

AR Plastic Machine Controller Series



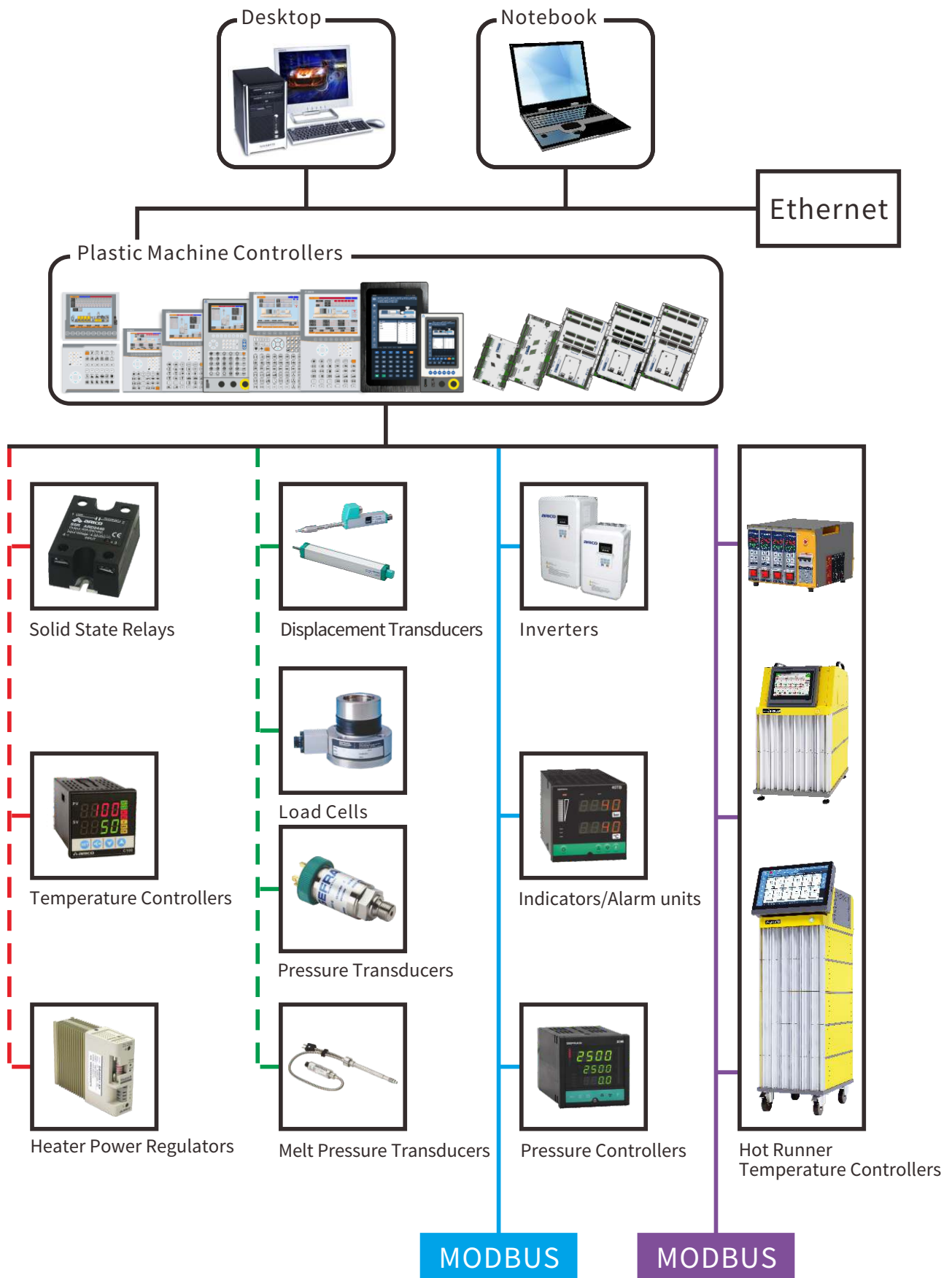
Easy To Link
Good Extensibility
Distributed Control System



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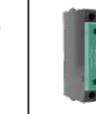
ARICO TECHNOLOGY

Total Solutions for Plastic Machines



Products Overview

GEFRAN authorized agent & other products

Pressure Transducers						
	K3 Series		KE Series		KN Series	
						
	M3 Series		ME Series		MN Series	
						
	M5 Series		M6 Series		KS/TK	
Displacement Transducers						
	LT/LT67/LTC		PC		PK	
						
	PA1		PY1/PY2/PY3			
						
	PZ12/PZ34		PC67/PZ67A/PZ67S		PMA12/PME12/PMI12	
						
	PMI-SL/PMI-SLE					
Controller/Alarm unit/ Programmer/Indicator						
	IC		PR65		PS	
						
	PCIR 101-102					
						
Power Controller/ Solid State Relay						
	GRM-H		GRP		GRP-H	
Ceramic Band Heater						
	GRS		GRS-H		GRZ	
Ceramic Band Heater						
	GRZ-H		GQ			
Ceramic Band Heater						
	Ceramic Band Heater		Insulation Plus Ceramic Band Heater		Air Cooled Ceramic Band Heater	

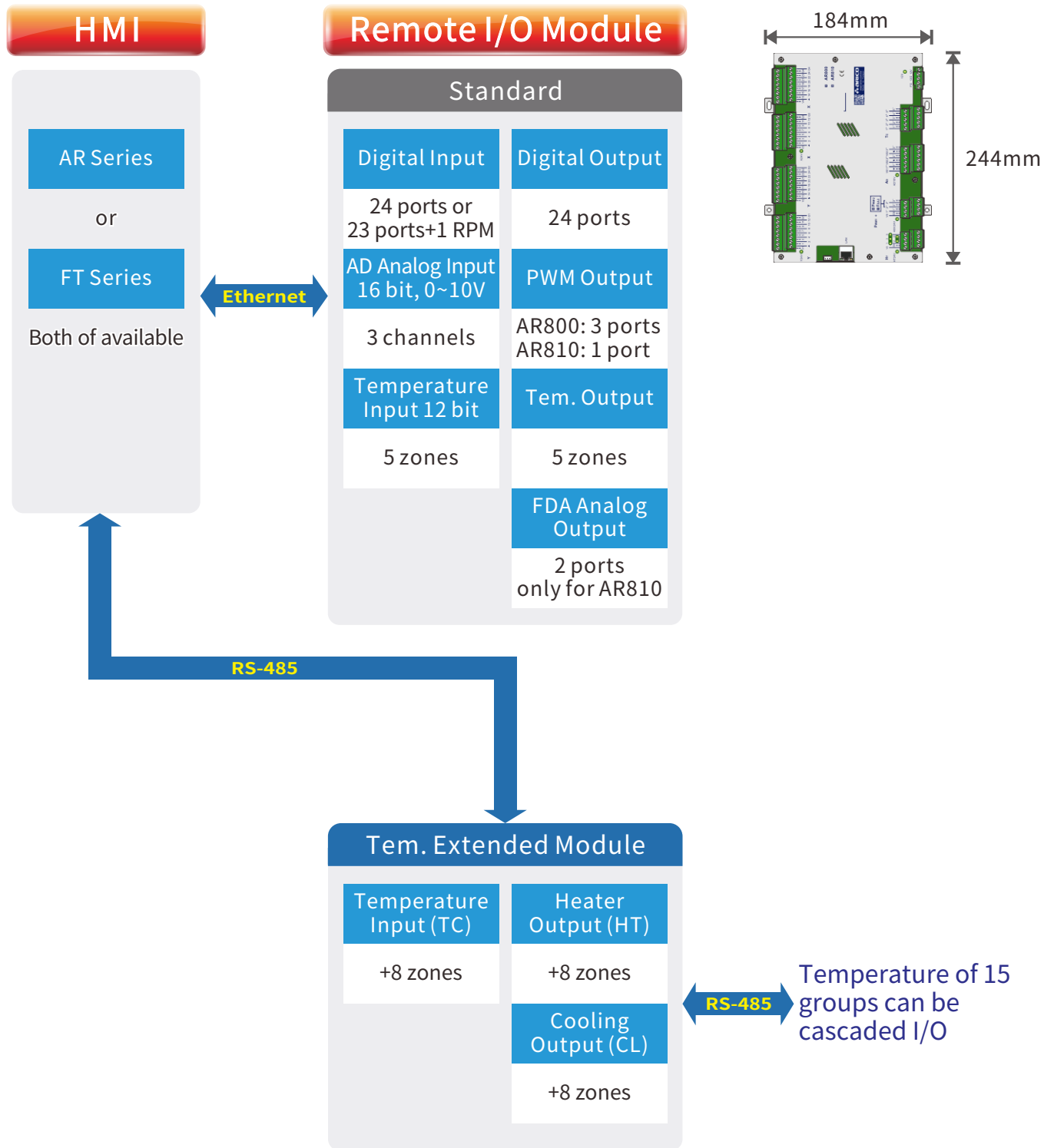
Products Overview

Temperature Controllers V Series							
	V100	V200	V300	V400	V500		
Temperature Controllers C Series							
	C100	C200	C300	C400	C500		
Temperature Controllers A Series							
	A1AN	A1DN	A2DA	A2DD	A3AN	A3AA	A3AD
							
	A3DA	A3DD	A4AA	A4AD	A4AN	A4DA	A4DD
Temperature Controllers TC Series							
	H2DA	TC2DA	TC3AA	TC3AO	TC3DA		
							
	TC3DO	TC4AA	TC4AO	TC4DA	TC4DO		
Hot Runner Temperature Controllers							
			TC5T	TC5H	TC5E Plus	TC5E	
					Valve Gate Controller		
			TC50	TC500			TC5V
Plastic Machine Controllers							
	AR800/AR810/AR1280/AR2000/AR2010/AR2100						AR/FT/FTS Series - HMI
Solid State Relay							
	ARD24 Series	ARD48 Series	SY Series	SV Series	SW Series		
Heatsoft		Signal Transmitter					
	SB Series			TR100/TR200			

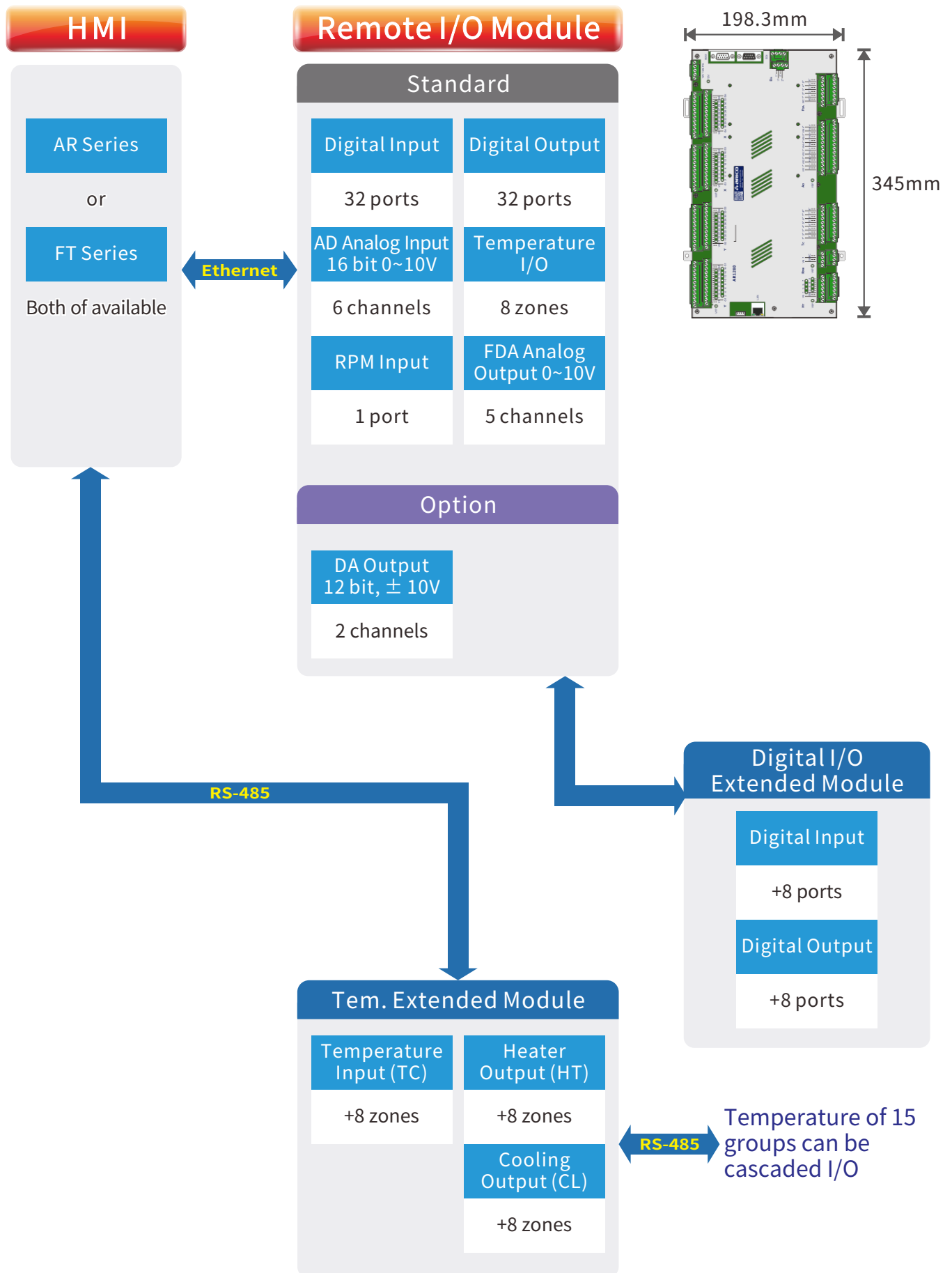
Product Characteristics

- It is simple to update all of program via USB memory driver.
- DCS control (HMI and Remote I/O module) for easy access of external device and/or controller.
- Various HMI size options: 7"/8"/10.1"/10.4"/12.1"/15.6"/17.3"/21.5".
- High speed Ethernet communication between HMI and Remote I/O module.
- RS485 and Ethernet (Option) Interface.
- State-of-the-art window system HMI Screen Editor design by ARICO.
- PLC ladder editor for process program.
- It is non-industrial personal computer board, because the CPU of PC update very fast, face stop manufacture and version change, software maintain and cost will go high.
- I/O function define self and shift function:
 1. Change the defect I/O to another by setting, to solve problem at once.
 2. For some multi function valve, use program control them, it can use one program to apply the timing of the different hydraulic valve in extent permitted.
 3. For some multi function valve, use program control them, and collect them to front I/O to save the I/O ports.
(DO have to consider the 2A/port, 16 ports max. is 10A)
 4. Define different DI, DO, AI, AO for different model machine, no need to modify the wiring, just setting to suitable hardware.
(Example: it can be applied at old machine replace new controller, no need re-wire the all wires)
- Flip up icon of screen and alarm message.
- PLC Real-Time control.
- The 10 levels control for user.
- The present screen picture can be saved via USB port to external memory device (USB memory device).

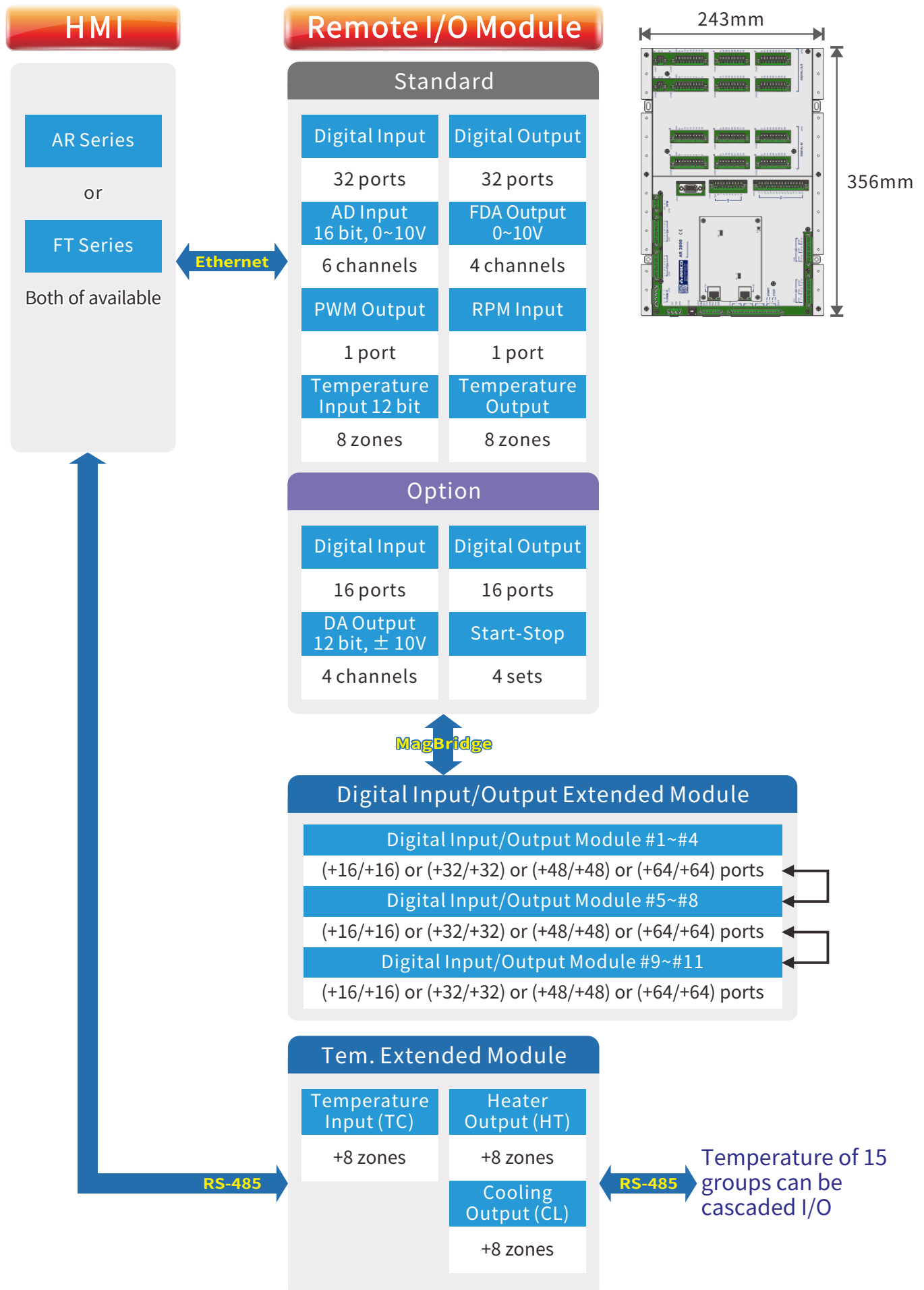
AR800/AR810 System Block Diagram (NPN)



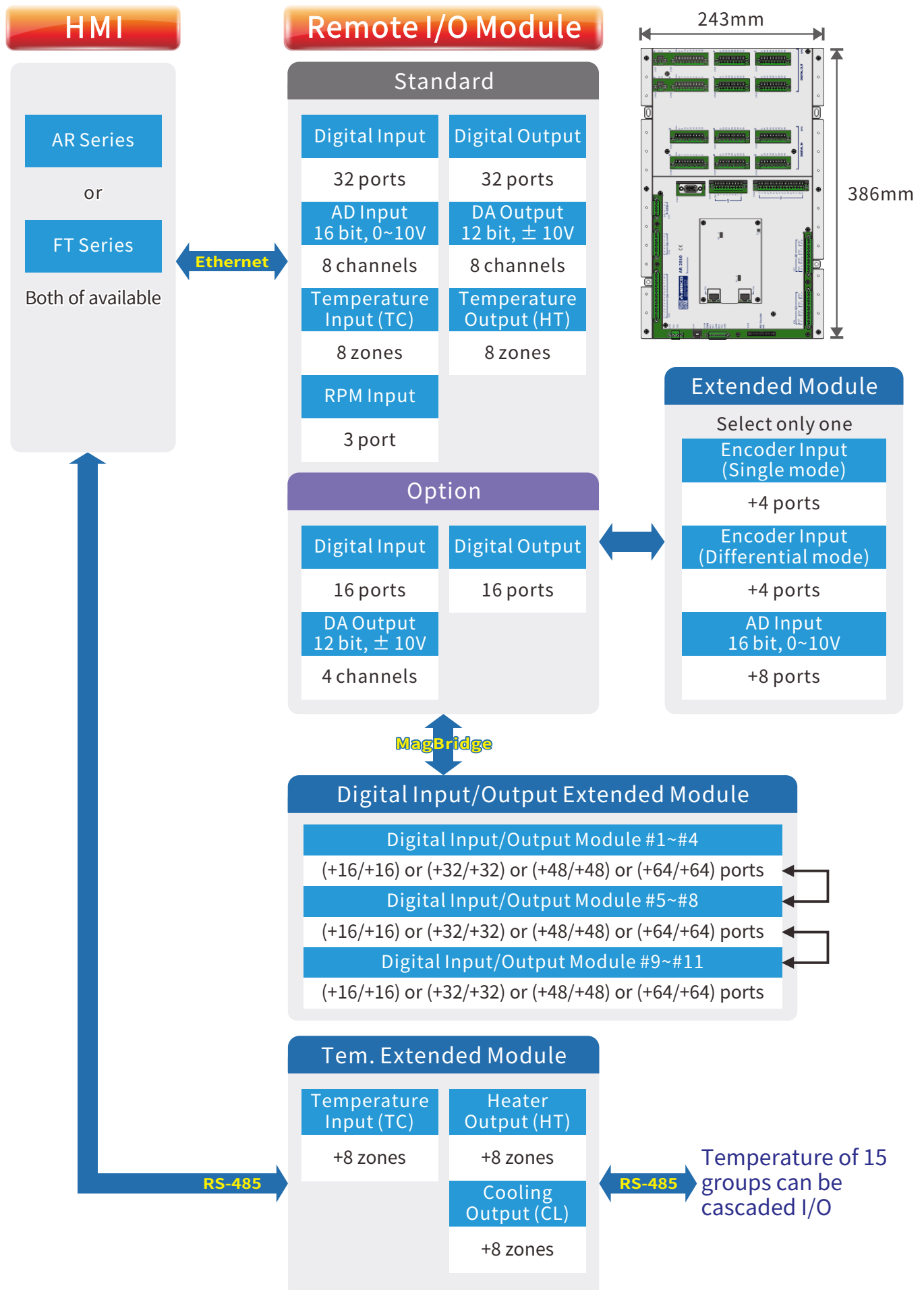
AR1280 System Block Diagram (NPN)



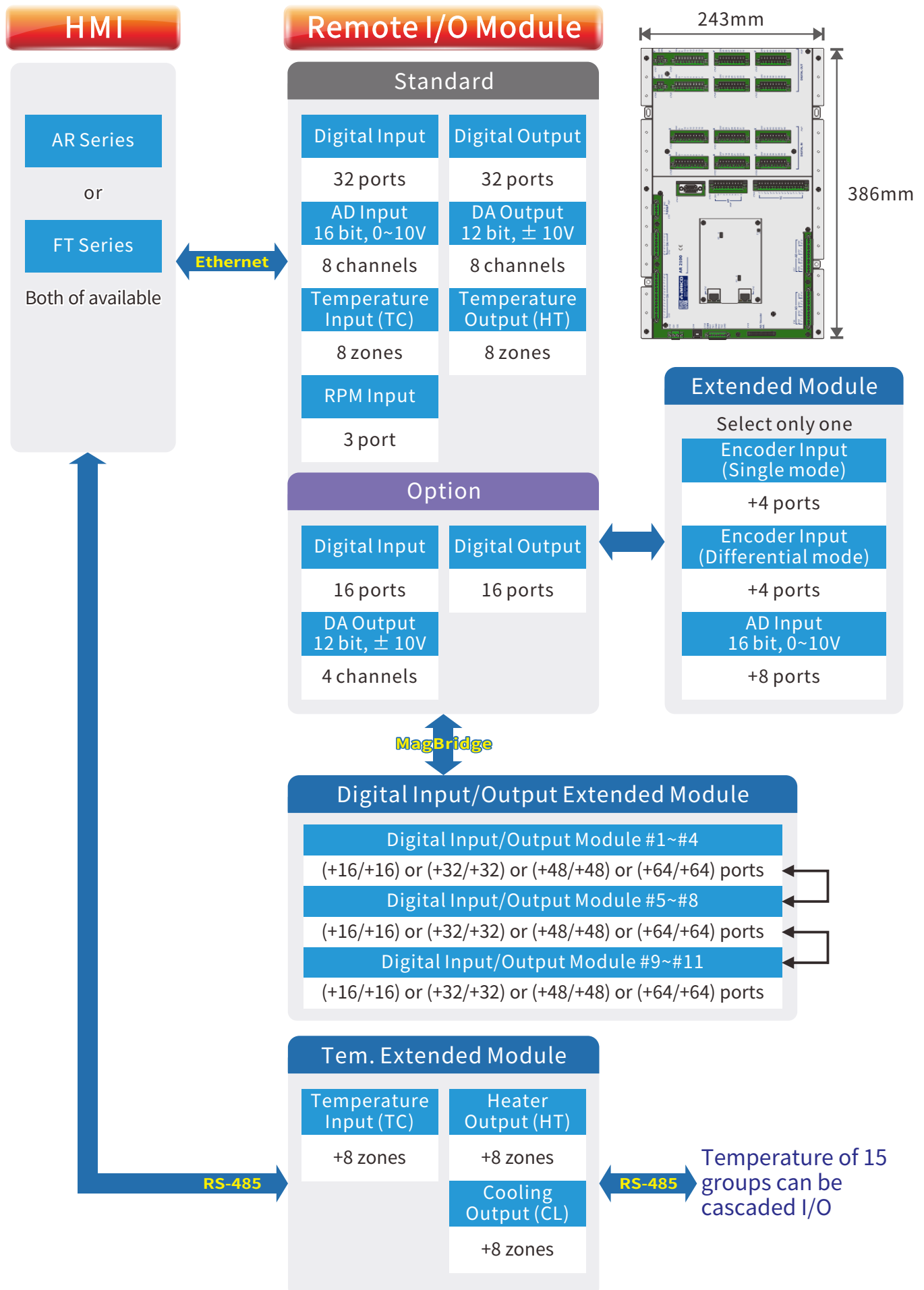
AR2000 System Block Diagram (NPN)



AR2010 System Block Diagram (NPN)



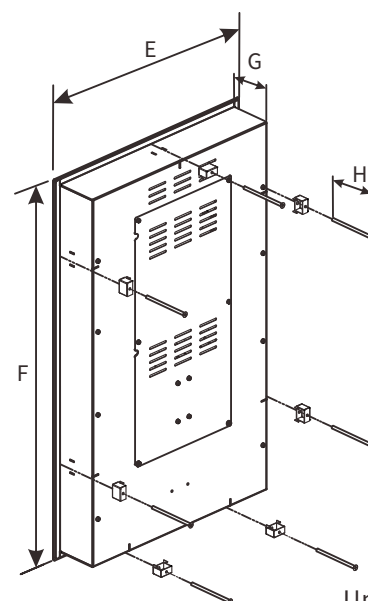
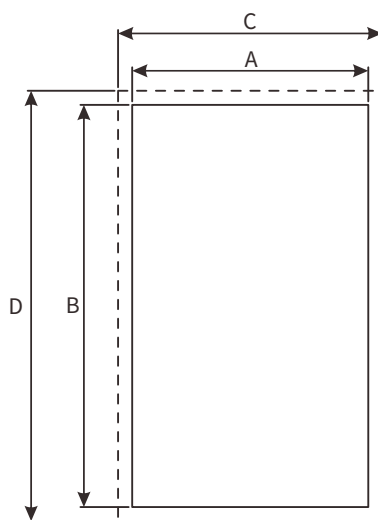
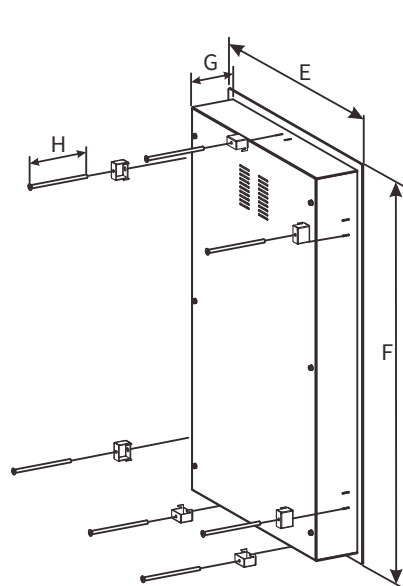
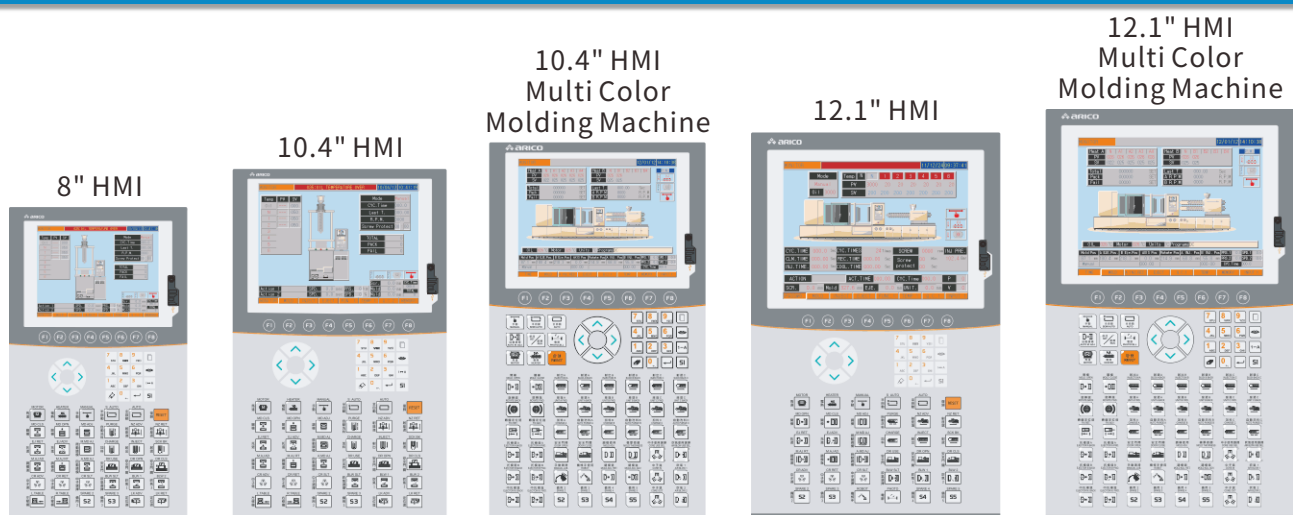
AR2100 System Block Diagram (PNP)



Specification Comparison Table

HMI Specifications Comparison Table							
Categories	AR series			FTS series			FT series
HMI	7"/8"/10.4"/12.1"			10.1"	15.6"		15.6"/17.3"/21.5"
HMI CPU	Vesper/266 MHz	Vela/1 GHz		2 GHz			
Internet Connection	Yes (optional)	Yes		Yes	×	Yes (optional)	Yes
RS-485	1	1	2	2	1	2 (optional)	1
CANopen	×	1	×	1	1		×
Wi-Fi	×	Yes (optional)		Yes			
Touch Panel	Yes (optional) , able to expand with a touch panel (10.4"/12.1")			Yes			
Controller Specifications Comparison Table							
Categories	AR800/AR810	AR1280		AR2000	AR2010		AR2100
PLC CPU	528 MHz	528 MHz		520 MHz			
Control CPU	72 MHz	528 MHz Time base = 0.25ms		520 MHz Time base = 0.25ms			
I/O Connection	NPN	NPN		NPN	NPN		PNP
Temperature PID Control	5	8		8	8		8
DI Digital Input	24 or 23+1 RPM	32		32/48	32/48		32/48
DO Digital Output	24	32		32/48	32/48		32/48
AD Analog Input	16 bit*3	16 bit*6		16 bit*6	16 bit*8		16 bit*8
Start-Stop	×	×		×/4	×		×
FDA Analog Output	×/2	12 bit*5 (0~+10V)		12 bit*4 (0~+10V)	×		×
DA Analog Output	×	12 bit*0/2 (0~± 10V)		12 bit*0/4 (0~± 10V)	12 bit*8/12 (0~± 10V)		12 bit*8/12 (0~± 10V)
PWM Output	3/1	×		1	×		×
RPM Input	×	1		1	3		3
FPGA	×	PLC CPU & Control CPU data transmitted through a parallel FPGA connection; allows more precise control accuracy					
Hardware Expansion Specifications Comparison Table							
Temperature Module	Man-machine communication allows 15 sets of temperature module expansions; each module includes 8-zones temperature control						
I/O Expansion Module	×	Able to expand 1 module; each module DI/DO*8 (Max=8)		Able to expand 12 modules; each module DI/DO*16 (Max=192)			
AD Expansion Module	×	×		×	16 bit*8		16 bit*8
Encoder Expansion Module	×	×		×	32 bit*4		32 bit*4

AR Series HMI Dimensions



Unit: mm

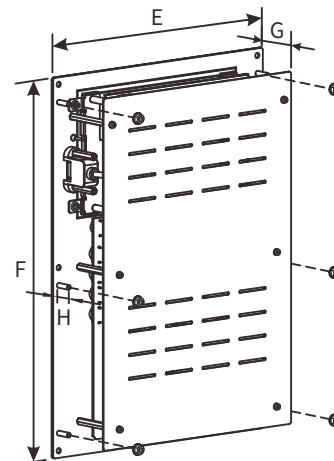
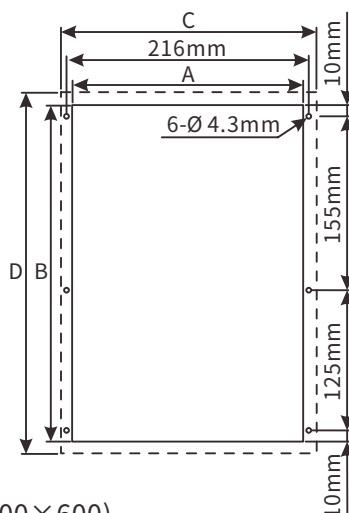
LCD size	Dimensions of Installation Opening		Recommended Margin Dimensions (chassis interior diameter)		Width	Height	Depth	Length of Screw	Recommended Chassis Depth
	A	B	C	D	E	F	G	H	
8"	219	400	299	480	237.5	417.8	61	70	80
10.4"	267	451	347	531	285	469.1	61		
10.4" Multi Color Molding Machine	271	487	351	567	288.9	505.3	64		
12.1"	314	500	394	580	332	517.5	61		
12.1" Multi Color Molding Machine	314	531	394	611	332	548.5			



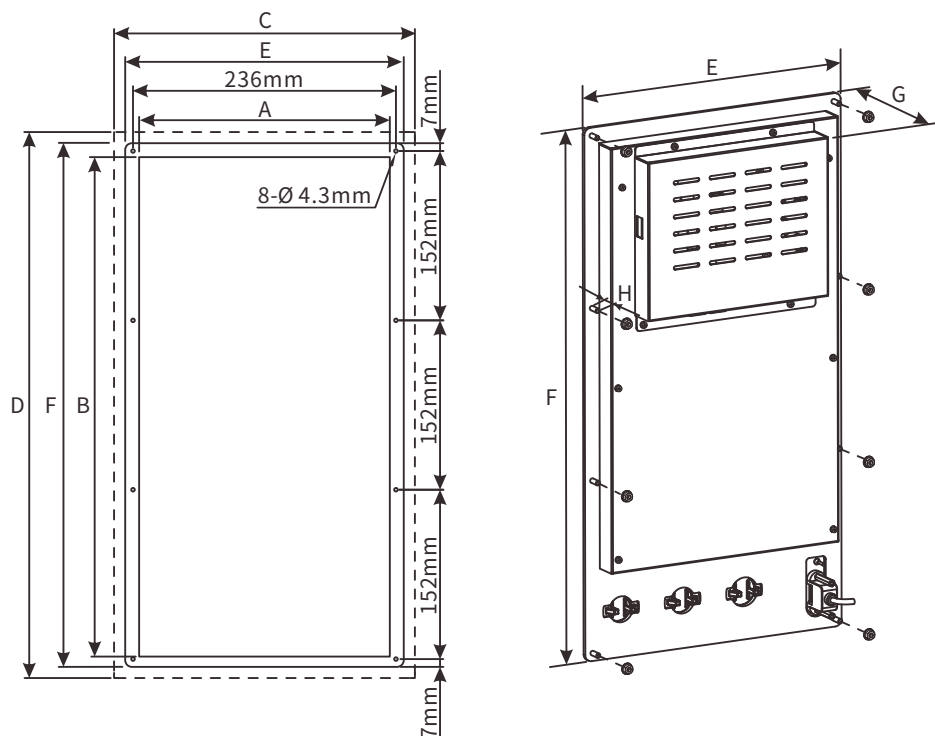
7" HMI

Unit: mm

LCD size	7"
Dimensions of Installation Opening	A 206 B 300
Recommended Margin Dimensions (chassis interior diameter)	C 286 D 380
Width	E 228
Height	F 322
Depth	G 51
Length of Screw	H 10
Recommended Chassis Depth	80



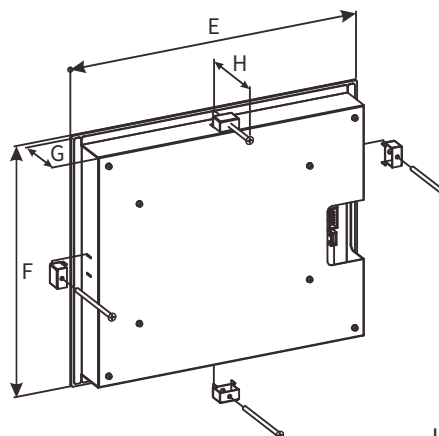
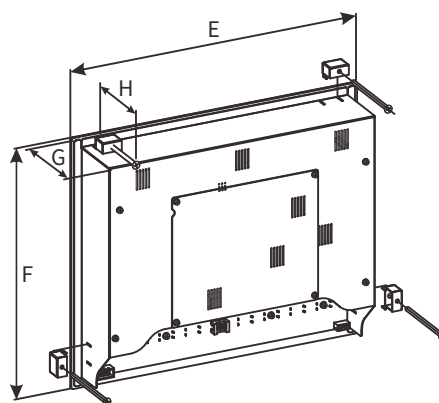
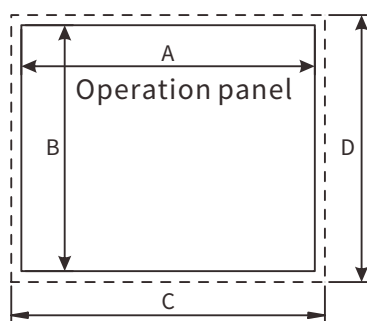
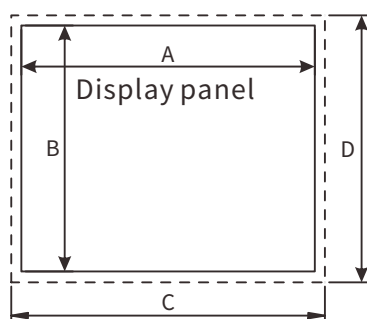
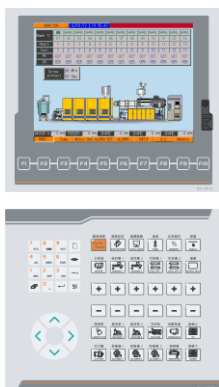
Note: 7" is (800×480), other LCD modules are all (800×600)



Unit: mm

LCD Size	Dimensions of Installation Opening		Recommended Margin Dimensions (chassis interior diameter)		Width	Height	Depth	Length of Screw	Recommended Chassis Depth
	A	B	C	D	E	F	G	H	
8"	224	446	304	526	250	470	51	10	80

10.4" Extruder Machine



Unit: mm

Panel	Dimensions of Installation Opening		Recommended Chassis Inside Margin		Width	Height	Depth	Length of Screw	Recommended Chassis Depth
	A	B	C	D	E	F	G	H	
10.4" Display	270	227	350	307	287.6	244.8	61	70	80
10.4" Operating							34		

-

-
- Figure 1-10: Inverter Function Key Definitions
- | | | | | | | |
|-----------|---------|---------|--------|---------|--------|--------|
| MOTOR | HEATER | MANUAL | B AUTO | AUTO | RESET | 1 PAGE |
| MD ON | MD CLS | MD ADJ | PURGE | NZ ADV | NZ RET | LAMP |
| EJ RET | EJ ADV | M-MO AJ | CHARGE | PUNCT | SCR BK | SPIN1 |
| M-AJ RT | M-AJ AD | A-MO AJ | A-B | CHANGE | DR ON | DR CLS |
| LUBRICATE | CR RET | CR ADV | CR ILT | BLW ILT | BLW 1 | BLW 2 |
| RUSTY | | | | | | |

Module name : ABC

0

MONITOR

MOLD

INJECTION

EJECTOR

FUNCTION

TEMP 1

Q.C.1

MEMORY

Hold

0.5 mm

Screw

0.0 mm

Ejector

0.0 mm

NZ unit

0.0 mm

Pressure

0.0 Kg

Screw SPD.

0 rpm

Act Time / Cyc Time

00.00 sec 00.00 sec

Set PHS. / SPD.

0 Kg 0 %

SPC.

Total	1
PACK	1
Fail	0

Temp

Temp.	SV	PV
Zn	20	33
1	20	33
2	20	33
3	20	33
4	20	33
5		
6		
Oil		32

MONITOR

PASSWORD

VERSION

PAGE INDEX

IP SET

ACTION TIME

MOTOR

HEATER

MANUAL

S AUTO

AUTO

RESET

NEXT

MD OPN

MD CLS

MD ADJ

PURGE

NZ ADV

NZ RET

Language

EJ RET

EJ ADV

M.MD AJ

CHARGE

INJECT

SCK BK

S1

M.AJ RT

M.AJ AD

A.MD AJ

CHANGE

DR OPN

DR CLS

LUBRICATE

CR RET

CR ADV

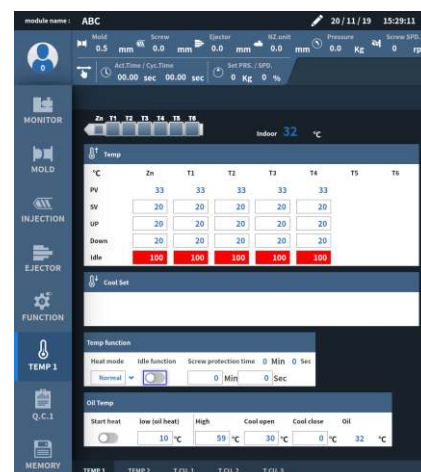
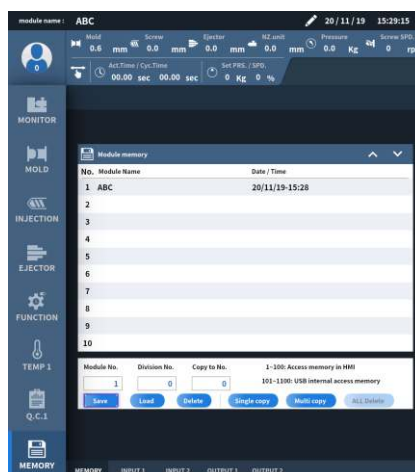
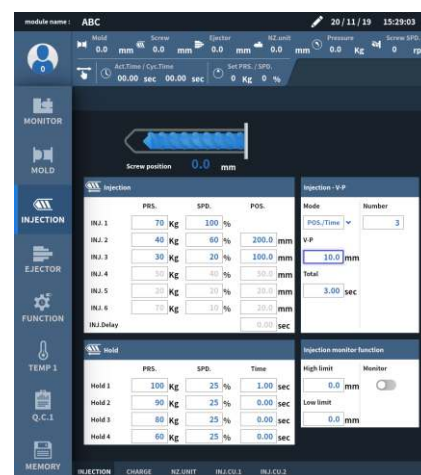
CR SLT

BLW SLT

BLW 1

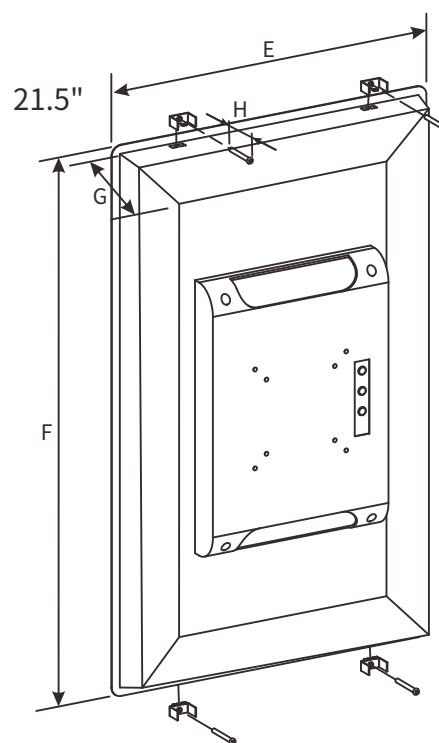
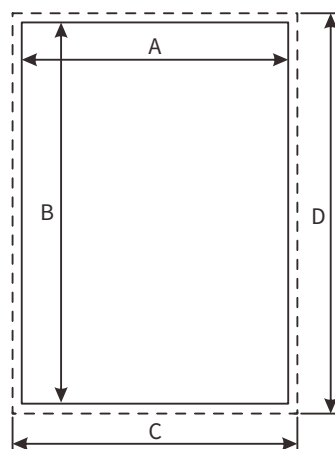
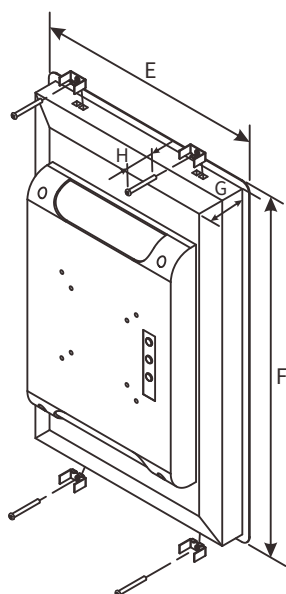
BLW 2

ROBOT



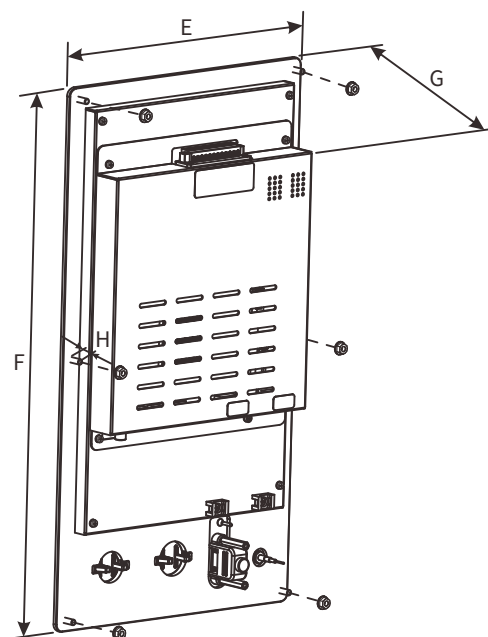
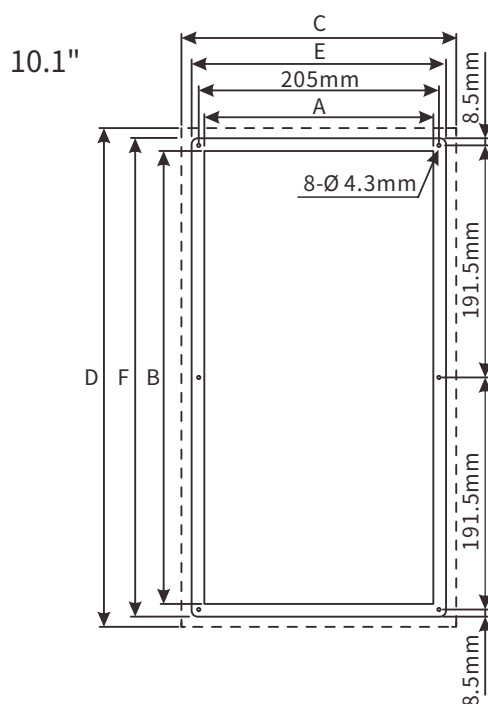
FT/FTS HMI Dimension

15.6"
17.3"



Unit: mm

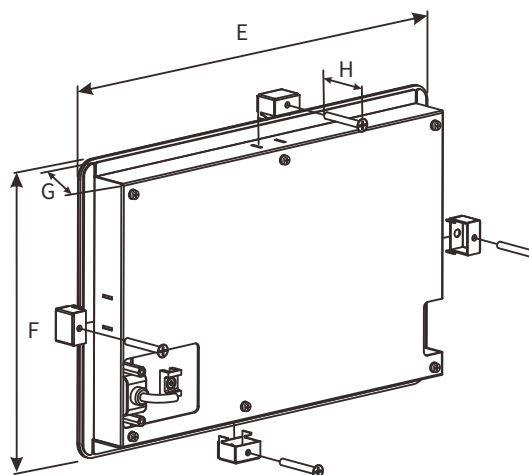
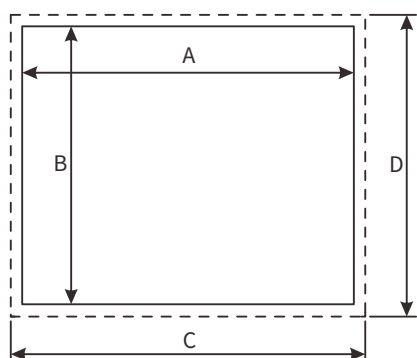
LCD Size	Dimensions of Installation Opening		Recommended Margin Dimensions (chassis interior diameter)		Width	Height	Depth	Length of Screw	Recommended Chassis Depth
	A	B	C	D	E	F	G	H	
15.6"	253	404	333	484	269	420	70	35	80
17.3"	274	441	354	521	291	458	62		
21.5"	329.5	541.5	409.5	621.5	345	557	63		



Unit: mm

LCD Size	Dimensions of Installation Opening		Recommended Margin Dimensions (chassis interior diameter)		Width	Height	Depth	Length of Screw	Recommended Chassis Depth
	A	B	C	D	E	F	G	H	
10.1"	191	372	271	452	220	400	40	10	80

35 Keys Operation Panel



Unit: mm

Operation Panel	Dimensions of Installation Opening		Recommended Margin Dimensions (chassis interior diameter)		Width	Height	Depth	Length of Screw	Recommended Chassis Depth
	A	B	C	D	E	F	G	H	
35 Keys	251	157	331	237	269	175	25	30	80

External Expansion Modules

HMI

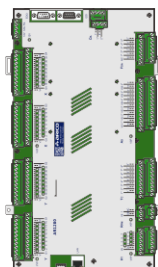
Temperature Expansion
Module (iron shell)

Temperature Expansion
Module (plastic shell)

16 * DI & 16 * DO
Expansion Board (iron shell)

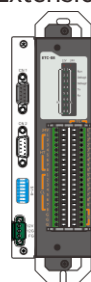
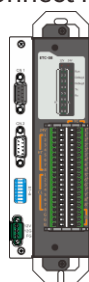
AR1280

NPN



NPN

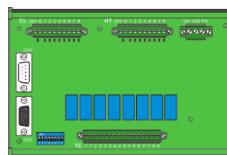
(Connect HMI) (Extension)



Cable standard
= 5m or customize

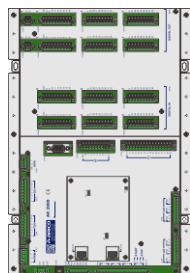
Cable standard
= 0.45m

NPN



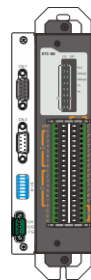
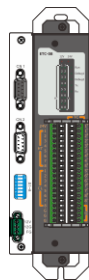
AR2000

NPN



NPN

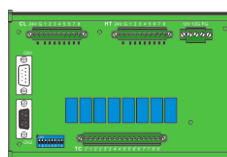
(Connect HMI) (Extension)



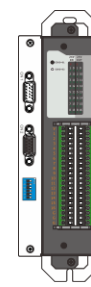
Cable standard
= 5m or customize

Cable standard
= 0.45m

NPN



NPN

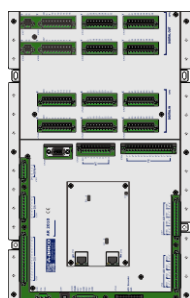


Main board
(Max. 192 ports)

Expansion board

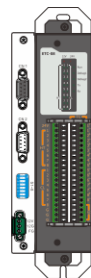
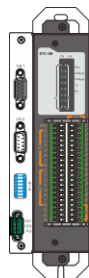
AR2010

NPN



NPN

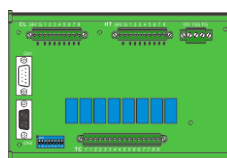
(Connect HMI) (Extension)



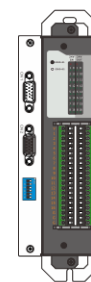
Cable standard
= 5m or customize

Cable standard
= 0.45m

NPN



NPN

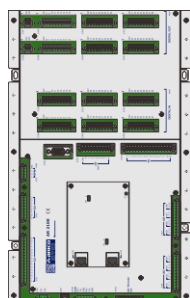


Main board
(Max. 192 ports)

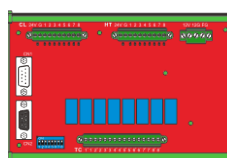
Expansion board

AR2100

PNP



PNP



Remote I/O Module

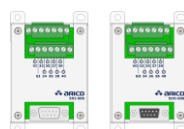
16 * DI & 16 * DO
Expansion Board (plastic shell)

4 Channels Encoder
Expansion Module

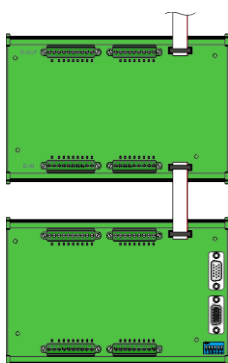
8 * DI & 8 * DO
Expansion Module

AD Expansion Module

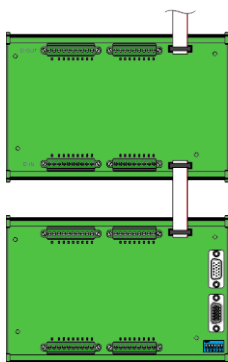
NPN



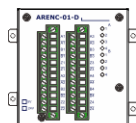
NPN



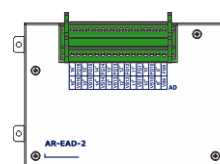
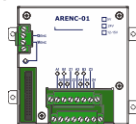
NPN



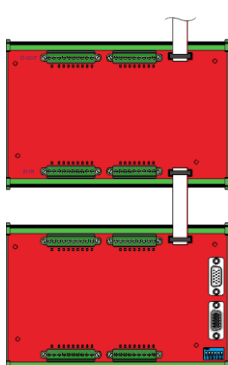
Line driver



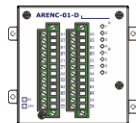
Open collector



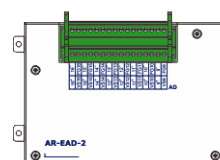
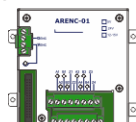
PNP



Line driver

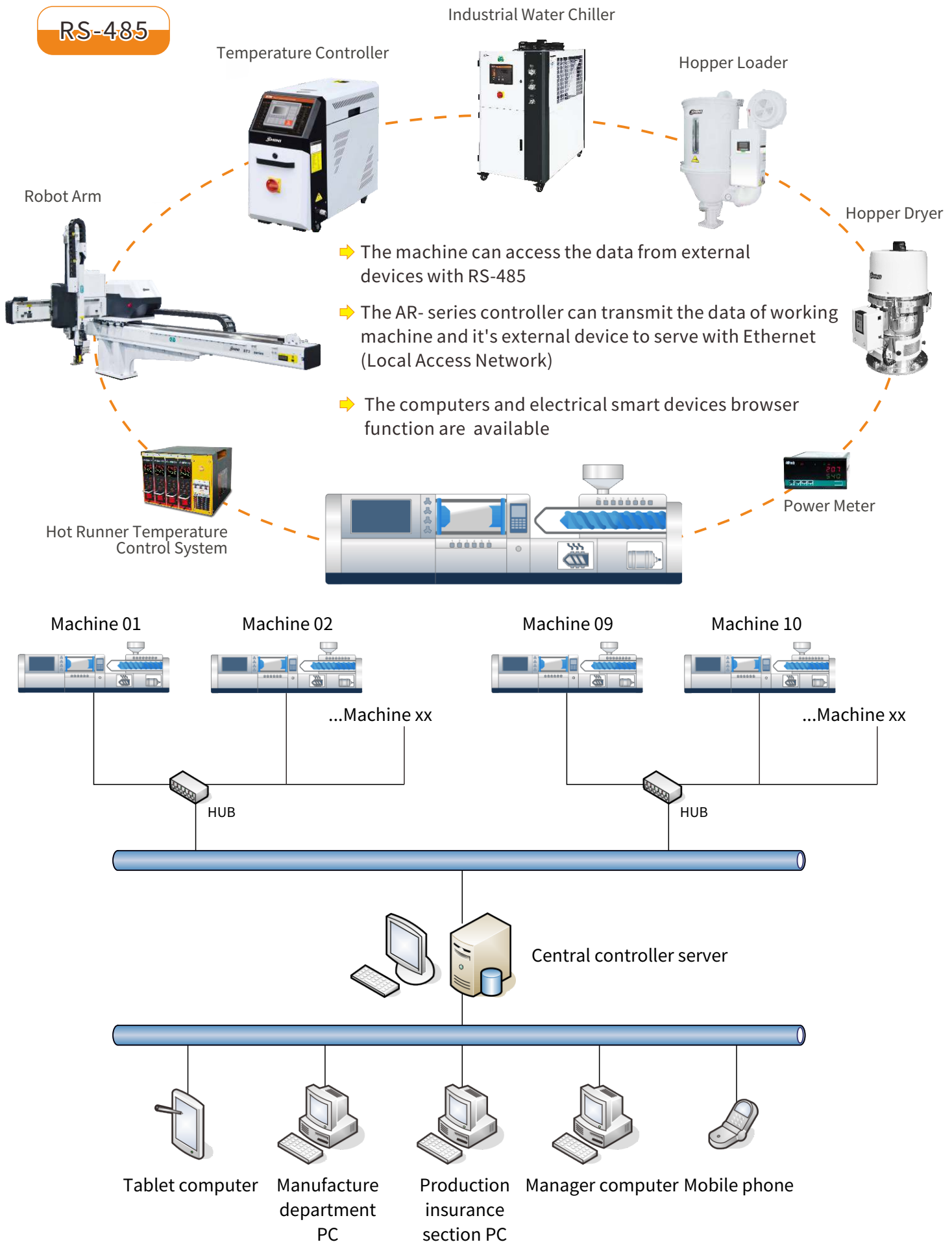


Open collector

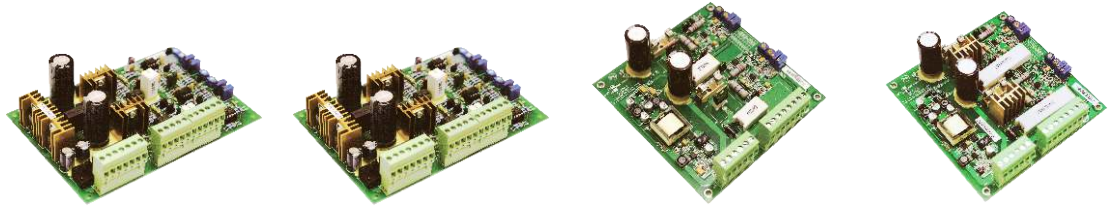


IoT System Architecture

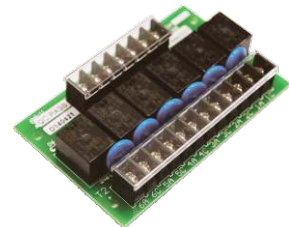
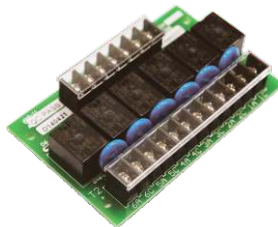
Image source: SHINI PLASTICS TECHNOLOGIES, INC.



Other Accessories



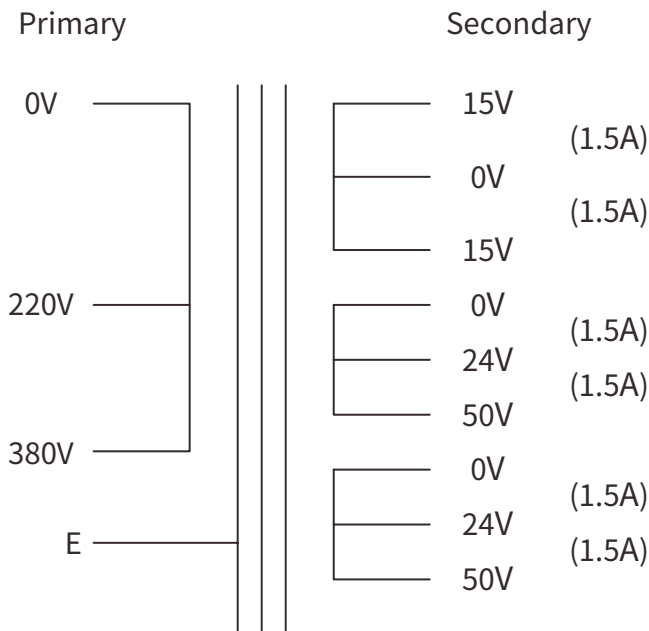
Amplifier Board	FPV-01	FPV-01N	ARPV-01	ARPV-04
AC Auxiliary Power	15Vac/0Vac/15Vac		-	
AC Input Power	50Vac (40Ω)/24Vac (10Ω)		-	
DC Auxiliary Power	-		24Vdc	
DC Input Power	-		48Vdc	
Power Output (Max.)	25.6W (40Ω)/6.4W (10Ω) Jumper Select			160W
Load Impedance	40/10Ω			10Ω
Output Current (Max.)	0.8A			4A
Control Signal Input	0~10Vdc			
Fuse	2A			5A
Vibration Frequency	120Hz			
Ascending Speed	Coarse Adjustment (Three-quarters turn)			
Descent Speed	Coarse Adjustment (Three-quarters turn)			
Output Value (Max.)	Fine Adjustment (25 rpm)			
Output Value (Min.)	Fine Adjustment (25 rpm)	Coarse Adjustment (Three-quarters turn)	Fine Adjustment (25 rpm)	Fine Adjustment (25 rpm)



Relay Board	Relay-04 (NPN)			Relay-05 (PNP)		
Control Output						
Rated Carrying Current	12A			12A		
Min. Applicable Load	10 mA 5Vdc			10 mA 5Vdc		
Max. Allowable Voltage	250Vac/30Vdc			250Vac/30Vdc		
Rated Load	12A/120Vac	10A/24Vdc	10A/240Vac	12A/120Vac	10A/24Vdc	10A/240Vac
Control Input						
Nominal Voltage	24Vdc			24Vdc		
Nominal Current	15 mA			15 mA		
Pick Up Voltage	< 2.4Vdc			> 18Vdc		
Drop Out Voltage	> 18Vdc			< 2.4Vdc		
Max. Applicable Voltage	26.4Vdc			26.4Vdc		
Operate Time	10 ms			10 ms		
Release Time	5 ms			5 ms		
Power Consumption	0.36W			0.36W		

The specification of Transformer MA-02

1. The Primary side input: AC 0V, 220V, 380V, E
2. The secondary side have 3 sets output:
 - (1) AC 15V, 0V, 15V (1.5A)
 - (2) AC 0V, 24V, 50V (1.5A)
 - (3) AC 0V, 24V, 50V (1.5A)
3. The total Watt: 195W
4. The diagram as follow:



116×110×105mm

Power Supply



PMT-12V50W2BA

LRS-350-24

LRS-75-12

LRS-100-48

Output Voltage	12V	24V	12V	48V
Output Power	50.4W	350.4W	72W	110.4W
Output Current	4.2A	14.6A	6A	2.3A
Input Voltage Range	90-264Vac	90~132Vac / 180~264Vac by switch 240~370Vdc (switch on 230Vac)	85~264Vac 120~373Vdc	85~264Vac 120~373Vdc (Withstand 300Vac surge for 5sec. Without damage)
Dimensions	99×82×29 mm	215×115×30 mm	99×97×30 mm	129×97×30 mm
Unit Weight	0.176 kg	0.76 kg	0.23 kg	0.33 kg
Specifications Reference	DeltaPSU	MEAN WELL	MEAN WELL	MEAN WELL

TC500 Multi-Cavity Hot Runner Temperature Controller



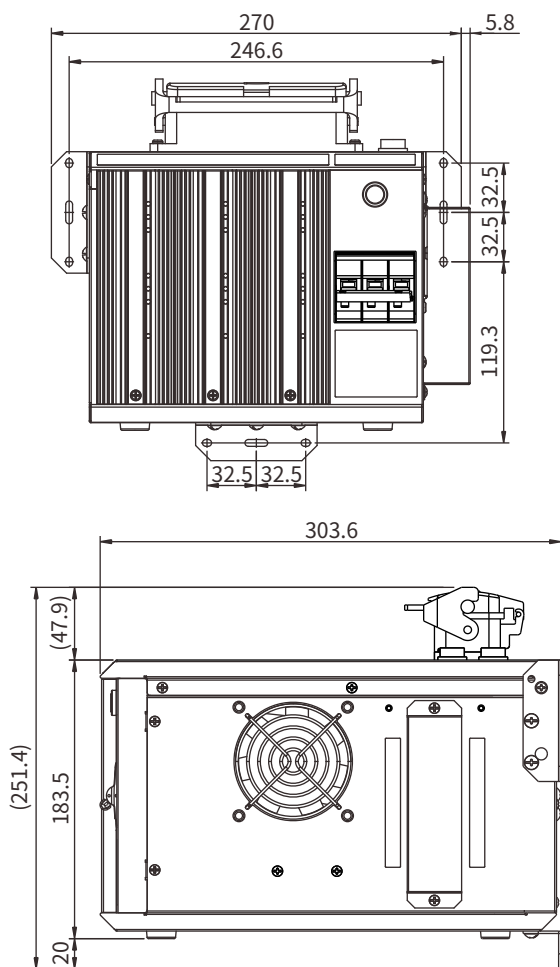
Features

- Wiring Friendly design
- Easy swapping for individual module failures
- Compact size, light weight, installed directly on the injection molding machine
- Automatic ID recognition
- Fast alternative for 230V/380V power input

Function

- Built-in NFB switch
- Auto/Manual function
- PID auto temperature control
- Current, output percentage display function
- Setting for output percentage limit
- Heat sink temperature detection
- Detection fuse breakage
- RS-485 communication function: ASCII and RTU mode
- Temperature range: K TYPE: 0~600°C (32~999°F)
J TYPE: 0~600°C (32~999°F)
- Thermocouple break and inverse detect
- Detection for heater open and short circuits
- Automatic shutdown for heater abnormality
- Automatic switch to manual mode if thermocouple breaks
- Selectable two thermocouple types (J/K)
- Selectable two temperature scales (°C/°F)
- Selectable six alarm modes
- Selectable two output trigger modes (Phase angle/Zero cross)

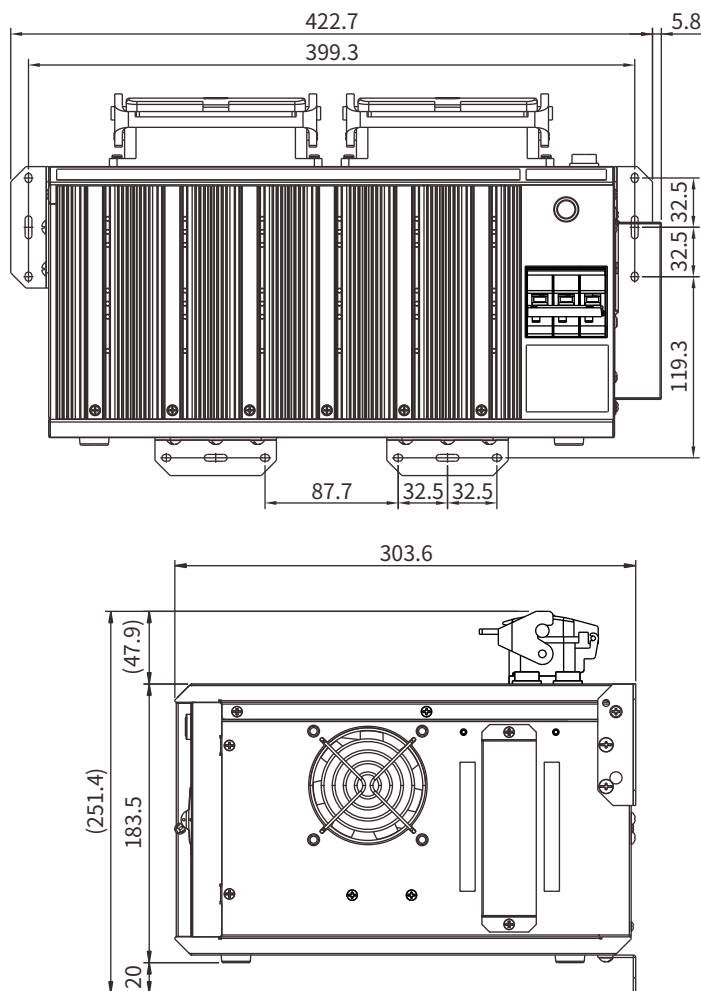
6 Zones (3 Modules)



Bracket (Fixed by screw M4)

Unit: mm

12 Zones (6 Modules)



Bracket (Fixed by screw M4)

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長新科技股份有限公司
ARICO TECHNOLOGY CO., LTD.

總公司【Headquarters】

☎ +886-2-2910-1266

☎ +886-2-2915-9434

✉ info@arico.com.tw

📍 231028 新北市新店區寶橋路 235 巷 1 弄 1 號 8 樓
8F., No. 1, Alley 1, Lane 235, Baoqiao Rd.,
Xindian Dist., New Taipei City 231028, Taiwan

🌐 www.arico.com.tw/www.arico.tw



台 北 工 廠【Taipei Factory】

☎ +886-2-2910-1077

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台中分公司【Taichung Branch】

☎ +886-4-2291-7011

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☎ +886-6-253-9940

☎ +886-6-253-9945

華南總經銷

東莞亞洛克【Dongguan】

☎ +86-769-83902101-2

☎ +86-769-8398-8791

華東總經銷

上海亞洛克【Shanghai】

☎ +86-21-61115256-7

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