Frequency Inverters
WL200 / WJ200 Series

HITACHI
Inspire the Next

Automation Solutions by Hitachi

WL200/WJ200 – Compact Frequency Inverters

Hitachi maintains research and development departments throughout the business. These are continually working on the further improvement of products and technologies and synergy effects are specifically used in product policy. As a result, many components for Hitachi products are manufactured within the company itself.

Hitachi offers a broad range of high performance inverters for a wide range of industrial applications. The inverters' modular design and high versatility ensure optimal, cost-efficient technical solutions which can be individually adapted to the respective application. Our industrial inverters can be configured easily, and are designed to deliver unprecedented performance, reliability and flexibility.

With our WL200/WJ200 Series we present a generation of compact inverters, ideally suited for a variety of applications such as textile machines, materials handling, rolling shutter gates, pump and fan and much more.

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Ease of Use

ProDrive Next Software

Easy to use programming software allows user-friendly and intuitive operation.

- Online monitoring of all parameters and I/O terminal status
- Parameter conversion between different series
- Faster parameter download/upload for RS422 communication
- Windows XP, 7, 8, 10 compatible

Easy operation

- LED control
- RS422 port
- Mini USB port

WOP LCD operator

- 12 languages available
- 5 line LCD operator
- Real time clock built-in
- Two color backlight that distinguish trip status

Password function

To ensure parameters remain consistent and to hide some or all parameters.

WOP LCD operator

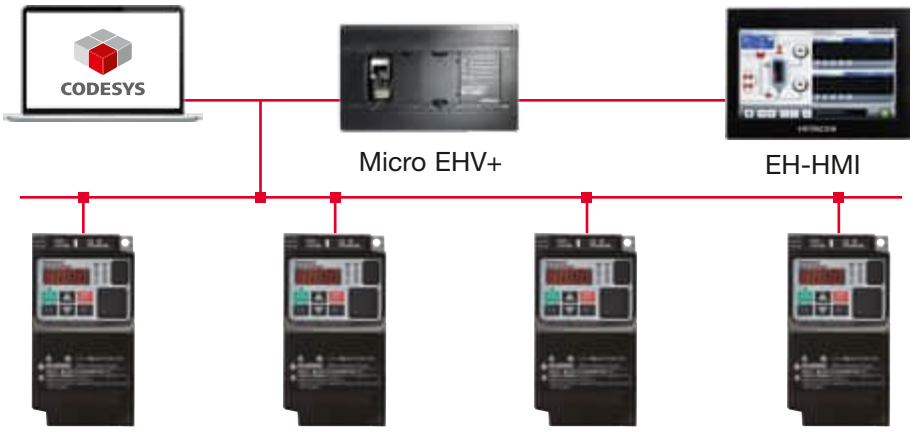
Network compatibility & external ports

The WL200/WJ200 Series is particularly suitable for easy integration into various networks using optional fieldbus modules.

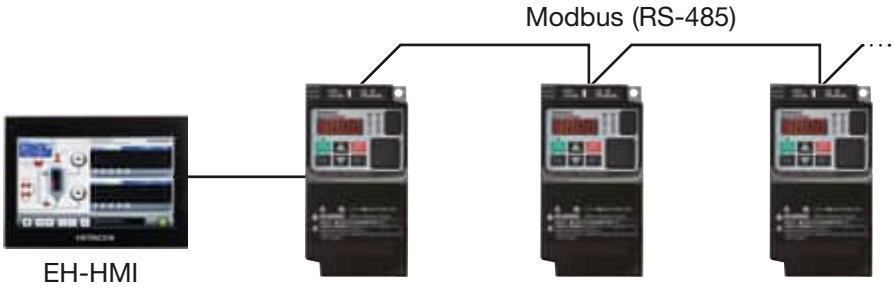
- RS485-ModBUS (Built-in)
- RS422 port (Built-in)
- DeviceNET
- Profibus-DP
- EtherCAT
- ProfiNET

One network expansion card can be installed inside the inverter.

Fieldbus communication PLC – WL200/WJ200 Series



Direct communication HMI – WL200/WJ200 Series



Flexible & User-friendly

Side-by-side installation

Inverters can be installed with no space between them to save space in the panel.*

*Ambient temperature 40°C max., individual mounting.

Ease of wiring

Screw-less terminals (control circuit terminals) spring-type for use with solid or stranded wire with ferrules.

Screw-less terminals (Control circuit terminals)

Easy to remove cooling fan

The cooling fan can be exchanged without special tools.

Top cover can be removed with fingertips.

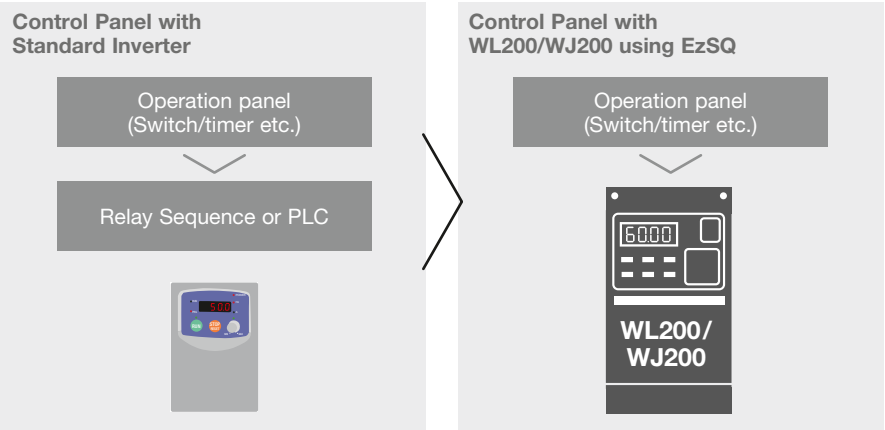
Remove cooling fan simply by disconnecting the power plug.

Fast connection module

Connection to various field bus systems via an easy to install optional expansion card.

Easy sequence programming function [EzSQ]

Logic operations can be realised within the inverter using Hitachi's EzSQ software without the need for external relays or a PLC. User programs are compiled using a PC program which are then downloaded to the drive.



EzSQ Application Example:
Energy saving through speed reduction on a spinning machine.

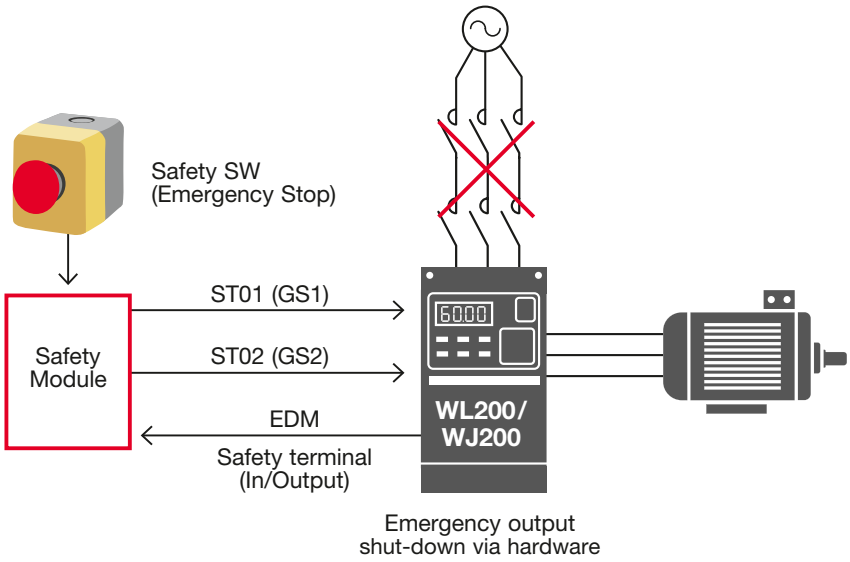
- **Daytime:** motor speed is automatically decreased to reduce demand during peak hours.
- **Night-time:** motor speed is increased to take advantage of off-peak power rates. Average productivity is maintained.

Safety & Safe Operation

Safety stop function

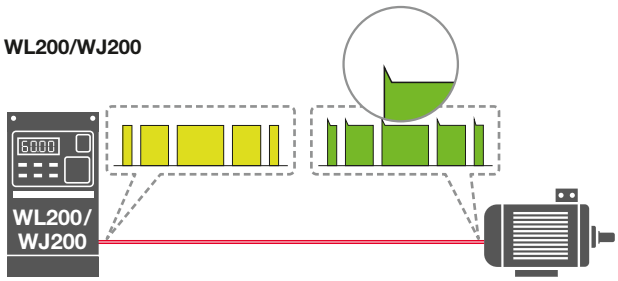
WL200/WJ200 conform to the applicable safety standards and corresponds to Machinery Directive of Europe. Inverter is shut down via hardware, bypassing the CPU, achieving a reliable safe stop function.
(ISO13849-1 Category 3/IEC60204-1 Stop Category 0)

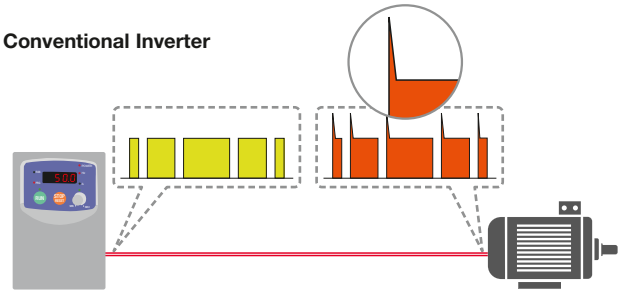
Only one MC is enough
- Reduction in costs.
- Space saving



Micro surge voltage suppress function

Hitachi original PWM control method limits motor terminal voltage to less than twice inverter DC bus voltage. (During regeneration, the motor terminal voltage may exceed the motor maximum insulation voltage.)



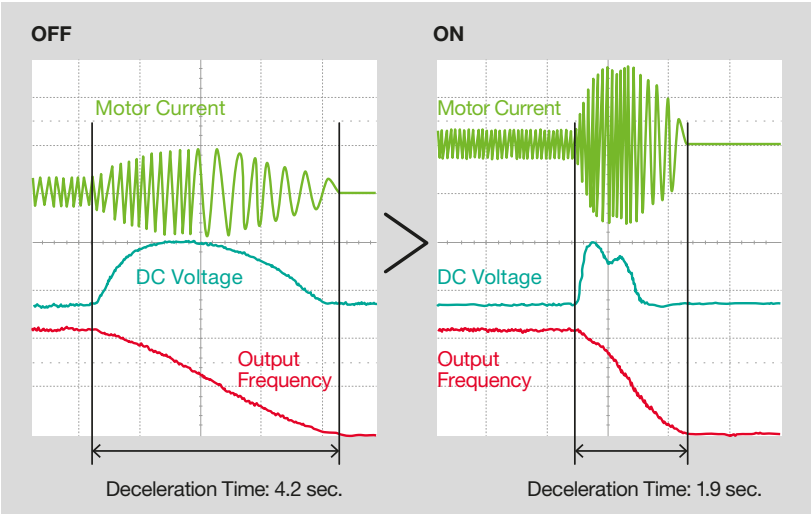


Trip avoidance functions

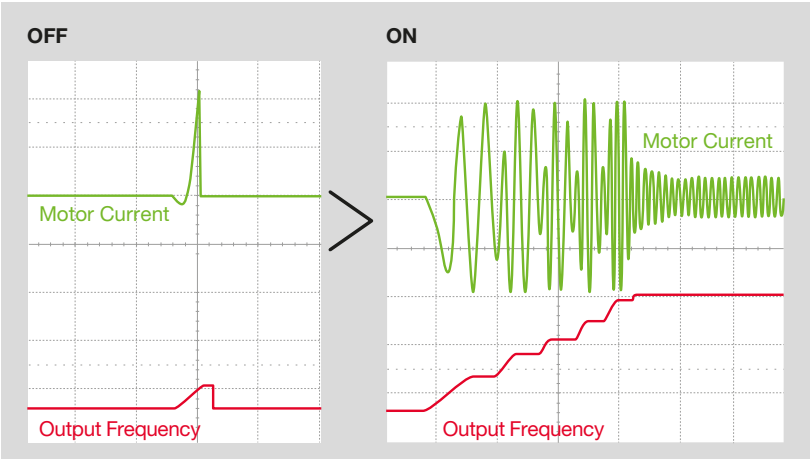
Minimum time deceleration function, over-current suppression and DC bus AVR functions are included as standard.

These functions increase the robustness of the product and help to avoid unnecessary tripping. Improved torque limiting/current limiting function enables a load restriction to protect machinery and equipment.
(Example of WJ200-075LF)

Minimum time Deceleration Function



Over-current Suppression Function*



*Turn off this function for lifting equipment.

Various Functions

Output monitoring (2 terminals)

Two programmable output terminals* can be used to monitor items such as frequency, motor current and more.

*Analog 0～10VDC (10-bit), pulse train (0～10VDC, max. 32kHz)

Watt-hour monitor

Energy consumption is displayed in kWh.

Built-in BRD circuit

Built-in braking resistor control circuit as standard in all models (Resistor optional).

Flexible display functions

- **Automatic return to the initial display**
  10 mins after the last key operation, display returns to the initial parameter set.
- **Display limitation**
  show only the contents of display parameter.
- **Dual monitor**
  two arbitrary monitor items can be set.
  Parameters are selected via the Up/Down keys.

EzCOM (peer-to-peer communication)

WL200/WJ200 support peer-to-peer communication between multiple inverters using the built-in RS485 port. One administrator inverter is necessary in the network, and the other inverters act as master or slave.

Eco-friendly

RoHS compliant
The WL200/WJ200 series meets the EU RoHS requirements.

Endurance in severe conditions
Vanish coating of the internal PC board ensures an improved endurance to certain severe conditions (logic PCB and I/F PCB are excluded).

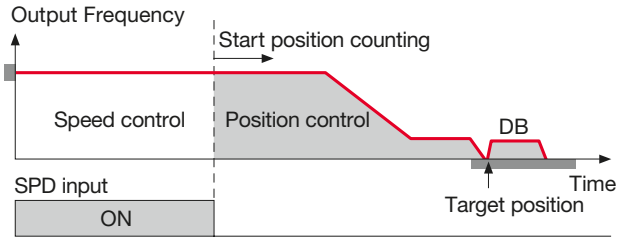
Long life components
The cooling fans and built-in capacitors have an estimated design lifetime of 10 years*. By using the ON/OFF control function the lift time can be extended.

*10 years is a design lifetime based on calculation, not guaranteed

WJ200 Special Functions

High starting torque of 200% or greater achieved using sensorless vector control (when sized for heavy duty)

Sensorless vector control allows for the realisation of high torque required for applications such as cranes, hoist, lifts etc. Auto-tuning function makes the implementation of sensorless vector control easy and effective.



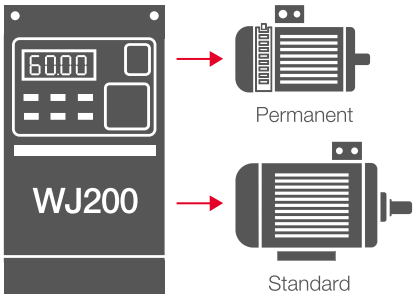
Simple positioning control (in combination with a feedback signal)

When simple positioning function is activated, speed or positioning control operation is selectable via intelligent input. While the [SPD] input is ON, the current position counter is held at 0. When [SPD] is OFF, the inverter enters positioning control operation and the position counter is active.

Induction motor & permanent magnet motor* control with one inverter series

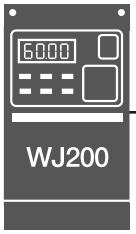
The WJ200 inverter can be used to drive both induction motors (IM) and permanent magnetic motors (PM). PM motors are energy efficient and make effective use of available space.

*The permanent magnet motor control function is only suitable for variable torque applications such as fan and pump.



Dual rating

WJ200 can be used for both heavy and normal duty. One-frame-size smaller WJ200 can be applicable to certain applications.



Heavy duty: Conveyor, Lift Hoist, etc.

7,5 kW
overload capacity:
150 %, 60 sec

Normal duty: Fan, Pump, etc.

11 kW
overload capacity:
120 %, 60 sec

General Specifications

Item		WL200	WJ200
Control method		Sinusoidal Pulse Width Modulation (PWM) control	
Carrier frequency		2 kHz to 10 kHz (derating required depending on the model)	2 kHz to 15 kHz (derating required depending on the model)
Output frequency range		0.01 to 400 Hz	
Frequency accuracy		Digital command: ±0.01 % of the maximum frequency Analog command: ±0.2 % of the maximum frequency (25 °C ±10 °C)	
Frequency setting resolution		Digital: 0.01 Hz; Analog: max. frequency / 1000	
Volt. / Freq. characteristic		V / f control (constant torque, reduced torque, free-V / F): base freq. 30 Hz – 400 Hz adjustable.	V / f control (constant torque, reduced torque, free-V / F): base freq. 30 Hz – 400 Hz adjustable, Sensorless vector control, Closed loop control with motor encoder feedback (only V / f control).
Overload capacity		60 sec. @120 %, 12 sec. @140 %	Dual rating: CT (Heavy duty): 60 sec. @150 % VT (Normal duty): 60 sec. @120 %
Acceleration / deceleration time		0.00 to 3600 seconds, linear and S-curve accel. / decel., second accel. / decel. setting available	
DC braking		Variable operating frequency, time, and braking force	
Input signal	Digital	7 terminals, NO / NC switchable, sink / source changeable by a short bar	
	Analog	0 to 10 VDC (10 kΩ), 4 to 20 mA (100 Ω), 1 thermistor (PTC characteristic, common with intelligent terminal)	
	Pulse train	-	1 terminal, 24 VDC, 32 kHz 1 terminal, 24 VDC, 2 kHz (common with intelligent terminal)
Output signal	Digital	2 open-collector terminal, NO / NC switchable, sink / source logic	
	Analog	1 terminal, 0 to 10 VDC	
	Pulse train	1 terminal, 0 to 10 VDC, 32 kHz	
	Relay	1 terminal, NO / NC switchable	
Network	Standard	RS485 (Modbus RTU), USB mini-B port, RJ45 port	
	Option	EtherCAT, DeviceNet, PROFIBUS, PROFINET	
Other functions		-	Auto-tuning
		-	Simple position control
		-	Simple torque control
		-	Sensorless vector control
		-	PM motor control
		PID control	
		Programming function (EzSQ)	
		Peer-to-Peer communication (EzCOM)	
		Password function	
Functional safety		STO (ISO13849-1 Category 3 / IEC60204-1 Stop Category 0)	
Protective function		Over-current, over-voltage, under-voltage, overload, brake resistor overload, CPU error, memory error, external trip, USP error, ground fault detection at power on, temperature error, internal communication error, driver error, thermistor error, brake error, safe stop, overload at low speed, modbus communication error, option error, EzSQ command error, EzSQ nesting error, EzSQ execution error, EzSQ user trip, etc.	
Operating environment	Temperature	Operating (ambient): –10 to 40 °C / Storage: –20 to 65 °C	Operating (ambient): –10 to 50 °C / Storage: –20 to 65 °C
	Humidity	20 to 90 % humidity (non-condensing)	
	Vibration	5.9 m / s^2 (0.6 G), 10 to 55 Hz	
	Location	Altitude 1,000 m or less, indoors (no corrosive gases or dust)	
	Degree of protection	IP20	
Certification		RoHS, CE, UL, cUL, c-Tick, GOST	
Options		LCD operator, digital operator, braking unit, braking resistor, AC reactor, DC reactor, EMC filter	

Conformity to global standards
CE, UL, c-UL, c-Tick approvals

Sink / source logic is standard
Logic input and output terminals can be configured for sink or source logic

Wide input power voltage range
Input voltage 240 V for 200 V class and 480 V for 400 V class as standard

WL200 Standard Specifications

1-phase 200 V class

Models WL200-		002SFE	004SFE	007SFE	015SFE	022SFE
Applicable motor size	kW	0.2	0.4	0.75	1.5	2.2
Rated capacity (kVA)	200 V	0.4	1.2	1.5	2.8	4.1
	240 V	0.5	1.4	1.8	3.4	4.9
Input Rating	Rated input voltage (V)	1-phase: 200V–15 % to 240 V +10 %, 50 / 60Hz ±5 %				
Output Rating	Rated output voltage (V)	3-phase: 200 V to 240 V (proportional to input voltage)				
	Rated output current (A)	1.2	2.6	3.5	6.0	9.6
Minimum value of resistor (Ω)		100	100	100	50	50
Weight (kg)		1.0	1.1	1.1	1.6	1.8

3-phase 400 V class

Models WL200-		004HFE	007HFE	015HFE	022HFE	030HFE	040HFE	055HFE	075HFE	110HFE	150HFE	185HFE
Applicable motor size	kW	0.4	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11	15	18.5
Rated capacity (kVA)	380 V	1.4	1.4	2.9	3.9	5.4	6.2	8.8	13.2	15.8	25.1	29
	480 V	1.7	1.8	3.6	5.0	6.8	7.9	11.1	16.7	20.0	31.6	36.6
Input Rating	Rated input voltage (V)	3-phase: 380V–15 % to 480 V +10 %, 50 / 60 Hz ±5 %										
Output Rating	Rated output voltage (V)	3-phase: 380 V to 480 V (proportional to input voltage)										
	Rated output current (A)	1.5	2.1	4.1	5.4	6.9	8.8	11.1	17.5	23.0	31.0	38.0
Minimum value of resistor (Ω)		180	180	180	180	100	100	100	70	70	70	35
Weight (kg)		1.5	1.5	1.6	1.8	1.9	1.9	2.1	3.5	3.5	4.7	5.2

WJ200 Standard Specifications

1-phase 200 V class

Models WJ200-			002SF	004SF	007SF	015SF	022SF
Applicable motor size	kW	VT	0.4	0.55	1.1	2.2	3.0
		CT	0.2	0.4	0.75	1.5	2.2
Rated capacity (kVA)	200 V	VT	0.6	1.2	2.0	3.3	4.1
		CT	0.5	1.0	1.7	2.7	3.8
	240 V	VT	0.7	1.4	2.4	3.9	4.9
		CT	0.6	1.2	2.0	3.3	4.5
Input Rating	Rated input voltage (V)		1-phase: 200 V–15 % to 240 V +10 %, 50 / 60 Hz ±5 %				
Output Rating	Rated output voltage (V)		3-phase: 200 V to 240 V (proportional to input voltage)				
	Rated output current (A)	VT	1.9	3.5	6.0	9.6	12.0
		CT	1.6	3.0	5.0	8.0	11.0
Minimum value of resistor (Ω)			100	100	50	50	35
Weight (kg)			1.0	1.1	1.6	1.8	1.8

3-phase 400 V class

Models WJ200-			004HF	007HF	015HF	022HF	030HF	040HF	055HF	075HF	110HF	150HF
Applicable motor size	kW	VT	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11	15	18.5
		CT	0.4	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11	15
Rated capacity (kVA)	200 V	VT	1.3	2.6	3.5	4.5	5.7	7.3	11.5	15.1	20.4	25.0
		CT	1.1	2.2	3.1	3.6	4.7	6.0	9.7	11.8	15.7	20.4
	240 V	VT	1.7	3.4	4.4	5.7	7.3	9.2	14.5	19.1	25.7	31.5
		CT	1.4	2.8	3.9	4.5	5.9	7.6	12.3	14.9	19.9	25.7
Input Rating	Rated input voltage (V)		3-phase: 380V–15 % to 480 V +10 %, 50 / 60 Hz ±5 %									
Output Rating	Rated output voltage (V)		3-phase: 380 V to 480 V (proportional to input voltage)									
	Rated output current (A)	VT	2.1	4.1	5.4	6.9	8.8	11.1	17.5	23.0	31.0	38.0
		CT	1.8	3.4	4.8	5.5	7.2	9.2	14.8	18.0	24.0	31.0
Minimum value of resistor (Ω)			180	180	180	100	100	100	70	70	70	35
Weight (kg)			1.5	1.6	1.8	1.9	1.9	2.1	3.5	3.5	4.7	5.2

VT normal duty / CT heavy duty
3-phase 200 V class versions are also available

Information in this brochure is subject to change without notice.

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