



全電式射出機／全電式轉盤雙色機

All-Electric Injection Molding Machine

All-Electric Multi-Component Injection Molding Machine

CT-e / CT-R SERIES

CT-e/CT-R Series



低耗能 - 單位能耗0.37kWh/kg以下

高射速 - 射出速度高達300mm/s

高精準 - 位置控制重複精度達 $\pm 0.01\text{mm}$

高產能 - 可多軸同動提高生產效率

Energy Saving - Energy consumption below 0.37kWh/kg

High Injection Speed - Injection speed up to 300mm/s

High Precision - Repeated accuracy of $\pm 0.01\text{mm}$

High Efficiency - Simultaneous actions deliver shorter cycle times



FCS五十餘年技術結晶與積累，創造了多樣性的產品及穩定的性能品質，同時也針對各行業不同產品特性，提供差異化技術整合與服務。CT-e/CT-R系列為FCS全新發表之全電機/全電式轉盤雙色機，除了模盤結構優化設計，採用高階控制系統，全伺服馬達設計整合，完美體現媲美日本全電式運動控制性能的水準。本設備可提供精準、省能、潔淨、智能與高產能的需求，適用於醫療、光學、食品包裝、3C電子、化妝品等產業，結合FCS工業4.0解決方案，讓機器智慧化的能力更上一層。

FCS has created various products with steady performance by utilizing its 50 years expertise in technological developments and innovations; also providing customized integration and service for different product characteristics for many industries.

The **CT-e/CT-R** is our newly released fully electric machine. Besides the optimized mold platen structure, it adopts high-level control system and high integration from the servo motors, which reflects a performance level comparable to the Japanese all-electric machine's motion control.

It can provide precision, energy-saving, clean, intelligent and high-capacity requirements which are suitable for medical, optical, food packaging, electronics, cosmetics, among other industries. Combined with the FCS Industry 4.0 solution, it upgrades the machine to be intelligent.

二 然拔群
風馳電掣

is more than speed.



精準的射出單元 Accurate Injection Unit

一般螺桿
Normal screw



高混煉螺桿
High mixing screw



高混煉螺桿 (選配)

提供L/D比加長設計，滿足多穴、高射量及快循環等產品，亦有光學級用專用螺桿可提供選擇。

High mixing screw (optional)

Longer L/D ratio design to satisfy multi-cavities, larger shot weight and faster cycles for products. Also, a special screw for the optical industry is available.



射出 / 射座皆採線性滑軌

- 負荷輕、減少磨耗，射出控制精準穩定。
- 儲料背壓阻力低，減少熔膠溢流。

Linear guide for the injection carriage

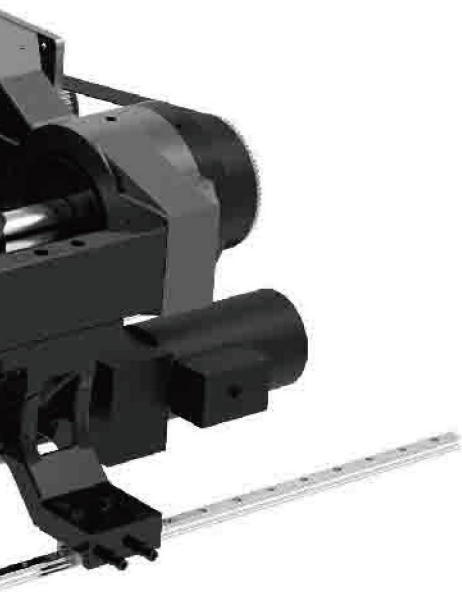
- Lighter load and less abrasion which ensures precise and stable injection.
- Basic charging back pressure to reduce the melt overflow.

高精度壓力感測器

採用進口高精度壓力感測器(LoadCell)與高響應射出單元，具優越壓力閉迴路運算控制。

A precise pressure sensor (LoadCell)

Ensures a highly responsive injection unit which offers an optimized pressure closed-loop algorithm.



射出 / 儲料採伺服馬達

- 全伺服系統設計，高效穩定，符合GB一級節能產品。
- 運行平穩且噪音小、易於維護。

Closed-loop injection system and servo-driven charging unit

- Complete servo driven system to ensure high efficiency and stability. The energy consumption meets first-level energy-saving requirement.
- Steady operation, low noise and maintenance friendly.



高性能伺服驅動系統及控制器

具備卓越的運動控制技術，射出精度可達0.01mm。

High-performance cutting-edge control and driver systems

Excellent motion control which ensures accuracy to 0.01mm.

彈性射出單元模組化設計

與多種系列相容，能滿足更多產業需求。

Flexible injection unit with a modular design

Compatible with many series to meet demanding tasks rapidly.

優化的夾模單元 Optimized Clamping Unit

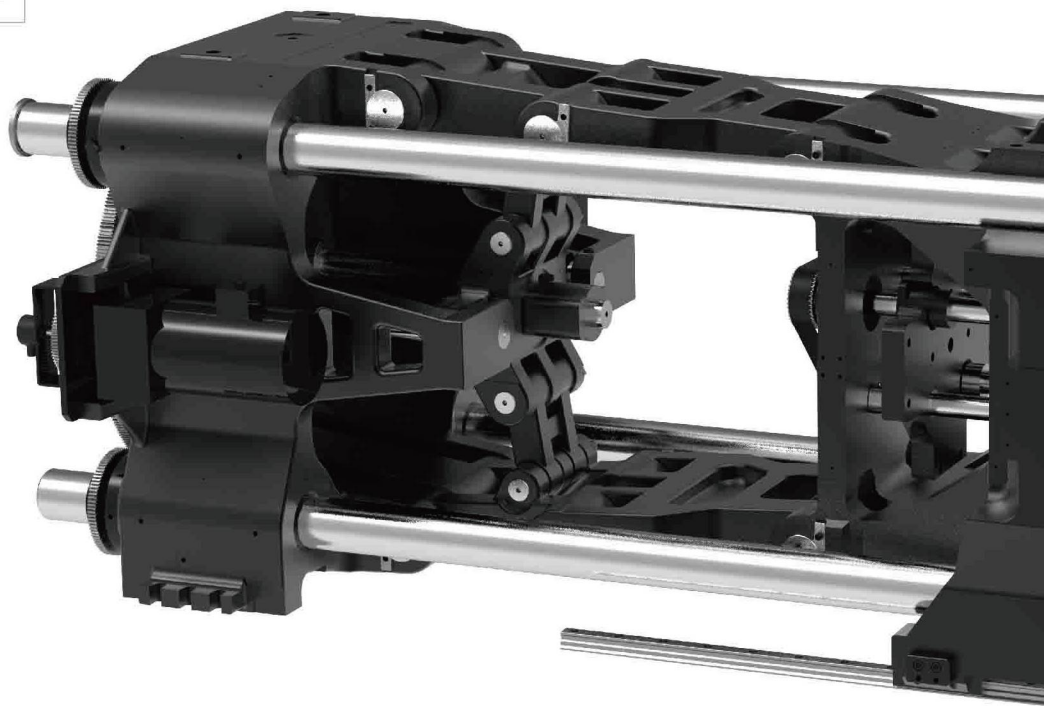


精準閉模力

電動調模且閉迴路控制，閉模力控制更為精準。

Precise clamping force

Clamping force was tuned by using a closed-loop electric mold height adjustment motor.

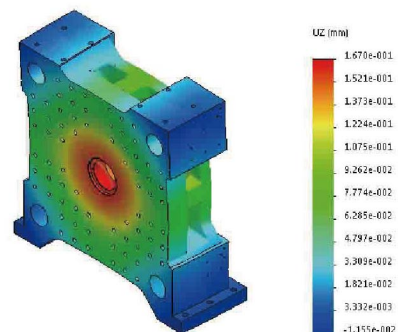


模盤設計優化

- 採用線性滑軌，模盤平行度高。
- 力流線朝模盤中心集中，可減少模具變形。

Platen design optimization

- Linear guide for clamping unit used to enhance the platen parallelism.
- The clamping force flows through the center of the movable platen to help reduce mold wear.



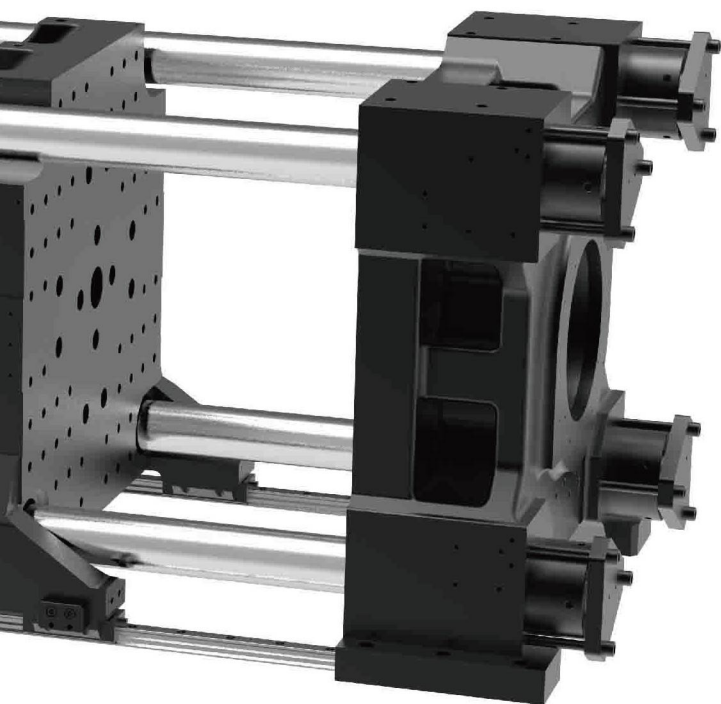


低磨耗設計

- 不抱持大柱設計，無汙染且低磨損，伺服驅動更低能耗，適合醫療產品。
- 採用日本知名品牌滾珠導螺桿，具重負荷與高剛性，使用壽命長。

Low abrasion design

- The tie bars are not held by the platens to reduce pollution, abrasion and power consumption, which is suitable for medical products.
- Japanese famous brand ball screw, with heavy load and high rigidity, provides a longer lifespan.



週期優化

標準配置開模中頂出等同步功能，可縮短成型週期。

Molding cycle optimization

Parallel movement of ejectors on fly is standard which effectively shortens the cycle time.

模具保護

智能模具低壓保護功能，降低壓模危險。

Mold protection

Intelligent mold clamp low-pressure protection, reduces the risk of mold crush.

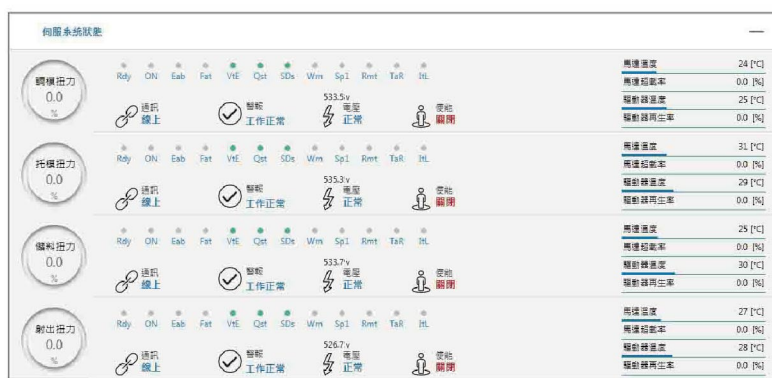
智能的電控單元 Intelligent Control Unit

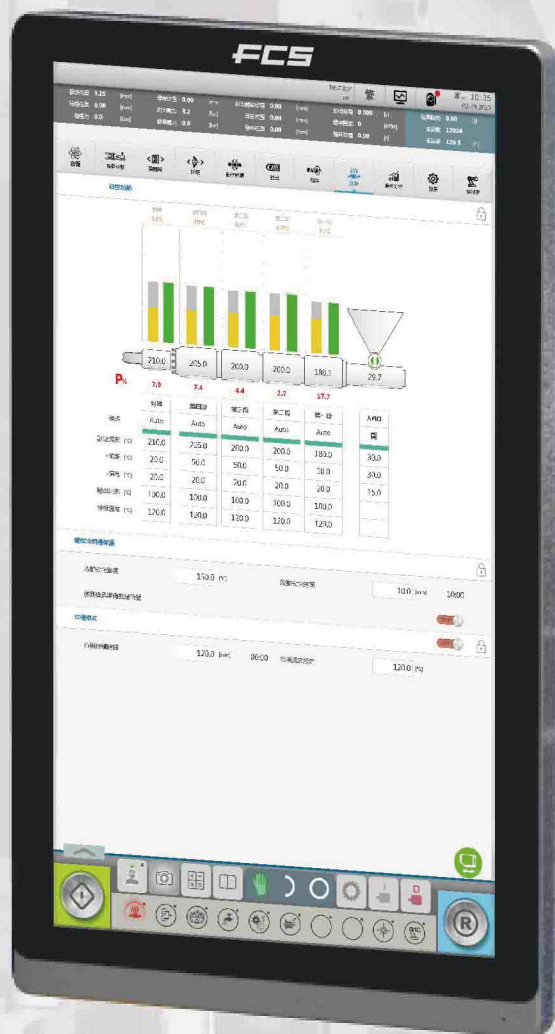
直覺式操作介面

- 採用21.5"全觸控螢幕，加上全新設計操作介面與圖示，操作更為便利。
- 動作波形圖顯示，可隨時掌握機台狀況與耗電狀態。
- 畫面擷取及記錄功能，可隨時瀏覽擷取畫面。
- UPS(不斷電系統)、相序偵測，提升機台保護與安全。
- 多軸扭力即時監控，防止馬達損壞。
- 支援多國語言(中、英、德、義、葡、西)。

Intuitive HMI

- 21.5" full touch screen with newly designed interface and icons, extremely user friendly.
- The waveform chart can monitor the status of the machine and the power consumption at any time.
- Screen capture and recording function can browse the captured screens at any time.
- UPS protects the machines operational safety.
- Instant axis torque monitoring which prevents the motors from damaging.
- Multiple languages are available.
(Mandarin、English、German、Italian、Portuguese、Spanish)





控制精度

- 加熱控制精度 0.1°C 並有效分段控制，以提升塑化能力。
- 位置控制精度 0.01mm ，可準確控制動作行程。

Control Precision

- Barrel heating zones are accurate to 0.1 degrees $^{\circ}\text{C}$ to ensure stable material plasticizing.
- Screw position is controlled within 0.01mm to precisely control the shot size and cushion position.

特殊應用

- 具備二次關模射出壓縮功能，優化產品應力需求使用。
- 具備四種VP切換功能，包括射出時間、位置、壓力或模具壓力訊號。

Special Application

- Injection compression is applicable to avoid the injection residual stress.
- Four different V-P switch models, including injection time/position/pressure and the signal from mold pressure sensor.

智能的電控單元 Intelligent Control Unit

遠端監控 & 工業4.0

- 支援OPCUA協定，可將資訊匯出以進行看板管理。
- 多重通訊界面且無上限的模具參數儲存(USB/CAN/VARAN/Ethernet)，提供更穩定、安全快速的即時通訊與資訊蒐集。
- 圖表顯示的SPC(統計製程控制)，提供每模生產詳細資訊並監看每模次整體週期的每個階段時間。
- 生產週期即時分析，參數調校更有效率。
- 機台稼動率、產能統計及停機狀態顯示及記錄。(選配)

Remote Control & Industry 4.0

- Compatible with OPCUA protocol to allow data to be extracted for visual management.
- Multiple communication interfaces (USB, CAN, VARAN, Ethernet) with extensive mold parameter storage to provide stable, safe and instant communication and data collection.
- Graphic-based SPC (Statistical Process Control) records all with detailed information on every cycle and monitoring of all processing sequences.
- Real-time analysis of production cycle; parameter adjustment is more efficient.
- Machine utilization rate, production capacity and down time statistics and recording. (Optional)

Cycle Time	Prod.Timing 0:01:00			Screw Lubrication	
	10.14 s	10.14 s	Start	During	End
					0.00
 MoldOpen Time	4.9 %		0.00	0.50	0.50
			0.00	0.00	0.00
 MoldClose	12.1 %		0.50	1.23	1.73
			0.00	0.00	0.00
 Cooling	49.3 %		1.73	5.00	6.73
			0.00	0.00	0.00
 MoldOpen	8.7 %		6.73	0.89	7.62
			0.00	0.00	0.00
 Air 1	4.9 %		7.31	0.50	7.81
			0.00	0.00	0.00
 Air 2	4.9 %		7.42	0.50	7.92
			0.00	0.00	0.00
 Air 3	4.9 %		7.55	0.37	7.92
			0.00	0.00	0.00
 Ejector FWD	6.9 %		7.62	0.30	7.92
			0.00	0.00	0.00
 Ejector Vib	12.4 %		8.32	1.26	9.58
			0.00	0.00	0.00
 Ejector BWD	5.4 %		9.58	0.55	10.13
			0.00	0.00	0.00

智慧製造工廠 iMF 4.0



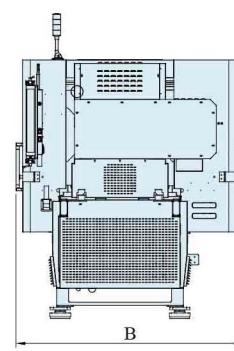
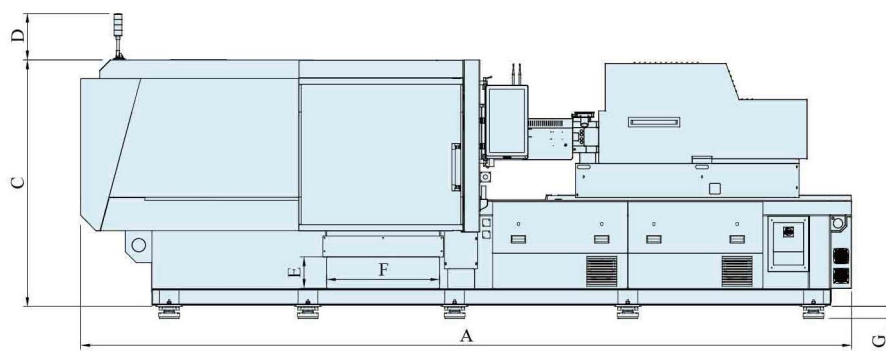
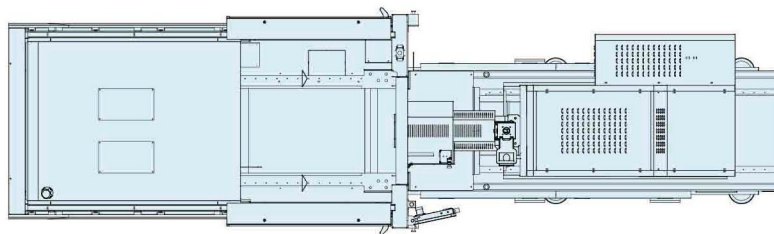
智慧製造工廠

- 智慧塑機 — 運用外加感測器，掌握因環境、塑料、設備磨耗的微量變異，提升射出機自適應調控能力。
- 智慧周邊 — 透過標準通訊協定，達到設備運轉、互聯及調控之目的。
- 智慧製造 — 由熔體變異或模穴壓力感測，即時線上監控品質，並搭配機械手臂檢出不良品，有效降低品檢人力。
- 智慧管理 — 透過智慧管理系統收集關鍵熔體變異數據。

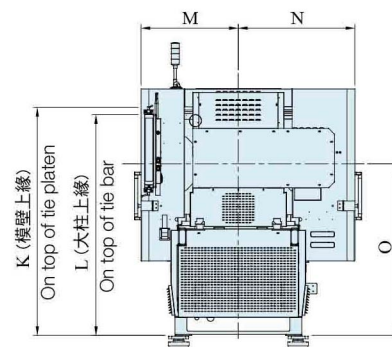
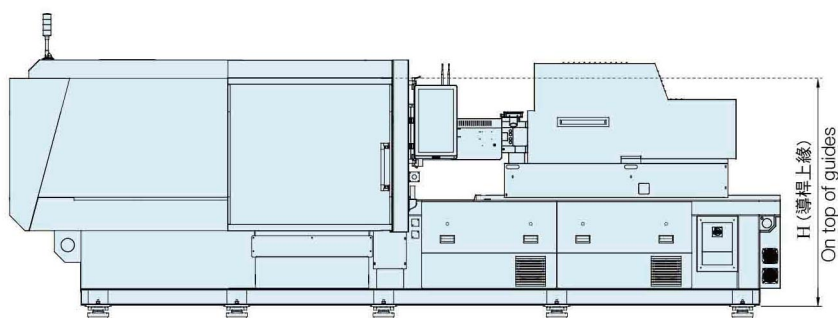
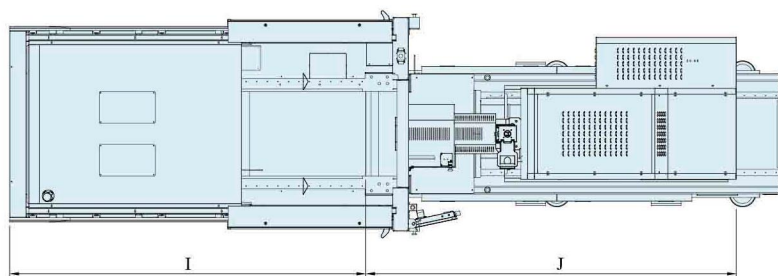
Intelligent ManuFactory

- **Smart Machine -**
Applying additional sensors to monitor and meet the slight fluctuations caused by the environment, material, or machine abrasion, and to improve the adaptive control of injection molding machines.
- **Smart Auxiliary -**
The IMM and auxiliaries could operate, communicate with each other through the standard communication protocol, to be adjusted and controlled.
- **Smart Manufacturing -**
Real-time online quality monitoring through the sensors of viscosity variation of melt, or cavity pressure, and detecting the defectives with automations, to effectively reduce the inspection manpower.
- **Smart Management -**
Using intelligent managing system to collect the key data of viscosity variation of melt.

CT-e 外觀尺寸圖 Machine Dimension



機種 Model	A	B	C	D	E	F	G
CT-50e	4200	1400	1900	351	287	522	90-110
CT-80e	4600	1500	1900	351	290	729	90-110
CT-120e	4800	1600	2000	351	287	720	90-110
CT-150e	5700	1700	2000	351	237	760	90-110
CT-180e	5900	1800	2000	351	237	857	90-110
CT-220e	6100	1900	2100	351	192	868	90-110
CT-280e	7300	2000	2100	351	195	868	90-110
CT-350e	7600	2200	2100	351	177	851	90-110
CT-450e	9100	2250	2250	341	197	710	90-110
CT-550e	9800	2400	2500	370	212	1038	90-110
CT-700e	10400	2600	2700	370	212	1045	90-110
CT-900e	11500	2700	2900	370	212	1045	90-110
CT-1100e	12000	2800	2900	370	212	1045	90-110



機種 Model	H	I	J	K	L	M	N	O
CT-50e	1480	1817	1998	1428	1390	588	663	1155
CT-80e	1561	2069	2256	1511	1477	619	704	1207
CT-120e	1650	2232	2256	1600	1553	670	755	1248
CT-150e	1628	2576	2804	1648	1605	695	846	1260
CT-180e	1706	2693	2804	1726	1670	737	882	1300
CT-220e	2815	2886	3022	1620	1570	810	930	1360
CT-280e	1990	3302	3609	1944	1895	899	990	1425
CT-350e	1985	3586	3487	2005	1950	1018	1078	1410
CT-450e	2150	4192	4485	2150	2077	1027	1147	1472
CT-550e	2137	4773	4625	2225	1970	1158	1252	1472
CT-700e	2200	4780	5620	2400	2300	1233	1327	1560
CT-900e	2300	5440	6560	2530	2445	1298	1392	1625
CT-1100e	2300	5880	6320	2673	2598	1353	1447	1703

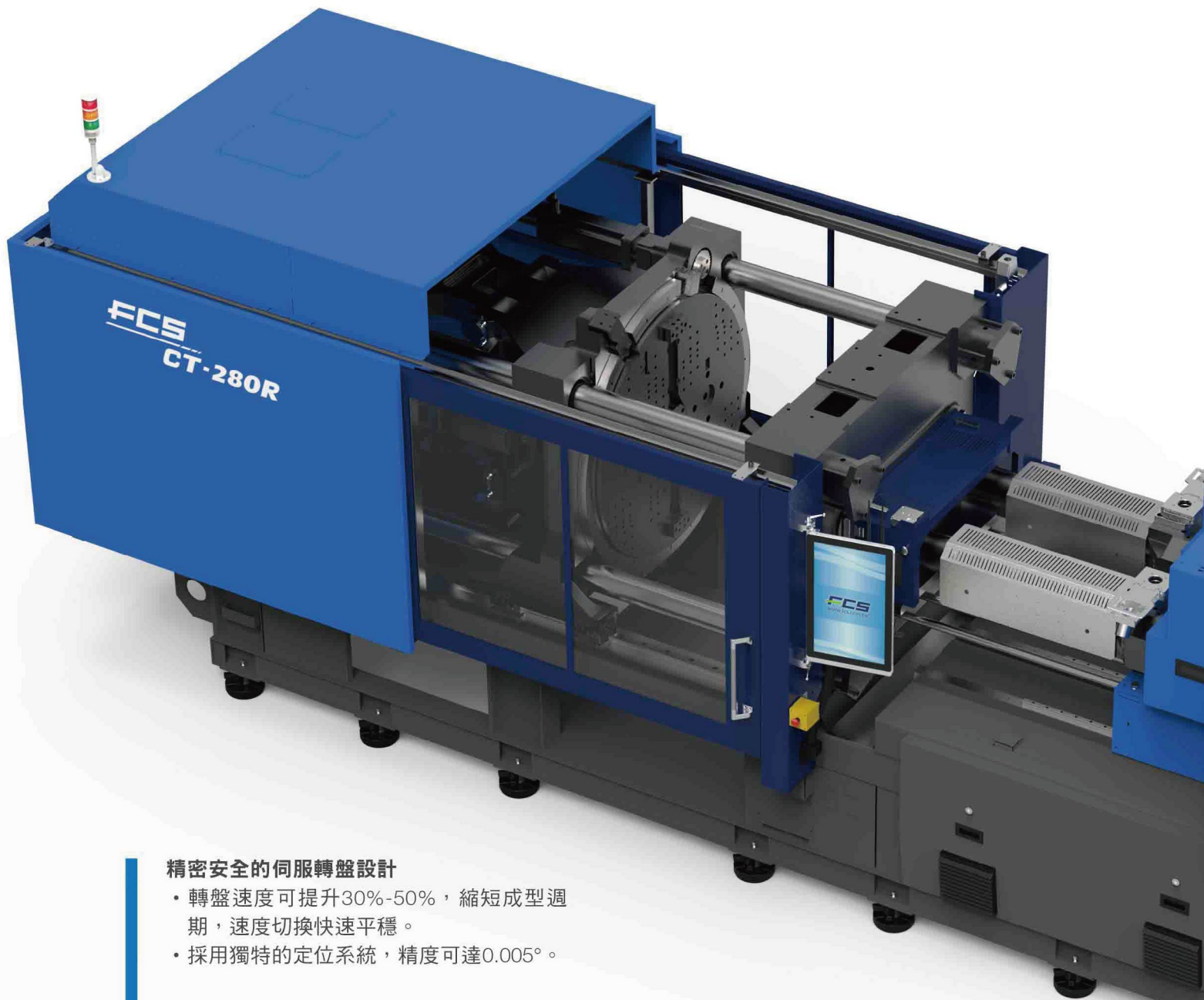
CT-e 標準與選購配備 Standard & Optional Accessories

配備項目	ITEM
6段開合模速度可調	6 adjustable open and close speeds
高精度位置、扭力控制	Precise positioning, speed and force control
高靈敏2段模具保護	High sensitivity mold protection with two stages
自動潤滑	Automatic lubrication
即時鎖模力顯示	Actual tonnage display on HMI
動模板使用線性導軌	Linear guide for moving platen
雙中子(一公一母)	Double core pull device (1 in moving platen, 1 in fixed platen)
3組風托(二公一母)	Air ejector sets (2 in moving platen, 1 in fixed platen)
大柱鎖模力監視(閉環控制)	Tie-bar Clamping force monitor(Close-loop)
雙迴路(開模與加料同動)	Double loops system (mould open - screw charge start)
電眼檢出	Photo cell drop-out checking device
模壁T型槽	T-slot platen
模壁T型墊板	T-slot board
活動式模定位圈	Check ring of mold (Replaceable)
頂桿回退確認	Ejector back end sensor
頂桿壓力保護	Ejector force protection
頂出保持功能	Ejector holding
開模中頂出功能	Ejector during mold opening
鎖模時頂出功能(模內切斷)	Ejector when mold closed (cut cold runner)
PVC、PC、壓克力、尼龍專用螺桿組	Special Screw for PC/PMMA/PA/PVC...
雙合金螺桿、料管	Bi-alloy Screw/Barrel
不鏽鋼料管護罩	Barrel cover with perforated metal
多段射出與保壓可調	Multi Stages pressure holding adjustable
多段背壓可調	Multi Stages rotate speed and Back pressure adjustable in platizing
預壓縮功能	Pre-compression function
止逆射嘴	Shut-off nozzle
落料口溫度顯示及控制	Temperature display and control of material feeding section
不銹鋼漏斗	Stainless hopper
托拉式落料裝置	Sliding material feeding device
射出安全護罩	Safety cover for injection
4種VP切換模式	4 VP transfer mode selection
陶瓷料管加熱圈	Ceramic barrel heater
24H料管自動定時預熱	24 hours Auto-preheat
熱電偶異常檢測	Heating zone and thermocouple failure detection
料管同步加熱	Zones heating up synchronous
射嘴獨立溫控	Temperature control of injection nozzle
21.5吋顯示器配備電容式觸控屏(FCS7000)	21.5 inch full color LCD with capacitive touch (FCS7000)
屏幕擷取	Print screen and save
運行流程分析	Breakdown analyzer
多種國際單位切換	Multi unit
電能計量(瓦時計)	Energy meter
熱澆道溫度控制器(整合PLC監控)	Hot runner controller
品質判別和統計以及品質曲線	Quality criteria and statistics, the quality curve
品質異常紀錄功能	Quality exception record
生產管理功能	Production management
歐規12接口	Euromap 12 interface
歐規67接口	Euromap 67 interface
水流分佈器4入4出(銅製)	Water manifold - 4 in & 4out (copper)
後安全門操作	Part remove from rear safety door
CE安全插座3組	CE safty socket
電源插座2組 (220V)	Power socket (220V)
三色警示燈	Three colors alam light
避震器	Anti-vibration mounting pad
工具箱組	Tool box set

● 標準配備 Standard ○ 選購配備 Option ▲ 選附配備 Free Option — 無 N/A

全電式轉盤雙色機 - CT-R

All-Electric Multi-Component Injection Molding Machine



精密安全的伺服轉盤設計

- 轉盤速度可提升30%-50%，縮短成型週期，速度切換快速平穩。
- 採用獨特的定位系統，精度可達0.005°。

Precise and safe rotary table driven by servo motor

- The rotation speed increases 30%-50%, which could shorten the cycle time, changing speed setting more smoothly.
- Rotation accuracy is up to 0.005° with the patented positioning system.

支援智慧管理系統

支援OPCUA協定，可整合iMF4.0智慧管理系統，提供差異化服務。

Support smart management system

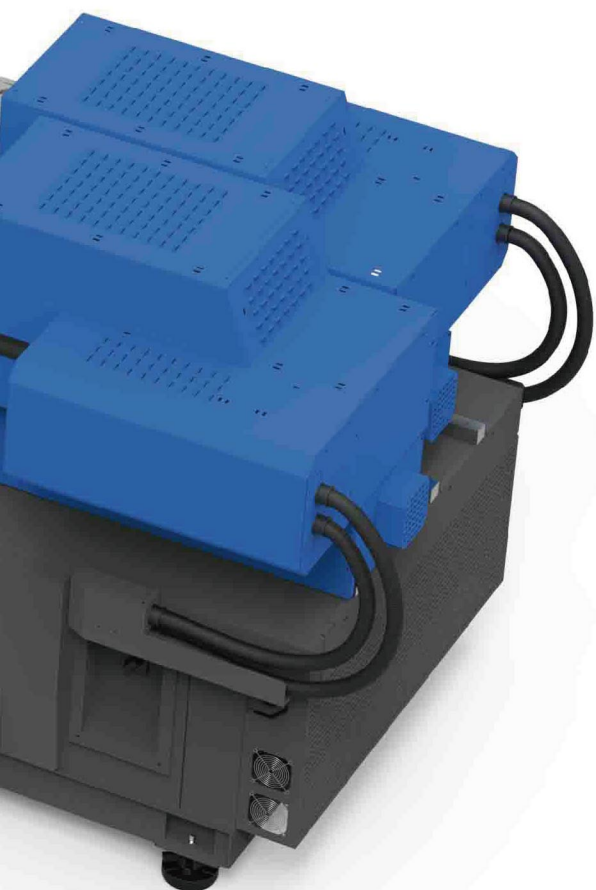
Support OPCUA agreement, can be integrated with iMF4.0 smart management system, provide differentiated services.

伺服馬達控制技術

全機採用伺服馬達控制，運動速度快且平穩，較傳統油壓省電40~70%。

Servo motor control technology

The whole machine is controlled by servo motors, all the movement is fast and stable. Compared with hydraulic machine, it saves electricity by 70-40%.



快速緊湊的射出單元

- 射出部分有二組或多組獨立料管組，同步做射出動作，大幅縮短成型週期。
- 螺桿及料管採用特殊合金鋼材，經離子氮化處理，耐腐蝕、耐磨性和耐高溫。

Fast and compact injection unit

- Multiple independent injection barrel allows simultaneous injection, greatly shortens the cycle time.
- With finest steel and most innovative ion-nitriding process, the hardest of screw and barrel reaches above HV950, to ensure high wear-resistance.

穩定生產的解決方案

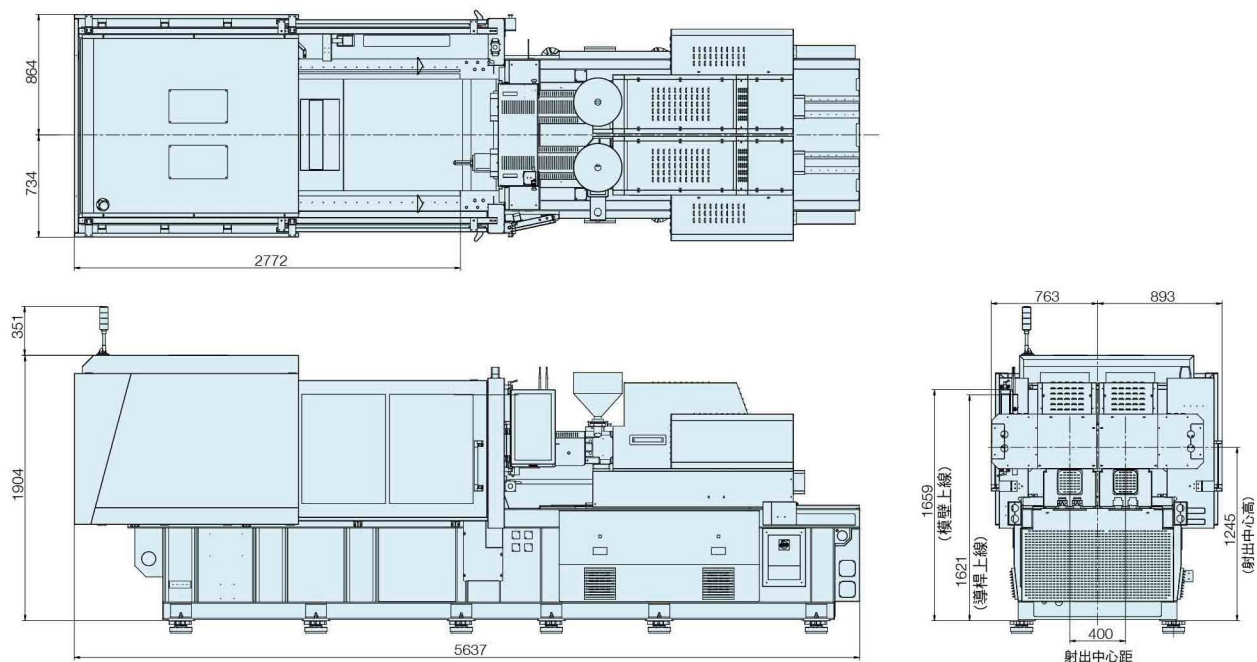
具高速生產及多軸同步控制，提供客戶最短周期設計，確保最大產能需求，且成型品重量穩定誤差<0.3%。

Stable production solutions

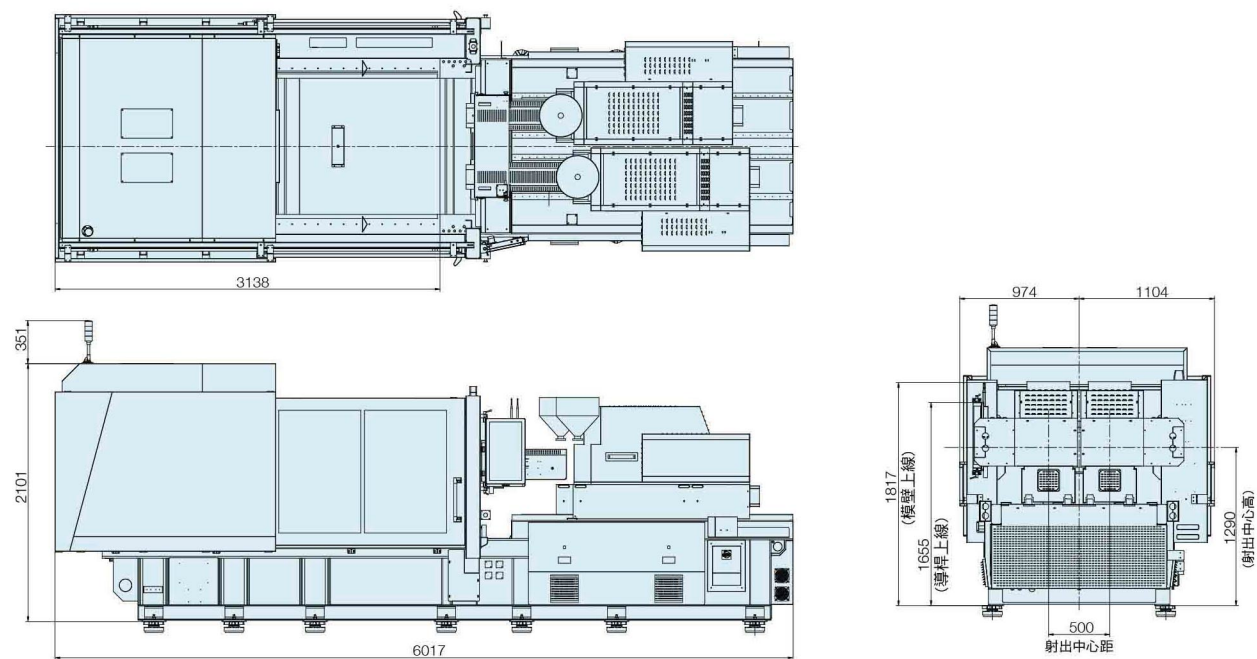
With high-speed production and multi-axis synchronous control, it provides customers with the shortest cycle design to ensure the maximum production demand, and the stability of the weight of the molded product is less than 0.3%.

CT-R 外觀尺寸圖 Machine Dimension

CT-180R



CT-230R / CT-280R



CT-R標準與選購配備 Standard & Optional Accessories

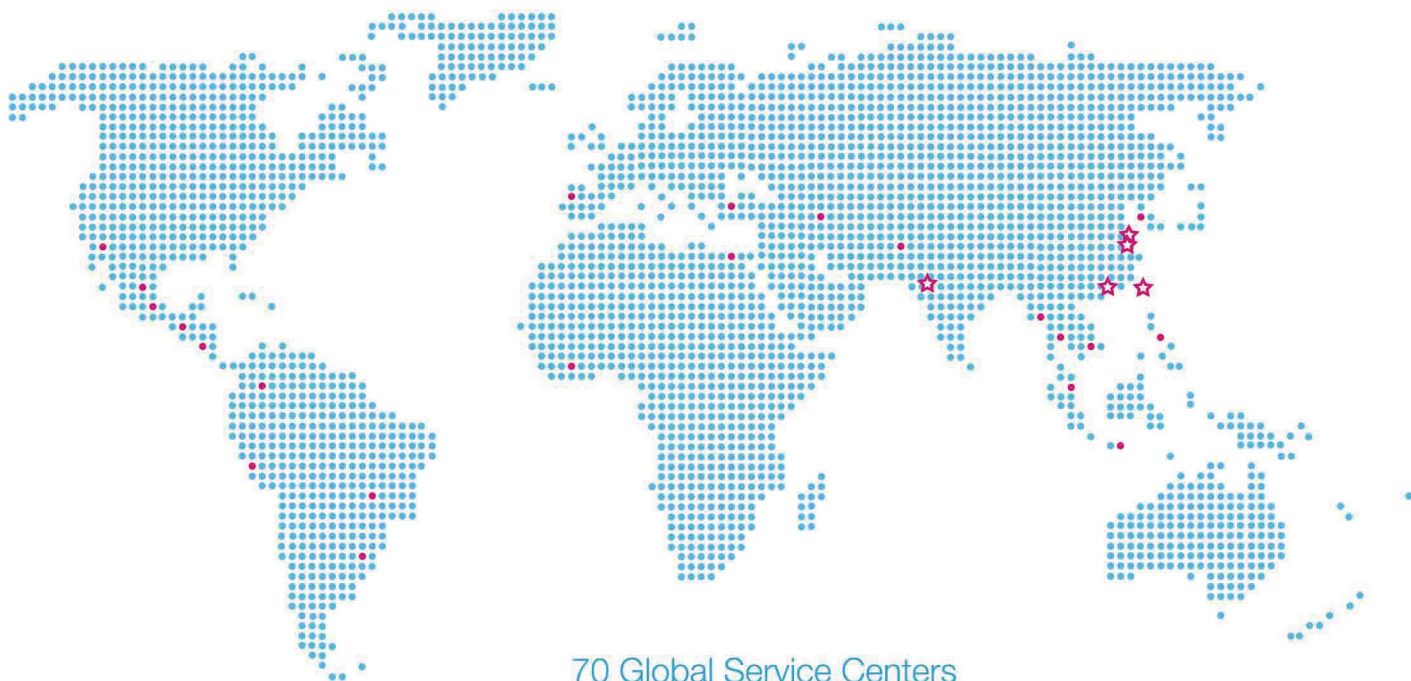
配備項目	ITEM	CT-180R	CT-230R	CT-280R
6段開合模速度可調	6 adjustable open and close speeds	●	●	●
高精度位置、扭力控制	Precise positioning, speed and force control	●	●	●
高靈敏2段模具保護	High sensitivity mold protection with two stages	●	●	●
自動潤滑	Automatic lubrication	●	●	●
電動雙托模	Double electric ejector	●	●	●
即時鎖模力顯示	Actual tonnage display on HMI	●	●	●
動模板使用線性導軌	Linear guide for moving platen	●	●	●
雙中子（一公一母）	Double core pull device (1 in moving platen, 1 in fixed platen)	○	○	○
雙中子（二公）	Double core pull device	○	○	○
四中子（二公二母）	Four core pull device	○	○	○
3組風托（二公一母）	Air ejector sets (2 in moving platen, 1 in fixed platen)	●	●	●
伺服馬達轉盤控制裝置	Servo motor control for rotary table	●	●	●
成品落下斜板	Article Collecting Channel	○	○	○
大柱鎖模力監視鎖（閉環控制）	Tie-bar Clamping force monitor(Close-loop)	○	○	○
雙迴路（開模與加料同動）	Double loops system (mould open - screw charge start)	●	●	●
電眼檢出	Photo cell drop-out checking device	○	○	○
模壁T型槽	T-slot platen	—	—	—
活動式模定位圈	Check ring of mold (Replaceable)	●	●	●
頂針回退確認	Ejector back end sensor	●	●	●
頂針壓力保護	Ejector force protection	●	●	●
頂出保持功能	Ejector holding	●	●	●
開模中頂出功能	Ejector during mold opening	●	●	●
鎖模時頂出功能（模內切斷）	Ejector when mold closed (cut cold runner)	●	●	●
PVC、PC、壓克力、尼龍專用螺桿組	Special Screw for PC/PMMA/PA/PVC...	○	○	○
雙合金螺桿、料管	Bi-alloy Screw/Barrel	○	○	○
不鏽鋼料管護罩	Barrel cover with perforated metal	●	●	●
多段射出與保壓可調	Multi Stages pressure holding adjustable	●	●	●
多段背壓可調	Multi Stages rotate speed and Back pressure adjustable in plasticizing	●	●	●
預壓縮功能	Pre-compression function	○	○	○
止逆射嘴	Shut-off nozzle	○	○	○
落料口溫度顯示及控制	Temperature display and control of material feeding section	●	●	●
不銹鋼漏斗	Stainless hopper	▲	▲	▲
乾燥機	Hopper dryer	○	○	○
托拉式落料裝置	Sliding material feeding device	●	●	●
射出安全護罩	Safety cover for injection	●	●	●
4種VP切換模式	4 VP transfer mode selection	●	●	●
陶瓷料管加熱圈	Ceramic barrel heater	○	○	○
24H料管自動定時預熱	24 hours Auto-preheat	●	●	●
熱電偶異常檢測	Heating zone and thermocouple failure detection	●	●	●
料管同步加熱	Zones heating up synchronous	●	●	●
射嘴獨立溫控	Temperature control of injection nozzle	●	●	●
21.5吋顯示器配備電容式觸控屏(FCS7000)	21.5 inch full color LCD with capacitive touch (FCS7000)	●	●	●
屏幕擷取	Print screen and save	●	●	●
運行流程分析	Breakdown analyzer	●	●	●
多種國際單位切換	Multi unit	●	●	●
電能計量（瓦時計）	Energy meter	○	○	○
熱澆道溫度控制器（整合PLC監控）	Hot runner controller	○	○	○
品質判別和統計以及品質曲線	Quality criteria and statistics, the quality curve	●	●	●
品質異常紀錄功能	Quality exception record	●	●	●
生產管理功能	Production management	●	●	●
歐規12接口	Euromap 12 interface	●	●	●
歐規67接口	Euromap 67 interface	○	○	○
水流分佈器4入4出（銅製）	Water manifold - 4 in & 4out (copper)	●	●	●
水流分佈器8入8出（銅製）	Water manifold - 8 in & 8 out	●	●	●
水流分佈器10入10出（銅製）	Water manifold - 10 in & 10 out	○	○	○
後安全門操作	Part remove from rear safety door	○	○	○
CE安全插座3組	CE safety socket	●	●	●
電源插座2組(220V)	Power socket (220V)	●	●	●
前安全門電磁鎖保護裝置	Safety door lock protection device	●	●	●
三色警示燈	Three colors alarm light	●	●	●
避震器	Anti-vibration mounting pad	●	●	●
工具箱組	Tool box set	●	●	●

● 標準配備 Standard

○ 選購配備 Option

▲ 選附配備 Free Option

— 無 N/A



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