

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



# 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.



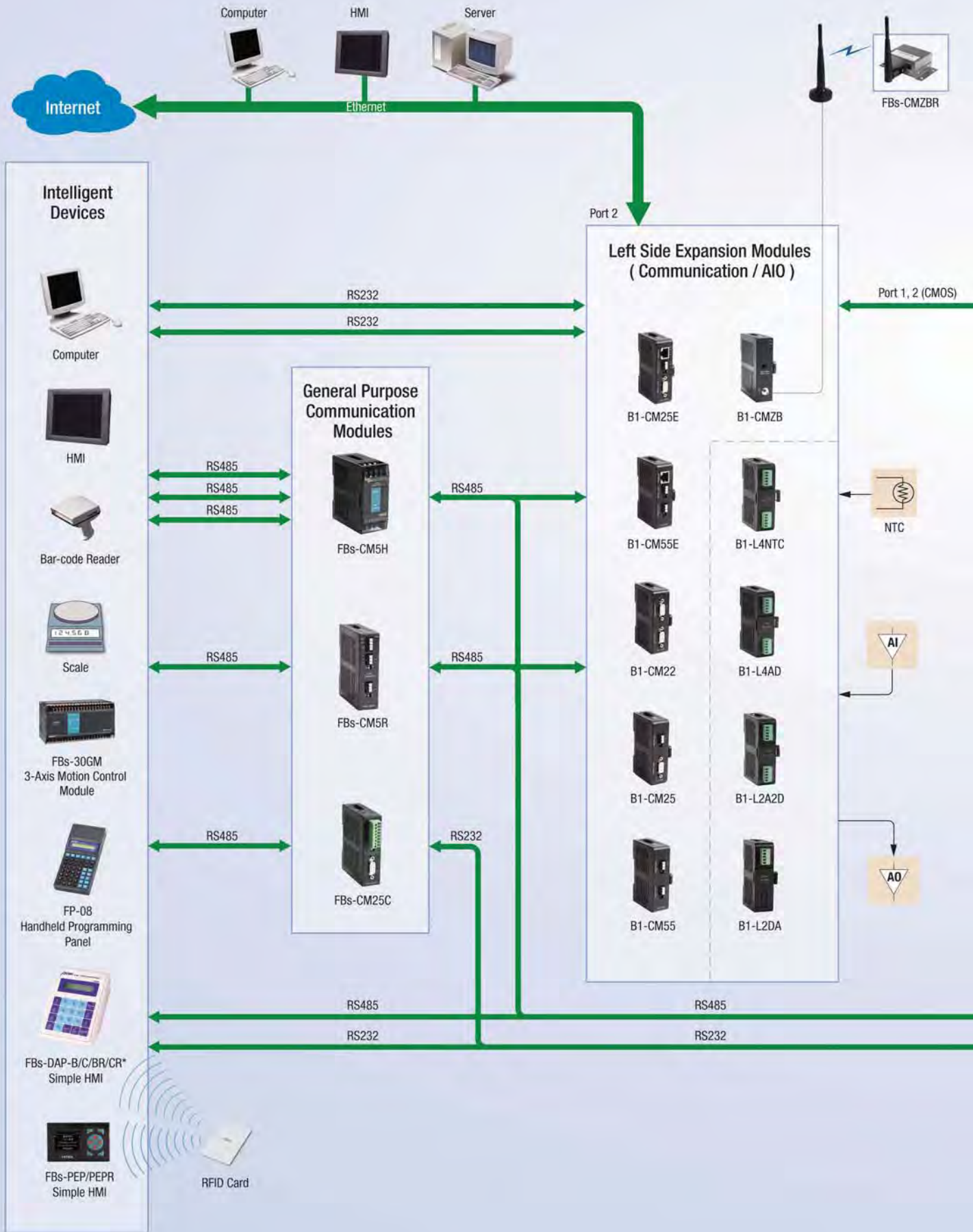
## Competitive Low Price

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!

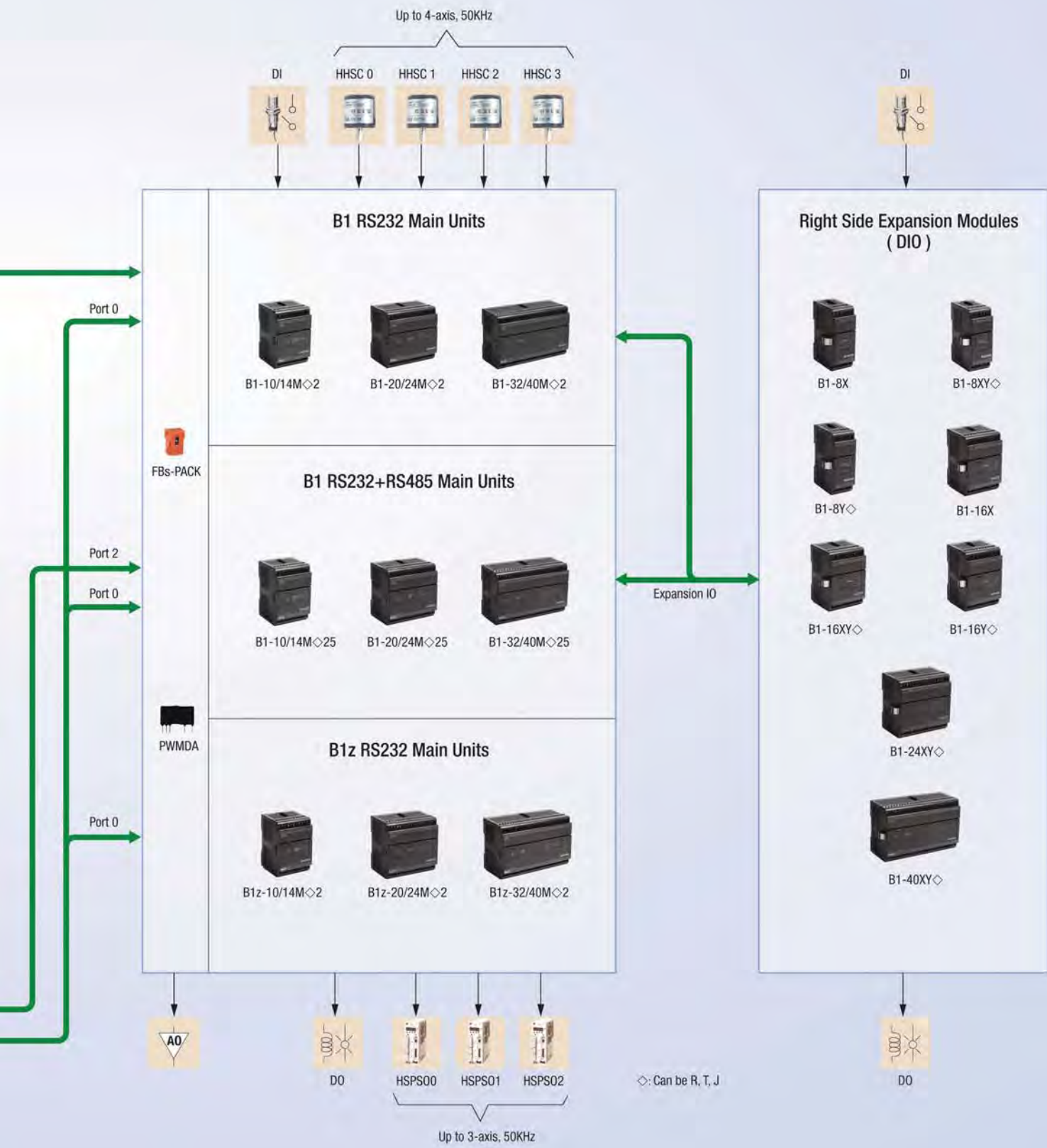
## Easy to Use, Common Instruction Sets

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



# General Specifications

## Environmental Specifications

Item		Specification	Note
Operating ambient temperature	Enclosure space	Minimum	5°C
		Maximum	40°C
	Open space	Minimum	5°C
		Maximum	55°C
Storage temperature		-25°C ~ +70°C	Permanent installation
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	

## 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			0.33μS/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 M1400~M1911 (512)	M0~M511 (512)	Can be configured as retentive type	
			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	
			Read only register	R5000~R8071 (3072)*1	R5000~R5255 (256)*1	When not configured as ROR, it can serve normal register(for read/write)	
	HR ROR	File 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)				
	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)				

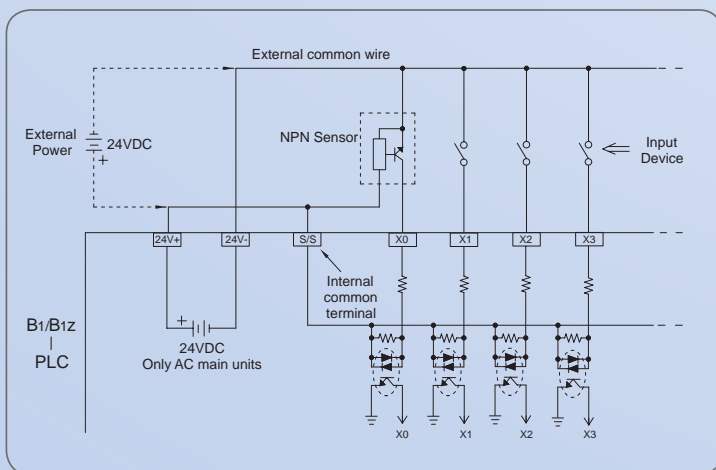
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Specification		Item	B1	B1z	Notes
Capture input	Points		Maximum 24 points (All inputs in main unit come with this feature)		
	Minimum capturable pulse width		$> 47\mu\text{S}$ (for high speed input) $> 470\mu\text{S}$ (for medium speed input)		
Digital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

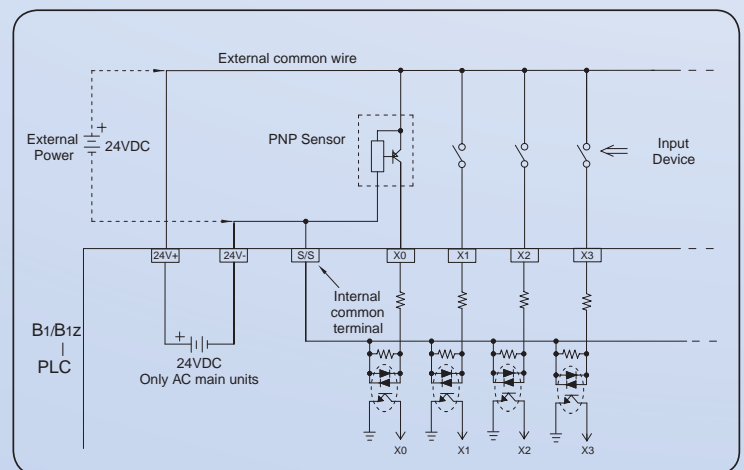
### Digital Input (DI) Specifications

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 $\pm$ 10%			
Threshold current	ON	$> 4\text{mA}$		$> 2.3\text{mA}$	
	OFF	$< 1.5\text{mA}$		$< 0.9\text{mA}$	
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(4.7 $\mu$ S)	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



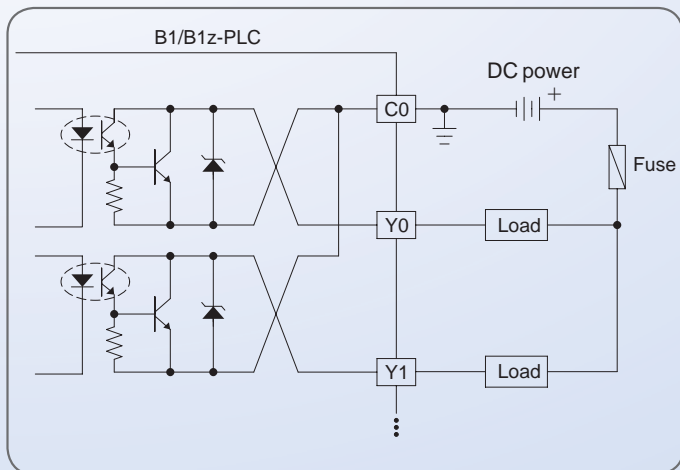


## Digital Output (DO) Specifications

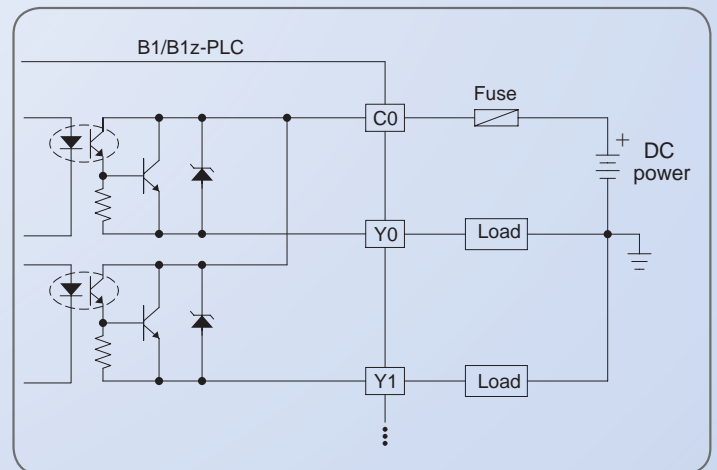
Specification	Item	Single-end transistor output (T, J models)		Single-end relay output
		High speed	Low speed	
Maximum output frequency*		50KHz	—	—
Working voltage		5~30VDC		<250VAC/30VDC
Maximum load current	Resistive	0.3A	0.5A	2A/single, 4A/common
	Inductive			80VA(AC)/24VA(DC)
Maximum voltage drop/ 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

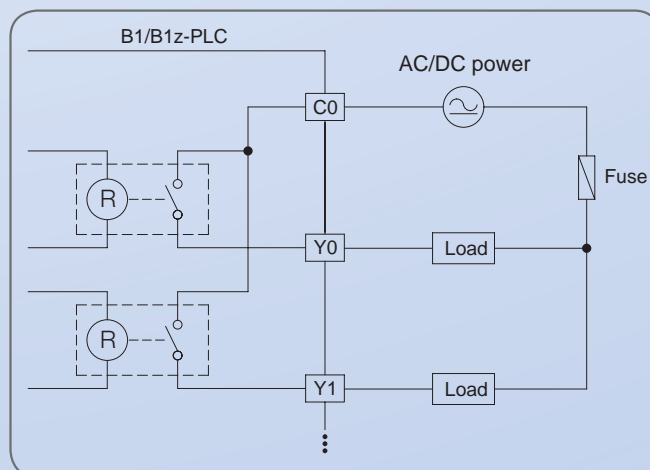
### Wiring of transistor single-end SINK output



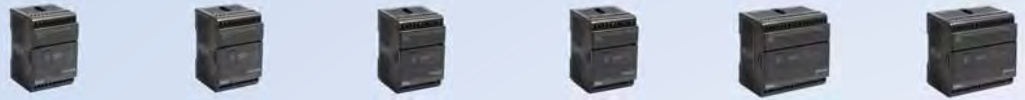
### Wiring of transistor single-end SOURCE output



### 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*) / 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*) / 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*)						
	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*)								
	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



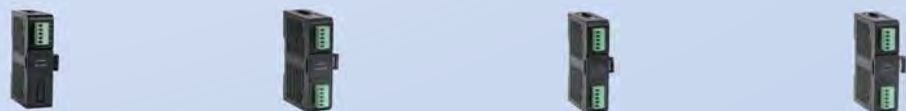
Spec.			Model		B1-8X	B1-8YR	B1-8Y(T/J)	B1-8XYR	B1-8XY(T/J)	B1-16X	B1-16YR	B1-16Y(T/J)
Digital input	24VDC	Low speed	8 points	—	—	4 points	4 points	16 points	—	—	—	—
Digital output	Relay	AC/DC(2A)	—	8 points	—	4 points	—	—	16 points	—	—	—
	Transistor (5 ~ 30VDC)	Low speed (0.5A)	—	—	8 points	—	4 points	—	—	—	—	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



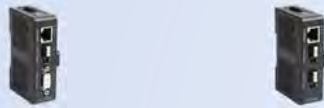
Spec.		Model		B1-L2DA	B1-L4AD	B1-L2A2D	B1-L4NTC
Features		2 channels, 12-bit analog output module (0~10V or 0~20mA)	4 channels, 12-bit analog input module (0~10V or 0~20mA)	2 channels, 12-bit analog input + 2 channels, 12-bit analog output combo analog module (0~10V or 0~20mA)	4 channels, 12-bit NTC 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	PWMDA	Handheld Programming Panel	RFID Card
FBs-PACK	PWMDA	FP-08	CARD-H

Simple HMI			General Purpose Communication Converter			
FBs-DAP-B/BR*	FBs-DAP-C/CR*	FBs-PEP/PEPR	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

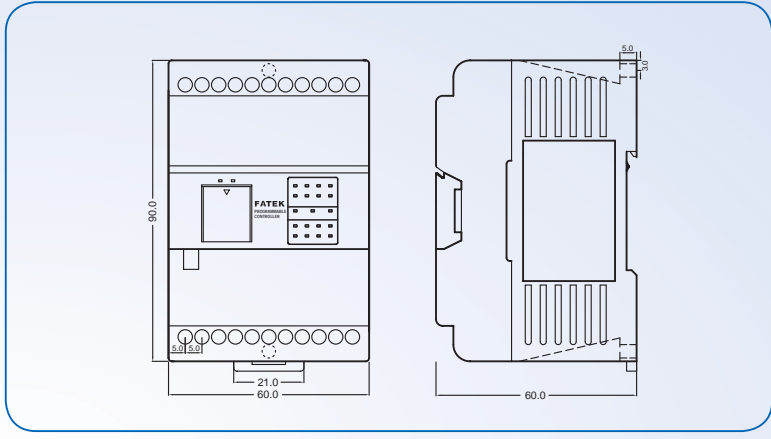


Figure 2 Slim

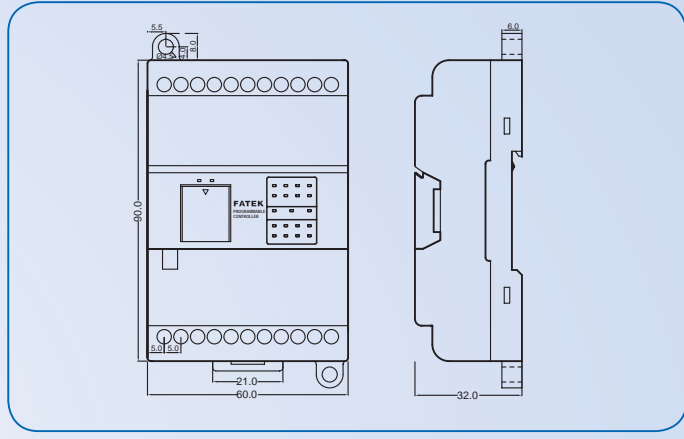


Figure 3 Standard

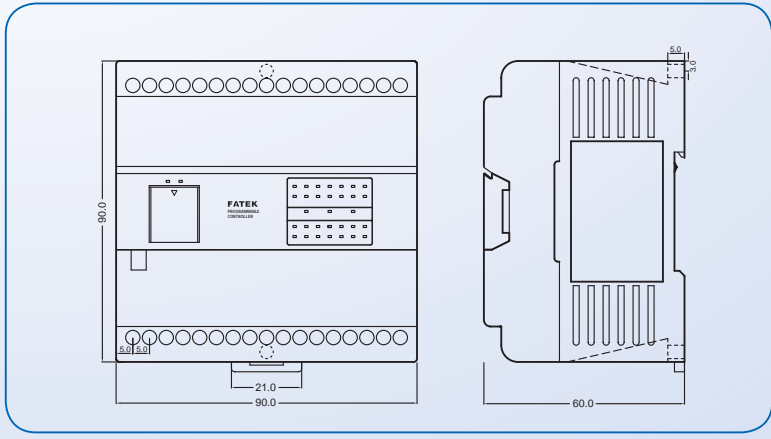


Figure 4 Slim

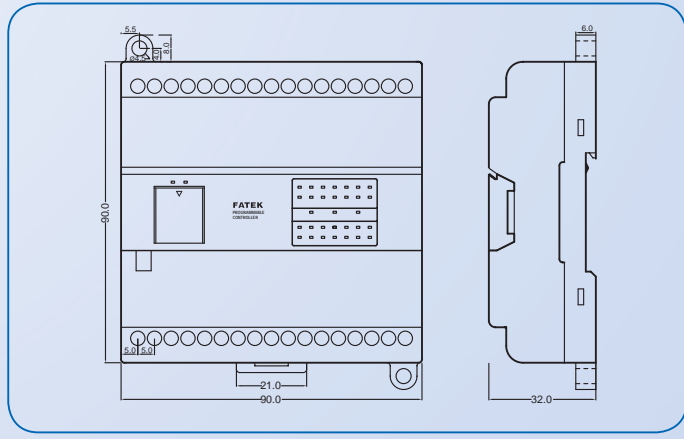


Figure 5 Standard

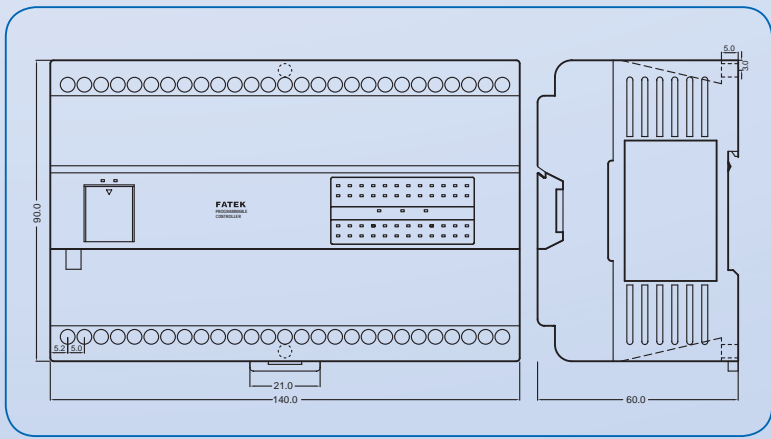
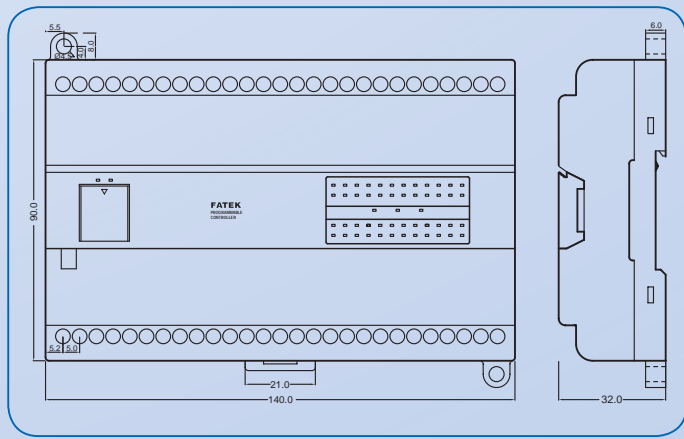


Figure 6 Slim



# Dimensions

Figure 7 Standard

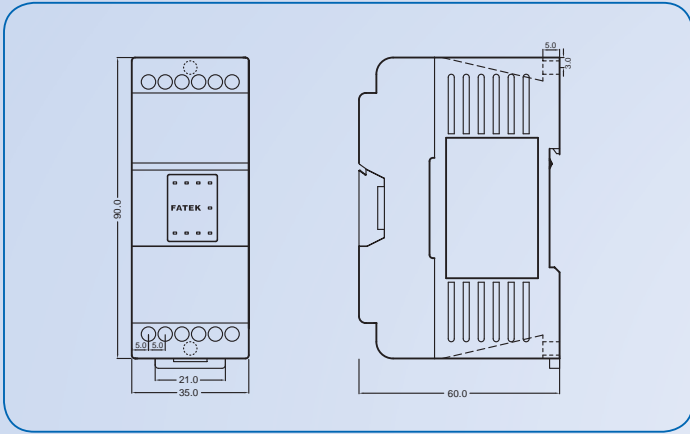


Figure 8 Slim

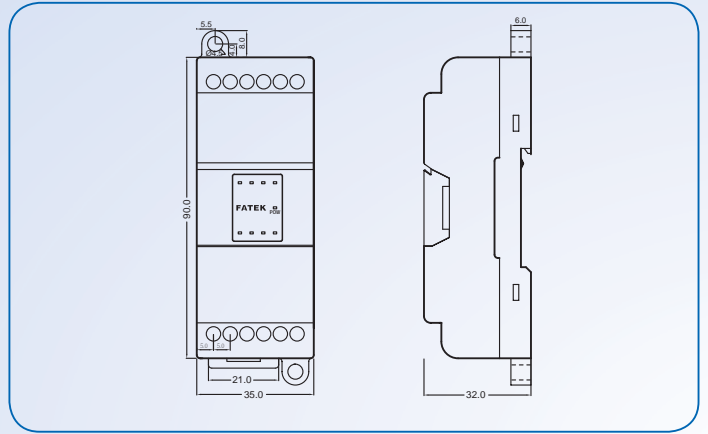


Figure 9 Standard

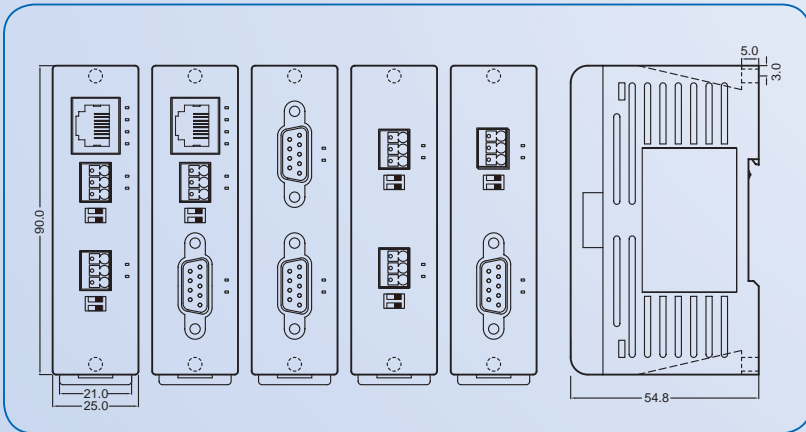


Figure 10 Slim

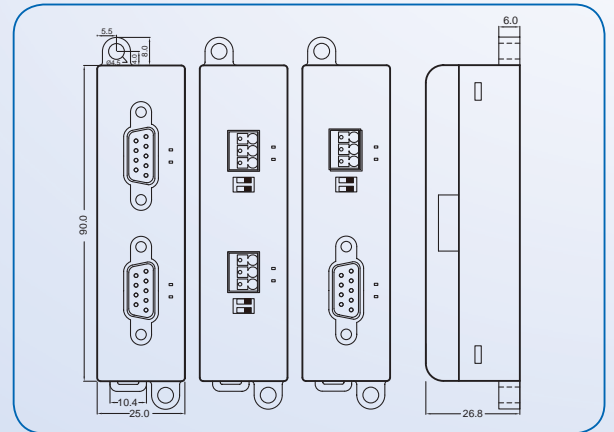


Figure 11 Standard

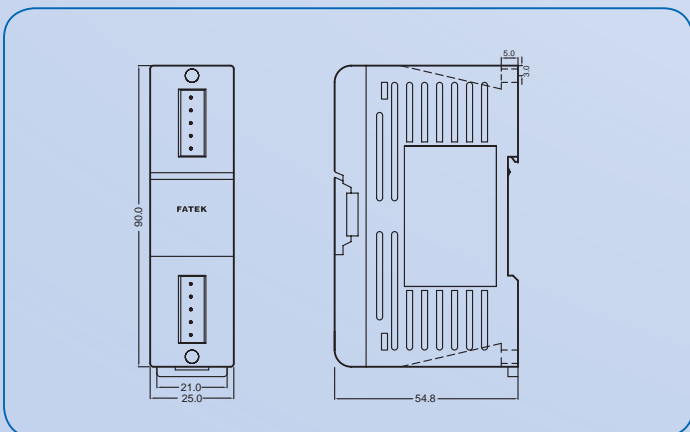
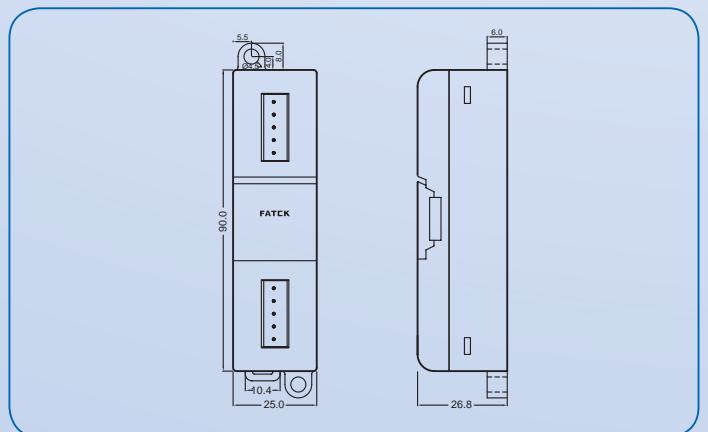


Figure 12 Slim



# 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		

- ◇ : R – Relay output, T. – Transistor SINK (NPN) output, J. – SOURCE (PNP) output
- △ : 2 – built-in 1 RS232 communication port, } left side of B1 main units can expand 1 analog module + 1 communication module (1 port) or 1 communication module (1 or 2 ports)  
U – built-in 1 USB communication port, (special order)
- ◎ : AC – 100~240VAC power supply, D12—12VDC power supply, D24—24VDC power supply
- ☆ : Blank – Standard case, -S – Slim case (units with AC power supply has no slim case)  
\*: FBs-DAP cannot apply to B1z units

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