FATEK® The Brand You Can Rely On

Since 1992

Economical and High-Quality PLC
FATEK B1/B1z Series Micro-Programmable Controllers

www.fatek.com

Be impressed with the high quality !

Features

Core Technology of the Advanced SoC

With advanced software, hardware techniques and over 20 years experience in the automation industry, FATEK has integrated its own SoC CPU (Systems on Chip), hardware logic solver (HLS), hardware high-speed counter/timer, NC positioning, communication, FLASH, and SRAM into a tiny BGA chip. This is an industry first making FATEK a market leader in micro PLC design!

Compact and Rugged

Common components are now integrated into the SoC so the processor and I/O board layer can now be manufactured on a single PCB substantially reducing the overall size and increasing the reliability of the B1/B1z series controllers!

High Quality and High Reliability

With the streamline hardware design and the highly integrated SoC technology, the number of components required in the B1/B1z series PLC is significantly reduced. With the combination of high quality parts, rigorous quality control procedures, FATEK creates a high quality PLC for today's industry.

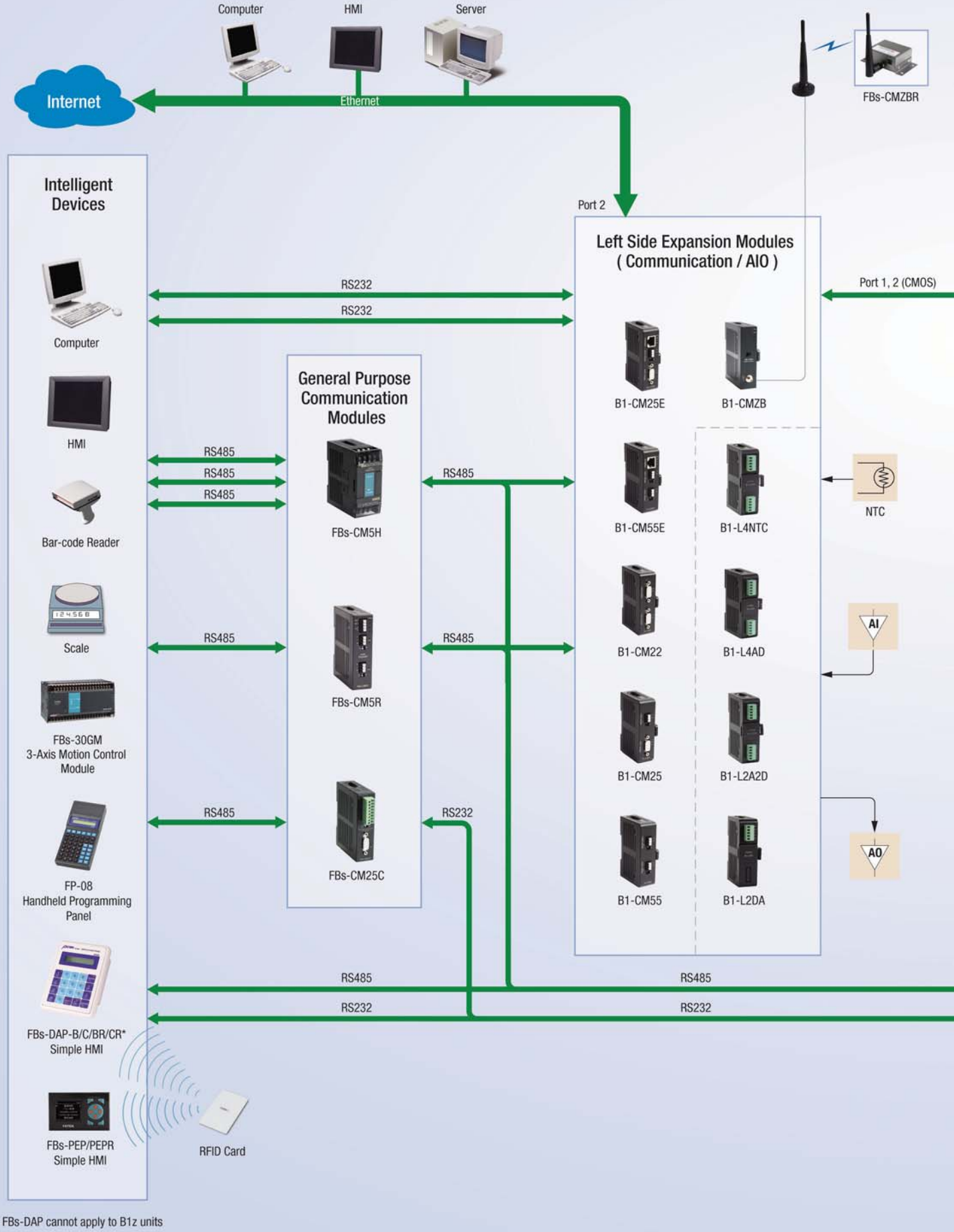
Competitive Low Price

The streamline design of SoC technology significantly reduces the hardware costs. The B1/B1z series PLC incorporates the most sophisticated manufacturing process and high quality two-layer board design. This makes the B1/B1z PLC very price-competitive in today's cost conscience PLC market!

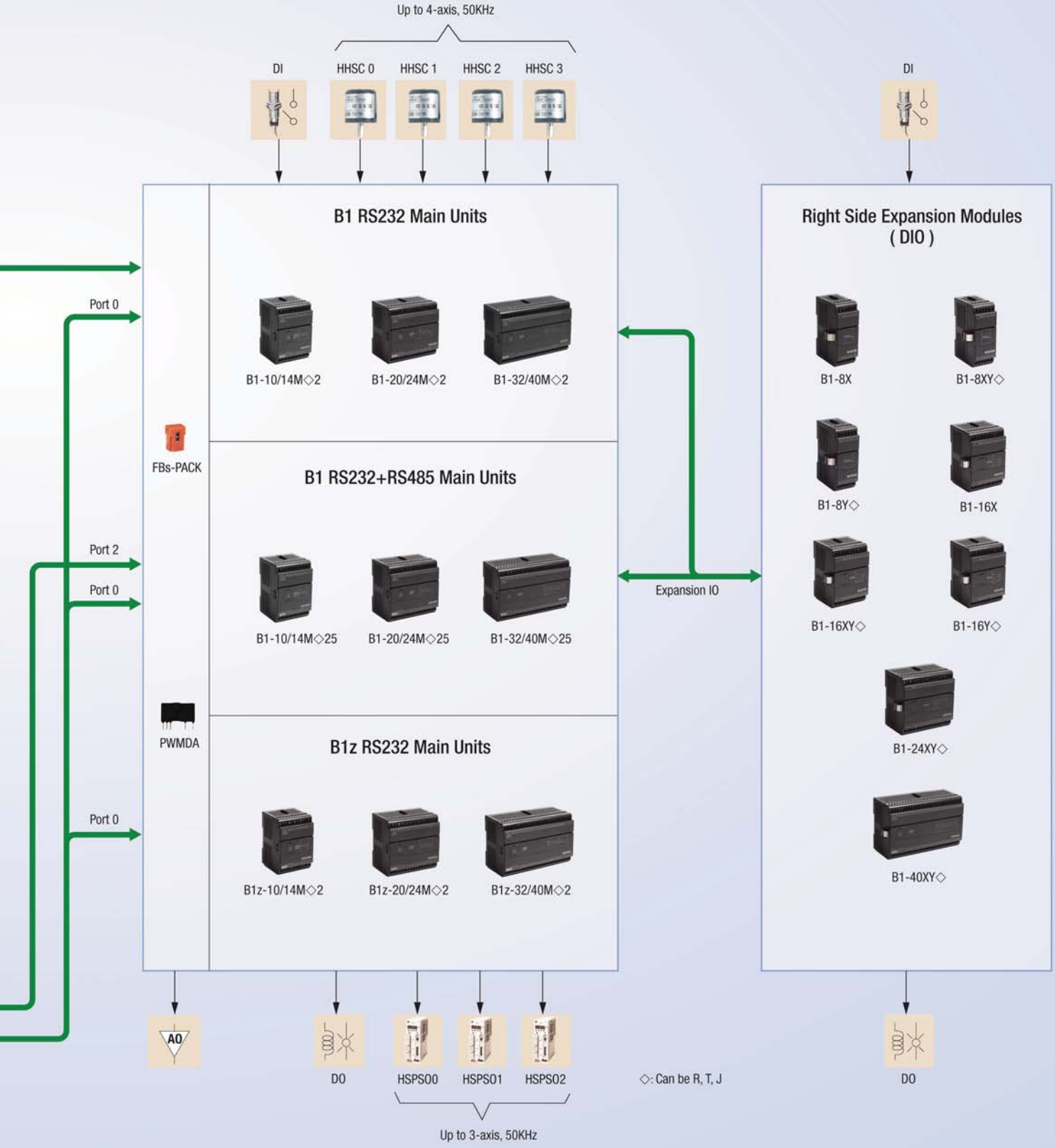
Easy to Use, Common Instruction Sets

The B1/B1z series PLC is an economic type PLC without any compromise to its performance. It also provides all the easy to use yet powerful FBs series PLC's instructions. Both B1/B1z and FBs series PLC are programmed by the same utility software - Winproladder.

System Configuration



*: FBs-DAP cannot apply to B1z units


Up to 4-axis, 50KHz
DI
HHSC 0
HHSC 1
HHSC 2
HHSC 3
DI
B1 RS232 Main Units
Right Side Expansion Modules
(DIO)
B1-10/14M◇2
B1-20/24M◇2
B1-32/40M◇2
B1-8X
B1-8XY◇
B1-8Y◇
B1-16X
B1-16XY◇
B1-16Y◇
B1-24XY◇
B1-40XY◇
Port 0
FBs-PACK
B1 RS232+RS485 Main Units
Port 2
Port 0
B1-10/14M◇25
B1-20/24M◇25
B1-32/40M◇25
Expansion IO
PWMDA
B1z RS232 Main Units
Port 0
B1z-10/14M◇2
B1z-20/24M◇2
B1z-32/40M◇2
AO
DO
HSPSO0
HSPSO1
HSPSO2
◇: Can be R, T, J
DO
Up to 3-axis, 50KHz

General Specifications

Environmental Specifications

Item			Specification	Note
Operating ambient temperature	Enclosure space	Minimum	5°C	Permanent installation
		Maximum	40°C	
	Open space	Minimum	5°C	
		Maximum	55°C	
Storage temperature			-25°C ~ +70°C	
Relative humidity (non-condensing, RH-2)			5% ~ 95%	
Pollution resistance			Degree II	
Corrosion resistance			Based on IEC-68 standard	
Altitude			≤2000m	
Vibration resistance	Fixed by DIN RAIL		0.5G, 2 hours for each direction of 3 axes	
	Fasten by screw		2G, 2 hours for each direction of 3 axes	
Shock resistance			10G, three times for each direction of 3 axes	
Noise resistance			1500 Vp-p, pulse width 1μS	
Withstand voltage			1500VAC, 1 minute	L, N to any terminal

AC Model Power Specifications

Specification \ Item		10 Points Main Unit	14 Points Main Unit	20 Points Main Unit	24 Points Main Unit	32 Points Main Unit	40 Points Main Unit
Input power	Voltage	100~240VAC, -15%/+10%					
	Frequency	50/60Hz ±5%					
Max. power capability (built-in power supply)		21W					
Inrush current		20A@264VAC					
Allowable power momentary interruption time		< 20mS					
Fuse rating		2A, 250VAC					

DC Model Power Specifications

Specification \ Item	10 Points Main Unit	14 Points Main Unit	20 Points Main Unit	24 Points Main Unit	32 Points Main Unit	40 Points Main Unit
Input voltage	12 or 24VDC, -10%/+20%					
Max. power capability	2.5W	3.0W	3.5W	4.0W	4.5W	5.0W
Inrush current	20A@DC24V					
Allowable power momentary interruption time	< 2mS					
Fuse rating	1A, 125V					

Functional Specifications

Main Unit Specifications

*1 : Default, changeable by user

Specification \ Item			B1	B1z	Notes
Execution speed			0.33uS/Sequential instruction		
Memory capacity		Program(Word)	7936 Words	3840 Words	
		Comment(Byte)	8K Bytes	4K Bytes	
Sequential instruction			36 instructions		
Function instruction			326 instructions(126 kinds)		Include derivative instructions
Flow chart command (SFC)			4 instructions		
Communication Interface		Port0 (RS232)	Communication speed 4.8~115.2Kbps (9.6Kbps)*1		
		Port1~Port2	Expandable Port1 and Port2 Communication speed 4.8~921.6Kbps (9.6Kbps)*1	—	Port1~2 provides FATEK or Modbus RTU/ASCII or user defined communication protocol
		Maximum link stations	254		
Digital (Bit status)	X	Input contact(DI)	X+Y=80	6/8/12/14/20/24	
	Y	Output relay(DO)		4/6/8/10/12/16	
	TR	Temporary relay	TR0~TR39 (40)		

Functional Specifications

(continue)

*1 : Default, changeable by user
*2 : Analog expansion module will occupy Port1

Specification / Item					B1	B1z	Notes
Digital (Bit status)	M	Internal relay		Non-retentive	M0~M799 (800)*1	M0~M511 (512)	Can be configured as retentive type
					M1400~M1911 (512)		
				Retentive	M800~M1399 (600)*1	M512~M767 (256)	Can be configured as non-retentive type
		Special relay			M1912~M2001 (90)	M1912~M2001 (90)	
	S	Step relay		Non-retentive	S0~S499 (500)*1	S0~S143 (144)	S20 ~ S499 can be configured as retentive type
				Retentive	S500~S999 (500)*1	S144~S271 (128)	Can be configured as non-retentive type
	T	Timer "Time-Up" status contact			T0~T255 (256)	T0~T113, T200~T219 (134)	
	C	Counter "Count-Up" status contact			C0~C255 (256)	C0~C63, C200~C215 (80)	
Register (Word data)	TMR	Timer current value register		0.01S Time base	T0~T49 (50)*1	T0~T49(50)	T0 ~ T255 members for each time base can be adjusted
				0.1S Time base	T50~T199 (150)*1	T50~T113(64)	
				1S Time base	T200~T255 (56)*1	T200~T219 (20)	
	CTR	Counter current value register	16-bit	Retentive	C0~C139 (140)*1	C0~C31 (32)	Can be configured as non-retentive type
				Non-retentive	C140~C199 (60)*1	C32~C63 (32)	Can be configured as retentive type
			32-bit	Retentive	C200~C239 (40)*1	C200~C207 (8)	Can be configured as non-retentive type
				Non-retentive	C240~C255 (16)*1	C208~C215 (8)	Can be configured as retentive type
	HR DR	Data register		Retentive	R0~R2999 (3000)*1	R0~R127 (128)	Can be configured as non-retentive type
					D0~D3999 (4000)		
				Non-retentive	R3000~R3839 (840)*1	R128~R511 (384)	Can be configured as retentive type
	HR ROR			Retentive	R5000~R8071 (3072)*1	R5000~R5255 (256)*1	When not configured as ROR, it can serve normal register(for read/write)
				Read only register	R5000~R8071 can be set as ROR, default setting is (0)*1	R5000~R5255 can be set as ROR, default setting is (0)*1	ROR is stored in special ROR area and not occupy program space
				File register	F0~F8191(8192)	—	Saved/retrieved via dedicated instruction
	IR	Input register			D4072~D4075(4)*2	—	
	OR	Output register			D4076~D4077(2)*2	—	
	SR	Special system register			R3840~R4167(328) D4000~D4095 (96)	R3840~R4167 (328) R4030~R4057 (retentive) R4088~R4166(retentive)	
		0.1mS high-speed timer register			R4152~R4154 (3)		
		High-speed counter register		Hardware (4 sets)	DR4096~DR4110 (4x4)		
				Software (4 sets)	DR4112~DR4126 (4x4)		
		Calendar Register			R4128 (sec) / R4129 (min) / R4130 (hour) / R4131 (day) / R4132 (month) / R4133 (year) / R4134 (week)	—	Optional
	XR	Index Register			V, Z(2)		
Interrupt control		External interrupt control			32 interrupts(16 points input positive/negative edge)		
		Internal interrupt control			8 interrupts(1, 2, 3, 4, 5, 10, 50, 100mS)		
0.1mS high speed timer(HST)					1(16-bit), 4(32-bit, share with HHSC)		
High-speed counter HSC		Hardware high-speed counter(HHSC) /32-bit		No. of channel	Up to 4		Total number of HHSC and SHSC is 8 HHSC can be converted into 32-bit/0.1mS time base High-Speed Timer(HST) Half of maximum frequency while A/B phase input
				Counting mode	8 modes(U/D, U/Dx2, P/R, P/Rx2, A/B, A/Bx2, A/Bx3, A/Bx4)		
				Counting frequency	Maximum is 50KHz (Single-end input)		
		Software high-speed counter(SHSC) /32-bit		No. of channel	Up to 4		
				Counting mode	3 modes(U/D, P/R, A/B)		
				Counting frequency	Maximum sum up to 5KHz		
NC position pulse out (HSPSO)		Number of axis			Up to 3		
		Output frequency			Maximum is 50KHz (Single-end input)		Half of the maximum while A/B phase output
		Pulse output mode			3 modes(U/D, P/R, A/B)		
		Programming method			Dedicated position language		
		Interpolation			Maximum 3 axes linear interpolation		
HSPWM output		Number of points			Up to 3		
		Output frequency			72Hz~18.432KHz (with 0.1%resolution) 720Hz~50KHz (with 1%resolution)		

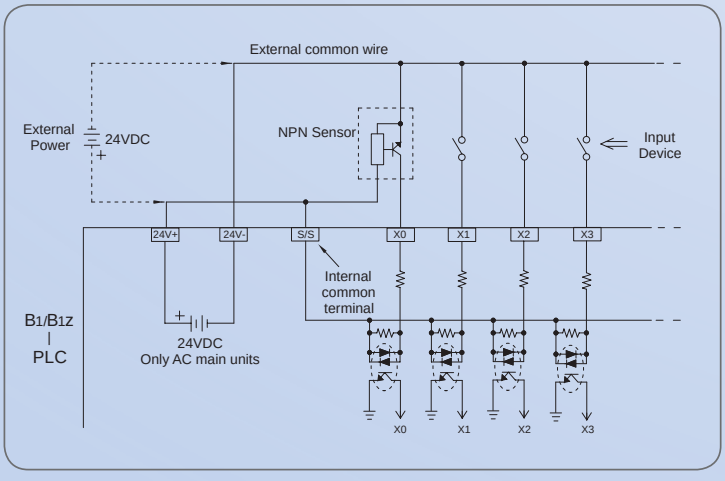
(continue)

Specification \ Item		B1	B1z	Notes
Capture input	Points	Maximum 24 points (All inputs in main unit come with this feature)		
	Minimum capturable pulse width	> 47μS(for high speed input)		
		> 470μS(for medium speed input)		
Digital filter	X0~X15	Adjustable frequency 14KHz~1.8MHz		Chosen by frequency at high frequency
		Adjustable time constant 0~1.5mS/0~15mS(unit: 0.1mS/1mS)		Chosen by time constant at low frequency
	X16~X23	Time constant 1~15mS adjustable(unit: 1mS)		

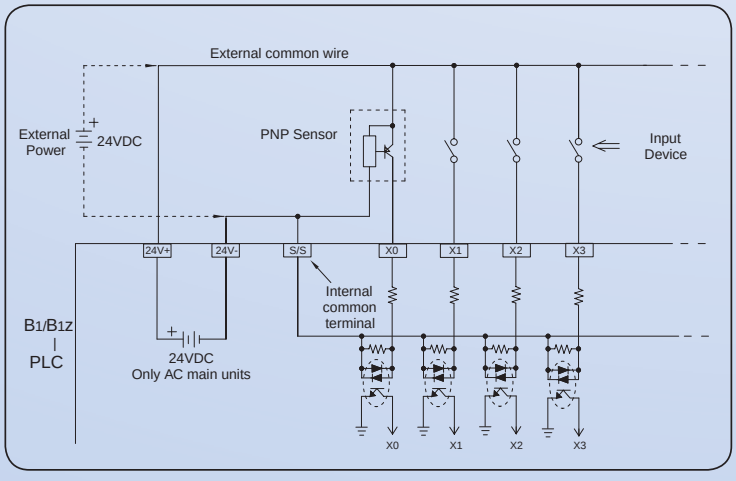
Digital Input (DI) Specifications

Specification \ Item		24VDC single-end input			Notes
		High speed	Medium speed	Low speed	
Maximum input frequency*		50KHz(HHSC)	Total 5KHz(SHSC)	< 50Hz	* : Half of maximum frequency while A/B phase input
Input signal voltage		24VDC±10%			
Threshold current	ON	> 4mA		> 2.3mA	
	OFF	< 1.5mA		< 0.9mA	
Maximum input current		7.6mA		4.5mA	
Input status indication		Displayed by LED: light when "ON", dark when "OFF"			
Isolation method		Optical isolation, 500VAC, 1 minute			
SINK/SOURCE selection		Select by wiring methods (internal common terminal S/S and external common wiring)			
Noise filtering methods		DHF(0~15mS) +AHF(4.7μS)	DHF(0~15mS) +AHF(0.47mS)	AHF(4.7mS)	DHF: Digital Hardware Filter AHF: Analog Hardware Filter

Wiring of 24VDC single-end SINK input



Wiring of 24VDC single-end SOURCE input

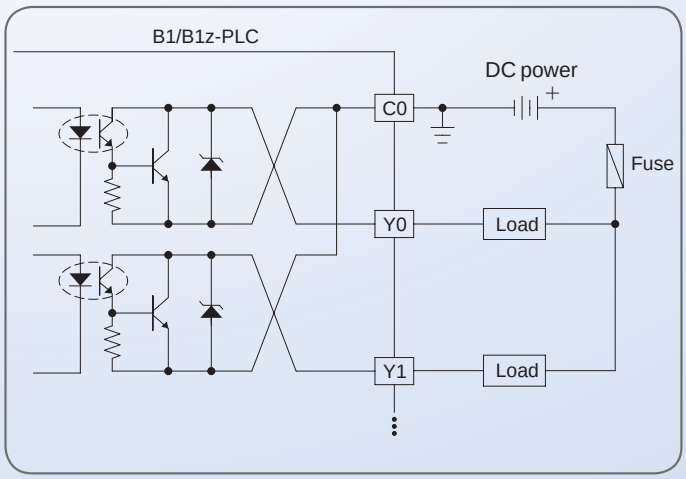


Digital Output (DO) Specifications

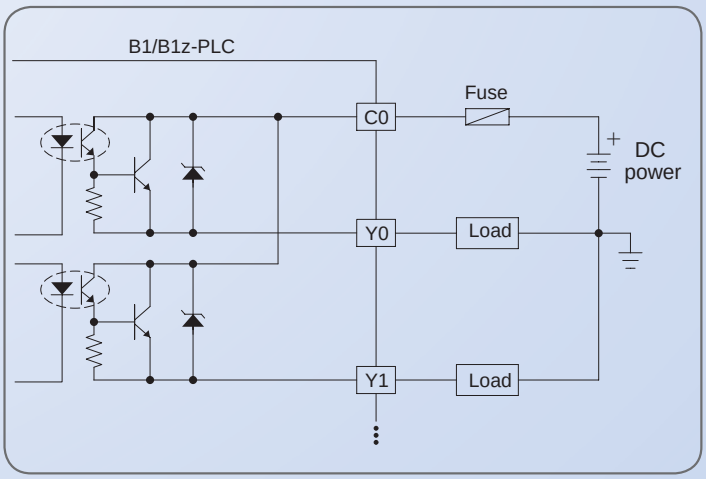
Specification \ Item		Single-end transistor output (T,J models)		Single-end relay output
		High speed	Low speed	
Maximum output frequency*		50KHz	—	—
Working voltage		5~30VDC		<250VAC/30VDC
Maximum load current	Resistive	0.3A	0.5A	2A/single, 4A/common
	Inductive			80VA(AC)/24VA(DC)
Maximum voltage drop/ conducting resistance		0.5V	1V	0.06V(initial)
Minimum load		—		2mA/DC power
Leakage current		< 0.1mA/30VDC		—
Maximum output delay time	ON→OFF	15μS		10mS
	OFF→ON	30μS		
Output status indication		Displayed by LED: light when "ON", dark when "OFF"		
Isolation method		Optical isolation, 500VAC, 1 minute		Electromagnetic isolation, 1500VAC, 1 minute
SINK/SOURCE output type		T models (SINK); J models (SOURCE)		Can be arbitrarily set to SINK/SOURCE output

* : Half of the maximum frequency while A/B phase output

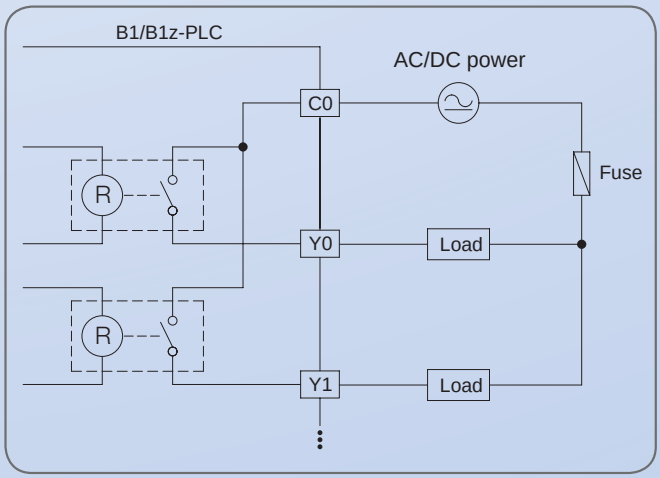
Wiring of transistor single-end SINK output



Wiring of transistor single-end SOURCE output



Wiring of relay single-end output



Model Specifications

B1 Main Units

Spec. \ Model			B1-10MR	B1-10M(T/J)	B1-14MR	B1-14M(T/J)	B1-20MR	B1-20M(T/J)
Digital input	24VDC	High speed 50KHz	4 points (4-axis single phase or 2-axis A/B phase)				6 points (4-axis single phase or 3-axis A/B phase)	
		Medium speed (Total 5KHz)	2 points		4 points		6 points	
		Low speed	—	—	—	—	—	—
Digital output	Relay	AC/DC(2A)	4 points	—	6 points	—	8 points	—
	Transistor (5~30 VDC)	High speed 50KHz (0.3A)	—	2 points(1-axis single phase or A/B phase)	—	2 points(1-axis single phase or A/B phase)	—	4 points(2-axis single phase or A/B phase)
		Low speed (0.5A)	—	2 points	—	4 points	—	4 points
Communication Port		Built-in	1 port (RS232 or USB*1) / 2 ports (RS232 + RS485) for B1-xxM ◇25					
		Expandable	2 ports (except B1-xxM ◇25)					
Calendar			Special order					
Built-in power supply			ZPOW14(AC power) or N/A(DC power)					
Wiring mechanism			5mm European fixed terminal block					
Dimension			Figure 1 (Standard), Figure 2 (Slim)*2				Figure 3 (Standard), Figure 4 (Slim)*2	

*1 Special order
*2 AC power main unit has no slim case

B1 Main Units

Spec. \ Model			B1-24MR	B1-24M(T/J)	B1-32MR	B1-32M(T/J)	B1-40MR	B1-40M(T/J)
Digital input	24VDC	High speed 50KHz	8 points (4-axis single phase or A/B phase)					
		Medium speed (Total 5KHz)	6 points		8 points			
		Low speed			4 points		8 points	
Digital output	Relay	AC/DC(2A)	10 points	—	12 points	—	16 points	
	Transistor (5~30 VDC)	High speed 50KHz (0.3A)	—	4 points(2-axis single phase or A/B phase)	—	6 points(3-axis single phase or A/B phase)	—	6 points(3-axis single phase or A/B phase)
		Low speed (0.5A)	—	6 points	—	6 points	—	10 points
Communication Port		Built-in	1 port (RS232 or USB*1) / 2 ports (RS232 + RS485) for B1-xxM ◇25					
		Expandable	2 ports (except B1-xxM ◇25)					
Calendar			Special order					
Built-in power supply			ZPOW14(AC power) or N/A(DC power)					
Wiring mechanism			5mm European fixed terminal block					
Dimension			Figure 3 (Standard), Figure 4 (Slim)*2		Figure 5 (Standard), Figure 6 (Slim)*2			

*1 Special order
*2 AC power main unit has no slim case

B1z Main Units

Spec. \ Model			B1z-10MR	B1z-10M(T/J)	B1z-14MR	B1z-14M(T/J)	B1z-20MR	B1z-20M(T/J)
Digital input	24VDC	High speed 50KHz	4 points (4-axis single phase or 2-axis A/B phase)				6 points (4-axis single phase or 3-axis A/B phase)	
		Medium speed (Total 5KHz)	2 points		4 points		6 points	
		Low speed	—	—	—	—	—	—
Digital output	Relay	AC/DC(2A)	4 points	—	6 points	—	8 points	—
	Transistor (5~30 VDC)	High speed 50KHz (0.3A)	—	2 points(1-axis single phase or A/B phase)	—	2 points(1-axis single phase or A/B phase)	—	4 points(2-axis single phase or A/B phase)
		Low speed (0.5A)	—	2 points	—	4 points	—	4 points
Communication Port		Built-in	1 port (RS232 or USB*1)					
		Expandable	N/A					
Calendar			N/A					
Built-in power supply			ZPOW14(AC power) or N/A(DC power)					
Wiring mechanism			5mm European fixed terminal block					
Dimension			Figure 1 (Standard), Figure 2 (Slim)*2				Figure 3 (Standard), Figure 4 (Slim)*2	

*1 Special order
*2 AC power main unit has no slim case

Model Specifications

B1z Main Units






Spec. \ Model			B1z-24MR	B1z-24M(T/J)	B1z-32MR	B1z-32M(T/J)	B1z-40MR	B1z-40M(T/J)
Digital input	24VDC	High speed 50KHz	8 points (4-axis single phase or A/B phase)					
		Medium speed (Total 5KHz)	6 points		8 points			
		Low speed	—	—	4 points		8 points	
Digital output	Relay	AC/DC(2A)	10 points		12 points		16 points	
	Transistor (5~30 VDC)	High speed 50KHz (0.3A)	—	4 points(2-axis single phase or A/B phase)	—	6 points(3-axis single phase or A/B phase)	—	6 points(3-axis single phase or A/B phase)
		Low speed (0.5A)	—	6 points	—	6 points	—	10 points
Communication Port		Built-in	1 port (RS232 or USB*1)					
		Expandable	N/A					
Calendar			N/A					
Built-in power supply			ZPOW14(AC power) or N/A(DC power)					
Wiring mechanism			5mm European fixed terminal block					
Dimension			Figure 3 (Standard), Figure 4 (Slim)*2		Figure 5 (Standard), Figure 6 (Slim)*2			

*1 Special order
*2 AC power main unit has no slim case

Right Side Digital I/O Expansion Modules








Spec. \ Model			B1-8X	B1-8YR	B1-8Y(T/J)	B1-8XYR	B1-8XY(T/J)	B1-16X	B1-16YR	B1-16Y(T/J)
Digital input	24VDC	Low speed	8 points	—	—	4 points	4 points	16 points	—	—
Digital output	Relay	AC/DC(2A)	—	8 points	—	4 points	—	—	16 points	—
	Transistor (5 ~ 30VDC)	Low speed (0.5A)	—	—	8 points	—	4 points	—	—	16 points
Wiring mechanism			5 mm European fixed terminal block							
Dimension			Figure 7 (Standard), Figure 8 (Slim)					Figure 1 (Standard), Figure 2 (Slim)		

Right Side Digital I/O Expansion Modules






Spec. \ Model			B1-16XYR	B1-16XY(T/J)	B1-24XYR	B1-24XY(T/J)	B1-40XYR	B1-40XY(T/J)
Digital input	24VDC	Low speed	8 points	8 points	14 points	14 points	24 points	24 points
Digital output	Relay	AC/DC(2A)	8 points	—	10 points	—	16 points	—
	Transistor (5 ~ 30VDC)	Low speed (0.5A)	—	8 points	—	10 points	—	16 points
Wiring mechanism			5mm European fixed terminal block					
Dimension			Figure 1 (Standard), Figure 2 (Slim)		Figure 3 (Standard), Figure 4 (Slim)		Figure 5 (Standard), Figure 6 (Slim)	

Left Side Analog I/O Expansion Modules




Spec. \ Model	B1-L2DA	B1-L4AD	B1-L2A2D	B1-L4NTC
Features	2 channels, 12-bit analog output module (0~10V or 0~20mA)	4 channels, 12-bit analog input module (0~10V or 0~20mA)	2 channels, 12-bit analog input + 2 channels, 12-bit analog output combo analog module (0~10V or 0~20mA)	4 channels, 12-bit NTC temperature input module (100Ω~100KΩ)
Wiring mechanism	3.81 mm European detachable terminal block			
Dimension	Figure 11 (Standard), Figure 12 (Slim)			

Left Side Communication Expansion Modules





Spec. \ Model	B1-CM2	B1-CM22	B1-CM5	B1-CM55	B1-CM25
Features	1 RS232 port (Port 2) with TX, RX indicators	2 RS232 ports (Port 1, 2) with TX, RX indicators	1 RS485 port (Port 2) with TX, RX indicators	2 RS485 port (Port 1, 2) with TX, RX indicators	1 RS232 port (Port 1) + 1 RS485 port (Port 2) with TX, RX indicators
Wiring mechanism	DB9F		3.5mm spring terminal block		DB9F 3.5mm spring terminal block
Dimension	Figure 9 (Standard), Figure 10 (Slim)				

(continue)


Spec. \ Model	B1-CM25E	B1-CM55E
Network interface	10 Base T	
Network protocol	TCP/UDP/IP, ICMP, ARP	
Application protocol	FATEK client and server mode, Modbus-TCP server mode	
PLC interface	Port2	
PLC communication speed	9.6K / 19.2K / 38.4K / 57.6K / 115.2Kbps / 230.4Kbps	
Expansion communication interface	RS232 (Port1), RS485 (Port2)	RS485 (Port1, Port2)
Application IP port number	FATEK port number 500, Modbus-TCP 502 or customized	
Security protection	IP based access control	
Indicators	Internet RX, TX, LINK LEDs indicators	
Wiring mechanism	DB9F, 3-pin spring terminal block x 1, RJ45	3-pin spring terminal block x 2, RJ45
Dimension	Figure 9 (Standard only)	

ZigBee™ Communication Module

Spec. \ Model	B1-CMZB
Standards	Compliant with IEEE 802.15.4 and ZigBee™ standard
Network topology	Mesh, star, and cluster-tree
Frequency	2.4GHz, Unlicensed ISM Band
Modulation	QPSK
Data rate	250 Kbps
RF channels	16(5MHz)
Data encryption	AES(option)
Transmit power	-7~18dBm
Transmission distance	1200m (LOS)
Nodes	Maximum 65535
Communication interface	Port1
Power consumption	24VDC, -15%/+20%, 2W
Dimension	Figure 9 (Standard), Figure 10 (Slim)

FBs Compatible Peripherals
(Refer to FBs-PLC Catalog for Detail Specifications)

Memory Pack

FBs-PACK

PWMDA

PWMDA

Handheld Programming Panel

FP-08

RFID Card

CARD-H

Simple HMI



FBs-DAP-B/BR* | FBs-DAP-C/CR* | FBs-PEP/PEPR

General Purpose Communication Converter




FBs-CM25C | FBs-CM5R | FBs-CM5H | FBs-CMZBR

*: FBs-DAP cannot apply to B1z units

Communication Cables





FBs-U2C-MD-180 | FBs-232P0-9F-150 | FBs-232P0-9M-400 | FBs-232P0-MD-200 | FBs-232P0-MDR-200

Dimensions

Figure 1 Standard

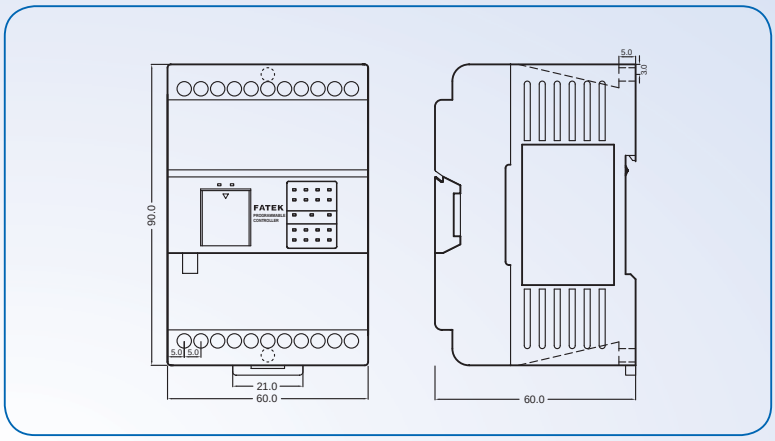


Figure 2 Slim

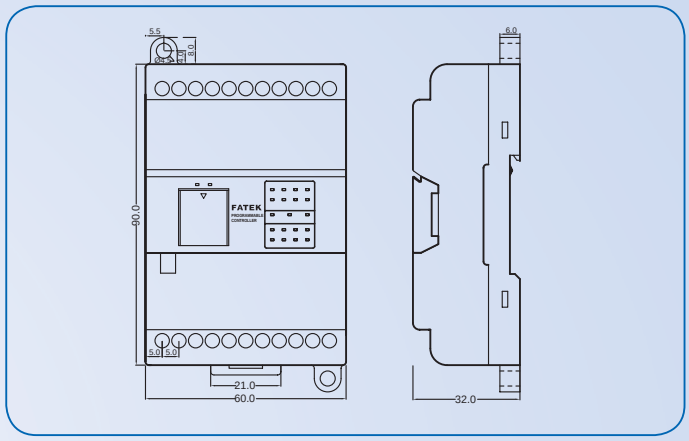


Figure 3 Standard

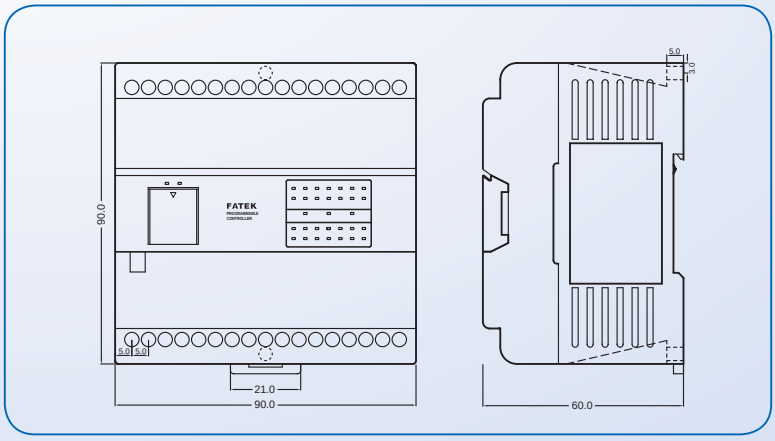


Figure 4 Slim

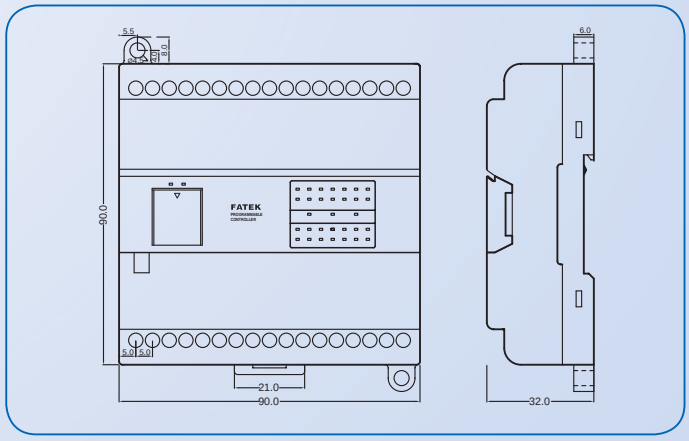


Figure 5 Standard

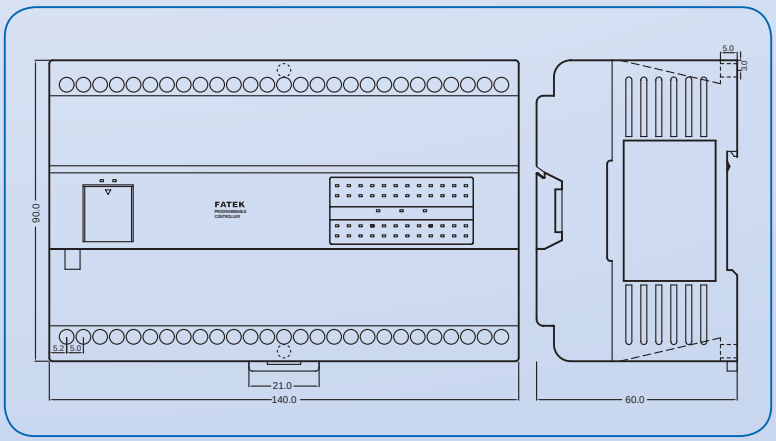
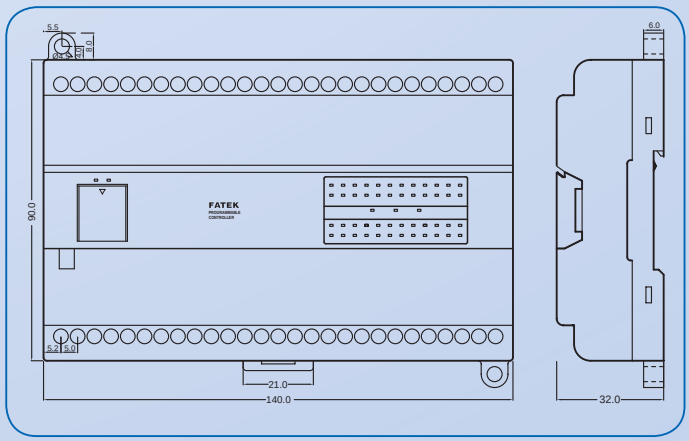


Figure 6 Slim



Dimensions

Figure 7 Standard

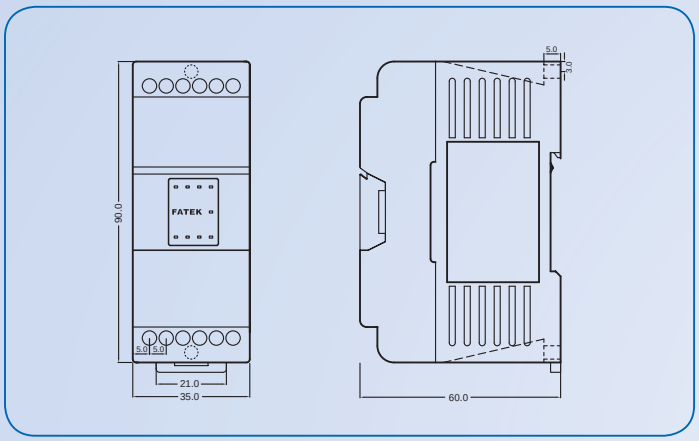


Figure 8 Slim

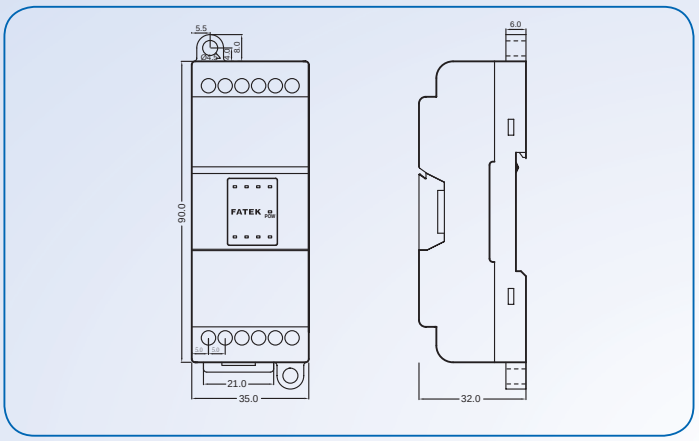


Figure 9 Standard

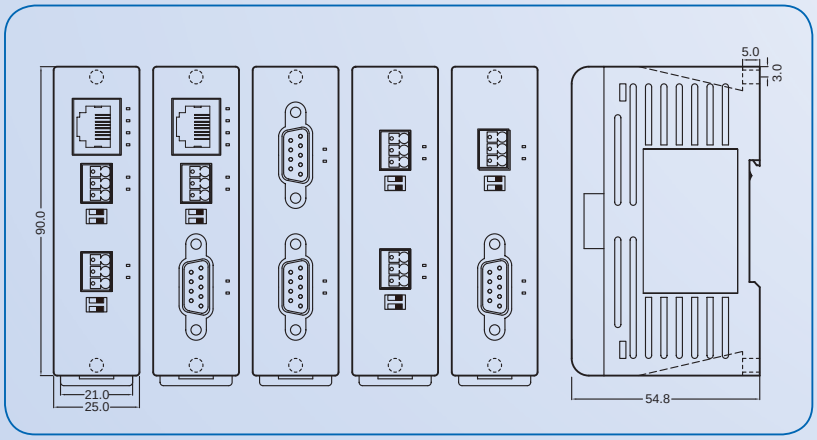


Figure 10 Slim

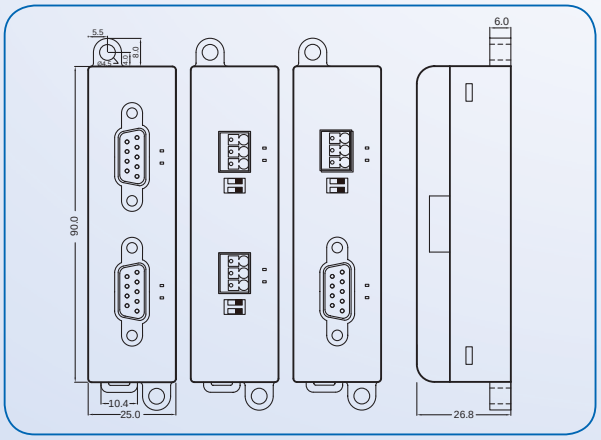


Figure 11 Standard

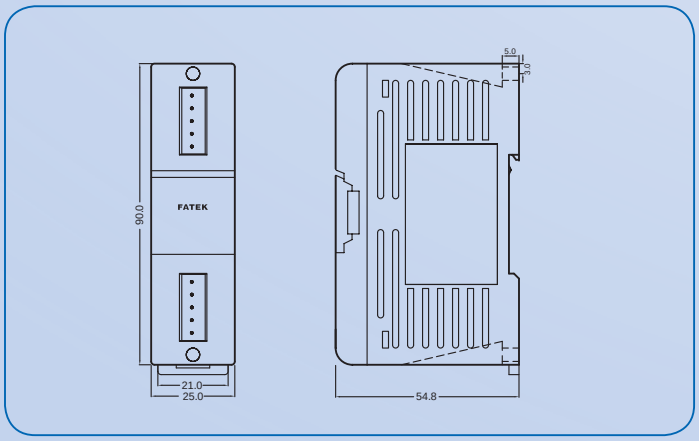
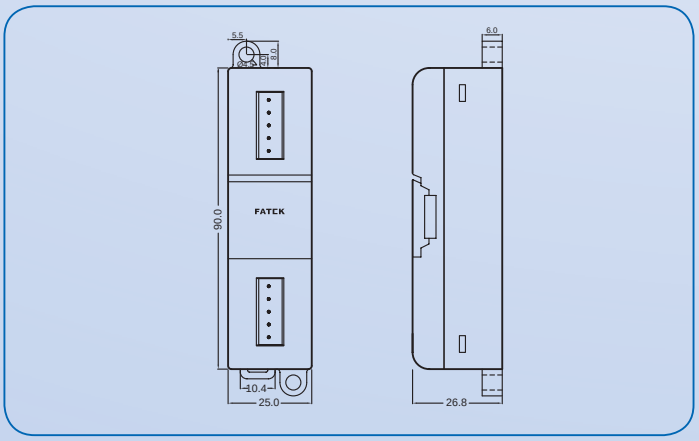


Figure 12 Slim



Model List

Item Name		Model	Specifications
Main Units	B1 Main Units	B1-10M ◇△ - ◎☆	6 points 24VDC digital input (4 points 50KHz, 2 points total 5KHz), 4 points relay output or transistor output (2 points 50KHz), built-in 1-2 communication ports, left side is expandable 0-2 modules, right side is expandable up to 80 I/O points
		B1-14M ◇△ - ◎☆	8 points 24VDC digital input (4 points 50KHz, 4 points total 5KHz), 6 points relay output or transistor output (2 points 50KHz), built-in 1-2 communication ports, left side is expandable 0-2 modules, right side is expandable up to 80 I/O points
		B1-20M ◇△ - ◎☆	12 points 24VDC digital input (6 points 50KHz, 6 points total 5KHz), 8 points relay output or transistor output (4 points 50KHz), built-in 1-2 communication ports, left side is expandable 0-2 modules, right side is expandable up to 80 I/O points
		B1-24M ◇△ - ◎☆	14 points 24VDC digital input (8 points 50KHz, 6 points total 5KHz), 10 points relay output or transistor output (4 points 50KHz), built-in 1-2 communication ports, left side is expandable 0-2 modules, right side is expandable up to 80 I/O points
		B1-32M ◇△ - ◎☆	20 points 24VDC digital input (8 points 50KHz, 8 points total 5KHz, 4 points low speed), 12 points relay output or transistor output (6 points 50KHz), built-in 1-2 communication ports, left side is expandable 0-2 modules, right side is expandable up to 80 I/O points
		B1-40M ◇△ - ◎☆	24 points 24VDC digital input (8 points 50KHz, 8 points total 5KHz, 8 points low speed), 16 points relay output or transistor output (6 points 50KHz), built-in 1-2 communication ports, left side is expandable 0-2 modules, right side is expandable up to 80 I/O points
	B1z Main Units	B1z-10M ◇△ - ◎☆	6 points 24VDC digital input (4 points 50KHz, 2 points total 5KHz), 4 points relay output or transistor output (2 points 50KHz), built-in 1 communication port, both sides are not expandable
		B1z-14M ◇△ - ◎☆	8 points 24VDC digital input (4 points 50KHz, 4 points total 5KHz), 6 points relay output or transistor output (2 points 50KHz), built-in 1 communication port, both sides are not expandable
		B1z-20M ◇△ - ◎☆	12 points 24VDC digital input (6 points 50KHz, 6 points total 5KHz), 8 points relay output or transistor output (4 points 50KHz), built-in 1 communication port, both sides are not expandable
		B1z-24M ◇△ - ◎☆	14 points 24VDC digital input (8 points 50KHz, 6 points total 5KHz), 10 points relay output or transistor output (4 points 50KHz), built-in 1 communication port, both sides are not expandable
		B1z-32M ◇△ - ◎☆	20 points 24VDC digital input (8 points 50KHz, 8 points total 5KHz, 4 points low speed), 12 points relay output or transistor output (6 points 50KHz), built-in 1 communication port, both sides are not expandable
		B1z-40M ◇△ - ◎☆	24 points 24VDC digital input (8 points 50KHz, 8 points total 5KHz, 8 points low speed), 16 points relay output or transistor output (6 points 50KHz), built-in 1 communication port, both sides are not expandable
Right Side Expansion Modules	DIO Expansion Modules	B1-8X ☆	8 points 24VDC digital input
		B1-8Y ◇☆	8 points relay or transistor output
		B1-8XY ◇☆	4 points 24VDC digital input, 4 points relay or transistor output
		B1-16X ☆	16 points 24VDC digital input
		B1-16Y ◇☆	16 points relay or transistor output
		B1-16XY ◇☆	8 points 24VDC digital input, 8 points relay or transistor output
		B1-24XY ◇☆	14 points 24VDC digital input, 10 points relay or transistor output
		B1-40XY ◇☆	24 points 24VDC digital input, 16 points relay or transistor output
Left Side Expansion Modules	AIO Modules	B1-L2DA ☆	2 channels, 12-bit analog output module (0~10V or 0~20mA)
		B1-L4AD ☆	4 channels, 12-bit analog input module (0~10V or 0~20mA)
		B1-L2A2D ☆	2 channels, 12-bit analog input + 2 channels, 12-bit analog output combo analog module (0~10V or 0~20mA)
		B1-L4NTC ☆	4 channels, NTC temperature input module, 12-bit resolution , measuring range 100Ω~100KΩ
	Communication Modules	B1-CM2 ☆	1 port RS232 (Port 2) communication module
		B1-CM5 ☆	1 port RS485 (Port 2) communication module
		B1-CM22 ☆	2 ports RS232 communication module
		B1-CM55 ☆	2 ports RS485 communication module
		B1-CM25 ☆	1 port RS232 (Port1) + 1 port RS485 (Port2) communication module
		B1-CM25E	1 port RS232 (Port1) + 1 port RS485 (Port2) + Ethernet network interface communication module
		B1-CM55E	2 ports RS485 (Port1, Port2) + Ethernet network interface communication module
		B1-CMZB ☆	ZigBee communication module
FBs Compatible Peripheral	Memory Pack	FBs-PACK	B1/B1z/FBs-PLC program memory pack with 20K Words program, 20K Words register, write protection switch
	PWMDA Module	PWMDA	10-bit single channel pulse width modulation (PWM) 0~10V analog output (AO) module
	Programming Devices	FP-08	B1/B1z/FBs-Series PLC handheld programmer
		Winproladder	FATEK-PLC Winproladder programming software
	RFID Card	CARD-H	Read/Write RFID card (for FBs-DAP-BR/CR and FBs-PEPR)
	Simple HMI	FBs-PEP/PEPR	Multi-characters with graphics-based Parameter Entry Panel, built-in RFID Read/Write module with PEPR
		FBs-DAP-B/BR*	16 x 2 LCD character display, 20 keys keyboard, 24VDC power supply, RS485 comm. port, built-in RFID Read/Write module with BR
		FBs-DAP-C/CR*	16 x 2 LCD character display, 20 keys keyboard, 5VDC power supply, RS232 comm. port, built-in RFID Read/Write module with CR
	General Purpose Communication Converters	FBs-CM25C	General purpose RS232 to RS485/RS422 communication interface converter with optical isolation
		FBs-CM5R	General purpose RS485 repeater with optical isolation
		FBs-CM5H	General purpose 4 ports RS485 HUB with optical isolation, RS485 can be connected as star connection
		FBs-CMZBR	ZigBee communication repeater
		FBs-U2C-MD-180	Communication converter cable with standard USB AM connector to RS232 Mini-DIN 4M connector (used in standard PC USB to FBs main unit Port0 RS232), length 180cm
	Communication Cables	FBs-232P0-9F-150	Mini-DIN 4M to DB9F communication cable (FBs main unit Port 0 RS232 connect to standard DB9M), length 150cm
		FBs-232P0-9M-400	Mini-DIN 4M to DB9M communication cable (FBs main unit Port 0 RS232 connect to standard DB9F), length 400cm
		FBs-232P0-MD-200	Mini-DIN 4M to Mini-DIN 4M communication cable (FBs main unit Port 0 RS232 connect to FBs-PEP/PEPR), length 200cm
		FBs-232P0-MDR-200	Mini-DIN 4M to 90° Mini-DIN 4M communication cable(FBs main unit Port0 RS232 connect to FBs-PEP/PEPR), length 200cm

1. ◇ : R – Relay output, T. – Transistor SINK (NPN) output, J. – SOURCE (PNP) output

2. △ : 2 – built-in 1 RS232 communication port,
U – built-in 1 USB communication port, (special order)
} left side of B1 main units can expand 1 analog module + 1 communication module (1 port) or 1 communication module (1 or 2 ports)
25 – built-in 2 communication ports (RS232 + RS485), only B1 main units provided, and left side is not expandable

3. ◎ : AC – 100~240VAC power supply, D12—12VDC power supply, D24—24VDC power supply

4. ☆ : Blank – Standard case, -S – Slim case (units with AC power supply has no slim case)

*: FBs-DAP cannot apply to B1z units