

• Optional parts

■ Extension cable

	5m	10m	15m	20m
Control cable of wire feeder side (10-pin)	BKCPJ-1005	BKCPJ-1010	BKCPJ-1015	BKCPJ-1020
Control cable for analog remote controller (6-pin)	BKCPJ-0605	BKCPJ-0610	BKCPJ-0615	BKCPJ-0620
Control cable for digital panel	BKCAN-0509	BKCAN-0514	BKCAN-0519	BKCAN-0524

\* No standard power cable (2m) is required when using an extension cable.  
\* If you use an automatic machine or a current value close to the rated current, use a one-rank thicker cable.  
\* According to the extension wiring regulations, the power cable is 60mm<sup>2</sup> for 400A or less, and 80mm<sup>2</sup> for 500A or less. (For a rated duty cycle of 50%)

■ Voltage detection cable

	5m	10m	15m	20m
Voltage detection cable	K5791G00	K5416N00	-	K5791E00

■ Voltage detection adaptor

When using CBT-EX (DC low spatter), attach it to the wire feeder (CM -743U).

Part name	Part No.
Voltage detection adaptor	K5952E00



How To Install

■ Welding torch

• MIG welding torch for stainless steel and steel

Part name	Model	BT3510-xxUT
Applicable wire dia.	mm	(0.9), (1.0), 1.2
Specified max current	A	300A
Duty cycle	%	30%
Cooling method		Air cooling
Cable length	m	3m, 4.5m, 6m

■ Remote controller

• Analog remote controller

Part name	Part No.
Analog remote controller(3m)	K5804S00



• Conversion cable for conventional analog remote controller (K5416Z00)

Part name	Part No.
Conversion cable	K8116E00

• Digital remote controller  
(One set of the following three items are needed.)

Part name	Model
Digital remote controller (Main unit)	E-2452
CAN communication cable	BKCAN-0410(10m) BKCAN-0420(20m)
BKCAN conversion connector	K5810B00

\* Software update is necessary.  
Please contact your dealer for details.

■ Voltage detection line for welding torch

Prepare it when using CBT-EX (DC low spatter) with a MIG torch for stainless steel.

Part name	Part No.
Voltage detection cable	K5791G00

■ Cooling water circulator

Part name	Model / Part No.
Cooling water circulator	WTCB-M1

\* When using a water-cooled welding torch with WB-M502, prepare a water-cooling kit (K5848A00) in addition to the above. Contact your dealer or OTC's sales office to install the water cooling kit.

■ TIG solenoid valve kit

Part name	Part No.
TIG solenoid valve kit	K8197A00

\* Conversion cable (BKJIT-60R2) is separately required for WB-M502/P502L.

■ Panel for wire feeder

• Analog panel

Current/voltage setting and inching can be operated in the same way as with analog remote controller.

Part name	Part No.
Analog panel	K8028A00
Conversion cable	K8116E00

\* Control cable BKCPJ-06\*: is separately required.  
\* Function switching by F2 cannot be used.



• Digital panel

Such operations as current/voltage setting, inching, and storage/reading of parameter setting can be made in the same way as a digital remote controller.

Part name	Model
Digital panel	E-2628

\* Control cable BKCAN-05\*: is separately required.



Same reliable design.  
New improved interface.



Welbee P500L II

Welbee P400L II

Welbee M350L II

Welbee M350 II

Welbee P400 II

Welbee M500 II



ISO 9001 Registered



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Fax: (937) 667-0885



Member of DAIHEN Group



# Welding's EVEN BETTER Electronic Engine



Welbee P500L II

Welbee M350 II

Welbee P400L II

Welbee P400 II

Welbee P350L II

Welbee M500 II



## Welbee III NANOTECHNOLOGY

OTC DAIHEN invested over 10 million dollars and 6 years to develop welding's best electronic engine - Welbee, our custom LSI ASIC chip. Delivering an industry leading 20nsec response time, that is 50 million arc adjustments every second of the weld! 4X faster response than our nearest competitor! This enables our clean welding results including support for CO2 welding and the reduction and elimination of expensive Helium gas. Better welds enabled by better technology, for the welder.

## Same great low-maintenance durability

### ■ Welbee side-flow structure

| High dust resistance

Sensitive electronic components are separated and isolated from damaging dust accumulation.

| Easy maintenance

Cooling fans adjust to accommodate duty cycle and ambient air temperature.  
Blow-out with compressed air can be performed without removing covers.



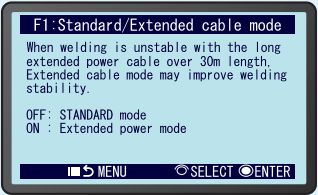
## Same great model line-up, only better.

### New and improved operator control panel

Easier to access welding info

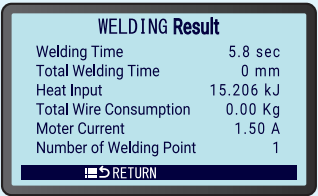
| Detailed function display

Settings, functions and errors are displayed in detail reducing the need for an operation manual.



| Welding results display

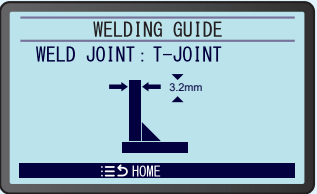
Welding results including time, wire consumption, heat input and more are displayed at the conclusion of each weld.



Ease of Use Improvements

| Built-in welding guide

Welding conditions can automatically be set simply by selecting the joint type and plate thickness. This function supports the setting of conditions for those who are unfamiliar with welding work.



| Improved Current / Voltage digital display

140% larger than prior model for improved visibility.

| Easy-to-read LCD panel

Text font size and background color are adjustable to improve visibility.

\* Welding conditions are guidelines and do not guarantee welding results.



## DC Pulse / WavePulse

Welbee P500L II

Welbee P400L II

Welbee M350L II

Welbee pulse welding has been refined improving welding of steel, stainless steel and aluminum.

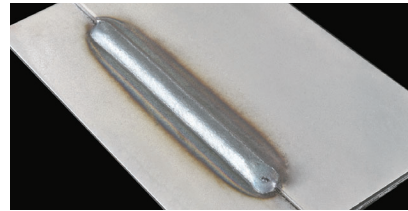
### Better pulse welding for all materials

#### Mild steel

No special technique is required to obtain beautiful welding results with less spatter and uniform bead toes.

Welding conditions

- Welding current: 115A • Arc voltage: 23.1V • Plate thickness: 0.8"
- Wire dia.:  $\phi 0.045"$  • Travel speed: 24in/min • Shielding gas: 80%Ar+20%CO<sub>2</sub>

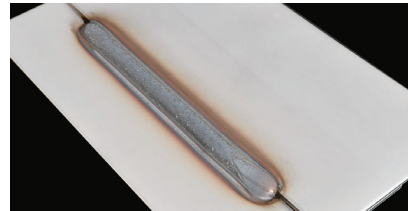


#### Stainless steel

Controlled droplet transfer enables to obtain good weld beads even with highly viscous stainless steel wire's molten droplets.

Welding conditions

- Welding current: 115A • Arc voltage: 21.0V • Plate thickness: 0.8"
- Wire dia.:  $\phi 0.045"$  • Travel speed: 24in/min • Shielding gas: 98%Ar+2%O<sub>2</sub>



#### Aluminum

Beautiful weld beads can be obtained by suppressing the generation of fine particle spatter.

Welding conditions

- Welding current: 55A • Arc voltage: 18.5V • Plate thickness: 0.8"
- Wire: Hard aluminum  $\phi 0.045"$  • Travel speed: 14in/min • Shielding gas: 100%Ar



### AI-enhanced SmartPulse welding NEW

OTC DAIHEN has implemented AI-enhanced pulse welding with automatic adjustment of the welding waveform for optimal, high-speed welding. Advantages include elimination of undercut and reduction of adhered spatter, delivering a higher quality weld with a consistent appearance.

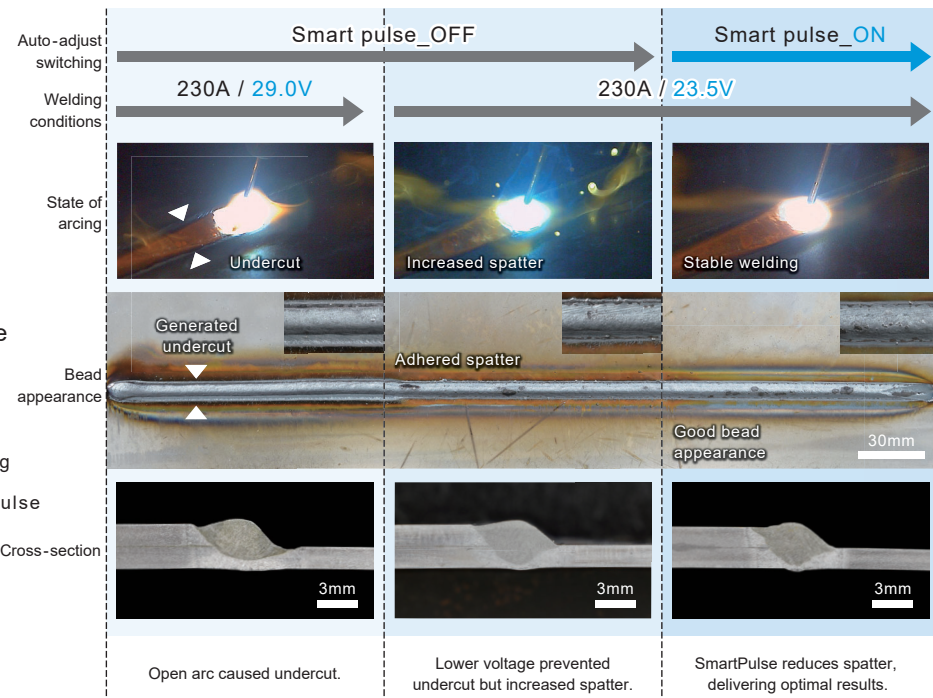
Welding conditions

- Welding mode: Mild steel DC Pulse
- Plate thickness: 1/16"
- Wire dia.:  $\phi 0.045"$
- Travel speed: 60in/min
- Shielding gas: 80%Ar-20%CO<sub>2</sub>

\*1 The Rule Base is a method of processing data based on the input rules.  
\* Automatic machine mode of mild steel pulse is supported only.

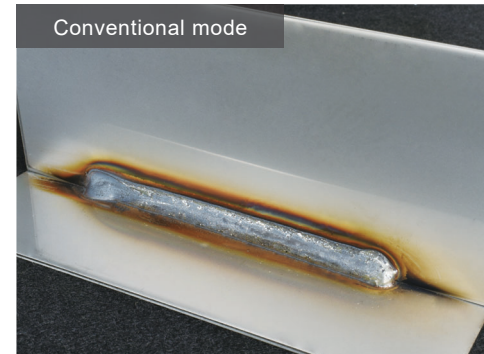
#### SmartPulse high-speed welding comparison

•Function No.84,85



### Improved stainless steel waveform delivers beautiful bead appearance. NEW

The soft arc created by our new waveform realizes stable droplet transfer while suppressing the weld scale. Also, the short arc length improves arc position aiming and manipulation.



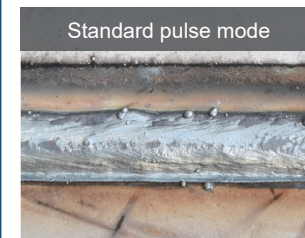
Welding conditions

- Welding current : 200A
- Arc voltage : 26.7V
- Plate thickness : 0.08"
- Wire dia. :  $\phi 0.045"$
- Travel speed : 40in /min
- Shielding gas : 98%Ar+2%O<sub>2</sub>

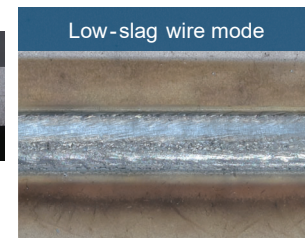
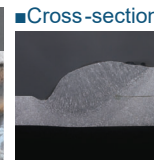
#### Option

### Improved support for low slag wires NEW

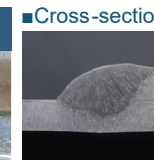
Low-slag wire is now supported, eliminating the unstable arc in high speed welding. This mode reduces problems such as meandering, undercut, and large spatter adhesion caused by low Si wire.



Spatter adhesion and undercut occur



Good weld bead with no defects



Welding conditions

- Welding current: 270A
- Arc voltage: 27.8V
- Base metal: galvanized steel 45g/m<sup>2</sup>, 0.09in
- Wire diameter:  $\phi 0.045in$
- Travel speed: 51.2in/min
- Shielding gas: 80%Ar+20%CO<sub>2</sub>

## MS-MIG

Welbee P400 II

Welbee P400L II

Welbee P500L II

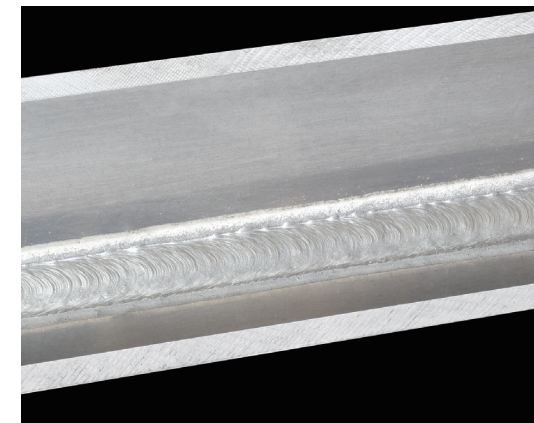
### Optimum aluminum welding mode for medium thick plate NEW

In aluminum welding in the medium and high current ranges, the arc tends to become unstable, which causes such problems such as bead meandering and poor penetration. OTC DAIHEN developed MS-MIG is resistant to this disturbance, keeping the welding current constant for beautiful weld beads with consistent penetration.

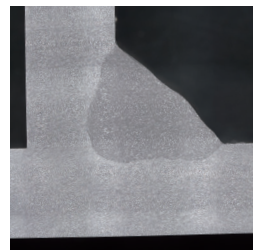
\* Applicable only to hard aluminum wire with a diameter of 1/16in

Welding conditions

- Welding current: 280A
- Plate thickness: 0.4in
- Wire: Hard aluminum,  $\phi 1/16in$
- Travel speed: 16in/min
- Shielding gas: 100%Ar



Cross-section





# CBT-EX (DC Low Spatter)

Controlled Bridge Transfer- Expanded

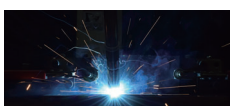

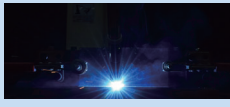

Welbee P500L II Welbee P400L II Welbee P350L II

## Low-Spatter (L-Mode) powered by Welbee's precision control

Spatter can be reduced by up to 80% in low, medium and high current ranges. Less weld spatter on the base metal means less post-weld cleanup prior to assembly or finishing. Less post-weld cleanup means more parts in less time.

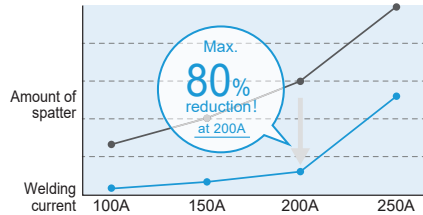
### Welding conditions

- Welding current: 200A • Travel speed: 20 in/min
- Wire dia.:  $\phi$ 0.045in • Shielding gas: CO<sub>2</sub>
- Welding time: 2.5min

Welding method	Comparison of spatter during welding	Large spatter particles that have to be removed (0.5mm or larger)
CO <sub>2</sub> welding		
Welbee II CBT-EX		

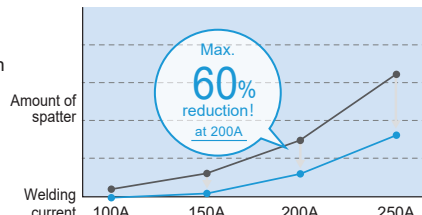
### CO<sub>2</sub> welding

Low spatter comparable to those in MAG welding can be achieved even in CO<sub>2</sub> welding.



### MAG welding

Spatter can be minimized in MAG welding.



## DC welding

Common to the series

## Fine control for DC welding on all materials and current ranges.

Delivers uniform weld beads with consistent appearance under adverse conditions such as varying arc length and high-speed welding. Reliable results during manual, semi-automatic and automatic operation.

### Thin plate



Uniform and beautiful beads with little spatter

### Welding conditions

- Welding current: 120A
- Arc voltage: 16.9V
- Plate thickness: 1/16in
- Wire dia.:  $\phi$ 0.035in
- Travel speed: 18in/min
- Shielding gas: AR/CO<sub>2</sub>

### Medium thick plate



Stable arc realizes flat weld beads even at high current.

### Welding conditions

- Welding current: 300A
- Arc voltage: 35.0V
- Plate thickness: 0.35in
- Wire: Mild steel flux cored  $\phi$ 0.045in
- Travel speed: 14in/min
- Shielding gas: CO<sub>2</sub>

## Convenience and stability provided by extension mode

Stable and reliable results in extended applications

### Welding conditions

- Welding current: 250A • Arc voltage: 29.0V • Plate thickness: 1/4in
- Wire dia.:  $\phi$ 0.045in • Travel speed: 16in/min • Shielding gas: CO<sub>2</sub>

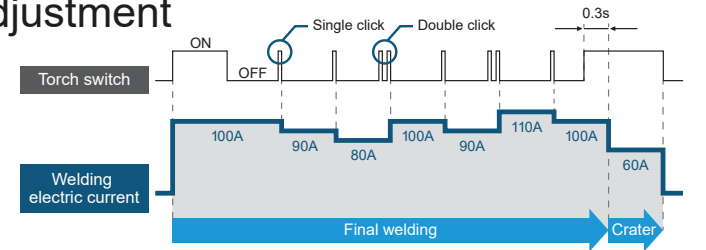
	Standard mode	Extension mode
Cable length 131ft		

## Smart function

Common to the series

## Torch triggered welding current adjustment

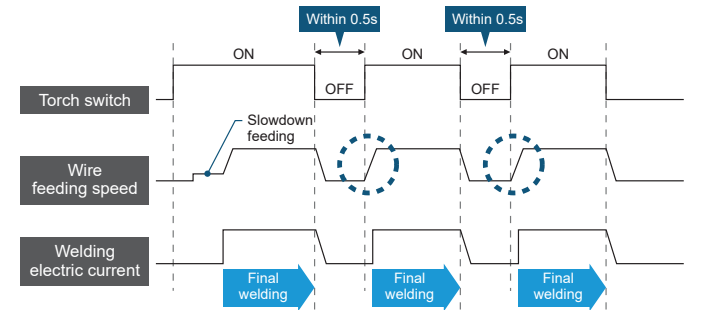
You can increase or decrease the output current by any preset amount of change by operating the torch switch (single click/double click). If you want to change the input heat during welding in accordance with sheet-thickness changes, you can change the welding conditions without suspending your welding work.



\*You cannot use this function when the analog remote controller is connected.

## High-speed tack start

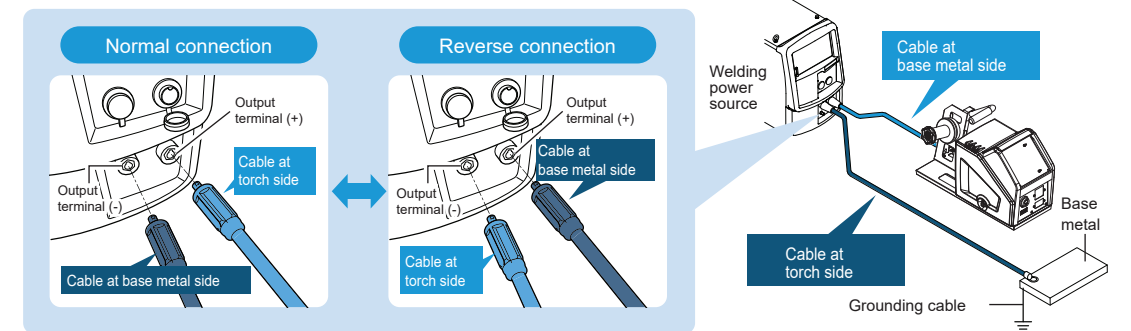
Slow wire feed can be overridden if the torch trigger is pulled within 1/2 second of previous weld, speeding up your tack welds and expanding your productive output.



## Straight polarity (DCEN) mode

NEW

By setting the function number "38", welding can be performed with straight polarity (DCEN - electrode negative), including galvanized steel welding.



## Evolved multifunction remote controller

NEW

OTC DAIHEN's NEW multifunction remote controller supports selected assignment of 6 commonly used functions to the selector switch.




F 2	Functions	Remote controller switching knob		
		[ 1 ]	[ 2 ]	[ 3 ]
1	Crater setting	Crater OFF	Crater ON (with pulse)	Crater ON (No pulse)
2	Gas check	OFF	OFF	ON
3	Constant penetration	OFF	OFF	ON
4	Tack start	OFF	OFF	ON
5	Read out of welding conditions	OFF	OFF	ON
6	Welding process	P400L II	CBT-EX (DC low spatter)	DC pulse
		P500L II	DC pulse	DC wave pulse
		P400 II	DC pulse	DC
		M350L II	CBT-EX (DC low spatter)	DC
		M350 II		—
		M500 II		—

# IoT functionality, machine-connected control and integrated quality control

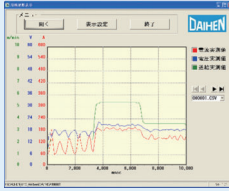
## PC-based access to recorded welding data

With the USB port equipped as standard, various data can easily be read.  
By using the "Smart Wave Viewer" from DAIHEN website, you can easily graph the welding data on your PC.



You can easily edit and manage data by using USB.

● Welding waveform display screen




● CSV file output

1	A	B	C	D
1	0	42	53.8	1.6
2	100	97	25.3	2.1
3	200	139	12.3	2.1
4	300	165	11.7	2.1
5	400	132	13.1	2.1
6	500	106	15.6	2.1
7	600	107	16.9	2.1
8	700	113	16.5	2.1
9	800	117	14.9	2.1
10	900	125	14.2	2.1
11	1000	115	15.3	2.1
12	1100	125	14.6	2.1
13	1200	150	12.3	2.1
14	1300	141	13.8	2.1
15	1400	117	14.9	2.1

\* Various software can be downloaded for free from OTC HP.  
<https://www.daihen.co.jp/products/welder/software/>

Access to the downloading site



■ List of data that can be output

- Simple data log: Current, voltage, wire feed setting and actual measurement
- Abnormal log: Recording the past 10 abnormal codes
- Welding conditions
- Welding result management: Weld points, Wire consumption, Total welding time, Welding monitoring, Total operating time
- Internal function setting values

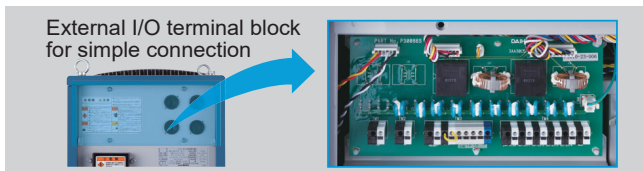
## Easy connection to external devices



A lineup of interfaces are abundantly available for connecting to other robots.  
A wide range of options are available according to particular communication specifications.

Connection method	Format
Analog	IFR-101WB
EtherNet/IP	IFR-800EI
PROFIBUS	IFR-800PB
DeviceNet	IFR-800DN
PROFINET	IFR-800PN

Simply open the access panel on the back of the welding power source to connect easily to external equipment



Wire feeder for robot

Wire feeder	Model	CMRE-742
* Applicable wire dia.	mm	(0.8), 0.9, 1.0, 1.2, (1.4), (1.6)
Type of wire		Solid wire, Flux cored wire
Wire feeding speed	m/min	22
External dimensions (WxDxH)	mm	195x275x235 (No cable is included.)
Mass	kg	7

\* For using the wire diameters given in parentheses, optional parts are required.

## Option PC-based and connected Welbee weld monitoring

Data from up to 100 welding power sources can be collectively monitored on a PC to support quality control.

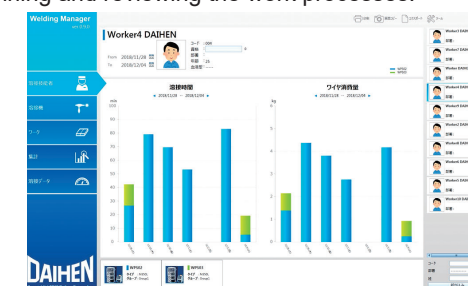
Capable of checking the operating status of the welding power sources even at a remote location.

On the collected monitoring screen, you can monitor not only the operating status of each welding power source but also errors and warnings at a glance.



### Visualized welding results.

Welding data can be organized in an easy-to-understand manner for each "worker," "work," and "welding power source," which can be used for planning and reviewing the work processes.



### Monitoring parameters

\* Check the instruction manual for details.

Welding current (Setting)	Welding voltage (Setting)	Welding current (Measured)	Welding voltage (Measured)
Wire feed speed (Measured)	Starting signal	Primary input voltage	Motor current
Various error codes	Power source's interior temperature	FAN rotation speed	Wire feed load rate

### Welbee welding monitor's system configuration

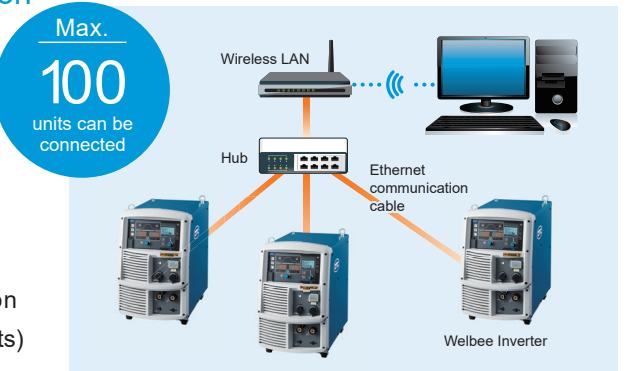
#### Standard configuration

- Extension board kit for welding power source
- Welding monitor software for PC

#### Items to be prepared by customer

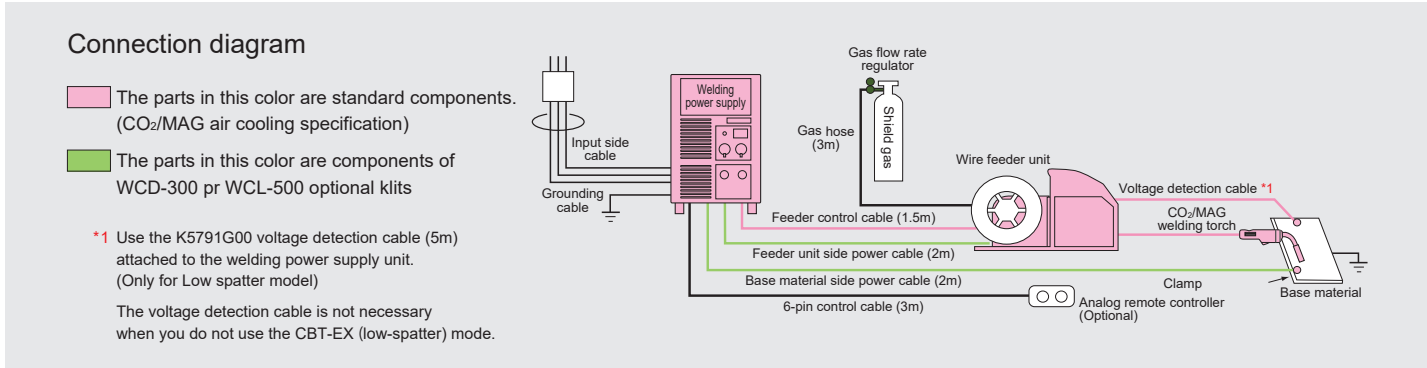
- PC (Ethernet connectable)
  - Supported OS: Windows 8.1, 10
  - Required memory capacity: Min. 8GB,
  - Display: Min. 32bit color / Min. 1920 x 1080 resolution
- Ethernet communication hub (when connecting multiple units)
- Ethernet communication cable
- Wireless LAN interface (for wireless connection)

\* The number of connectable devices may be limited depending on your PC and communication environment.  
\* When you use the extension board kit (E-2560), you can use the latest welding monitor by preparing only the PC software (K-7496).





Specification



\*1 When selecting the CBT-EX mode (DC low spatter), use the voltage detection cable K5791G00 (5m) (optional)with the welding power source WB-M352L/P402L/P502L.

Standard configuration

General brand name		Welbee Inverter M350L II		Welbee Inverter M350 II	Welbee Inverter M500 II	Welbee Inverter P400 II			Welbee Inverter P400L II				Welbee Inverter P500L II				
●Welding power source		WB-M352L		WB-M352	WB-M502	WB-P402			WB-P402L				WB-P502L				
Usage	CO2/MAG Air cooled	CBT-EX (DC low spatter)	CO2/MAG Air cooled	CO2/MAG Air cooled	CO2/MAG Air cooling	Aluminum MIG, Air cooled	Aluminum MIG, Water cooled	CO2/MAG Air cooled	CBT-EX (DC low spatter)	Aluminum MIG, Air cooled	Aluminum MIG, Water cooled	CO2/MAG Air cooled	CBT-EX (DC low spatter)	CO2/MAG Water cooled	Aluminum MIG, Air cooled	Aluminum MIG, Water cooled	
	CM-743U		CM-743U	CM-743U	CM-743U			CM-743U				CM-743U					
Welding torch	BT3510-30UT (45)(60)	BT3500V-30UT <sup>*1</sup>	BT3510-30UT (45)(60)	BT5000-30UT (45)(60)	BT3510-30UT (45)(60)	BTA300-30UT (40)	BTAW400-30UT (40)	BT3510-30UT (45)(60)	BT3510V-30UT (40) <sup>*2</sup>	BTA300-30UT (40)	BTAW400-30UT (40)	BT5000-30UT (45)(60)	BT3510V-30UT <sup>*2</sup>	BTW500-30UT (45)(60)	BTA300-30UT (40)	BTAW500-30UT (40)	
Powew cable	Regulator/Flow meter kits	WCD-300		WCD-300	WCL-500	WCD-300			WCD-300				WCL-500				

\*1 When selecting the CBT-EX mode (DC low spatter), attach the voltage detection adapter (K5952E00) to the wire feeder CM-743

Standard Specification

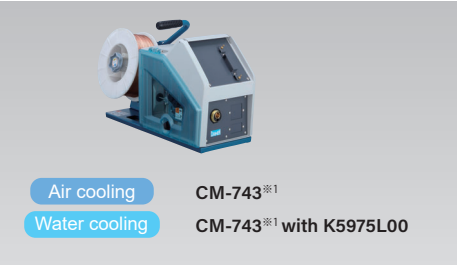
General Name		Welbee Inverter M350L II				Welbee Inverter M350 II				Welbee Inverter M500 II	Welbee Inverter P400 II				Welbee Inverter P400L II			Welbee Inverter P500L II
Welding power Source Model	Model #	WB-M352L				WB-M352				WB-M502	WB-P402				WB-P402L			WB-P502L
Phase(s)		Single-phase		Three-phase		Single-phase		Three-phase		Three-phase Only	Single-phase		Three-phase		Single-phase	Three-phase		Three-phase Only
Rated input voltage	V	208 / 230	460	208 / 230	460	208 / 230	460	208 / 230	460	460	208 / 230	460	208 / 230	460	208 / 230	208 / 230	460	460
Rated Input Current	A	58.0	25	43.3	19.6	54.2	23.7	42.5	18.8	31.7	53.6	30	54	26.1	56.3	56.2	26.3	31.7
Rated Input	kVA	12.1	11.5	15.6	15.6	11.3	10.9	15.3	15.0	25.2	11.2	13.8	19.7	20.8	13.4	25.2	25.2	25.4
100% Output Current	A	194	194	271	271	194	194	271	271	500	194 (126)	194 (126)	310 (283)	310 (283)	194 (126)	310 (283)	310 (283)	387 (350)
Rated Duty Cycle (Pulse)	%	60	60	60	60	60	60	60	60	100	60 (40)	60 (40)	60 (50)	60 (50)	60 (40)	60 (50)	60 (50)	60 (80)
Rated Output Current (Pulse)	A	250	250	350	350	250	250	350	350	500	250 (200)	250 (200)	400	400	250 (200)	400	400	500 (400)
Rated Load Voltage	V	26.5	26.5	31.5	31.5	26.5	26.5	31.5	31.5	39	24	24	34	34	24	34	34	39 (34)
Output Current Range (Pulse)	A	10 - 250	10- 250	10- 350	30 - 350	20 - 250	20- 250	20- 350	20- 350	20- 500	30-250(200)	30-250(200)	30 - 400	30 - 400	30-250(200)	30 - 400	30 - 400	30 - 500
Output Voltage Range (Pulse)	V	12 - 26.5	12 - 26.5	12 -31.5	12 - 31.5	12 - 26.5	12 - 26.5	12 -31.5	12 - 31.5	12 - 39	12 - 26.5	12 - 26.5	12 - 34	12 - 34	12 - 26.5	12 - 34	12 - 34	12 - 39
Max no-load Voltage	V	78	70	79	70	78	70	79	70	81	78	70	92	80	78	92	80	92
Welding programs in memory	#	100				100				100	100				100			100
External Dimensions (WxDxH)	mm (in)	395 x 710 x 810 (15.6 x 28 x 31.9)				395 x 710 x 810 (15.6 x 28 x 31.9)				395 x 710 x 810 (15.6 x 28 x 31.9)	395 x 710 x 810 (15.6 x 28 x 31.9)				395 x 710 x 810 (15.6 x 28 x 31.9)			395 x 710 x 810 (15.6 x 28 x 31.9)
Mass	kg (lbs)	85 (187.4)				85 (187.0)				77 (170)	80 (176.4)				80 (176.4)			81 (178.5)
Cable kit (optional)	P/N	WCD-300				WCD-300				WCL-500	WCD-300				WCD-300			WCL-500
Cable size	mm2 (AWG)	60 (2/0)				60 (2/0)				80 (4/0)	60 (2/0)				60 (2/0)			80 (4/0)
Grounding Cable	mm2 (AWG)	6 or more				6 or more				10 or more	6 or more				10 or more			10 or more

●Wire feeder	Model	CM-743U				CM-743U with K5975E00 Aluminum Kit			
Applicable wire		Solid wire Cored wire				Hard aluminum Soft aluminum			
*4 Applicable wire dia.	mm	(0.8), 0.9, 1.0, 1.2, (1.4), (1.6)				1.2, (1.6)		1.2, 1.6	
Wire feed speed	m/min	22(Max)				22(Max)		22(Max)	
External dimensions (W×D×H)	mm	254 × 611 × 393				285 × 723 × 393		285 × 723 × 393	
Weight	lb	31				31		31	
Cooling system		Air cooling				Air cooling		Water cooling	
●Welding torch		BT3500-30UT	BT3510-30UT	BT5000-30UT	BT3510V-30	BTW500-30		BT A300-30	
Rated current	A	350	350	500	350	500		300	
*4 Applicable wire dia.	mm	(0.9), (1.0), 1.2	(0.9), (1.0), 1.2, (1.4)	(1.2), 1.4, (1.6)	(0.9), (1.0), 1.2, (1.4)	(1.2), (1.4), 1.6		1.2, (1.6)	
Duty cycle	%	30	60	60	60	100		50	
Cable length	m	3, (4.5, 6)	3, (4.5, 6)	3, (4.5, 6)	3, (4.5, 6)	3, (5)		3,(4)	

\*3 Eyebolts are not included in the external dimensions. \*4 If you use the wire diameter in parentheses, optional part required.  
\*5 When selecting the CBT-EX mode (DC low spatter), attach the voltage detection adapter (K5952E00) to the wire feeder CM-743.

Wire feeder with maximized safety, operability and durability

For steel and stainless steel



For aluminum



\*1 For CBT-EX (DC low spatter), the voltage detection adapter (K5952E00) is required.

\* When you use a pack wire, prepare the guide adapter (K5977J04) .