BASE ENGINEERING INC.

INDUSTRIAL WIRELESS CONTROLS

INSTALLATION AND OPERATING INSTRUCTIONS

ONE - TWELVE FUNCTION RADIO REMOTE CONTROL FIXED-FREQUENCY SERIES

MODEL ASKRB/ASKRC SERIES

ASKRB/ASKRC SYSTEM DESCRIPTION

The Wireless Control System is comprised by two major components; the handheld device and the receiver unit. The receiver is permanently attached to the equipment under control and allows for various operations by connecting directly to the existing electrical control system. The handheld device is the portable unit which the operator keeps by his side and uses to send commands back to the receiver to make the desired operational changes.

The receiver is mounted in a IP67 polycarbonate Deutsch enclosure and is connected to the unit under control through supplied cables. Connectors on both control cables allow for convenient installation. It is powered from the same 12/24VDC system used to start and operate the unit engine. The radio signals from the handheld are received through either an internal receiver antenna or an externally mounted receiver antenna depending on the range requirement specific to the customer's application.

The handheld unit is a robust, custom designed ergonomic unit. It uses large buttons which provide a positive tactile feedback when operated. The handheld is powered by a rechargeable Li-Ion battery. A 12 volt system charger is included in the system to allow charging while at the job site. 24VDC chargers are also available by request. Two LED indicators are used to give the operator confirmation of signal transmission during button presses and also to warn of low batteries. An audible 'beep' alarm will also indicate a low battery condition. RF transmission is implemented using a 433 MHz system with built-in ID code. This will ensure the receiver will only operate with up to two transmitters. The receiver is pre-programmed to operate with one specific transmitter. Replacement transmitters can be quickly field programmed by following the instructions later in this manual.

The handheld also has the following optional SafeLink and Auto Shutoff features incorporated into the design, although not used in all the configurations. Either or both of these features can be included with any order the request of the customer.

SafeLink Technology

The SafeLink function acts as a safety measure for the system. As long as the handheld unit is functioning and the receiver is within range of the handheld any currently active functions (latched channels) will remain active. However, if the handheld goes out of range, is turned OFF by the operator or fails for some reason, the receiver will shut down any active functions.

This features is only implemented in systems that includes an ***ON*** and an ***OFF*** in the handheld. This feature must be programmed at the factory. If your system does not have these buttons, then this feature is not available.

Handheld Auto Shutoff

The handheld unit has an auto shutoff feature which shuts down the power after a predefined period of time without button presses. This puts the unit into sleep mode conserving battery power. The handheld ***ON*** button must be pressed to turn the unit back on again. The amount of time that the handheld waits before shutdown is preset to the manufacturer's specifications at the factory. This feature is especially useful in operations where accidental button activation presents a safety concern (boom trucks, high pressure jetters, etc...).

This features is only implemented in systems that includes an ***ON*** and an ***OFF*** in the handheld. If your system does not have these buttons, then this feature is not available. In systems where this features is not available, the handheld will wake up when any key is pressed and will go back to sleep mode as soon as the button is released.

SYSTEM OPERATION

General Operation

Operation of the system requires 12/24VDC power applied to the receiver module. In most cases, this is done by connecting the RED wire on Cable 1 to a keyed, fused 12/24VDC source. After the switch is on, the BLUE light on the receiver will go ON solid. At this point the receiver is fully operational and is waiting for commands from the handheld unit. (AC powered systems come pre-wired to a 12VDC power supply)

1. Systems with ***ON/OFF*** buttons.

Press the ***ON*** button to activate the handheld. Once the handheld device is powered on, pressing any button will make the Blue indicator on the handheld flash rapidly. When the button is released, the blue indicator flashes approximately once per second. This is to show that the handheld is awake and is sending signals to the receiver unit. Under normal operations, the red indicator will not light.

When the user presses any button on the handheld unit, the blue light on the receiver will also begin to flash and continue to do so. This light does not blink when the handheld has gone into sleep mode, is turned OFF or has ceased to function, possibly caused by discharged batteries.

If the batteries in the handheld become drained to a preset point, the red indicator, rather than the blue indicator will flash during button presses. An audible alarm will also sound at this point. This is to warn the operator that the handheld will need recharging soon. The user has approximately one hour of continuous operation time left before the unit shuts down. The actual amount of operational time will depend on total button usage totaling about 1hr.

2. Systems **without** ***ON/OFF*** buttons.

Pressing any button in the handheld will cause the unit to wake up and send a command. The blue LED should blink rapidly while the button is pressed. Once the button is released the LED will go OFF.

If the batteries in the handheld become drained to a preset point, the red indicator will flash during button presses instead of the blue. An audible alarm will also sound at this point. This is to warn the operator that the handheld will need recharging soon. The user has

approximately one hour of continuous operation time left before the unit shuts down. The actual amount of operational time will depend on total button usage totaling about 1hr.

SafeLink Operation

The following only applies to systems with ***ON/OFF*** buttons and the SafeLink feature requested.

The ***BASE*** radio control system is shipped with SafeLink feature turned ON. The operation of the SafeLink is fully automatic and requires no additional steps on the part of the operator. If the SafeLink feature has been activated and the machine under control has shut down, the operator can confirm this by observing the blue indicator on the receiver unit. If it is on solid or OFF and not flashing then the handheld was either out of range or stopped functioning.

During the SafeLink operation the handheld will attempt to communicate continuously with the receiver. If the receiver does not receive a signal from the handheld after a period of time it will shut down any active output.

If the operator experiences a shut down triggered by the SafeLink, he can resume operation by moving back within range and pressing the ***ON*** button again. The system will return to normal operation. This safety feature prevents unintended 'latched-function' equipment operation following signal loss.

Handheld Battery Charging

If the red LED and buzzer of the handheld indicate that the system charge is getting low, the unit should be recharged as soon as possible.

To charge the batteries, pull back the sealing plug on the bottom of the handheld and insert the small plug of the supplied charger (stock no. CHA1000) into the receptacle. Next, plug the other end of the charger into the power receptacle of the truck. Ensure that 12/24Vdc power is available to this receptacle at all times. In some vehicles, the power to the receptacle is cut off when the ignition is off.

While the handheld is charging, the blue LED will flash at a slow rate. When the unit is fully charged, the blue LED will remain ON solid. It will take up to four hours to charge the batteries from a fully depleted state.

The handheld will remain operational while charging, allowing the operator to continue operations while the unit is charging.

WARNING: Do not charge the handheld unit with any device other than the supplied BASE charger or damage to the unit may occur.

NOTE: It is not recommended to charge the handheld in a cold environment such as overnight in the vehicle. This will severely limit the lifespan of the batteries.

SYSTEM INSTALLATION

Receiver Module

Select a suitable location for mounting of the receiver unit. The plastic IP67 enclosure, when properly installed is resistant to water and other industrial contaminants. The receiver can be mounted anywhere on the equipment as long as there is an open, unobstructed path for the radio signal to reach the receiver/antenna. This will ensure maximum operational range.

The enclosure should be mounted with the connectors facing down, to minimize the risk of water ingress through the connector pins.

Please refer to the specific system drawings for size and mounting holes location.

Power Connection

Connect the RED lead of the system cable to a keyed and fused +12/24Vdc source. This power source must be active when the system under control is ON. Connect the BLACK lead to suitable electrical ground of the electrical system.

It is strongly recommended that any radio control system be powered only when the equipment is parked and ready to work. A park-brake interlock switch for all air-brake truck applications is available from BASE Engineering at the time of order.

Other Connections.

Refer to attached system-specific drawing for the remaining connections.

WARNING: The ASKRB/ASKRC receiver units are not rated for use in explosive environments and must not be installed in close proximity to fuel tank fittings or hose connections or any other area that requires explosion environments certification.

Handheld Unit

The handheld unit is shipped from the factory configured and ready for operation. It is recommended that the handheld unit be charged before it is put into operation.

System Dedication

Every BASE Engineering handheld has a unique ID assigned at factory. The receiver unit can be dedicated to two separate handhelds. This means that the receiver can only be operated by either of these handhelds. The receiver must 'learn' the ID code of the handheld in order for the transmitter to operate the receiver.

All Wireless Control System are supplied from the factory fully programmed and ready for use, however, the following procedure can be used to re-program or dedicate a replacement handheld or receiver unit in the field.

Teaching the Receiver a new Transmitter ID Code

If a transmitter is used that has not been "learned" by the receiver, the receiver will not function with that transmitter. To teach a receiver the ID code of a transmitter, complete the following steps:

1. Make sure receiver is powered on.
2. Make sure the external antenna is connected, if applicable.
3. Locate the pushbutton (programming button) located to the left of the power connector.
4. Press this button 5 times quickly. The blue power/activity LED should flash 5 times.
5. Press the programming button 1 or 2 times, depending on the transmitter that is to be dedicated (once for 1 transmitter, twice for a 2nd/spare transmitter).
6. If the handheld has system ***ON/OFF*** buttons, press and hold the green ***ON*** button. If it does not have system ***ON/OFF*** functionality, press and hold any button on the transmitter.
7. If the receiver learns the transmitter ID correctly, the blue power activity LED on the receiver will blink 8 times. If it does not learn the ID correctly, the blue power activity LED will blink twice. If it blinks twice, go back to step 4 and repeat instructions.
8. This completes the learning process. The ID of this transmitter is stored in the receiver's memory and will not be lost when the receiver is powered off. These instructions can be repeated whenever a transmitter or receiver is replaced.

***NOTE: The user should ensure that there are no other operational handheld units within range of the system as they could interfere with the dedication process.**

SYSTEM TROUBLESHOOTING

Systems with B receivers

1. Receiver will not power up.
   The blue POWER/ACTIVITY indicator should be ON after power on, if it is not check the following (ensure the transmitter if OFF before testing):
   - Cycle the power, verify that the blue indicator goes solid. If it does not, then check the power wiring going into the receiver.
   - If the blue indicator flashes and goes off, verify that the Safety Interlock wire is properly connected. Check schematics. Check that the black is properly connected to battery GND.

2. Receiver is ON but it will not work properly. No other indicator lit.
   - If the handheld includes a system **ON** make sure that the button is pressed and the blue indicator in the handheld is blinking.
   - Check if the blue POWER/ACTIVITY indicator blinks when a button is pressed. If not try the Dedication Procedure described in this Manual. If the Dedication Procedure is done and still the blue indicator does not blink when a button is pressed contact BASE.

3. ACTUATOR or MOTOR FAULT indicator lit RED.
   If a fault is detected in the outputs the ACTUATOR or the MOTOR FAULT indicators will lit in RED.
   - ACTUATOR FAULT blinks. This indicator will blink to indicate the channel where the fault was detected. Count the number of flashes to find the channel and check the corresponding wiring for short circuits or equipment faults.

- MOTOR FAULT blinks. It will indicate a fault in channels 5-8; check the wiring for short circuits of equipment failures.

Systems with C receivers.

1. Receiver will not power up.
   The blue POWER/ACTIVITY indicator should be ON after power on, if it is not check the following (ensure the transmitter if OFF before testing):
   - Cycle the power, verify that the blue indicator goes solid. If it does not, then check the power wiring going into the receiver.
   - If the blue indicator flashes and goes off then check schematics to ensure the black wire on grey connector is properly connected to battery GND.

2. Receiver is ON but FUSE indicator is lit RED
   - If the FUSE indicator is lit RED after power on, the internal 10A fuse is blown. Open the receiver and replace the fuse. Check for wiring or equipment faults.

3. Receiver is ON but it will not work properly. No other indicator lit.
   - If the handheld includes a system **ON** make sure that the button is pressed and the blue indicator in the handheld is blinking.
   - Check if the blue POWER/ACTIVITY indicator blinks when a button is pressed. If not try the Dedication Procedure described in this Manual. If the Dedication Procedure is done and still the blue indicator does not blink when a button is pressed contact BASE.

For further details and product support please contact BASE Engineering Inc. 800.924.1010

WARRANTY & RETURN PROCEDURES

Limited Warranty Policy

This ***BASE*** Engineering Inc. radio remote control system is sold with a limited warranty to be free from defects in material and workmanship for a period of **4 years from the date of manufacture**. This warranty covers only repair or replacement parts/components. Labor to diagnose, remove, or replace failed components is not covered under this warranty.

Replacement parts will be shipped same-day when possible provided the call is placed prior to 1:00 pm (EST) Eastern Standard Time. Calls received later than 1:00 pm EST will be shipped overnight on the next business day. All defective components must be returned to the factory clearly marked with a RGA (Returned Goods Authorization) number for identification purposes.

Warranty Claims

BASE Engineering Inc. will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within the warranty period. Before any warranty repairs are attempted or before returning any product to the factory ***BASE*** Engineering must be contacted. ***BASE*** Engineering staff will require the model number and the serial number of the system.

Troubleshooting calls and prior authorization for warranty can be made toll free to 800.924.1010.

BASE Engineering is not liable for material, labor or contingent liabilities arising out of the improper use or function of any product. Warranty shall become void if the product is improperly installed, modified, damaged, abused, or used for applications other than intended use.

FCC Rules and Compliance.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Part 15.231

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