ZW-5A series

ZW220

WHEEL LOADER

Model Code: ZW220
Engine power: 144 kW (193 HP)
Operating Weight: 16,810 - 17,380 kg
Bucket ISO Heaped: 2.7 - 3.4 m³
The new ZW220 wheel loader combines excellent fuel economy with enhanced controllability. The “Active Engine Control System” - original Hitachi technology - determines operating status and adjusts engine speed while suppressing machine jerking. The ZW220 offers what is most needed today - fuel efficiency and productivity.

**CONTENTS**

- **10%* fuel saving**  
  * Compared to the conventional ZW220  
  Page 4 - 5

- **Enhanced controllability**  
  Page 6 - 7

- **Operator-friendly features to improve operator comfort**  
  Page 8 - 9

- **Simplified maintenance with proven support system**  
  Page 10 - 11

**Improved Fuel Economy and Amazing Performance**
A 10% Fuel Saving

The “Active Engine Control System” can reduce fuel consumption by 10%, while enhancing controllability and productivity.

10%* Fuel Saving = Active Engine Control System + Quick Power Switch (QPS) + New Transmission

* Compared to the conventional ZW330

Active Engine Control System for Digging

Choosing optimal traction power and breakout force
Excessive traction power by too much pedal depression

Active Engine Control System for Economical Operation and Easy Control

The “Active Engine Control System” plays a key role achieving a 10% fuel saving. Strategically positioned sensors detect movements throughout the machine and adjust engine speed accordingly to eliminate energy losses to maximize fuel conservation. This delivers smooth, fuel-efficient operation.

Active engine control
Conventional

The Active Engine Control System chooses optimal traction power and breakout force for smooth digging while improving fuel efficiency, utilizing data collected from the sensors on the machine.

2 Selectable Work Modes: Standard and Power Modes

Standard mode is preselected and enough for ordinary work that requires constant power, such as loading. Power mode is selectable when extra power is needed.

Power Mode
Select this mode when extra power is needed, such as climbing a steep slope or getting the job done quickly.

Quick Power Switch (QPS)
Pressing the Quick Power Switch on the lever selects the Power mode. When switching forward/reverse, or when a reduction in traction is detected, the Standard mode resumes automatically. The Quick Power Switch helps save more fuel compared to operation when the Power mode is constantly selected.

Monitor indication items:
Clock, oil replacement intervals, travel speed, mileage, hour meter

The ECO mark indicator turns on when fuel-efficient operation is activated. This function encourages operators to utilize fuel-efficient operation.

Here are some fuel-saving techniques: avoiding rapid start of travel, and eliminating energy losses during excavation through variable displacement hydraulic pumps.

Active Engine Control System for Economical Operation and Easy Control

Technology to Cut Fuel Consumption
Enhanced Controllability

Hitachi analyzed various wheel loader operations including digging, approach to a dump truck, operation after dumping and travel. This led to the development of strategies to improve wheel loader controllability.

New Transmission with 5 speed gears

The new transmission comes standard with the Auto mode* that can automatically select an optimum gear according to the load, thereby reducing fuel consumption. Especially, the new transmission has 5 speed gears which can keep fuel efficient engine rpm more easily compared to the conventional transmission with 4 speed gears.

* AUTO1 (1st-5th gear) and AUTO2 (2nd-5th gear) are selectable using travel mode selector.

Lift Arm Auto Leveler (Optional)

This restriction valve suppresses the shaking of the machine when the lift arm stops to improve operator comfort and avoid load spills.

Levers for Easy Operation

In order to offer more efficient and comfortable operation, a new type of lever is employed to suit both fingertip control and grip control.

* A variety of lever patterns are available depending on job needs and operator’s preference.

Speed-responding Clutch Cut-off System

Clutch cut-off timing is adjusted by sensing travel speed and pedal depression for smooth, efficient truck loading. The Flat mode, Slope mode and OFF are selectable by switch control according to job requirements.

Lift Arm restriction valve

This restriction valve

PICK UP

NEW

Levers for Easy Operation

NEW

Speed-responding Clutch Cut-off System

NEW

Lift Arm Auto Leveler (Optional)
Operator-Friendly Features to Improve Operator Comfort

The cab is both comfortable and functional with a series of features aimed at reducing operator fatigue.

Bi-Level Auto Air Conditioner

This auto air conditioner has bi-level control function: warming at foot space and cooling at overhead. The pressurized cab shuts out dust, keeping the cab interior clean. In dusty environments, optional external double-filters are available for the air conditioner.

Panoramic Cab

The spacious panoramic cab offers near all-round visibility through pillar-less bonded windows. The seat and steering wheel can be adjusted to suit the operator, keeping the operator in an optimum position. In-cab noise is suppressed further. Even when the going gets tough, the operator can feel comfortable with less fatigue.

Tiltable Steering Wheel

The steering wheel is tiltable to fit the wheel to the operator for comfortable operation.

Comfort-Designed Suspension Seat

The mechanical suspension seat absorbs shocks and vibration from the machine in order to reduce operator’s physical stresses to the operator.

AM/FM Radio with 2 Speakers

The AM/FM radio has an auto-tuning feature and the 2 speakers stereo system provides excellent sound quality. The player pocket can hold a cell phone.

* An AUX port (stereo mini jack) is an option for connection with a mobile music player for entertainment during breaks.

Rearview Monitor (Optional)

The rearview monitor allows the operator to see the rear of the machine, including a view behind the counterweight. This rearview monitor enhances safe operation.
Hitachi Global Online Network, a parts supply system, is linked with CPD (Central Parts Depot), overseas depots and dealers abroad to deliver on-line parts information, including in-stock parts, order receptions, shipments and delivery period of over one million parts and components.

The main frame and its joins are thoroughly strengthened. The box-section structure is adopted around center pins, where concentrated forces are applied, for reinforcement. Frame plate thicknesses are optimally determined by 3D stress analysis.

The engine cover swings up to provide a wide service space. Filters are concentrated for easy inspection and servicing from the ground.

The automatic reversible cooling fan is available to keep the radiator clean at all times. The cooling fan is automatically self-reversed every 30 minutes to blow dust off the radiator. The cover swings up for efficient air blowing.

Hitachi Support Chain offers a comprehensive suite of support services for customers.

Robust Frame

The main frame and its joins are thoroughly strengthened. The box-section structure is adopted around center pins, where concentrated forces are applied, for reinforcement. Frame plate thicknesses are optimally determined by 3D stress analysis.

Wide Fin Pitch Radiator (Optional)

Wide fin pitch radiator is available for use in dusty environments, where there are large amounts of airborne debris, to avoid dust clogging and overheating as a result. Air blowing is easy and simple.

Automatic Reversible Cooling Fan (Optional) to Reduce Dust Deposits

The automatic reversible cooling fan is available to keep the radiator clean at all times. The cooling fan is automatically self-reversed every 30 minutes to blow dust off the radiator. The cover swings up for efficient air blowing.

Parts and Service

Simplified Maintenance

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Genuine Hitachi Parts

Genuine Hitachi parts, meeting Hitachi stringent quality standards, are guaranteed according to Hitachi warranty standards. The use of genuine Hitachi parts, including engine, fuel, hydraulic oil and filters, may slash running costs, and extend machine life.

Service

ConSite

ConSite is a full-package service menu which is designed for Hitachi’s machines used around the world. We closely monitor and support each machine working at each job site from various aspects, ensuring the best-tuned machines that are accommodated for the site condition and meet your specific needs.

Technical Training

On-site servicing matters despite locations to keep the machine at peak performance and reduce downtime. Technical Training Center (TTC), located in Japan, educates and trains service technicians and service support personnel coming from Hitachi dealers and factories on the globe according to the international training programs.

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**ENGINE**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make</td>
<td>CUMMINS QSB6.7</td>
</tr>
<tr>
<td>Type</td>
<td>4-cycle water-cooled, direct injection</td>
</tr>
<tr>
<td>Turbocharger &amp; intercooler</td>
<td></td>
</tr>
<tr>
<td>No. of cylinders</td>
<td></td>
</tr>
<tr>
<td>Maximum power</td>
<td>SAE J1995, gross</td>
</tr>
<tr>
<td></td>
<td>145 kW (194 HP) at 2 000 rpm</td>
</tr>
<tr>
<td>Rated power</td>
<td>SAE J1995, net</td>
</tr>
<tr>
<td></td>
<td>144 kW (193 HP) at 1 800 rpm</td>
</tr>
<tr>
<td>Maximum torque</td>
<td>931 Nm at 1 400 min-1 (rpm)</td>
</tr>
<tr>
<td>Bore and stroke</td>
<td>107 mm X 124 mm</td>
</tr>
<tr>
<td>Piston displacement</td>
<td>6.69 L</td>
</tr>
<tr>
<td>Batteries</td>
<td>2 x 12 V</td>
</tr>
<tr>
<td>Air cleaner</td>
<td>Two element dry type with restriction indicator</td>
</tr>
</tbody>
</table>

**TIRE SIZE**

| Type         | 23.5-25-16PR (3,3) |

**ENGINE OUTPUT**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air cleaner</td>
<td></td>
</tr>
<tr>
<td>Batteries</td>
<td></td>
</tr>
<tr>
<td>Torque converter</td>
<td></td>
</tr>
<tr>
<td>Reduction and differential gear</td>
<td>Two stage reduction with conventional differential</td>
</tr>
<tr>
<td>Oscillation angle</td>
<td>Total 24° at 17°-12°</td>
</tr>
<tr>
<td>Final drives</td>
<td>Heavy-duty planetary, mounted outboard</td>
</tr>
</tbody>
</table>

**TIRE**

| Type         | 23.5-25-16PR (3,3) |

**ENGINE COOLING**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Artifical frame steering</td>
</tr>
<tr>
<td>Steering angle</td>
<td>Each direction 40°; total 80°</td>
</tr>
<tr>
<td>Cylinders</td>
<td>Double-acting piston type</td>
</tr>
<tr>
<td>No. x Bore x Stroke</td>
<td>2 x 70 mm x 442 mm</td>
</tr>
</tbody>
</table>

**HYDRAULIC SYSTEM**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm and bucket are controlled by independent control lever</td>
<td>Arm controls</td>
</tr>
<tr>
<td>Bucket controls with automatic bucket return-to-dig control</td>
<td>Bucket: Three position valve; Full rock, hold, dump</td>
</tr>
<tr>
<td>Main pump (Serve as steering pump)</td>
<td>Variable Displacement Axial Plunger Pump: Maximum flow</td>
</tr>
<tr>
<td></td>
<td>Maximum pressure</td>
</tr>
<tr>
<td>Fan pump</td>
<td>Fixed Displacement Gear Pump:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic cylinders</td>
<td>Type</td>
</tr>
<tr>
<td></td>
<td>No. x Bore x Stroke</td>
</tr>
<tr>
<td></td>
<td>Bucket: 1 x 165 mm x 510 mm</td>
</tr>
<tr>
<td></td>
<td>Filtering</td>
</tr>
<tr>
<td>Hydraulic cycles</td>
<td>Lift arm raise: 5.9 (a 5.6 s)</td>
</tr>
<tr>
<td></td>
<td>Lift arm lower: 3.3 (a 3.5 s)</td>
</tr>
<tr>
<td></td>
<td>Bucket dump: 1.2 (a 1.7 s)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>

**DIMENSIONS & SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall length</td>
<td>mm 8 200</td>
</tr>
<tr>
<td></td>
<td>8 250</td>
</tr>
<tr>
<td></td>
<td>8 330</td>
</tr>
<tr>
<td></td>
<td>8 290</td>
</tr>
<tr>
<td></td>
<td>8 580</td>
</tr>
<tr>
<td>Overall height</td>
<td>mm 3 275</td>
</tr>
<tr>
<td></td>
<td>2 785</td>
</tr>
<tr>
<td>Wheel base</td>
<td>mm 3 300</td>
</tr>
<tr>
<td>Ground clearance</td>
<td>mm 450</td>
</tr>
<tr>
<td>Tread</td>
<td>mm 2 160</td>
</tr>
<tr>
<td>Bucket width</td>
<td>mm 2 910</td>
</tr>
<tr>
<td>Turning radius (Centerline of outside tire)</td>
<td>mm 5 620</td>
</tr>
<tr>
<td>Loader clearance radius, bucket in carry position</td>
<td>mm 6 590</td>
</tr>
<tr>
<td>Height to bucket hinge pin, fully raised</td>
<td>mm 2 380</td>
</tr>
<tr>
<td>Powering clearance radius, fully raised, maximum</td>
<td>mm 8 150</td>
</tr>
<tr>
<td>Molling depth (horizontal dimension)</td>
<td>mm 1 110</td>
</tr>
<tr>
<td>Max. roll back at carry position</td>
<td>kg 100</td>
</tr>
<tr>
<td>Static tipping load *</td>
<td>kg 13 810</td>
</tr>
<tr>
<td>Full-40 degree turn</td>
<td>kg 11 940</td>
</tr>
<tr>
<td>Breakout force</td>
<td>kg 10 120</td>
</tr>
<tr>
<td>Operating weight (with ROPS/ROPS cab)</td>
<td>kg 17 100</td>
</tr>
<tr>
<td></td>
<td>17 140</td>
</tr>
<tr>
<td></td>
<td>17 020</td>
</tr>
<tr>
<td></td>
<td>17 590</td>
</tr>
<tr>
<td></td>
<td>17 220</td>
</tr>
</tbody>
</table>

**BRAKES**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanbo brakes</td>
<td>Outboard mounted fully hydraulic 4-wheel wet disc brakes</td>
</tr>
<tr>
<td>Parking brakes</td>
<td>Spring applied, hydraulically released, dry disc type with external output shaft</td>
</tr>
</tbody>
</table>

**POWER TRAIN**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission</td>
<td>Torque converter, countershift type powershift with computer-controlled automatic shift and manual shift features included</td>
</tr>
<tr>
<td>Torque converter</td>
<td>Three element, single stage, single phase</td>
</tr>
<tr>
<td>Main drives</td>
<td>Wet hydraulic, multi-disc type</td>
</tr>
<tr>
<td>Cooling method</td>
<td>Forced circulation type</td>
</tr>
<tr>
<td>Travel speed*</td>
<td>Forward / Reverse</td>
</tr>
<tr>
<td>1st</td>
<td>0.75 / 0.70 km/h (0.47 / 0.47 km/h)</td>
</tr>
<tr>
<td>2nd</td>
<td>1.14 / 1.20 km/h (0.71 / 0.73 km/h)</td>
</tr>
<tr>
<td>3rd</td>
<td>1.67 / 1.75 km/h (1.05 / 1.09 km/h)</td>
</tr>
<tr>
<td>4th</td>
<td>2.48 / 2.66 km/h (1.55 / 1.66 km/h)</td>
</tr>
<tr>
<td>5th</td>
<td>3.74 km/h (2.31 km/h)</td>
</tr>
</tbody>
</table>

**SERVICE REFILL CAPACITIES**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel tank</td>
<td>255 L</td>
</tr>
<tr>
<td>Engine coolant</td>
<td>26 L</td>
</tr>
<tr>
<td>Engine oil</td>
<td>25 L</td>
</tr>
<tr>
<td>Torque converter &amp; transmission</td>
<td>40 L</td>
</tr>
<tr>
<td>Front axle differential wheels &amp; hub</td>
<td>36 L</td>
</tr>
<tr>
<td>Rear axle differential &amp; hub wheels</td>
<td>36 L</td>
</tr>
<tr>
<td>Hydraulic oil tank</td>
<td>114 L</td>
</tr>
</tbody>
</table>

**BUCKET SELECTION GUIDE**

<table>
<thead>
<tr>
<th>Bucket type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO-geared</td>
<td>Rock bucket</td>
</tr>
<tr>
<td>ISO-struck</td>
<td>Rock bucket</td>
</tr>
<tr>
<td>General purposes</td>
<td>General purposes</td>
</tr>
</tbody>
</table>

**WEIGHT CHANGE**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating weight</td>
<td>kg 17 100</td>
</tr>
<tr>
<td></td>
<td>17 140</td>
</tr>
<tr>
<td></td>
<td>17 020</td>
</tr>
<tr>
<td></td>
<td>17 590</td>
</tr>
<tr>
<td></td>
<td>17 220</td>
</tr>
</tbody>
</table>

**Material**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Density</td>
<td>kg / m³</td>
</tr>
<tr>
<td>115%</td>
<td>17100 kg / m³</td>
</tr>
<tr>
<td>100%</td>
<td>17100 kg / m³</td>
</tr>
<tr>
<td>95%</td>
<td>17100 kg / m³</td>
</tr>
</tbody>
</table>


% of bucket fill factor
**OPERATOR’S STATION**
- Adjustable steering column
- Ashtray, cigar lighter
- Radio
  - AM/FM radio
  - AM/FM radio with AUX for digital audio player
- Auto control air conditioner with single intake filter
- Cap
  - TOPS-1004417, TOPS-1004448
- Coat hook
- Front/Rear defroster
- Glove compartment
- Rear side camera & monitor
- Rear view mirrors
  - Inside (2)
  - Outside (2)
- Retractable seat belt, 50mm
- Rubber floor mat
- Seat
  - Mechanical suspension seat: fabric, high-back, adjustable for armrest angle, toe-all position, reclining angle and weight height.
- Storage
  - Cup holder
  - Digital audio player holder
  - Document holder
  - Hot & cool box
  - Headrest pocket
  - Sun visor
  - Telescopic steering wheel with spinner knob
  - Safety glass (tempered)
  - Windshield washer front and rear
  - Windshield wipers front and rear

**ELECTRICAL SYSTEM**
- Backup alarm
- Batteries
  - Standard batteries (158AH-500A)
  - Battery: disconnect switch
  - 12V power outlet
- MONITORING SYSTEM
  - Gauge: coolant temperature, fuel, transmission oil temperature
  - Indicator lights: air filter restriction, brake oil low pressure, clearance lights, control lever lock, discharge warning, emergency steering, engine warning, fan reverse, fuel filter restriction, forward/reverse selector switch, high beam, hydraulic oil temperature, maintenance, parking brake, power mode, preheat, seat belt, service, transmission oil temperature, transmission warning, turn signals, water separator, work lights
  - LCD monitor display: clock, ECO, F-N-R/Shift position, hold, hour meter, odometer, replacement intervals, ride control, speedometer, warning lights: brake oil low pressure, engine oil low pressure, overheat, steering oil low pressure

**COOLING SYSTEM**
- Fan
- Cooling fan with heat sensing
- Automatic reversible cooling fan with heat sensing
- Fan guard
- Radiator
- Standard fin pitch radiator
- Wide fin pitch radiator

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**LIGths**
- Brake & tail lights
- Clearance lights
- Headlights
- Turn signals with hazard switch
- Work lights
- Front lights on cab (2)
- Rear lights on rear grille side cover (2)

**POWER TRAIN**
- Automatic transmission with load sensing system
  - Clutch cut-out position switch
- Differential
  - Conventional differential
  - LSD (Limited Slip Differential, front)
  - 2WS (Driver Side Shift)
- Forward/Reverse lever
- Power mode switch
- Quick power switch
- Travel mode selector (Auto1-Auto2)
- 1st speed fixed switch

**ENGINE**
- Air intake
- Rain cap
- Pre-cleaner (Sy-Klone)
- Pre-cleaner (Short type)
- Air filter double elements
- Cartridge type engine oil filter
- Cartridge type fuel pre-filter
- Cartridge type fuel main filter
- Engine oil remote drain

**MONITORING SYSTEM**
- Gauge: coolant temperature, fuel, transmission oil temperature
- Indicator lights: air filter restriction, brake oil low pressure, clearance lights, control lever lock, discharge warning, emergency steering, engine warning, fan reverse, fuel filter restriction, forward/reverse selector switch, high beam, hydraulic oil temperature, maintenance, parking brake, power mode, preheat, seat belt, service, transmission oil temperature, transmission warning, turn signals, water separator, work lights
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- LCD monitor display: clock, ECO, F-N-R/Shift position, hold, hour meter, odometer, replacement intervals, ride control, speedometer

**EQUIPMENT**
- Standard equipment
- Optional equipment
- Standard equipment
- Optional equipment

**BRAKE SYSTEM**
- Front & rear independent brake circuit
- Outboard mounted fully hydraulic 4 wheel wet disc
- Pedal
  - Single brake pedal
  - Double (LH & RH) brake pedal
- Spring-set/Hydraulic-released parking brake

**HYDRAULIC SYSTEM**
- Bucket auto lever (Automatic return to dig control)
  - Control lever
    - for 2 spools control valve
    - 2 levers
    - Multifunction lever (MF lever)
    - for 3 spools control valve
    - MF lever & AUX lever for 3rd function
    - 2 levers & AUX lever for 3rd function
  - Outside layout pattern (Bucket - liftarm - 3rd)
- Control lever lock switch
- Dual lift arm auto leveler
- Hydraulic filters
- Lift arm float system
- Reservoir sight gauge
- Ride control system (OFF-AUTO type)

**TIRES**
- 23.5-25-16PR (L3)
- 23.5R25 (L3)
- 23.5R25 (L5)

**MISCELLANEOUS**
- Articulation lock bar
- Belly guard (Bolt on type)
- Bucket cylinder guard
  - Counter weight
    - 1 950 kg counter weight
    - 2 270 kg counter weight
- Drawbar with locking pin
- Emergency steering
- Fenders
  - for 23.5-25-16PR
  - Front & half covered rear fenders
  - Front & full covered rear fenders with mud flaps
- Global e-service
- Lift arm
  - Standard lift arm
  - High lift arm
- Lift & tie down hooks
- On board information controller
- Filter press
  - Battery cover with locking bracket
  - Lockable engine cover
  - Lockable fuel refilling cap
- Anti-vandal protection
  - Battery cover with locking bracket
  - Lockable engine cover
  - Lockable fuel refilling cap
- Standard and optional equipment may vary by country, so please consult your Hitachi dealer for details.
Built on the foundation of superb technological capabilities, Hitachi Construction Machinery is committed to providing leading-edge solutions and services to contribute as a reliable partner to the business of customers worldwide.

Reducing Environmental Impact by New ZW
Hitachi makes a green way to cut carbon emissions for global warming prevention according to LCA*. New ZW utilizes many technological advances, including the new standard mode which optimizes fuel efficiency. Hitachi has long been committed to recycling of components, such as aluminum parts in radiators and oil coolers. Resin parts are marked for recycling.

*Life Cycle Assessment – ISO 14040

The Hitachi Group released the Environmental Vision 2025 to curb annual carbon dioxide emissions. The Group is committed to global production while reducing environmental impact in life cycles of all products, and realizing a sustainable society by tackling three goals — prevention of global warming, recycling of resources, and enhancement of ecosystem.

Before using a machine with a satellite communication system, please make sure that the satellite communication system complies with local regulations, safety standards and legal requirements. If not so, please make modifications accordingly.

Before use, read and understand the Operator’s Manual for proper operation.