

WTL-A(700)型 力矩限制器

LOAD MOMENT INDICATOR

使用说明书

Operation Manual

[WT-184V2.0]

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WEITE TECHNOLOGIES CO.,LTD.



国家级高新企业



国际质量体系认证



欧共体CE认证



中国船级社认证



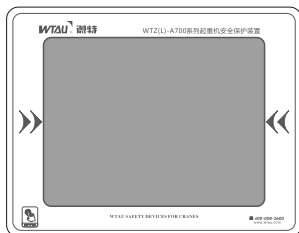
特检合格



防爆认证

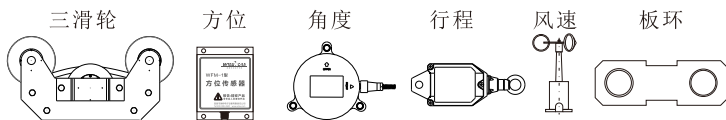


起重机械改造A级

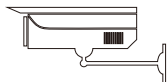


主机仪表

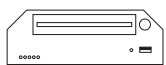
(※图例为部分传感器，具体需求请与销售人员沟通)



传感器 (选配)



监视器(选配)



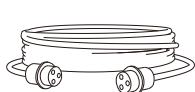
硬盘录像机(选配)



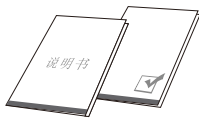
信号处理器(选配)



编码器(选配)



电缆(选配)



说明书/合格证

打开包装箱请检查力矩限制器的外观是否完好无损，清点所有配件。如有不符请立通知销售人员沟通解决。

※传感器和电缆等选配产品具体按商务合同约定内容执行。

一、产品概述

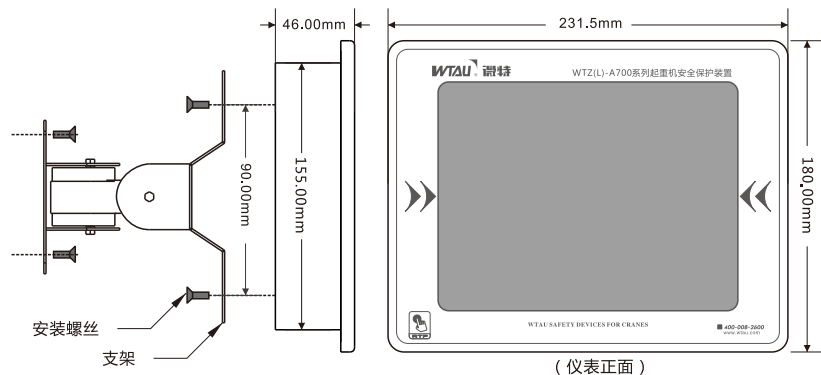
WTL-A700型力矩限制器采用模块化结构，由重量传感器、角度传感器、信号传输电缆、微电脑主机（含电源、显示、信号处理）等部分组成。

WTL-A700型力矩限制器仪表主机板采用全合一CPU主板，具有极高的可靠性和抗干扰能力，主机板设有自恢复电路WATCH DOG(又称“看门狗”)，当程序进入死机状态时能自动恢复。

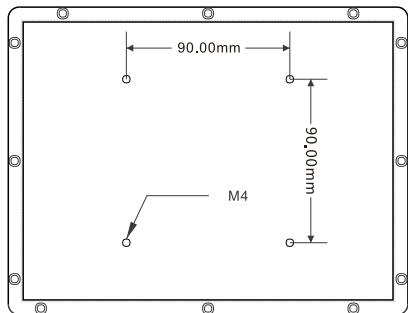
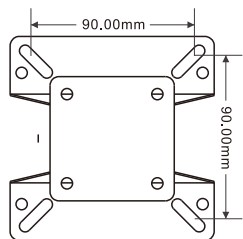
测量范围	0 ~ +999.9T	动作误差	<±3% (F.S.)
分辨力	0.1T	继电器触点容量	24DC 2A
综合精度	±5% (F.S.)	防护等级	IP66
工作电压	DC24V ± 10%	安装方式	壁挂/支架
环境温度	-20℃ -- +60℃		
相对湿度	95%(25℃)		

二、安装连接

本仪表为壁挂式安装，可固定在司机室墙壁上，安装方法如下：



(仪表正面)



(仪表背面)

1. 仪表背面有有4个φ4安装孔，用螺丝将仪表与仪表支架链接;
2. 将支架调整到合适的松紧度以及角度;
3. 将支架固定到合适位置;

三、仪表面板及按键介绍

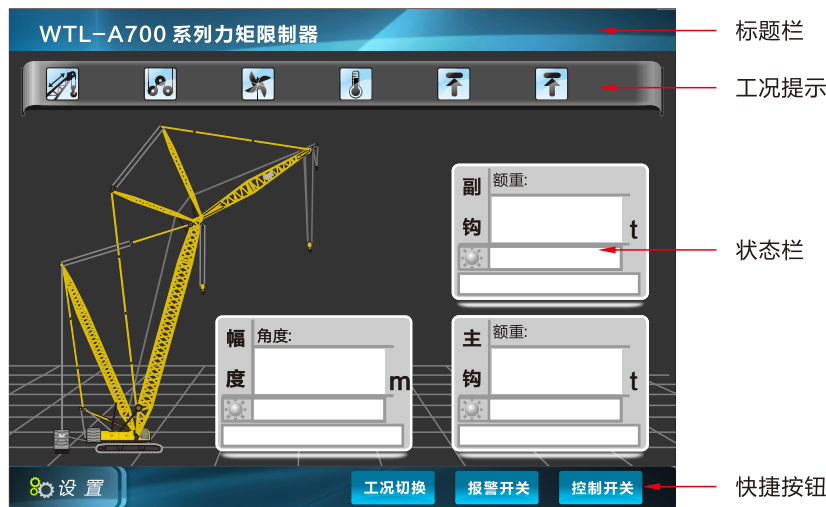
(非标工作界面具体与实物为准)

1、工作界面

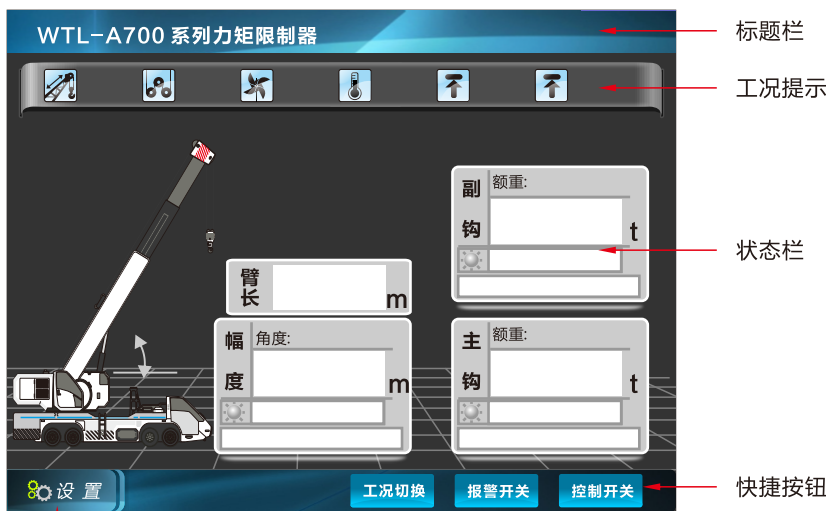
※本说明书默认为履带吊/汽车吊一体说明，有区分的位置会标识出来，请注意区分界面信息以及相关说明信息；

触控按钮	功能含义
设置	点击按钮弹出权限密码输入小键盘，输入对应权限密码后进入菜单选择界面。
工况切换	点击进入工况切换界面。
报警开关	点击按钮弹出小键盘，输入对应权限密码即可改变蜂鸣器报警状态，密码错误忽略对应操作。
控制开关	点击按钮弹出小键盘，输入对应权限密码即可改变变频器控制功能，密码错误忽略对应操作。

a. 履带吊界面



b. 汽车吊界面



2、菜单界面

- 1、点击工作界面左下角“设置”按钮，弹出权限密码小键盘。
- 2、输入对应的权限密码，按“Enter”按钮以对应权限进入系统功能设置的“菜单选择”界面。如果密码不对则权限不足，只能浏览对应参数，不可修改。
(具体权限密码，请联系售后服务人员)



(小键盘)

触控按钮	功能含义
0~9	输入数字0~9
<X> 或 C	删除/清零
.	输入小数点
-	输入负号
Enter	确认键
X	关闭小键盘

a.履带吊菜单



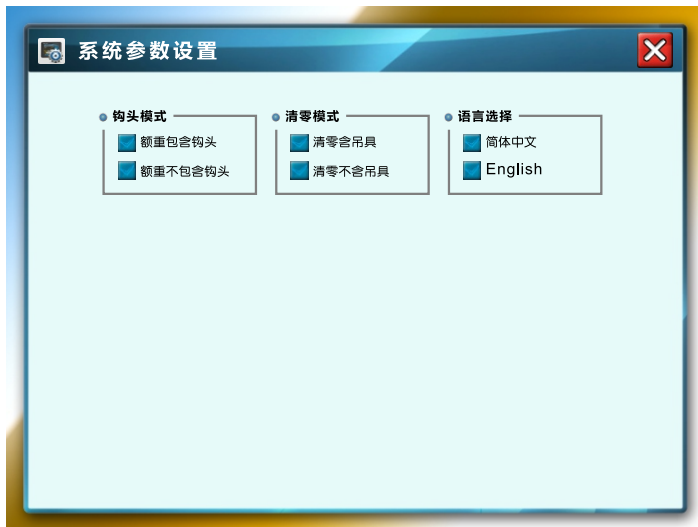
b.汽车吊界面



子界面及按钮	功能含义
系统参数	设置吊车相关参数
系统配置	设置仪表相关参数
报警参数	设置报警控制相关参数
重量标定	设置重量相关参数
重量修正	重量校准配置
幅度修正	幅度校准配置
备份恢复	参数备份、恢复操作控制
臂长标定(汽车)	臂长标定设置
角度标定	角度标定配置
载荷曲线表	查看仪表所有曲线表
历史记录	查看当前吊车运行历史记录
报警记录	查看当前吊车报警历史记录
统计记录	查看当前吊车累计工作时间重量等记录
"返回"按钮	返回到工作界面

3、系统参数设置

在“菜单选择”界面点击“系统参数”区域，进入“系统参数”界面。



系统参数设置项	功能含义
钩头模式	额重是否含钩头重量
清零模式	重量是否含吊具清零
语言选择	中英文切换配置

4、工况切换

在仪表界面点击“工况切换”区域，进入“工况切换”界面。

履带吊工况界面分塔式履带吊和非塔式履带吊两种；

系统参数设置项	功能含义
工况模式	选择对应的工况模式：标准模式、塔架模式、立塔模式
主钩倍率	主钩钢丝绳倍率，根据不同工况（倍率）实际输入，在换倍率时需与现场改为一致
幅钩倍率	副钩钢丝绳倍率，根据不同工况（倍率）实际输入，在换倍率时需与现场改为一致

系统参数设置项	功能含义
主钩钩头重	主钩钩头重量
副钩钩头重	副钩钩头重量
额头臂使能	额头钩是否有效的 0：有效、1：无效
常开/常闭	钩头限位开关类型选择 0：常开 1：常闭
单绳载荷	单根钢丝的最大额定载荷值
主臂长	主臂实际长度，实际测量或实际图纸尺寸
副臂长	实际测量或实际图纸尺寸
主副臂夹角	主臂与副臂之间夹角，实际测量或实际图纸
中心距	旋转中心至臂杆活动支点的距离，实际测量或实际图纸尺寸
立塔高度	设置立塔的高度
立塔臂长	设置立塔的臂长
立塔中心距	设置立塔的中心距
臂端单滑轮使能	臂端单滑轮是否有效 0：有效、1：无效

a.履带吊工况

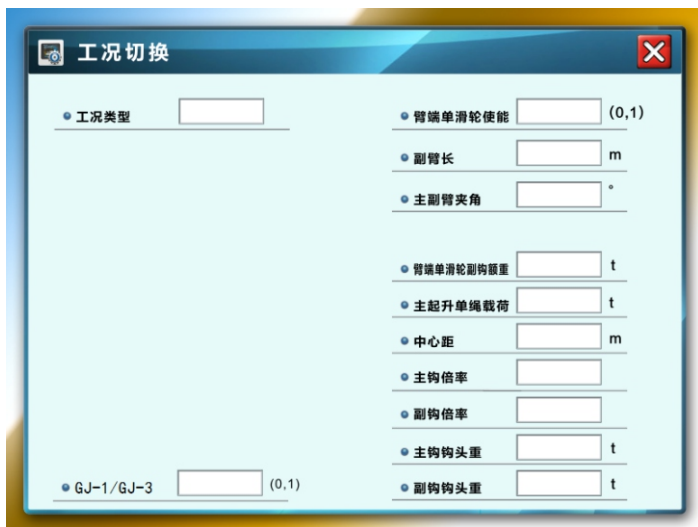


(塔式工况)



(非塔式工况)

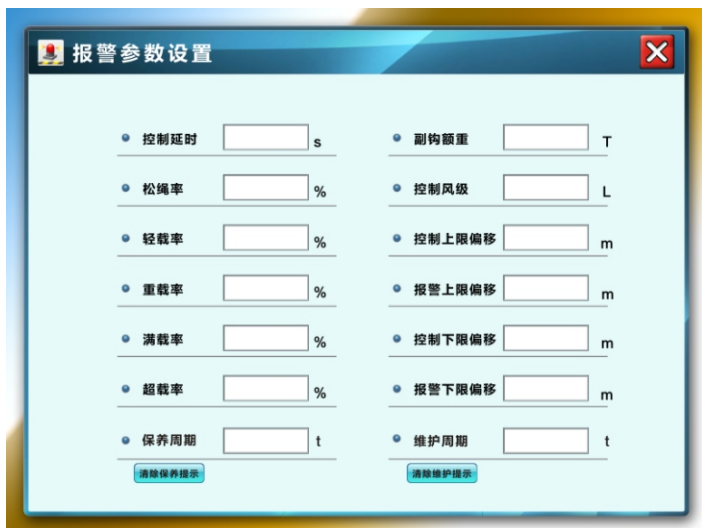
b. 汽车吊工况



系统参数设置项	功能含义
工况模式	选择对应的工况模式：标准模式、塔架模式、立塔模式
常开/常闭	钩头限位开关类型选择 0：常开 1：常闭
臂端单滑轮使能	臂端单滑轮是否有效 0：有效、1：无效
副臂长	实际测量或实际图纸尺寸
主副臂夹角	主臂与副臂之间夹角，实际测量或实际图纸
臂端单滑轮额重	臂端单滑轮额重
主起升单绳载荷	主起升单绳载荷
中心距	旋转中心至臂杆活动支点的距离，实际测量或实际图纸尺寸
主钩倍率	主钩钢丝绳倍率，根据不同工况（倍率）实际输入，在换倍率时需与现场改为一致
幅钩倍率	副钩钢丝绳倍率，根据不同工况（倍率）实际输入，在换倍率时需与现场改为一致
主钩钩头重	主钩钩头重量
副钩钩头重	副钩钩头重量

5、报警参数设置

在“菜单选择”界面点击“报警参数”区域，进入“报警参数”界面。



报警参数设置菜单	功能含义
控制延时	继电器控制延时时间设置，单位为秒
松绳率	松绳比例
轻载率	实际重量低于额重的百分比，根据实际设置（在技术协议要求的用户有此功能）
重载率	重载荷对应额重比例
满载率	实际重量达到额重报警的百分比，国标为90%-95%
超载率	实际重量达到额重控制的百分比，国标为100%-105%
副钩额重	副钩额重报警点设置
控制风级	控制报警点风级设置
控制上限偏移	幅度上限继电器控制点对应上限值偏移
报警上限偏移	幅度上限预警点对应上限值偏移
控制下限偏移	幅度下限继电器控制点对应下限值偏移
报警下限偏移	幅度下限预警点对应下限值偏移

6、重量标定

在“菜单选择”界面点击“重量标定”区域，进入“重量标定”界面。

报警参数设置菜单	功能含义
保养周期	设置吊车累计吊重的吨位，达到该值提示吊车保养
维护周期	设置吊车累计吊重的吨位，达到该值提示吊车维护

6、重量标定

在“菜单选择”界面点击“重量标定”区域，进入“重量标定”界面。

触控按钮	功能含义
切换	轮流切换到其它重量标定界面。
清零	当前重量清零（即去皮）
标零	重量标零
标定	配重标定，点击后弹出小键盘输入当前起吊重量。
删除	删除对应标定点
退出	退出当前界面



(1)现场重量标定步骤：

- 将传感器和仪表安装到位，传感器信号线接至仪表。准备配重（需单钩额重30%~100%之间）。
- 观看模数值以确认传感器信号线是否正确接入仪表。
- 保持空钩离地1米状态，数据稳定后，点击 **标零** 按钮，进行零点标定。
- 起吊配重一离地1米状态，保持稳定后，点击“配重1标定”行右侧 **标定** 按钮，在弹出的小键盘中输入当前配重重量后按确定 **Enter**，完成配重1标定。
- 如有多个配重，按同样的方法标定配重2、3、4、5...；标定表格中配重相关数据按模数值从小到大排列。
- 吊重检验重量显示是否准确，将超载控制线接入电器控制回路。
- 如有多路配重输入，按“切换”键进入对应标定对象，重复a-f。

(2)重量清零

当使用3-6个月后，若空钩时重量显示不为零，可点击 **清零** 进行空钩清零，用以校准零点。

7、重量修正

在“菜单选择”界面点击“重量修正”区域，进入“重量修正”界面。



触控按钮	功能含义
切换	轮流切换到其它重量修正界面。
设置	幅度修正，点击后弹出小键盘输入当前修正比例。
删除	删除对应修正点
退出	退出当前界面

重量修正步骤：

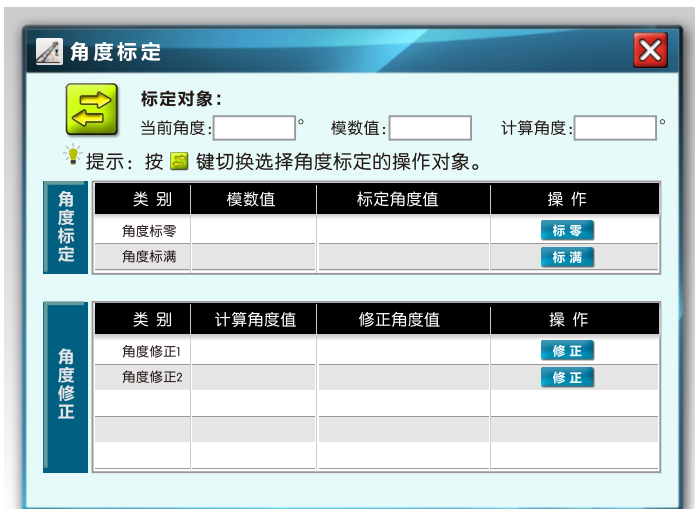
- 确保重量传感器安装到位且调试成功。
- 如出现随臂杆角度变化重量测量误差增大的现象，即可进行如下步骤做重量修正。
- 调整臂杆到对应角度，起吊对应配重，保持数据稳定后观察仪表“实际重量”是否和实际配重基本一致，如一致移动臂杆到下一角度继续观察读数，直到仪表“实际重量”和实际配重相差较大。点击重量修正第一行右侧 **设置** 按钮，弹出小键盘输入对应修正百分比系数。

$$\text{修正系数} = (\text{配重重量} / \text{仪表计算重量}) * 100\%$$
- 调整臂杆到其它角度，重复上述判断，点击其它行右侧 **设置** 按钮，输入修正百分比系数。
- 根据需要决定是否设定其他修正点。

8、角度标定

在“菜单选择”界面点击“角度标定”区域，进入“角度标定”界面。

触控按钮	功能含义
切换	轮流切换到其它重量修正界面。
标零	角度标零，点击后弹出小键盘输入最小角度。
标满	角度标满，点击后弹出小键盘输入最大角度。
修正	角度修正，点击后弹出小键盘输入当前角度误差。
	退出当前界面



角度标定步骤：

角度标零、角度标满在出厂时已校验准确，请勿标定！

- 将传感器和仪表安装到位，传感器信号线接至仪表。
- 观看模数值以确认传感器信号线是否正确接入仪表。
- 旋转角度仪到0°（或最小俯角），保持数值稳定。点击 **标零** 按钮，弹出小键盘，输入当前角度。
- 旋转角度仪到90°（或最大仰角），保持数值稳定。点击 **标满** 按钮，弹出小键盘，输入当前角度。
- 转动角度仪到其它角度，检测显示角度值是否正确。

角度修正步骤：

当仪表显示角度与实际角度不一致时可执行以下操作。

- 将传感器和仪表安装到位，传感器信号线接至仪表。
- 观看模数值以确认传感器信号线是否正确接入仪表。
- 观察仪表显示角度与实际角度误差范围，如有误差方可执行以下操作。
- 点击角度修正1右侧 **修正** 按钮，弹出小键盘输入当前实际角度值。
- 观察仪表显示的上限角度与下限角度是否满足要求。

f.若臂杆上下限角度不满足要求，将吊车臂杆调到最小角度，点击 **修正** 按钮，弹出小键盘输入当前实际角度值。

g.将吊车臂杆调到最大角度，点击角度修正右侧 **修正** 按钮，弹出小键盘输入当前实际长度值。

9、臂长标定(汽车吊)

在“菜单选择”界面点击“幅度修正”区域，进入“幅度修正”界面。

触控按钮	功能含义
	切换 轮流切换到其它重量修正界面。
	设置 幅度修正，点击后弹出小键盘输入当前修正比例。
	删除 删除对应修正点
	退出 退出当前界面



臂长标定步骤：

- 将传感器和仪表安装到位，传感器信号线接至仪表。
- 观看模数值以确认传感器信号线是否正确接入仪表。
- 将吊臂伸至最长，保持数值稳定。点击 **标定** 按钮，弹出小键盘，输入当前臂长。

d.将吊臂伸完全缩回，保持数值稳定。点击 标定 按钮，弹出小键盘，输入当前臂长。

e.多点标定根据需求选择;

f.伸缩臂杆，检测显示角度值是否正确。

臂长修正步骤：

当仪表显示角度与实际角度不一致时可执行以下操作。

a.将传感器和仪表安装到位，传感器信号线接至仪表。

b.观看模数值以确认传感器信号线是否正确接入仪表。

c.观察仪表显示臂长与实际臂长误差范围，如有误差方可执行以下操作。

d.点击臂长修正1右侧 修正 按钮，弹出小键盘输入当前实际角度值。

e.观察仪表显示的上限角度与下限角度是否满足要求。

10、幅度修正

在“菜单选择”界面点击“幅度修正”区域，进入“幅度修正”界面。



a.确保角度传感器安装到位且调试成功。

b.如当前臂长下幅度显示值和实际测量值之间有误差，方可进行幅度修正。

c.调整臂杆位置到最小角度，点击第一行右侧 按钮，输入当前实际测量幅度值，设置好第一个修正点，对应角度幅度数据显示在第一行。

d.调整臂杆位置到最大角度，点击第二行右侧 按钮，输入当前实际测量幅度值，设置好第二个修正点，对应角度幅度数据显示在第二行。

e.更新需要调整臂杆到其它角度，输入实际测量幅度值，设置好其它修正点。

注意，其标定参数会按照角度顺序显示。

f.对应其它臂长下幅度修正，方法类似。

触控按钮	功能含义
切换	轮流切换到其它重量修正界面。
<input type="button" value="设置"/> 设置	幅度修正，点击后弹出小键盘输入当前修正比例。
<input type="button" value="标零"/> 删除	删除对应修正点
退出	退出当前界面

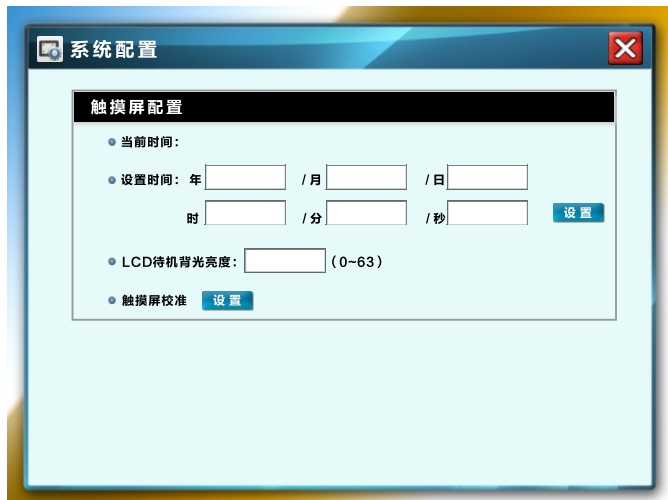
11.备份恢复

在“菜单选择”界面点击“备份选择”区域，进入“备份选择”界面。



12、系统配置

在“菜单选择”界面点击“系统配置”区域，进入“系统配置”界面。



13、历史记录/报警记录/统计记录

在“菜单选择”界面点击“历史记录”区域，进入“历史记录”界面。



触控按钮	功能含义
切换	轮流切换到其它重量标定界面。
清除记录	当前重量清零（即去皮）
导出记录	重量标零
向左翻页	配重标定，点击后弹出小键盘输入当前起吊重量。
向右翻页	删除对应标定点
退出	退出当前界面

※报警记录、统计记录与历史记录设置方法一致；

※产品界面后续如有修改,恕不另行通知;

四、仪表维护及常见故障处理

1、仪表的维护

- 按标识及接线图正确安装本系统；
- 本产品属于精密仪表，注意防水，离人断电；
- 谨慎操作，非专业人员或无专业人士指导请勿操作；
- 精度校正周期为3~6个月一次，定期检查，维护。

2.故障排除

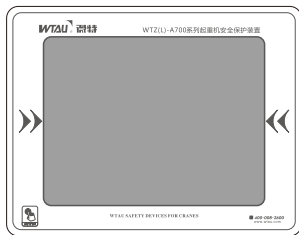
- 开机后仪器不工作、显示器不显示；
处理方法：检查有误供电，检查保险管是否正常或咨询厂家；
- 重量显示值不变化；
处理方法：重量传感器电缆线断或重量传感器损坏,更换传感器及质询厂家;
- 信号引入后，显示值相应变化，但与实际值偏差超出误差范围
处理方法：主机参数值设置不准,重新操作标定步骤。

五、服务体系

WTL-A(700)型力矩限制器质保保期为一年。（自交付之日起12个月内，因用户的非正常使用，电源电压超标以及其它外力造成的损坏不在质保范围内。）

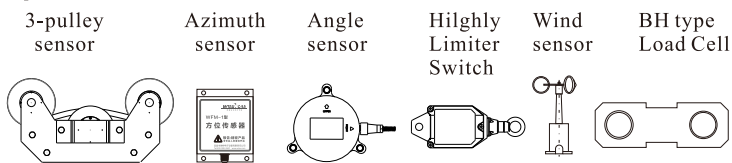
※本标准产品(不含定制)功能最终解释权属微特公司所有。

※产品返修时请注明详细的故障现象、使用工地、联系方式等内容。

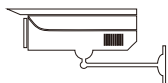


host instrument

(※The pictures is part of the sensor. Please communicate with the sales staff for specific requirements.)



sensor(option)



monitor(option)



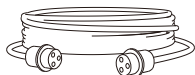
Hard disk recorder(option)



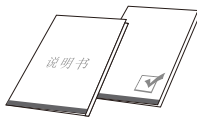
signal processor (option)



encoder(option)



electric wires (option)



Operation Manual
Inspection Certificate

Please confirm if the Load moment indicator appearance is in good,condition and check all the components,if anything is missing,please contact with seller.

※ Sensors and cables and other products is business contract matching parts .

1.Product Description

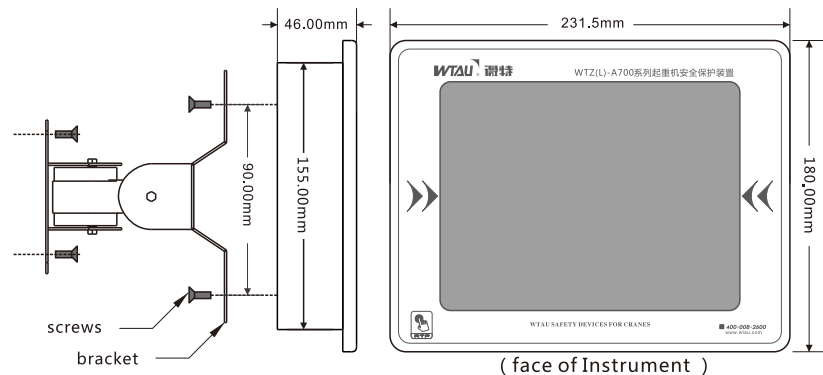
WTL-A700 type Load moment indicator is using modular structure, by the components like weight sensors, Angle sensor, Signal transmission cable, microcomputer host (including power supply, display, signal processing) etc.

The host plate of WTL-A700type Load moment indicator instrument adopts the all-in-one CPU motherboard, here the so-called all-in-one refers to all the system hardware circuit (CPU, A/D conversion, EPROM, EEPROM, controllers and other) are integrated into one board, it is of very high reliability and anti-interference ability, the motherboard has the recovery circuit WATCH DOG (also called "watchdog"), when the program crashed into the state, it can automatically restored.

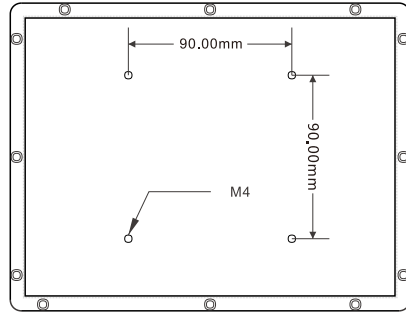
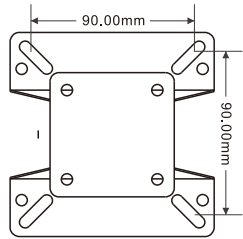
Measurement Range	0 ~ +999.9T	Action error	<±3% (F.S.)
Resolving Ability	0.1T	Relay contact capacity	24DC 2A
Combined accuracy	±5% (F.S.)	Protection grade	IP66
Working Voltage	DC24V ± 10%	Installation mode	wall/bracket
Working Condition	-20°C -- +60°C		
Relative Moisture	95%(25°C)		

2.Installation and Connection

The instrument can be fixed to the wall of the driver cab. The procedure of installation is as follows:



(face of Instrument)



(back of Instrument)

1. Use appropriate screw to fix instrument and bracket;
2. Adjust the bracket to the appropriate tightness and Angle.;
3. Fix the bracket to the right position.;

3. Panel and operation introduce

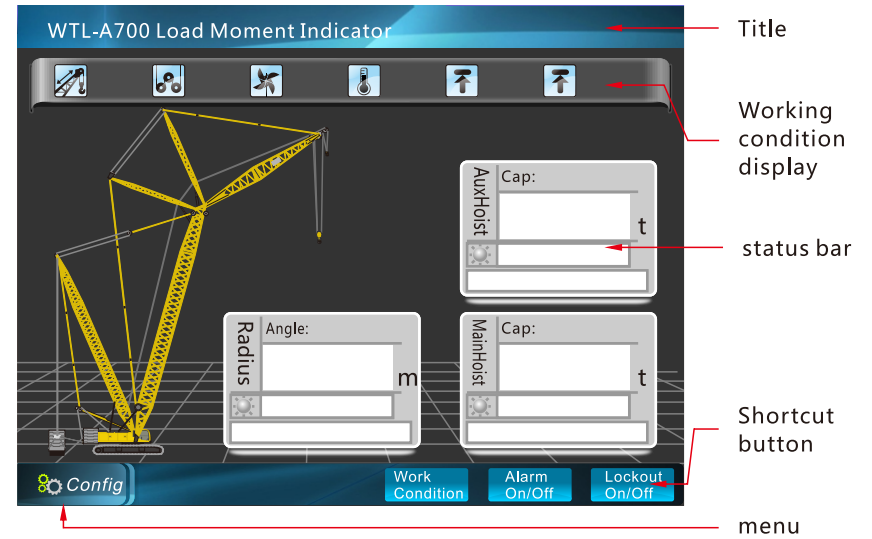
— (The non-standard working interface is subject to the actual object ;) —

1. Working interface

This manual for both crawler crane/mobile crane . The differentiated position will be identified. Please pay attention to the interface information and related instruction.

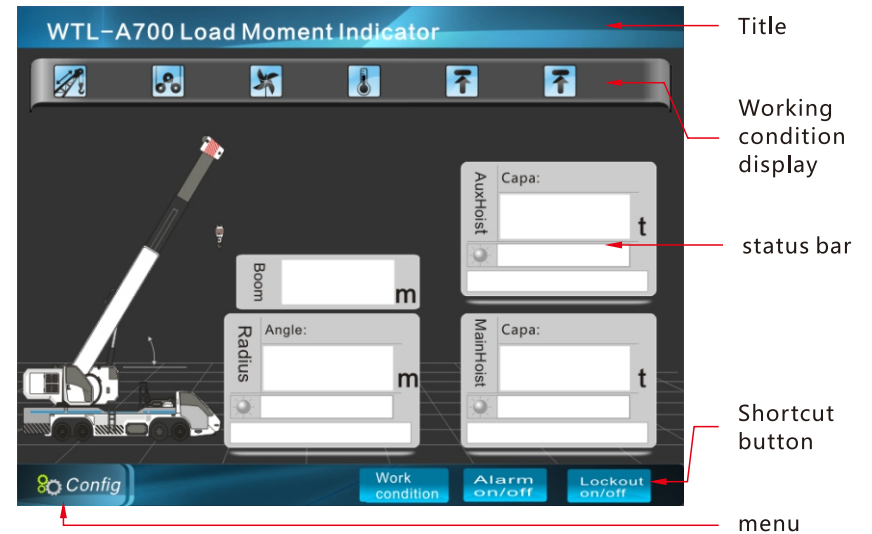
Button	Function
Config	Click to pop up permissions password input keypad, input corresponding permissions password to enter the menu selections interface.
work condition	Click to operating mode switch interface.
Alarm switch	Click to pop up permissions password input keypad, input right password, then the buzzer alarm status can be changed, wrong password will ignore corresponding operation.
Control switch	Click to pop up permissions password input keypad, input right password, then the relay control function can be changed, wrong password will ignore corresponding operation.

a. Crawler crane



- Title
- Working condition display
- status bar
- Shortcut button
- menu

b. mobile crane



- Title
- Working condition display
- status bar
- Shortcut button
- menu

2.menu

1、Click the left bottom button in the working interface, pop up permission password keyboard as follows;

2、Input the right password, press the "Enter" button with corresponding permission to enter the system function setting "Menu selection" interface. Wrong password will not get the corresponding permissions, then the corresponding parameters can only be browsed but not be modified.

(Pls contact the after-sales service personnel for specific permissions password)



Button	Function
0~9	Input 0~9
⌫ & C	Delete/Reset
.	Input decimal point
-	Input minus sign
Enter	Enter
⌫	closed

a.Crawler crane menu

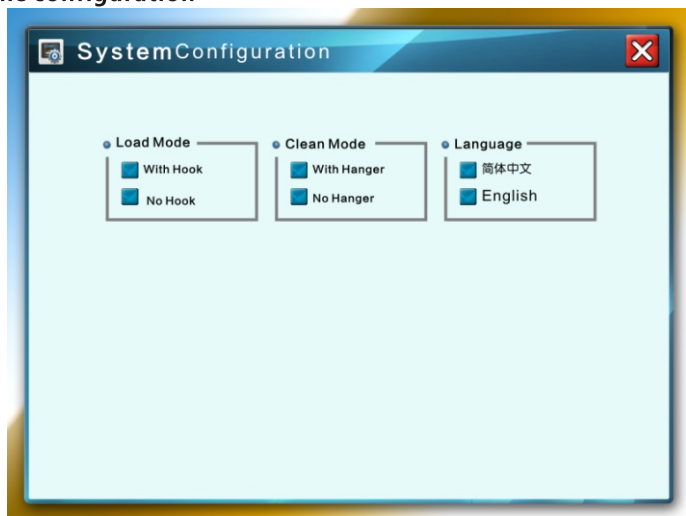


b.mobile crane menu



Button	Function
Crane configuration	Set related parameters of crane
System configuration	Set related parameters of instrument
Alarm configuration	Set related parameters of alarm control
Load Hoist calibration	Set related parameters of weight
Load Correct	Weight calibration configuration
Radius correction	Radius calibration configuration
Backup and recovery	Parameters backup and restore operations control
Angle Calibration	Angle calibration configuration
ARM Calibration	ARM Calibration configuration
Crane Capacity Charts	View the current load curve table
History lifting records	View the current crane operation historical records
datalogger date	View the current crane alarm historical records
Statistical records	View the current crane records such as cumulative working hours, weight records etc...
"Return" button	Return to working interface

3. Crane configuration



Setting Items	Function
Load mode	Whether weight includes hook or not
clear mode	Whether weight includes hangger or not
Language	Chinese and English switching configuration

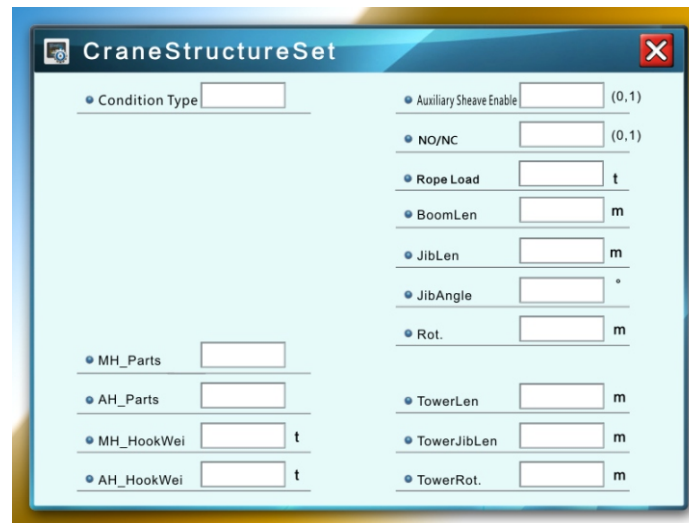
4.system configuration (Operating mode switch)

crawler crane system configuration contains tower working condition and non-tower working condition.

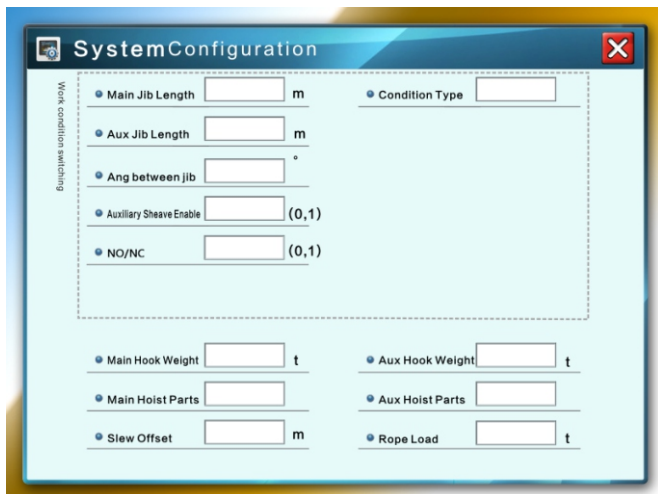
a. Crawler crane system configuration

Setting Item	Function
Condition type	Select the corresponding working mode: standard mode, shovel tower, vertical tower model
MH Parts	Main hook steel wire rope ratio, according to different working conditions (ratio), shall be changed to accord with the onsite
AH parts	Auxiliary hook wire rope ratio, according to different working conditions (ratio), shall be changed to accord with the onsite
MH_Hookwei	Main hook weight

Setting Item	Function
MH_Hookwei	Main hook weight
AH_Hookwei	Auxiliary hook weight
Auxiliary Sheave Enable	Auxiliary Sheave Enable is valid 0: valid, 1: invalid.
NO/NC	highly limit switch type option 0: normal open/1: normal closed.
Rope Load	Maximum rated load of single wire.
BoomLen	length of arm, actual measurement or actual drawing dimensions.
JBLen	Actual measurement or actual drawing size
JB angle	Arm included angle between main arm and supporting arm, actual measurement or actual drawing
Rot	Distance from rotation center to arm lever pivot, actual measurement or actual drawing dimension
Tower Len	Set the height of the vertical tower
Tower JB Len	Set the arm length of the vertical tower
Tower Rot	Set the center distance of the vertical tower

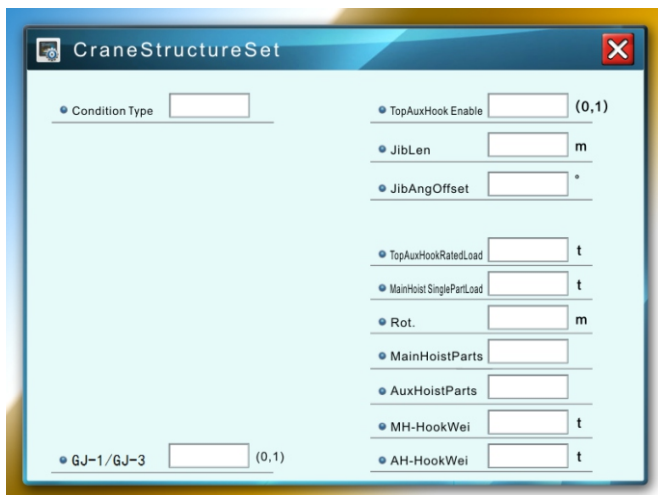


(tower working condition)



(non-tower working condition)

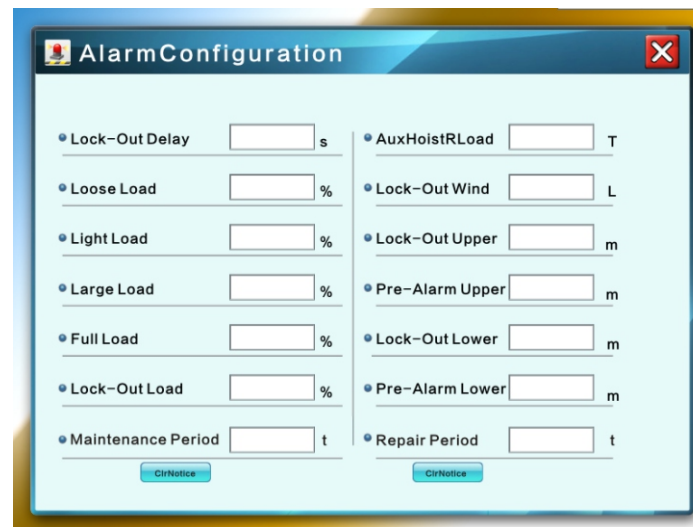
b.mobile crane



Setting Item	Function
condition type	Select the corresponding working mode: OutRigger MAXExt7.25 m, OutRigger MidExt4.0m, OutRigger MinExt2.57m

GJ-1/GJ/3	highly limit switch type option 0: normal open/1: normal closed.
TopAuxHook Enable	TopAuxHook Enable is valid 0: valid, 1: invalid.
JBLen	Actual measurement or actual drawing size.
JBAngOffset	Arm included angle between main arm and supporting arm.
TopAuxHookRatedLoad	Top Aux Hook Rated Load.
MainHoistSinglePartLoad	Main Hoist Single Part Load.
Rot	Distance from rotation center to arm lever pivot, actual measurement or actual drawing dimension
MainHoistParts	Main hook steel wire rope ratio, according to different working conditions (ratio), shall be changed to accord with the onsite
AuxHoistParts	Auxiliary hook wire rope ratio, according to different working conditions (ratio), shall be changed to accord with the onsite
MH_Hookwei	Main hook weight
AH_Hookwei	Auxiliary hook weight

5.Alarm configuration



setting menu	function
Lock-out Delay	Relay control delay time setting, unit is "s".
Loose load	Rope loosening rate
Light Load	Actual weight is lighter than rated weight, set it according to actual setting (this function is existed in technical protocol which has this function)
Large Load	Heavy load corresponding rated weight rate
Full Load	The percentage of actual weight to rated weight alarm, national standard is 90%-95%
Lock-out Load	The percentage of actual weight to rated weight control, national standard is 100%-105%
AuxhoistRLoad	Auxiliary hoist rate load weight setting
Lock-out wind	Control the alarm point wind level setting.
Lock-out Upper	Lock-out upper limit relay control point corresponding upper limit offset
pre-alarm Upper	Pre-alarm upper limit early warning point corresponding upper limit offset
Lock-out lower	Lock-out lower limit relay control point corresponding lower limit offset
Pre-alarm Lower	Pre-alarm lower limit early warning point corresponding lower limit offset
Maintenance period	When crane accumulative total tonnage achieve the preset value prompt maintenance
Repair Period	When crane accumulative total tonnage achieve the preset value prompt crane repair

6. Load Hoist Calibration

BUTTON	function
Switch	Take turns to switch to other weight calibration interface.
TARE	Current weight zero clearing (i.e. peeling)
ZERO	Weight zero marking
CALIB	Balance weight calibration, click then pop keyboard to input current hoisting weight
DEL	Delete corresponding calibration point
EXIT	Quit current interface



(1) Onsite weight calibration steps :

1. Install sensor and instrument in position, sensor signal wire is connected to the instrument. Prepare balance weight (need single hook rated weight to be in 30% ~ 100%).
2. Watch modulus value to confirm sensor signal wire is properly connected to the instrument.
3. Maintain empty hook to be 1 meter over the ground, when the data is stabilized,

click **ZERO** to make zero point marking.

4. Crane balance weight shall be 1 meter over the ground, when the data is stabilized, click “balance weight 1 calibration” to press **CALIB** button, press “Enter” after inputting current balance weight in the popping up keyboard to finish balance weight 1 calibration.

5. If there are multiple balance weights, then by the same method can finish the calibration of weight 2, 3, 4, 5... ; Balance weight related data in the calibration table shall be arranged according to the modulus value from small to large.

6. Hoisting weighing machine test whether the weight display is accurate, the overload control line is connected to the electrical control circuit.

7. If there are multiple balance weights, then by the same method can finish the calibration of other weights.

(2) Weight zero clearing

After 3-6 months of use, if the weight of empty hook is not zero, click **TARE** for zero clearing of empty hook, thus to calibrate the zero point.

7. Load Correction



触控按钮		功能含义
	SWITCH	Take turns to switch to other weight correction interface.
	SET	Weight correction, click then pop keyboard to input current correction rate.
	DEL	Delete corresponding correction point.
	EXIT	Quit the current interface.

Onsite weight correction steps:

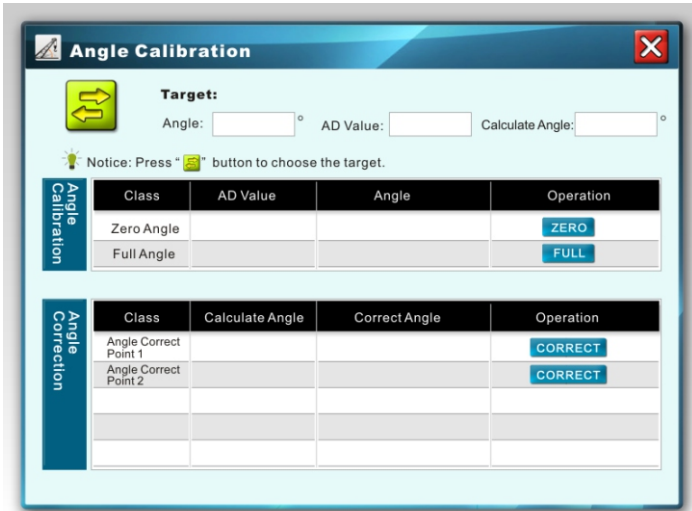
1. Ensure weight sensor install in position and debug in success.
2. If arm angle changes and weight measurement error increases, the weight correction phenomenon can be done by the follow steps.
3. Adjust the arm to corresponding angle, hoisting corresponds with balance weight, maintain the data stability then observe whether the “actual weight” of the instrument is roughly in accordance with the actual balance weight, if it does, then move the arm to the next angle and observe the reading number, till the “actual weight” of the instrument is larger than the actual balance weight. Click the **SET** button at the first line at the right side of the weight correction, then a keyboard is popped up for you to input corresponding percentage factor.

Correction factor = (balance weight/instrument calculation weight) * 100%.

4. Adjust the arm to other angles, repeat the above judgment, click the **SET** button at other lines at the right side, and input corresponding percentage factor.
5. Judge whether to set other correction points according to the need.

8. Angle Calibration

Button	Fuction	
	Switch	Take turns to switch to other weight correction interface.
	ZERO	Angle zero marking, click then pop keyboard to input minimum angle.
	FULL	Angle full marking, click then pop keyboard to input maximum angle.
	CORECT	Angle correction, click then pop keyboard to input current angle error.
	EXIT	Quit the current interface.



Zero marking steps:

Angle zero marking and angle full marking are done when leaving factory, please do not make angle zero marking and angle full marking!

1. Install sensor and instrument in position, sensor signal wire connects to the instrument.
2. Watch the module value to confirm whether sensor signal wire is properly connected to the instrument.
3. Rotate the angle gauge to 0 ° (or minimum angle of depression), to keep the numerical stability. Click the **ZERO** button, pop a keypad, and enter the current angle.
4. Rotate the angle gauge to 90 ° (or maximum angle of elevation), to keep the numerical stability. Click the **FULL** button, pop a keypad, and enter the current angle.
5. Rotate the angle gauge to other angles, detect whether the displaying angle value is correct.

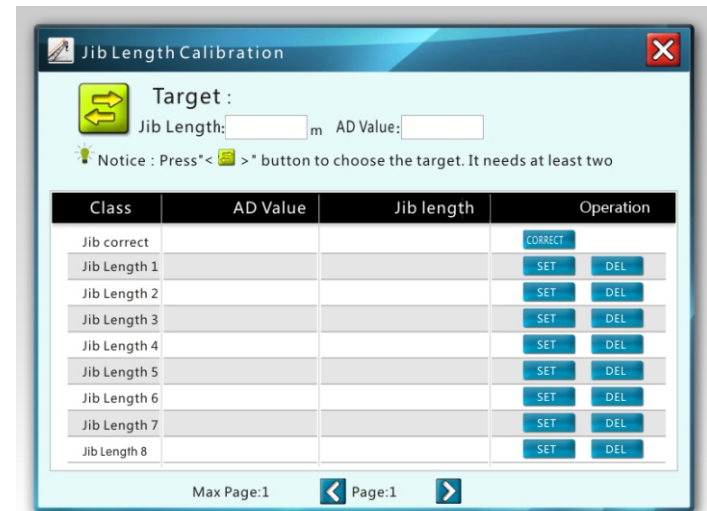
Zero correction steps:

When the instrument displaying angle and actual angle disaccord, you can perform the following operations.

1. Install sensor and instrument in position, sensor signal wire connects to the instrument.
2. Watch the module value to confirm whether sensor signal wire is properly connected to the instrument.

3. Watch displaying angle and actual angle error range, only when there is an error can the following operations be performed.
4. Click angle correction **CORRECT** button, pop a keyboard to input current actual angle value.
5. Watch whether the displaying upper limit angle and lower limit angle meet the requirements.
6. If the upper limit angle and lower limit angle can not meet the requirements, adjust the hoisting arm to be at the minimum angle, click the **CORRECT** button at the right side of angle correction 1, pop a keypad, and enter the current angle.
7. Adjust the hoisting arm to be at the maximum angle, click the " " button at the right side of angle correction 2, pop a keypad, and enter the current angle.

9.Jib Length Calibration(mobile crane)



Button	Function	
	Switch	Take turns to switch to other Radius Calibration interface.
	SET	Amplitude correction, click then pop keyboard to input amplitude correction value.
	DEL	Delete corresponding correction point.
	EXIT	Quit current interface.

Zero marking steps:

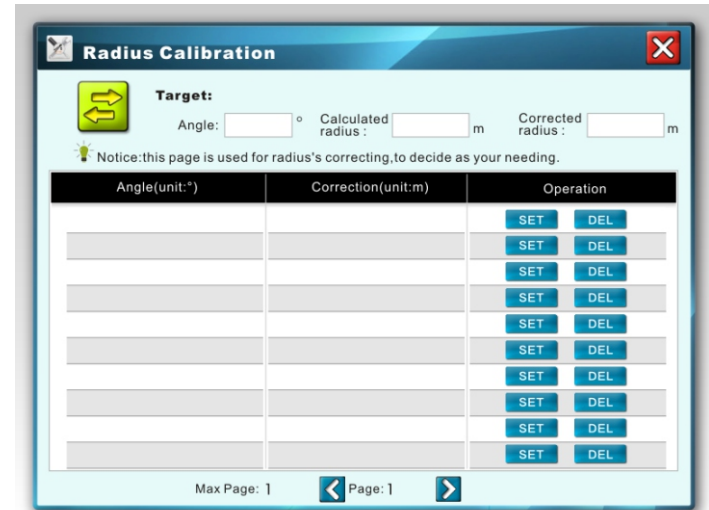
1. Install sensor and instrument in proper position, sensor signal wire connects to the instrument.
2. Watch the module value to confirm whether sensor signal wire is properly connected to the instrument.
3. Extend the boom to its maximum length , to keep the numerical stability. Click the SET button, pop a keypad, and enter the current angle.
4. Extend the boom to its minimum length, to keep the numerical stability. Click the SET button, pop a keypad, and enter the current angle.
5. Extend the boom to other length, detect whether the displaying length value is correct.

Zero correction steps:

When the instrument displaying length and actual length disaccord, you can perform the following operations.

1. Install sensor and instrument in position, sensor signal wire connects to the instrument.
2. Watch the module value to confirm whether sensor signal wire is properly connected to the instrument.
3. Watch displaying length and actual length error range, only when there is an error can the following operations be performed.
4. Click angle correction CORECT button, pop a keyboard to input current actual length value.
5. Watch whether the displaying upper limit length and lower limit length meet the requirements.
6. If the upper limit length and lower limit length can not meet the requirements, adjust the hoisting arm to be at the minimum length, click the CORECT button at the right side of length correction 1, pop a keypad, and enter the current length.
7. Adjust the hoisting arm to be at the maximum length, click the CORECT button at the right side of length correction 2, pop a keypad, and enter the current length.

10. Radius Calibration



Button	Function
	Switch
	SET
	DEL
	EXIT

Setting steps:

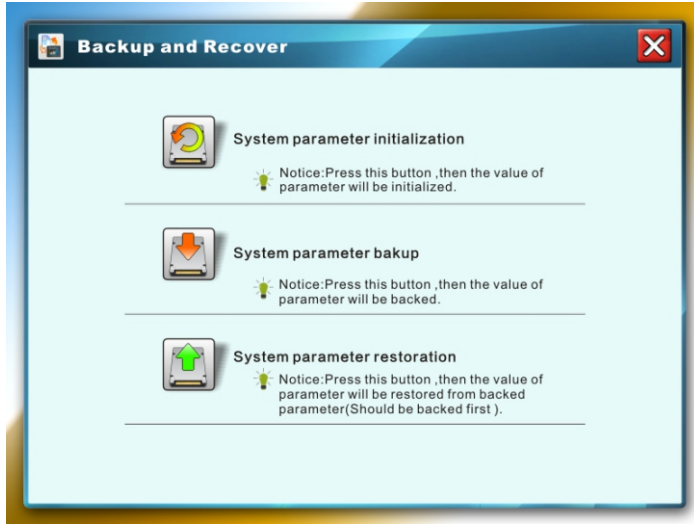
1. Ensure angle sensor be installed in position and be debugged in success.
2. Watch displaying value and actual value of current arm length, only when there is an error between the two can radius correction be performed.
3. Adjust the arm to the minimum angle, click the SET button at the first line at the right side, input current actual measured radius value. Set the first correction point, corresponding radius data is displayed in the first line.
4. Adjust the arm to the maximum angle, click the SET button at the second line at the right side, input current actual measured radius value. Set the second correction point, corresponding radius data is displayed in the second line.

5. Update requirements, adjust the arm to other angles, input actual measured radius value, and set other correction points. Remember, other calibration parameters will be displayed by angle sequence.

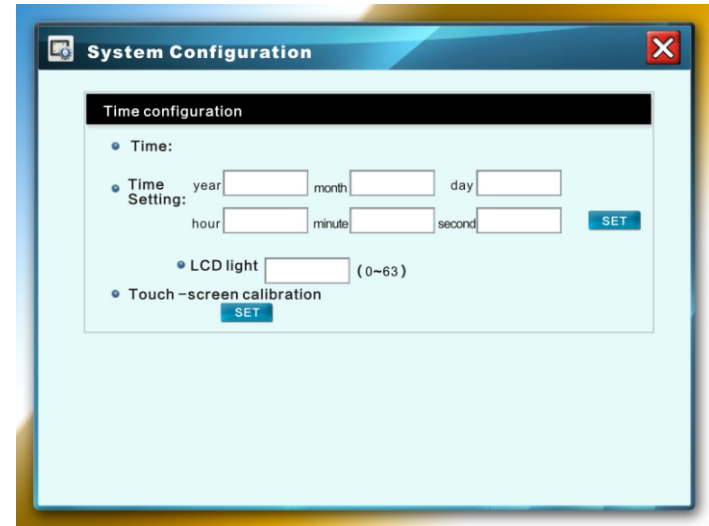
6. Correspond to radius correction under other arm lengths, the method is similar.

11.Backup and Recover

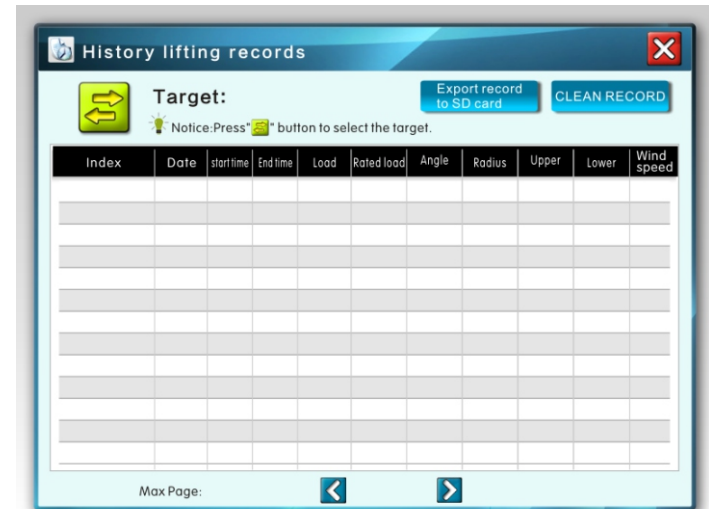
Touch button description as follows the interface.









12.System Configuration



13.History Lifting records/ Datalogger date/Statistical records



Button	Function
 Switch	Turns to switch to other types of record tables to show
 Clean record	Clean all the historical records from instrument;
 Export record	Export all the historical records from instrument ;
 Page left	Turn the current record page to the left one
 Page right	Turn the current record page to the right one
 Exit	Exit from the current interface

※History Lifting records/ Datalogger date/Statistical records setting method are consistent ;

※The product interface is subject to change without prior notice.;

4. Tips for repair and maintenance

1. Tips for repair and maintenance

- a、 Correctly install the system ;
- b、 Precision products, pay attention to waterproof, close the power when all the people left ;
- c、 careful operation, non-professional personnel or no professional guidance do not operate; ;
- d、 3 ~ 6 months for a precision calibration cycle, regular check and maintenance.

2. Analysis and Settlement of Common Failures

- a. Display Instrument not operating, monitor not working.

Reasons: Power cord is pulled out or no electric power input; malfunction of stabilized power source; safety fuse blew out.

Solutions: check the power lines and output voltage, connect the power supply.

- b. Weight Value doesn't change.

Reason : Weight Sensor cable failure; Weight Sensor damaged or Zero and Full Scale Calibration are incorrect.

Solutions: find the break point of the cable, reconnect it according to its color and take water-proof measures; or replace the sensor and recalibrate the Weight Zero and Weight Full Scale.

- c. Upon receiving the signal, the displayed values change accordingly but in big discrepancy with the actual values and beyond the range of permissible error.

5. Product assurance

WTL-A(700) Load moment indicator's guarantee period is 12 months which is from the installation acceptance delivery date on. But except follow damage reasons which are non-normal use, excessive supply voltage, and other external damage.

※This standard products (excluding customization) function finally explain belongs to the WTAU.

Please indicate the specific symptoms, use site, contact information and other content when the product returned for repair.