Radio Control Transmitters

Hubbell Radio Remote Control Systems

Catalog 31.300 • June 1999 • New
Replaces Catalog Sheet 31110 of Mar 95
Catalog Sheet 31115 of Sep 97
Catalog Sheet 31120 of Jun 96

All Hubbell Radio Control Transmitters use the latest microcontroller technology and ultra reliable Manchester II (biphase) digital, FM data transmission. These transmitters are for use with Hubbell radio control receivers on cranes, locomotives, etc. The transmitters operate on a licensed frequency in the 72 to 76 MHz or the 450 to 470 MHz bands. (Only the catalog 31.130 equipment is license-free.)

A typical transmitter has three or four stepped or stepless lever function switches for the main crane motions. Toggle switches and push buttons are used for the auxiliary functions. The key operated "On/Off" switch controls power to the transmitter, and the "Run/E-stop" toggle switch controls the main line contactor on the crane. Two toggle switches are used for the control of any lifting magnets: one for "Lift" and both for "Drop". An LED indicates transmitter is operating normally when it flashes at the transmit rate and comes on steady when the Ni-Cad battery needs recharging. Internal antennas are used with all transmitters, except the hand-held, which uses an external antenna. The fixed transmitter uses coax cable to its remote antenna.

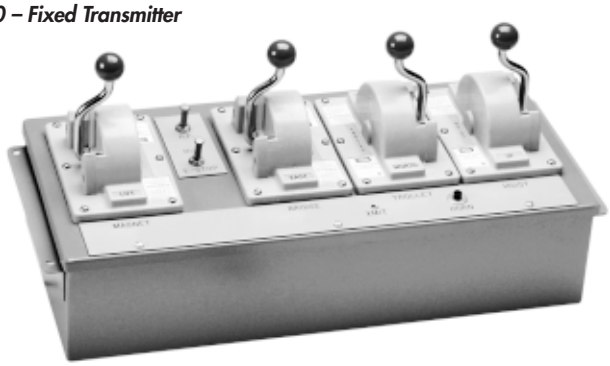
31.310 – Full-Size Transmitter

31.320 – Mid-Size Transmitter

31.330 – Hand-Held Transmitter

31.340 – Compact Locomotive Transmitter

31.350 – Fixed Transmitter



HUBBELL

Hubbell Radio Remote Control Systems

31.100 Micro-controller Radio Crane Control Systems

- 31.110 Compact Style AC Receiver
- 31.120 Compact Style DC Receiver
- 31.130 License-free Systems

31.200 Micro-controller Radio Locomotive Control Systems

- 31.210 Compact Style Receiver

31.310 Full Size Transmitter

This portable transmitter is housed in a light, rugged, weather proof plastic case suitable for severe industrial environments. The switches for control of Bridge, Trolley and Hoist are reliable return-to-center devices with positive detents in all positions. Up to five-speed, or stepless reversing control of all motors can be provided.

Auxiliary functions such as: horn, bridge brake and magnet lift/drop are controlled by high quality toggle switches with sturdy operating handles. All switches are located for ease of operation and identified on an engraved legend plate.

The RF transmitter is crystal controlled and all logic is handled by a microcontroller. The antenna is completely enclosed within the transmitter case.

The unit is powered by a rechargeable 12 volt nickel cadmium battery capable of 500 or more recharge cycles. The quick disconnect battery module provides up to 5 shifts continuous service (40 hrs.) — more in normal intermittent day to day operation. A low battery LED indicator is provided. The bench top charger will recharge a battery within 8 hours.

A shoulder-type carrying harness is provided which is adjustable over a wide range of sizes to accommodate operator comfort and clothing differences.

31.320 Mid-Size Transmitter

The Hubbell Mid-Size Transmitter is for use with Hubbell biphase or microcontroller receivers. It is used for the remote control of overhead cranes, locomotives and other moving equipment. The transmitter is fully self contained with battery, controller board, rf board, antenna, switches and indicators in a small, lightweight, rugged plastic case. The transmitter is equipped with either a 72–76 MHz or 450–470 MHz rf board and antenna, per customer order.

Levers similar to a crane cab master controller are provided for the control of bridge, trolley, main hoist, and auxiliary hoist motions. Each control switch has a positive detent arrangement to provide operator feedback of individual speed points. Additional toggle or spring return switches, key switches or pushbuttons can be provided for the control of other functions such as horn, brakes, magnets, tongs, etc. A Master Key Switch is provided for turning battery power on and off to the transmitter control circuit. A Run/Emergency Stop toggle switch is provided for quick stop in case of emergency. This switch must be in the Run position for the transmitter to operate.

The battery is a 12 volt Ni-Cad module having the capacity to power the transmitter for two work shifts (20 hours) when fully charged. It is easily removed for quick recharging in the battery charger.

Each transmitter comes with a battery pack, two keys for the Master Switch and a fully adjustable shoulder harness.

31.330 Hand-Held Transmitter

The Hubbell Hand-Held Transmitter is a microcontroller for use with Hubbell biphase or microcontroller receivers. It is suitable for the remote control of overhead cranes, locomotives, etc. The transmitter is fully self contained with battery, controller board, rf board, antenna, switches and indicators in a small, lightweight, rugged plastic case. The transmitter is equipped with a 72–76 MHz rf board and external antenna.

Elastomer rocker switches control the bridge, trolley, and hoist motors. Up to a maximum of 3 speed points are available for each motion. The momentary "Run" pushbutton is used to initiate the turn-on sequence which is a series of keystrokes that must be completed within 10 seconds of pressing "Run", or the transmitter will not power-up and close the main contactor. The "E-Stop" momentary pushbutton is used to remove power from the crane and turn off the transmitter. In addition, there are three momentary pushbuttons near the bottom of the transmitter. One is used to sound the crane siren, the remaining two are available for any other function.

The transmitter operates for about 70 hours on a standard 9 volt alkaline battery. The battery is easily replaced. The transmitter includes a leather case with belt loop.

31.340 Compact Locomotive Transmitter

Hubbell also offers a compact transmitter designed specifically for Radio Locomotive Control Systems, available in 72–76 MHz or 450–470 MHz. This compact microcontroller transmitter offers smaller size, less weight and greater operator acceptance over full size units. The size is reduced by 33% making it safe to use in tight conditions. The weight is reduced by 15% which allows longer wearing cycles.

The compact transmitter has all the ruggedness of the standard Hubbell transmitter and includes a rechargeable nickel cadmium battery pack and adjustable harness. All functions of the locomotive are duplicated with reliable, high quality switches and pushbuttons. Throttle position and brake pressure are controlled by one switch, a reliable return to center device with positive detents in all positions. All switches are located for ease of operations and identified on an engraved legend plate.

31.350 Fixed Transmitter

The Hubbell Fixed Transmitter is a microcontroller based, biphase modulated transmitter for use with Hubbell microcontroller receivers. The fixed transmitter communicates to the remote receiver via radio transmission, eliminating the need for festooning, cabling, etc.

The Fixed Transmitter is housed in a NEMA 12 surface-mounting console integrating several Hubbell operator interface products. The transmitter electronics are essentially the same as used in the mid-size transmitter. Internal power supplies are provided for operation from 120V ac or 250V dc. The antenna mounts remotely and is conected to the transmitter by coax cable.

Multispeed/bidirectional operator control is via a Type 4211 Mini-Master Switch for each function controlled by the transmitter. The compact Mini-Master Switch has an operator head molded with tough fiberglass reinforced polyester resin and a stainless steel handle. The switch is available with up to 5 speed points per direction. Refer to Specification Sheet 4211 for additional information.

Other operator interface functions (start/stop, horn, etc.) use toggle switches, and/or pushbuttons & selector switches.

72 MHz Transmitters

	Full-Size	Mid-Size	Hand-Held	Compact Loco	Fixed Transmitter
Frequency Range Channel Available Frequency Stability -10 to 60° C	72-76 MHz per customer license ±5ppm				
Emission Type Spurious/Harmonic Output (below carrier) Output to Antenna Effective Radiated Power Nominal Range (line of sight)	10KOFID >70db 300 mW 3 mW 800 ft	10KOFID >70db 300 mW 3 mW 800 ft	10KOFID >70db 100 mW 10 mW 1000 ft	10KOFID >70db 300 mW 3 mW 800 ft	10KOFID >70db 300 mW 150 mW 2000 ft*
FCC Identifier Canada Certificate Number	LRL922206-72 2259-203-224	LRL922206-72 2259-203-224	LRL922206-72 2259-203-224	LRL922206-72 2259-203-224	LRL922206-72 2259-203-224
Voltage Requirement Battery Usage Recharge Time	12.5V dc ±15% 40 hrs 8 hrs	12.5V dc ±15% 20 hrs 8 hrs	9V dc ±15% 70 hrs not rechargeable	12.5V dc ±15% 40 hrs 8 hrs	120V ac or 250V dc no battery no battery
Operating Temperature Relative Humidity LED Indicator	-22° F to 140°F -30° C to 60° C 20% to 90% non - condensing Flashing: transmitting Steady: low battery**				
Function Lever Switches Auxiliary Switches Weight with Battery	4 lever switches max. 8 toggle sw./p.b. 10 lbs.	4 lever switches max. 8 toggle sw./p.b. 6.5 lbs.	9 rocker switches 3 p.b. 1.1 lbs.	2 lever switches max. 8 toggle sw./p.b. 8 lbs.	as required as required No Battery

450 MHz Transmitters

	Full-Size	Mid-Size	Hand-Held	Compact Loco	Fixed Transmitter
Frequency Range Channel Available Frequency Stability -10 to 60° C	406–430, 450–475 MHz per customer license ±5ppm		**The Hand-Held Transmitter is currently available only in the 72 MHz model.**	406–430, 450–475 MHz per customer license ±5ppm	
Emission Type Spurious/Harmonic Output (below carrier) Output to Antenna (low/high) Effective Radiated Power (low/high) Nominal Range (line of sight) (low/high)	10KOFID >80db 300 mW/1 W 75 mW/250 mW 1000 ft/1500 ft	10KOFID >80db 300 mW/1 W 75 mW/250 mW 1000 ft/1500 ft		10KOFID >80db 300 mW/1 W 75 mW/250 mW 1000 ft/1500 ft	10KOFID >80db 300 mW/1 W 150 mW/500 mW 2500 ft/3500 ft*
FCC Identifier Canada Certification Number	LRL922206-450 2259-203-222	LRL922206-450 2259-203-222		LRL922206-450 2259-203-222	LRL922206-450 2259-203-222
Voltage Requirement Battery Usage (low/high) Recharge Time	12.5V dc ±15% 60 hrs/40 hrs 8 hrs	12.5V dc ±15% 20 hrs/10 hrs 8 hrs		12.5V dc ±15% 60 hrs/40 hrs 8 hrs	120V ac or 250V dc no battery no battery
Operating Temperature Relative Humidity LED Indicator	-22° F to 140°F -30° C to 60° C 20% to 90% non - condensing Flashing: transmitting Steady: low battery			-22° F to 140°F -30° C to 60° C 20% to 90% non - condensing Flashing: transmitting Steady: low battery**	
Function Lever Switches Auxiliary Switches Weight with Battery	4 lever switches max. 8 toggle sw./p.b. 10 lbs.	4 lever switches max. 8 toggle sw./p.b. 6.5 lbs.		2 lever switches max. 8 toggle sw./p.b. 8 lbs.	as required as required No Battery

* The use of "Whip Antennas", raised 20 to 30 feet above ground level, on both transmitter and receiver, increases the nominal range to 2 miles.
** Fixed Transmitter does not have "Steady" LED indicator for low battery warning.

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