

Innovation in Motion

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Digitalization

Industrial
Automation

New
Energy





Always be true in word and resolute in deed.

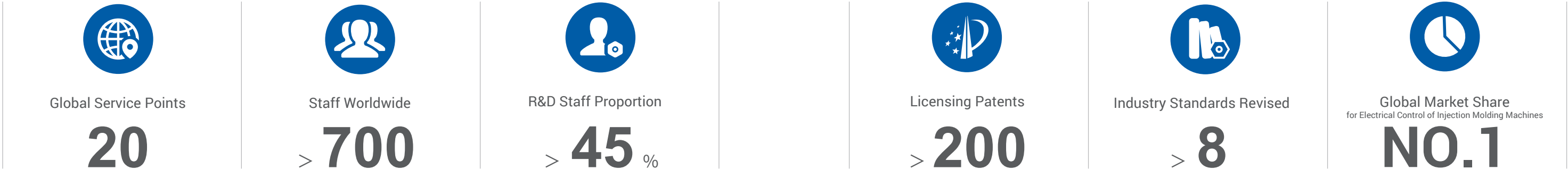
Ningbo Techmation Co., Ltd. was founded in Ningbo in September 2001, hereafter referred to as Techmation, which was developed from Techmation Taiwan established in 1984. Techmation went public in Shanghai A-share market in March 2015 with the stock code of 603015. Currently, Techmation has become a well-known system integrator in the area of plastics machinery automation in China, among which its market share of control system products for plastics machinery ranks the first in the domestic market, and it is honored as “National Manufacturing Single Champion Product”.

Techmation has been focusing on industrial automation for 40 years. It has attached great importance to scientific and technological innovation and devoted a lot to research and development, which has helped to build its profound technical background and rich industrial experience. Techmation has grasped the keys to intelligent manufacturing solutions in the areas of industrial control, drive technology, communication bus, motion modules, edge computing, IoT and others, enabling it to provide software and hardware products for intelligent manufacturing, including industrial control systems, servo drive systems, control modules, manufacturing management systems and etc., and to provide digital solutions for injection molding. Techmation will continue to contribute to the development of industries, marching towards intelligence and digitalization to accelerate industrial transformation and upgrading.

Driven by Innovation, Based on R&D.

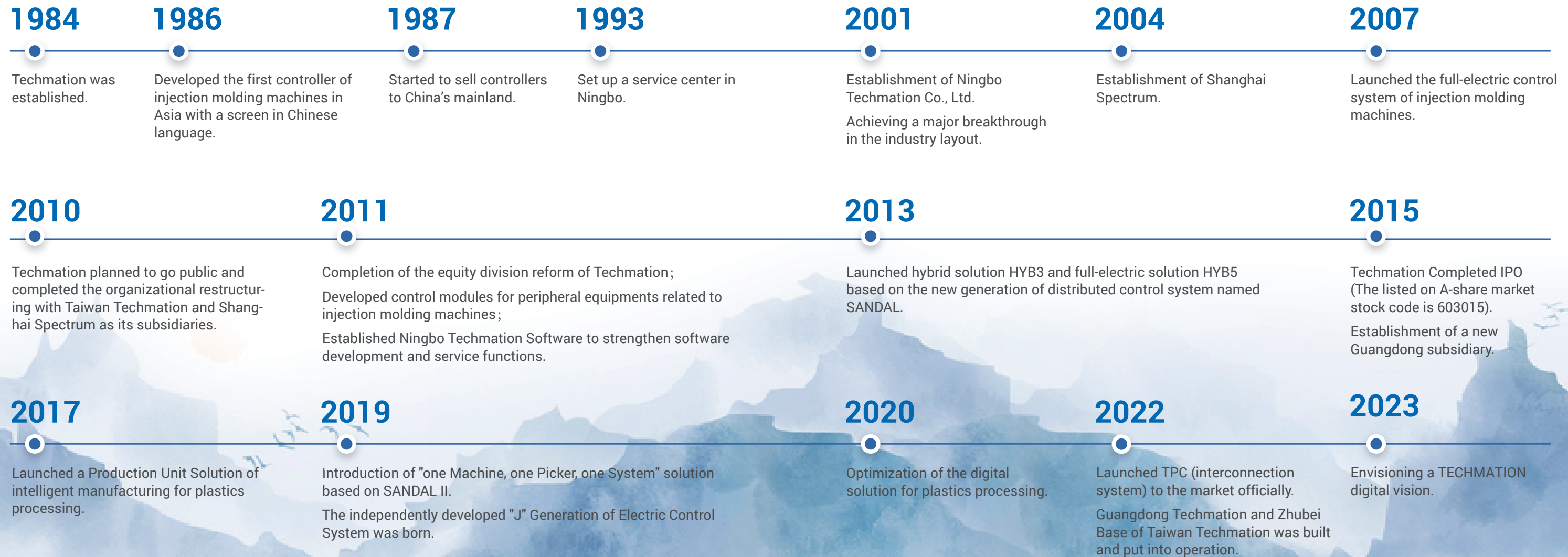
Techmation places a high value on ongoing product innovation, more than 45% of staff dedicated to research and development, with R&D costs making up roughly 8% of total operating income annually. In addition to holding several core patents and drafting a number of industry standards, national standards, and group standards, it has been recognized as the Provincial High-Tech Enterprise Research and Development Center, Provincial Enterprise Research Institute, Provincial Patent Demonstration Enterprise, and National Intellectual Property Demonstration Enterprise.

Techmation is an expert in the layer of execution and control of the fundamental software and hardware technologies used in the design of intelligent manufacturing systems, such as industrial robots, motion control, drives, and industrial bus technologies. At the operation and management layer, Techmation has been working hard to develop edge computing, big data storage, private cloud, mobile development, artificial intelligence (AI), and 3D modeling technologies in the field of the digital industry. As a result, it has produced a range of digital products that are used in a variety of industries. Technology possesses the ability to create standards and implement testing methods for its fundamental electrical components, ensuring that the competitiveness of its products remains uncompromised.



Development History

40th 1984-2024
Keep Accumulating, Keep Innovating



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PART 1

Integrated Automation and Control System



Overview

1. High speed DSP (Digital Signal Processing) chip with reinforced computing ability;
2. Single-board design, with easy maintenance and installation;
3. With output short circuit protection, overvoltage protection, overcurrent protection, watchdog protection and etc., providing safe and reliable hardware protection;
4. Specialized control modules, which are more professional and with better performance;
5. Distributed control systems, with more flexible structures;
6. A variety of digital communication methods, achieving full digital control.



Advantages

1. Various models and specifications, offering flexible cost-effective options;
2. Applicable to various types of injection molding machines covering high-end models such as all-electric injection molding machines and oil-electric hybrid injection molding machines, as well as special purpose machines such as extruders, hollow molding machines, injection blow molding machines, cup making machines and rubber machines;
3. Connection to TM PLAS CLOUD, achieving online production management;
4. Intelligent control, convenient set-up, high-level automation;
5. Cloud services available for remote assistance and maintenance;
6. Integrated control of production units.

01 HMI



Advantages

User-friendly UI, high-resolution, clear image, multi-language support, fast communication.

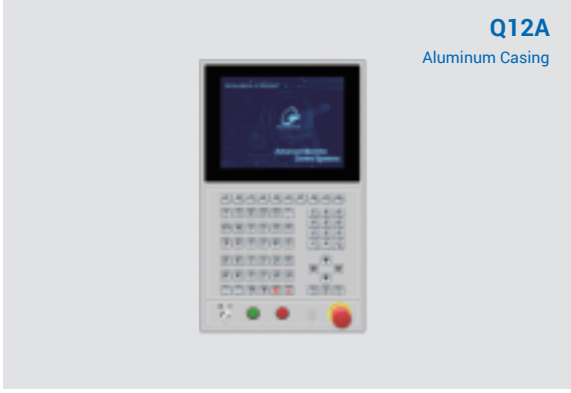
Q8A Aluminum Casing

Items	Specifications
Size H (mm) * W (mm) * D (mm)	470*260*45.8
CPU Frequency	800MHZ
LCD Display	8.0"
LCD Resolution	800*600
Baud Rate	10/100Mbps
Operation Temperature	-10°C ~50°C
Storage Temperature/RH	-20°C ~85°C / 85%RH
Communication Port	RS232*1, NET
Memory Card Port	USB



Q12A Aluminum Casing

Items	Specifications
Size H (mm) * W (mm) * D (mm)	600*335*63.4
CPU Frequency	800MHZ
LCD Display	12.1" (Touchscreen optional)
LCD Resolution	800*600
Baud Rate	10/100Mbps
Operation Temperature	-10°C ~50°C
Storage Temperature/RH	-20°C ~85°C / 85%RH
Communication Port	RS232, NET
Memory Card Port	USB



Q12A

All-in-One (no operation box)

Items	Specifications
Size H (mm) * W (mm) * D (mm)	600*335*52.5
CPU Frequency	800MHz
LCD Display	12.1" (Touchscreen optional)
LCD Resolution	800*600
Baud Rate	10/100Mbps
Operation Temperature	-10°C ~50°C
Storage Temperature/RH	-20°C ~85°C / 85%RH
Communication Port	RS232, NET
Memory Card Port	USB



Q15AT

Aluminum Casing

Items	Specifications
Size H (mm) * W (mm) * D (mm)	426*368*52.7
CPU Frequency	1GHZ
LCD Display	15.0" (Touchscreen)
LCD Resolution	1024*768
Baud Rate	10/100Mbps
Operation Temperature	-10°C ~50°C
Storage Temperature/RH	-20°C ~85°C / 85%RH
Communication Port	NET
Memory Card Port	USB



Q15AT

All-in-One (no operation box)

Items	Specifications
Size H (mm) * W (mm) * D (mm)	523*276*56
CPU Frequency	1GHZ
LCD Display	15.0" (Touchscreen)
LCD Resolution	1024*768
Baud Rate	10/100Mbps
Operation Temperature	-10°C ~50°C
Storage Temperature/RH	-20°C ~85°C / 85%RH
Communication Port	RS232, NET
Memory Card Port	USB



02

Controller

iTECH Series

Techmation's third-generation host controller

The iTECH, Techmation's third-generation host controller, has been optimized in terms of overall design and technological advancement. It supports full digital EtherNET and SABUS communication and expands its software functionality, including intelligent mold opening and closing, temperature self-learning, multi-stage control of oil pressure and flow, and other features that improve production accuracy and efficiency. It is widely utilized in various rubber and plastic manufacturing machinery.



NO.1
Global Market Share
for Electrical Control of Injection Molding Machines



Champion
National Manufacturing Single
Champion Product



Precise Control

Improved sampling accuracy and control precision.



Program Update

Online updating via USB flash drive eliminates the requirement for a burner, which is efficient and practical.



Upgraded Terminals

Using direct-insertion spring terminals enhances the wiring efficiency, boosts the level of protection, and ensures compliance with export requirements.



Visual Operation

In combination with Techmation's HMI, the entirely digital architecture supports intelligent alarm assistance, servo online monitoring, and maintenance reminders, among other features.



Intelligent Algorithm

Intelligent mold opening and closing; automatic compensation: These make the commissioning simpler; effectively manage and lessen the impact of oil temperature and lubrication on system stability and performance.

Intelligent multi-stage oil pressure control: optimize control based on actual conditions, eliminate oil waste, and lessen the impact of the oil circuit.



Fast and Convenient Communication

All digital communication with increased speed, stability, noise immunity, and real-time data exchange.

Bus Type communication: simplified wiring, optimized cost



Optional Products, Diverse Functions

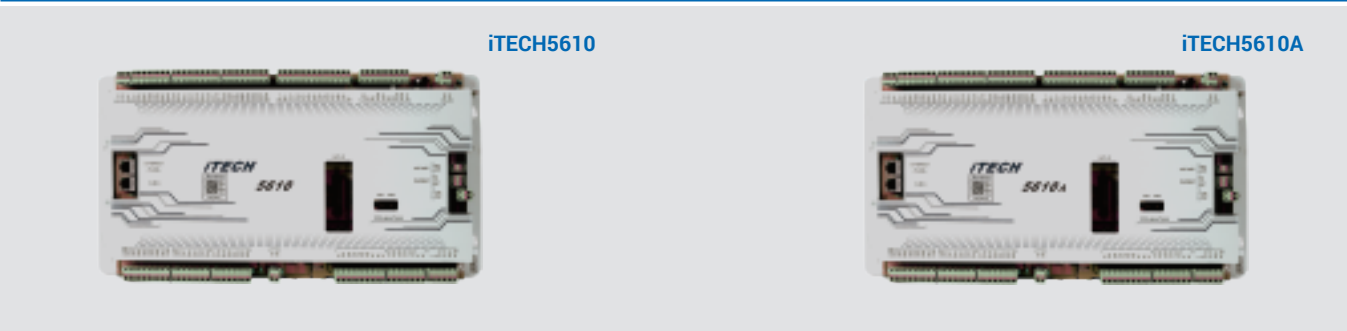
Energy consumption meter (optional): Analyze the power and monitor the energy consumption of devices and products.

One system with one manipulator (optional): Automatic compensation for the mold opening position.

TM PLAS CLOUD (optional): Establish a seamless link between management and production.

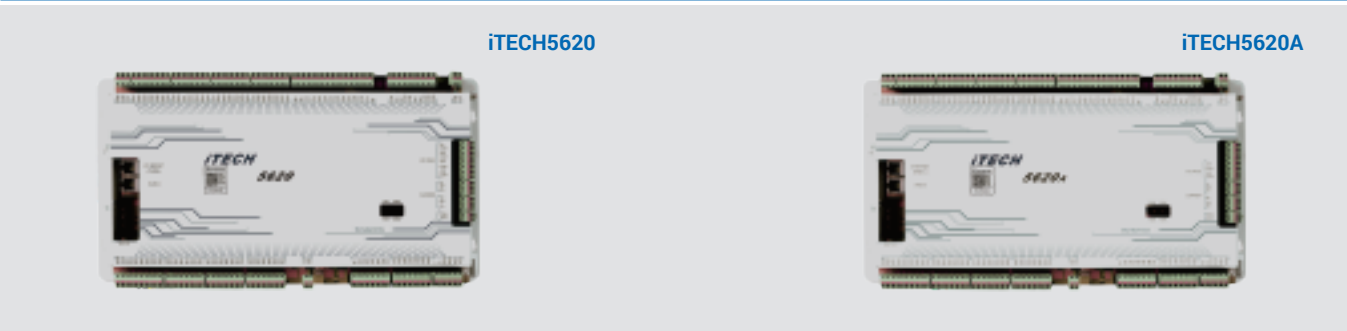
iTECH5610 / iTECH5610A (Full digital communication with servo)

Items	iTECH5610	iTECH5610A
Size H (mm) * W (mm) * D (mm)	226*424*42	226*424*42
DI (Digital Input)	24	24
DO (Digital Output)	28	28
Relay	12 (6 heating+3 motor+3 other)	11 (6 heating+2 motor+3 other)
Temperature Input	7 (6 barrel temperature+1 oil temperature)	7 (6 barrel temperature+1 oil temperature)
AI (Analog Input)	4	4
AO (Analog Output)	3V+1A	1V+1A
IO Extendable (Input + Output)	IO88 (8 DI+8 DO)	IO88 (8 DI+8 DO)
Communication Port	NET, SABUS	NET, SABUS
Power Supply	DC24V	DC24V



iTECH5620 / iTECH5620A (Full digital communication with servo)

Items	iTECH5620	iTECH5620A
Size H (mm) * W (mm) * D (mm)	255*424*44	255*424*44
DI (Digital Input)	32	32
DO (Digital Output)	32	32
Relay	14 (7 heating+3 motor+4 other)	13 (7 heating+2 motor+4 other)
Temperature Input	8 (7 barrel temperature+1 oil temperature)	8 (7 barrel temperature+1 oil temperature)
AI (Analog Input)	4	4
AO (Analog Output)	4V+2A	2V+2A
IO Extendable (Input + Output)	IO88 (8 DI+8 DO)	IO88 (8 DI+8 DO)
Communication Port	NET, SABUS	NET, SABUS
Power Supply	DC24V	DC24V



iTECH5606A (Full digital communication with servo)

Items	Specifications
Size H (mm) * W (mm) * D (mm)	226*344*42
DI (Digital Input)	16
DO (Digital Output)	16
Relay	8 (5 heating+2 motor+1 other)
Temperature Input	6 (5 barrel temperature+1 oil temperature)
AI (Analog Input)	4
AO (Analog Output)	0
IO Extendable (Input + Output)	IO88 (8 DI+8 DO)
Communication Port	NET, SABUS
Power Supply	DC24V



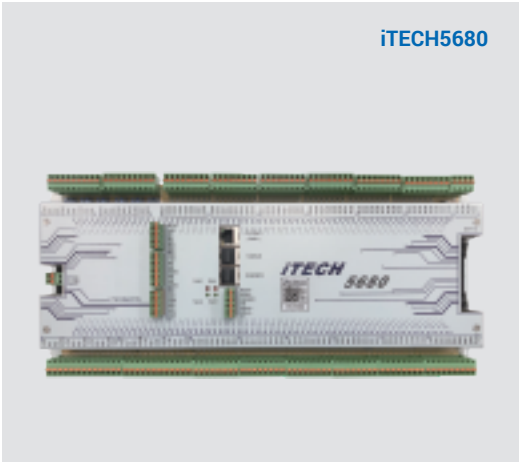
iTECH5630

Items	Specifications
Size H (mm) * W (mm) * D (mm)	174*415*64
DI (Digital Input)	32
DO (Digital Output)	32
Relay	15 (9 heating+2 motor+4 other)
Temperature Input	10 (9 barrel temperature+1 oil temperature), Allows for bus expansion
AI (Analog Input)	6+4 (Motion control), Allows for bus expansion
AO (Analog Output)	6V+1A+4V (Motion control), Allows for bus expansion
IO Extendable (Input + Output)	IO88 (8 DI+8 DO), Allows for bus expansion
Communication Port	NET, SABUS, CAN
Power Supply	DC24V



iTECH5680

Items	Specifications
Size H (mm) * W (mm) * D (mm)	174*410*64
DI (Digital Input)	48
DO (Digital Output)	48
Relay	None, need external connection
Temperature Input	Standard layout of external 12-stage, Allows for bus expansion
AI (Analog Input)	12+4 (Motion control), Allows for bus expansion
AO (Analog Output)	12V+4V (Motion control), Allows for bus expansion
IO Extendable (Input + Output)	IO88 (8 DI+8 DO), Allows for bus expansion
Communication Port	NET, SABUS, CAN
Power Supply	DC24V



AK628S

Items	Specifications
Size	227*424*47
H (mm) * W (mm) * D (mm)	
PB (Digital Input)	24
PC (Digital Output)	24
Relay	11 (5 heating+3 motor+3 other)
Temperature Input	6 (5 barrel temperature+1 oil temperature)
AD (Analog Input)	4
DA (Analog Output)	2 (A) //2 (V) +1 (A)
IO Extendable (Input + Output)	IO88 (8 PB+8 PC)
Communication Port	RS232
Power Supply	DC24V



TECH1S

Items	Specifications
Size	227*424*47
H (mm) * W (mm) * D (mm)	
PB (Digital Input)	24
PC (Digital Output)	28
Relay	12 (6 heating+3 motor+3 other)
Temperature Input	7 (6 barrel temperature+1 oil temperature)
AD (Analog Input)	4
DA (Analog Output)	2 (A) //2 (V) +1 (A)
IO Extendable (Input + Output)	IO88 (8 PB+8 PC)
Communication Port	RS232, NET
Power Supply	DC24V



TECH2S

Items	Specifications
Size	255*424*47
H (mm) * W (mm) * D (mm)	
PB (Digital Input)	32
PC (Digital Output)	32
Relay	16 (9 heating+3 motor+4 other)
Temperature Input	10 (9 barrel temperature+1 oil temperature)
AD (Analog Input)	8
DA (Analog Output)	4 (A) //4 (V)
IO Extendable (Input + Output)	IO88 (8 PB+8 PC)
Communication Port	RS232, NET
Power Supply	DC24V



03 Extension Module
Temperature Control Card



Digital communication



Easy to expand



Temperature self-learning



Display accuracy 0.1



Control accuracy $\leq \pm 1\text{ }^{\circ}\text{C}$

A professional 12-stage temperature control module with a card design of smaller size, which makes it possible to be placed in the junction box of temperature sensors.

RMTP12

Items	Specifications
Size	190*35.5*115
H (mm) * W (mm) * D (mm)	
Temperature Input	12
DO (Digital Output)	12
Communication Port	CAN



RMTP16

Items	Specifications
Size	190*35.5*115
H (mm) * W (mm) * D (mm)	
Temperature Input	16
DO (Digital Output)	16
Communication Port	CAN



iTC_12

Items	Specifications
Size	190*35.5*115
H (mm) * W (mm) * D (mm)	
Temperature Input	12
DO (Digital Output)	12
Communication Port	SABUS



04

Extension Module

Analog Quantity/IO Expansion Card



Digital communication



Easy to expand



Use over long distances



Easy wiring

tmIoT-i201C

Analog Quantity/IO Expansion Card

Items	Specifications
Size H (mm) * W (mm) * D (mm)	190*35.5*115
DI (Digital Input)	8 (DC0V, MAX.5mA)
DO (Digital Output)	8 (DC24V, MAX.2A)
AI (Analog Input)	6
AO (Analog Output)	6
Communication Port	CAN



tmIoT-i201C

iM_SA08

Analog Quantity/IO Expansion Card

Items	Specifications
Size H (mm) * W (mm) * D (mm)	190*35.5*115
DI (Digital Input)	8
DO (Digital Output)	8
AI (Analog Input)	6
AO (Analog Output)	8
Communication Port	SABUS



iM_SA08

tmIoT-i202C

IO Expansion Card

Items	Specifications
Size H (mm) * W (mm) * D (mm)	190*35.5*115
DI (Digital Input)	16 (DC0V, MAX.5mA)
DO (Digital Output)	16 (DC24V, MAX.2A)
Communication Port	CAN



tmIoT-i202C

iM_S08

IO Expansion Card

Items	Specifications
Size H (mm) * W (mm) * D (mm)	190*35.5*115
DI (Digital Input)	8
DO (Digital Output)	8
Communication Port	SABUS



iM_S08

iM_S16

IO Expansion Card

Items	Specifications
Size H (mm) * W (mm) * D (mm)	190*35.5*115
DI (Digital Input)	16
DO (Digital Output)	16
Communication Port	SABUS



iM_S16

05

Extension Module
Analog Quantity/IO Expansion Card



Professional function
extension modules



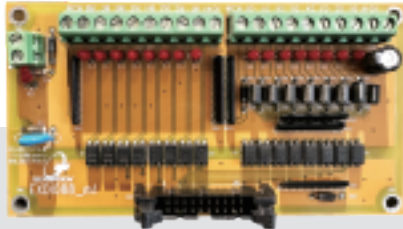
Board - type



Small size

IO88

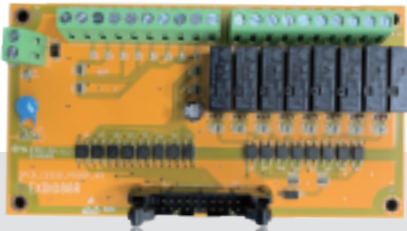
Items	Specifications
Size H (mm) * W (mm) * D (mm)	72*135*28
PB (Digital Input)	8 (DC24V, 5mA)
PC (Digital Output)	8 (DC24V, 2A)



IO88

IO88R

Items	Specifications
Size H (mm) * W (mm) * D (mm)	72*135*28
PB (Digital Input)	8 (DC24V, 5mA)
Relay	8



IO88R

With professional technologies
Offer high-quality system solutions



PART 2

Servo Power System

 Overview

Our independently developed “HYB” hydraulic servo energy-saving system, constituted by servo drivers, servo motors and gear pumps, is a pioneer product leading the plastics industry marching towards energy saving, consumption reduction and green environmental protection.

This system has excellent performance, which can save 40% - 70% energy compared to traditional systems, and is with much faster response and better control compared to traditional systems.

 Advantages

The perfect combination of servo systems and Techmation controllers provides different control solutions to satisfy the different needs of rubber and plastics machinery, raising the working efficiency, reducing the energy consumption, improving the operational accuracy and enhancing the running stability, which makes the maintenance and performance tuning of equipment easier and more convenient. All these are our real competitive advantages in markets and applications.

01

Servo Driver

DE688 (Air Cooling Series)

Bus-Type Servo Drive

With their air-cooling structure, the DE688 series servo drives are able to meet the demands of manufacturing under a variety of environmental circumstances. It allows for digital communication with the host computer under different communication protocols, including EtherNET / CAN_BUS / SABUS, to accomplish a diverse range of motion control tasks.

Model	Input Voltage/V	Output power/kW	Rated current/A
DE688K1F3_XXXX	AC 3PH 380~480V (-15%~10%)	11	25
DE688K5F3_XXXX		15	32
DE688K8F3_XXXX		18.5	37
DE688J2F3_XXXX		22	45
DE688I0F3_XXXX		30	60
DE688I7F3_XXXX		37	75
DE688H5F3_XXXX		45	91
DE688G5F3_XXXX		55	112
DE688E5F3_XXXX		75	150
DE688C0F3_XXXX		90	176
DE688A1F3_XXXX		110	210
DE688A3F3_XXXX		132	253
DE688A6F3_XXXX		160	304

Note: Regarding the 220V specification in more detail, please contact us.

Specifications		
Power Input	Input Voltage (V)	AC 3PH 380~480V (-15%~10%, 380V Driver) AC 3PH 220V (-10%~20%, 220V Driver)
	Incoming Frequency (Hz)	50Hz / 60Hz
Power Output	Output Voltage (V)	0~480V
	Output Power (kW)	Please refer to "Rated Value"
	Output Current (A)	
Control Performance	Control Mode	Closed-loop vector control
	Motor Type	AC permanent-magnet synchronous motor
	Control Mode	Pressure closed-loop mode, speed mode
	Maximum Output Frequency	300Hz
	Instruction Setting	CHAB: Analog quantity, internally specified, EtherNET, CAN_BUS THBB: SABUS
	Overcurrent Capability	Up to 2.0 times
	Overload Capability	At 4KHz Modulation mode: 120% rated current for 30 minutes. 150% rated current for 90 seconds. 180% rated current for 8 seconds. 200% rated current for 1 second.
Peripheral Interface	Analog Input	CHAB: 3, DC0~10V THBB: 1, DC0~10V
	Analog Output	CHAB: 2, DC0~10V
	Digital Switch Input	CHAB: 6 THBB: 2
	Digital Switch Output	4
	Encoder Serial Interface	Resolver
Communication	CHAB: EtherNET; CAN_BUS THBB: EtherNET; SABUS	
Protective Function	Overcurrent, overvoltage, undervoltage, over temperature, overload, short-circuit, etc	
Other	Install Method	Support wall mount
	Operating Ambient Temperature	-10°C~50°C (Derate when above 40°C)
	Protection Class	IP20
	Type of Cooling	Forced air
	Braking Unit	≤90kW Internally installed, >90kW Externally installed
	Braking Resistance	Optional, externally installed
	Reactor	30~55kW built-in DC reactor, Other alternatives: externally installed



DE688 (Liquid Cooling Series)

Universal Servo Drive

With their liquid-cooling structure, the DE688 series servo drives are able to meet the demands of manufacturing under a variety of environmental circumstances. It allows for digital communication with the host computer under different communication protocols, including EtherNET / CAN_BUS, to accomplish a diverse range of motion control tasks.

Model	Input Voltage/V	Output power/kW	Rated current/A
DE688I0W3_XXXX	AC 3PH 380~480V (-15%~10%)	30	60
DE688I7W3_XXXX		37	75
DE688H5W3_XXXX		45	91
DE688G5W3_XXXX		55	112
DE688E5W3_XXXX		75	150
DE688C0W3_XXXX		90	176
DE688A1W3_XXXX		110	210
DE688A3W3_XXXX		132	253
DE688A6W3_XXXX		160	304

Note: Regarding the 220V specification in more detail, please contact us.

Specifications		
Power Input	Input Voltage (V)	AC 3PH 380~480V (-15%~10%, 380V Driver) AC 3PH 220V (-10%~20%, 220V Driver)
	Incoming Frequency (Hz)	50Hz / 60Hz
Power Output	Output Voltage (V)	0~480V
	Output Power (kW)	Please refer to "Rated Value"
	Output Current (A)	
Control Performance	Control Mode	Closed-loop vector control
	Motor Type	AC permanent-magnet synchronous motor
	Control Mode	Pressure closed-loop mode, speed mode
	Maximum Output Frequency	300Hz
	Instruction Setting	Analog quantity, internally specified, EtherNET, CAN_BUS
	Overcurrent Capability	Up to 2.0 times
	Overload Capability	At 4KHz Modulation mode: 120% rated current for 30 minutes. 150% rated current for 90 seconds. 180% rated current for 8 seconds. 200% rated current for 1 second.
Peripheral Interface	Analog Input	3, DC0~10V
	Digital Switch Input	6
	Digital Switch Output	4
	Encoder Serial Interface	Resolver
Communication	EtherNET; CAN_BUS	
Protective Function	Overcurrent, overvoltage, undervoltage, over temperature, overload, short-circuit, etc	
Other	Install Method	Through-wall installation
	Operating Ambient Temperature	-10°C~50°C (Derate when above 40°C)
	Protection Class	IP20
	Type of Cooling	Water cooling or oil cooling
	Braking Unit	30~90kW Internally installed. 110~160kW Externally installed
	Braking Resistance	Optional, internally installed
	Reactor	Optional, externally installed



01

Servo Driver

ID680 Series

Universal Servo Drive

LED operation panels come with the ID680 series servo drives, which enable easier commissioning and more effective maintenance.

Model	Input Voltage/V	Output power/kW	Rated current/A
ID680K1F3_XXXX	AC 3PH 380~480V (-15%~10%)	11	25
ID680K5F3_XXXX		15	32
ID680K8F3_XXXX		18.5	37
ID680J2F3_XXXX		22	45
ID680I0F3_XXXX		30	60
ID680I7F3_XXXX		37	75
ID680H5F3_XXXX		45	91
ID680G5F3_XXXX		55	112
ID680E5F3_XXXX		75	150
ID680C0F3_XXXX		90	176
ID680A1F3_XXXX		110	210
ID680A3F3_XXXX		132	253
ID680A6F3_XXXX		160	304

Note: Regarding the 220V specification in more detail, please contact us.

Specifications		
Power Input	Input Voltage (V)	AC 3PH 380~480V (-15%~10%, 380V Driver) AC 3PH 220V (-10%~20%, 220V Driver)
	Incoming Frequency (Hz)	50Hz / 60Hz
Power Output	Output Voltage (V)	0~480V
	Output Power (kW) Output Current (A)	Please refer to "Rated Value"
Control Performance	Control Mode	Closed-loop vector control
	Motor Type	AC permanent-magnet synchronous motor
	Control Mode	Pressure closed-loop mode, speed mode
	Maximum Output Frequency	300Hz
	Instruction Setting	Analog Setting; NET; CAN; SABUS
	Overcurrent Capabilit	Up to 2.0 times
	Overload Capability	At 4KHz Modulation mode: 120% rated current for 30 minutes. 150% rated current for 90 seconds. 180% rated current for 8 seconds. 200% rated current for 1 second.
Peripheral Interface	Analog Input	3, DC0~10V
	Analog Output	2, DC0~10V
	Digital Switch Input	6
	Digital Switch Output	4
Communication	Encoder Serial Interface	Resolver
	EtherNET; CAN_BUS; RS485 (Optional)	
Protective Function	Overcurrent, overvoltage, undervoltage, over temperature, overload, short-circuit, etc	
Other	Install Method	Support wall mount
	Operating Ambient Temperature	-10°C~50°C (Derate when above 40°C)
	Protection Class	IP20
	Type of Cooling	Forced air
	Braking Unit	≤90kW Internally installed, >90kW Externally installed
	Braking Resistance	Optional, externally installed
	Reactor	30~55kW built-in DC reactor, Other alternatives: externally installed



02

Electro-hydraulic Servo Integrated Machine

Our electro-hydraulic servo integrated machine is suitable for various models such as rubber machines, hydraulic presses, bending machines, vertical injection molding machines, and hydraulic units.



Configuration
140Bar / 160Bar
175Bar / 210Bar

The machine case has a superior heat dissipation effect since it is extruded and produced in a single piece.



01

High protection level for working in harsh environments.



03

Highly cost-effective with more power saving.



02

The fast connector provides easy installation and plug-and-play functionality.



04

Low noise and low oil temperature.

Model	Rated Speed n _N (rpm)	Rated Torque T _N (Nm)	Torque Constant K _T (Nm/A)	Output Power P _N (kW)	Rated Current I _N (A)	Input Voltage EMP(V)
1ED_iDKL4XXXX	1800	17	2.95	4	8	AC 3PH 380~480V (-10%~10%)
1ED_iDKL5XXXX	1800	27	2.97	5.5	13	
1ED_iDKL7XXXX	1800	37	2.95	7.5	17	
1ED_iDKL9XXXX	1800	46	3.00	9	19	
1ED_iDKK1XXXX	1800	52	3.22	11	25	
1ED_iDKK5XXXX	1800	77	3.15	15	32	
1ED_iDKK8XXXX	1800	102	3.16	18.5	37	
1ED_iDKJ2XXXX	1800	121	3.13	22	45	

Note: Regarding the 220V specification in more detail, please contact us.

03 Servo Motor

AC permanent magnet synchronous servo motors

It is the new generation of high-performance products independently developed by Techmation

This product adopts a new magnetic circuit design. Compared with traditional servo motors, it has higher power density, higher torque density and stronger field weakening ability.

It can be widely used in various hydraulic equipment or systems, and is especially suitable for applications with ultra-high response and short-term overload.

For assistance with motors that do not meet the aforementioned standards, please get in touch with one of our technical support specialists!



Rated Power
5kW-66kW



Rated Torque
27Nm-350Nm



Adapt to General Oil Pumps
8cc-160cc

Model	Rated Speed n_n (rpm)	Rated Torque T_n (Nm)	Output Power P_n (kW)	Rated Current I_n (A)	Torque Constant K_t (Nm/A)
665KG2BA	1800	27	5	8.5	2.97
665KG3BA	1800	37	7	12	2.95
665KG7BA	1800	46	9	15	3.00
665K05BE	1500	52	8	15	3.49
665K05BB	2000	51	11	18	2.86
665K08BE	1500	79	12	22.5	3.53
665K08BB	2000	75	16	27	2.94
665K10BE	1500	102	16	29	3.51
665K10BB	2000	98	21	36	2.85
665K13BE	1500	121	19	34	3.51
665K13BB	2000	119	25	42	2.90
665K16BE	1500	148	23	41	3.68
665K16BB	2000	145	30	52	2.74
665K20BE	1500	192	30	55	3.51
665K20BB	2000	190	40	69	2.86
665K23BA	1800	203	38	70	3.04
665K28BE	1500	251	39	70	3.74
665K28BA	1800	251	47	87	3.04
665H33BA	1800	300	57	105	2.80
665H38BA	1800	350	66	123	2.80

Note: Regarding the 220V specification in more detail, please contact us.

20%

Improved by more than 20%
Performance improved by more than 20% compared to traditional hydraulic servo systems.

1.5 times

Over 1.5 times
Maximum speed can be over 1.5 times of the rated speed.

30%

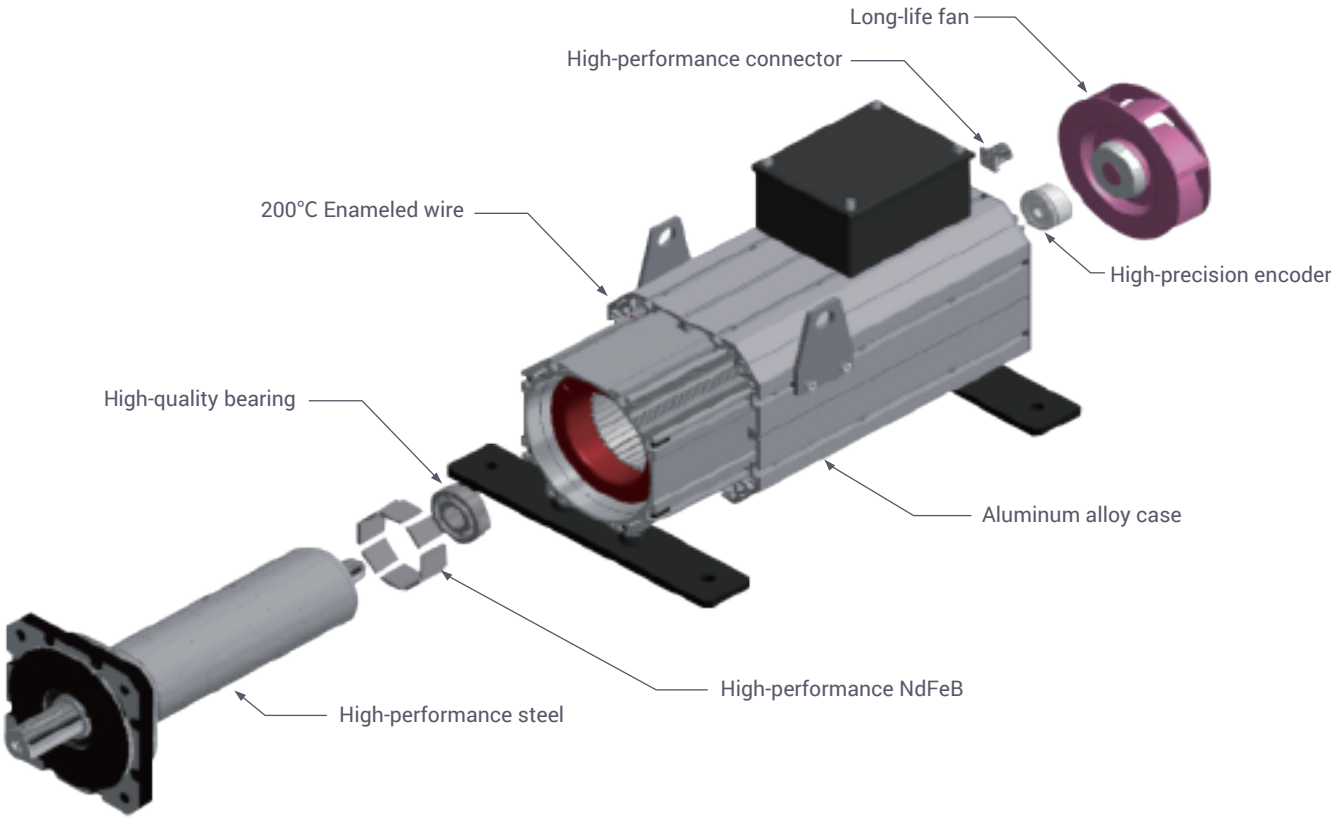
Increase by 30%
Low inertia, dynamic response increased by 30%.

Stronger

Low noise
Working with dedicated drives for better control performance.

High overload capacity
S6 overload running time increased by more than 30%.

Embedded magnetic circuit
Embedded magnetic circuit, stronger anti-demagnetization ability.



04

Oil Pump

ECKERLE Series

Gear Pumps

The ECKERLE series gear pumps use the latest EIPC technology, allowing them to endure high pressures with minimal pulsation and consistent pressure. This guarantees smooth mechanical functionality and extended durability.



High pressure

Low pulsation



Axial and radial

pressure compensation



Long service

life

Series	EIPS2		EIPC3				EIPC5		EIPC6	
Specification	016	025	032	040	050	063	080	100	125	160
Displacement (cm³/rev)	15.8	25.2	32.1	40.1	50.3	63.1	80.4	100.5	125.7	160.1
Continuous Working Pressure (Bar)	250	250	250	250	250	180	250	250	250	250
Clearance Gap Pressure (Bar)	320	280	320	300	280	210	270	270	280	280
Peak Pressure (Bar)	350	300	350	325	300	210	280	280	300	300
Maximum Speed (rpm)	4000	3600	3700	3600	3600	2400	3000	3000	2800	2200
Operating Medium	HL-HLP DIN 51 524 part 1/2									

Spline

Flat key



SETTIMA Series

Screw Pumps

The SETTIMA series screw pumps are constructed from aluminum alloy, which provides several benefits, such as being lightweight, resistant to corrosion, producing little noise, and reducing pulsation. Being compatible with various gear pump sizes, they also feature good heat dissipation and a small mechanical inertia.



Low pulsation

Low noise



Low mechanical

inertia



High volumetric

efficiency

Series	GR38		GR47			GR55			GR63
Specification	018	025	032	040	050	063	075	090	100
Displacement (cm³/rev)	17.9	25.2	32.2	40.5	50.3	63.5	75.0	90.2	100
Continuous Working Pressure (Bar)	175	175	175	175	175	175	175	175	160
Clearance Gap Pressure (Bar)	260	210	270	250	250	260	250	240	200
Peak Pressure (Bar)	280	220	280	270	270	280	270	260	210
Maximum Speed (rpm)	2300	2300	2300	2300	2300	2200	2200	2200	2100
Operating Medium	HL-HLP DIN 51 524 part 2/3								

Spline

Flat key



05 Servo Control System for Electric Rotary Table

The electric servo control system has the advantages over the hydraulic control system in terms of accuracy, stability, and ease of use.

Compared to conventional hydraulic rotary tables, there are additional improvements in terms of control accuracy, response frequency, and other aspects as well.

It functions well to provide the rotary table with fast, stable, and accurate control.



Position Memory

Power-off memory for the mechanical zero position eliminates the need for frequent zeroing operations.

Fast & Stable Positioning

S-shaped motion curve planning to achieve stable and rapid rotary table positioning.

Convenient User-friendly

The rotary table is simple to operate and convenient to control with selectable IO, AD, digital communication, and other control techniques for both forward and backward rotation.

High Efficiency, Low Noise, Minimal Backlash

Using high-precision planetary reducers results in minimum backlash, low noise, and excellent efficiency.

Multi-Turn Absolute Encoder

The use of 23-bit high-precision multi-turn absolute encoders considerably increases the positioning accuracy and repeatability of rotary tables.

Multi-Station Setup

Supports multi-station setups to satisfy a variety of process needs and allows for position adjustments to correct for machine inaccuracies.

Minimize Machine Deterioration

Switch to protective torque after achieving the desired position to reduce machine wear caused by excessive force.

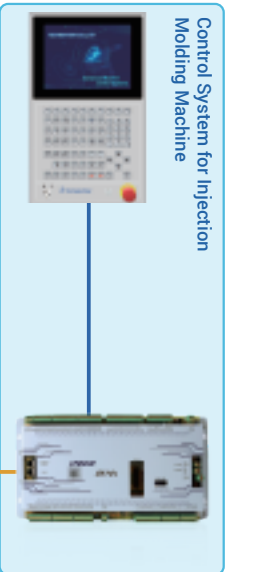
Model	75DSL4KS1F11	75SDL5KG2F14	75SDL7KG3F14	75SDL7KG3F18	75SDK1KG4F18	75SDK1KG4F18
Disk Size/mm	D≤1000	1000 < D≤1200	1200 < D≤1400	1400 < D≤1600	1600 < D≤1800	1800 < D≤2000
Drive Power/kW	4	5.5	7.5	7.5	11	11
Motor Power/kW	2	4.2	4.3	4.3	7.5	7.5
Motor Rated Torque/Nm	9.5	16	21	21	35	35
Motor Maximum Torque/Nm	26	35	56	56	75	75
Reducer Speed Ratio	115 (1:7)	142 (1:7)	142 (1:7)	180 (1:16)	180 (1:16)	180 (1:16)
Maximum Output Torque of Reducer/Nm	182	245	392	896	1200	1200
Gear Reduction Ratio (Recommended Gear Ratio)	≥8	≥10	≥10	≥10	≥12	≥16
0-180 Degrees of Operating Time/s	1.5-1.8	1.8-2.2	2.2-2.6	2.5-3	3-3.5	3.5-3.8

06 Electric Plasticizing Solutions

- 01 Raise the working efficiency and shorten the molding cycle.
- 02 High accuracy with small rotational speed fluctuations.
- 03 Energy saving ≥30% compared to the hydraulic motor system.
- 04 Easy maintenance and replacement.
- 05 Long service life; capable of handling a wide range of industrial materials.

30%
Energy conservation

5%
Noise reduction



Belt & Driven Pulley

Screw Diameter (mm)	Planned Speed of Screw (rpm)	Planned Torque of Screw (Nm)	Number of Teeth on Driving Gear	Number of Teeth on Driven Gear	Speed Ratio of Belt	Motor Model	Driver	Types of Applicable Machines
35	300	405	26	120	4.6	665K05BE	7.5kW	120T
40	300	465	26	120	4.6	665K08BE	11kW	130T
45	300	640	26	120	4.6	665K10BE	15kW	180T
50	300	850	30	144	4.8	665K13BE	18.5kW	250T
55	300	1099	30	144	4.8	665K16BE	22kW	280T
60	300	1391	30	144	4.8	665K20BE	30kW	320T
65	250	1726	26	102	3.92	665H39FF	37kW	350T
70	250	2108	26	102	3.92	665H45FF	45kW	380T
75	250	2540	26	102	3.92	665H52FF	55kW	450T

Reduction Gearbox

Screw Diameter (mm)	Planned Speed of Screw (rpm)	Planned Torque of Screw (Nm)	Reduction Ratio of Reducer	Reducer Model	Hydraulic Motor Model	Motor Model	Driver	Types of Applicable Machines
75	180	2540	10.5	M1110-10.5	M11	665H25WA	37kW	450T
80	180	3024	10.5	M1120-10.5	M16	665H25WA	45kW	500T
85	180	3561	10.5	M1120-10.5	M16	665H32WA	55kW	650T
90	150	4156	12.5	M1130-12.5	M31	665H32WA	55kW	700T
95	150	4809	12.5	M1130-12.5	M31	665H39WA	55kW	900T
100	130	5523	12.5	M1140-12.5	F50	665H45WA	75kW	980T
110	130	7144	12.5	M1140-12.5	F50	665H53WA	90kW	1080T
120	100	9036	16	M1150-16	F70	665H53WA	90kW	1280T
130	100	11216	16	M1150-16	F70	665H70WA	110kW	1380T
140	100	13701	16	M1150-16	F70	665H80WA	110kW	1500T
150	80	16506	22.5	M1160-22.5	F100	665H80WA	110kW	1800T
160	80	19648	22.5	M1160-22.5	F100	665H80WA	132kW	2000T
180	80	22874	22.5	M1160-22.5	F100	665H97WA	160kW	2200T

01 Machine Picker System

SANDAL II : Foundation of Next Generation of Industry 4.0

SANDAL II is the foundation of our technology platform, which is the integration of control systems, servo drivers, servo motors, oil pumps (oil-electric hybrid systems), sensors, precision mechanical components, communication technology, and related control software. It currently- offers two options: oil-electric hybrid solutions and all-electric solutions. With a brand new hardware design, smart interactive user interface and SA Communication System, it shows outstanding performance in high response, high precision and high repeatability which takes the lead in the domestic and foreign markets of similar products. The "Machine Picker System" solution based on SANDAL II perfectly integrates injectionmolding machinery with vertical manipulators, preparing for the future application of factory automation to bring the transformation and upgrading of the plastics processing industry.

Injection Force Requirement

Standard Unit	Injection Speed	83KN	108KN	135KN	160KN	203KN	251KN	318KN	393KN	475KN	509KN	597KN
TM-100	200mm/s	○										
TM-130			○									
TM-180				○								
TM-250					○							
TM-330						○						
TM-450							○					
TM-680								○				
TM-950									○			
TM-1200										○		
TM-1400											○	
TM-1700												○
TM-100H	350mm/s	○										
TM-130H			○									
TM-180H				○								
TM-250H					○							
TM-330H						○						
TM-450H							○					
TM-680H								○				
TM-950H									○			
TM-1200H										○		
TM-1400H											○	
TM-1700H												○

PART 3

High-end Integration System

All-electric & Hybrid Solution-SANDAL II

Overview

Our new SANDAL II solution fully integrates with the manipulator and the auxiliary equipment under standard communication protocols. On the basis of our SA Communication System and working with our TM Edge Server and TM PLAS CLOUD, the solution perfectly builds a structure of “One Machine with One Picker in One System” , and also lays a good foundation for the future Industry 4.0 intelligent manufacturing.

Advantages

Our “Machine Picker System” , adopting our independently developed “SA Communication System” , perfectly integrates with our high-end control system of plastics machinery (SANDAL II), high-end manipulator control system (THUJA), and other auxiliary equipment. It also carries our latest TM Edge Server, and through the management software, clients are able to do equipment management, process management, real-time monitoring, process tracing and etc.. It is an integrated solution for digital factories.

The solution is highly cost effective with easy implementation, good reliability and convenient management, contributing to the digitalization of the plastics processing industry.

01 Machine Picker System

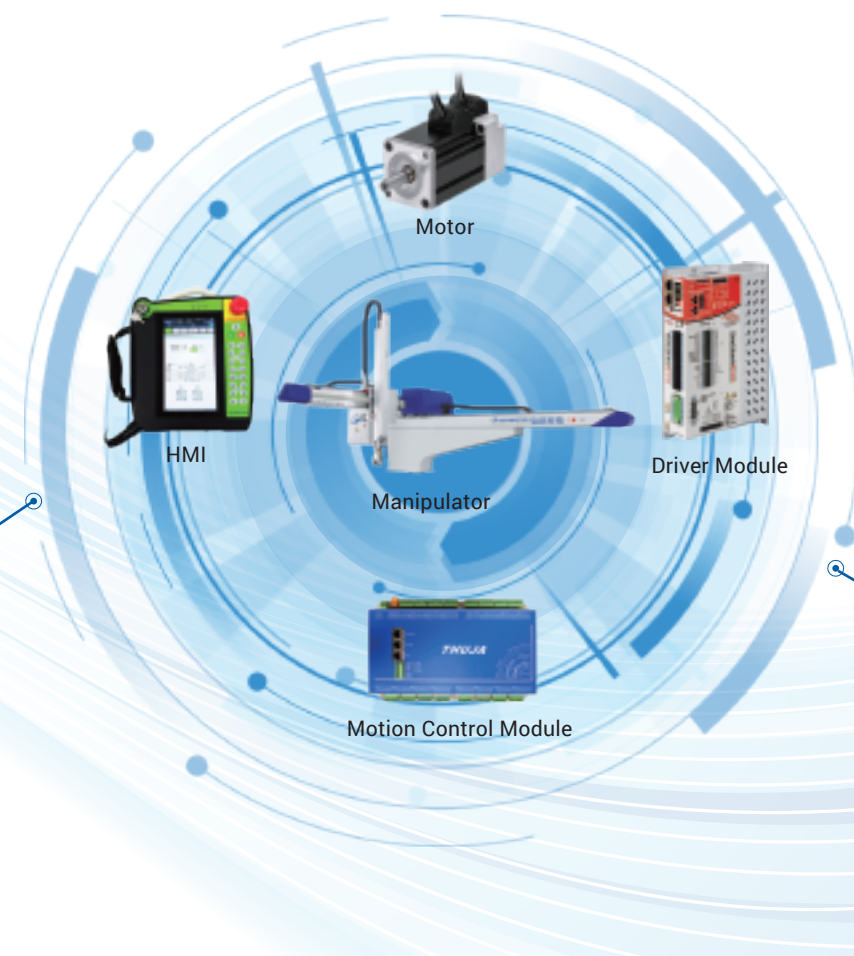


High Response

High Repeatability

High Precision

High Integration



02 HMI

Q12A All-in-One (no operation box)

Items	Specifications
Size H (mm) * W (mm) * D (mm)	600*335*52.5
CPU Frequency	800MHz
LCD Display	12.1" (Touchscreen optional)
LCD Resolution	800*600
Baud Rate	10/100Mbps
Operation Temperature	-10°C ~50°C
Storage Temperature/RH	-20°C ~85°C / 85%RH
Communication Port	RS232, NET
Memory Card Port	USB



Q15AT Aluminum Casing

Items	Specifications
Size H (mm) * W (mm) * D (mm)	426*368*52.7
CPU Frequency	1GHZ
LCD Display	15.0" (Touchscreen)
LCD Resolution	1024*768
Baud Rate	10/100Mbps
Operation Temperature	-10°C ~50°C
Storage Temperature/RH	-20°C ~85°C / 85%RH
Communication Port	NET
Memory Card Port	USB



Q15AT All-in-One (no operation box)

Items	Specifications
Size H (mm) * W (mm) * D (mm)	523*276*56
CPU Frequency	1GHZ
LCD Display	15.0" (Touchscreen)
LCD Resolution	1024*768
Baud Rate	10/100Mbps
Operation Temperature	-10°C ~50°C
Storage Temperature/RH	-20°C ~85°C / 85%RH
Communication Port	RS232, NET
Memory Card Port	USB



03 Controller

SANDAL II Series

Host controllers designed specifically for all-electric and hybrid machines.

The host controller utilized in Techmation's all-electric and hybrid system solutions offers three communication modes: NET, SABUS, and CAN. It effectively improves operating efficiency when used in paired with Techmation's HMI. Its dual CPU control allows for the expansion of I/O groups while maintaining excellent control accuracy.

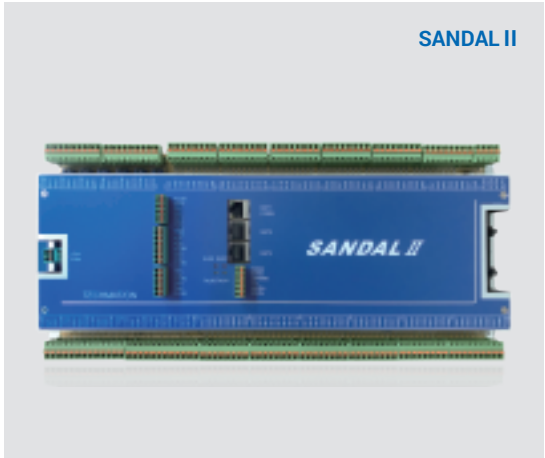
SANDAL II (ECO)

Items	Specifications
Size H (mm) * W (mm) * D (mm)	174*415*64
DI (Digital Input)	32
DO (Digital Output)	32
Relay	15 (9 heating+2 motor+4 other)
Temperature Input	10 (9 barrel temperature+1 oil temperature), Allows for bus expansion
AI (Analog Input)	6+4 (Motion control), Allows for bus expansion
AO (Analog Output)	6V+1A+4V (Motion control), Allows for bus expansion
IO Extendable (Input + Output)	IO88 (8 DI+8 DO), Allows for bus expansion
Communication Port	NET, SABUS, CAN
Power Supply	DC24V



SANDAL II

Items	Specifications
Size H (mm) * W (mm) * D (mm)	174*410*64
DI (Digital Input)	48
DO (Digital Output)	48
Relay	None, need external connection
Temperature Input	Standard layout of external 12-segmentand it is expandable
AI (Analog Input)	12+4 (Motion control), Allows for bus expansion
AO (Analog Output)	6V+4V (Motion control), Allows for bus expansion
IO Extendable (Input + Output)	IO88 (8 DI+8 DO), Allows for bus expansion
Communication Port	NET, SABUS, CAN
Power Supply	DC24V



04 Motion Control Card

Position closed-loop control and pressure closed loop control, various control modes and various communication interfaces.

Support Multiple Control Modes



Position control (T-type and S-type), pressure control.

Integrated Software Modules



Integrated software modules for handling complex molding process control.

Convenient User-friendly



Compatible with SABUS high-speed industrial bus.

Position Memory



Power-off memory for the mechanical zero position eliminates the need for frequent zeroing operations.

Card Design



Small dimensions, higher space utilization.

Extremely Easy Installation



Extremely easy installation.

Advantages

- 01

Digital communication with drivers/single-axis servos.
- 02

Accurate position control of injection axis, pressure closed-loop control.
- 03

Accurate stop position control of hydraulic clamping.
- 04

Closed-loop control of the speed of plasticizing axis.
- 05

Accurate positioning control of the mold opening and clamping, ejection and rotary table.
- 06

Closed-loop control of hydraulic system pressure.

iMC-A16

tems	A16
Size	190*35.5*115
H (mm) * W (mm) * D (mm)	
CPU Frequency	200MHZ
PB (Digital Input)	None
PC (Digital Output)	None
AD (Analog Input)	±10V*4
DA (Analog Output)	±10V*4
Communication Port	SABUS, NET



05 Servo Drive System

iDriveCombi Multiple drives share common DC bus.

Flexible and Compact | Complete Specifications | Efficient and Energy-saving | Safe and Reliable | Easy Operation | User-Friendly UI | Control Stability | Flexible Modes | Multiple Functions

It is dedicated to the SANDAL II solution, integrating with the manipulator control system and auxiliary equipment, which simplifies and modularizes the entire system and forms a production unit centered on the injection molding machine.

Safe and Reliable with Stable Control



STO and Power Fail Safeguard.
Complying with the standards for CE certification.

Independent Property Rights, Reliable After-Sales Service



Independent property rights of Techmation, which offer more dependable maintenance services.

Compact and Adaptable with a Variety of Functions



Split installation of the rectifier unit and inverter unit , flexible configurations of inverter unit.

User-Friendly UI, Simple Operation



SA-BUS full digital communication, supporting maximum 250us.

Superior control precision and powerful interference resistance

Highly Energy-Efficient , CompleteSets of Specifications



Innovative design that offers enhanced energy efficiency, cost-effectiveness, compact installation dimensions, and great performance.



05 Servo Drive System

Rectifying Unit

Model	Input voltage/V	Output power/kW	Rated current/A	Maximum current /A
1DAM1_B337S00D0B_FBXX	AC 3PH 380V	37	75	150
1DAM1_B345S00D0B_FBXX		45	90	180
1DAM1_B375S00D0B_FBXX		75	150	300
1DAM1_B390S00D0B_FBXX		90	180	400

* Note: This table provides the corresponding data of power and current. The product model is coded using input voltage AC380V as an example. If the input voltage is AC480V, the product model can be coded separately according to the coding principles.

Inverter Unit

Model	Input voltage/V	Output power/kW	Rated current/A	Maximum current /A
1DAM1_V507MR1XXX_FBXX	DC 380V~750V	7.5	15	28
1DAM1_V511MR1XXX_FBXX		11	22	40
1DAM1_V515MR1XXX_FBXX		15	30	54
1DAM1_V518MR1XXX_FBXX		18.5	37	67
1DAM1_V522MR1XXX_FBXX		22	50	90
1DAM1_V530MR1XXX_FBXX		30	60	108
1DAM1_V537MR1XXX_FBXX		37	75	135
1DAM1_V545MR1XXX_FBXX		45	90	162
1DAM1_V555MR1XXX_FBXX		55	110	198
1DAM1_V560HR1XXX_FBXX		60H	120	300
1DAM1_V575HR1XXX_FBXX		75H	150	380

* Note: This table provides the corresponding data of power and current. The product model is coded using encoder R1 as an example. For other specifications, the product model can be coded separately according to the coding principles.

The foundation for next generation of future industry 4.0 intelligent manufacturing.

Specifcations		
Basic Parameters	Input Voltage (V)	Rectifying Unit: AC 3PH 480V, 380V and 220V; fluctuation range ±10%
		Inverter Unit: 537VDC~679VDC
	Rated Frequency (Hz)	50Hz/60Hz, fluctuation range ±5%
	Carrier Frequency (Hz)	1k~16k Hz
	Drive Specifcation	Rectifying 37kW, 45kW, 75kW, 90kW (3PH 480V, 3PH 380V) Inverter 1.8 times overload: 7.5kW, 11kW, 22kW, 30kW, 37kW, 45kW, 55kW, 75kW (AC 3PH 480V, AC 3PH 380V) 2.5 times overload: 60H, 75H (AC 3PH 480V, AC 3PH 380V)
	Motor Type & Control Mode	Permanent magnetic synchronous motor: servo control (position, speed, torque) Three-phase asynchronous motor: vector control
	Speed Control Accuracy	±0.01%
	Torque Response	< 1ms
	Torque Control Accuracy	±1%
	Overload Capability	Inverter Unit 1.8 times overload driver: 1.5 times 30s, 1.8 times 2s. 2.5 times overload driver: 2.5 times 1s.
	Acceleration and deceleration curve	Multiple planning methods
	Built-in PID	Adaptive PID algorithm, convenient for closed-loop process control.
	Protection Class	IP20
Functional Parameters	Type of Cooling	Forced air
	Communicating	SABUS 250us Communication cycle, low latency with good synchronization
Functional Parameters	Hardware Protection	RST phase loss alarm RLY fault alarm Total output power monitoring and protection Temperature protection Undervoltage and overvoltage protection of bus voltage Power fail safeguard IGBT short-circuit protection Output over load protection Output short-circuit protection Fast acting fuse, short-circuit protection for bus

06

Servo Motor

Torque ripples within 1%, offering high control precision.



Low inertia, low noise, and high dynamic response.



Protection Class: Air Cooling-IP54 No fan-IP65



Low temperature rise, minimum loss, high energy conservation, and efficiency.



Excellent overload capability and high power density.



Model	Rated speed n _N (rpm)	Rated torque T _N (Nm)	Rated power P _N (kW)	Rated current I _N (A)	Torque constant K _T (Nm/A)	Moment of Inertia J(10 ⁴ kgm ²)	Cooling A (No cooling) F (Forced air)	Brake ○ (No) ● (Yes)	Mouth size mm
665KG3AB	2000	21	4.3	10.5	2.21	30	A	●	130
665K08AB	2000	46	9.6	16	2.94	83	A	●	180
665K08BB	2000	73	15	29	2.68	83	F	○	
665K08BE	1500	79	12	22.5	3.53	83	F	○	
665K10AB	2000	55	11.5	20	2.85	107	A	●	
665K10BB	2000	96	20	40	2.5	107	F	○	
665K10BE	1500	102	16	29	3.51	107	F	○	
665K13AB	2000	62	13	22	2.9	130	A	●	
665K13BB	2000	117	25	45	2.68	130	F	○	
665K13BE	1500	121	19	34	3.51	130	F	○	
665K16AB	2000	76	15.9	25	2.68	154	A	●	
665K16BB	2000	141	30	54	2.68	154	F	○	
665K16BE	1500	148	23	41	3.68	154	F	○	
665K20AB	2000	88	18.4	33	2.92	202	A	●	
665K20BB	2000	183	38	76	2.5	202	F	○	
665K20BE	1500	192	30	55	3.51	202	F	○	
665H28FB	2000	250	52.4	108	2.56	318	F	○	
665H33FB	2000	300	62.8	130	2.59	374	F	○	
665H38FB	2000	350	73.3	151	2.61	430	F	○	
665H46FB	2000	400	83.8	172	2.51	486	F	○	

“●” Indicates the braking function that is optional.

07

Mechanical Transimission System

It is specifically designed for injection molding machines that require precise positioning and rigidity. In addition, it is capable of high-speed injection, allowing injection molding devices to be used in industries where high speed, high pressure, and high precision are required.



Standardized design



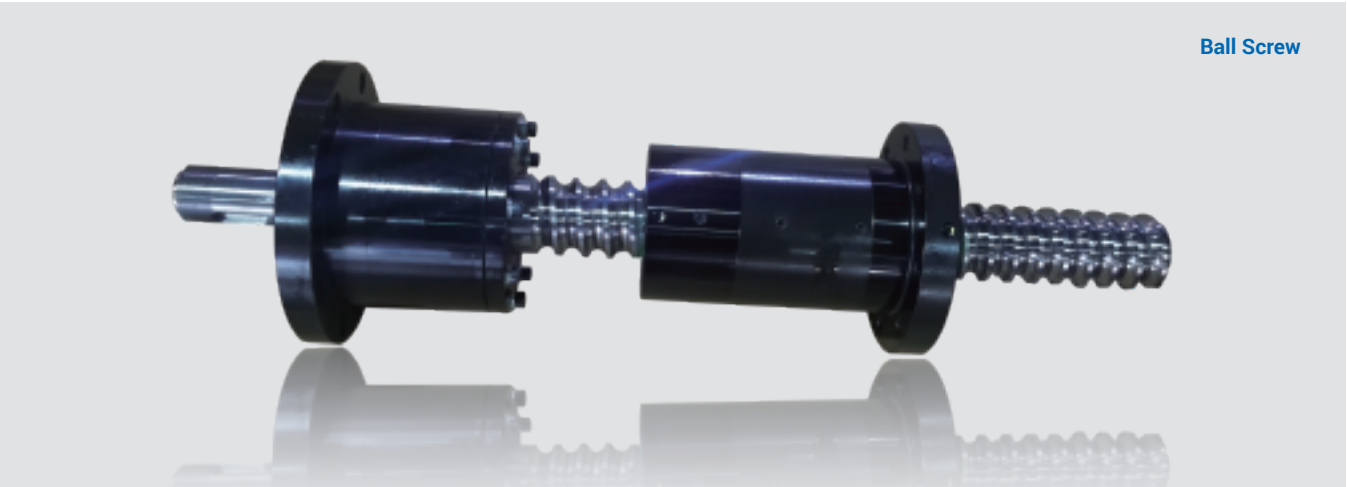
Precision grade C7

Specifications

Nominal diameter for injection axis
50 / 63 / 80 / 100

Nominal diameter for mold opening axis
50 / 63

Model	Screw diameter / mm	Leads / mm	Efective Stroke / mm	Application Field
602_I1BS05020120687SPX_X	50	20	180	Injection Axis
602_I1BS06320150779SPX_X	63	20	240	
602_I1BS08020150938SPX_X	80	20	250	
602_I1BS08025190997SPX_X	80	25	250	
602_I1BS10025191110SPX_X	100	25	280	
602_T1BS05040120815SPX_X	50	40	360	Clamp Axis
602_T1BS06340150995PX_X	63	40	490	



08 Load Sensor

The internal pressure of the injection molding process can be directly measured by our load cell, providing an exact reflection of the injection pressure, plasticizing pressure, and back pressure in real time.



Rapid response



Accurate measurements



Standardized design

Specifications

150KN	220KN	300KN
500KN	600KN	750KN
850KN	Load sensor	>>



Load Sensor

Items	Specifications
Maximum Safe Overload	150%R.C.
Ultimate Overload	150%R.C.
Rated Output	0V~10V
Degree of Nonlinearity	1%R.O.
Hysteresis	1%R.O.
Repetition Accuracy	0.5%R.O.
Power Supply	DC24V±10%
Frequency	1KHz

(150KN as example)



PART 4

THUJA Manipulator control system

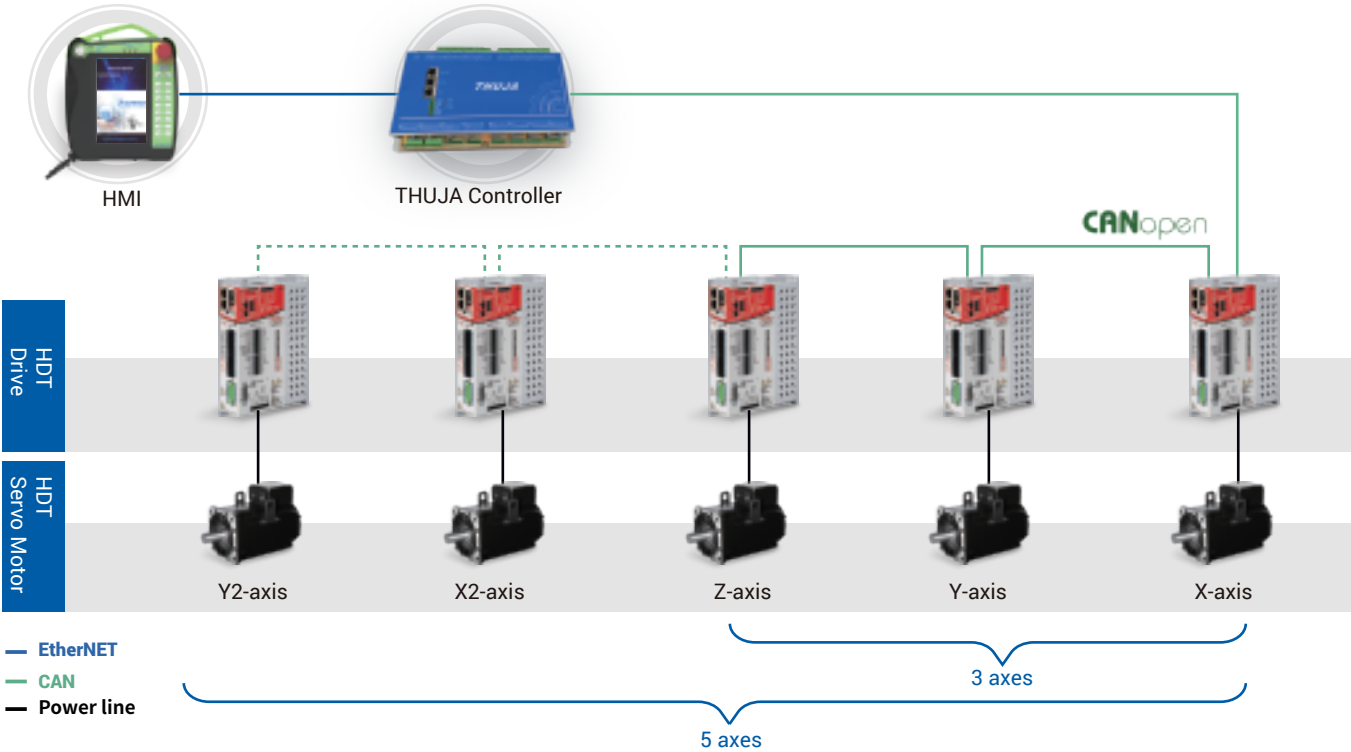
Overview

It is a specialized control system designed for the robotics sector that mostly consists of controllers, teach pendants, servo drives, and servo motors. It explores potential automation applications, improves the integration of robotic arms with injection molding systems (a solution of one machine with one manipulator), and complies with European criteria for manipulators.

Advantages

1. Italian-brand servo motors and drives, manufactured by Techmation's Italian holding subsidiary, conform to European standards.
2. A 7-inch full-color touch screen that supports multiple languages.
3. Adaptable and rapid programming instructions, which are simple to learn.
4. Pre-stored multiple groups of standard (single arm or double arm) action programs; 200 groups of module number storage.
5. Using the bus control mode.
6. Rich application functions, such as multiple main and secondary programs, multi-path planning, multi-point stacking, and more, make sure that varied automation application requirements are fulfilled.
7. Dependable safety methods include region safety restrictions, machine operation self-diagnosis, and hardware and software safety protection, all of which are designed to ensure safe use.
8. Excellent motion control: Multi-stage speed, precise positioning, seamless control, synchronization of multiple axes, and more.
9. Working with Techmation control systems, it can achieve the special functionality of “one machine with one manipulator”.

01 THUJA System Architecture & Screen



System Screen



02 THUJA Manipulator HMI & Controller

HMI

THUJA Manipulator HMI



Items	Specifications
CPU Frequency	1GHZ
Memory	4GB EMMC
Storage Temperature	-10°C~50°C
Communication Port	NET
Memory Card Port	USB
LCD Display	7"LED
LCD Resolution	1024*600

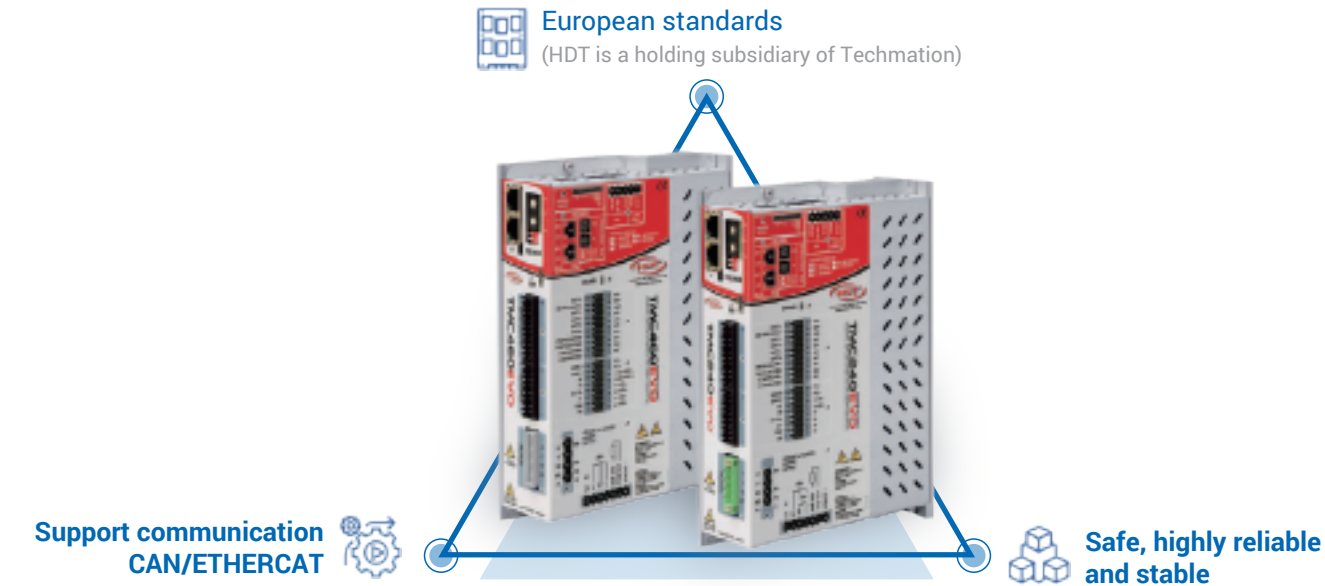
Controller

THUJA Manipulator Controller

Items	Specifications
Size	180*290*46.6
Installation Size	100*275
PB (Digital Input)	32
PC (Digital Output)	32
EtherNET Port	1
CAN BUS Port	2
EtherCAT Port	2
Power Supply	DC24V



03 HDT Drive

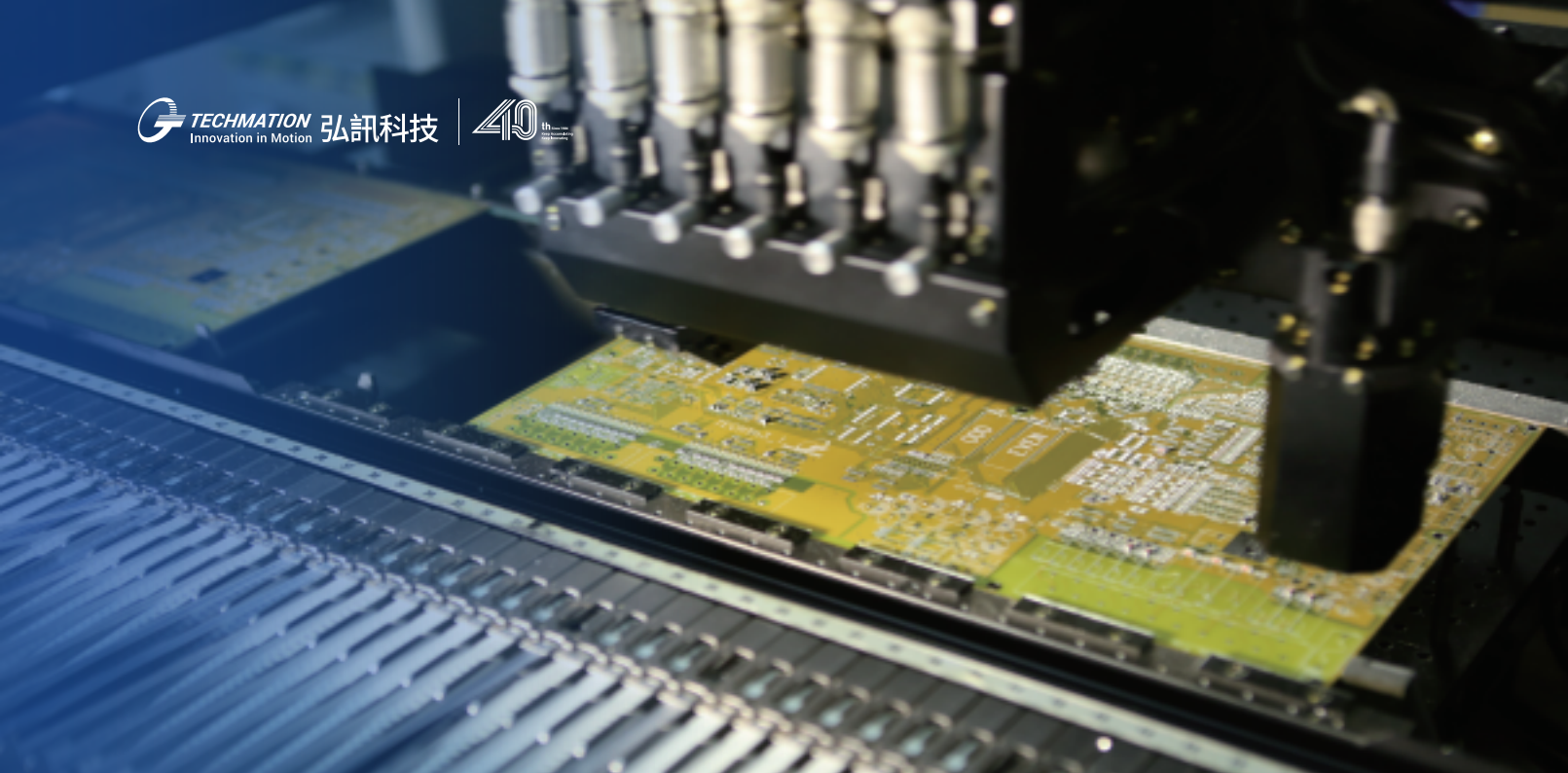


Items	Specifications
Input voltage (v)	220VAC 1ph
Minimum/Maximum input voltage (v)	200~240VAC , 50/60HZ
Rated Current (A)	6
Maximum Current (A)	12
Maximum Output Power (kW)	2.00
Maximum Output Power (DC Brushed) (kW)	1.67
Controlling Means	IGBT/PWM pulse width modulation, sine wave (brushless AC motor) or trapezoidal wave (brushed DC motor).
Logical Power Supply (VDC)	+24VDC±20%
Feedback	Hall signal, 5V (line driver) incremental encoder (with or without Hall signal), absolute encoder (SSI protocol), open loop without feedback.
Motor Type	Rotary, linear or tubular AC/DC brushless motors, DC brushed permanent magnet motors with encoders.
Communication Mode	Modbus RTU - CanOpen DS402 - EtherCat COE - ProfNet - ProfBus
Main Analog Input	±10V Differential Input (12-bit) for controlling the torque and speed
Auxiliary Analog Input	0-10V, 12-bit, for speed control with torque limit
Frequency Input	Frequency/Direction - A/B 5V Line driver channels - CW/CCW (2MHZ)"
Digital Input & Output	6 Programmable digital inputs (NPN/PNP) - 3 Programmable digital outputs (NPN/PNP)
Control Modes	Speed - Adjustable Ramp - Torque Control - Multi-step Position - Electronic Gearing - Electronic Cam
Limit Switch Management	In P-OT and N-OT conditions, use maximum torque for braking deceleration.
Digital Filter	Notch filters, torque current filters, and digital input filters
Protection Functions	Short circuit, overvoltage/undervoltage, drive overtemperature, hall signal disconnection, current limit
Drive Signals	3 LEDs for displaying operating status and alarms
Safe Functions	STO: Safe Torque Off Circuit set up according to IEC 618800-5-2:2007
Brake Logic Management	Integrated, immediate stop or ramp-down stop
Drive Settings	Set up with the CALIPER 4.0 software running through a USB2.0 port.
Estimated Weight (kg)	1.16

04 HDT Servo Motor



Specifications Items		400w		400w+brake	750w		750w+brake	
		Z	S	Z	Z	S	Z	S
		KUT032F_CAK90C	KUT032F_CAK90E	KUT032F_CAK9BC	KUT040F_CAK90C	KUT040F_CAK90E	KUT040F_CAK9BC	KUT040F_CAK9BE
Electrical parameters	Rated Speed (rpm)	3000		3000	3000		3000	
	Rated Power (W)	400		400	750		750	
	Rated Torque (Nm)	1.27		1.27	2.39		2.39	
	Rated Current (A)	2.3	2.1	2.3	4.2	4.1	4.2	4.1
	Number of Poles	8	10	8	8	10	8	10
	Voltage Constant (V*Krpm ⁻¹)	29.8	39	29.8	40.8	39	40.8	39
	Torque Constant (Nm*A ⁻¹)	0.55	0.605	0.55	0.6	0.57	0.6	0.57
	Rotor Inertia (10 ⁻⁴ Kgm ²)	0.407	0.58	0.407	0.924	1.5	0.924	1.5
	Phase Resistance (Ω)	2.94	5.7	2.94	1.47	1.7	1.47	1.7
	Phase Inductance (mH)	21.28	12.5	21.28	18.1	8	18.1	8
Mechanical parameters	Shaft Length (mm)	30		30	35		35	
	Shaft Diameter φ (mm)	14		14	19		19	
	Keyway (mm*mm)	17.5*5	20*5	17.5*5	22*6	22.5*6	22*6	22.5*6
	Mounting Holes φ (mm)	70		70	90		90	
	Installation Size (mm)	4*5.5		4*5.5	4*6.6		4*6.6	
	Flange Stop φ (mm)	50		50	70		70	
	Flange Stop Height (mm)	3		3	3		3	
	Flange Face (mm*mm)	60*60		60*60	80*80		80*80	
	Body Length (mm)	143	89.5	183.8	144.6	94.3	187.9	119.6
Encoder	Type	Optical						



PART 5 Peripheral (Auxiliary) Equipment

Overview

By utilizing our auxiliary equipment, production processes have become less manual. This has allowed injection molding factories to gather and track production data more effectively, organize production schedules more logically, and oversee production progress more skillfully. The automation and intelligence of industrial production lines have significantly increased as a result. It is essential in assisting clients in achieving lower costs, more productivity, and improved efficiency.

Advantages

1. Improved quality control and management of energy consumption.
2. Increase production efficiency and reduce the lead time.
3. Decrease material and labor expenses significantly.
4. Use digital platforms for real-time monitoring.

01 Energy Consumption Meter

In 2011, Techmation introduced its own energy consumption meter.

It is frequently used along with Techmation's existing servo energy-saving system and TM PLAS CLOUD to provide the plastic industry with more efficient energy consumption monitoring and quality management. It is extensively applicable for power monitoring of various industrial machinery, including die casting and injection molding machines.

Application

It is widely used for power monitoring of various industrial machinery such as injection molding machines, die casting machines and etc..

Components

Instrument transformers, power measuring modules.

Advantages

01

The main screen shows the current total consumption of energy.

02

Universally applicable to industrial apparatus.

03

Analyzing the ratio of energy consumption during machine automatic production to stand-by energy consumption.

04

Allowing the connection of up to three energy consumption meters and displaying data based on the category of the monitored objects, such as electric heating, servos, auxiliary machinery, etc.

05

Show three-phase voltage, current, power, electric power and further details.

06

Comprehensive modes for analyzing energy consumption, such as unit weight, unit time, single-mode energy consumption, and energy consumption during specific actions or tasks.

Current Production		Total Energy Consumption Of Machine	
Auto Mode	0.38°C	Other Mode	1.20°C
Mold Open Count/ Product Count	123/180	Auto Mode	0.38°C
Power Consumption	0.0030 0.0020 kW-H/Onepiece	Total	1.58°C
Weight Per Shot	0.0g		
Energy Consumption Per Weight	0.0kWh/Kilo		
Reset Operation	No Need		
Time of Reset	0-0-0/0.0		
Phase A Voltage	233.79V	Phase A Current	0.20A
Phase B Voltage	233.73V	Phase B Current	0.60A
Phase C Voltage	233.55V	Phase C Current	1.00A
Phase AB Voltage	404.70V	Total Electrical Energy	1.57°C
Phase BC Voltage	404.49V	Total Power	0.35kW
Phase AC Voltage	404.62V		

* Example of Displayed Data

Energy Consumption Meter

Items	Specifications
Wiring Method	Three-phase three-wire, three-phase four-wire
Monitoring Function	Voltage, current, active/reactive power, electric energy, Digital Input status collection, Digital output status.
Input Voltage Range	AC 0~380V, not more than 450V
Input Power Frequency	50/60Hz
Input Current Range	0~5A
Measurement Accuracy	0.25%F.S.
Power Supply	DC24V
Communication Port	RS485/CAN/SABUS



02 Hot Runner Controller

A hot runner controller is a device used to adjust the internal temperature in the system. The accuracy and stability of the internal temperature-recontrol is essential to the operation of the entire hot runner system.



Save raw materials, cut expenses, and enhance automation.



Simple process adjustments, shorter molding cycles, and increased efficiency.



Enhance the appearance, performance, and quality of the product.



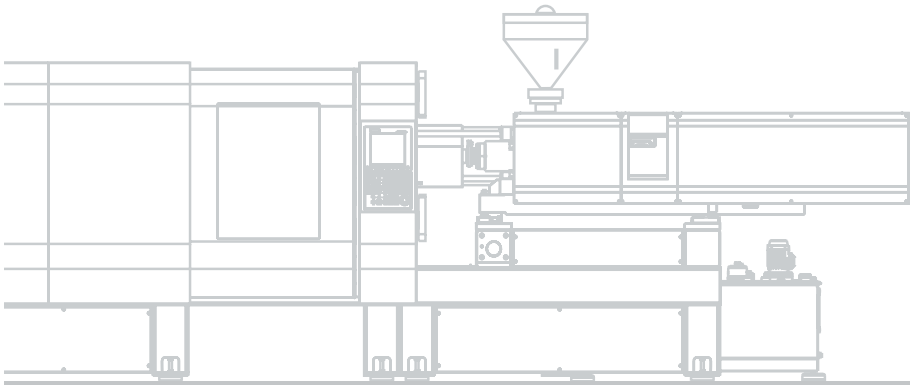
Support multi-cavity molds to boost production while maintaining consistent product quality across all mold cavities.



Used in the manufacturing of large and unique products.



Extend the range of applications for injection molding.





It is mainly used for mold heating control of injection molding machines

Integrated Hot Runner Controller/Advantages

- 01

Self-learning PID control of temperature.
- 02

Heater damage detection.
- 03

Balancing heating for all temperature ranges.
- 04

Temperature curve function.
- 05

Automatic detection of whether the temperature sensing line corresponds to the heating output point.
- 06

Dehumidification function, Alarm function.

Items	Specifications
Power Input	Three-phase five-wire AC380~415V or Three-phase four-wire AC200~240V
Control Module	AC85~265V
Supply Frequency	50/60Hz Automatic switching
HMI	12" Touch screen
Thermocouple Type	J/K thermocouple
Measurement Accuracy	±0.25°F.S.
Control Accuracy	±0.5°C
Control Mode	Closed loop (AUTO), open loop (manual)
Temperature Control Range	0~450°C (32~842°F)
Output Mode	Adjust voltage by changing breakover phase angle/Adjust power at regular time.
Rated Load	240VAC, 15A
Power Protection	Overvoltage protection module
Input Protection	Diagnose of inversely connected circuits, open circuits and dislocation; semiconductor fuses.
Output Protection	Diagnosis of short circuit, overload, dislocation and etc., ceramic fuse tubes.
Alarm Method	Flashing indicator lights, alarm codes, warning buzzers.
Operating Environment	0~50 °C (32~122°F), 20~90%RH, no condensation.



Multi-Point Hot Runner Controller/Advantages

- 01

Flexiable switching among PID automatic control, manual control and standby mode.
- 02

Multiple PID self-tuning modes, with high temperature control accuracy.
- 03

Soft start mode or full-speed start mode for selection.
- 04

A variety of diagnostic alarm functions.
- 05

A variety of functions of self-protection and equipment protection.
- 06

Two types of control outputs: Zero- crossing trigger or phase angle adjustment.
- 07

Easy to restore factory parameters.
- 08

Universal installation size, electrical interfaces and etc.

Items	Specifications
Display	LED/LCD
Operating Power	AC85V~250V, 50/60Hz
Thermocouple Type	J/K thermocouple
Temperature Control Range	0~450°C (32~842°F)
Measurement Accuracy	±0.25°F.S.
Cold- junction Compensation Error	±1°C
Control Mode	PID AUTO/Manual
Control Accuracy	±0.1°F.S.
Control Output Type	SCR voltage regulation (PWM) SCR power regulation (SSR)
Rated Load	15A, 50~1650W (110V), 100~3600W (240V)
Operating Environment	0~55°C (32~131°F), 10~85&RH (no condensation)



03

Displacement Sensor

Magnetostrictive Principle



Application of magnetostriction with advanced digital circuits.

Non-Contact Measurement



Non-contact measurement, no mechanical wear, extended service life, and simultaneous measurement of various displacements

CAN_BUS Communication



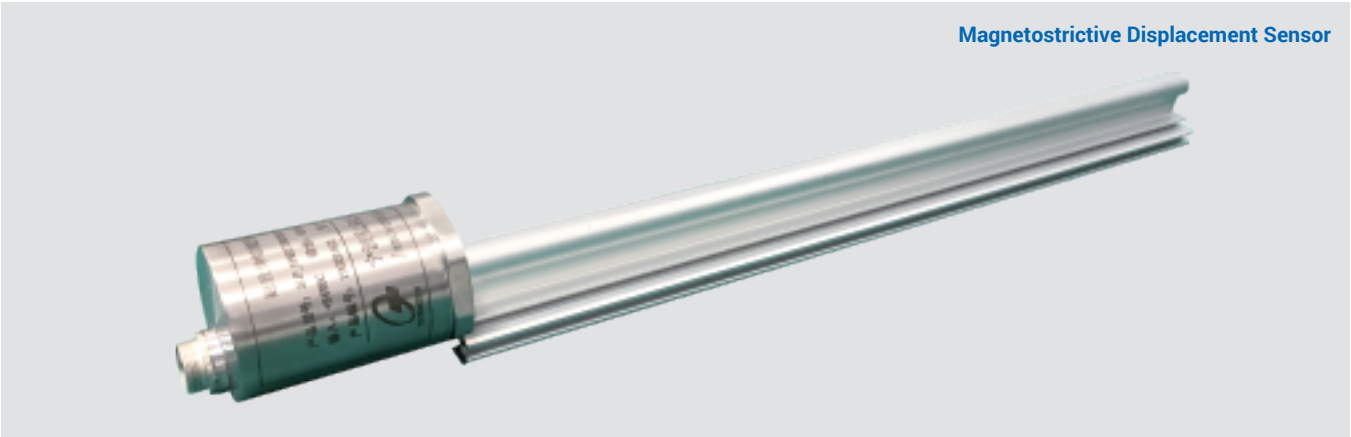
CAN_BUS communication, accurate and reliable long-distance transmission.

Isolated CAN Circuit Design



Isolated CAN circuit, strong resistance to power interference and environmental interference.

Items	Specifications
Output	Output interface: CANbus Communication protocol: CANopen
Baud Rate	1Mbps
Systemic Resolution	1μm
Measurement Range	80~5000mm (Customized according to customer requirements)
Degree of Nonlinearity	≤0.05%F.S. (F.S means Full Scale)
Repeatabilty Accuracy	≤0.002%F.S.
Hysteresis	4 μm
Drift	±0.01% F.S. /°C
Supply Voltage	+24VDC±10%
Current Consumption	<90mA
Working Temperature	-40℃~85℃
Material of Measuring Bar	G structure: 304 stainless steel, H structure: aluminum
Material of Housing for Electronic Circuit	G structure: 304 stainless steel, H structure: 304 stainless steel
Protection Grade	IP65 (Plug mode)



04

RFID

Diverse Solutions, Satisfying Various Requirements



Present clients with the following three alternatives: HMI integration, operation box integration, and external installation. These options are adaptable to a wide range of customer requirements, including subsequent installation and factory installation.

Writable and Readable IC card, Usage with Multiple Machines



The readable and writable IC card allows user information to be written to it and utilized on multiple injection molding machines without the need for repetitive processes.

Techmation RFID uses IC cards to manage access control for the operator panel of the injection molding machine control system, enhancing convenience and security.

Items	Specifications
Read-Rite Protocol	ISO15693 (ISO14443 differentiates between Type A and Type B, whereas ISO15693 makes no distinction between types.)
Supported Chip Types	I-CODE-2 (I-CODE-SLI)
Working Frequency	13.56 MHz
Read and Write Distance	2.5~5cm
Working Voltage	5VDC
RF Power	100mW~200mW
Read and Write Speed	0.4s



05 Manipulator

E-Series Fully Servo-Driven Manipulator

Manipulator

A manipulator is a robotic arm-like mechanism that is designed to manipulate or move materials, tools, and parts without direct human contact. Manipulators resemble some functions of the human upper limbs consist of a number of segments. They are used in industrial applications to effectively perform tasks like transporting products or production operations.

Owing to their progressive advancements, manipulators have found extensive applications in various sectors, including automotive manufacturing, consumer goods packaging, optical fabrication, and more. Instances of their use include the removal of finished products and nozzles from injection molding machines, automatic cutting or removing the excess glue port, spraying mold agent , in-mold inserts, in-mold labeling, out-of-mold shaping, assembly, stacking, and packaging. These applications have resulted in staff reductions, enhanced efficiency and quality, and improved safety for customers.



Accurate Positioning



Fast Speed



Easy to Operate



Durable and Long-lasting

AC Servo Motors



With traverse mechanism driven by AC servo motors.

A Variety of Styles



Single-section arm or double-section arm.

Precise & Stable



With a precision linear guideway, quiet and stable.

80-650T



Applicable to 80-650T horizontal injection molding machines (products and drainage opening material picking up).

High Precision



With the functions of "quick teaching" and "mold opening follow" to achieve high precision.

ES Series



80-650t
Applicable tonnage



1.4-2.2 sec
Minimum take-out time



5-8 kg
Load



2 kw/h
Power consumption



2.0 NL/cycle
Air consumption



Specification ES Series	For injection molding machine (t)	Up and down (mm)	Pull out (mm)	Transverse movement (mm)	Side posture angle (degree)	Max load (kg)	Take out (s)	Empty cycle (s)	Driven mode	Working pressure (kgf/cm²)	Air consumption (nl/cycle)	Power	Power consumption (Kva)	NW (kg)
630-ESII-800A-T3Y	80~200	800	740	1300	90°	5	1.4	6.0	Full AC servo Motor drive	5~7	2.0	AC 220±10V 50/60Hz	2.0	280
630-ESII-1000B-T3Y	200~380	1000	740	1600		5	1.8	7.0		5~7	2.0		2.0	310
630-ESII-1300B-T3Y	380~650	1300	985	1800		8	2.2	8.0		5~7	2.0		2.0	330

ED Series



80-650t
Applicable tonnage



1.4-2.2 sec
Minimum take-out time



5-8 kg
Load



2.85 kw/h
Power consumption



2.1 NL/cycle
Air consumption



Specification ED Series	For injection molding machine (t)	Up and down (mm)	Pull out (mm)	Transverse movement (mm)	Side posture angle (degree)	Max load (kg)	Take out (s)	Empty cycle (s)	Driven mode	Working pressure (kgf/cm²)	Air consumption (nl/cycle)	Power	Power consumption (Kva)	NW (kg)
630-EDII-800A-T5Y	80~200	800	Main arm 530 Sidearm 530	1300	90°	5	1.4	6.0	Full AC servo Motor drive	5~7	2.1	AC 220±10V 50/60Hz	2.7	300
630-EDII-1000B-T5Y	200~380	1000	Main arm 530 Sidearm 530	1600		5	1.8	7.0		5~7	2.1		2.7	325
630-EDII-1300B-T5Y	380~650	1300	Main arm 770 Sidearm 770	1800		8	2.2	8.0		5~7	2.1		2.7	360

05

Manipulator

ET High Speed Series Manipulator

Manipulator



Accurate Positioning



Ultra-High Speed



Easy to Operate



Durable and Long-lasting

Machine Configuration



Open (bullhead) structure, standard double-section (double-speed) arm, three-axis servo drive.

High Precision



With the function of "Quick Teaching" and "Mold Opening Follow" to achieve high precision.

200-450T



Applicable to 200-450T high-speed injection molding machines, primarily designed for products with a molding cycle of 3-6S, such as thin-walled packaging products, disposable fast food cases, knives and forks, and other items.



200-450t
Applicable tonnage

0.75-1.1 sec
Minimum take-out time

3-5 kg
Load

1.9-2.5 kw/h
Power consumption

2.0 NL/cycle
Air consumption

Specification ET Series	For injection molding machine (t)	Up and down (mm)	Pull out (mm)	Transverse movement (mm)	Side posture angle (degree)	Max load (kg)	Take out (s)	Empty cycle (s)	Driven mode	Working pressure (kgf/cm²)	Air consumption (nl/cycle)	Power	Power consumption (Kva)	NW (kg)
630-ETII-1100H-T3Y	200~380	1100	500	1600	90°	3	0.75	3.58	Full AC servo Motor drive	5~7	2.0	AC 220±10V 50/60Hz	1.9	260
630-ETII-1300H-T3Y	250~450	1300	700	1800		5	1.1	5.85		5~7	2.0		2.4	290

ET Series Large Manipulator

Manipulator

High Stability



Its bullhead design, working with the high-power and high-performance fully servo system, ensures outstanding stability during the retrieval of items.

Automatic Loading and Unloading



With capabilities such as "quick pick-up and gentle placement," "mold opening follow-up," stacking, etc., it realizes automatically feeding raw materials and unloading finished products.

350-4000T



Suitable for product removal from large and medium-sized 350~4000T horizontal injection molding machinery (applications involving big and heavy loads).

Support Customized Design



The end-of-arm posture group can be tailored to customers' specific products (by adding an A-axis or B-axis), allowing for flexible multi-degree-of-freedom movement and achieving the best extraction path.



350-4000t
Applicable tonnage

3.41-12.5 sec
Minimum take-out time

12-50 kg
Load

2-5.4 kw/h
Power consumption

8 NL/cycle
Air consumption

Specification ET Series	For injection molding machine (t)	Up and down (mm)	Pull out (mm)	Transverse movement (mm)	Side posture angle (degree)	Max load (kg)	Take out (s)	Empty cycle (s)	Driven mode	Working pressure (kgf/cm²)	Air consumption (nl/cycle)	Power	Power consumption (Kva)	NW (kg)
630-ETII-1500C-T3Y	350~800	1500	1000	2200	90°	12	3.41	13.2	Full AC servo Motor drive	5~7	8	AC 220±10V 50/60Hz	2.0	540
630-ETII-1500D-T3Y	550~1000	1500	1400	2200		25	4.2	15.0		5~7	8		2.35	540
630-ETII-1700D-T3Y	800~1500	1700	1400	2550		25	5.2	18.0		5~7	8		2.35	566
630-ETII-1900C-T3Y	1000~2000	1900	1600	2700		25	5.0	17.5		5~7	8		2.35	790
630-ETII-1900D-T3Y	1000~2000	1900	1600	2700		40	10.0	27.0		5~7	8		2.9	1068
630-ETII-2200C-T3Y	1500~2500	2200	1800	3000		40	12.5	32.0		5~7	8		2.9	1100
630-ETII-2500D-T3Y	1600~3000	2500	1800	3600		50	12.5	35.0		5~7	8		2.9	2500
630-ETII-3000D-T3Y	2500~4000	3000	2000	4500		50	12.5	45.0		5~7	8		5.4	2800

PART 6

Digital Factory Service

Build a New Digital Infrastructure

Our Digitalization Division has been focusing on digital development and exploring the innovative application of advanced technologies such as the Internet of Things, big data, AI and automatic control in digital transformation.

The digital factory service is to facilitate the digital transformation of enterprises, providing full digital service in multiple application scenarios of IoT and supporting large-scale innovation. The digital factory service has been contributing to the digital transformation of the industry, leading the high-quality development of the industry, and building a new ecosystem of the industry.

Industry 4.0
Interconnecting
Nectar OS
tmOS
Digital Service
Modular Design
Visualizable
TM PLAS CLOUD
Expandable
tmCloud
Internet of Things
Traceable
Fits the Concept of "Smart Factory"

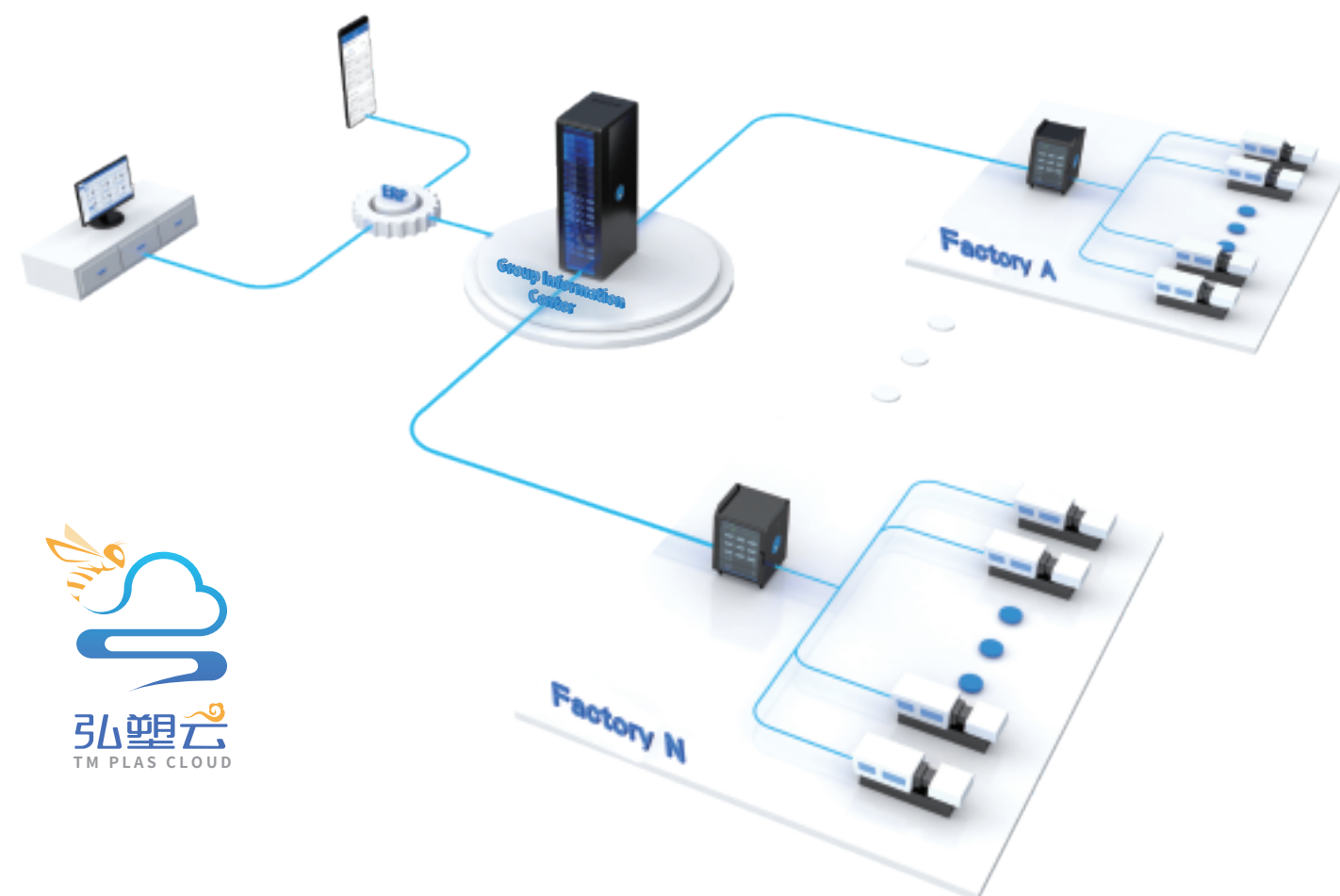
01 TM PLAS CLOUD (TPC)

Visualizable | Interconnecting | Traceable | Expandable

TM PLAS CLOUD is a customized information management platform for the rubber and plastics industry, also the best solution for intelligent factories and the foundation for enterprises to go forward to Industry 4.0.

Regarding the production factors which are "people", "machine", "material" and "method", the identification, positioning, tracking, monitoring and management of these factors are completed through edge computing, big data analysis and other means, so as to realize the digitalization, informatization, intelligence and low carbon emissions in the production process.

System Screen

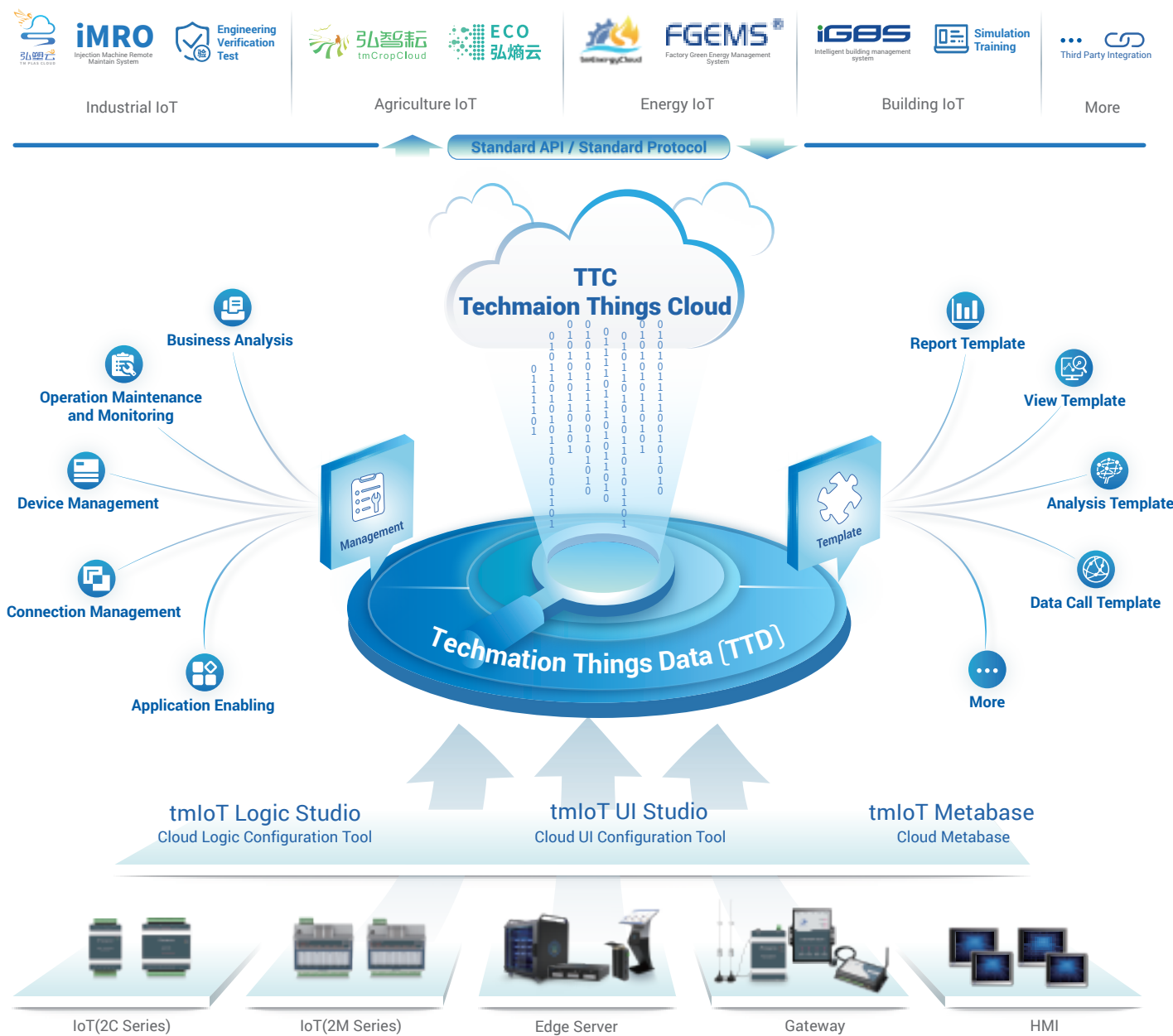


02 tmIoT® IoT Cloud Platform

No-Code | Modular Design | Low Threshold

tmIoT® IoT Cloud Platform has achieved private cloud deployment based on Nectar OS, an industrial operating system independently developed by Techmation.

tmIoT® IoT Cloud Platform is an AIoT ecosystem managed by Techmation IoT Metabase, which integrates with self-developed standard hardware, visual configuration tools, data middle-end and multi-industry development systems. The integration of management with control can be realized through the combination of one platform, two hardware, three tools and multiple applications with the standard of no-code, modular design, low threshold, and one-stop services are provided to promote the development of enterprises.



Create a dedicated IoT ecosystem for you !

tmIoT® IoT Cloud Platform, with standard components and program design of no-code, modular design, low threshold, allows IoT application through cloud tools with simple configuration which is like building blocks.

Official website of tmIoT® IoT Cloud Platform: www.tmiot.com.cn



IoT (2C Series)	DIDO Acquisition/Controller	Relay DIDO Acquisition/Controller	AIAO Acquisition/Controller	Small Protocol Converter
IoT (2M Series)	DIDO Acquisition/Controller	Relay DIDO Acquisition/Controller	Small Protocol Converter	
Gateway			Max Gateway	4G DTU
HMI				Touch- screen HMI
Atom Touch(12")	Atom Touch(8")	3354 Touch(12")	3354 Touch(8")	
Edge Server			Edge Server -Bee	Edge Server -Hive

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With strong technical reserves, rich industrial experience and a wide range of service stations, we have built a maintenance and operation network enabling us to stay close to the market and customers.

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