

GCCZ 主传令钟系统产品说明书

GCCZ Main Telegraph System Product INSTRUCTION



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## **产品说明书**

### **GCCZ Main Telegraph System**

### **Product INSTRUCTION**

#### 一、概述

GCCZ 主传令钟系统是用于驾驶室与集控室、驾驶室与机舱发送与回答主机转速命令及执行情况的设备。在特殊情况下，可以反向操作，即由机舱传达主机现行速度命令，而驾驶室回答命令。

采用微处理器MPU控制技术设计，产品面板为PVC贴面，具有结构小巧、安装使用方便、美观、性能可靠、配置灵活、减少电缆芯线数可节约造船费用等优点。传令钟产品有手柄式、按键式、波段开关式，分单机/双机供选用，符合CCS有关规范要求，适用于各类大、中、小型船舶。

#### **General**

GCCZ main telegraph system is the equipment used for transmitting and receiving rotational speed order and executing condition of M/E engine from W/H to ECC, from W/H to E/R. In particular cases, it could be operated reversedly, that is say transmit current speed order of M/E from E/R, and W/H receive.

Adopting microprocessor MPU control technique for design, product panel is PVC overlay, to possess such advantages as small and artful structure, convenient for installation and use, reliable performance, flexible setting and may economy ship money through decreasing numbers of cable core. Telegraph product has types as handle type, key-press type, band type, it can be divided into single engine and double engine for selecting, conforms with relate standard request of CCS, and applies to all classes of heavy, middle and small ship.

#### 二、主要功能及特点

档位：GCCZ 主传令钟系统共分十一档，即进一、进二、进三、进四、空车、完车、备车、退一、退二、退三、退四。

#### **二、Main Function And Characteristic**

Step position: GCZCZ main telegraph system is divided into 11 steps altogether, namely dead slow ahead, slow ahead, half ahead, full ahead, stop engine, finished with engine, stand by engine, dead slow astern, slow astern, half astern, full astern.

能发出和接收 11 档指令信号与接收器通讯，并对发送器和接收器（机舱接收器、监视室复示器、监视室接收器）手柄位置信号进行比较，发生异步输出声响信号。

It can transmit and receive 11 steps command signal and communicate with receiver, also it can compare with handle position signal of transmitter and receiver (E/R receiver, ECC repeater, ECC receiver), and send out audible signal for asynchronous output.

具有三地控制功能，即能分别和监视室收讯器、机舱收讯器通讯，由设在监视室的转换开关控制；在与机舱收讯器通讯时，监视室收讯器起复示器的功能。开关输入高电平时为监视室与驾驶室通讯，低电平时为机舱与驾驶室通讯。

It possesses 3-position control function, that is may separately communicate with ECC receiver and E/R receiver, and controlled by transfer switch set in ECC; when communicate with E/R receiver, ECC receiver has the function of repeater. When the switch is input high level, ECC communicates with W/H, when switch is input low level, E/R communicates with W/H.

发送器、监视室收讯器、机舱收讯器、车钟复示器功能一样，发送器和监视室收讯器外形相同，其功能由拨码开关设置。

The functions of transmitter, ECC receiver, E/R receiver, engine telegraph repeater are same, externals of transmitter and ECC receiver are same, their function are setup by thumb wheel dial.

**GCCZ 主传令钟系统**在运作时能同时显示双方（发送器、接收器）的工作状态。车钟复示器也能同时显示。发送器和接收器同步时指示灯常亮，异步时为闪光，并有声光报警和闭合触点输出，以便接通外电源报警器。一旦同步之后，自动撤消报警。

GCCZ main telegraph system may synchronously display both (transmitter, receiver) working order at the time of running. Engine telegraph repeater also can be displayed simultaneously. When transmitter is synchronizing with receiver, the indicating lamp normally flash , and when asynchronous, it will flicker, together with audible & visual alarm and closing contact output, in order to switch on alarm device of external power. Once being synchronizing, alarm will automatically cancelled.

**失电报警：**当主电源失电时，能够自动转换切换到辅助电源（U1 转换为 U2）并有声光报警和无源触点输出，主电源恢复正常自动撤消报警。按消音按钮，指示灯变平光，声音消失。该信号由车钟发讯器采集。

**Lose power alarm:** when main power supply lose power, it will be automatically switched to Auxiliary Power Supply( U1 change to U2)together with audible & visual alarm and dry contact output, this will be automatically cancelled after main power supply gets right. Press button "mute", indicating lamp change to mat gloss, and sound disappears. The signal is collected by engine telegraph transmitter.

**误车报警：**当有误车信号时，发讯器手柄和收讯器对应的位置指示灯同时闪频，并输出声响信号和闭合触点，警告主机误操作，主机纠正错误操作后，误车报警自动撤消。按消音按钮后变平光。误车报警的定义：当发讯器发出正车或倒车指令，收讯器应答后，如果齿轮箱回馈的信号与指令不同时，输出误车信号。不使用该功能时，应有屏蔽输入端把该功能屏蔽掉。误车信号、误车屏蔽信号由机舱收讯器采集。

**Error engine alarm:** when there is a error engine signal, indicating lamp which is at the corresponding position of transmitter handle and receiver flashes at the same time,besides output audible signal and closing contact, caution the M/E misoperation, error engine alarm will be automatically cancelled after M/E rectifying the misoperation. Press button "mute", then change to mat gloss. Definition of error engine : when transmitter sends out ahead or astern instruction, after receiver replys, if the feedback signal of gearbox is not simultaneously with instruction, error engine signal will be output.when the function isn't used, there should be a shield input terminus shield off it. error engine signal and error engine shield signal are collected by E/R receiver.

**报警消音和灯变平光功能：**消音是指车钟在出现主电源失电、误车报警的情况下，按下消音按钮，可以解除声响及闪光信号。在上下联络不同步、通讯失败的情况下，按消音无效。

**Alarm mute and lamp change to mat gloss function:** mute is that press button "mute" under the condition of main power supply lose power, error engine alarm, which can cancel audible and flash signal. Under the condition that up and down communication is asynchronous, communication failed, it is ineffectively to press "mute".

**通讯正常指示功能：**如果通讯故障，则蜂鸣器一直报警，按消音无效并且所有指示灯闪烁。

**Communication normal indication function:** if communication failed, buzzer will alarm all the while, it is ineffectively to press "mute" and all the indicating lamps flicker.

**试验功能：**用于检测其工作状态是否正常。如果按下试验按钮所有指示灯全亮同时蜂鸣器有声响输出，则说明工作状态正常。

Test function: used for detecting whether its working order is normal. If all indicating lamps flash and there is an audible output from buzzer after pressing test button, it shows the working order is normal.

调光功能: 设有调光旋钮, 可随外界光线强弱调节驾驶室传令钟面板上指示灯, 方便驾驶人员操作。按需要可调节至适当的亮度, 具有断电记忆功能, 开机后不用重新调整。

Dimmer function: there is dimmer rotary knob, indicating lamp on telegraph panel in W/H may be adjusted according to intensity of external ray, this is convenient for navigating mate's operation. Adjust to brightness as per need, has memory function of power cut, and needn't be readjusted after restarting.

GCCZ 主传令钟系统通讯采用 485 通讯方式, 使发送器 (驾驶室传令钟) 到接收器 (机舱回令钟) 的连接电缆只有四根 (包括电源)。

GCCZ main telegraph system communication adopts 485 communication mode, there are only 4 pieces of connecting cable (power supply is included) from transmitter (W/H telegraph) to receiver (E/R replier).

VDR 接口: 可增加 VDR 接口, 通过该接口可向 VDR 提供数据: 该接口符合 NMEA0183 标准, 可连接车钟记录仪。

VDR interface: may increase VDR interface, data can be provided to VDR through this interface; the interface meets NMEA0183 standard, and can be connected to engine telegraph recorder.

直流 24V 电源供电。电路设计采用了 CMOS 集成电路和发光二极管, 功耗小; 采用了微处理器电路, 所用元器件更少。由于结构、电路设计简单, 耗用电缆芯线比较少, 便于施工和维修。

DC24V supply power. Circuit design adopts CMOS IC and LED, power consumption is small; adopts microprocessor circuit, so the used components are much less. Because simplicity of structure and circuit design, usage of cable cores are fewer, which is convenient for construction work and maintain.

复示器: LED 指示灯同时显示双方的工作状态, 在驾驶室与机舱或驾驶室与集控室不同步时, 发出声光报警和输出闭合触点。

Repeater: LED indicating lamp simultaneously display both working order, it will send out audible & visual alarm and output closing contact when W/H and E/R are asynchronous or W/H and ECC are asynchronous.

应急联络功能: 当传令钟或线路出现故障时, 双方可以借助遥控面板上的应急联络功能和辅车钟进行传令, 但需要根据预先规定的鸣音信号进行传令。一般配有辅车钟, 用于驾驶室与集控室或机舱之间进行“机控”、“驾控”和“备车”、“完车”四种信号的联系。

Emergency communication function: when telegraph or circuitry appear failure, both can transmit orders to auxiliary engine telegraph by dint of emergency communication function on remote control panel, but need transmit orders according to predefine audible signal. Generally matched with auxiliary engine telegraph, used for contact of 4 kinds signal as "LOCAL", "WHC", "SBE" and "FWE" between W/H and ECC or E/R.

能在-10℃~+55℃环境条件下可靠地工作。

Can reliably working under the ambient condition of -10℃~+55℃.

有很好的电磁兼容性, 微机技术中有严密的抗干扰措施。

Having good electro magnetic compatibility, microprocessor technique contains rigorous anti-interference measure.

模块化设计, 无论单主机或双主机, 驾驶室单部位或驾驶室和集控室双部位都能适用。

Modular design, no matter whether single main engine or twin main engine, it is applied

to both W/H single position or W/H and ECC double position.

复示器通过拨码开关设置后可作发讯器用（平面化车钟）。

Repeater can be used as transmitter after setup by thumb wheel dial (complanation engine telegraph).

手柄式主车钟有左右机之分可由拨码开关设定。

Handle type main engine telegraph has difference of port engine and starboard engine, and can be set by thumb wheel dial.

报警声响延伸无源触点。

Alarm audible extension dry contact.

装置所用的关键元器件均为进口件。All essential component used on device are import.

GCCZ 主传令钟系统适用于各种类型的船舶。

GCZCZ main telegraph system is applied to all kinds of marine.

### 三、技术规格

电源电压：DC24V(-10%~+6%) 蓄电池DC24V±20%

工作电流：<1A

防护型式：发送器 IP22

接收器 IP22

传令档数：进一~进四，停车，备车，完车，退一~退四

环境温度：-10℃~+50℃

相对湿度：≤RH95%(+40℃)

大气压力：86~106KPa

振动：满足有关规范要求；

设备具有防振及防潮湿、防盐雾、防霉菌的措施；

报警输出类型：无源触点；

触点最大容量：DC24V/1A

### Technical Specification

Supply Voltage: DC24V(-10%~+6%) Battery DC24V±20%

Working Current: <1A

Protection Grade : Transmitter IP22

Receiver IP22

Transmit orders steps: dead slow ahead ~ full ahead, stop, stand by engine, finished with engine, dead slow astern ~ full astern.

Ambient Temperature: -10℃~+50℃

Relative Humidity: ≤RH95%(+40℃)

Atmospheric Pressure: 86~106KPa

Vibration: satisfying relative standard request;

Equipment possesses measures for moisture proof, salt mist proof and anti-mildew.

Type of Alarm Output: dry contact;

Max. Cap. of Contact : DC24V / 1A.

### 四、设备组成

#### Equipment Composition

GCCZ 主传令钟系统是由发送器和接收器等仪器组成。发送器由显示器电路、控制电路和失步报警电路组成；接收器由显示电路，失步报警电路组成。

GCCZ main telegraph system is composed by transmitter and receiver etc. instrument. Transmitter is composed by display circuit, control circuit and desynchronizing alarm circuit; Receiver is composed by



display circuit, desynchronizing alarm circuit.

电子灯光传令钟能同时显示发送器和接收器的车位,每当发送器发出一个改变主机运转情况的命令时,发送器的失步报警电路工作,发出失步报警的灯光和音响信号(发光二极管闪烁,警铃发出声响),机舱命令完毕后失步报警解除。

Electron lamplight may simultaneously display berth of transmitter and receiver, once transmitter send out an order to transfer working condition of M/E, desynchronizing alarm circuit of transmitter will work, send out lamplight and audible signal (LED flickers, alarm bell sends out audible), desynchronizing alarm will be cancelled after finishing E/R order.

电子灯光传令钟可以设有交、直流两种电源。交流作为主电源,直流作为应急电源。当交流电源断电时,直流电源自动投入工作。

Electron lamplight telegraph has DC,AC 2 kinds of power supply. AC acts as main power supply, and DC acts as emergency supply. DC power supply will jump into working automatically when AC supply blackout.

发讯器功能为指示当前手柄位置,当手柄位置与收讯器位置相同时指示灯为平光,当发讯器手柄发出的指令改变时,则相应的指示灯发光同时闪频,直到收讯器回令同步后变平光。当三地控制作监视室收讯器时,在发讯器与机舱收讯器通讯时,这 11 个灯指示的是驾驶室发讯器手柄位置。The transmitter's function is indicating handle's current position, indicating lamp is mat gloss when handle's position is same with receiver's position; the relevant indicating lamp shines and flashes when the order sent out by transmitter handle changes, it will turn to mat gloss

until receiver's reply synchronizes. When 3 position control act as ECC receiver, communicate between transmitter and E/R receiver, these 11 lights indicate W/H transmitter handle's position.

收讯器功能为指示当前收讯器手柄位置,当发送器手柄位置与收讯器位置相同时指示灯为平光,当收讯器手柄发出的指令改变时,则相应的指示灯发光同时闪频,直到发讯器回令同步后变平光。当三地控制作监视室收讯器时,在发讯器与机舱收讯器通讯时,这 11 个灯指示的是机舱收讯器手柄位置。

The receiver's function is indicating current receiver handle's position, indicating lamp is mat gloss when transmitter handle's position is same with receiver's position; the relevant indicating lamp shines and flashes when the order sent out by receiver handle changes, it will turn to mat gloss until transmitter's reply synchronizes. When 3 position control act as ECC receiver, communicate between transmitter and E/R receiver, these 11 lights indicate E/R receiver handle's position.

#### 1、主要输出端 (28个)

Main output port (28 pieces)

发讯器手柄位置指示灯: 前进1、前进2、前进3、前进4、备车、停车、完车、后退1、后退2、后退3、后退4, 共11个;

Transmitter position indicating lamp: dead slow ahead, slow ahead, half ahead, full ahead, stand by engine, stop, finished with engine, dead slow astern, slow astern, half astern, full astern, altogether 11 pieces;

收讯器位置指示灯: 前进1、前进2、前进3、前进4、备车、停车、完车、后退1、后退2、后退3、后退4, 共11个;

Receiver position indicating lamp: dead slow ahead, slow ahead, half ahead, full ahead, stand by engine, stop, finished with engine, dead slow astern, slow astern, half astern, full astern, altogether 11 pieces;

失电报警灯1个;

Lose power alarm lamp 1 piece

声响报警信号（带继电器输出）；

Audible alarm signal (with relay output);

485通讯接口1个（占用两个端子）。

485 communication interface 1 piece (occupying 2 terminal).

2、主要输入端口（15个）

Main input ports (15 pieces)

指令输入信号：前进（后退）1、前进（后退）2、前进（后退）3、前进（后退）4、备车（完车）、停车信号，共11个；

Command input signal: dead slow ahead (astern), slow ahead (astern), half ahead (astern), full ahead (astern), stand by engine (finished with engine), stop, altogether 11 pieces;

失电信号输入信号（光电隔离）1个；

power failure signal input signal (optical isolation) 1 piece;

正车合排回馈信号（光电隔离）1个；

ahead coupling feedback signal (optical isolation) 1 piece;

倒车合排回馈信号（光电隔离）1个；

Astern coupling feedback signal (optical isolation) 1 piece

取消误车报警信号（光电隔离）1个；

Cancel error engine alarm signal (optical isolation) 1 piece

监视室与驾驶室通讯和机舱与驾驶室通讯控制端（光电隔离）；

Control terminal of communications between ECC and E/R or communication between E/R and W/H. (optical isolation) ;

发讯器（驾驶室）、接收器（监视室）、接收器（机舱）、复示器、左右机设置拨码开关（三位）。

Transmitter (W/H), receiver (ECC), receiver (E/R), repeater, port and starboard engine setup thumb wheel dial (three-position)

## 五、安装与测试注意事项

### Matters Need Attention on Installation and Testing

本仪器要安装牢固可靠，安装时要注意电源的电制与电压是否与仪器要求相符。

The instrument need to be installed hard and reliably, please note whether the current and voltage of power supply meets instrument's requirements.

通电试验：接入直流24V电源，检查其功能是否正常。

Powered action test: switch in DC 24v power supply, to check whether its function is normal.

当检查仪器需打开时，应先切断电源。

Power should be cut off before opening the instrument at the time of checking.

本车钟有通讯自检功能。如果信号线开路则发出异步报警，而且操作手柄和消音按钮不能消音，这时应检查电缆是否开路。

The engine telegraph has communication self checking function. If signal wire is open circuit, it will send out asynchronous alarm, in addition operation handle and mute button can't mute, at this time should check whether the cable is open circuit.

仪器每半年进行一次检查及润滑。检查仪器紧固件有无松动，对摩擦部分（如轴、定位轮等）给予润滑。

Instrument should be checked and lubricated semiannually. Check whether the fastener of instrument is slack, and lubricate the friction parts (as shaft, orientation wheel etc.)

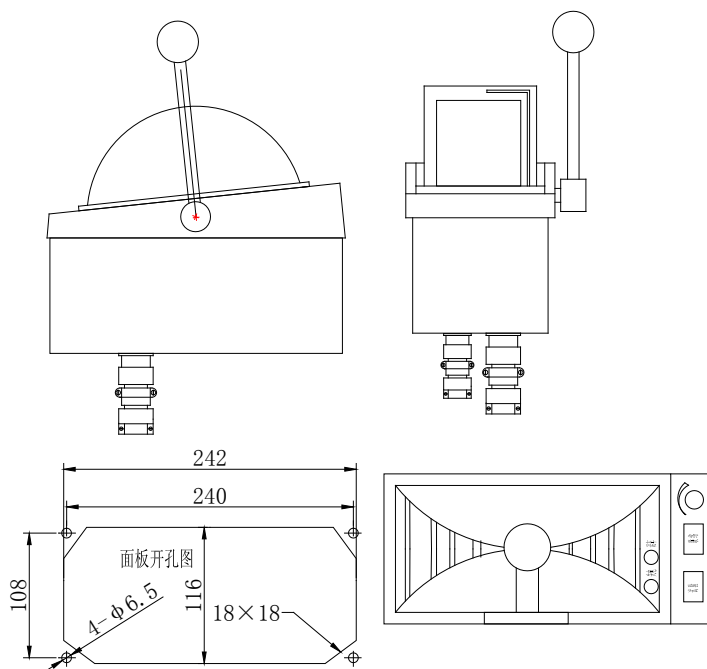
安装电缆：截面积不小于0.5mm<sup>2</sup>，芯数见系统接系统图。电源电缆截面积不小于1mm<sup>2</sup>。请按

系统接线图接线。屏蔽层要可靠接壳。

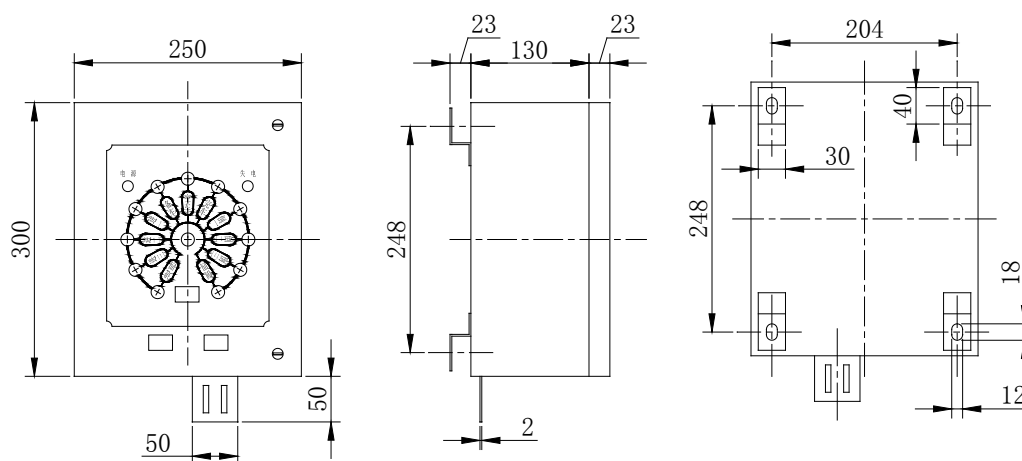
Installation Cable: sectional area is not less than 0.5mm<sup>2</sup>, number of cores referred to system wiring diagram. Sectional area of power cable is not less than 1mm<sup>2</sup>. please connect as per system wiring diagram. Shield layer need reliably connect shell.

另外附有外安装尺寸、接线图、面板图。

Otherwise accompanied with external installation dimension, wiring diagram, panel drawing.

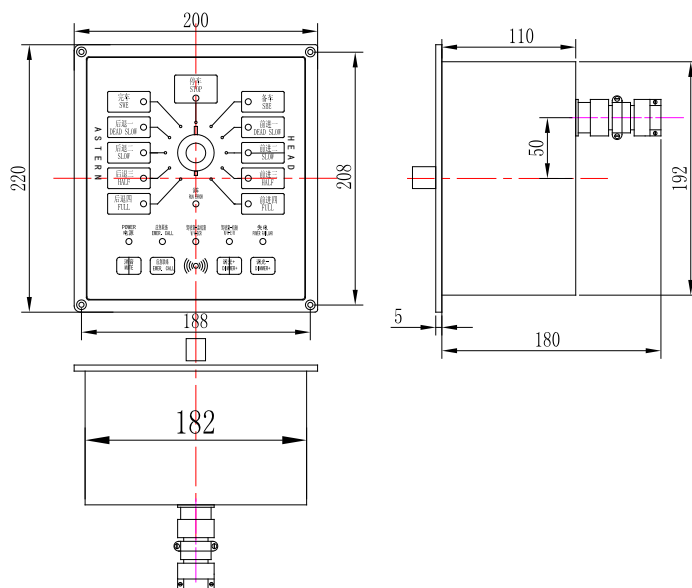


GCCZ-01 主传令钟  
GCCZ-01 Main Telegraph

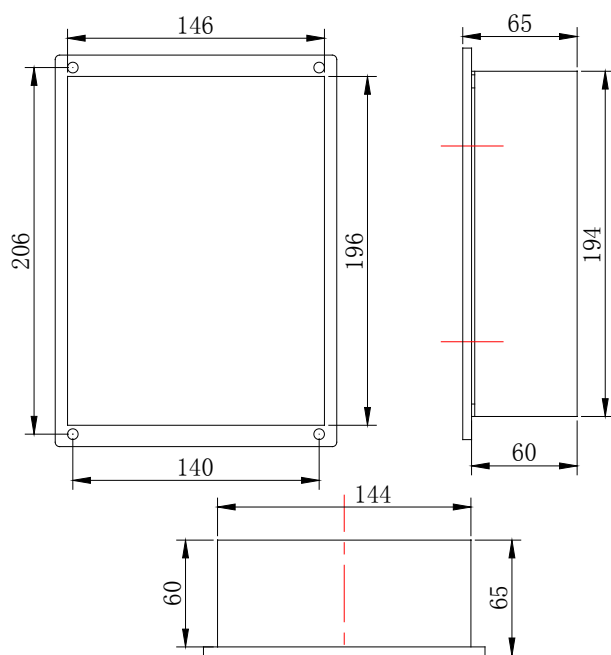


GCCZ-04 车钟接收器  
GCCZ-04 Telegraph Receiver

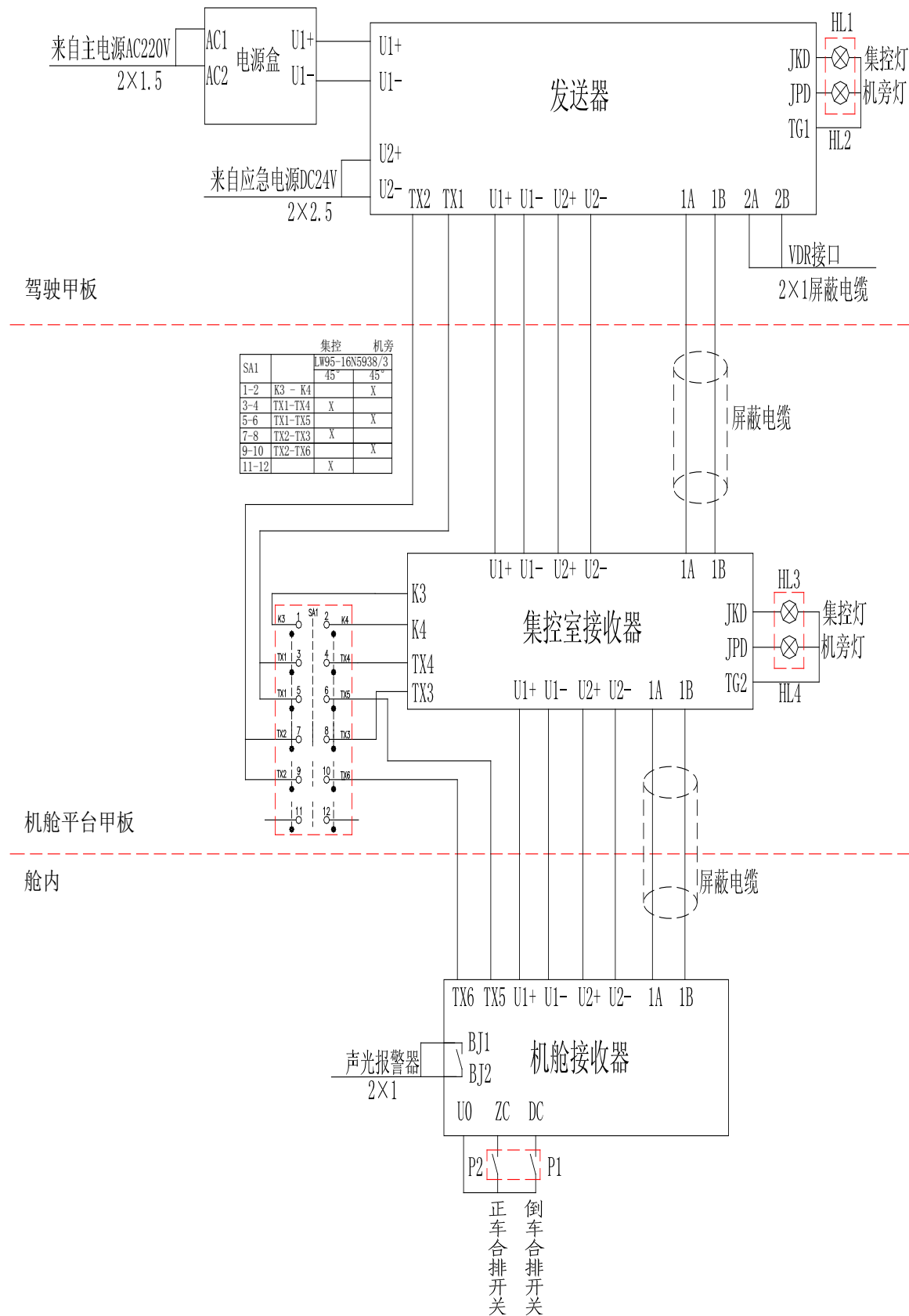




GCCZ-03波段开关式车钟发讯器  
GCCZ-03 Band Type Telegraph Transmitter



GCCZ-05车钟复示器  
GCCZ-05Telegraph Repeater





GCCZ-01 主传令钟  
GCCZ-01/03 Main Telegraph



GCCZ-03 波段开关式车钟发讯器  
GCCZ-03 Band Type Engine  
Telegraph Transmitter



GCCZ-05.车钟复示器  
GCCZ-05 Telegraph Repeater



GCCZ-04车钟接收器  
Emergency Telegraph Receiver

## 车钟分类



### 型号说明:

型 式 Mode	型 号 Type	操作部位 Operating Position		适 用 Appliance
手柄式 Handle type	GCCZ-01/3	驾驶室、机 舱 Wheel house Engine room	驾驶室、集控室、机 舱 Wheel house, engine room Engine control room	主车钟或应急车钟 Main telegraph or Emergency telegraph
按键式 Key-press type	GCCZ-02/2	驾驶室、机 舱 Wheel house Engine room	驾驶室、集控室、机 舱 Wheel house, engine room Engine control room	应急车钟或车钟复示器 Emergency telegraph or Telegraph repeater
旋转式 Rotary type	GCCZ-03/2	驾驶室、机 舱 Wheel house Engine room	驾驶室、集控室、机 舱 Wheel house, engine room Engine control room	应急车钟或机舱接收器 Emergency telegraph or Engine room receiver

备注：型号GCCZ-01/2表示两地式，型号GCCZ-01/3表示三地式

Remark:GCCZ-01/2 expresses 2-position type , GCCZ-01/3 expresses 3-position type.