

Hydraulic Remote Control for Construction Engineering Cranes

Product Specification, Wiring Architecture & Integration Manual

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1. EXECUTIVE SUMMARY & OVERVIEW

The Nomi Hydraulic Remote Control System for Construction Engineering Cranes, engineered by Henan Nomi Electronic Technology Co., Ltd., is an industrial-grade electro-hydraulic proportional wireless control solution designed for mobile construction cranes, truck-mounted cranes, rough-terrain cranes, and heavy crawler cranes.

Spider style crawler crane wireless remote control

International Certification

Safety protection

Signal stability

Function customization



Source factory

Professional R&D of industrial remote controllers for 20 years

- ✓ logic customization
- ✓ Panel customization
- ✓ function customization

Operating heavy construction cranes requires high precision, continuous multi-axis motion control, and smooth hydraulic metering during load hoisting, boom extension, and turret rotation. Traditional cabin-only or corded pendant operation limits visibility and places operators near hazardous rigging zones. The Nomi remote control system converts operator joystick movements into precise Pulse Width Modulation (PWM) or CAN-bus control signals, allowing crane operators to maneuver loads from an optimal vantage point up to 300 meters away while improving line-of-sight safety and operational productivity.

2. TECHNICAL SPECIFICATIONS

Technical Parameter	Specification & Engineering Value
Manufacturer & Brand	Henan Nomi Electronic Technology Co., Ltd. / Nomi
Target Machinery	Truck Cranes, Mobile Engineering Cranes, Rough-Terrain Cranes, Crawler Cranes
Control Signal Output	PWM Proportional Output, CAN-bus (J1939 / CANopen), On/Off Relays
Operating Voltage Range	9V DC – 32V DC (Wide-Voltage Transient & Reverse Polarity Protection)
Radio Frequency Band	433 MHz / 868 MHz / 2.4 GHz (FHSS Automatic Frequency Hopping)
Control Distance	Up to 300 meters (984 feet) unobstructed line-of-sight
Response Latency	Less than 12 milliseconds
Proportional Accuracy	Less than 1 percent nonlinearity across joystick range
Enclosure Protection Rating	Receiver IP67 Epoxy Sealed / Transmitter IP65 Weatherproof
Operating Temperature	-30°C to +75°C (-22°F to +167°F)

3. KEY SYSTEM FEATURES & ADVANTAGES

Micro-Meter Proportional Metering

Dual multi-axis proportional joysticks provide smooth, stepless control over main hydraulic pump displacement and spool opening. Slight joystick deflection yields minimal hydraulic oil flow for precise load positioning, while full deflection delivers maximum hydraulic speed.

FHSS Anti-Interference Architecture

Utilizes Frequency Hopping Spread Spectrum (FHSS) technology to continuously switch channels across the radio spectrum, ensuring uninterrupted signal link even in high electromagnetic interference environments near power lines or active construction equipment.

Ruggedized Chest-Pack Ergonomics

The transmitter features a heavy-duty glass-fiber reinforced nylon housing with rubberized corner bumpers and a padded waist-chest strap, equipped with tactile joysticks, toggle switches, and an oversized emergency stop button.

Hardware Redundancy Safety System

Compliant with EN ISO 13849-1 Category 3 PL d standards. Integrated dual processors continuously monitor signal integrity, automatically disengaging the main hydraulic pilot dump valve within 15 milliseconds if the signal drops or the Emergency Stop is activated.

4. SYSTEM PACKAGE COMPONENTS

Item Number	Component Description	Quantity Included
1	Multi-Axis Joystick Transmitter Unit with Padded Chest Strap	1 Unit
2	IP67 Epoxy-Potted Industrial Receiver Box	1 Unit
3	High-Gain External Omnidirectional Antenna with Cable Lead	1 Set
4	Pre-Wired Heavy-Duty Cable Harness with Waterproof Connectors	1 Set
5	Smart Dual-Dock Battery Charger & Rechargeable Lithium Battery Pack	2 Sets

Item Number	Component Description	Quantity Included
6	Technical Wiring Schematic Diagram & Installation Manual	1 Copy

5. SYSTEM WIRING ARCHITECTURE & PINOUT MATRIX

5.1 Receiver Wiring Lead Assignments

Lead Cable Wire	Signal Function	Target Connection Point	Operation Logic
Red (12V/24V +)	Main System Power Supply	Crane Battery Positive (+24V DC Bus Bar)	System Controller Main Power Input
Black (GND)	Power Ground Reference	Chassis Ground / Battery Negative Terminal	Common Reference Ground
Yellow (E-Stop)	Hydraulic Safety Cutoff	Main Hydraulic Dump / Pilot Cutoff Solenoid	Cuts Pilot Oil Pressure on E-Stop Activation
Blue (Hoist UP/DN)	Main Winch Proportional Output	Main Hoist Hydraulic Valve PWM Pilot Coil	Controls Main Winch Raising & Lowering Speed
Green (Boom EXT/RET)	Telescopic Boom Output	Boom Extension Valve PWM Pilot Solenoid	Controls Boom Telescoping Out & In
White (Boom LIFT/LWR)	Boom Luffing Output	Boom Cylinder Luffing Valve PWM Coil	Controls Boom Angle Raising & Lowering
Orange (Slew L/R)	Turret Swing Output	Slewing Motor Electro-Hydraulic Valve	Drives Clockwise & Counter-Clockwise Rotation
Brown (Aux Winch)	Auxiliary Winch Control	Aux Winch Hydraulic Valve Solenoid	Controls Secondary Winch Hoisting Functions

Lead Cable Wire	Signal Function	Target Connection Point	Operation Logic
Purple (Throttle)	Engine Speed Control	Engine ECU / RPM Acceleration Relay	Controls Engine RPM Speed Acceleration

5.2 Motion Control Logic

Joystick Movement	Primary Signal Output	Hydraulic Valve Function	Crane Motion
Right Joystick Pull Back	Main Winch UP PWM	Opens Winch Raising Spool	Raises Main Hook Block
Right Joystick Push Forward	Main Winch DOWN PWM	Opens Winch Lowering Spool	Lowers Main Hook Block
Left Joystick Pull Back	Boom LIFT PWM	Opens Luffing Up Spool	Elevates Boom Angle
Left Joystick Push Forward	Boom LOWER PWM	Opens Luffing Down Spool	Lowers Boom Angle
Left Joystick Push Left/Right	Slew L/R PWM	Drives Slewing Motor Valve	Rotates Crane Upper Structure
Right Joystick Push Left/Right	Boom EXT/RET PWM	Opens Telescoping Valve	Extends / Retracts Telescopic Boom

6. STEP-BY-STEP INSTALLATION & CALIBRATION

Step 1 Receiver Unit Mounting

Disconnect the crane battery main switch. Mount the IP67 receiver unit inside the electrical junction box or chassis compartment using rubber shock absorbers. Route the high-gain external antenna to the cab roof for line-of-sight reception.

Step 2 Cable Harness Integration

Connect the main power supply directly to the 24V DC battery circuit through an inline 15A fuse. Interface the PWM output wires to the electro-hydraulic proportional valves on the main hydraulic distributor manifold according to the pinout matrix above.

Step 3 Joystick Zero-Point & Flow Calibration

Set the receiver to setup mode. Move both joysticks through their full range of motion to calibrate zero-position deadbands, minimum start current, and maximum hydraulic oil flow thresholds for each function.

Step 4 Operational Safety Check

Start the crane engine in an open area. Test hoist, boom, and slewing movements at low engine speed. Press the Emergency Stop button during movement to confirm that the main hydraulic pilot valve drops immediately.

7. TROUBLESHOOTING & MAINTENANCE

Issue 1 Receiver Status LED Flashes Red Continuously

Cause and Solution: Low supply voltage or signal loss. Check if battery voltage drops below 18V DC under load and verify antenna coaxial connections.

Issue 2 Crane Movement Is Jerky or Non-Linear

Cause and Solution: PWM output frequency mismatch or valve spool contamination. Adjust the PWM output frequency in the receiver menu to match the valve solenoid specification (typically 100 Hz to 200 Hz).

Routine Maintenance Schedule

Inspect pre-wired cable harnesses every 100 operating hours for wear or corrosion. Clean hydraulic oil residue off the transmitter using a dry cloth.

8. COMPANY INFORMATION & TECHNICAL SUPPORT

Manufacturer: Henan Nomi Electronic Technology Co., Ltd.

Official Website: <https://www.spiremade.com>

Sales & Technical Email: sales@spiremade.com

Product Lineup: Construction Crane Remotes, Hydraulic Proportional Controllers, Concrete Pump Truck Remotes, Overhead Crane Controllers.