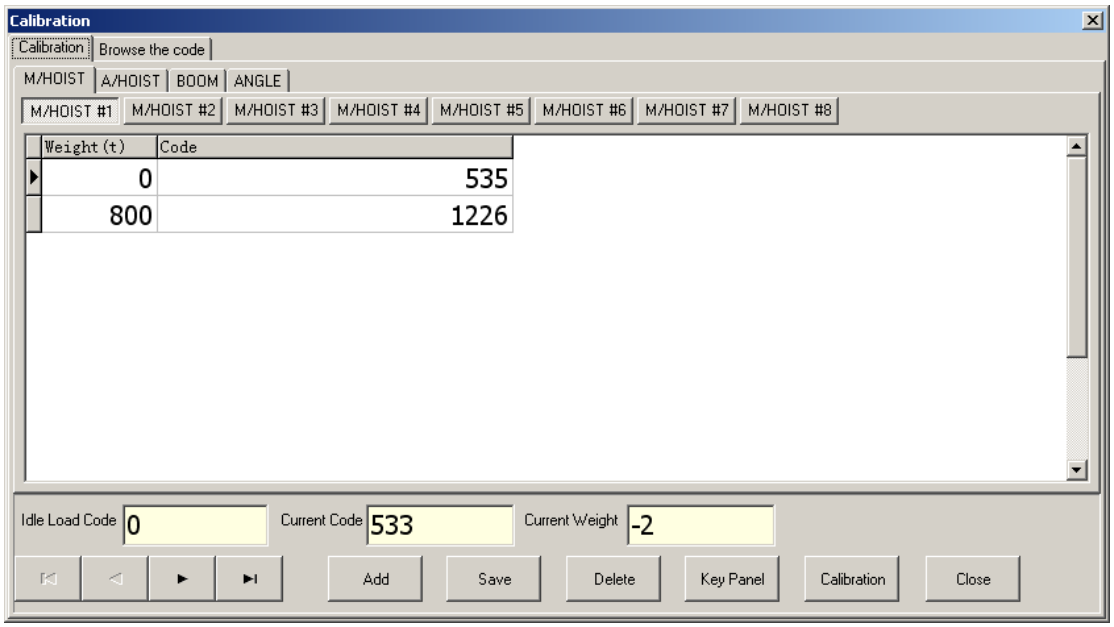
2.8 传感器标定



点击“Calibration”,如下所示：



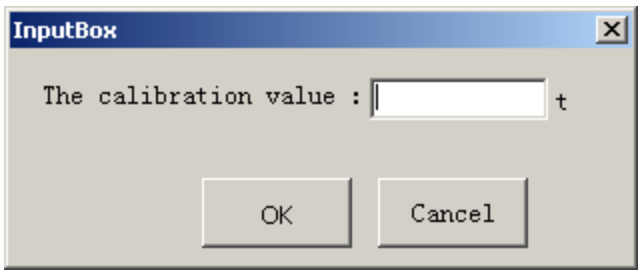
在这里，可以浏览所有传感器的内码。



重量与角度的标定：

1）增加一行重量/角度值

点击“Add”

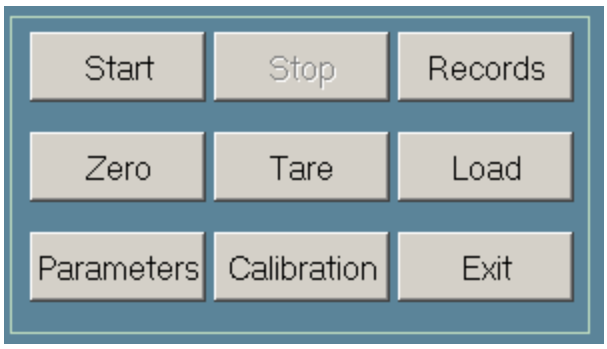


输入重量后，点击“OK”。

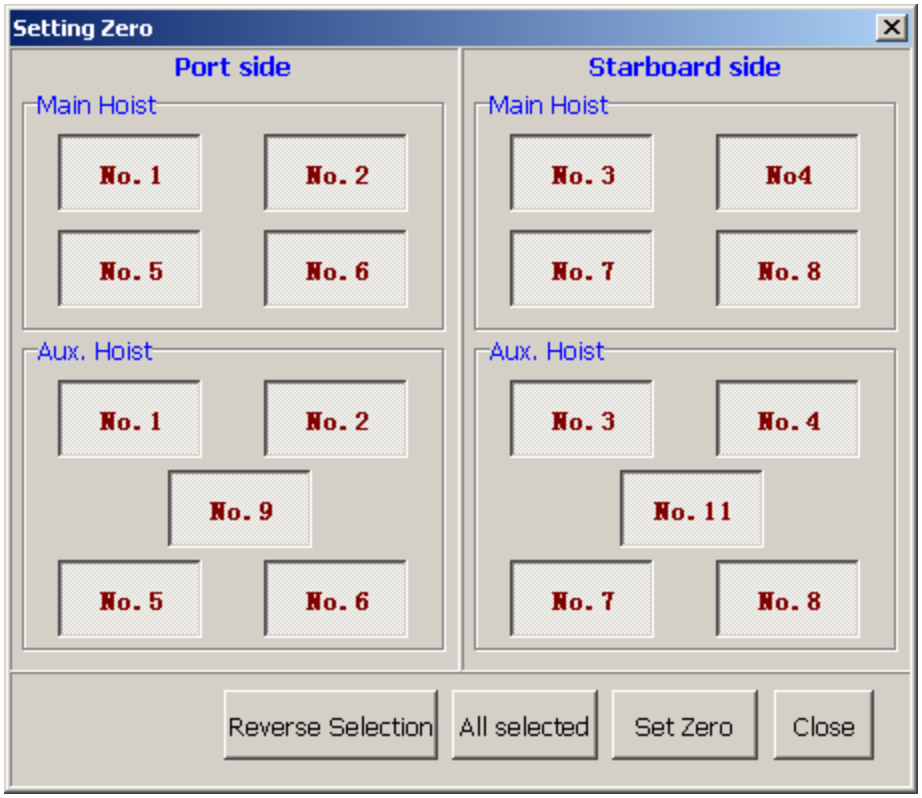
2）标定

在表格内选择对应的重量后，点击按钮“Calibration”,即可完成某个钩子某个重量的标定。

2.9 置零

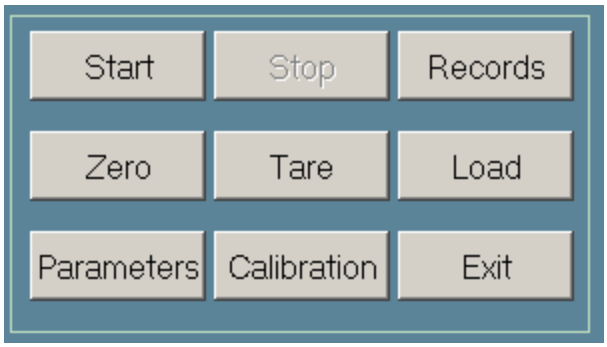


点击“Zero”,如下所示：

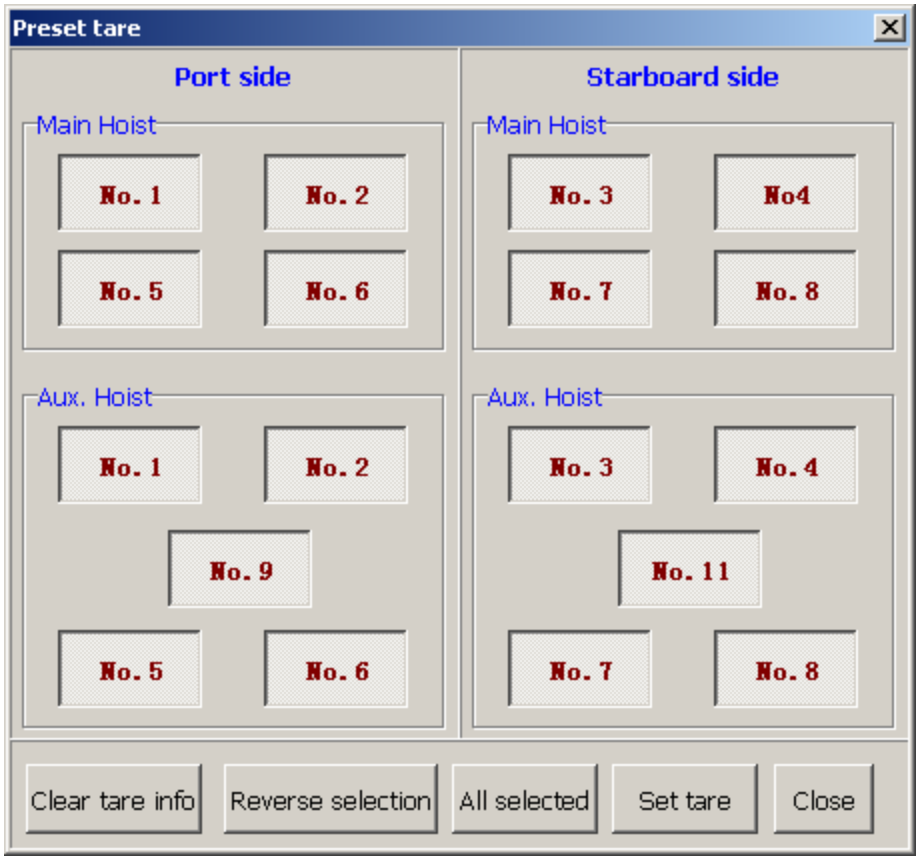


选择一个或者几个钩子，将当前重量置零：选择钩子，然后点击“Set Zero”.
注意：手动置零是有限制的，如在参数设置中，手动置零范围如果设置为 2%F.S，如当前重量>2%F.S,系统将无法完成置零操作。

2.10 预设皮重

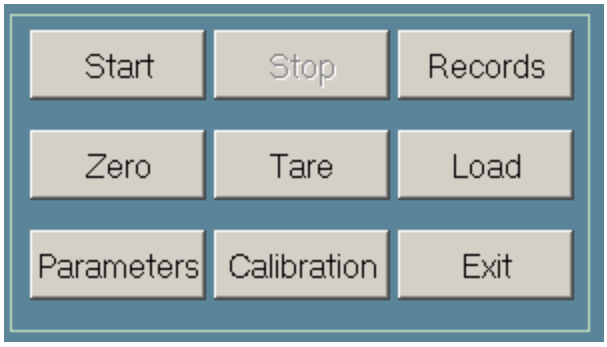


点击“Tare”,如下所示：



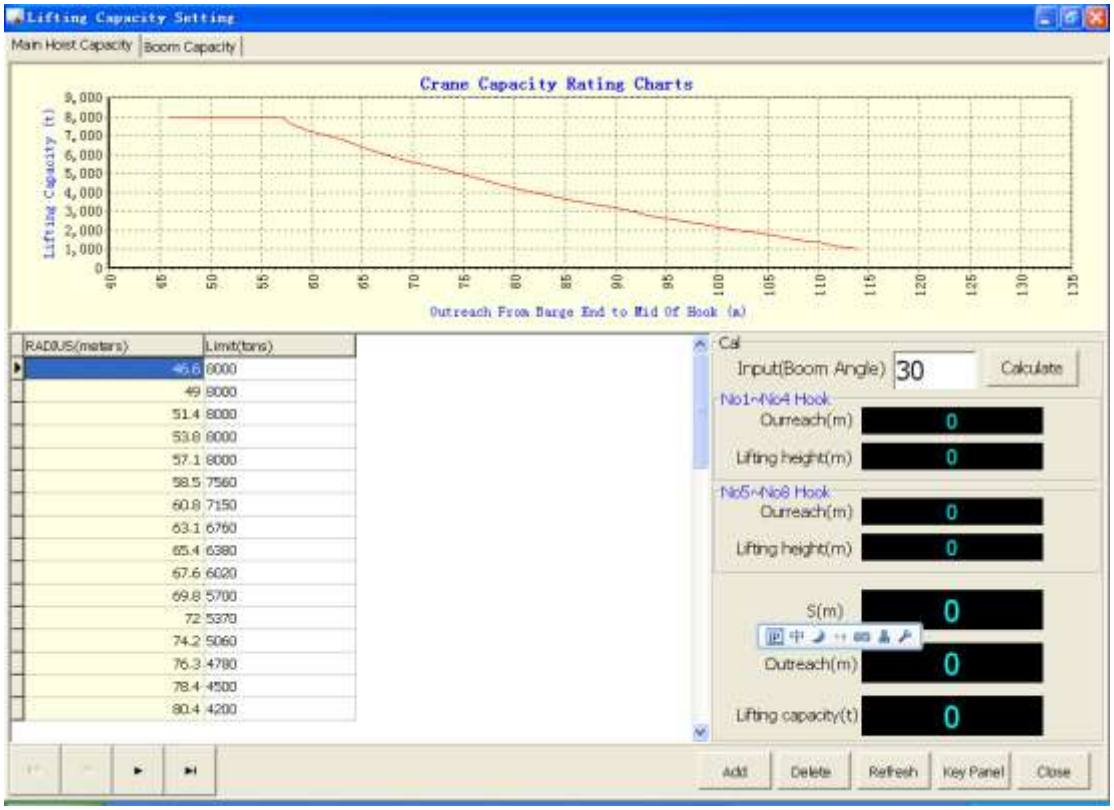
预设皮重：选择某个或几个钩子，点击“Set tare”,就可以将当前重量设置为皮重。
清除皮重信息：选择某个或几个钩子，点击“Clear tare info”,就可以将皮重信息清除。

2.11 载荷能力设置



点击“Load”,如下所示：

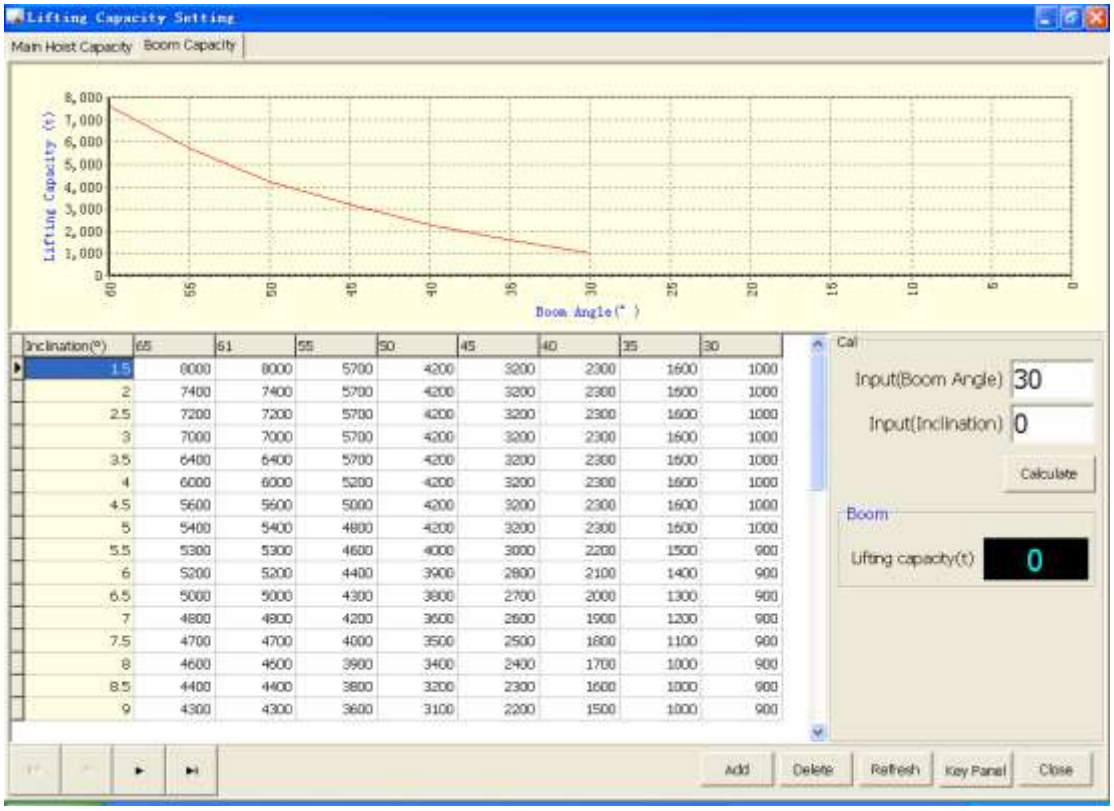
2.11.1 主钩载荷能力设置：



在这里，可以设置主钩的载荷能力曲线。

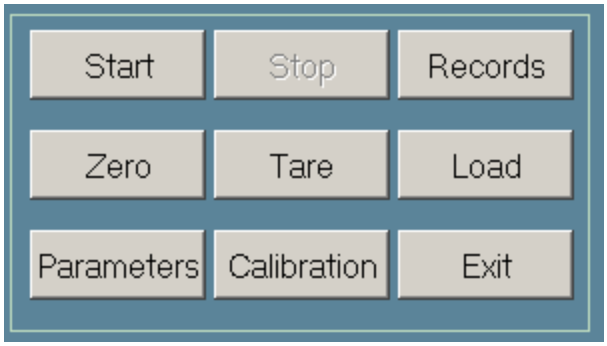
在“Cal”栏目中，可以输入臂架角度，点击“Calculate”,可以分别计算出NO1~NO4Hook 与 NO5~NO8 Hook 的 Ourreach,lifting capacity,lift height 值。

2.11.2 臂架载荷能力设置：

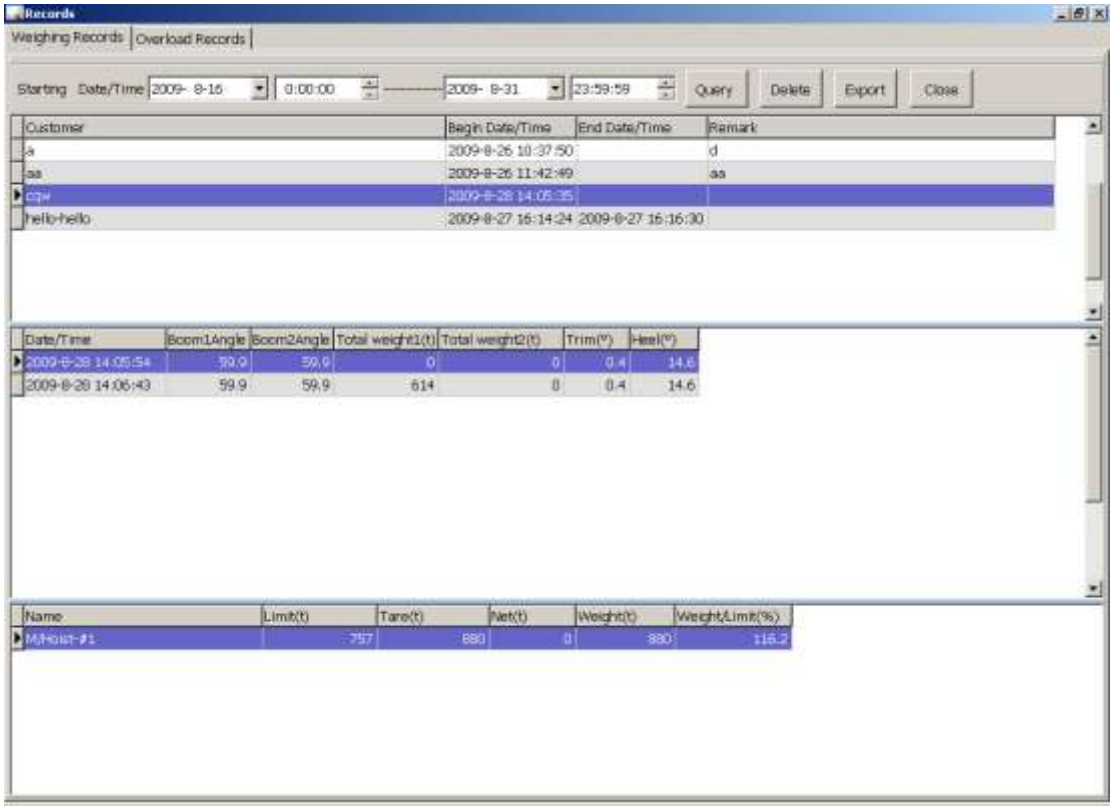


臂架的载荷能力是由船体前后倾角与臂架角度共同决定的。

2.12 数据记录

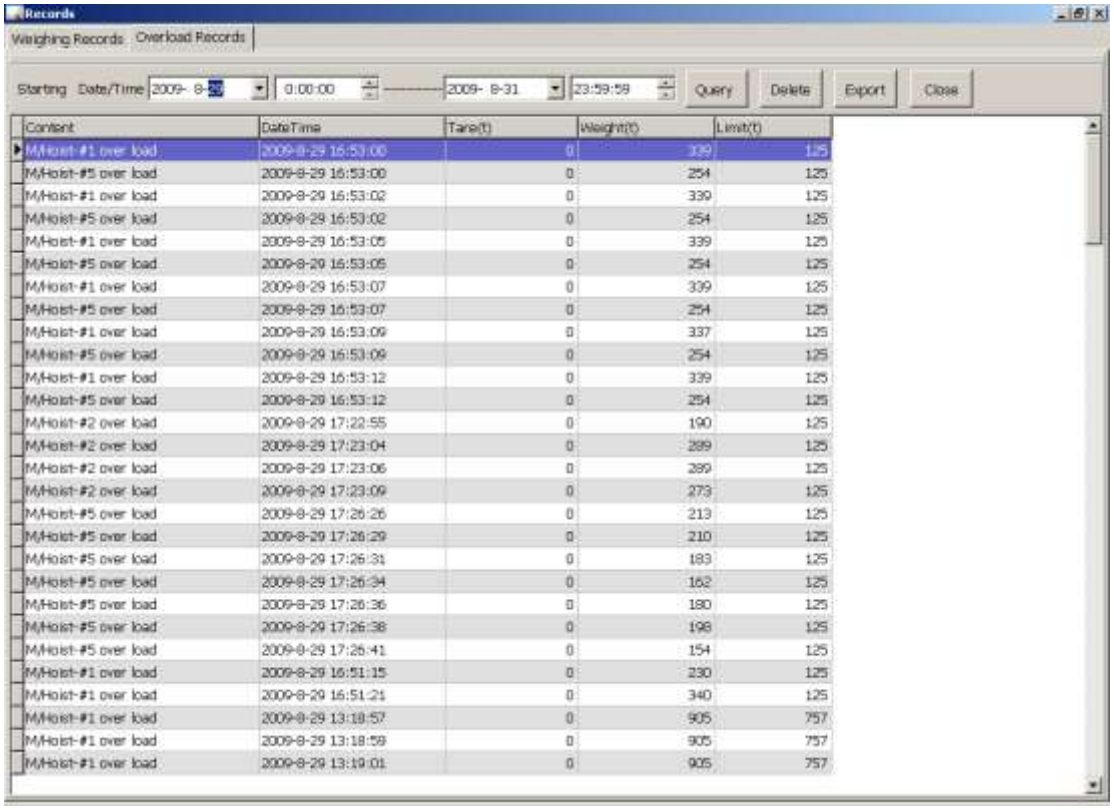


2.12.1 Weiging Records：



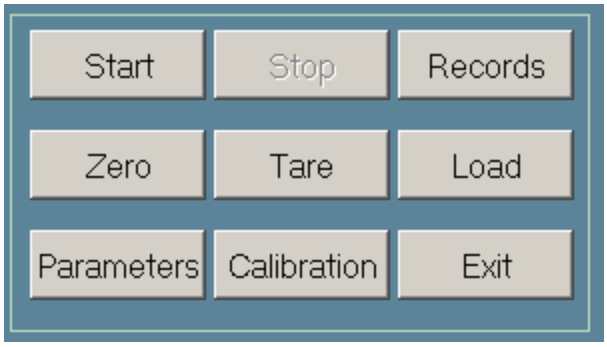
表格 1：记录了客户信息，起吊时间，结束时间，备注信息。
表格 2：记录了存储数据的时间，臂架 1 角度，臂架 2 角度，总重 1，总重 2，船体左右倾角，船体前后倾角角度。
表格 3：记录了每一个测量部位的限重，皮重，净重，重量，重量/限重的百分比。

2.12.2 Overload Records：



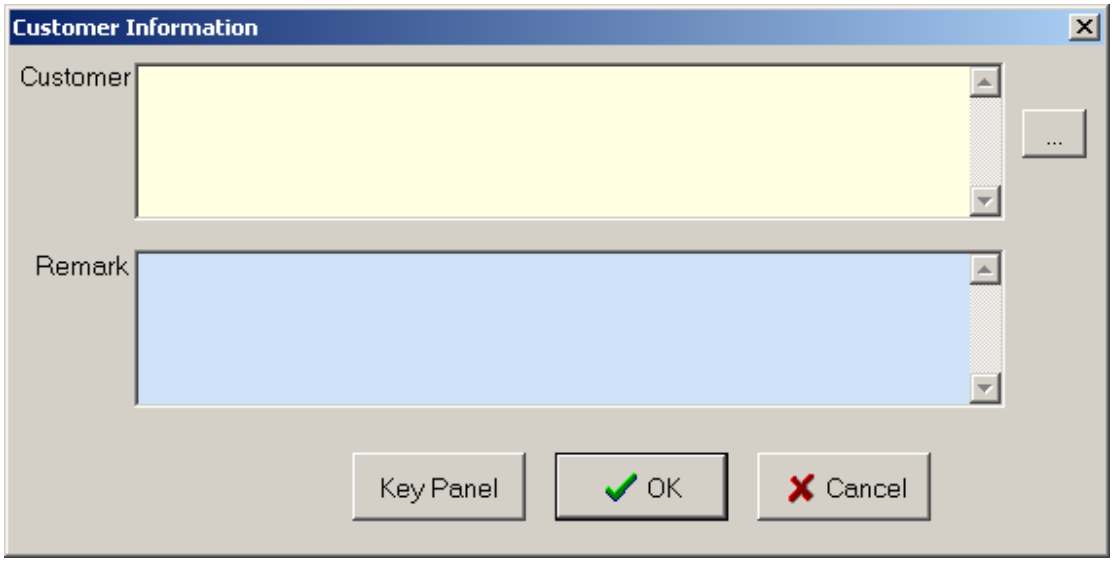
系统过载后 3 秒，系统会将过载数据记录下来。

2.13 如何记录客户信息

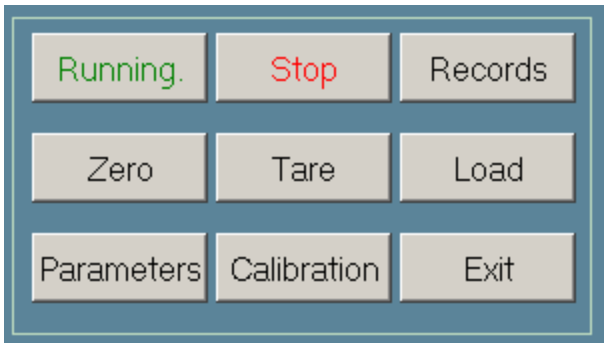


称重数据要保存下来，需要按如下步骤操作：

2.13.1 点击“Start”,弹出如下窗口：



输入“Customer”和“Remark”记录，点击“OK”,主窗口的显示如下。



此时，系统开始按客户要求存储数据。

2.13.2 点“Stop”,系统停止存储当前数据。存储的数据格式请见“Records”下的 “Weiging Records”.