

QCX-BY 型起重量限制器 操作说明书

Operating Instruction for QCX-BY Hoisting Weight Limiter

一、概述:

I.Survey:

QCX-BY 系列起重量限制器是用于单梁、葫双等起重机设备上的安全保护装置。该装置主要有电阻应变式传感器和电器控制器两部分组成，具有声光报警并切断起重机起升回路电源和数字显示重量等功能。

QCX-BY series Hoisting Weight limiter is a safety protection device to apply to cranes equipments including single girder and electric gourd double-beamed crane, which is composed of resistance strain sensor and electrical controller in purpose of alarming through sound and light, cutting power of hoisting circuit and displaying weight digitally, etc.

它是根据 GB12602-90《起重机械过载保护装置安全技术规范》的要求设计而成的，各项技术指标均满足安全技术规范要求。

It is designed according to requirements of GB12602-90 “Lifting appliances--Safety devices against overloading--Safety technology code” , and its technical indexes meets the requirements of the Safety technology code.

QCX-BY 系列起重量限制器选用的传感器有旁压张力式,板环式,轴销式鱼背式等型式,控制仪表可选用 QCX-BY 单显仪表。

QCX-BY series Hoisting Weight limiter uses lateral-pressure, plate-ring, axl-pin, cantilever-beam, fish-back or other sensors.Control instrument can use QCX-BY monochrome display instrument.

二、技术指标

II. Technical Indexes

1、适用范围：0.5T 以上各种单梁,葫双等起重机.

1. Applicable ranges: a various of single girder and electric gourd double-beamed cranes with more than 0.5T.

2、系统综合误差：≤5% (F·S)

2. System comprehensive tolerance: ≤5% (F·S)

3、传感器过载能力：1.5 倍

3. Over-loading capacity of sensor: 1.5times

4、出厂初始设定点：（在满足国家安全规范和标准的前提下，可根据用户需求更改设定点）

4. Ex-factory initial setting point (setting point can be changed on the requirements of users according to national safety specifications and standards)

①预警点：设定为额定起重量的 90%

① Pre-alarmed spot: 90% of rated lifting weight to be set

②报警动作点：设定为额定起重量的 102%

② Alarming action spot: 102% of rated lifting weight to be set

③立即动作点：设定为额定起重量的 108%

③ On-spot action spot: 108% of rated lifting weight to be set

5、报警信号及控制

5. Alarming signal and alarming

①正常显示：起重量信号低于设定的预警点时，信号灯显示为绿色，表示起重量处于正常工作状态。

① Normal displaying: signal lamp turns green when signal of lifting capacity is less than pre-alarmed spot which has been set, showing that the lifting capacity is in normal working condition.

②预警显示：起重量信号达到设定的预警点，低于设定的报警点时，信号灯显示为黄色，蜂鸣器发出断续告警声，但不切断起升控制回路电源，表示目前起重量处于超载预警状态。

②Pre-alarmed displaying: signal lamp turns yellow, buzzer makes off-on alarming sound, and power of hoisting circuit is on, when signal of lifting capacity is equal to alarming spot which has been set but less than pre-alarmed spot which has been set, showing that the lifting capacity is in over-loading and pre-alarmed condition.

③报警显示及动作：起重量信号达到设定的报警动作点，低于设定的立即动作点时，信号灯显示为红色，蜂鸣器发出连续告警声，持续 1 秒后继电器工作切断起升控制回路电源，表示目前起重量处于超载报警状态。

③ Alarming display and action: signal lamp turns red, buzzer makes continuous alarming sound, then one second later, power of hoisting circuit is off, when signal of lifting capacity is equal to alarming action spot which has been set but less than on-spot action spot which has been set, showing that the lifting capacity is in over-loading and alarming condition.

④立即动作点显示及动作：起重量信号达到设定的立即动作点时，信号灯显示为红色，蜂鸣器发出连续告警声，继电器立即动作切断起升控制回路电源，表示目前起重量已处

于超载报警状态。

④ Control and action for on-spot action spot: signal lamp turns red, buzzer makes continuous alarming sound, and power of hoisting circuit is off through on-spot action of relay, when signal of lifting capacity is equal to alarming spot which has been set, showing that the lifting capacity is in over-loading and alarming condition.

⑤自动复位控制：当报警状态时，起重量信号恢复到额定起重量的 90%及以下继电器自动复位。（注：继电器常闭）

⑤ Auto-reset control: signal of lifting capacity resets 90% of rated lifting capacity and the following relays reset automatically when it is in alarming. (Note: relay is always off.)

6. 音响报警信号强度：距发音部位 1m 及在司机位置测量均不低于 75dB(A)。

6. Alarming signal intensity: it is no less than 75dB(A) at 1m distance from sound-making or at the measurement of driver.

7.信号连接方式：常用 4x0.5mm²、4x0.75mm² 屏蔽电缆线。

7 Contact type of signal: shielding cable line with 4x0.5mm² and 4x0.75mm² to be applied usually.

8.工作电压（根据用户要求可选择）：AC380V（±10%）、50Hz，

8. Working voltage (it is allowed to select the working voltage accordance to requirements of users): AC380V (±10%) , 50Hz,

9.继电器触点容量：10A、277V AC，12A、125V AC

9 Contact-point capacity of relay: 10A, 277V AC and 12A, 125V AC

10.传感器防护等级：IP65

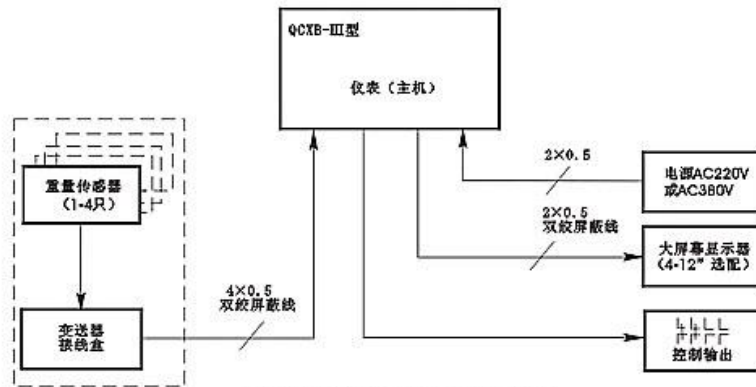
10. Protection grade of sensor: IP65

11. 电器控制箱防护等级：装置室内部分 IP42；装置室外部分 IP44。

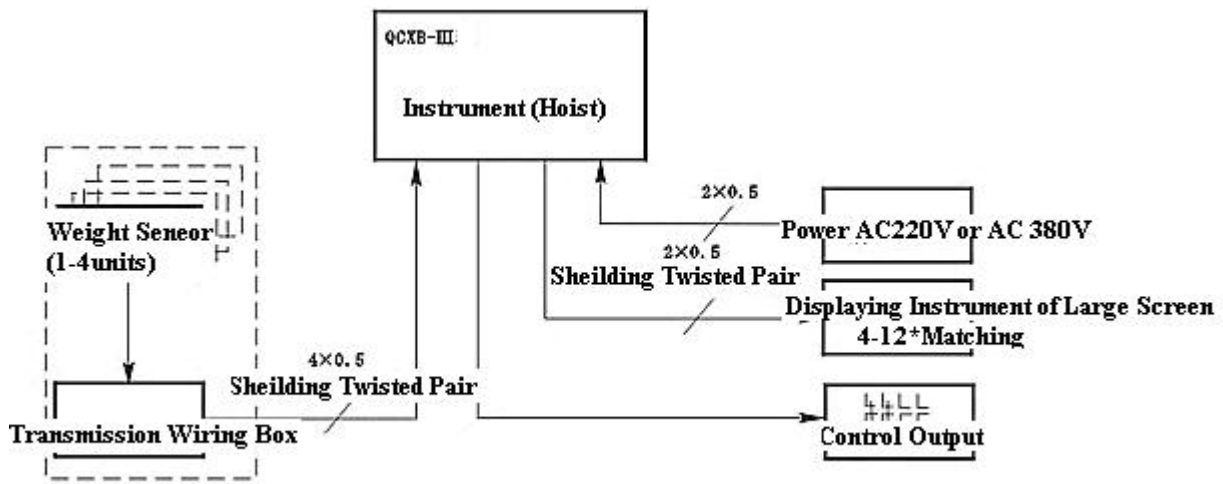
11. Protection grade of electrical apparatus control box: IP42 for internal chamber of device and IP44 for external chamber of device.

三、工作原理示意图

III. Working Principle Diagram



起重量限制器工作原理示意图



Working Principle Diagram of Hoisting Weight Limiter

四、安装和调试

IV. Amounting & Commissioning

1.传感器的安装:

1. Mounting of Senor

检查产品铭牌的型号与规格是否与起重机起重量、倍率、钢丝绳直径等参数相符;

Check whether model and specification for product nameplate is in compliance with lifting capacity of crane, rete, diameter of steel wire rope and other parameters or not;

A、旁压张力式传感器直接固定在电动葫芦钢丝绳（固定端）上，扭紧螺钉，钢丝绳略有变形。

A. Fix lateral-pressure sensor directly on electric hoist steel wire rope(fixed end), tighten screw, and somewhate distort the shape of the steel wire rope.

B、板环式传感器直接固定环链电动葫芦固定端链条和对应的销孔。

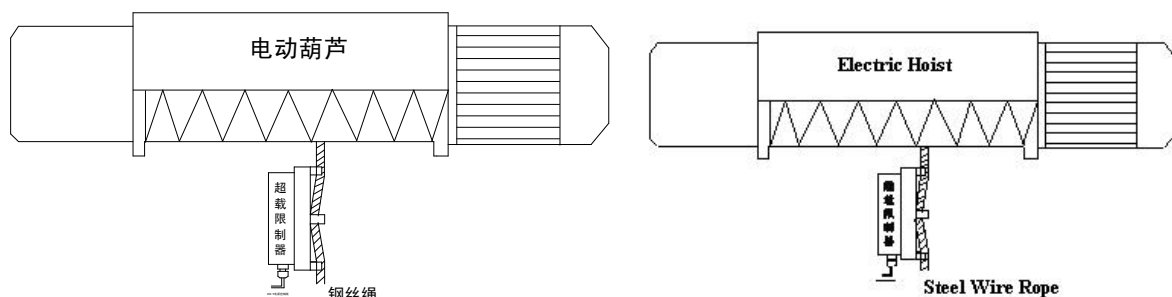
B. Fix plate-ring sensor directly on the fixed-end chain grates and corressponding pin holes of chain electric hoist.

C、轴销压力式传感器固定于电动葫芦受力支撑架或吊钩的销孔和固定滑轮对应的销孔。

C. Fix axel-pin pressure sensor on the forced supporting frame of electric hoist or on the pin holes of hook and corresponding pin holes of fixed sheave.

D. 单臂梁式传感器固定于电动葫芦受力压头和对应的固定销孔。

D. Fix single-arm-beam sensor on forced pressure head and corresponding fixed pin holes for electric hoist.



2. 电气仪表盒的安装和接线

1. Mounting and wiring for electrical instrument box

(1) QCX-BY 系列起重量限制器控制仪表若直接固定在传感器背面, 则无须再固定控制仪表; 若控制仪表与传感器分开, 则用 2 只 M4 的螺钉将仪表固定在驾驶室中便于观察的位置上, 安装要牢固, 应采取适当的防震措施。

(1) QCX-BY series Hoisting Weight limiter control instrument needs not to fix control instrument if it is directly fixed on the back of sensor; if the control instrument is apart from sensor, fix instrument with 2 M4 screws in a place of locomotive cab so as to observe, of which mounting must be firm and take proper precautions against shock.

(2) 不得安装于直接雨淋和有强烈腐蚀性介质的环境中。

(2) No rain and strong corrosive medium are surround at the mounting.

(3) 电气控制仪表安装完成后, 按行线标准悬挂于电缆架上与起重机小车一起移动。

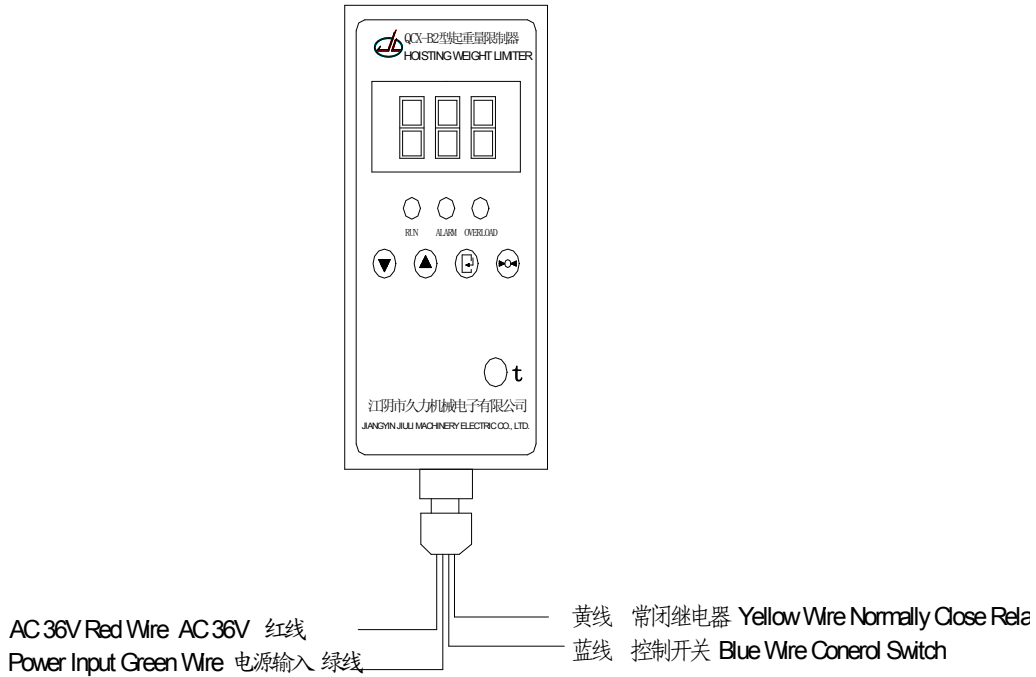
(3) After completion of mounting, electrical instrument is suspended from cable bracket according to standards of industrial line, moving along with crane crab.

3. 仪表设定

3. Instrument setting

(1) 控制仪表示意图:

(1) Diagram of control instrument



(2)仪表设定:

A 操作说明:






A (Operation Instruction)

- ▼ : 减少键 Reducing button ▲ : 增加键 Add button ⏏ : 设置键 Set button
- ⏏ : 去皮键 Tare button

操作步骤: Operation Procedure

1. 零位标定: 在限制器不受重力的情况下 (空钩), 按住 ▼ 键再按 ⏏ 键, 两键同时松开, 此时数码管显示 AD 值, 按住 ⏏ 键再按 ▼ 键, 两键同时松开数码管显示 “0.000” 即完成零位标定。
- 1. Zero Position Identification: when gravity has no effect on the limiter (empty hook), hold down the “Reducing” button and then “Set” button, release the two buttons at the same time, “AD” value will be displayed on the digital tube. Hold down “set” button and then “Reducing” button, release the two buttons at the same time, zero position identification is done when “0.000” value is displayed on the digital tube.**
2. 砝码标定: 已知砝码超过 50%, 在起重机起吊后, 传感器受重力的情况下进行砝码重量标定。按住 ▲ 键再按 ⏏ 键, 两键同时松开, 此时数码管显示 AD 值, 此时的 AD 值比空钩时应大的多。在砝码标定的 AD 显示状态下, 按增加或减少键, 可以改为已知实际砝码重量值 (和砝码相对应的数值), 按住 ⏏ 键再按 ▲ 键, 两键同时松开即完成砝码标定。
- 2. Weights Identification: since weights are 50% above the required standard, weight identification is in progress after weights are lifted by cranes equipments and**

gravity has an effect on sensors. Hold down “add” button then “set” button, release the two buttons in the mean time, AD value which is much more than that on the condition when gravity has no effect on the limiter will be displayed on the digital tube. AD value can be changed into the value of the known actual weights, which is corresponding to the weights when “add” button or “reducing” button is pressed. Hold down “set” button and then “add” button, then release the two buttons, weight identificaition will be done.

3. 去皮：在安装完毕空钩的情况下，如果数码管显示有重量，按下  键，看数码管是否归 0.000，完成去皮。
3. **Tare: When the empty hoop is equipped, press “Tare”button if the value of weights is displayed on the digital tube, zero identification is done if the value returns to 0.000.**
4. 在一般情况下，出厂的超载限制器，公司已调整无须再更改，但实际现场出现偏差，在已知砝码超过 50%重量时，可进行修整。按住  键，再按  键，两键同时松开，按标定的 AD 显示状态下，按  或  键，可以改为已知实际砝码重量值（和砝码相对应的数值），但整个操作必须在 5 分钟之内完成。完成之后应按  6S 看见三盏灯同时亮一次，把之前调试好的功能全部保存。今后若出现混乱的情况，可按增加键 6S 后，三盏灯同时亮一次，恢复之前保存的数值。
4. **Technically, factory overloading limiters do not have to be adapted any more, whereas they can be fixed if the known weights are above the required standards. Hold down “add” button then “set” button, release the two buttons in the mean time, AD value can be changed into the value of the known actual weights, which is corresponding to the weights when “add” button or “reducing” button is pressed, while the whole operation should be done in 5 minutes, and after that 6 lights will be on at the same time when “decreasing” button are holding down for 6 seconds. Save the functions which have been adapted. If something disordered occurs, hold down “add” button for 6 seconds , return to the preserved figure after three lights are on in the mean time .**

五、故障确定

V. Fault Determination

- 1.当发现仪表无显示时，应检查排线是否脱落；
1. When finding no display for instrument, it shall check whether arrange-line comes off;
- 2.当发现仪表显示不正常时，应检查标定和设置是否正确；
2. When finding instrument out of work, it shall check whether calibration and setting are correct;
- 3.当上述问题无法解决，应及时与本公司联系，由本公司专业人员进行诊断。
3. If the mentioned above problems can not be solved, it shall contact our company without delay for the diagnosis of our professional personnel.

六、注意事项:

VI. Precautions

1. 工作环境温度: $-20^{\circ}\text{C}\sim 60^{\circ}\text{C}$

1. Operating environment temperature: $-20^{\circ}\text{C}\sim 60^{\circ}\text{C}$

2. 相对湿度: $45\%—95\%(25^{\circ}\text{C})$

2. Relative humidity: $45\%—95\%(25^{\circ}\text{C})$

3. 工作电压: 380V (用户可另选电源) $\pm 10\%$

3. Operating voltage: 380V (users can select power supply in addition) $\pm 10\%$

4. 本装置只限于超载保护, 不能用作计量衡器使用。

4. The equipment, only limited to overload protection can not be used as measuring and weighing Instruments.

5. 本装置虽属安全保护装置, 但不可因装有本装置而忽视安全操作规程。

5. The equipment belongs to safety protection apparatus, but it can not ignore safety operation regulations for the equipment is installed.

6. 在您使用本产品前, 请详细阅读本说明书, 以免误操作。由于使用不当造成仪表失灵而产生严重后果, 本公司概不负责。

6. Please read the operation instruction carefully before the product is used for fear of misoperation. If the instrument is out of work and causes serious consequences for improper use, our company shall not take such responsibility.

7. 本产品保修期为 12 个月(自产品出厂日起), 保修期内由于使用不当而出现故障, 厂方也负责修理, 但须收取适当成本费用。

7. The warranty period of product comes to 12 months (from the date of delivery). With the warranty period, our factory is responsible to repair the malfunction for misoperation, but shall collect appropriate cost from the user .

