



# DP400-500

Pulsed MAG/MIG CO<sub>2</sub>/MAG Automatic G.M.A.W. Welding Machine

**D** Digital Inverter  
Welding Machine  
**SERIES**

## Number One In OTC's Line Up Of "D" Series Welding Machines, Offering Both High Quality DC Pulsed MAG/MIG and CO<sub>2</sub>/MAG/MIG Welding

- Incredible Arc Stability at Very Low Current Ranges
- Incredible Arc Stability at Very High Welding Speeds
- Incredible Quality Welding Achievable on Galvanized Steel
- Optional Software Modes Available to Achieve High Quality Welding on Materials Such as Magnesium and Titanium
- Instantaneous Arc Start By Capacitor Discharge Method
- Four-Roll Encoder Wire Feeder As Standard Equipment



DP400

CE-Marking  
Specification



DP400



DAIHEN Corporation

# The First-class Machine of D series Pursuing High-quality Welding...

Single welding power source provides optimum arc performance in both H



## Steel • Stainless Steel

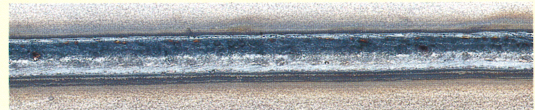
### Pulsed MAG/MIG Welding

#### Easier to Weld Galvanized Steel Plate!

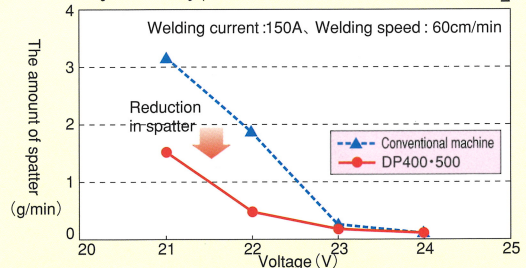
Easily offers high-quality galvanized steel welding, with less generation of undercut.

#### Generates Less Spatter!

Because of a very low voltage feature, this new welding power supply generates much less spatter, as compared to our earlier models. Arc-convergence improves arc-stability, when performing high-speed fillet welding.



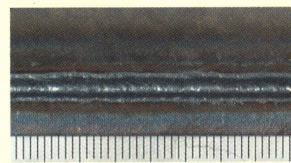
[ Current : 170A, Voltage : 19V, Welding speed : 100cm/min, Wire size : 1.2mm, Base metal : 1.6mmt ]



### CO<sub>2</sub>/MAG/MIG Welding

#### Provides High Quality and High Speed Welding of Sheet Metal.

In thin sheet metal welding with CO<sub>2</sub>/MAG, low heat input is possible resulting in high-quality welding with minimal melt-through.



[ Current : 125A  
Voltage : 18V  
Welding speed : 150cm/min  
Wire size : 1.2mm  
Base metal : 1mmt ]

#### Soft Arc Improves the Efficiency of Semi-Automatic Welding!

Soft arc improves arc stability during high speed welding.

#### Arc characteristic adjustment

Hard	Soft
<ul style="list-style-type: none"> <li>• Help high traveling speed welding</li> <li>• Stable arc with All position welding</li> <li>• Stable arc even when using a long extension cable</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce spatter generation</li> <li>• Flat bead</li> <li>• High amp welding</li> </ul>

# ies, DP400·500!

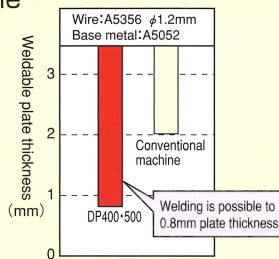
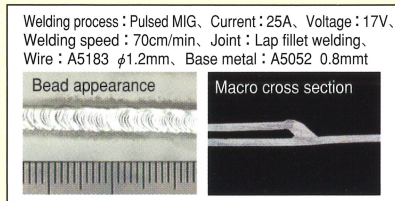
Pulse and Non-Pulse on all materials, such as steel, stainless steel, and aluminum.

## Aluminum

### Pulsed MIG Welding

#### High Stability even at Low Current!

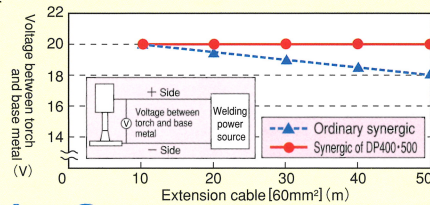
Welding at 25A with  $\phi 1.2$  wire is possible. MIG welding has become possible for thin sheet of 0.8-1.0.



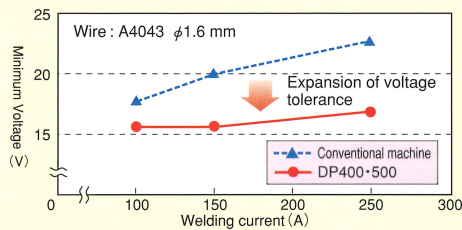
#### Advanced Full Synergic Control!

By providing constant arc length when the extension cable is lengthened and keeping the voltage fine adjustment to a minimum, the time to show welding conditions is reduced.

At the high voltage setting that doesn't generate short circuit, the voltage between torch and base metal can not be fixed and can vary as normal synergic.



#### Expanded Voltage Tolerance and Improved Arc Convergence

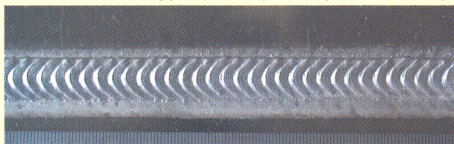


Even at high speed welding or the first layer in the groove, to which low voltage is applied, The arc is very stable and the concentrated arc reduces snaking weld bead and offers high quality welding with stable penetration.

#### Improved Welding Quality of Aluminum is Made Possible by Wave Pulse Option!

##### Produces the bead-like appearance of TIG Welding!

A beautiful bead appearance by wave pulsed welding.



Current : 160A, Voltage : 19V, Welding speed : 60cm/min,  
Wire : A5183  $\phi 1.2$ mm, Base metal : 4mm

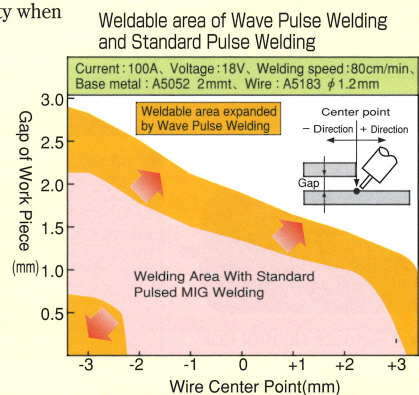
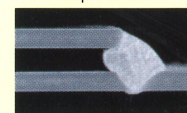
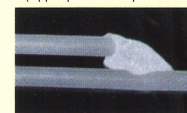
##### High-quality welding possible on heat treatable alloys

By applying the Optional Wave Pulse Method, metallurgical properties are much improved by the reduction of grain-structure size. Additionally, cracks and blowholes are greatly reduced when compared with conventional methods. The weldability of heat treatable alloys of 6000, 7000, and cast aluminum are substantially improved.

##### Ideal welding power supply for robots, hard automation, and manual welding.

Provides exceptional low heat input control, which allows the filling of gaps and improves weld quality when automatic welding.

##### Macro cross section (Upper plate/lower plate 2mm)



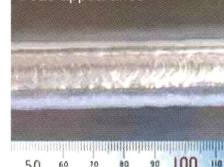
### MIG Welding

#### Soft Arc Ideal for Aluminum Improves Efficiency Especially at High Current!

DC MIG Welding of thick aluminum plate achieves stable soft arc providing excellent weld quality.

Welding process : DC MIG, Current : 250A, Voltage : 27V,  
Welding speed : 40cm/min, Joint : T Type Fillet Welding, Wire : A5183  $\phi 1.2$ mm,  
Base metal : A5052 12mm, Shielding Gas : Ar 20 $\theta$ min

Bead appearance



Macro cross section



50 60 70 80 90 100 110

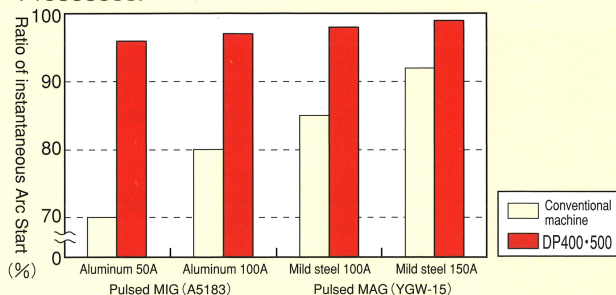


# DP400 · 500

## For High Quality Welding

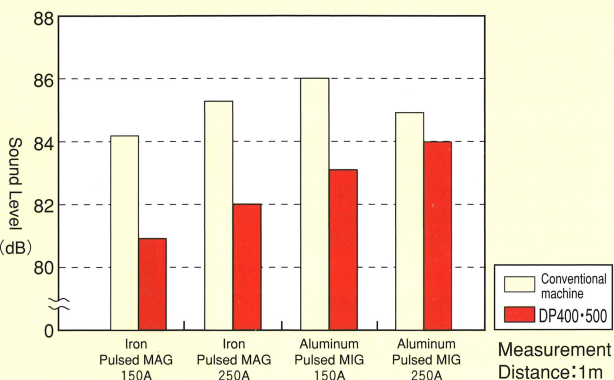
### New Digital Turbo Start Substantially Improves Arc Starting.

By utilizing capacitor discharge method, instantaneous arc-starts are possible regardless of base metal type being welded; thereby further enhancing Semi-Automatic and Automatic Welding Processes.



### New Wave Control Reduces Arc Sound Particularly in Pulse Welding, Further Improving the Work Environment.

Reduces Arc Sound in pulse welding, lightening the burden on operators



### In Combination with Our New Almega AX Robot, the Best Weldability is Achieved. Power Supply Becomes Robot Dedicated.

- When adding the special interface board to the AX Robot, the welding power supply becomes robot-dedicated. High, accurate setting of weld conditions becomes possible both assuring that high quality and accuracy are achieved.
- By utilizing the Teach Pendant, it is possible to directly set or change the weld parameters. The operator can easily set ideal weld conditions for complicated parts, thereby ensuring higher weld-quality.

#### Welding parameters are set by the Teach Pendant

Welding Parameter	
Setting of Arc Start and Arc End Conditions	Welding Current, Arc Voltage
	Arc Characteristic
	Pre-Flow Time
	Slow Down Speed
	Crater Time, Post Flow Time
	Anti-Stick Adjustment
Weld Mode Setting	Fine Adjustment of Pulse Condition
	Weld Mode Switch
	Arc Monitor (Welding Current, Arc Voltage)
	Trouble Observation Setting of Welding Current and Arc Voltage
	Monitor of Feed Motor Load
	Trouble Observation and Setting of Feed Motor Load
	Arc Outage Detection
	Wire Stick Check
	Wave Pulse Frequency (Optional)

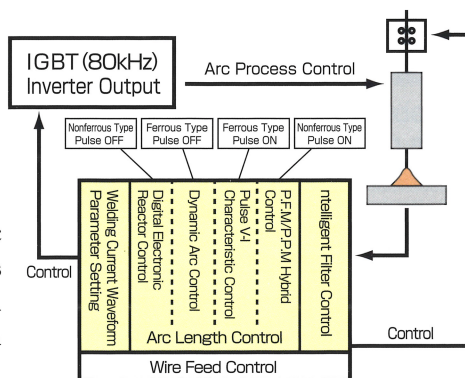


### New Arc Length Control System that Provides Welding Power Source with Multifunction.

#### Newly Developed T-MAC System that Supports Four Welding Processes.

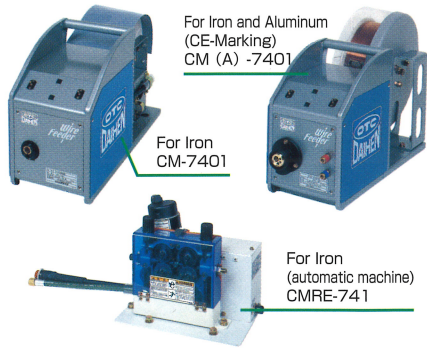
#### (Tailor Made Arc Control System)

Full and complete digitalization delivers four (4) types of arc length control for every welding process. Operator selects the welding process and consumable on the front panel and the microcomputer automatically selects the ideal arc length control, thereby providing the best weld quality.



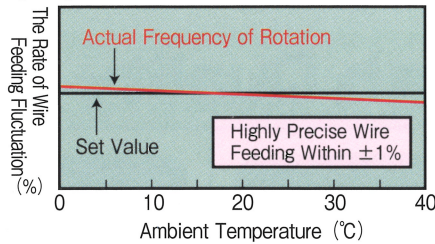
## Highly Efficient Wire Feeder For D Series

### Wire Feeder Selection Best Suited for Material of Wire



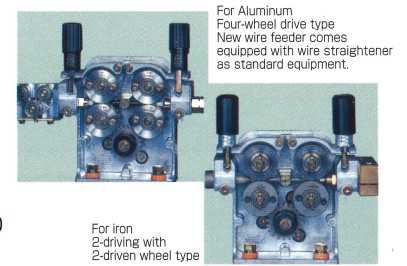
### Encoder Feedback Type with Adjustable Inertia Control

Highly precise wire feeding is not influenced by ambient temperature or extension cables, contributes to the stabilization of welding quality.



### Four-Roll Feeder is Standard. Wire Feeding Ability 1.5 Times Greater than Two-Roll Wire Feeder.

The powerful Four-Roll Wire Feeding allows greater welding torch flexibility.



## Touch panel Control Layout is Very User Friendly

### Digital Meters are Easily Read in Dim Areas.

Both Current and Voltage are displayed during welding, with the average current and voltage being displayed after welding is terminated. Additionally, Welding Power Supply provides Digital Diagnostic Display or error codes to assist troubleshooting.

### Welding Condition Memory Storage Function (99 conditions).

Welding Memory Play Back Function of welding conditions can be accessed by one-touch control to repeat or recall weld conditions.

### Function Key

Front Panel Control allows setting of Arc Functions by operator without having to go inside the Welding Power Source.

### Choice of the Welding Modes

Setting of weld conditions such as weld-wire type and wire diameter are easily accomplished by the Touch Panel and reading the LED indications.



### Operators can Easily Set Conditions with Dial Located on the Front Panel.

Precise setting of Amps and Volts can be accurately achieved to 1.0 Amp and 0.1V.

### Arc Characteristic

Arc type choices selectable via front touch panel control for a variety of applications.

### A Variety of Functions

Touch Panel control for user-friendly operation for various functions to achieve high quality welding.

### Optional Mode

Software is available for exotic alloys or special applications.

(Touch Panel Type)

## User-Friendly Design and Operation

### Meet Various Welding Needs (DP400-500 Welding Modes)

Wire type	Welding process	Wire diameter DP400	DP500	Wire type	Welding process	Wire diameter DP400	DP500	Wire type	Welding process	Wire diameter DP400	DP500
Mild steel solid	CO <sub>2</sub>	0.8	—	Stainless steel cored	MIG [98%Ar] + [2%CO <sub>2</sub> ]	0.8	—	Soft aluminum	MIG [Ar]	1.2	1.2
		0.9	—			0.9	—			1.6	1.6
		1.0	—			1.0	—			1.2	1.2
		1.2	1.2			1.2	1.2			1.6	1.6
		—	1.4			—	1.6			—	—
		—	1.6			—	—			—	—
	MAG [80%Ar] + [20%CO <sub>2</sub> ]	0.8	—	Mild steel cored	Pulsed MIG [98%Ar] + [2%CO <sub>2</sub> ]	0.9	—	Hard aluminum	MIG [Ar]	1.2	1.2
		0.9	—			1.0	—			1.6	1.6
		1.0	—			1.0	—			1.2	1.2
		1.2	1.2			1.2	1.2			1.0	—
		—	1.4			—	1.6			—	—
		—	1.6			—	—			—	—
Pulsed MAG [80%Ar] + [20%CO <sub>2</sub> ]	0.9	—	Stainless cored	CO <sub>2</sub>	1.0	—		Pulsed MIG [Ar]	1.2	1.2	
	1.0	—			1.2	1.2			1.6	1.6	
	1.2	1.2			—	1.4			—	—	
	—	1.4			—	1.6			—	—	
	—	1.6			—	0.9			—	—	
	—	—			—	1.2			1.2	—	—

### World's First Double Operation Type among Pulsed Welding Machines.

Two Types of Remote Control are available for setting of Weld Conditions Analog or Digital Remote Pendant to provide more Accurate control of welding conditions.

### Fan Automatic Stop Function

Fan on Demand, after a lapse of ten minutes from Arc End Fan, automatically stops, thereby saving electric power.

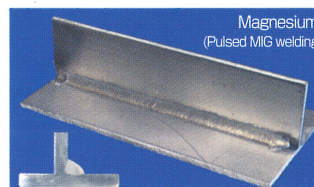
## Abundant Options

Applicable to special wire and special gas, just by installing optional software. There's no necessity to remodel hardware, meeting various welding needs.

### An optional mode

Welding process	Wire type	Wire diameter
Wave Pulse	Soft aluminum	1.2, 1.6
	Hard aluminum	1.0, 1.2, 1.6
* Pulsed MIG	Brazing	0.8, 0.9, 1.0, 1.2
	Inconel	0.9, 1.2
	Titanium	1.0, 1.2
	Magnesium	1.2

\*In case of welding Inconel, titanium, brazing metal and so on with the option software, depending on the brand or kind of wire, the result of welding can be different. For details, please contact us.

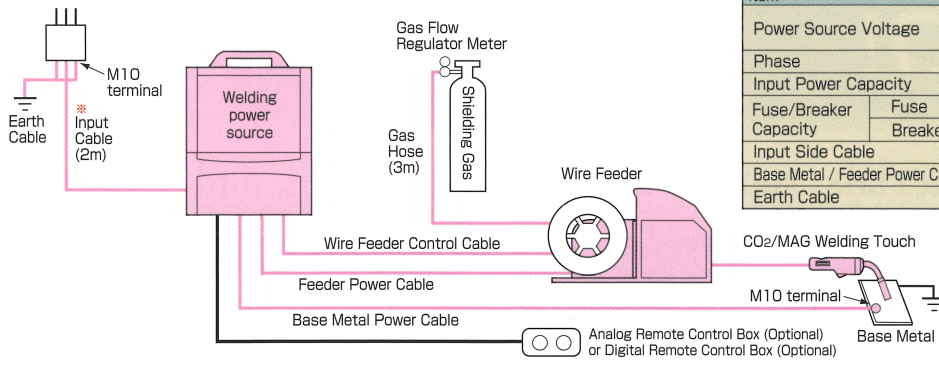


Current : 145A, Voltage : 20V, Welding speed : 70cm/min, Wire size : 1.2mm, Base metal : 6mmt



Current : 100A, Voltage : 19V, Welding speed : 60cm/min, Wire size : 1.0mm, Base metal : 3mmt

## ● Connection Diagram



## ■ Input Power Capacity and Cable Specifications

Item	Model Name	DP-400	DP-500
Power Source Voltage	V	400±15% (Inform input voltage when ordering)	
Phase	—	3 phase	
Input Power Capacity	kVA	more than 22	more than 23.8
Fuse/Breaker Capacity	Fuse	A 50	A 60
	Breaker	A 50	A 60
Input Side Cable	mm <sup>2</sup>	more than 8	more than 5.5
Base Metal / Feeder Power Cable	mm <sup>2</sup>	60	
Earth Cable	mm <sup>2</sup>	more than 8	more than 5.5

## Standard Composition and Specifications

### ■ Welding Power Source

● Welding Power Source	type	DP-400 (Standard) (CE-Marking)		DP-500 (CE-Marking)	
		Pulse	DC	Pulse	DC
Rated Input Voltage	V	400±15% (Inform input voltage when ordering)			
Phase		3 phase			
Rated Input	kVA	22(21.5kW)	19.7(17kW)	17.8(16.7kW)	23.8(22.2kW)
Rated Output Current	A	400	350	500	
Rated Load Voltage	V	34	31.5	39	
Range of Output Current	A	30~400	30~350	30~500	
Range of Output Voltage	V	12~38	12~36	12~45	
Max. no-load Voltage	V	80			
Rated Duty Cycle	%	50	60	100	60
Dimensions (W×D×H)	mm	250×640×544 (except handle)		300×653×595 (without the carrying handle)	
Weight	kg	45		55	

### ■ Wire Feeder

● Wire Feeder	type	CM-7401 (Standard)	CM-7401 (CE-Marking)	CMA-7401 (Standard)	CMA-7401 (CE-Marking)
		Applicable Wire Size	mm	(0.8), 0.9, 1.0, 1.2, (1.4), (1.6)	
Wire type		Solid Wire, Flux-cored Wire		Hard Aluminum, Soft Aluminum	
Wire Feeding Speed	m/min	Max 22			
Weight	kg	13	16	16	16
Dimensions (W×D×H)	mm	215×543×350	243×732×402	215×543×350	243×732×402

### ■ CO<sub>2</sub>/MAG Welding Torch

● CO <sub>2</sub> /MAG Welding Torch	type	WT3510-SD	WT5000-SD
		Rated Current	A
Applicable Wire Size	mm	(0.9, 1.0), 1.2, (1.4)	(1.2), 1.4, (1.6)
Duty Cycle	%	60	
Cooling Method		Air-Cooled	
Cable Length	m	3, (4.5), (6)	

### ■ Aluminum MIG Welding Torch

● Aluminum MIG Welding Torch	type	WTA300-SD
		Rated Current
Applicable Wire Size	mm	(1.0), 1.2
Duty Cycle	%	DC:50 Pulse:30
Cooling Method		Air-Cooled
Cable Length	m	3

### ■ Wire Feeder Control Cable (10 pins)

● Wire Feeder Control Cable	DP400 Standard Spec.	DP400-500 CE-Marking Spec.
Standard Cable	1.5m Cable is attached to Wire Feeder.	Choose cable from the following. BKCPP-1002(2m) BKCPP-1007(5m) BKCPP-1012(10m)
Extension Cable	BKCPJ-1005(5m), BKCPJ-1010(10m) BKCPJ-1015(15m), BKCPJ-1020(20m)	

### ■ Gas Hose

● Gas Hose	DP400 Standard Spec.	DP400-500 CE-Marking Spec.
Standard	3m Gas Hose is attached to Wire Feeder.	
Extension	BKGG-0605(5m), BKGG-0610(10m) BKGG-0615(15m), BKGG-0620(20m)	

### ■ Wire Feeder Power Cable

● Wire Feeder Power Cable	DP400 Standard Spec.	DP400 CE-Marking Spec.	DP500 CE-Marking Spec.
Standard Cable	Choose cable from the following. BKPDT-6002(2m) BKPDT-6007(5m) BKPDT-6012(10m) BKPDT-6017(15m) BKPDT-6022(20m)	Choose cable from the following. BKPDJ-6002(2m) BKPDJ-6007(5m) BKPDJ-6012(10m) BKPDJ-6017(15m) BKPDJ-6022(20m)	Choose cable from the following. BKPJT-6002(2m) BKPJT-6007(5m) BKPJT-6012(10m) BKPJT-6017(15m) BKPJT-6022(20m)

### ■ Base Metal Power Cable

● Base Metal Power Cable	DP400 Standard Spec.	DP400 CE-Marking Spec.	DP500 CE-Marking Spec.
Standard Cable	Choose cable from the following. BKPDT-6002(2m) BKPDT-6007(5m) BKPDT-6012(10m) BKPDT-6017(15m) BKPDT-6022(20m)	Choose cable from the following. BKPT-6002(2m) BKPT-6007(5m) BKPT-6012(10m) BKPT-6017(15m) BKPT-6022(20m)	Choose cable from the following. BKPT-6002(2m) BKPT-6007(5m) BKPT-6012(10m) BKPT-6017(15m) BKPT-6022(20m)

## Optional

### ■ Remote Control Box



Analog Remote Control Box

#### ● Analog Remote Control Box

Name	Part numbers
Analog Remote Control Box (3m Cable is attached)	K5416H00
Extension Cable	BKCPJ-0605 (5m)
	BKCPJ-0610 (10m)
	BKCPJ-0615 (15m)
	BKCPJ-0620 (20m)



Digital Remote Control Box

#### ● Digital Remote Control Box

Name	Part numbers
Digital Remote Control Box	E-2454
Control Cable	BKCAN-0410 (10m) BKCAN-0420 (20m)
CAN Communication Board	K5422B00

### ■ Wheel Kit

Part numbers : K5416B

This is convenient for the works, in which the power source is moved frequently. The rubber feet are attached originally.

In accordance with DAIHEN's policy to make continuing improvements, design and/or specifications are subject to change without notice and without any obligation on the part of manufacturer.

## DAIHEN Corporation

4-1, Koyochi-nishi, Higashinada-ku, Kobe, Hyogo 658-0033, Japan  
Phone: (Country Code 81) 78-275-2006  
Fax: (Country Code 81) 78-845-8159

Distributed by :