INVT Control Product Catalog

Programmable Controller / Human Machine Interface / Industrial Internet

Company profile

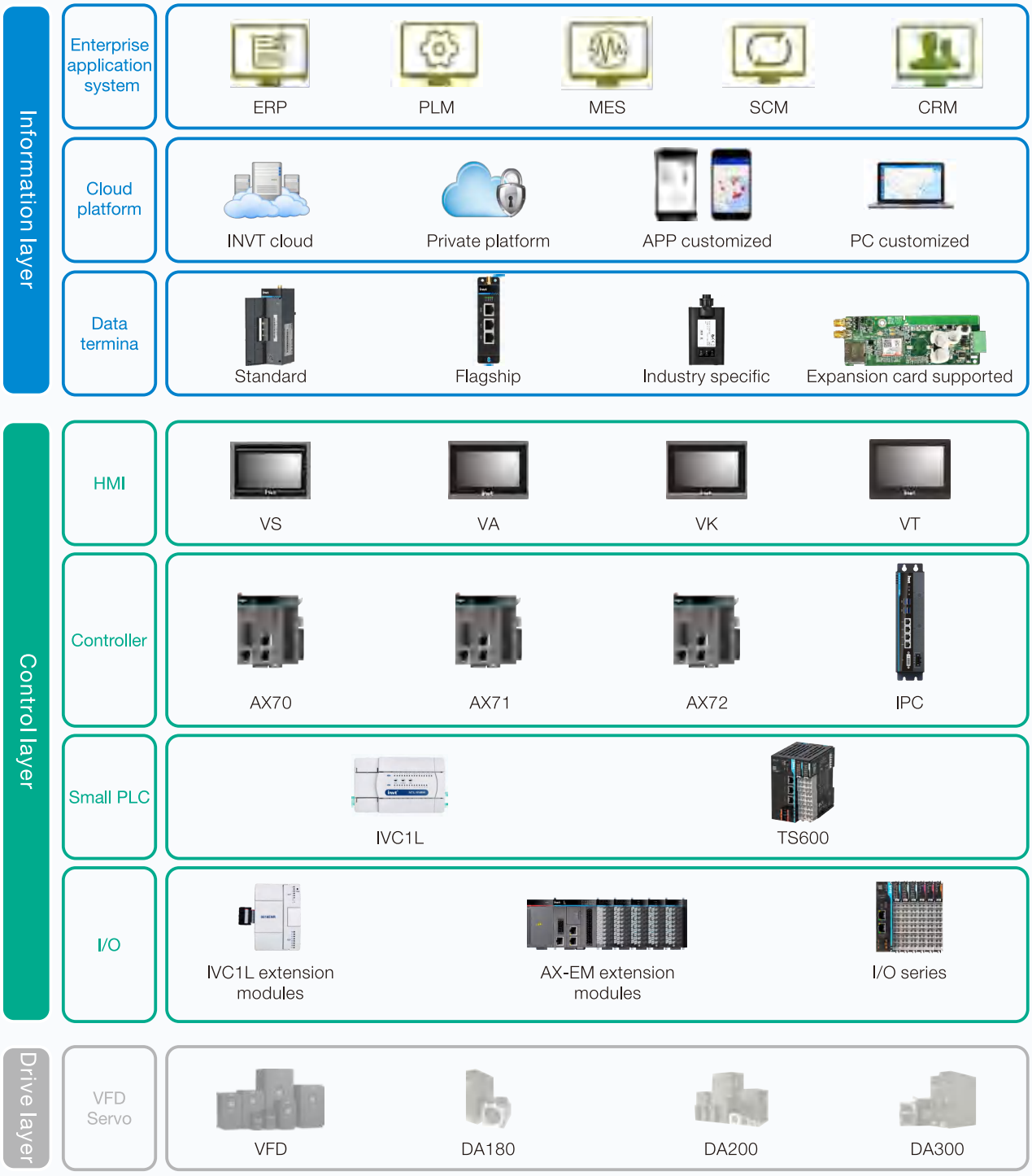
INVT (Shenzhen INVT Electric Co., Ltd) has been concentrating on industry automation and energy power since its foundation in 2002 and is committed to “Providing the best product and service to allow customers more competitiveness”. INVT goes public in 2010 and is the first A-share listed company (002334) in Shenzhen Stock Exchange in the industry. At present, INVT owns 15 subsidiaries and more than 3200 employees, over 30 domestic offices and warranty centers and 4 overseas branches, forming a sales network covering more than 100 overseas countries and regions.

INVT has been awarded as the Key High-tech Enterprise of National Torch Plan based on mastering of key technologies in power electronics, auto control and IT. With business covering industry automation, electric vehicle, network power and rail transit, INVT has established 12 R&D centers nationwide, boasts more than 1300 patents and owns the first lab in the industry awarded ACT qualification from TÜV SÜD, UL-WTDP and CNAS National Lab. The industrial parks in Shenzhen and Suzhou aim to provide customers with advanced integrated product development design management, comprehensive product R&D test and auto informational production. The worldwide INVT branches and warranty service centers are ready to offer customers all-around back-ups including professional solutions, technical trainings and service support.

In the next decade, INVT will continue to take " Honesty and Integrity, Professionalism and Excellence" as our business philosophy, enhance core business sectors including industrial automation, electric vehicle, network power and rail transit based on the three major technologies in industry automation and energy power fields, and strive to become a leading, responsible and harmonic international professional group armed with proper product structure, leading technologies, efficient management, robust profitability and superior competitiveness.

CONTENT

INVT Automation networking



Small PLC

IVC series PLC features fast speed, stable performance, strong function and software usability.

IVC1L feature

IVC1L is a general-purpose PLC product with compact structure, complete functions, and flexible I/O configuration. It can be widely used in small-scale IO and simple positioning applications.

- 60 built-in I/O points, able to add on 7 modules and 128 I/O points
- 16K steps program capacity
- 1 RS232, 2 RS485, supporting the Modbus master/slave protocol
- Two 50K+four 10K high speed input ports
- Three 100K high speed output (transistor type) ports
- Support real time clock function and built-in battery
- Support DC power supply and AC power supply modules

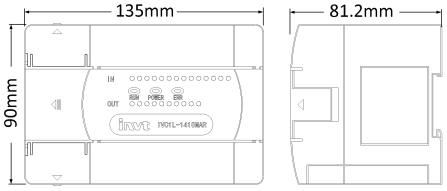
IVC1L technical specification

Model	IVC1L-	0806MAT	1410MAT	1614MAT	1614MAT1	2416MAT	3624MAT	0806MAR	1410MAR	1614MAR	2416MAR	3624MAR
Power												
Input	Voltage	220VAC (85~264VAC)										
	Current	1.5A										
Output	5V/GND	900mA										
	24V/GND	300mA										
	24V/COM	600mA										
I/O configuration												
Built-in I/O	Total	14	24	30	30	40	60	14	24	30	40	60
	Input	8	14	16	16	24	36	8	14	16	24	36
	Output	6	10	14	14	16	24	6	10	14	16	24
	Input type	NPN/PNP						NPN/PNP				
	Output type	Transistor (NPN)						Relay				
Extension I/O	Extension module	7										
	Total	128										
Analog		–			2 AI, 1 AO			–				
High speed I/O												
High speed input		2×50KHz+4×10KHz, AB phase (1×30K, 1×5K)						2×50KHz+4×10KHz, AB phase (1×30K, 1×5K)				
High speed output		3×100KHz						–				
Communication												
Serial port	RS232	1										
	RS485	2										
	Protocol	Programming protocol; MODBUS master/slave; free port; N:N protocol										
Storage												
Program capacity		16K steps										
Data block		8000 D registers										
Interrupt												
External input interrupt		16										
High speed counter interrupt		6										
Internal time interrupt		3										
Serial port interrupt		12										
PTO output completion interrupt		3										
Power loss interrupt		1										
Programming												
Software		Auto Station										
Subprogram calling		Supported total 64 subprograms (6 levels), and it can supports the design of input and output interfaces										
Others												
Digital filtering function		X0~X7 adopts digital filering and other ports adopt hardware filtering										
Encryption		Upload/download password, monitor password, subprogram encryption, format disable, upload disable										
Real time clock		Support, built-in battery										
Data saving function at power failure		Supported										

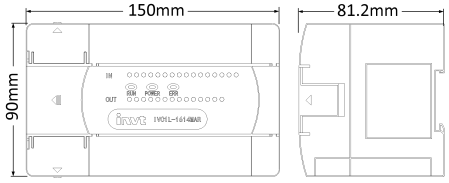
Model	IVC1L-	0806MDT	1410MDT	1614MDT	2416MDT	3624MDT	0806MDR	1410MDR	1614MDR	2416MDR	3624MDR	1614MAR1	1616MAR6
Power													
Input	Voltage	24VDC (19~30VDC)										220VAC (85~264VAC)	
	Current	0.85A										15A	
Output	5V/GND	900mA											
	24V/GND	300mA											
	24V/COM	–										600mA	
I/O configuration													
Built-in I/O	Total	14	24	30	40	60	14	24	30	40	60	30	32
	Input	8	14	16	24	36	8	14	16	24	36	16	16
	Output	6	10	14	16	24	6	10	14	16	24	14	16
	Input type	NPN/PNP					NPN/PNP						
	Output type	Transistor (NPN)					Relay						
Extension I/O	Extension module	7											
	Total	128											
Analog		–										2 AI, 1 AO	2 thermal resistance
High speed I/O													
High speed input		2×50KHz+4×10KHz, AB phase (1×30K, 1×5K)					2×50KHz+4×10KHz, AB phase (1×30K, 1×5K)						
High speed output		3×100KHz					–						
Communication													
Serial port	RS232	1											
	RS485	2											
	Protocol	Programming protocol; MODBUS master/slave; free port; N:N protocol											
Storage													
Program capacity		16K steps											
Data block		8000 D registers											
Interrupt													
External input interrupt		16											
High speed counter interrupt		6											
Internal time interrupt		3											
Serial port interrupt		12											
PTO output completion interrupt		3											
Power loss interrupt		1											
Programming													
Software		Auto Station											
Subprogram calling		Supported total 64 subprograms (6 levels), and it can supports the design of input and output interfaces											
Others													
Digital filtering function		X0~X7 adopts digital filering and other ports adopt hardware filtering											
Encryption		Upload/download password, monitor password, subprogram encryption, format disable, upload disable											
Real time clock		Support, built-in battery											
Data saving function at power failure		Supported											

IVC1L	
Soft element	
Inputs	X element, 128
Outputs	Y element, 128
Auxiliary relays	M element, 2048
Local auxiliary relays	LM element, 64
Special auxiliary relays	SM element, 512
Status relays	S element, 1024
Data registers	D element, 8000
Local data registers	V element, 64
Indexing/addressing registers	Z element, 16
Special data registers	SD element, 512
Timer – Total	T element,256
Timer – 1ms	T252~T255
Timer – 10ms	T210~T251
Timer – 100ms	T0~T209
Counter – Total	C element, 256
Counter – 16bit up counter	C0~C199
Counter – 32bit up/down counter	C200~C235
Counter – 32bit high speed counter	C236~C255
Rising edge	1024
Falling edge	1024

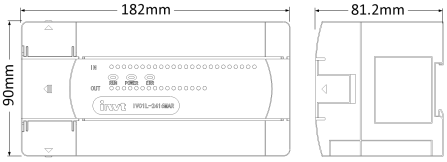
IVC1L dimension



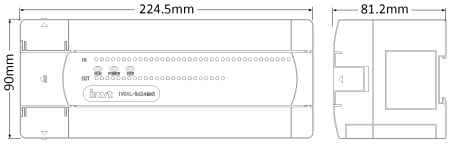
Model	Dimension
IVC1L-0806M** IVC1L-1410M**	135×90×81.2mm



Model	Dimension
IVC1L-1614M**	150×90×81.2mm



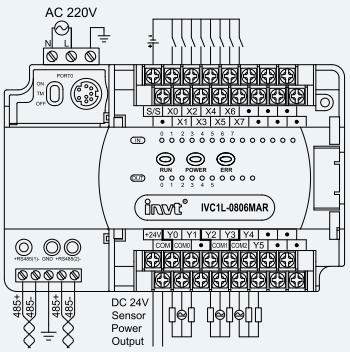
Model	Dimension
IVC1L-1614MAR1 IVC1L-1614MAT1 IVC1L-1616MAR6 IVC1L-2416M**	182×90×81.2mm



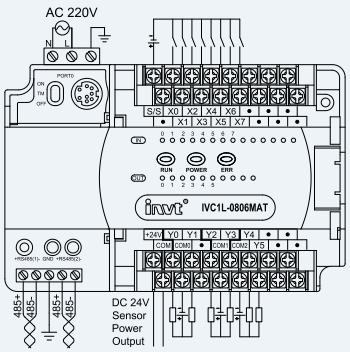
Model	Dimension
IVC1L-3624M**	224.5×90×81.2mm

IVC1L(AC) wiring diagram

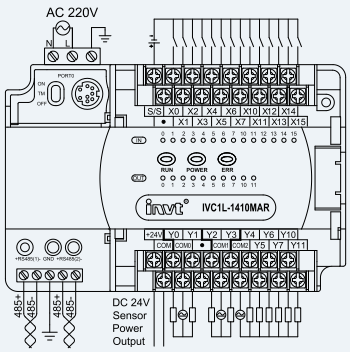
IVC1L-0806MAR



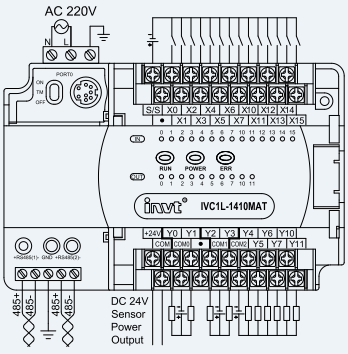
IVC1L-0806MAT



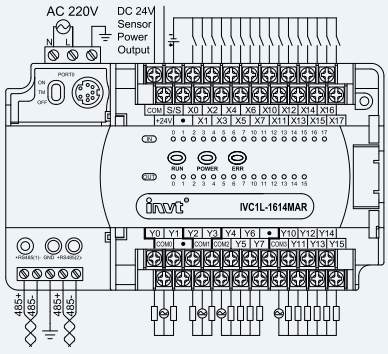
IVC1L-1410MAR



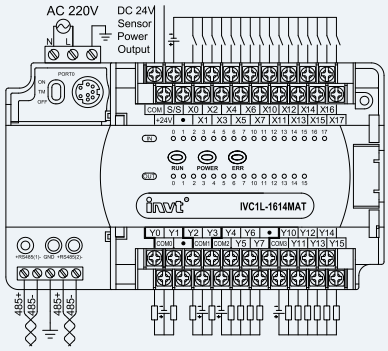
IVC1L-1410MAT



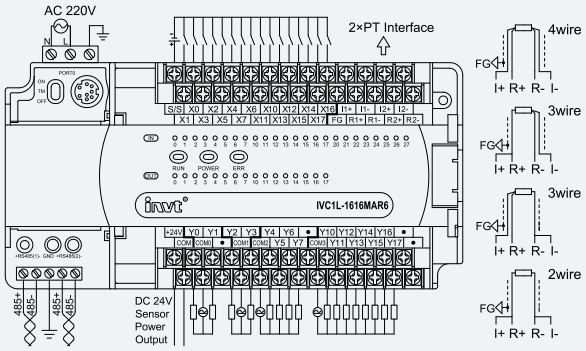
IVC1L-1614MAR



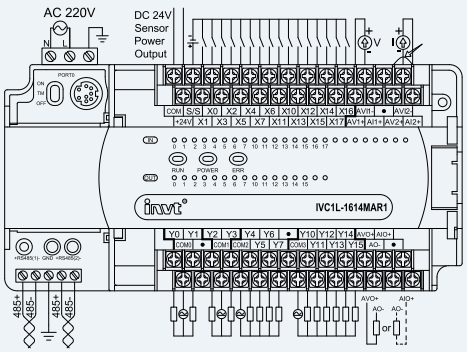
IVC1L-1614MAT



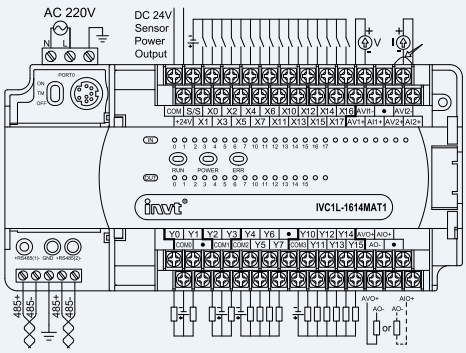
IVC1L-1616MAR6



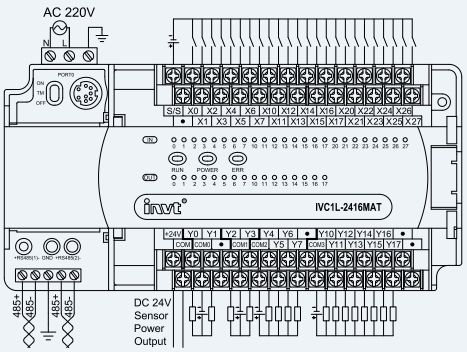
IVC1L-1614MAR1



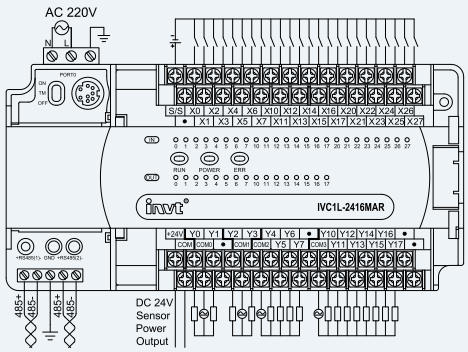
IVC1L-1614MAT1



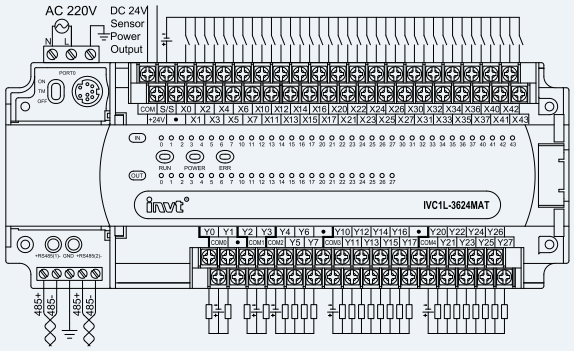
IVC1L-2416MAT



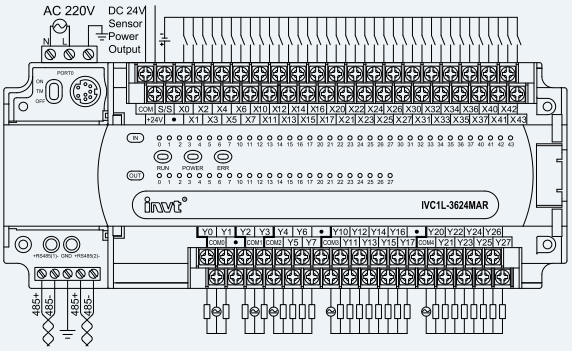
IVC1L-2416MAR



IVC1L-3624MAT

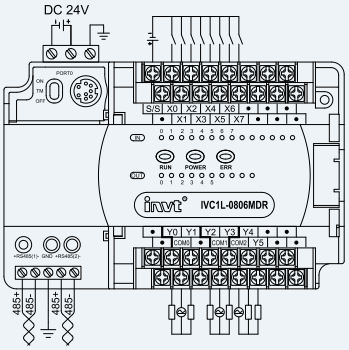


IVC1L-3624MAR

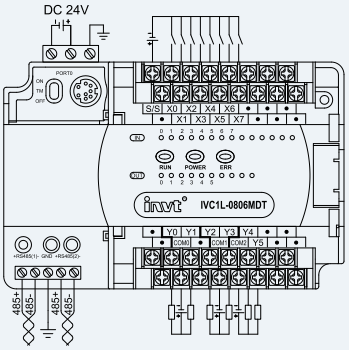


IVC1L(DC) wiring dragram

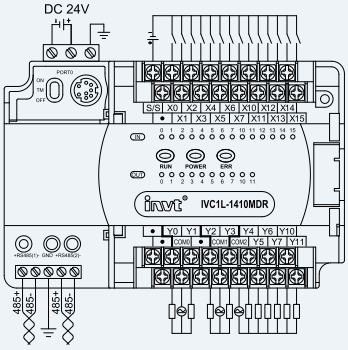
IVC1L-0806MDR



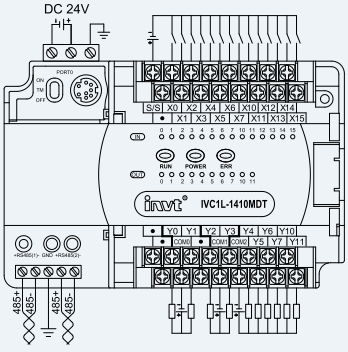
IVC1L-0806MDT



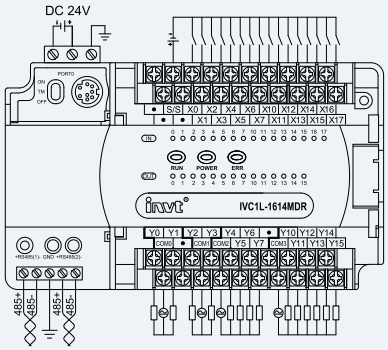
IVC1L-1410MDR



IVC1L-1410MDT



IVC1L-1614MDR



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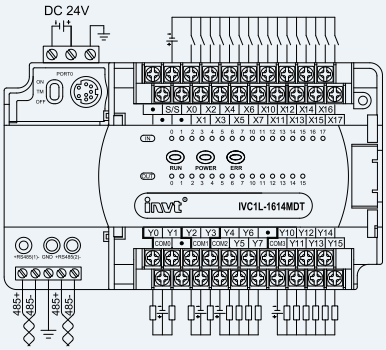

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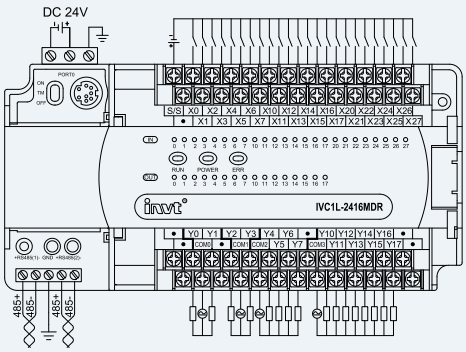

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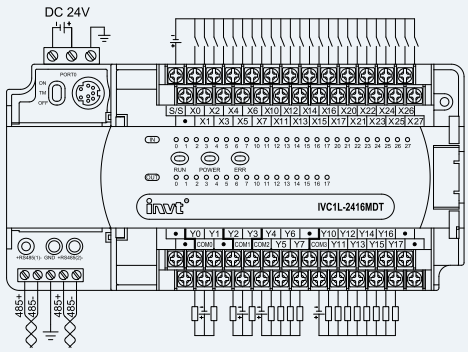
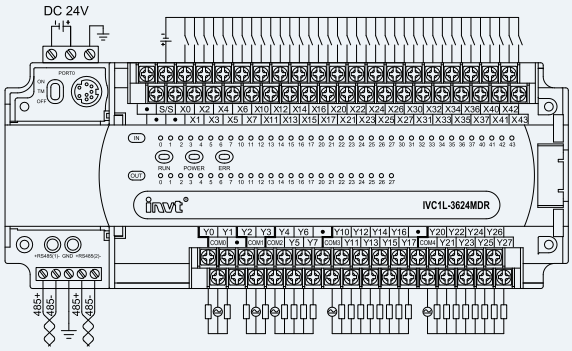
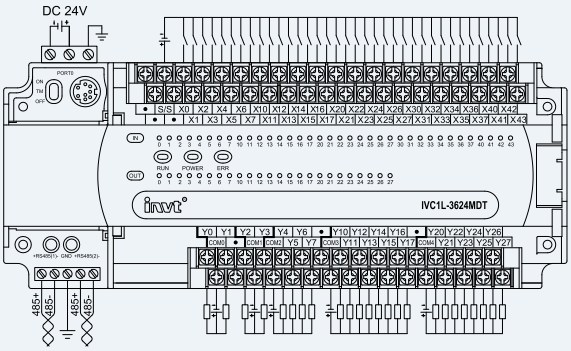


IVC1L-3624MDR



IVC1L-3624MDT



IVC1L extension module

• Digital input module

Model		IVC1L-1600ENN
Product overview		16 digital inputs
General		
Dimension		61×90×81.2mm
Power	5V/GND	70mA
	24V/GND	–
Output specification		
Inputs		16
Input type		PNP/NPN (source type/sink type)
Input voltage		24VDC
Current		60mA (DC24V/COM)
Insulation		Optocoupler insulation
Action indication		LED is on when optocoupler is driven
Equivalent resistance		4.3kΩ/channel
Logic 1 signal		≥15VDC
Logic 0 signal		≤5VDC

• Digital output module

Model		IVC1L-0016ENT
Product overview		16 points transistor output
General		
Dimension		61×90×81.2mm
Power	5V/GND	170mA
	24V/GND	–
Output specification		
Outputs		16
Output type		Transistor
Voltage		24VDC
Insulation		Optocoupler insulation
Action indication		LED is on when optocoupler is driven
Minimum load		5mA (5~24VDC)
Max. output current	Resistive load	Total current can be increased by 0.1A for every additional 1 point above 8 points
	Inductive load	24VDC, 7.2W
	Lamp load	24VDC, 1.5W
Response time	OFF→ON	Max.0.5ms (100mA/24VDC)
	ON→OFF	Max.0.5ms (100mA/24VDC)
Contact life		–

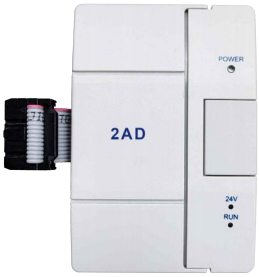
Model		IVC1L-0016ENR
Product overview		16 points relay output
General		
Dimension		61×90×81.2mm
Power	5V/GND	70mA
	24V/GND	100mA
Output specification		
Outputs		16
Output type		Relay
Voltage		250VAC,below 30VDC
Insulation		Mechanical insulation of relay
Action indication		The LED light is on when relay output contact closed
Minimum load		2mA/5VDC
Max. output current	Resistive load	2A/1point , The total current of 8 points of common COM terminal is less than 8A
	Inductive load	220VAC, 80VA
	Lamp load	220VAC, 100W
Response time	OFF→ON	Max.20ms
	ON→OFF	Max.20ms
Contact life		200,000 time

Digital input/output module

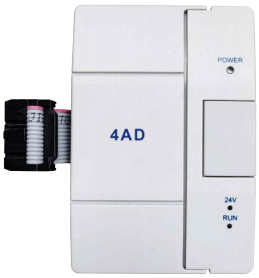
Model		IVC1L-0808ENT
Product overview		8 digital inputs, 8 points transistor output
General		
Dimension		61×90×81.2mm
Power	5V/GND	170mA
	24V/GND	–
Input specification		
Inputs		8
Input type		PNP/NPN (source type/sink type)
Input voltage		24VDC
Current		50mA (DC24V/COM)
Insulation		Optocoupler insulation
Action indication		LED is on when optocoupler is driven
Equivalent resistance		4.3kΩ/channel
Logic 1 signal		≥15VDC
Logic 0 signal		≤5VDC
Output specification		
Outputs		8
Output type		Transistor
Voltage		5~24VDC
Insulation		Optocoupler insulation
Action indication		LED is on when optocoupler is driven
Minimum load		5mA (5~24VDC)
Max. output current	Resistive load	0.3A/1 point 0.8A/4points 1.6A/8points
	Inductive load	24VDC, 7.2W
	Lamp load	24VDC, 1.5W
Response time	OFF→ON	Max.0.5ms (100mA/24VDC)
	ON→OFF	Max.0.5ms (100mA/24VDC)
Contact life		–

Model		IVC1L-0808ENR
Product overview		8 digital inputs,8 points relay output
General		
Dimension		61×90×81.2mm
Power	5V/GND	70mA
	24V/GND	50mA
Input specification		
Inputs		8
Input type		PNP/NPN (source type/sink type)
Input voltage		24VDC
Current		50mA (DC24V/COM)
Insulation		Optocoupler insulation
Action indication		LED is on when optocoupler is driven
Equivalent resistance		4.3kΩ/channel
Logic 1 signal		≥15VDC
Logic 0 signal		≤5VDC
Output specification		
Outputs		8
Output type		Relay
Voltage		250VAC, below 30VDC
Insulation		Mechanical insulation of relay
Action indication		The LED light is on when relay output contact closed
Minimum load		2mA/5VDC
Max. output current	Resistive load	2A/1point , The total current of 8 points of common COM terminal is less than 8A
	Inductive load	220VAC, 80VA
	Lamp load	220VAC, 100W
Response time	OFF→ON	Max.20ms
	ON→OFF	Max.20ms
Contact life		200,000 time

Analog input module

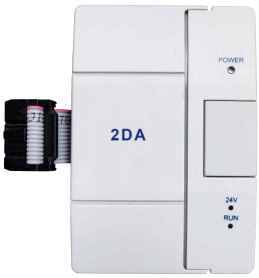


Model		IVC1L-2AD
Product overview		2 analog inputs
General		
Dimension		61×90×81.2mm
Power	5V/GND	70mA
	24V/GND	–
Input specification		
Coversion speed		15ms/channel (normal speed), 6ms/channel (high speed), settable
Range	Voltage input	-10V~+10V -5V~+5V
	Current input	-20mA~+20mA
	Digital format	Default: -2000~+2000; Range: -10000~+10000
Resolution		12 bit
Accuracy		±1%FS
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.



Model		IVC1L-4AD
Product overview		4 analog inputs
General		
Dimension		61×90×81.2mm
Power	5V/GND	70mA
	24V/GND	–
Input specification		
Coversion speed		15ms/channel (normal speed), 6ms/channel (high speed), settable
Range	Voltage input	-10V~+10V -5V~+5V
	Current input	-20mA~+20mA
	Digital format	Default: -2000~+2000; Range: -10000~+10000
Resolution		12 bit
Accuracy		±1%FS
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.

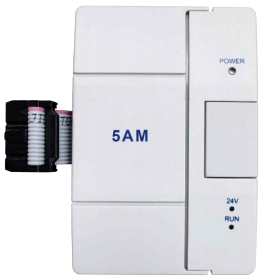
Analog output module



Model		IVC1L-2DA
Product overview		2 analog outputs
General		
Dimension		61×90×81.2mm
Power	5V/GND	72mA
	24V/GND	–
External power		24VDC (-15%~20%), Maximum allowable ripple voltage 5%,100mA
Output specification		
Coversion speed		2ms/channel
Range	Voltage output	-10V~+10V
	Current output	0~20mA 4~20mA
	Digital format	Default: -2000~+2000; Range: -10000~+10000
Resolution		12 bit
Accuracy		±1%FS
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.

Model		IVC1L-4DA
Product overview		4 analog outputs
General		
Dimension		61×90×81.2mm
Power	5V/GND	72mA
	24V/GND	–
External power		24VDC (-15%~20%), Maximum allowable ripple voltage 5%, 100mA
Output specification		
Coversion speed		2ms/channel
Range	Voltage output	-10V~+10V
	Current output	0~20mA 4~20mA
	Digital format	Default: -2000~+2000; Range: -10000~+10000
Resolution		12 bit
Accuracy		±1%FS
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.

Analog input/output module



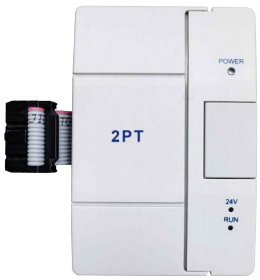
Model		IVC1L-5AM
Product overview		4 analog inputs, 1 analog output
General		
Dimension		61×90×81.2mm
Power	5V/GND	72mA
	24V/GND	–
Input specification		
Coversion speed		15ms/channel (normal speed), 8ms/channel (high speed), settable
Range	Voltage input	-10V~+10V -5V~+5V
	Current input	-20mA~+20mA
	Digital format	Default: -2000~+2000; Range: -10000~+10000
Resolution		12 bit
Accuracy		±1%FS
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.
Output specification		
Coversion speed		2ms/channel
Range	Voltage output	-10V~+10V
	Current output	0~20mA 4~20mA
	Digital format	Default: -2000~+2000; Range: -10000~+10000
Resolution		12 bit
Accuracy		±1%FS
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.

Thermocouple module

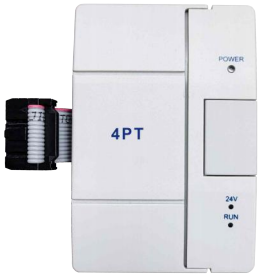
Model		IVC1L-4TC
Product overview		4 thermocouple
General		
Dimension		61×90×81.2mm
Power	5V/GND	72mA
	24V/GND	–
External power		24VDC (-15%~20%), Maximum allowable ripple voltage5%, 50mA
Input specification		
Conversion speed		240ms/channel
Input type		K/J/E/N/T/R/S type thermocouple
Digital format	Celsius (0.1 ° C)	K type: -1000~+12000 J type: -1000~+10000 E type: -1000~+10000 N type: -1000~+12000 T type: -2000~+4000 R type: 0~16000 S type: 0~16000
	Fahrenheit (0.1 ° F)	K type: -1480~+21920 J type: -1480~+18320 E type: -1480~+18320 N type: -1480~+21920 T type: -3280~+7520 R type: 320~29120 S type: 320~29120
Resolution		0.5 ° C/0.9 ° F; 12bit
Accuracy		±0.5%FS+1 ° C
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.

Model		IVC1L-2TC
Product overview		2 thermocouple
General		
Dimension		61×90×81.2mm
Power	5V/GND	72mA
	24V/GND	–
External power		24VDC (-15%~20%), Maximum allowable ripple voltage5%, 50mA
Input specification		
Conversion speed		240ms/channel
Input type		K/J/E/N/T/R/S type thermocouple
Digital format	Celsius (0.1 ° C)	K type: -1000~+12000 J type: -1000~+10000 E type: -1000~+10000 N type: -1000~+12000 T type: -2000~+4000 R type: 0~16000 S type: 0~16000
	Fahrenheit (0.1° F)	K type: -1480~+21920 J type: -1480~+18320 E type: -1480~+18320 N type: -1480~+21920 T type: -3280~+7520 R type: 320~29120 S type: 320~29120
Resolution		0.5 ° C/0.9 ° F; 12bit
Accuracy		±0.5%FS+1 ° C
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.

Termal resistance module

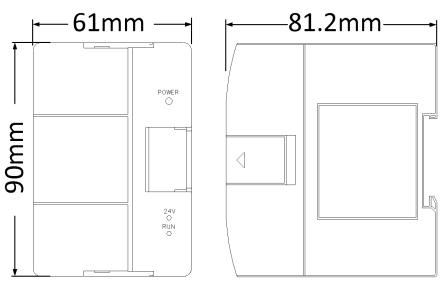


Model		IVC1L-2PT
Product overview		2 thermal resistance
General		
Dimension		61×90×81.2mm
Power	5V/GND	72mA
	24V/GND	–
External power		24VDC (-15%~20%), Maximum allowable ripple voltage5%, 50mA
Input specification		
Conversion speed		15ms/channel
Input type		Pt100/Cu100/Cu50
Digital format	Celsius (0.1 ˚ C)	Pt100: -1500~+6000 Cu100: -300~+1200 Cu50: -300~+1200
	Fahrenheit (0.1˚ F)	Pt100: -2380~+11120 Cu100: -220~+2480 Cu50: -220~+2480
Resolution		0.2 ˚ C/0.36 ˚ F; 12bit
Accuracy		±1%FS
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.



Model		IVC1L-4PT
Product overview		4 thermal resistance
General		
Dimension		61×90×81.2mm
Power	5V/GND	72mA
	24V/GND	–
External power		24VDC (-15%~20%), Maximum allowable ripple voltage5%, 50mA
Input specification		
Conversion speed		15ms/channel
Input type		Pt100/Cu100/Cu50
Digital format	Celsius (0.1 ˚ C)	Pt100: -1500~+6000 Cu100: -300~+1200 Cu50: -300~+1200
	Fahrenheit (0.1˚ F)	Pt100: -2380~+11120 Cu100: -220~+2480 Cu50: -220~+2480
Resolution		0.2 ˚ C/0.36 ˚ F; 12bit
Accuracy		±1%FS
Isolation		The optocoupler isolates analog circuit from digital circuit. The analog circuit is internally isolated from the 24VDC power supply of the module. No isolation between analog channels.

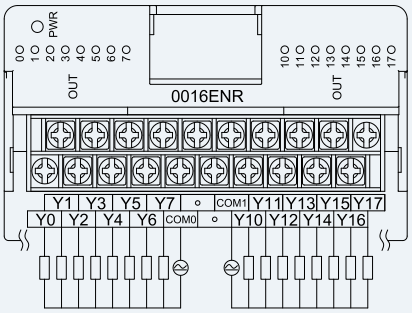
IVC1L extension module dimension



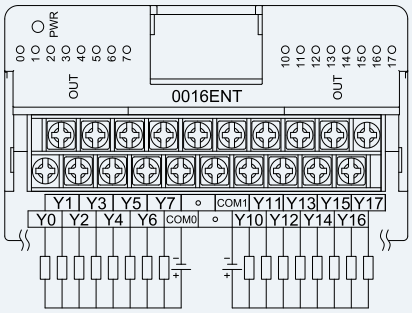
Model	Dimension
IVC1L extension module	61×90×81.2mm

IVC1L extension module wiring diagram

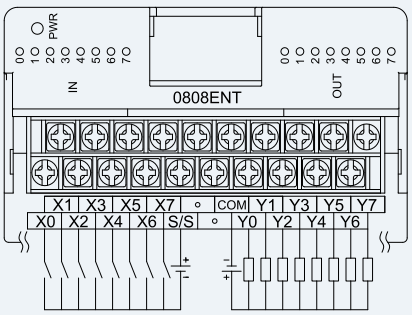
IVC1L-0016ENR



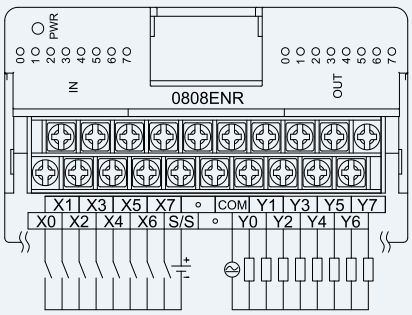
IVC1L-0016ENT



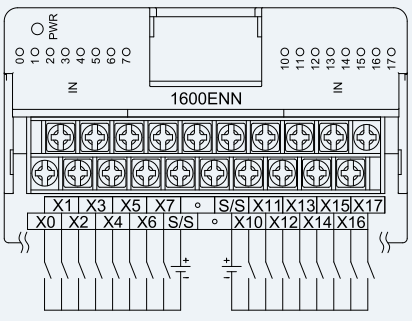
IVC1L-0808ENT



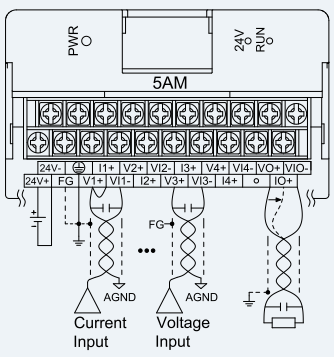
IVC1L-0808ENR



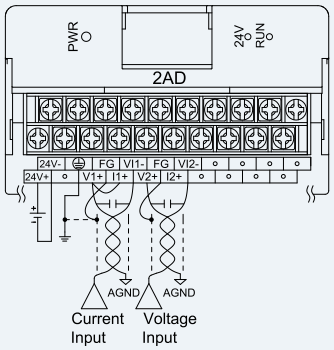
IVC1L-1600ENN



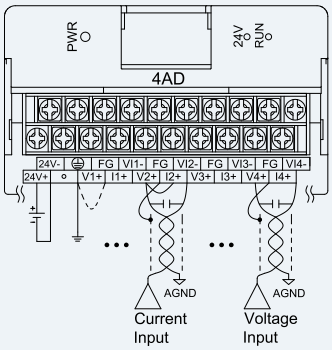
IVC1L-5AM



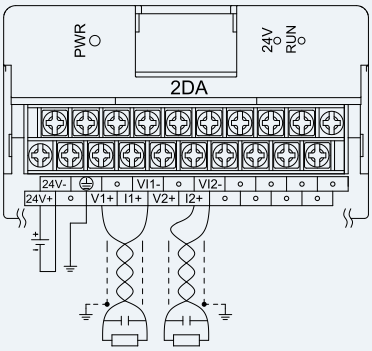
IVC1L-2AD



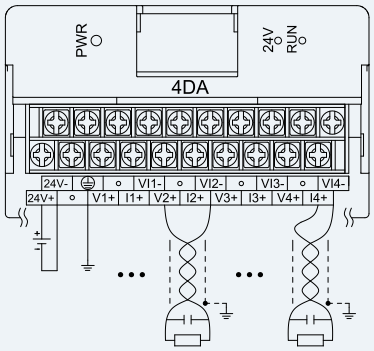
IVC1L-4AD



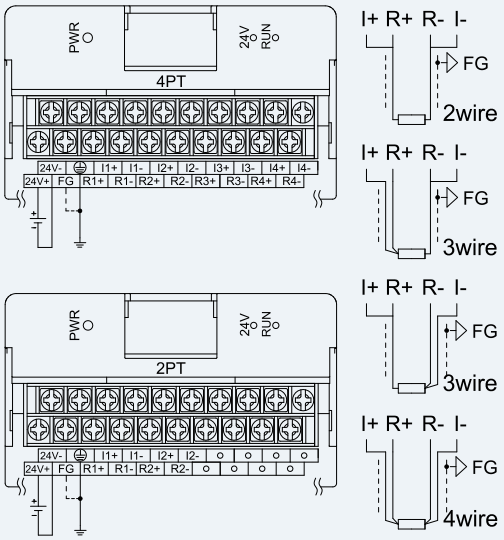
IVC1L-2DA



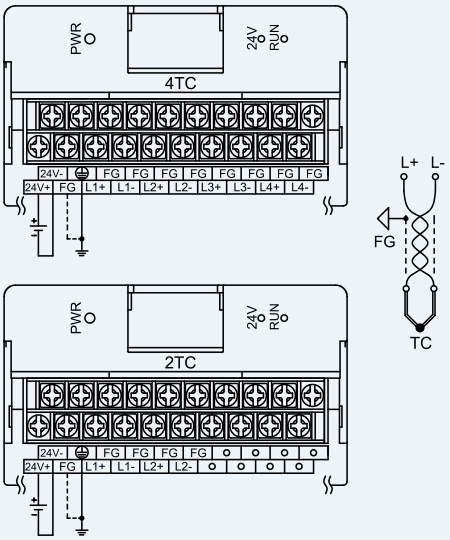
IVC1L-4DA



IVC1L-2PT/IVC1L-4PT



IVC1L-2TC/IVC1L-4TC



IVC PLC spare part

Product type	Description	Photo
IVC-SL1	PLC-VS HMI 232 communication cable(2m)	

Product type	Description	Photo
IVC-SL5	PLC-VT/VK/VA HMI 232 communication cable(7m)	

Product type	Description	Photo
IVC-SL2	PLC download cable, USB-RS232(Port0) (2m)	

Product type	Description	Photo
IVC-SL8	PLC-VS HMI 232 communication cable(7m)	

Product type	Description	Photo
IVC-SL3	PLC-VT/VK/VA HMI 232communication cable(3m)	

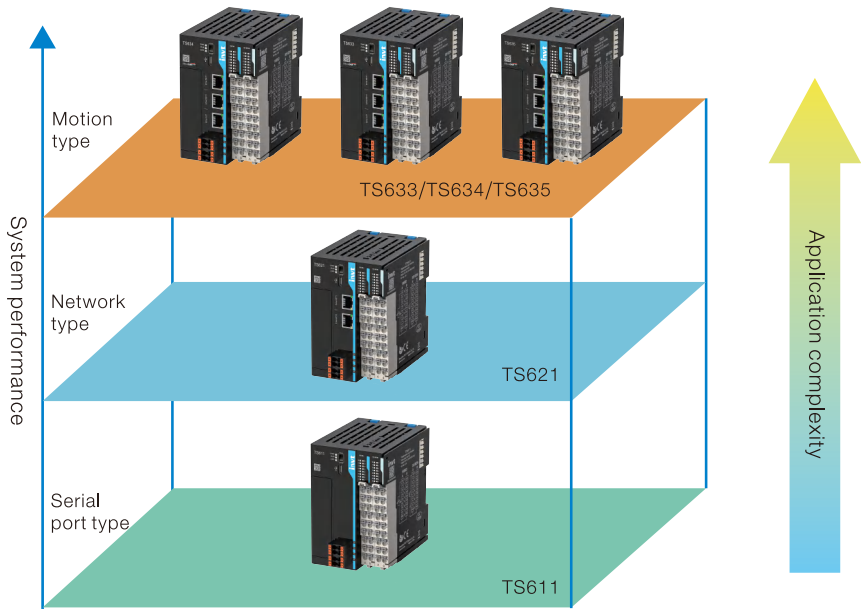
Product type	Description	Photo
IVC-SL9	IVC1L extension cable(1m)	

Product type	Description	Photo
IVC-SL4	HMI download cable, available for VT/VK/VA/VS series(2m)	

TS600 Series Intelligent PLC

INVT TS600 series intelligent PLC integrates high-performance embedding technology, and it is based on a high-speed bus system architecture to integrate four types of automation control, namely, sequence, process, information, and motion control, into the same system. It achieves the real-time control and complex calculation through the highly reliable software and hardware real-time system, and provides open communication interfaces, IoT networks, and distributed module system architecture. The completely independent programming software provides customized services, making programming easy. TS600 can work with INVT VFD, servo, HMI, IoT and other products to construct one-stop automation solutions to create value for customers.

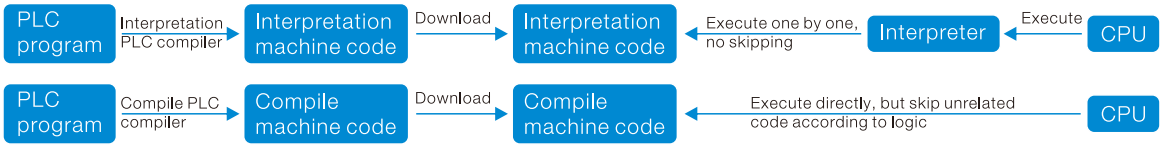
Product positioning

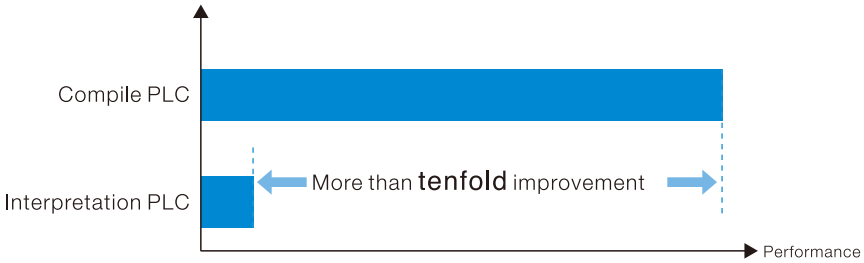


Product positioning

Running efciently

- 1G main frequency, compile command breakthrough, bit operation speeding up to 0.01μs

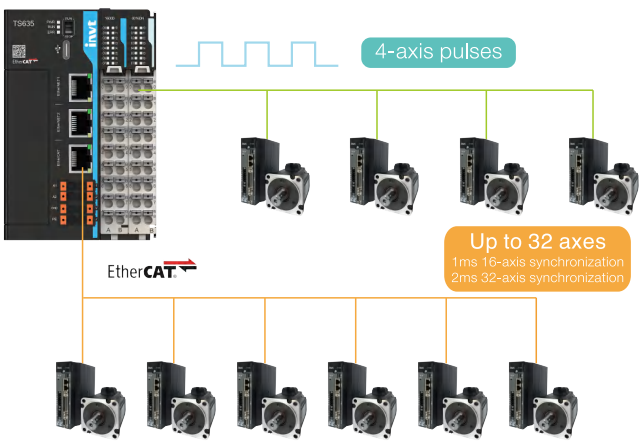


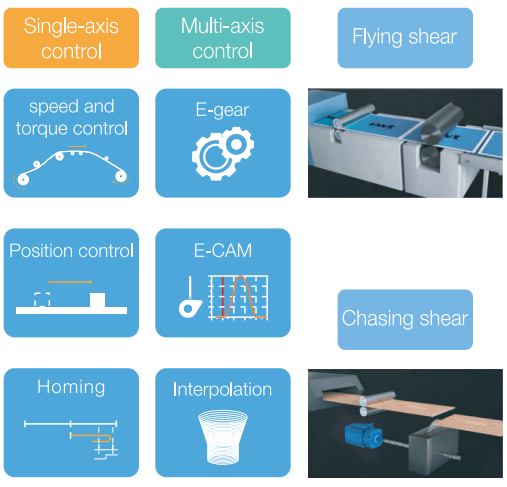


- 100Mbps backplane bus; 125μs IO refresh speed; plating process, reliable connection; saving data at power down, 1s power-down ride-through

Product positioning

High-speed motion control, easily implementing complex processes

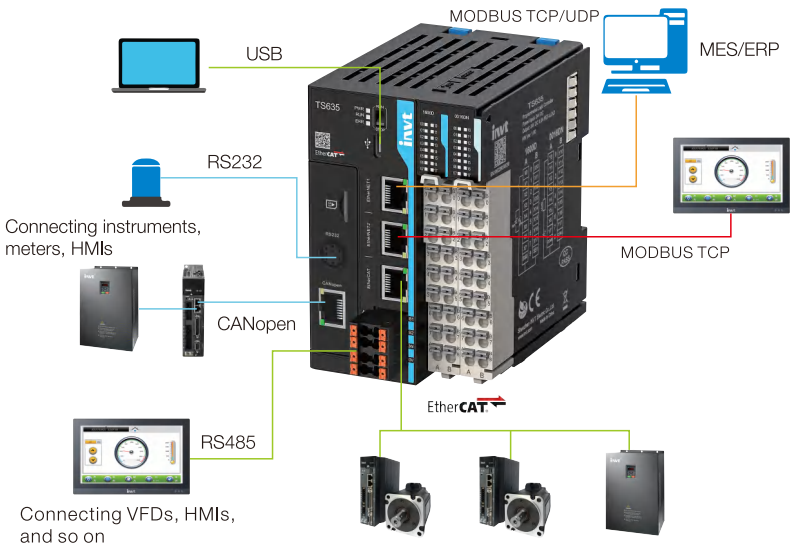




Easy connection

Multi-protocol support facilitates interconnection

- Dual-port design, makes cascading easy, and achieves the isolation between the internal network and external network

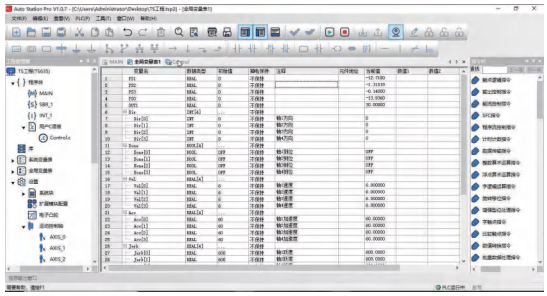


*Ethernet IP will be supported at the end of August

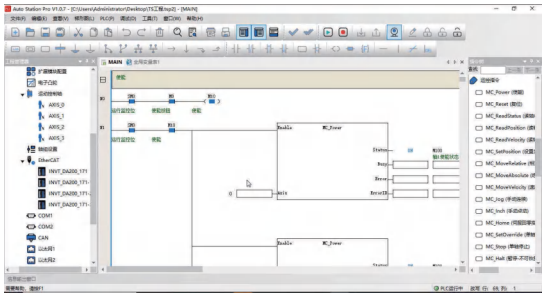
Easy programming

- Equipped with the brand new AutoStationPro

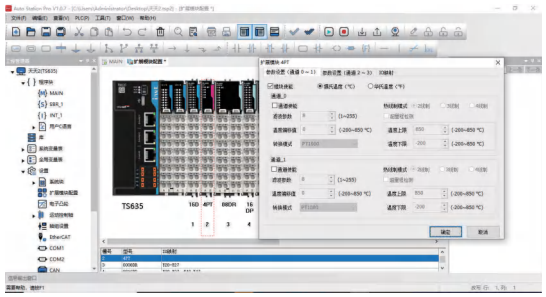
- Supporting user-dened variables



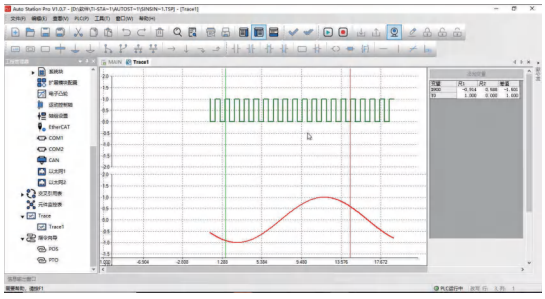
- Compliant with IEC61131 programming specications, supporting the languages LD, SFC, IL, C, and ST (under development). The pulse and bus axes are compatible with a set of axis control commands.



- Supporting graphic conguration through dragging, Easy parameter setup and automatic address allocation



- Trace function



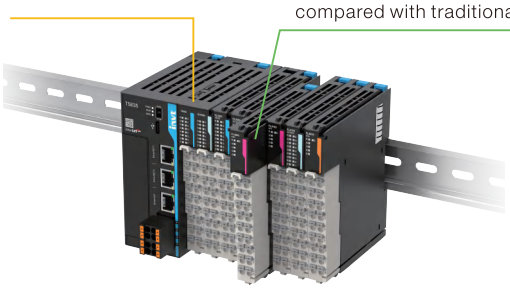
Easy scalability

Standard conguration of CPU

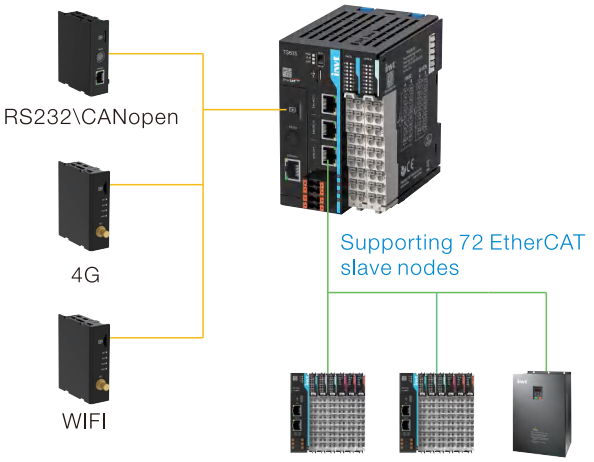
16 points of DI
Eight 200kHz high-speed inputs
16 points 0f DO
Eight 200kHz high-speed out puts

Compatible with Flex series I/O modules for scaling

Up to 16 I/O modules can be expanded locally
Use of push-in terminals, facilitating wiring
Vertical plug-in assembly, with working time reduced by 80%
Mounting space reduced by more than 60%, compared with traditional modules



Supporting various expansion cards



*WiFi expansion card is under development

Cloud collaboration

Efficient resource utilization in response to digitalization trends

- Supporting the 4G, WiFi, and RJ45 transmission methods, remote upload and download through VPN, and cloud collaboration through MQTT and API

4G \ WIFI \ RJ45

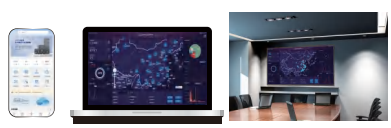
IWOCloud IoT cloud platform

Variousdata presenting means

Mature IOT applications

Remote O&M

API data interface



Mobile phone | PC | Large screen

Real-time data monitoring

Remote O&M

Third-party IoT platform

Product specifications

Model	TS635	TS634	TS633	TS621	TS611
General specications					
EtherNet interface	2	2	2	2	-
EtherCAT interface	1	1	1	-	-
Max. number of axes (bus+pulse)	32	16	8	-	-
RS485 BUS	2 channels, supporting Modbus RTU master/slave function				
EtherNet bus	Supporting Modbus TCP/UDP, program upload and download, and rmware upgrade				-
USB interface	1 channel, Type-C interface, supporting program upload and download, and rmware upgrade				
DI	16 inputs originally, including eight 200kHz high-speed inputs				
DO	16 outputs originally, including eight 200kHz high-speed outputs				
Pulse axis	Up to 4 axes				
Input power	24V DC (-15% – +20%)/1A, supporting reversal protection				
Standalone power consumption	<3W				
Backplane bus power supply	5V/2.5A				
Power-down protection	Supported (retention by the internal ash)				
Real-time clock	Supported (CR2032 battery is optional; the real-time clock works about four days without a battery)				
Local expansion modules	Up to 16, disallowing hot swapping				
Local expansion card	1 expansion card, supporting SD card, CANopen card, RS232 card, 4G IoT card and so on				
Program language	LD, SFC, IL, and C				
Program download	USB port, Ethernet port, SD card (expansion card), and remote download (expansion card)				
Program data capacity	200K steps of user program; 2MByte user-dened variables, in which 128KByte support power-down retention; About 150K soft elements, the soft elements numbered after 1000 support power-down retention				
Command speed (step)	20K steps at 0.2ms				
Bit handling command	0.0127μs				
Word transmission command	0.0014μs				
Floating-point transmission command	0.0027μs				
Four operations of math	0.033μs				
Power specications					
Terminal input power rated voltage	24V DC				
Terminal input power rated current	1A				
24V input power protection	Protection against reverse connection and surges				
Hot swapping of module	Not supported				
Input specications					
Input type	DI				
Number of input channels	16				
Input mode	Source and sink				
Input voltage class	24V DC (-10% -+10%)				
Input current	Typical value for X0–X7: 13.5mA; Typical value for X10–X17: 4.2mA				
Max. input frequency	200kHz for X0–X7; 200Hz for X10–X17				
Input resistance	Typical value for X0–X7: 1.7kΩ; Typical value for X10–X17: 5.7kΩ				
ON voltage	≥15VDC				
OFF	≤5VDC				
Isolation method	Capacitive isolation				
Common terminal method	8 channels/group				
Input action display	When the input is in the driving state, the input indicator is on (software control)				

Model	TS635	TS634	TS633	TS621	TS611
Output specications					
Output type	Transistor output				
Number of output channels	16				
Output mode	Sink				
Output voltage class	24V DC (-10%-+10%)				
Output load (resistive)	0.5A/point, 2A/group				
output load (inductive)	7.2W/point, 24W/group				
Hardware response time	≤2μs				
Load current requirement	Load current ≥ 12mA when output frequency is greater than 10kHz				
Max. output frequency	200kHz for resistive load, 0.5Hz for inductive load, and 10Hz for lighting load				
Leakage current at OFF	Below 30μA (24V typical voltage)				
Max. residual voltage at ON	≤0.5VDC				
Isolation method	Capacitive isolation				
Common terminal method	8 channels/group				
Short-circuit protection function	Supported				
External inductive load requirement	Flyback diode needed for external inductive load connection				
Output action display	When the output is valid, the output indicator is on (software control)				
Output derating	The current at each common terminal group cannot exceed 1A at ambient temperature of 55℃				

Expansion card specification

Model	TS-CAN-232
Product description	TS600 series expansion card, which supports. Micro SD cards, CANopen bus, and one channel of RS232 communication
IP rating	IP20
Working temperature	-20℃-55℃
Terminal resistor	Built-in terminal resistor, which can be selected through the dial switch
RS232	1
CAN communication baud rate	1Mbps: Distance<20m 500Kbps: Distance<80m 250Kbps: Distance<150m 125Kbps: Distance<300m 100Kbps: Distance<500m 50Kbps: Distance<1000m
SD card capacity	Up to 32GB
SD card specications	Micro SD
SD card communi-cation interface	SDIO
Hot swapping	Supported by SD cards, but not supported by the expansion card

Model	TS-4G
Product description	TS600 series expansion card, which supports Micro SD cards and 4G IoT
IP rating	IP20
Working temperature	-20℃-55℃
Entire machine power consumption	Less than 0.2W
Antenna	3 meters as standard conguration
SIM card	China Mobile 4G IoT card as standard conguration
Reconnection upon disconnection	Supported
Resumable upload	Supported
API interface	Supported
VNC function	Supported
Data monitoring	Up to 280 data points
Historical data	Up to 20000 records of data
Alarm push	Through clients and WeChat ofcial account
SD card capacity	Up to 32GB
SD card specications	Micro SD
SSD card communi-cation interface	SDIO
Hot swapping	Supported by SD cards, but not supported by the expansion card

IVC PLC product list

Material code	Model	Description	Dimension
● IVC1L main module ●			
11060-00076	IVC1L-0806MAR	8 digital inputs, 6 relay outputs, AC220V power supply	135×90×81.2mm
11060-00077	IVC1L-0806MAT	8 digital inputs, 6 transistor outputs, AC220V power supply	135×90×81.2mm
11060-00070	IVC1L-1410MAR	14 digital inputs, 10 relay outputs, AC220V power supply	135×90×81.2mm
11060-00071	IVC1L-1410MAT	14 digital inputs, 10 transistor outputs, AC220V power supply	135×90×81.2mm
11060-00068	IVC1L-1614MAR	16 digital inputs, 14 relay outputs, AC220V power supply	150×90×81.2mm
11060-00069	IVC1L-1614MAT	16 digital inputs, 14 transistor outputs, AC220V power supply	150×90×81.2mm
11060-00066	IVC1L-1614MAR1	16 digital inputs, 14 relay outputs, integrated 2AI and 1AO, AC220V power supply	182×90×81.2mm
11060-00067	IVC1L-1614MAT1	16 digital inputs, 14 transistor outputs, integrated 2AI and 1AO, AC220V power supply	182×90×81.2mm
11060-00064	IVC1L-2416MAR	24 digital inputs, 16 relay outputs, AC220V power supply	182×90×81.2mm
11060-00065	IVC1L-2416MAT	24 digital inputs, 16 transistor outputs, AC220V power supply	182×90×81.2mm
11060-00062	IVC1L-3624MAR	36 digital inputs, 24 relay outputs, AC220V power supply	224.5×90×81.2mm
11060-00063	IVC1L-3624MAT	36 digital inputs, 24 transistor outputs, AC220V power supply	224.5×90×81.2mm
11060-00198	IVC1L-1616MAR6	24 digital inputs, 16 relay outputs, integrated 2 thermal resistor (PT), AC220V power supply	182×90×81.2mm
11060-00139	IVC1L-0806MDR	8 digital inputs, 6 relay outputs, DC24V power supply	135×90×81.2mm
11060-00138	IVC1L-0806MDT	8 digital inputs, 6 transistor outputs, DC24V power supply	135×90×81.2mm
11060-00143	IVC1L-1410MDR	14 digital inputs, 10 relay outputs, DC24V power supply	135×90×81.2mm
11060-00142	IVC1L-1410MDT	14 digital inputs, 10 transistor outputs, DC24V power supply	135×90×81.2mm
11060-00145	IVC1L-1614MDR	16 digital inputs, 14 relay outputs, DC24V power supply	150×90×81.2mm
11060-00144	IVC1L-1614MDT	16 digital inputs, 14 transistor outputs, DC24V power supply	150×90×81.2mm
11060-00147	IVC1L-2416MDR	24 digital inputs, 16 relay outputs, DC24V power supply	182×90×81.2mm
11060-00146	IVC1L-2416MDT	24 digital inputs, 16 transistor outputs, DC24V power supply	182×90×81.2mm
11060-00149	IVC1L-3624MDR	36 digital inputs, 24 relay outputs, DC24V power supply	224.5×90×81.2mm
11060-00148	IVC1L-3624MDT	36 digital inputs, 24 transistor outputs, DC24V power supply	224.5×90×81.2mm
● IVC1L extension module ●			
11060-00207	IVC1L-0808ENR	8 digital inputs, 8 relay outputs	61×90×81.2mm
11060-00204	IVC1L-0808ENT	8 digital inputs, 8 transistor outputs	61×90×81.2mm
11060-00205	IVC1L-1600ENN	16 digital inputs	61×90×81.2mm
11060-00217	IVC1L-0016ENT	16 transistor outputs	61×90×81.2mm
11060-00206	IVC1L-0016ENR	16 relay outputs	61×90×81.2mm
11060-00214	IVC1L-2AD	2 analog input	61×90×81.2mm
11060-00212	IVC1L-2DA	2 analog outputs	61×90×81.2mm
11060-00215	IVC1L-2TC	2 thermocouple	61×90×81.2mm
11060-00216	IVC1L-2PT	2 thermal resistance	61×90×81.2mm
11060-00209	IVC1L-4AD	4 analog inputs	61×90×81.2mm
11060-00208	IVC1L-4DA	4 analog outputs	61×90×81.2mm
11060-00210	IVC1L-4TC	4 thermocouple	61×90×81.2mm
11060-00213	IVC1L-4PT	4 thermal resistance	61×90×81.2mm
11060-00211	IVC1L-5AM	4 analog inputs, 1 analog output	61×90×81.2mm
● IVC PLC spare part ●			
67005-00004	IVC-SL1	PLC-VS HMI 232 communication cable (2m)	2m
67005-00001	IVC-SL2	PLC download cable, USB-RS232 (Port0)(2m)	2m
67005-00002	IVC-SL3	PLC-VT/VK/VA HMI 232 communication cable (3m)	3m
67005-00003	IVC-SL4	HMI download cable, available for VT/VK/VA/VS series (2m)	2m
67005-00259	IVC-SL5	PLC-VT/VK/VA HMI 232 communication cable (7m)	7m
67005-00391	IVC-SL8	PLC-VS HMI 232 communication cable (7m)	7m
67005-00392	IVC-SL9	IVC1L extension cable (1m)	1m
● TS600 spare part ●			
11060-00315	TS611	16 inputs and 16 transistor outputs, 1×USB (Type-C), 2×RS485, eight 200K inputs, eight 200K outputs	CE
11060-00318	TS621	16 inputs and 16 transistor outputs, 1×USB (Type-C), 2×RS485, eight 200K inputs, eight 200K outputs, 2×EtherNet	CE
11060-00317	TS633	6 inputs and 16 transistor outputs, 1×USB (Type-C), 2×RS485, eight 200K inputs, eight 200K outputs, 2×EtherNet, 1×EtherCAT, up to 8 axes (bus+pulse)	CE
11060-00316	TS634	inputs and 16 transistor outputs, 1×USB (Type-C), 2×RS485, eight 200K inputs, eight 200K outputs, 2×EtherNet, 1×EtherCAT, up to 16 axes (bus+pulse)	CE
11060-00312	TS635	16 inputs and 16 transistor outputs, 1×USB (Type-C), 2×RS485, eight 200K inputs, eight 200K outputs, 2×EtherNet, 1×EtherCAT, up to 32 axes (bus+pulse)	CE
● TS600 series expansion card modules ●			
11060-00313	TS-CAN-232	TS600 series expansion card TS-CAN-232, which supports Micro SD cards, CANopen bus, and one channel of RS232 communication	CE
11060-00314	TS-4G	TS600 series expansion card TS-4G, which supports Micro SD cards and 4G IoT	CE

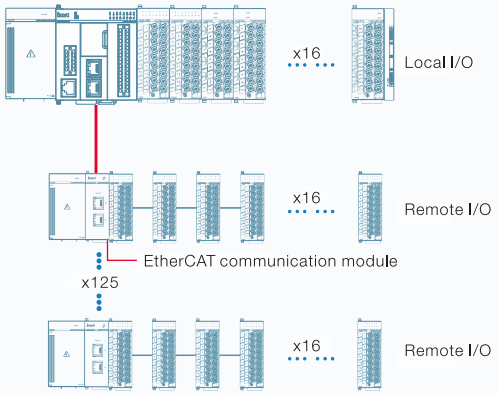
Medium PLC

Industrial control technology based on the CODESYS platform

System composition

The AX series controller is a motion control programmable controller for multi-axis motion control and high-order motion control needs based on the CODESYS platform and EtherCAT bus technology. It adopts modular design, integrates rich communication interfaces and high-level motion control functions, and quickly builds an industrial control network.

- CPU module
- Power supply module
- Digital input/output module
- Analog input/output module
- Temperature detection module
- EtherCAT communication module

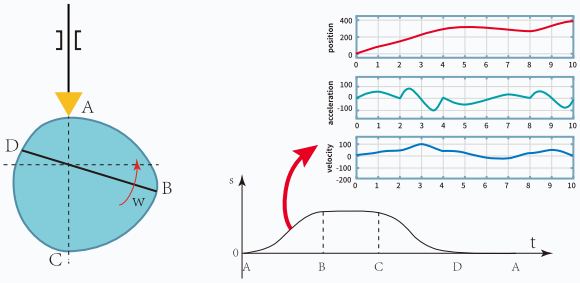


Advanced motion control

The AX series controller integrates rich motion control functions, and realizes high-level motion control such as electronic cam, electronic gear, and synchronous control through high-speed EtherCAT bus or pulse.

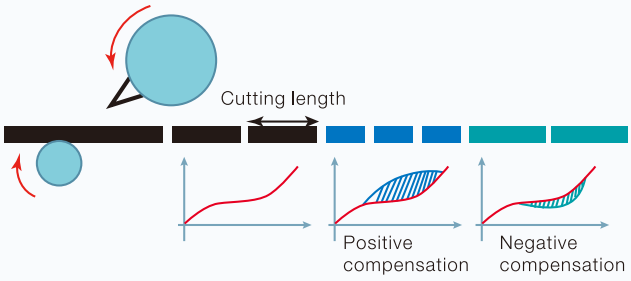
Quintic polynomial cam curve processing

- By specifying velocity, position, and acceleration boundary conditions, a continuous trajectory is obtained and the motion trajectory is smoother.



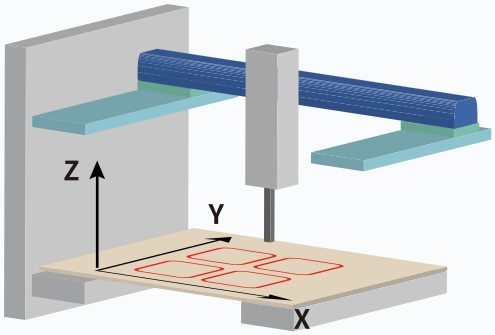
Modify the CAM curve online

- Position compensation is performed for deviations in the trajectory of the motion without the need to regenerate the cam curve.



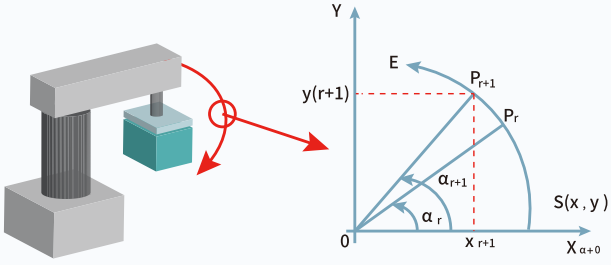
Multi-axis linear interpolation

- The 2/3/4 axes move in a straight line at the same time, supporting relative/absolute position operation.



Arc interpolation

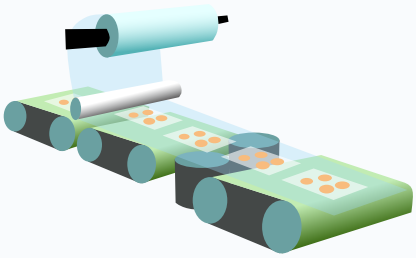
- Support plane XY/XZ/YZ any 2-axis arc interpolation, using trigonometric function interpolation, trajectory distortion control within 0.001mm.



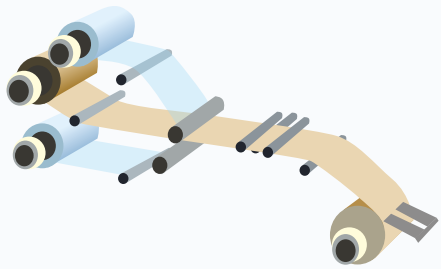
Industry-specific process libraries

The extensive industry application experience helps us to understand customers at a deeper level, and then according to the characteristics of the industry, the common parts of the complex process are extracted and condensed, encapsulated internally, and users only need to simply configure the interface parameters to achieve complex control, effectively shorten the engineer's programming and debugging time, improve efficiency, and reduce costs.

Packaging industry process library

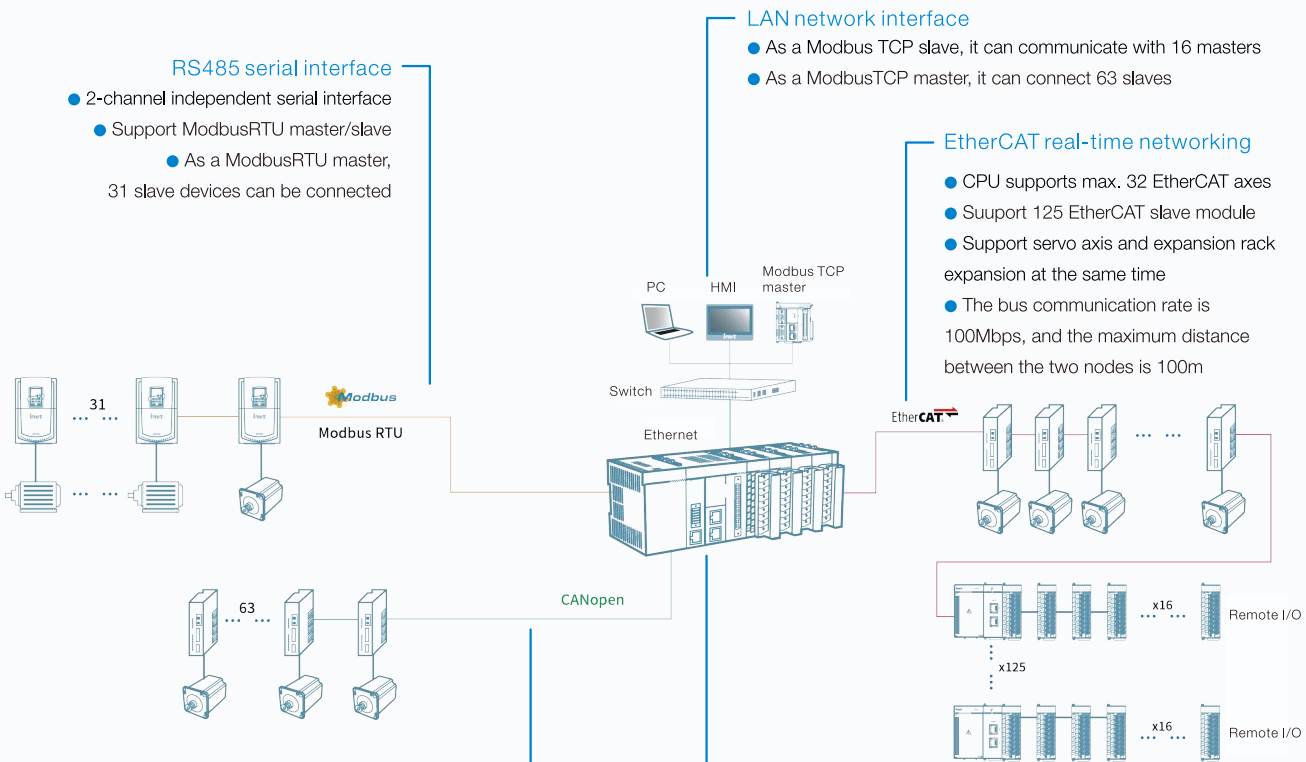


Retract and unwind process library



Multi-level open network

The CPU integrates standard common buses and interfaces such as EtherCAT, Ethernet, CANopen, RS485, etc., flexibly deploys communication networks, and creates a highly adaptable automation control system.



AX series

- EtherCAT bus control on 8/16/32 axes
- High-order motion control such as electronic cams
- Industry-specific process libraries
- 6 standard programming language in IEC61131-3

Technical specification

Model		AX70-C-1608N	AX71-C-1608N	AX72-C-1608N
Rated working voltage		DC24V (-5%~+5%)		
Storage				
Program capacity	Size	10M Word		
	Quantity	POU definition:3000 POU instance:6000		
Data capacity		8M Word		
Power down maintains data capacity		512K Bytes		
Maximum capacity of the SD card		32G		
I/O				
High speed IO		16 channels high-speed input, 8 channels high-speed output		
The maximum number of local extension modules		16	16	16
Max. IO point	Local	256	256	256
	EtherCAT bus	32000	15872	7936
High speed input		4 differential input + 12 200kHz single-ended input, supports 8 single-phase or A/B phase high-speed counting (supports 1x and 4x)		
High speed output		8-channel 200kHz single-ended output with 4-axis pulse motion control		
IO interruption		8-channel high-speed interruption		
Communication networks and interfaces				
Ethernet		1×RJ45, 10BASE-T or 100BASE-TX, support PLC software download, ModbusTCP, TCP/IP protocol		
EtherCAT		1×RJ45, 100BASE-TX, the distance between the two slave stations is less than 100m		
CANopen		1×RJ45,100BASE-TX		
Serial communication (RS485)		In-line terminals with ModbusRTU master/slave support		
USB		1× Mini USB, PC communication, program download and debugging		
Memory card		1× Micro SD for field software system upgrades		
Connection between PLCs		Ethernet/ModbusRTU		
PC software connection		Ethernet/Modbus		
Modem connection		Support		
Instruction cycle				
Bit operation time		1ns		
Word operation time		4ns		
Fixed-point operation time		80ns		
Floating-point operation time		150ns		
Motion control				
Control axes	EtherCAT max. control axes	32	16	8
Point movement	Manual function	●	●	●
	Homing function	●	●	●
	Fixed-point function	●	●	●
	Speed control	●	●	●
	Variable speed function	●	●	●
	Emergency stop function	●	●	●
	Halt function	●	●	●
	Reset function	●	●	●
	Position overlay function	●	●	●
	Magnification change function	●	●	●
	Time position control	●	●	●
	Time speed control	●	●	●
Interpolation function (pulse)	Linear interpolation	4 axes, 200kHz,supporting three modes, pulse + sign, forward/reverse pulse train, and quadrature coded pulse		
	Planar arc interpolation	2 axes, 200kHz,supporting three modes, pulse + sign, forward/reverse pulse train, and quadrature coded pulse		

Model		AX70-C-1608N	AX71-C-1608N	AX72-C-1608N
Motion control				
Electronic cam	Max. quantity of cam table	64 tables		
	Max. points of total cam tables	4194240		
	Max. points of single cam table	65535		
Electronic gear		●		
Motion control cycle		The EtherCAT data communication cycle uses the same control cycle; the pulse communication cycle is 1ms		
Position unit		Pulse count, millimeters, inches		
The maximum number of axes for		4 axes, 200kHz, support pulse + sign, forward/reverse pulse train and quadrature coded pulse three		
Clock				
Internal clock		When the ambient temperature is 55 °C: the error is -3.5 ~ +0.5 minutes / month When the ambient temperature is 25 °C: the error is -1.5 ~ +1.5 minutes / month When the ambient temperature is 0 °C: the error is -3 ~ +1 minute / month		
Configuration programming				
Programming platform		Invtmatic Studio		
programming language		IL, ST, FBD, LD, CFC, SFC		
Basic specification				
Operating ambient temperature		-10~55°C		
Operating ambient humidity		10%~95% (No condensation)		
Storage ambient temperature		-40~70°C		
Storage ambient humidity		10%~100% (Non-condensing)		
IP rating		IP20		
Operating environment		No corrosive gases		
Altitude		2000 meters or less above sea level		
Installation location		Inside the control cabinet		
Degree of contamination		2 or less: Compliant with IEC61131-2		
Surges		2kV		
Anti-interference		Power cord 2kV (according to IEC61000-4-4 standard)		
Electrostatic rating		6kV CD or 8kV AD		
Vibration resistant		3.5mm amplitude within 5~8.5Hz; 10m/s² acceleration within 8.5~150Hz; X/Y/Z axis, 10 cycles		
Dimensions and weight				
Dimension (W×H×D)		80×90×95mm (excl. terminal) 80×90×113mm (incl. terminal)		
Weight		0.38kg		

Note: ● indicates support; - indicates not support

AX series extension module specification

• Power supply module

Model	AX-PWR
Input power	AC100~240V (-15%~+10%)
Input frequency	50/60Hz (-5%~+5%)
Output voltage	DC24V (-5%~+5%)
Output current	2A
Efficiency	>70%
Overcurrent protection	Support
Fuse	Built-in
Dimension (W×H×D)	50×90×95mm
Material code	11015-00002

• Digital input module

Model	AX-EM-1600D
Internal power supply	5VDC (-10%~10%)
Extend bus consumption	5V/50mA
Number of channels	16
Input type	NPN/PNP
Input voltage	DC24V
Input current	4.7mA
Port filtering time	10ms
Logic 1 signal	⩾15V DC
Logic 0 signal	⩽5V DC
Isolation mode	Photocoupler isolation
Dimension (W×H×D)	32×90×117mm
Material code	11015-00004

• Digital output module

Model	AX-EM-0016DP
External power supply	DC24V (-15%~+5%)
Internal power supply	5VDC (-10%~10%)
Extend bus consumption	5V/60mA
Number of channels	16
Output type	Transistor PNP output, active-high
Output voltage	12V~24V (-15%~+5%)
Max. load	0.5A/point; 2A/Common side (resistive load)
Leakage current at each point	<10uA
OFF→ON response time	Max. 0.5ms (100mA/24VDC)
ON→OFF response time	Max. 0.5ms (100mA/24VDC)
Isolation mode	Magnetic isolation
Short-circuit resistant output	Yes (Limit maximum current to 1.7A during protection)
Dimension (W×H×D)	32×90×117mm
Material code	11015-00005

Model	AX-EM-0016DN
External power supply	DC24V (-15%~+5%)
Internal power supply	5VDC (-10%~10%)
Extend bus consumption	5V/60mA
Number of channels	16
Output type	Transistor NPN output, active low
Output voltage	12V~24V (-15%~+5%)
Max. load	0.5A/point; 2A/Common side (resistive load)
Leakage current at each point	<9uA
OFF→ON response time	Max. 0.5ms (100mA/24VDC)
ON→OFF response time	Max. 0.5ms (100mA/24VDC)
Isolation mode	Magnetic isolation
Short-circuit resistant output	Yes (Limit maximum current to 1.7A during protection)
Dimension (W×H×D)	32×90×117mm
Material code	11015-00006

Model	AX-EM-4AD
Internal power supply	5VDC (-10%~10%)
Extend bus consumption	5V/138mA
Number of channels	4
Voltage range	-10V~+10V, -5V~+5V, 0~5V, 0~10V
Current range	-20mA~+20mA, 0~20mA, 4~20mA
Resolution	24bit
Normal temperature accuracy (25℃)	Voltage±0.1%FS, current±0.1%FS
Conversion speed	1ms/channel
Limit voltage	±12V
Limit current	±24mA
Max. common-mode voltage between channels	30VDC
Isolation mode	Between I/O ports and power supplies: Isolated channels: Not isolated
Dimension (W×H×D)	32×90×117mm
Material code	11015-00007

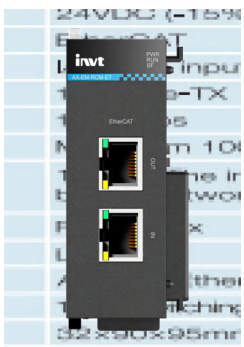
• Analog output module

Model	AX-EM-4DA
External power supply	24VDC (-15%~+20%)
Internal power supply	5VDC (-10%~+10%)
Extend bus consumption	5V/100mA
Number of channels	4
Voltage range	-10V~+10V, -5V~+5V, 0~5V, 0~10V
Current range	0~20mA, 4~20mA
Resolution	16bit
Normal temperature accuracy (25℃)	Voltage±0.1%FS, current±0.1%FS
Conversion speed	1ms/channel
Voltage output load	10kΩ~1MΩ
Current output load	0Ω~1kΩ
Isolation mode	Between I/O ports and power supplies: Isolated channels: Not isolated
Dimension (W×H×D)	32×90×117mm
Material code	11015-00010

• Temperature detection module

Model	AX-EM-4PTC
Internal power supply	5VDC (-10%~+10%)
Extend bus consumption	5V/150mA
Number of channels	4
Wiring method	2/3/4 wirings
Thermal resistance	Pt100, Pt500, Pt1000, CU100
Thermocouple	B, E, J, K, N, R, S, T
Resolution	24bit
Sensitivity	0.1° C/° F
Sampling period	1.5s/chanenl
Normal temperature accuracy (25℃)	Thermal resistance: ±0.3%FSThermocouple: ±0.1%FS±1° C
Operating temperature accuracy	Thermal resistance: ±1%FSThermocouple: ±0.3%FS±1° C
Cold junction compensation	Inside/Outside
Isolation mode	Between I/O ports and power supplies: Isolated channels: Not isolated
Dimension (W×H×D)	32×90×117mm
Material code	11015-00009

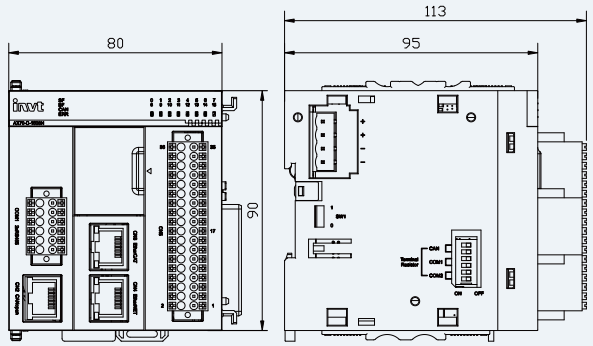
• Communication module



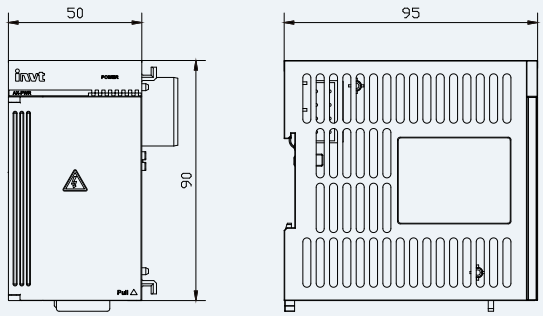
Model	AX-EM-RCM-ET
Power supply	24VDC (-15%~+20%)
Communication protocols	EtherCAT
Synchronization mode	I/O uses input-output synchronization
Physical layer	100Base-TX
Transmission rate	100Mbps
Transmission distance	Maximum 100m between two nodes
Number of slaves	1~125, The internal address is automatically arranged by the network bus connection sequence
Duplex mode	Full duplex
Topology	Linear
Process data	A single Ethernet frame can be up to 1486 bytes in size
Refresh time	1000 switching inputs and outputs are approximately 30us
Dimension (W×H×D)	32×90×95mm
Material code	11015-00008

AX series product dimension

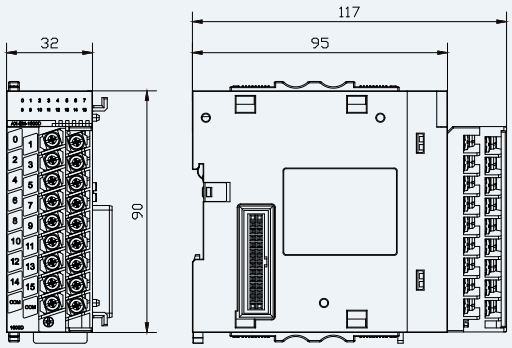
CPU module



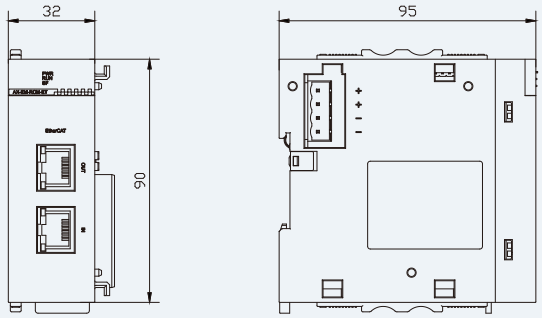
Power supply module



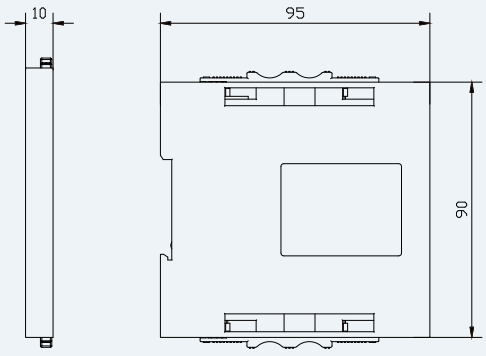
Expansion Modules (Digital/Analog/Temperature)



Communication module



Tail plate



Medium PLC prodcut list

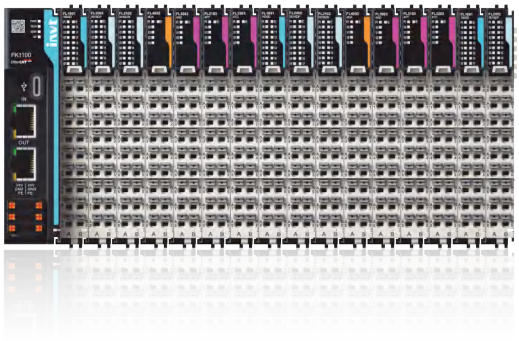
Material code	Model	Description	Dimension
11015-00014	AX70-C-1608N	CPU module; EtherCAT(32axes)/CANopen/Ethernet, Rs485×2, NPN output; RoHS	80×90×113mm
11015-00013	AX71-C-1608N	CPU module; EtherCAT(16axes)/CANopen/Ethernet, Rs485×2, NPN output; RoHS	80×90×113mm
11015-00015	AX72-C-1608N	CPU module; EtherCAT(8axes)/CANopen/Ethernet, RS485×2, NPN output; RoHS	80×90×113mm
11015-00002	AX-PWR	Power supply module; Input:100~240VAC50Hz/60Hz, output:2A, 24VDC; RoHS	32×90×95mm
11015-00004	AX-EM-1600D	Digital input module; 16-point input, 24VDC, NPN/PNP; RoHS	32×90×117mm
11015-00005	AX-EM-0016DP	Digital output module; 16-point PNP output, 500mA, 24VDC; RoHS	32×90×117mm
11015-00006	AX-EM-0016DN	Digital output module; 16-point NPN output, 500mA, 24VDC; RoHS	32×90×117mm
11015-00007	AX-EM-4AD	Analog input module; 4 channels, 24bit resolution, accuracy±0.1%; RoHS	32×90×117mm
11015-00010	AX-EM-4DA	Analog output module; 4 channels,16bit resolution, accuracy±0.1%; RoHS	32×90×117mm
11015-00008	AX-EM-RCM-ET	Communication module; EtherCAT slave module, support 16I/O modules; RoHS	32×90×95mm
11015-00009	AX-EM-4PTC	Temperature detection module; 4 channels, 24bit resolution, 0.1° C/° F; RoHS	32×90×117mm

I/O system

Flexible, reliable, and high-efficiency I/O system

Flex series new generation distributed I/O system

INVT Flex series I/O system is a exible, reliable, and efcient signal transmission system. The system is able to access to multiple standard communication networks, and equipped with rich signal modules to facilitate the deployment of personalized solutions while saving cabinet space, helping you develop more competitive personalized solutions.



Flexible

Rich communication couplers and I/O modules enable the exible design of control systems.

Efficient

Fully upgraded F-BUS bus with a 100-megabit communication rate creates a high real-time communication system.

Reliable

Tight connection using the gold plating process ensures stable and reliable signal transmission.

Compact

Ultra-thin design signicantly saves cabinet space and helps the equipment layout miniaturization.

Flexible

- The open Flex series I/O system adopts a modular design, supporting various bus network, and is equipped with rich signal modules to create personalized solutions. By importing the device description le to a third-party host controller, the module conguration can be achieved without specialized software conguration.

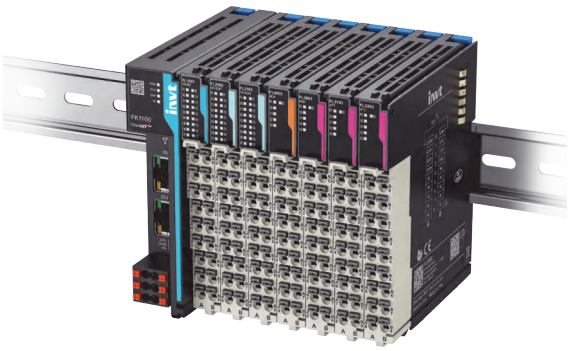
N + X

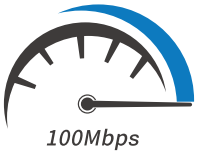
EtherCAT
Profinet
Ethernet/IP
.....

Base module
(Digital/analog/temperature module)
Encoder module
Pulse module
Weighing module
.....

Efcient

- The system is equipped with a 100Mbps F-BUS backplane bus, with a response of I/O refresh in microseconds, achieving high-speed information exchange.





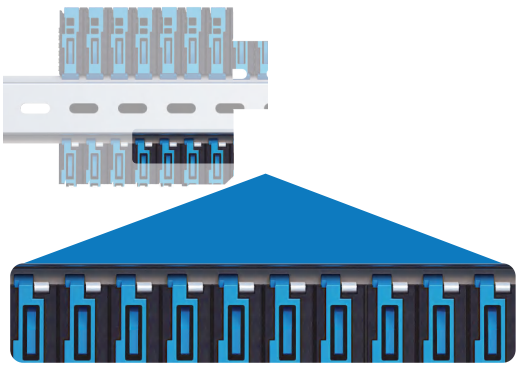
Product positioning

- Spring-loaded connection technology and 5u" gold plating process keep the connectors away from various types of corrosion and ensure a long service life of connectors.

Gold-plated connector

- The entire series adopts three-resistance coating to prevent dust, moisture, and salt spray, meeting a wider range of operating conditions and extending service life.

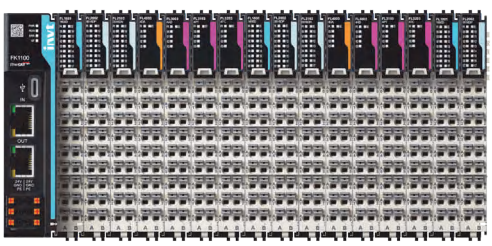
- Reliable grounding, further enhancing anti-interference capability.



- Capable of operating in -25~55℃ and at an altitude of 3000m, fearless of freezing weather.

Compact

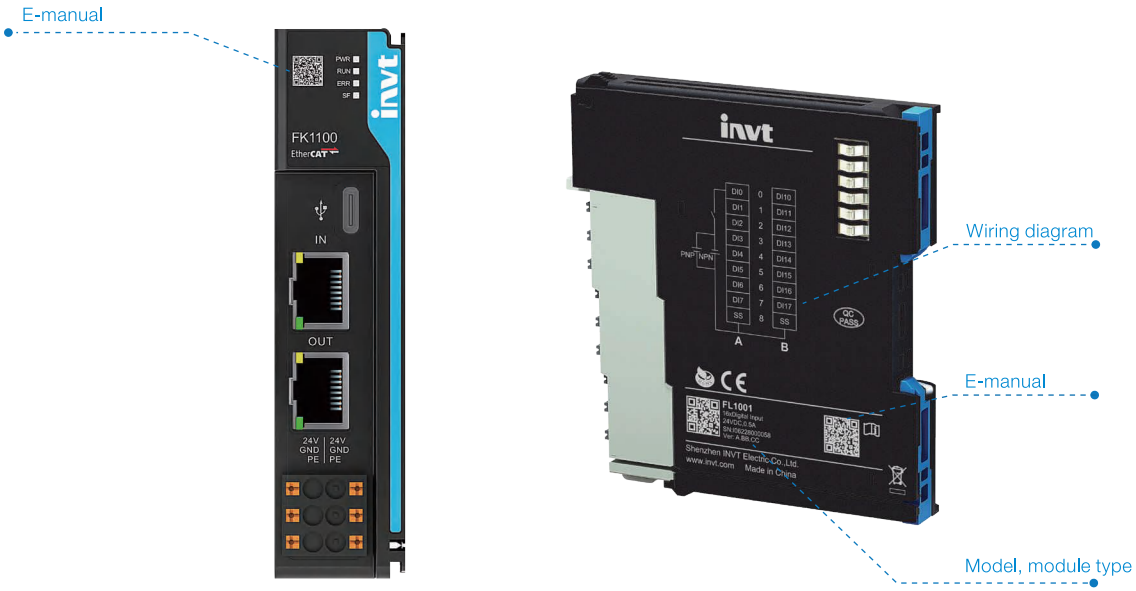
- 12mm ultra-thin design, saving 64% of the cabinet space, achieving miniaturization of the cabinet.



64%
space saving

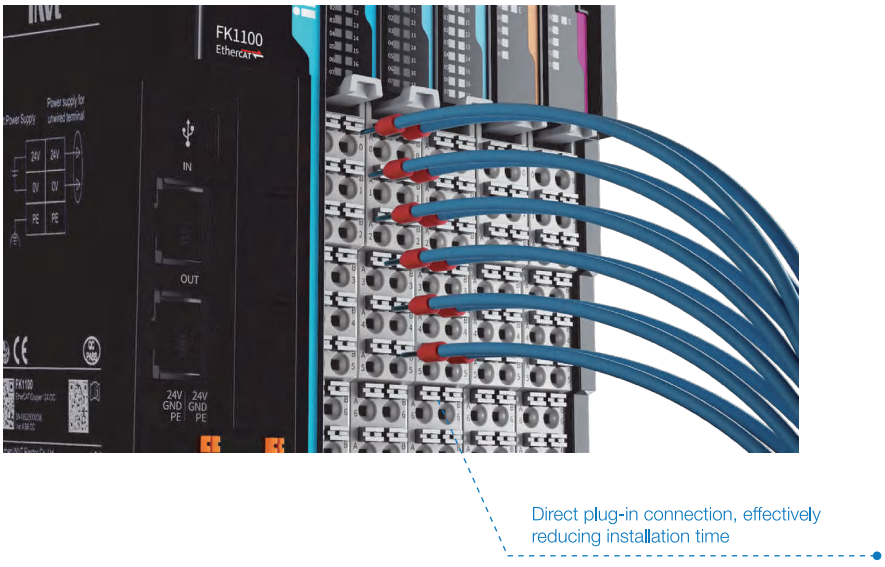
Easy installation

● The wiring diagram is printed on the module so the wiring can be completed without referencing a user manual. By scanning the QR code on the front, you can obtain an electronic version of the user manual for more information.



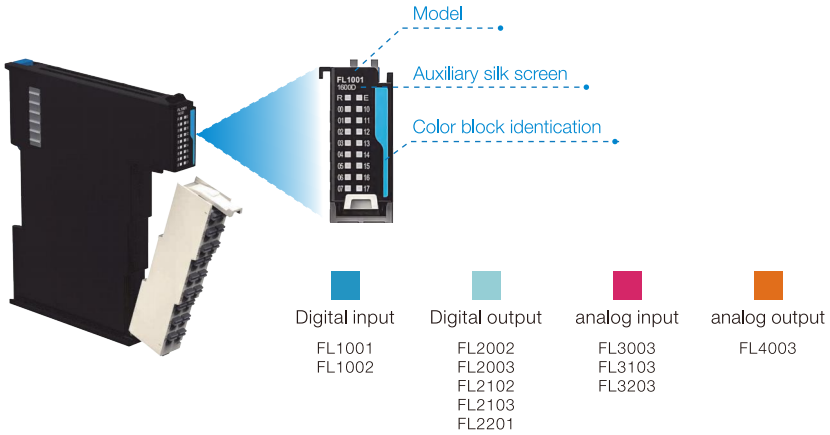
Tool-free quick connection

● PUSH IN connection technology enables easy installation without any tools, with a 70% improvement in wiring efciency compared to screw terminals, effectively reducing installation time while ensuring good reliability.



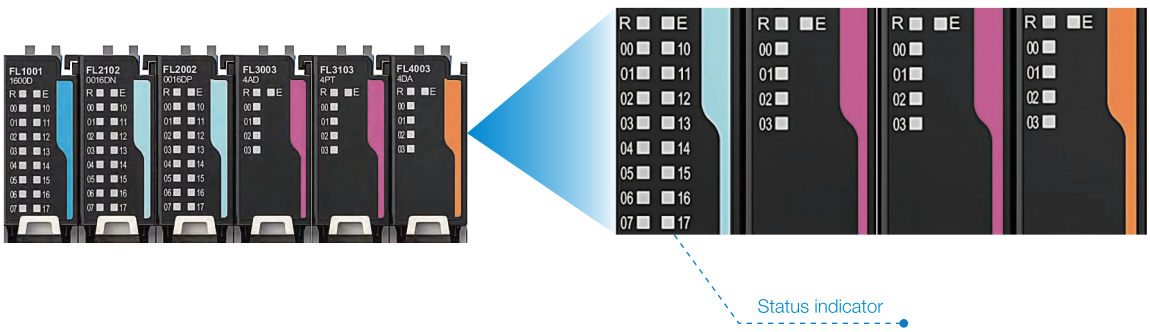
Clear identication

● Different modules are distinguished by color blocks and auxiliary codes, making identification and positioning more accurate and convenient.



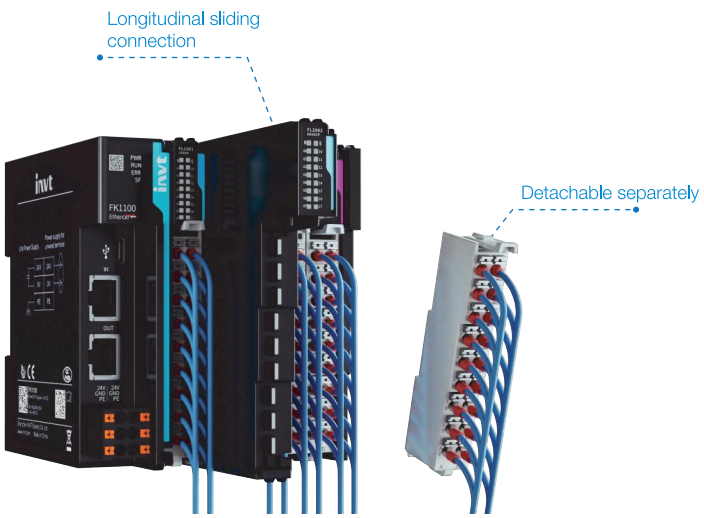
Channel-level diagnosis

● Each channel has a status indicator light, and each module can independently display its working status. The operating status and fault information are clear at a glance.



Easy to maintain

● Longitudinal sliding connection allows terminal assembly and disassembly without moving the left and right modules. Adopting a two-section modular design, the wiring terminals can be disassembled separately without repeated wiring.

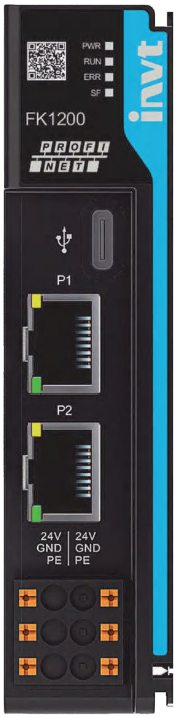


Product specifications

● Communication coupler (EtherCAT)

Item	Specications		
Ordering code	11016-00005		
Model	FK1100		
Product type	EtherCAT communication coupler		
Power supply	Rated voltage	24VDC (-15%~ +20%)	
	Power consumption of module	<10W	
	Isolation	No isolation	
	Power supply protection	Protection against reverse connection, overcurrent, and surges	
Interface	USB2.0	×1, for module upgrade	
	RJ45	×2, EtherCAT IN&OUT	
	EtherCAT slave	Synchronization method	Distributed clocks or input and output synchronization
		Physical layer	100BASE-TX
		Baud rate	100Mbit/s
		Output distance	Less than 100m between two nodes
		Transmission mode	Full duplex
		Topology structure	Linear, star-shape, tree-shape
		Slave address range	Assigned by the system
		Quantity of input PDO	Up to 768 bytes
		Quantity of output PDO	Up to 768 bytes
		Input mailbox size	Up to 128 bytes
		Output mailbox size	Up to 128 bytes
	Expansion bus	Number of I/O expansions	16, internal bus. The coupler can automatically identify the I/O type and quantity on the backplane
		Output power supply	5V/2.5A
Certication	CE, RoHS		
Environment	IP rating	IP20	
	Working temperature	-20℃–55℃	
	Working humidity	10%–95%RH (no condensation)	
	Air	No corrosive gas	
	Storage temperature	-40℃–70℃ (RH<90%RH, no condensation)	
	Altitude	Lower than 3000m	
	Pollution degree	Degree 2, compliant with IEC61131-2	
	Anti-interference	2kV power cable compliant with IEC61000-4-4	
	EMC antiinterference level	Zone B,IEC61131-2 (General industrial environment)	
	Vibration resistant	IEC60068-2-6 5Hz–8.4Hz, vibration amplitude of 3.5mm, 8.4Hz–150Hz, acceleration 9.8m/s2, 100 minutes for each in X, Y, and Z directions (10 times, 10 minutes each time, a total of 100 minutes)	
	Impact resistance	IEC60068-2-27, 9.8m/s2, 11ms, X/Y/Z, 3 times for each of 3 axes and 6 directions	
Installation method	35mm standard rail		
Weight	Net: 0.25(Kg) Gross: 0.28(Kg)		
Dimensions W×H×D	Product dimension: 25×105×96(mm) Package dimension: 29×109×100(mm)		

Communication coupler (Profinet)



Item	Specications		
Ordering code	11016-00012		
Model	FK1200		
Product type	PROFINET communication coupler		
Power supply	Rated voltage	24VDC (-15% – +20%)	
	Power consumption of module	<10W	
	Power supply protection	Protection against reverse connection, overcurrent, and surges	
	Isolation	No isolation	
interface	USB2.0	×1, for module upgrade	
	RJ45	×2, Profinet P1&P2	
	Pronet slave	Physical layer	100BASE-TX
		Baud rate	100Mbit/s
		Output distance	Less than 100m between two nodes
		Transmission mode	Full duplex
		Topology structure	Linear, star-shape, tree-shape
		Communication protocol	Profinet IO Device
		Communication mode	RT
		Communication period	Min. 1ms
		Process data zone	Input max. 1440 bytes, output max. 1440bytes; IM0–IM3
		Pronet switch function	Supports networking function
		Ethernet service	Supports TCP/IP, SNMP, LLDP, ping, arp
		Port diagnosis	Supported
		Port disabling	Supported
		Factory settings reset	Supported
	Expansion bus	Number of I/O expansions	16, internal bus. The coupler can automatically identify the I/O type and quantity on the backplane
		Output power supply	5V/2.5A
Certication	CE, RoHS		
Environment	IP rating	IP20	
	Working temperature	-25℃–55℃	
	Working humidity	10%–95%RH (no condensation)	
	Air	No corrosive gas	
	Storage temperature	-40℃–70℃ (RH<90%RH, no condensation)	
	Altitude	Lower than 3000m	
	Pollution degree	Degree 2, compliant with IEC61131-2	
	Anti-interference	2kV power cable compliant with IEC61000-4-4	
	EMC antiinterference level	Zone B,IEC61131-2 (General industrial environment)	
	Vibration resistant	IEC60068-2-6 5Hz–8.4Hz, vibration amplitude of 3.5mm, 8.4Hz–150Hz, acceleration 9.8m/s2, 100 minutes for each in X, Y, and Z directions (10 times, 10 minutes each time, a total of 100 minutes)	
	Impact resistance	IEC60068-2-27, 9.8m/s2, 11ms, X/Y/Z, 3 times for each of 3 axes and 6 directions	
Installation method	35mm standard rail		
Weight	Net: 0.25(Kg) Gross: 0.28(Kg)		
Dimensions W×H×D	Product dimension: 25×105×96(mm) Package dimension: 29×109×100(mm)		

Digital input

Model	FL1001
Ordering code	11016-00004
Product type	Digital input, supporting source type/sink type
Power loss, typ	0.75W
Number of channels	16
Input type	Source/sink
Input voltage	DC24V±10%
Input current,typ	7mA
Max. input frequency	500Hz (duty ratio: 40%–60%)
Port filter time	Setting range: 1–65535 (default 1000), unit: 10μs; 1000 indicates 10ms. Able to set two groups of Iter parameter. Every eight channels use a group of Iter parameter
Signal of logic 1	⩾15V DC
Signal of logic 0	⩽5V DC
OFF-ON response time	100μs
ON-OFF response time	100μs
Isolation method	Optocoupler
Input frequency decrease	Derate by 75% when operating at 55℃ (with no more than 12 input points that are on at the same time), or by 10℃ when all input points are on
Weight	Net: 0.15(Kg) Gross: 0.18(Kg)
Dimensions (W×H×D)	Product dimension: 12.5×105×96mm Package dimension: 17.5×109×100mm

Model	FL1002
Ordering code	
Product type	Digital input, supporting source type/sink type
Power loss,typ	0.75W
Number of channels	32
Input type	Source/sink
Input voltage	DC24V±10%
Input current,typ	7mA
Max. input frequency	500Hz (duty ratio: 40%–60%)
Port filter time	Setting range: 1–65535 (default 1000), unit: 10μs; 1000 indicates 10ms. Able to set two groups of Iter parameter. Every eight channels use a group of Iter parameter.
Signal of logic 1	⩾15V DC
Signal of logic 0	⩽5V DC
OFF-ON response time	100μs
ON-OFF response time	100μs
Isolation method	Optocoupler
Input frequency decrease	Derate by 75% when operating at 55℃ (with no more than 12 input points that are on at the same time), or by 10℃ when all input points are on
Weight	Net: 0.30(Kg) Gross: 0.33(Kg)
Dimensions (W×H×D)	Product dimension: 25×105×96mm Package dimension: 29×109×100mm

Contact local sales personnel for specic delivery times

Digital output (source type)

Model	FL2002
Ordering code	11016-00006
Product type	Digital output, transistor source type output, active high
Power loss, typ	0.75W
Number of channels	16
External power	DC24V (-15%~+20%)
Output voltage	24V±10%
Max. output frequency	1kHz
Max. load	Resistive load: 0.5A/point, 2A/module Inductive load: 7.2W/point, 12W/module Illumination load: 5W/point, 18W/module
Leakage current/point	<10uA
OFF-ON response time	100μs
ON-OFF response time	100μs
Protection against overheat/ overcurrent/overvoltage	Supported
Exception check of external power	Supported
Isolation method	Magnetic
Short-circuit protection output	Yes
Weight	Net: 0.15(Kg) Gross: 0.18(Kg)
Dimensions (W×H×D)	Product dimension: 12.5×105×96mm Package dimension: 17.5×109×100mm

Model	FL2003
Ordering code	
Product type	Digital output, transistor source type output, active high
Power loss, typ	0.75W
Number of channels	32
External power	DC24V (-15%~+20%)
Output voltage	24V±10%
Max. output frequency	1kHz
Max. load	Resistive load: 0.5A/point, 2A/module Inductive load: 7.2W/point, 12W/module Illumination load: 5W/point, 18W/module
Leakage current/point	<10uA
OFF-ON response time	100μs
ON-OFF response time	100μs
Protection against overheat/ overcurrent/overvoltage	Supported
Exception check of external power	Supported
Isolation method	Optocoupler isolation
Short-circuit protection output	Yes
Weight	Net: 0.30(Kg) Gross: 0.33(Kg)
Dimensions (W×H×D)	Product dimension: 25×105×96mm Package dimension: 29×109×100mm

Contact local sales personnel for specic delivery times

Digital output (sink type)

Model	FL2102
Ordering code	11016-00003
Product type	Digital output, transistor sink type output, active low
Power loss, typ	1W
Number of channels	16
External power	DC24V (-15%~+20%)
Output voltage	24V±10%
Max. output frequency	1kHz (duty ratio: 40%–60%)
Max. load	Resistive load: 0.5A/point, 4A/module Inductive load: 7.2W/point, 24W/module Illumination load: 5W/point, 18W/module
Leakage current/point	<10uA
OFF-ON response time	100μs
ON-OFF response time	100μs
Protection against overheat/ overcurrent/overvoltage	Supported
Exception check of external power	Supported
Isolation method	Magnetic
Short-circuit protection output	Yes
Weight	Net: 0.15(Kg) Gross: 0.18(Kg)
Dimensions (W×H×D)	Product dimension: 12.5×105×96mm Package dimension: 17.5×109×100mm

Digital output (sink type)

Model	FL2103
Ordering code	
Product type	Digital output, transistor sink type output, active low
Power loss, typ	1W
Number of channels	32
External power	DC24V (-15%～+20%)
Output voltage	DC24V±10%
Max. output frequency	1kHz (duty ratio: 40%–60%)
Max. load	Resistive load: 0.5A/point, 4A/module Inductive load: 7.2W/point, 24W/module Illumination load: 5W/point, 18W/module
Leakage current/point	<10uA
OFF-ON response time	100μs
ON-OFF response time	100μs
Protection against overheat/ overcurrent/overvoltage	Supported
Exception check of external power	Supported
Isolation method	Magnetic
Short-circuit protection output	Yes
Weight	Net: 0.15(Kg) Gross: 0.18(Kg)
Dimensions (W×H×D)	Product dimension: 25×105×96mm Package dimension: 29×109×100mm

Contact local sales personnel for specic delivery times

Digital output (relay)

Model	FL2201
Ordering code	11016-00009
Product type	Digital output, relay output
Power loss, typ	1.5W
Number of channels	8
Contact type	N.O. contact
Contact load (resistive)	3A 250VAC/30VDC
Max. switching voltage	250VAC/125VDC@0.3A
Max. switching current	5A
Service life of relay	Electrical: 100,000 times Mechanical: 20,000,000 times
OFF-ON response time	⩽15ms
ON-OFF response time	⩽10ms
Weight	Net: 0.30(Kg) Gross: 0.33(Kg)
Dimensions (W×H×D)	Product dimension: 25×105×96mm Package dimension: 29×109×100mm

Analog input

Model	FL3003
Ordering code	11016-00011
Product type	4 channels of analog input
Power loss, typ	1W
Number of channels	4
Voltage range	±5V, ±10V, +5V, +10V
Current range	0-20mA, 4-20mA, ±20mA
Accuracy in room temperature (of 25℃)	Voltage±0.1%FS, current±0.1%FS
Converting speed	320μs/channel
Max. common-mode voltage between channels	30VDC
Disconnection detection	Support (only voltage)
Isolation method	Between I/O port and power supply: isolated Between channels: not isolated
Resolution	16 bits
Weight	Net: 0.15(Kg) Gross: 0.18(Kg)
Dimensions (W×H×D)	Product dimension: 12.5×105×96mm Package dimension: 17.5×109×100mm

Analog output

Model	FL4003
Ordering code	11016-00008
Product type	4 channels of analog output
External power	24VDC (-15%~+20%)
Power loss, typ	0.75W
Number of channels	4
Voltage range	±5V, ±10V, 0-5V, 0-10V
Current range	0-20mA, 4-20mA
Accuracy in room temperature (of 25℃)	Voltage±0.1%FS, current±0.1%FS
Converting speed	40μs/channel
Min. load resistance during voltage output	1kΩ
Max. load resistance during current output	600Ω
Disconnection detection	Support (only current)
Isolation method	Between I/O port and power supply: isolated Between channels: not isolated
Resolution	16 bits
Weight	Net: 0.15(Kg) Gross: 0.18(Kg)
Dimensions (W×H×D)	Product dimension: 12.5×105×96mm Package dimension: 17.5×109×100mm

Temperature measuring (thermistor)

Model	FL3103
Ordering code	11016-00007
Product type	4 channels of thermistor input
Power loss, typ	1.25W
Number of channels	4
Wiring method	Two-, three-, or four-wire
Supported thermal resistors	PT100, PT500, PT1000, CU100
Sensitivity	0.0625°C/0.0625°F
SamplePeriod	240ms/channel (typical value)
Accuracy in room temperature (of 25°C)	±0.1%FS
Accuracy in working temperature	±1%FS
Filter time	Adjustable
Accuracy in working temperature	±0.3%FS
Isolation method	Between I/O port and power supply: isolated Between channels: not isolated
Weight	Net: 0.15(Kg) Gross: 0.18(Kg)
Dimensions (W×H×D)	Product dimension: 12.5×105×96mm Package dimension: 17.5×109×100mm

Temperature measuring (thermocouple)

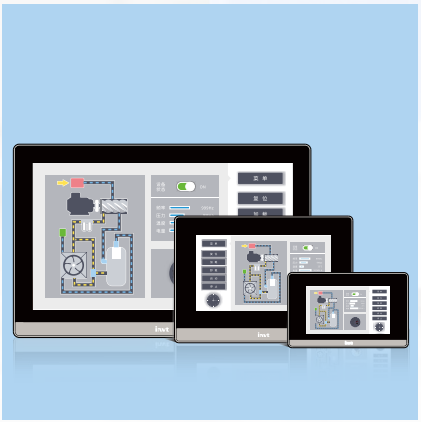
Model	FL3203
Ordering code	11016-00010
Product type	4 channels of thermocouple input
Power loss, typ	1.25W
Number of channels	4
Supported thermocouples	Types B, E, J, K, N, R, S, and T
Sensitivity	0.0625°C/0.0625°F
SamplePeriod	360ms/channel
Accuracy in room temperature (of 25°C)	±0.1%FS+cold junction compensation error
Accuracy in working temperature	±0.3%FS+cold junction compensation error
Cold junction compensation method	Internal
Disconnection detection	Supported
Isolation method	Between I/O port and power supply: isolated Between channels: not isolated
Weight	Net: 0.15(Kg) Gross: 0.18(Kg)
Dimensions (W×H×D)	Product dimension: 12.5×105×96mm Package dimension: 17.5×109×100mm

I/O system product list

Ordering code	Model	Product type	Specications
11016-00005	FK1100	Communication coupler (EtherCAT)	Coupler, EtherCAT, 24VDC; RoHS
11016-00012	FK1200	Communication coupler (Pronet)	Coupler, Pronet, 24VDC; RoHS
11016-00004	FL1001	Digital input	Digital input module, 16 channels, supporting the source and sink types, 500mA@ 24 VDC inputs; RoHS
11016-00006	FL2002	Digital output (source type)	Digital output module, with 16 channels of PNP transistor output, 500mA @ 24 VDC; RoHS
11016-00003	FL2102	Digital output (sink type)	Digital output module, with 16 channels of NPN transistor output, 500mA @ 24 VDC; RoHS
11016-00009	FL2201	Digital output (relay)	Digital output module, with 8 channels of relay output, dry contact, 3A @ 30VDC/250VAC; RoHS
11016-00011	FL3003	Analog input	Analog input module; 4 channels, 16-bit resolution, room-temperature accuracy±0.1%FS; RoHS
11016-00008	FL4003	Analog output	Analog output module; 4 channels, 16-bit resolution, room-temperature accuracy±0.1%FS; RoHS
11016-00007	FL3103	Temperature measuring (thermistor)	Thermistor, 4 channels, 24-bit resolution, sensitivity of 0.1℃/℉; RoHS
11016-00010	FL3203	Temperature measuring (thermocouple)	Thermocouples, 4 channels, 24-bit resolution, sensitivity of 0.1℃/℉; RoHS

HMI

Friendly human-machine interaction experience



Powerful CPU

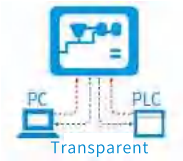
- Stable, efficient, safe, and reliable run in Linux.
- Industrial-grade high-performance processor.
- 256MB FLASH+512MB DDR3.

Diversified communication

- Multi-serial communication (RS232/422/485).
- Ethernet communication.
- Allowing one screen or multi-screen for one machine, or multi-screen for multi-machine.

Convenient configuration

- Multi-set recipes, multi-window function.
- Data acquisition, data alarm function.
- Macros are supported.
- Support for custom vector graphics.



Featured function

- PC can communicate directly with the PLC via the HMI.
- Online simulation function, PC can be directly connected to the PLC simulation configuration project.
- USB, Ethernet, U disk three ways to update the configuration of the project.

Language font

- Supports up to 50 languages.
- Supports TRUE TYPE (TTF) font.
- Supports font editing for complex properties.
- Unicode international standard code.

Safe and reliable

- Industrial-grade design, stable operation.
- High-capacity FLASH supports permanent storage of large capacity data without loss of power.
- Support USB flash drive data storage.
- New password mechanism, more secure and reliable to use.

VS-Q series

- 4.3/7.0/10.2/15.6"
- 16.77 million colors of true color display
- C language macros

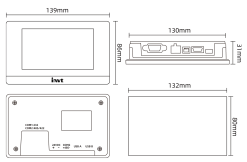
Technical specification

Model		VS-043QE	VS-070QE	VS-070QS	VS-070QS-G	VS-102QS-G	VS-102QS	VS-156QS
Display								
Display size		4.3"	7"	7"	7"	10.2"	10.2"	15.6"
Resolution		480×272	800×480	800×480	1024×600	1024×600	1024×600	1920×1080
Screen material		ITO						
Color depth		24 bits						
Brightness (cd/m²)		400	450					300
Backlight type		LED						
Backlight life (hr)		20000						15000
Touch panel type		4-wire high accuracy touch panel						
CPU and memory								
CPU		Cortex-A7 1GHz (dual core)						Cortex-A7 1.2GHz
Memory		128M DDR3						256M DDR3
Flash		128M Flash						4G (EMMC)
Communication interface								
USB		USB Client ×1, USB Host ×1						USB Host ×1
Serial * interface	COM1	RS232	RS232	RS232	RS232	RS232	RS232	RS232/422/485
	COM2	RS485/422	RS485/422	RS485/422	RS485/422	RS485/422	RS485/422	RS485
	COM3	-	RS485	RS485	RS485	RS485	RS485	-
Ethernet		-	-	Support	Support	Support	Support	Support
SD card slot		-						
4G/WIFI		-			Support		-	
Power supply								
Rated voltage		12-24VDC (±15%)						
Rated power		3W	4W				7W	10W
Environment								
Work temperature		-20~55 ° C						
Work humidity		5~95%RH (No condensation)						
Protection level		IP65 (front panel)						
Certification								
CE		En55032, EN55035						
FCC compatibility		FCC, Class A						
Dimensions and weight								
Physical dimension W*H*D (mm)		150×93×39	203×145×35	203×145×35	203×145×35	273×211×44	273×211×44	395×257×31
Hole dimension A*B (mm)		132×80	192×138	192×138	192×138	259×201	259×201	383×246
Weight (Kg)		0.2	0.7	0.7	0.7	1.05	1.05	2.45
configuration								
Configuration software		HMITOOL						

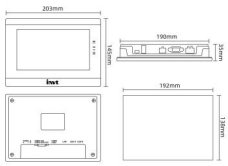
Note: ● Indicates Support - Indicates not supported * In the serial interface, DB9 is a male socket

Dimension

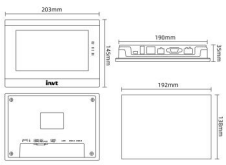
VS-043QE



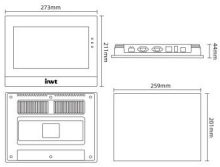
VS-070QE



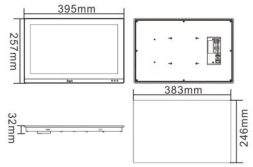
VS-070QS



VS-102QS



VS-156QS



VA series

- 7.0/10.1"
- 3 serial ports
- Backlight life 20,000hrs
- Up to 30 screens, 100 macros

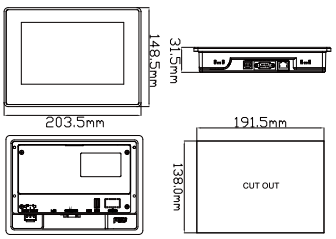
Technical specification

Model		VA2070-N0CXR	VA2100-N0CXR
Display			
Display size		7"	10.1"
Resolution		800×480	1024×600
Screen material		TFT	
Color depth		16 bits	
Brightness (cd/m²)		350	250
Backlight type		LED	
Backlight life (hr)		20000	
Touch panel type		4-wire resistive screen	
CPU and memory			
CPU		RISC ARM9 32Bit 300MHz	
Memory		64MB DDR3	
Flash		128MB Flash	
Number of screens		30 pages	
Interface			
USB		Host: USB2.0×1 / Client: USB2.0×1	
Serial interface *	COM1	RS232 (DB9)	RS232 (DB9)
	COM2	RS485/422 (DB9)	RS485/422 (DB9)
	COM3	RS485 (DB9)	RS485 (DB9)
Ethernet interface		-	-
Micro SD card slot		-	
Power supply			
Rated voltage		24VDC (±10%)(Isolation)	
Rated power		10W	20W
Environment			
Work temperature		-10~50°C	
Work humidity		10~90%RH (No condensation)	
Protection level		IP54 (Front board)	
Certification			
CE		EN61000-6-2, EN61000-6-4	
FCC compatibility		FCC, Class A	
RoHS		●	●
Dimensions and wight			
Physical dimension W*H*D (mm)		203.5×148.5×31.5	270.8×212.8×42.5
Hole dimension A*B (mm)		191.5×138	259×201
Weight (Kg)		0.55	1.1
Configuration			
Configuration software		VT Designer	

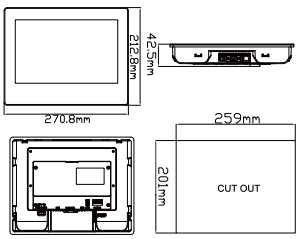
Note: ● Indicates Support - Indicates not supported * In the serial interface, DB9 is a female socket

Dimension

VA2070



VA2100



VK series

- 4.3/7.0/10.1"
- 3 serial ports
- Backlight life 20,000hrs
- Support macros

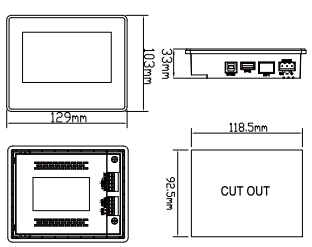
Technical specification

Model		VK2043-N0CXN	VK2043-N0CXR	VK2043-N0EXR	VK2070-N0EXR	VK2070-N0CXR	VK2100-N0CXR	VK2100-N0EXR
Display								
Display size		4.3"	4.3"	4.3"	7"	7"	10.1"	10.1"
Resolution		480×272	480×272	480×272	800×480	800×480	1024×600	1024×600
Screen material		TFT						
Color depth		16 bits						
Brightness (cd/m²)		400	400	400	400	400	350	350
Backlight type		LED						
Backlight life (hr)		20000						
Touch panel type		4-wire resistive screen						
CPU and memory								
CPU		RISC ARM9 32Bit 300MHz						
Memory		64MB DDR3						
Flash		128MB Flash						
Number of screens		7999 pages						
Interface								
USB		USB Host: USB2.0×1 / USB Client: USB2.0×1						
Serial interface *	COM1	-	RS232 (5-PIN terminal connector)		RS232 (DB9)			
	COM2	-	RS422/485 (5-pin terminal connector)		RS422/485 (DB9)			
	COM3	Rs485 (5-pin terminal connector)			RS485 (DB9)			
Ethernet interface		-	-	10M/100M BASE-T×1	10M/100M BASE-T×1	-	-	10M/100M BASE-T×1
Micro SD card slot		-						
Power supply								
Rated voltage		24VDC (±10%)(Isolation)						
Rated power		10W	10W	10W	20W	20W	20W	20W
Environment								
Work temperature		-10~60° C						
Work humidity		10~90%RH (No condensation)						
Protection level		IP65 (Front board)						
Certification								
CE		EN61000-6-2, EN61000-6-4						
FCC compatibility		FCC, Class A						
RoHS		●	●	●	●	●	●	●
Dimensions and wight								
Physical dimension W*H*D (mm)		129×103×33	129×103×33	129×103×33	203.5×148.5×37	203.5×148.5×37	270.8×212.8×42.5	270.8×212.8×42.5
Hole dimension A*B (mm)		118.5×92.5	118.5×92.5	118.5×92.5	191.5×138	191.5×138	259×201	259×201
Weight (Kg)		0.23	0.23	0.23	0.55	0.55	1.1	1.1
Configuration								
Configuration software		VT Designer						

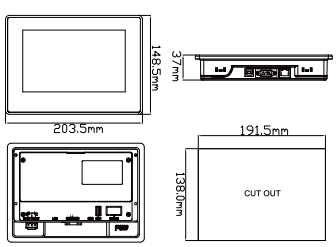
Note: ● Indicates Support - Indicates not supported * In the serial interface, DB9 is a female socket

Dimension

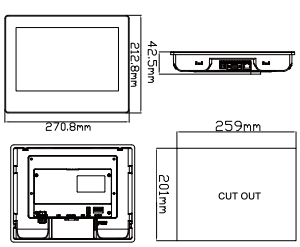
VK2043



VK2070



VK2100



VT series

- 7.0/10.4"
- Up to 5 serial ports
- Isolation design
- Backlight life 20,000hrs
- Support macros

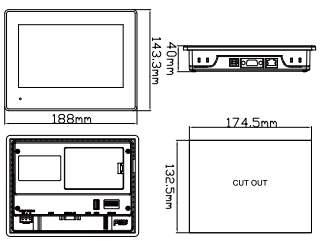
Technical specification

Model		VT2070-N0CTR-24	VT2070-H1ETR-31	VT2104-H0ETR-51
Display				
Display size		7"	7"	10.4"
Resolution		800×480	800×480	800×600
Screen material			TFT	
Color depth			16 bits	
Brightness (cd/m²)			400	
Backlight type			LED	
Backlight life (hr)			20000	
Touch panel type			4-wire resistive screen	
CPU and memory				
CPU			RISC ARM9 32Bit 300MHz	
Memory			64MB DDR3	
Flash			128MB Flash	
Number of screens			7999 pages	
Interface				
USB			USB Host: USB2.0×1 / USB Client: USB2.0×1	
Serial * interface	COM1	RS232 (DB9)	RS232/422/485 (DB9)	RS232 (DB9)
	COM2	RS422/485 (DB9)	RS485 (5-PIN terminal)	RS422/485 (DB9)
	COM3	-	RS485 (DB9)	RS485 (DB9)
	COM4	-	-	RS485 (5-pin terminal)
	COM5	-	-	RS485 (5-pin terminal)
Ethernet interface		-	10/100M BASE-T×1	10/100M BASE-T×1
Micro SD card slot		-	Micro SD	-
Power supply				
Rated voltage			24VDC (±10%)(Isolation)	
Rated power		20W	20W	20W
Environment				
Work temperature			-10~60°C	
Work humidity			10～90%RH (No condensation)	
Protection level			IP66 (Front board)	
Certification				
CE			EN61000-6-2, EN61000-6-4	
FCC compatibility			FCC, Class A	
RoHS		●	●	●
Dimensions and wight				
Physical dimension W*H*D (mm)		188×143.3×40	188×143.3×40	270.8×212.8×42.5
Hole dimension A*B (mm)		174.5×132.5	174.5×132.5	259×201
Weight (Kg)		0.55	0.55	1.1
Configuration				
Configuration software			VT Designer	

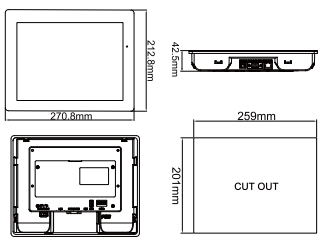
Note: ● Indicates Support - Indicates not supported * In the serial interface, DB9 is a female socket

Dimension

VT2070



VT2104



HMI-VS-Q series wireless module

Modules can be mounted to the HMI interface with fasteners, plug and play

Product model	VS-Q-4G	VS-Q-WIFI
Networking method	4G (Mobile, Unicom, Telecom)	WIFI
Network frequency band	LTE-TDD: B34/B38/B39/B40/B41	IEEE 802.11b
	LTE-FDD: B1/B3/B5/B8	IEEE 802.11g
	Optional GSM: GSM900/DCS1800	IEEE 802.11n
Network reconnection	Supported	Supported
Offline transmission resuming	Supported	Supported
API interface	Supported	Supported
VNC function	Supported	Supported
Data monitoring	Support up to 280 data points	Support up to 280 data points
Historical data	Supports up to 20,000 data items	Supports up to 20,000 data items
Alarm push	Support client push and WeChat public account push	Support client push and WeChat public account push

IWOcloud IoT cloud platform free application

HMI product list

Product	Material code	Model	Description	Cut-out size
VS-Q series	11026-00025	VS-043QE	4.3'', 480×272, 24bit color, 2 serial port, RoHS	132×84mm
	11026-00022	VS-070QE	7.0'', 800×480, 24bit color, 3 serial port, RoHS	192×138mm
	11026-00023	VS-070QS	7.0'', 800×480, 24bit color, 3 serial ports,1 Ethernet port, RoHS	192×138mm
	11026-00029	VS-070QS-G	7.0'', 800×480, 24bit color, 3 serial ports,1 Ethernet port, support the expansion of the IoT,RoHS	192×138mm
	11026-00024	VS-102QS	10.2'', 1024×600, 24bit color, 3 serial port, 1 Ethernet port, RoHS	259×201mm
	11026-00028	VS-102QS-G	10.2'', 1024×600, 24bit color, 3 serial port, 1 Ethernet port, support the expansion of the IoT,RoHS	259×201mm
	11026-00026	VS-156QS	15.6'', 1920×1080, 24bit color, 3 serial port, 1 Ethernet port, RoHS	383×246mm
	11095-00024	VS-Q-4G	4G module, which supports Mobile, Unicom, and Telecom. It needs to be used together with the IoT screen	-
	11095-00023	VS-Q-WIFI	WIFI module, which supports network frequency bands of IEEE802.11b, IEEE802.11g and IEEE802.11n. It needs to be used together with the IoT screen	-
	11060-00235	VS070-1614MDR1	7.0'' HMI PLC integrated machine,16 DI,14 DO,2 AI,1 AO, no Ethernet port	192×138mm
VA series	11060-00156	VA2070-N0CXR	7.0'', 800×480, 16bit color, 3 serial ports, no Ethernet port	191.5×138mm
	11060-00157	VA2100-N0CXR	10.1'', 1024×600, 16bit color, 3 serial ports, no Ethernet port	259×201mm
VK series	11060-00172	VK2043-N0CXN	4.3'', 480×272, 16bit color, 2 serial ports, no Ethernet port	118.5×92.5mm
	11060-00272	VK2043-N0CXR	4.3'', 480×272, 16bit color, 3 serial ports, no Ethernet port	118.5×92.5mm
	11060-00173	VK2043-N0EXR	4.3'', 480×272, 16bit color, 3 serial ports, 1 Ethernet port	118.5×92.5mm
	11060-00169	VK2070-N0EXR	7.0'', 800×480, 16bit color, 3 serial ports, 1 Ethernet port	191.5×138mm
	11060-00171	VK2070-N0CXR	7.0'', 800×480, 16bit color, 3 serial ports, no Ethernet port	191.5×138mm
	11060-00168	VK2100-N0CXR	10.1'', 1024×600, 16bit color, 3 serial ports, no Ethernet port	259×201mm
	11060-00167	VK2100-N0EXR	10.1'', 1024×600, 16bit color, 3 serial ports, 1 Ethernet port	259×201mm
VT series	11026-00017	VT2070-H1ETR-31	7.0'', 800×480, 16bit color, 3 serial ports, 1 Ethernet port	174.5×132.5mm
	11026-00018	VT2070-N0CTR-24	7.0'', 800×480, 16bit color, 32 serial ports, no Ethernet port,1MB (backup)	174.5×132.5mm
	11026-00016	VT2104-H0ETR-51	10.4'', 800×600, 16bit color, 5 serial ports,1 Ethernet port	259×201mm


72%
54%
96%
82%
0101 010
0010101 0
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101 010

Industrial Internet

Cloud platform | Application system | Cloud platform | Cloud services

Industrial Internet solutions

INVT independently develops and boasts industrial Internet products, including IWOCloud industrial Internet cloud platform, IWOScence application system, IWOLink data terminal products, and ICS industrial cloud services, which can work with INVT industrial automation family of products to provide end-to-end integrated solutions for industrial customers, helping them to move towards a new journey of digital transformation.

Application layer

System functions

- Monitor in real time
- Analyze faults
- Statistics
- Manage work orders
- Aftersales
- Maintenance
- Pre-alarm
- Accessory authentication

Representations

PC client

Presenting methods

Large screen

Platform layer

INVT IoT cloud platform

Private IoT cloud platform

Communication layer

Data transmission terminal

4G version

Industrial application

Industry specific

Special-purpose

Expansion cards

Execution layer

Acquired objects

PLC

HMI screen

Servo systems

VFDs

Industrial instruments

Application industry

PV power

Air compressors

Elevators

PV water pumps

Charing piles

Grain dryers

Textile Machinery

Construction Machinery

Environmental water engineering

IWOScence service application system

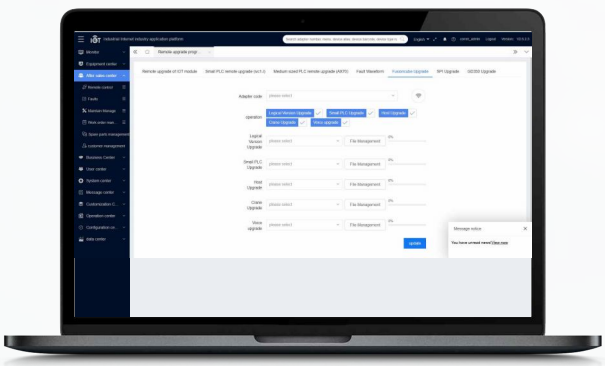
IWoScience is an IoT monitoring system that can be remotely managed, maintained, analyzed, and monitored. It supports universal access from devices such as VFDs, servos, PLCs, and HMIs, and it can be appliedto PCs and Android and iOS mobile clients.

Aftersales assistant tool to resolve problems remotely and effectively.

· **Remote working unit**

Remote upgrade without site service

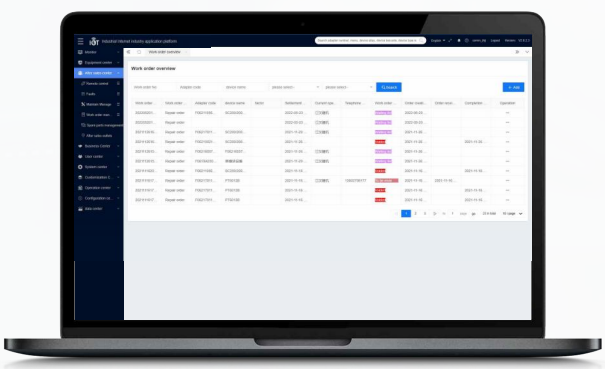
Enables you to upload, download,and monitor programs to remote devices, including PLCs, VFDs, and data terminal modules.



· **Aftersales work order management**

Online handing of aftersales service

Able to transfer aftersales work orders such as fault handling, installation, and maintenance, with the entire process from the handling to the result under surveillance, improving the efficiency of aftersales maintenance work, enhancing user experience and corporate image.



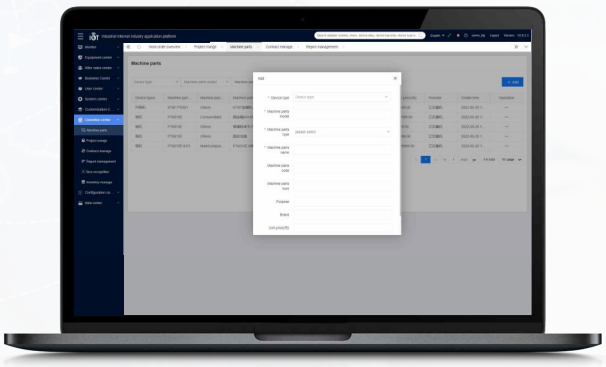
Financial leasing management tool, supporting new business development.

A set of device leasing service functions supports leasing business development, such as managing parts, projects, contracts, reports, and flows.

· **Device operation management**

Device leasing management tool

The tool already has many mature applications such as contract management, payment collection management, electronic fencing, spares management, remote device locking, and flow approval management.

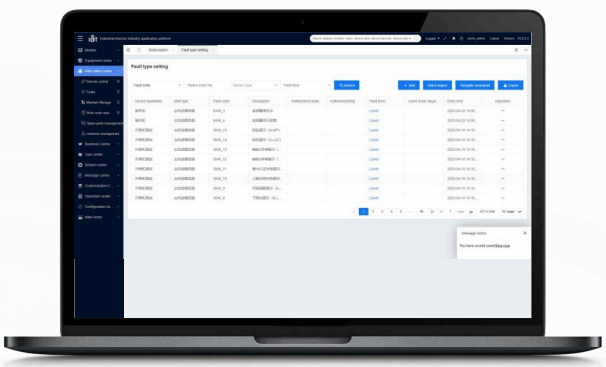


Passive service changed to active service.

· **Fault pre-alarm/alarm**

Electronic guard, protecting device safety in real time

The system provides instant feedback on all the alarm and pushes alarm information by means of app, SMS messages, and emails. Prealarm values can be set for important parameters of key devices, preventing accidents in advance.



It provides a set of aftersales maintenance functions, improving maintenance efficiency, including managing faults, warranty, work orders, and spares.

· **Preventive device maintenance**

Passive aftersales service becomes active service

Such as device lifetime predictation, key part preventive cleaning, warranty parts lifecycle management, and device exception pre-alarm.

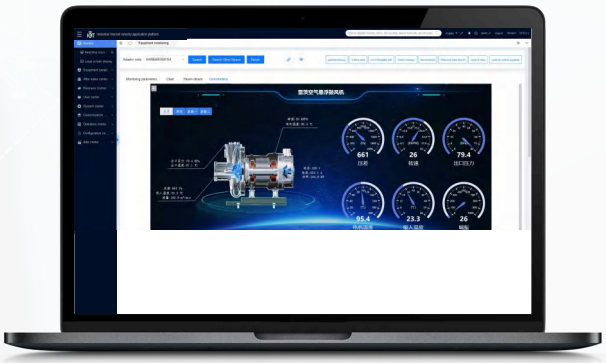
A new trend—Device networking.

It provides a set of various device monitoring functions, such as real-time monitoring for device safe running purposes, monitoring of device operation efficiency and energy efficiency, and large-screen monitoring.

· **Remote device monitoring**

Managing anywhere anytime

Various ways such as mobile app, PC web page, and large-screen monitoring help to understand device real-time status, and implement video monitoring, remote start or stop, and parameter modifying.



Foundation of data value digging in the era of big data.

It provides a set of system operation and daily platform management functions, which meet system management requirements, such as managing system setup, operation records, user data statistics, and corporate dynamics.

· **Historic data query**

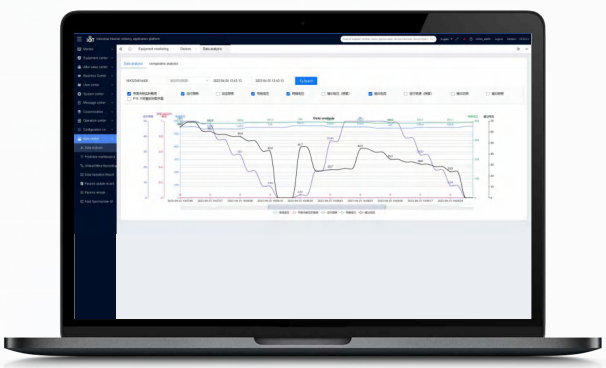
Dimensional data applications

Able to define key parameter types, addresses, charts, and faults.The user-defined data charts can be displayed, and historic data can be exported to various files and saved to the local server.

· **Data analysis and statistics**

Providing objective data support for fault analysis

You can define to generate various statistics reports for historic data, facilitating data analysis and application in various views. You can collect data on various parameter evaluation and make analysis, providing objective data support for R&D, aftersales, and sales to make decisions.



System features

INVT provides industrial enterprises with complete, reliable, flexible, and quick-deliverable solutions.

Pan-access

Supporting various VFDs, servo, PLC, and HMI screens.

Multiple presenting

Supporting PC and mobile app (on Android and iOS)

Privatization deployment

The system cloud platform supports privatization deployment

Safe and stable

Supporting the pushing by means of mobile app, email, and SMS message

Multimedia access

Supporting onsite video, image, and interface access, and AI recognition of face.

Quick start

Easy to operate and user friendly interface

Personalized customization

Application system functions can be customized

Data analysis

Historic data, condition collection, and data reports

Alarm pushing

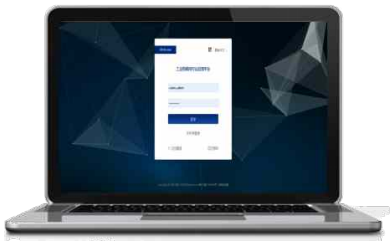
Data is encrypted before transmission, and servers are managed in distributed mode

Data interface

The platform provides the API, eliminating data silos

Multiple login ways

You can visit https://iot.invt.com to enter the login page



You can log in through the mobile app

Large-screen application

Customized large-screen display can be applied to system data, which can be planned as follows:

· Macro data: Device distribution map, online/fault/alarm device distribution

· System key statistics: Device status statistics and work order quantity display

IWOLink data terminal product

To adapt to data acquiring requirements of various industrial devices and network scenarios flexibly, INVT launches data acquiring product series to provide quick, easy, and safe IoT data connection solutions.

ICA 417 series

Excellent performance

Edge computing, transparent VPN transmission, remote OTA, the same as local operation.

4G flagship version

ICA413 series

Strong adaptation

A device supports many scenario applications. (Serial port to 4G; serial port to network port, network port to 4G)

4G standard version 4G vigor version

ICA100 series

WiFi version

Supporting connection to WiFi.

WiFi version

ICA200 series

Ultimate costeffectiveness

Customizable, supporting remote monitoring/upgrade.

2G version

EC-IC series

Perfect matching

Embedded with such a card, a traditional device upgrades with IoT functions.

Expansion card version

Model description

INVT ICA series product model description:

ICA * * * – * * * – * *

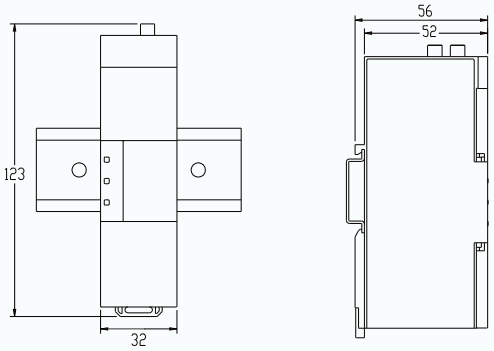
Field description	Content
Product series abbreviation	ICA: Internet Communication Adapter
Wireless communication method	0: Not support wireless communication 1: WiFi 2: GPRS 4: 4G
Wired communication method	0: Not support wired communication 1: Ethernet
Local data collection method	0: Rs485 1: Ethernet 3: RS485+Ethernet 7: RS485+Ethernet+VPN
Data flow card	0: Pluggable 1: SMD 2: Pluggable + Carried
IP rating	0: IP00 (No housing) 1: IP20 (Housing for wall mounting) 2: IP20 (Housing for rail mounting) 6: IP65 (Housing for push-in mounting)
Special functions	G: With GPS N: Embedded with antenna P: Configured with display This feild is omitted by default, which means no special function
Voltage class	5: 4.5–6V. The standard configured voltage is 12–24V. This field is omitted
Version	CN: China version EU: Europ version LA: Latin America version This field is omitted for a 2G/WiFi product

Technical specifications

Data terminal product	ICA100-02	ICA200-00HP	ICA200-00HN	ICA200-00GHP	ICA200-02
Ordering code	11095-00008	34008-00130	34008-00126	34008-00131	11023-00091
Product positioning	**WiFi version**	**2G vigor version**			**2G standard version**
Communication parameters					
Upstream networking	WiFi	2G			
Upstream network speed	54Mbps	15-20Kbs			
Downstream communication	RS485/232	RS485/232			
Downstream network speed	10Mbps	85.6Kbps			
Hardware parameters					
IP rating	IP20	IP00			IP20
Power supply voltage	10~24V				
Overall power consumption	2W				
Indicator	Power indicator, network status indicator, and run status indicator				
Mounting method	Standard DIN rail mounting				
Work temperature	-25~65°C				
International version	-	Universal			
Antenna	External		Embedded	External	
Housing material	Engineering plastic	No housing			Aluminium alloy
Software functions					
Real-time data monitoring	Support				
Edge computing	Support				
OTA remote upgrade	Not support	Support VFD upgrade (GD270/GD350 based special purpose products)			
Serial port transparent transmission	Not support	Support			
Network port VPN transparent transmission	Not support				

Data terminal product	ICA413-02-CN	ICA400-02-CN	ICA417-02-CN	ICA417-12-CN	EC-IC501-1	EC-IC501-2	EC-IC502-2-CN
Ordering code	11095-00006	11095-00004	11095-00019	11095-00020	11023-00131	11023-00130	11095-00009
Product positioning	**4G stanard version**	**4G vigor version**	**4G flagship version**		**2G expansion card**		**4G expansion card**
Communication parameters							
Upstream networking	4G/network port	4G	4G/network port		2G		4G
Upstream network speed	5Mbps	5Mbps	50Mbps		15-20Kbs		50Mbps
Downstream communication	RS485/RS232/ network port	RS485/232	RS485/RS232/network port		RS485/232		RS485/232
Downstream network speed	10Mbps		100Mbps		85.6Kbps		100Mbps
Hardware parameters							
IP rating	IP20				IP00		
Power supply voltage	10~24V						
Overall power consumption	3W			5W	2W		3W
Indicator	Power indicator, network status indicator, and run status indicator						
Mounting method	Standard DIN rail mounting				Screw		
Work temperature	-25~65°C						
International version	Support CN/EU/LA versions				Universal		Support CN/EU/ LA versions
Antenna	External				Embedded	External	
Housing material	Engineering plastic		Sheet metal		-		
Software functions							
Real-time data monitoring	Support						
Edge computing	Support						
OTA remote upgrade	Support VFD upgrade (GD270/GD350 based special purpose products)						
Serial port transparent transmission	Support						
Network port VPN transparent transmission	Not support		Support		Not support		

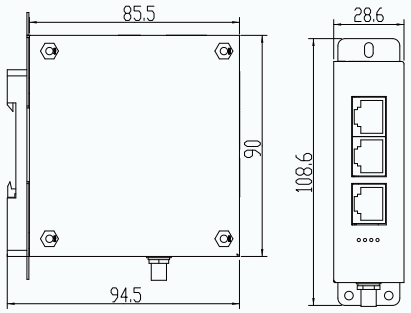
Structure size



4G three-in-one version

Model	Size (WxHxD) (including rail snap)	Weight (excluding antenna)
ICA413 series	32×123×56mm	55g

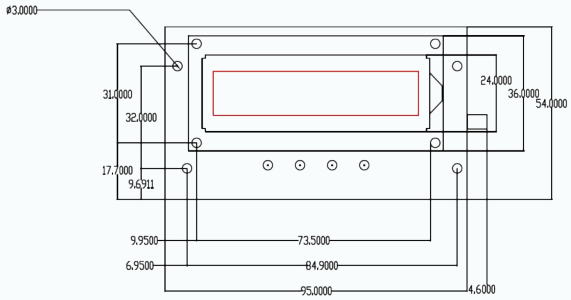
Positioning: Three-in-one version
(485 to 4G/485 to network port/network port to 4G)
Features: DTU price with RTU performance



4G flagship version

Model	Size (WxHxD) (including rail snap)	Weight (excluding antenna)
ICA417 series	28.6×108.6×94.5mm	153g

Positioning: 4G flagship version (High speed 4G cat 4 version)
Features: VPN transparent transmission, supporting remote commissioning



ICA200 Model	Size (WxHxD) (including rail snap)	Weight (excluding antenna)
ICA200-00HNP	95×54×10.4mm	35g
ICA200-00HN	95×54×10.4mm	12g
ICA200-00HP	99.6×54×10.4mm	36g
ICA200-00H	99.6×54×10.4mm	13g
ICA200-00GHN	95×54×10.4mm	35g
ICA200-00GH	99.5×54×10.4mm	12g

Technical characteristics

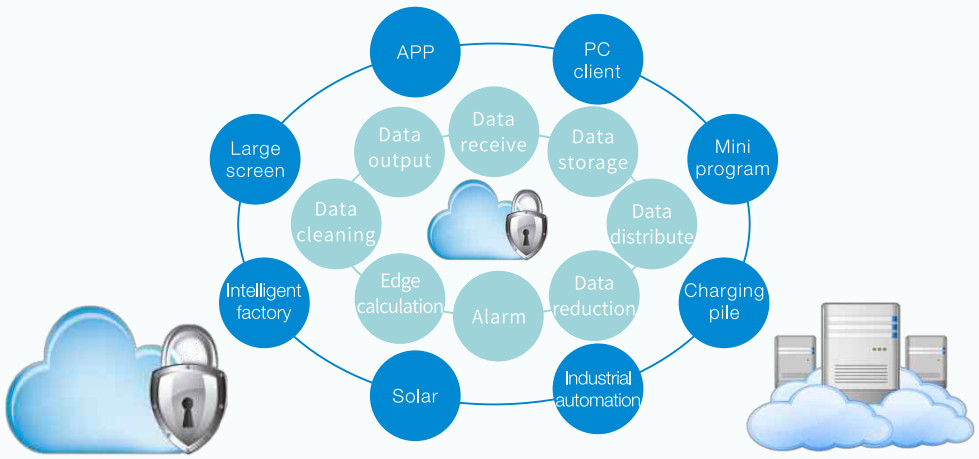
No.	Function category	ICA413 series function description
1	Supported network	Supporting TDD-LTE, FDD LTE
		Compatible with HSPA+, EVDO, GPRS, and CDMA networks
		In the case of unstable 4G network coverage, smooth downward compatibility ensures uninterrupted data transfer
2	4G network speed	10Mbps (downstream)/ 5Mbps (upstream) @CAT1
3	Supported interface	One standard RS485 interface
		One standard RJ45 network port (10/100M)
4	Indicator	Power indicator, network status indicator, and run status indicator
5	Power range	DC 10V-24V
6	Overall power consumption	Less than 5W
7	Temperature range	-25~+75℃
8	IP rating	IP20
9	Mounting method	Din rail mounting
10	Main functions	Supporting IP and PORT client tool configuration
		Supporting ARP, Ethernet, MODBUS, MQTT and FTP protocols
		Supporting OTA remote upgrade
		Supporting remote query for system status, network connection status, and signal intensity

No.	Function category	ICA417 series product function description		
1	Supported network	Upstream	4G	LTE FDD、LTE TDD、GSM
			WAN	10/100M self-adaptive port
		Downstream	RS485	Modbus RTU MASTER
			LAN	Modbus TCP CLIENT
2	Supported interface	Commissioning port	Supporting one USB type-C commissioning port	
		Serial port	Supporting one-to-one frontend device data acquisition through RS485 communication	
		Ethernet port	Supporting three 10/100M self-adaptive ports: one WAN port and two LAN ports	
		SIM card	Supporting one pop-up SIM card holder (large)	
		Antenna	Supporting one SMA female antenna interface	
3	Indicator	Power indicator, network status indicator, run status indicator, and signal indicator		
4	Power range	DC 10V-24V		
5	Overall power consumption	Less than 5W		
6	Temperature range	-25~+65°C(-13~+149°F)		
7	IP rating	IP20 sheet metal		
8	Mounting method	DIN rail mounting and wall mounting		
9	Main functions	Remote monitoring	Supporting active acquiring 01/02/03/04 function codes, 19200 as default baud rate of serial port, even parity, automatically obtaining INVT PLC barcode and model	
			Supporting active acquiring 01/02/03/04 function codes, 192.168.1.100 as default IP address, port number 502, automatically obtaining INVT PLC barcode and model	
		Remote upgrade	Firmware upgrade: Remotely upgrading 4G data terminal application programs	
			Policy upgrade: Remotely upgrading policy files	
			Serial port: Virtual serial port transparent transmission	
			Network port: VPN transparent transmission	
		Multi-network access	4G and Ethernet	
		VPN transparent transmission	VPN transparent transmission, facilitating remote commissioning	
		4G routing	Transforming public LTE wireless networks to wired networks, providing networking for devices	
		Switch	Two LAN ports support the switch function	

No.	Function category	Specifications	ICA200 series product function description
1	Communication	Communication protocol	GPRS, IoT MQTT, PPP dialing, FTP transfer, and embedded TCP/UDP protocols
		Remote upgrade	Supporting the use of GPRS module to upgrade system and VFD programs remotely
		Communication interface	Supporting RS232 commissioning output, one-to-one frontend device data acquiring through RS485 communication, and MicroSD card data storing
			Supporting the use of external flash to store module configuration information and upgrade files (2MB)
		Parameter settings	Modbus device serial port baud rate, data bit, stop bit, and parity bit are configurable
		Software watchdog	Monitoring system run status in real time
		GPRS heartbeat mechanism	Monitoring server connection in real time
		GPRS communication command	Enhanced AT command set
2	Interface	External interface	4-pin socket (RS485, power), SIM card slot + Reserved SMD SIM card
			RS232/TTL debugging port, MicroSD card slot
			Onboard antenna + Reserved GPRS/4G external antenna design
			Button cell; reserved 2G GPS chip + GPS antenna
		Serial port	One RS232 interface and one RS485 interface, built with 15kV ESD for protection
		Indicator	SMD light-emitting diode, power indicator (red), signal indicatior (yellow), data indicator (green), and fault indicator (red)
		Antenna interface	Standard configuation: PCB embedded antenna + Reserved standard SMA female antenna interface + Reserved GPS antenna interface
		SIM/UIM card interface	Standard user card interface (compatible with SMD SIM configuration), supporting 1.8V/3V SIM/UIM card, built with 15kV ESD for protection
		MicroSD card interface	Standard MicroSD interface
		Power supply interface	Terminal interface, built with power phase reversal and overvoltage protection
		Text display interface	Supporting the text display of SPC device real-time monitoring parameters, in two lines
3	Power supply	Standard power	DC 24V/5~30V/5V
		Supply range	DC 6~30V/ 4.5~30V/5~6V
4	Power consumption	Communication status	200mA@12VDC; 400mA@5VDC
		Standby status	20mA@12VDC; 35mA@5VDC
		Sleep status	8mA@12VDC; 18mA@5VDC
		Scheduled shutdown status	0.6mA@12VDC; 1mA@5VDC
5	Physical characteristics	Housing	No housing, Ip00
		Size	39mm*88mm
6	Indicator	Status display	39mm*88mm

IWOCloud industrial cloud platform

INVT develops the industrial IoT data processing platform to provide a stable, safe, and high-efficiency base for various IoT industries and application scenarios. As the IoT "brain", the platform provides large-scale data terminal node access and high concurrent terminal access capability to accept, clean, arrange, distribute, and save data uploaded from various devices. In addition, it provides standard database interfaces in unified data format externally, meeting enterprise informationization development needs.



INVT public cloud platform

Customers upload device acquired data to INVT cloud platform (IWoCloud)
· System running: safe and stable
· Maintenance: at low cost

Privatized IoT platform

Customers can deploy industrial cloud platform with private permissions on specified servers, and upload device acquired data to the platform.
· Data privatization
· Maintenance: at high cost for the need of specialist for system stablity maintenance

Industrial cloud service

Policy file maintenance service

ICS-SW

Data acquiring policy File maintenance service

Data flow card service

ICS-SIM-

· Standard card: 30MB per month
· Large data flow card: 100MB per month
· Users can recharge their cards before the 12-month service life expires.

Cloud data storage service

ICS-DS-

· 6M: The data storage rolling period is 6 months.
· 12M: The data storage rolling period is 12 months.

Cloud platform use and maintenance

ICS-PF

INVT cloud platform use and maintenance

Data flow card service

· Standard card: 30MB per month

· Large data flow card: 100MB per month. Users can recharge their cards before the 12-month service life expires

API service

· CS-API: A third-party system can obtain device real-time data, facilitating remote device control and remote program upgrade.

· Standard version: The service application system provides data interfaces, for third-party systems to invoke data.

· Customized version: Data interfaces can be customized based on third-party system requirements.

Policy file maintenance service

· ICS-SW: Data acquiring policy file maintenance service, implementing the upgrade or update on different data points of monitored devices

Cloud platform use and maintenance

· INVT cloud platform use and maintenance

Cloud data storage service

· 6M: The data storage rolling period is 6 months

· 12M: The data storage rolling period is 12 months

Air compressor IoT comprehensive service management platform

Acquiring objects


Screw air compressor


Piston air compressor


Centrifugal air compressor


Sliding vane air compressor


Diaphragm air compressor


Axial flow air compressor

Data acquiring

Presenting methods

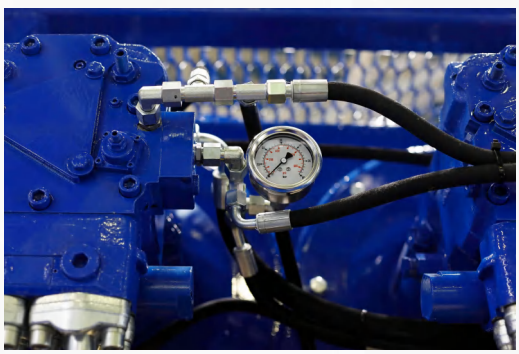

APP


Large screen


PC clients

Function applications

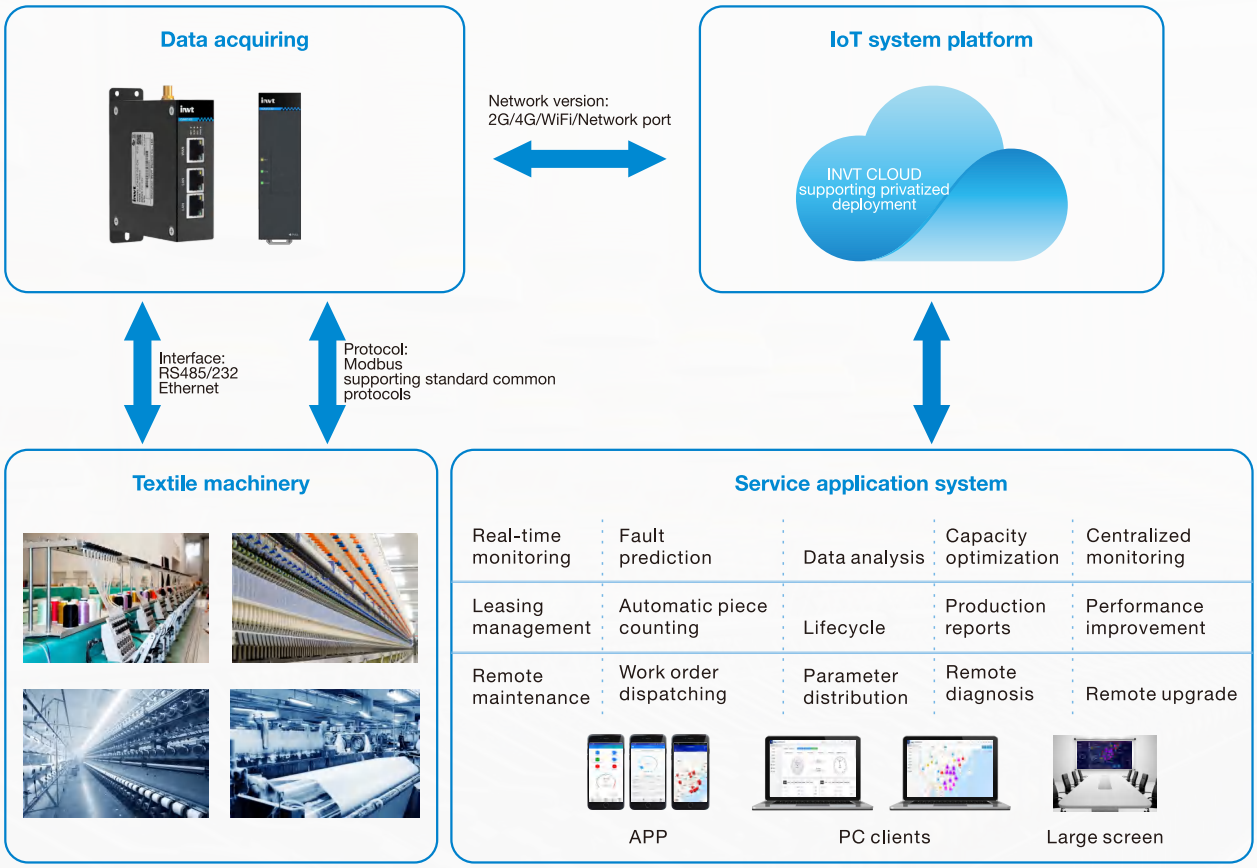
Device manufacturers	Warranty work orders	Fault handling work orders	Remote aftersales	Remote maintenance	Remote upgrade
Service providers	Lifecycle	Asset monitoring	Risk control	Expert knowledge library	Leasing management
End users	Energy consumption monitoring	Fault prediction	Efficiency analysis	Data acquiring	Statistics reports

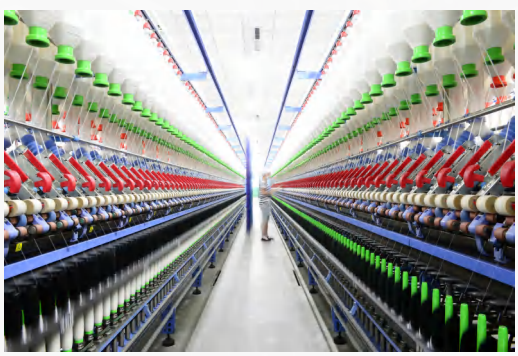


Solutions

1. Saving aftersales costs: Remote aftersales can improve overall aftersales efficiency and reduce aftersales costs.
2. Device status monitoring and operation analysis: The best economic efficiency of replacing vulnerable and consumableparts can be achieved by real-time detection and intelligent analysis of these parts of air compressor.
3. IoT supervision and online leasing business: The ownership of leased device is separated from operational services, improving efficiency and reducing risks.
4. Refined energy consumption management: Through the IoT management, an enterprise can achieve a reduction of approximately 10% in energy consumption under the same operating conditions, saving at least RMB 700,000 in energy consumption costs annually.

Textile IoT smart management platform



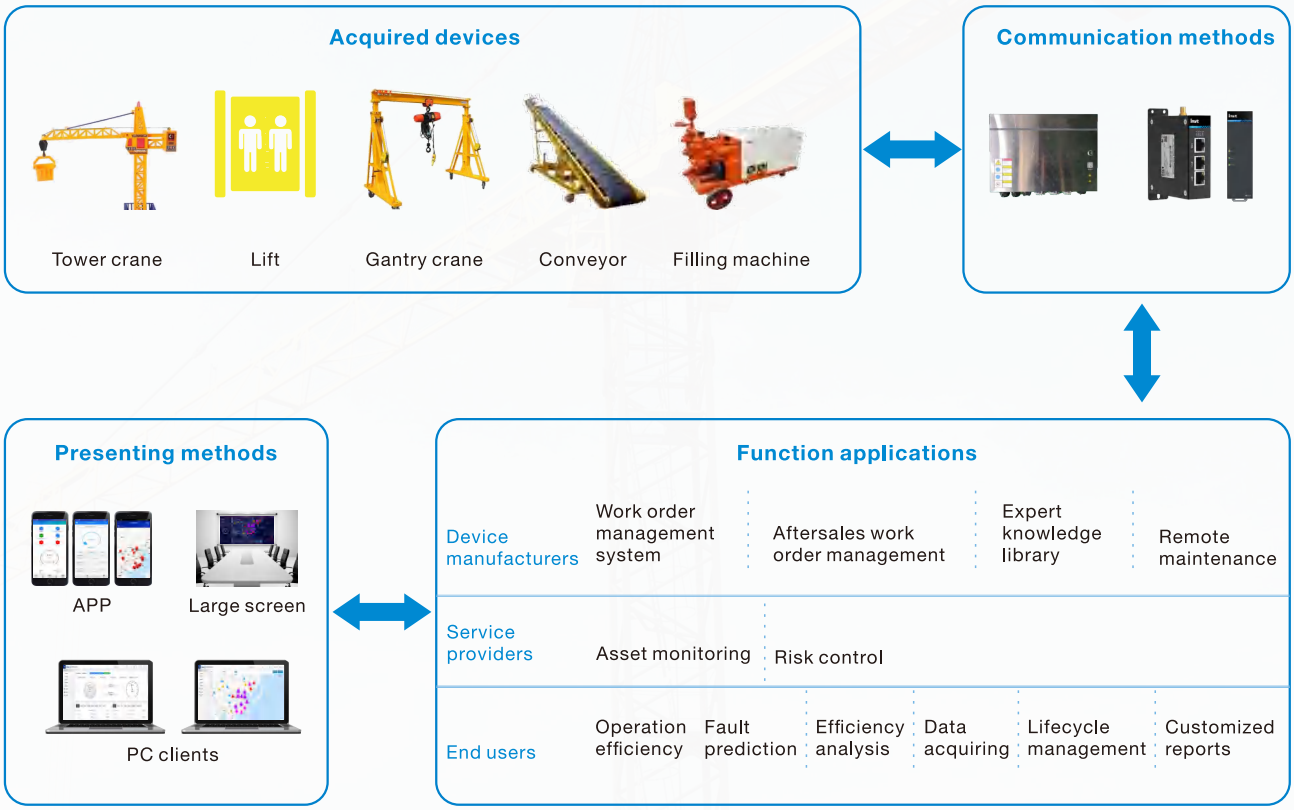


Textile process production line

Solution

1. It realizes remote monitoring of textile production line device, batch parameter distribution, real-time monitoring of device status, improving production efficiency.
2. It realizes remote fault prediction, reducing downtime of textile production line device, ensuring system stability, and reminding of periodic device maintenance.
3. It realizes the integration of IoT platform with enterprise ERP, PLM, CRM, SCM and other management information systems, helping enterprises in efficient resource flow and integration from product design to production, and ensuring the stability and efficiency of production.

Construction machinery IoT smart management platform



• Solution

Device manufactuers

1. Fault work order management: can handle faults timely and accurately, improving user experience.
2. Aftersales and maintenance work order management: can rigger maintenance tasks actively through remote aftersales and remote control, enhancing customer stickiness, and driving accessory sales.
3. Expert knowledge library management: precise fault handling suggestions pushing to assist in efficient management.

Service providers

1. Risk control: By combining IoT technology to achieve online leasing business, separating ownership of leased device from operational services, improving efficiency and controlling risks.
2. Timely reminder of payment: For device service providers' leasing business, a reminder of lease expiration can be provided to reduce repayment risks.

End users

1. Device monitoring: Real time monitoring of device status and implementation of over limit alarm mechanism for key parameters to ensure onsite safety production.
2. With the help of IoT terminal devices on construction sites, onsite inspectors can track device conditions and respond promptly to emergency situations.
3. Data report management: can generate health data for devices, facilitating maintenance operations, preventing faults, and timely notifying manufacturers for repairs.
4. Full lifecycle management of construction machinery: all device data is fully recorded for engineers to access.

PV water pumpt IoT smart management platform

Application scenarios


Grassland animal husbandry


Desert management


Agricultural irrigation


Domestic water use

Acquired objects


PV water pump data collection terminal


PV water pump controller

Presenting method


APP


Large screen


PC client

Function applications

Device manufacturers	Warranty work orders	Fault handling work orders	Remote aftersales	Remote maintenance	Remote upgrade
End users	Remote regular inspection	Fault prediction	Statistics reports	Data acquiring	Centralized monitoring

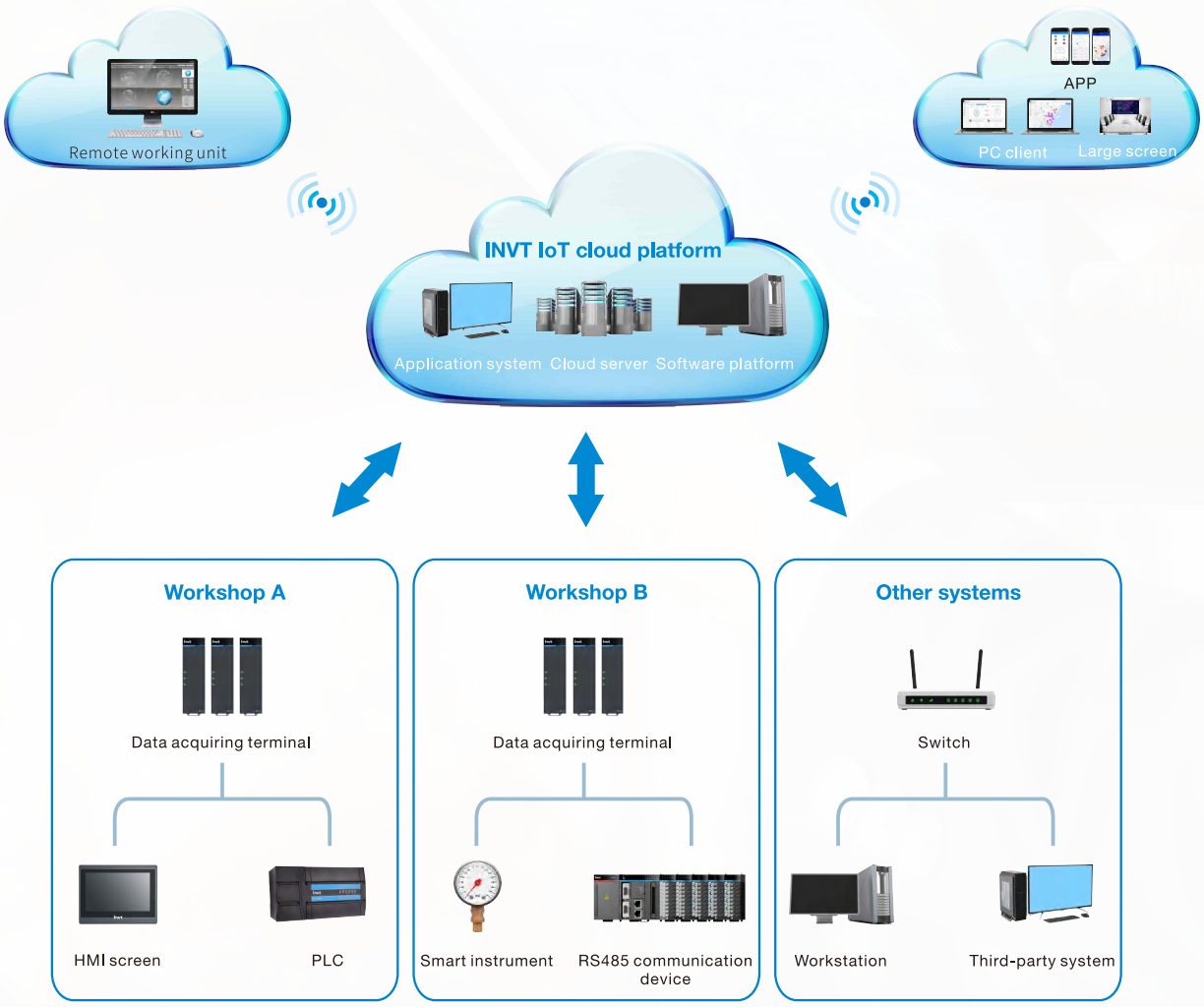
PV water pump IoT platform

Solution

1. Smart regular inspection and efficient O&M: can realize remote monitoring and analysis of PV water pump faults and exceptions, effectively solving practical problems such as difficult monitoring and control of PV water pumps, inspection difficulty, and low O&M effectiveness. Ultimately, the annual cost of O&M and inspection can be reduced by 30%.
2. Panoramic monitoring: can acqure operational data information such as voltage, current, and power of PV water pumps in real time, comprehensively monitor the operation of PV devices, and make intelligent analysis to achieve maximum operational efficiency of the entire PV water pump system.
3. PV water pump devices can be remotely controlled through computers and mobile phones, and key parameters of the devices can be remotely regulated.

Smart factory solution—Energy saving, emission reduction, production increase and efficiency enhancement

The smart factory solution is a full lifecycle management system for a digital factory or product from requirements to design, production, operation, and maintenance. The purpose is to summarize and integrate the manufacturing data, operation data, maintenance data, and then analyze and process the data through big data analysis systems and artificial intelligence systems, ultimately completing the optimization, production capacity improvement, efficient operation, remote pre-maintenance.



INVT IoT solution gradually achieves the goal of energy saving, emission reduction, and production increase and efficiency enhancement in smart factories in three stages:

1. To realize the interconnection and intercommunication of various industrial device data in the factory.
2. To manage factory device energy consumption and faults.
3. To establish a mathematical model for device energy saving, emission reduction, and production increase and efficiency enhancement by means of data analyisis.

Automation product family

HMI

VK Series
VT Series
VS Series
VA Series
TC Series

Controller

IVC1L Series Programmable Controller
IVC1S Series Programmable Controller
INV2 Series Programmable Controller
IVC3 Series Programmable Controller
AX Series High-performance Programmable Controller

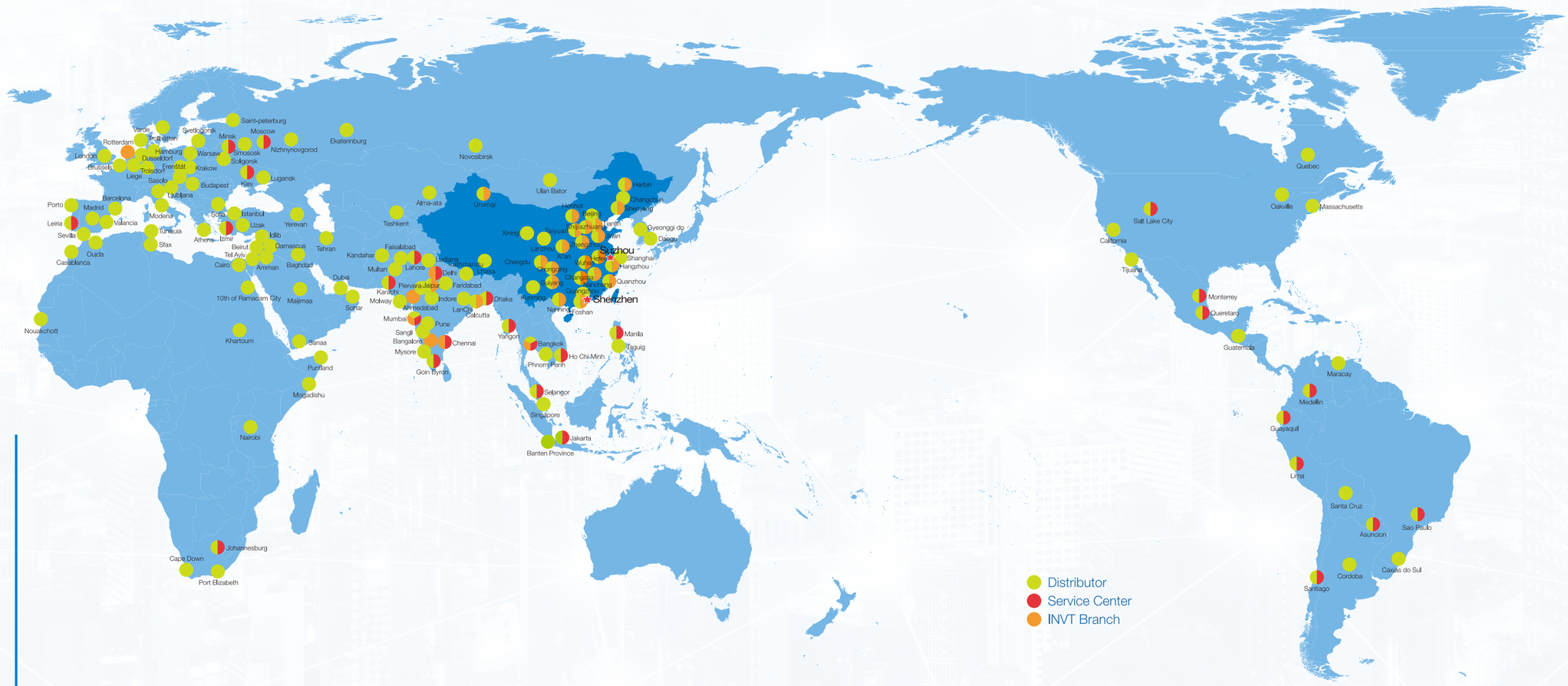
Servo System

General servo drive System
Industry specific servo system
Industry specific electronic control system

VFD

Low-voltage general VFD
Midum-voltage VFD
Industry specific VFD

INVT Marketing service network



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- DCIM
- Solar Inverter
- New Energy Vehicle Powertrain System
- New Energy Vehicle Charging System
- New Energy Vehicle Motor

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