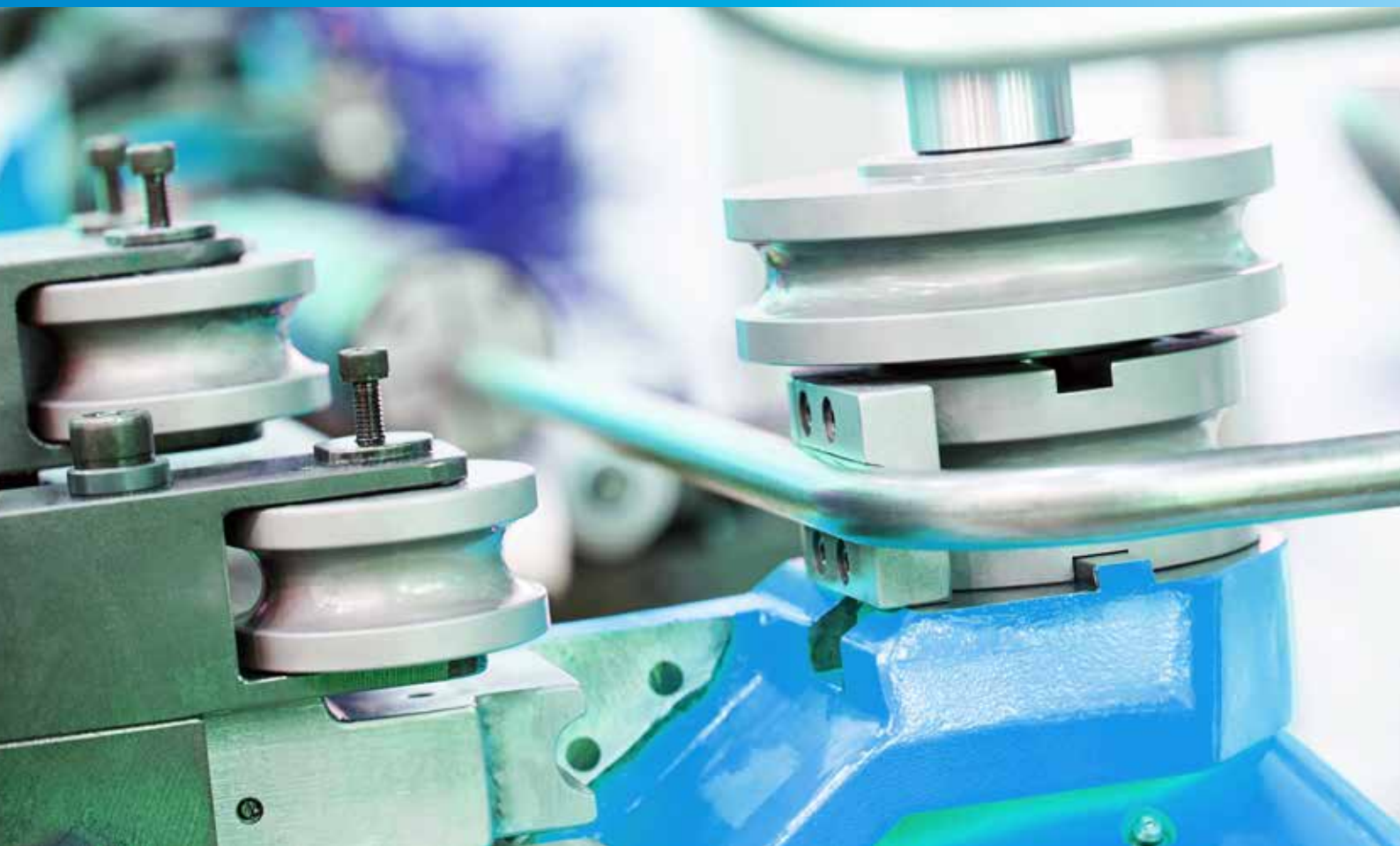


Automation for a Changing World

Delta Pipe Bending Solution



**Fast and precise multi-axis motion control
for pipe bending machines**

Features

Delta Industrial PC-Based Motion Control Solution DMCNET



Max. stations: 12



DMCNET Max. axis: 12 axes
(With pipe bending software: 6 axes)



Supports pulse output module and 3rd party pulse drives



Remote DI/DO/AI/AO modules fulfill various application needs, maintenance requirements, and machine regeneration



Easy debugging and wiring to avoid noise jamming



Specific software with various functions, easy to set up and use

Benefits

Supports Various Pipe Modes and Specifications

- Various modes to define pipe bending conditions for different applications
E.g.: Bending entry (separated/auxiliary), pipe length (long, standard, short), bending exit
- 3D bending process simulation to meet equipment space limitations

Precise Pipe Processing Control

- Realizes feeding axis torque speed compliance via bottom auxiliary bending entry algorithm
- Different bending force setup for various pipe materials to improve processing quality



Simple and Complete System Structure

- Delta PC-Based Motion Controller MP1 Series with built-in touchscreen simplifies system structure
- Adopts Delta PC-Based Motion Controller MP1 and MH1 Series' processing and axis control capabilities for scalable function expansion
E.g.: auto mold changing and loading/unloading
- Additional modules support 3rd motor drives

Fast and Mass Production

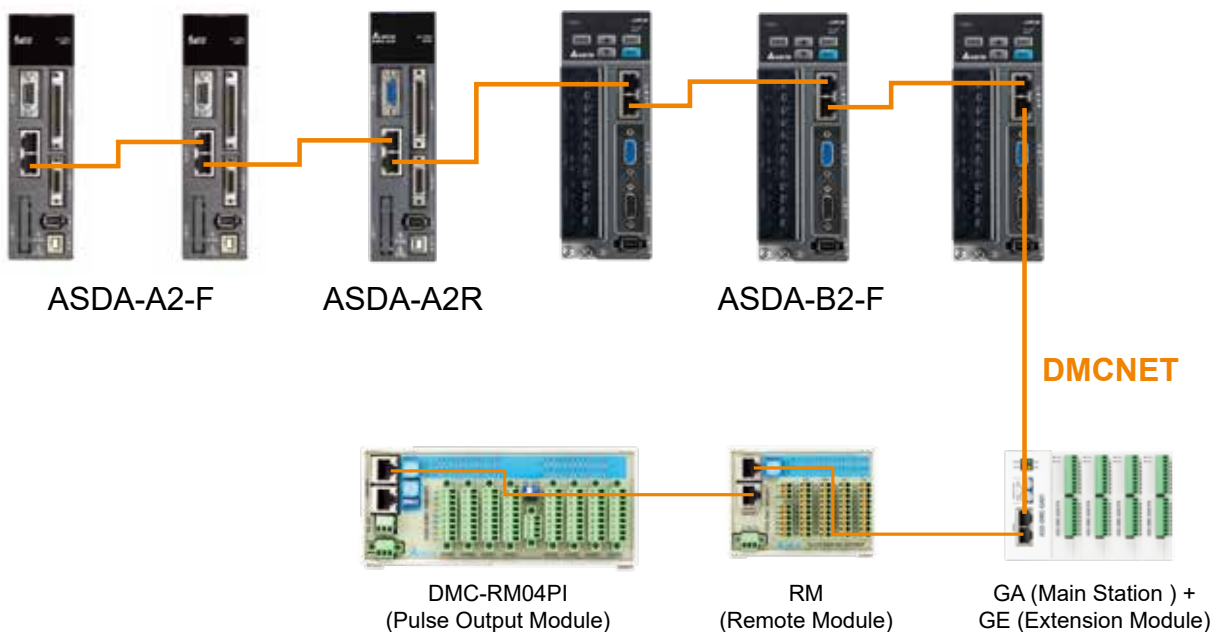
- Transforms XYZ coordinates to YBC file easily to enhance processing/monitoring efficiency
- Add-on 3D simulation software to detect error data

System Structure

PC-Based Motion Controller			
PC-Based Panel Motion Controller MP1 (Built-in DMCNET)		PC-Based Host Motion Controller MH1 (Built-in DMCNET)	
			
MP1-P10D (10 inches)	Intel Celeron J1900 Quad Core 2.0 GHz	MH1- A12D	Intel Atom Quad Core 1.91 GHz
MP1- A12D (15 inches)	Intel Atom E3845 Quad Core 1.91 GHz WS7E	MH1- C50D	Intel Core i5 Dual Core 2.7 GHz
		MH1- C70D	Intel Core i7 Quad Core 2.1 GHz



DMCNET Max. axis: 6 axes (with pipe bending software)



Specifications

PC-Based Panel Motion Controller

MP1

DMCNET™
Delta Motion Control Network



Model Name	MP1-P10D (10 inches)	MP1-A12D (15 inches)
CPU	Intel Celeron J1900 Quad Core 2.0GHz	Intel Atom 3845 Quad Core 1.91 GHz
OS	Windows 10 IoT	Windows Embedded Standard 7
System Memory	DDR3L-1333 4 GB Default	
Maximum Nodes	12	
Maximum Fieldbus Axis	DMCNET (6-axis)	DMCNET (12-axis)
USB 2.0	2 Port	3 Port
Serial Port	Isolated RS-232 x 1 RS-422/485 x 1	Isolated RS-232 x 1 Isolated RS-422/485 x 2
Ethernet	IEEE 802.3/802.3u/802.3ab 1 Gbps x 2 port	IEEE 802.3/802.3u/802.3ab 1 Gbps PoE IEEE 802.3af x 2 port
Ethernet W/PoE	X	O
Digital Input	X	1-CH isolated, Sink type, 24 V _{DC} (5 mA / CH) 12-CH isolated, Sink/Source type 24 V _{DC} (5 mA / CH)
Digital Output	X	1-CH isolated, Sink type, 24 V _{DC} (10 mA / CH) 12-CH isolated, Sink type, 24 V _{DC} (200 mA / CH)

Specifications

PC-Based Host Motion Controller

MH1

DMCNET™
Delta Motion Control Network

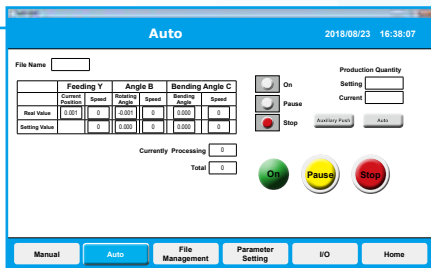


Model Name	A12D	C50D	C70D
CPU	Intel Atom E3845 Quad Core 1.91 GHz	Intel i5-3610ME Dual Core 2.7 GHz	Intel i7-3612QE Quad Core 2.1 GHz
OS	Windows Embedded Standard 7		
System Memory	DDR3L-1333 Default 4 GB	DDR3-1600 x 2 Default 4 GB Max. 16 GB	DDR3-1600 x 2 Default 4 GB Max. 16 GB
Maximum Nodes	12	12	12
Maximum Axis	6 (with pipe bending software)		
Fieldbus	DMCNET		
USB 2.0	4 port		
Serial Port	RS-232 x 1 port		
Ethernet	10/100/1000 M x 2 port		
PCI	2 Bus		

Software Features

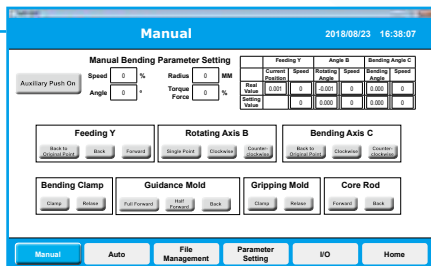
Auto Mode

- Real-time auto bending process monitoring
- Semi-auto bending mode available to adjust bending process and avoid pipe disturbance
- Feeding base provides auxiliary pushing force to assist pipe forming



Manual Mode

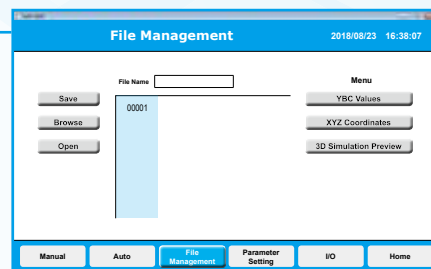
- Manually tests bending motion to ensure machine, mold and pipe are regulated
- Users can operate single actions of motors, gas cylinders and oil cylinders to adjust processing position
- Real-time alert notification when abnormal manual operation occurs to ensure safety



File Management

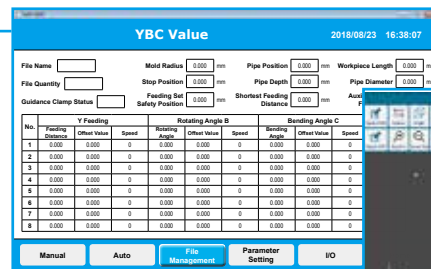
File Saving / Naming

- Limitless data saving functions
- Auto notification if the file name is existed



Coordinates and YBC File Invention

- The system transforms the input pipe XYZ coordinates and related data into YBC files for easy reading and processing
- Parameter logs to ensure correct pipe features and data
- Flexible settings for both sides of pipe as invention start point, easy adjustment for clock/counter-clock wise bending



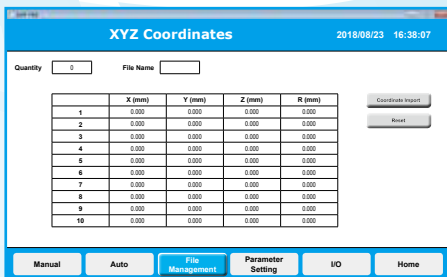


User-friendly Interface

- Shifts between functions easily with parallel interface design
- Users can setup home screen layout based on own needs

Processing Expansion Setting

- Processing related feeding and expansion value setting to avoid pipe conflicts in process
- 1 or 2 feeding time setting based on processing needs

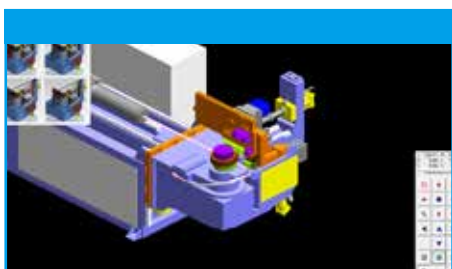


Pipe Bending 3D Simulation

- Preview 3D pipe model to save sample development time and cost

Note:

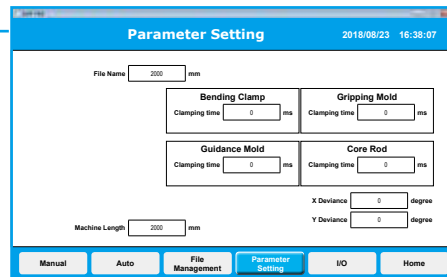
Customized function, machine exterior design file needed



Parameter Setting

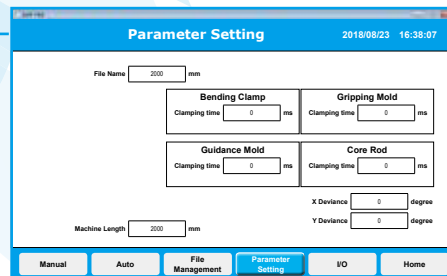
Workpiece Parameter Settings

- Inputs machine, mold and pipe values for processing safety and position reference
- Pre-sets the positions of all servo motors to ensure accuracy



Processing Mode Setting

- Users can choose different processing modes based on forming requirement





Smarter. Greener. Together.

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