



# MicroSmart Pentra with Logic Engine

- Features**
- Fast processing speed
  - Supports 32-bit data processing
  - IEEE standard Floating Pt. Math
  - Built-in Modbus master & slave
  - Field upgradeable firmware
  - Up to 512 I/Os
  - Configure up to 56 analog I/Os
  - Max. of 7 communication ports
  - Embedded 100kHz HSC & pulse outputs
  - Online Edit and Simulation Mode
  - UL Listed for Class 1 Div. 2 Hazardous Locations



**LOGIC ENGINE**

		Slim (Book) Models with Logic Engine				All-In-One (Brick) Models					
		FC5A-D16RK1 FC5A-D16RS1		FC5A-D32K3 FC5A-D32S3		FC5A-C10R2 FC5A-C10R2C		FC5A-C16R2 FC5A-C16R2C		FC5A-C24R2 FC5A-C24R2C	
<b>Instruction Words</b>		35 basic									
		88 advanced		92 advanced		76 advanced		76 advanced		81 advanced	
<b>Program Capacity<sup>1</sup></b>		62.4KB (10,400 steps)				13.8 KB (2,300 steps)		27KB (4,500 steps)		54KB (9,000 steps)	
<b>User Program Storage</b>		EEPROM (10,000 times rewritable)									
<b>Processing Time</b>	<b>Basic Instruction</b>	83µs (1,000 steps)				1.16ms (1,000 steps)					
	<b>END Processing<sup>2</sup></b>	0.35ms				0.64ms					
<b>Expandable I/O Modules</b>		7 modules + additional 8 modules using the expansion interface module				-				4 modules	
<b>I/O Points</b>	<b>Input</b>	8	Expansion: 224 Additional: 256		16	Expansion: 224 Additional: 256		6	9	14	Expansion: 64
	<b>Output</b>	8			16			4	7	10	
<b>Internal Relay</b>		2,048 points				2,048 points					
<b>Shift Register</b>		256 points				128 points					
<b>Data Register</b>		42,000 points <sup>3</sup>				2,000 points					
<b>Expansion Data Register</b>		6,000 points				-					
<b>Counter</b>		256 points				256 points					
<b>Timer (1-sec, 100-ms, 10-ms, 1-ms)</b>		256 points				256 points					
<b>Input Filter</b>		Without filter, 3 to 15 ms (selectable in increments of 1 ms)									
<b>Catch Input/Interrupt Input</b>		Four inputs (I2 through I5) Minimum turn on pulse width: 5 µs maximum Minimum turn off pulse width: 5 µs maximum				Four inputs (I2 through I5) Minimum turn on pulse width: 40 µs maximum Minimum turn off pulse width: 150 µs maximum					
<b>High-speed Counter</b>	<b>Maximum Counting Frequency and High-speed Counter Points</b>	Total 4 points Single/two-phase selectable: 100 kHz (2 points) Single-phase: 100 kHz (2 points)				Total 4 points Single/two-phase selectable: 50 kHz (1 point) Single-phase: 5 kHz (3 points)					
	<b>Counting Range</b>	0 to 4294967295 (32 bits)				0 to 65535 (16 bits)					
	<b>Operation Mode</b>	Rotary encoder mode and adding counter mode									
<b>Analog Potentiometer</b>	<b>Quantity</b>	1 point				2 points					
	<b>Data Range</b>					0 to 255					
<b>Analog Voltage Input</b>	<b>Quantity</b>	1 point									
	<b>Input Voltage Range</b>	0 to 10V DC									
	<b>Input Impedance</b>	Approx. 100kΩ				-					
	<b>Data Range</b>	0 to 255 (8 bits)									
<b>Pulse Output</b>	<b>Quantity</b>	2 points		3 points							
	<b>Maximum Frequency</b>	100 kHz									
<b>Sensor Power Supply</b>	<b>Output Voltage Current</b>					24V DC (+10% to -15%), 250 mA					
	<b>Overload Detection</b>	-				-					
	<b>Isolation</b>	Isolated from the internal circuit									
<b>Port 1</b>		RS232C (maintenance communication, user communications)									
<b>Port 2 Communication Adapter (optional)<sup>4</sup></b>		Yes									
<b>Clock Cartridge (optional)</b>		Yes									
<b>Memory Cartridge (optional)</b>		Yes									
<b>HMI Module (optional)</b>		Yes									
<b>Modbus Master/Slave</b>		Yes									

Notes: The maximum number of relay outputs that can be turned on simultaneously is 54 including those on the CPU module.

\*1. One step equals 6 bytes.

\*2. Not including expansion I/O service time, and clock function, data link and interrupt processing time.

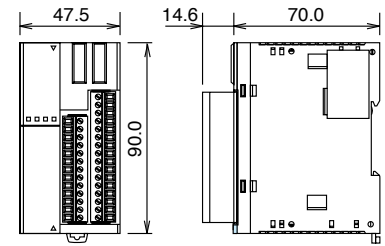
\*3. Extra data registers D10000 through D49999 are enabled using WindLDR Function Area Settings, then run-time program download cannot be used.

\*4. Maintenance communication, user communication, Modem communication, data link, Modbus master/slave communication (FC5A only).

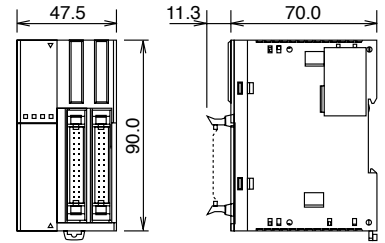
	Slim (Book) Models with Logic Engine		All-In-One (Brick) Models		
	FC5A-D16RK1 FC5A-D16RS1	FC5A-D32K3 FC5A-D32S3	FC5A-C10R2 FC5A-C10R2C	FC5A-C16R2 FC5A-C16R2C	FC5A-C24R2 FC5A-C24R2C
<b>Rated Power Voltage</b>	24V DC		AC power model: 100 to 240V AC DC power model: 24V DC		
<b>Allowable Voltage Range</b>	20.4 to 26.4V DC (including ripple)		AC power model: 85 to 264V AC DC power model: 20.4 to 28.8V DC (including ripple)		
<b>Rated Power Frequency</b>	N/A	N/A	AC power model: 50/60 Hz (47 to 63 Hz)		
<b>Maximum Input Current</b>	700mA (26.4V DC) <sup>1</sup>		250mA (85V AC) 160mA (24V DC)	300mA (85V AC) 190mA (24V DC)	450mA (85V AC) <sup>2</sup> 360mA (24V DC) <sup>3</sup>
<b>Maximum Power Consumption</b>	19W (26.4V DC) <sup>1</sup>		AC: FC5A-C10R2: 30VA (264V AC) 20VA (100V AC) <sup>4</sup> DC: FC5A-C10R2C: 3.9W (24V DC) <sup>5</sup>	AC: FC4A-C16R2: 31VA (264 V AC) 22VA (100V AC) <sup>4</sup> DC: FC5A-C16R2C: 4.6W (24V DC) <sup>5</sup>	AC: FC4A-C24R2: 40VA (264V AC) 33VA (100V AC) <sup>2</sup> DC: FC5A-C24R2C: 8.7W (24V DC) <sup>3</sup>
<b>Allowable Momentary Power Interruption</b>	10ms (at 24V DC)		10ms (rated power voltage)		
<b>Dielectric Strength</b>	Between power and ⏏ terminals: 500V AC, 1 minute Between I/O and ⏏ terminals: 1,500V AC, 1 minute		Between power and ⏏ or ⏏ terminals: 1500V AC, 1 minute Between I/O and ⏏ or ⏏ terminals: 1500V AC, 1 minute		
<b>Insulation Resistance</b>	Between power and ⏏ terminals: 10MΩ minimum (500V DC megger) Between I/O and ⏏ terminals: 10MΩ minimum (500V DC megger)		Between power and ⏏ or ⏏ terminals: 10MΩ minimum (500V DC megger) Between I/O and ⏏ or ⏏ terminals: 10MΩ minimum (500V DC megger)		
<b>Noise Resistance</b>	DC power terminals: 1.0kV, 50ns to 1µs I/O terminals (coupling clamp): 1.5kV, 50ns to 1µs		AC power terminals: 1.5kV, 50ns to 1µs DC power terminals: 1.0kV, 50ns to 1µs I/O terminals (coupling clamp): 1.5 kV, 50ns to 1µs		
<b>Inrush Current</b>	50A maximum (24V DC)		35A		40A
<b>Power Supply Wire</b>	22 - 18AWG				
<b>Operating Temperature</b>	0 to 55°C				
<b>Storage Temperature</b>	-25 to +70°C (no freezing)				
<b>Relative Humidity</b>	Level RH1 (IEC61131-2), 10 to 95% (no condensation)				
<b>Altitude</b>	Operation: 0 to 2,000m, Transport: 0 to 3,000m				
<b>Pollution Degree</b>	2 (IEC60664-1)				
<b>Corrosion Immunity</b>	Free from corrosive gases				
<b>Degree of Protection</b>	IP20 (IEC60529)				
<b>Grounding Wire</b>	22 - 18AWG		16AWG		
<b>Vibration Resistance</b>	When mounted on a DIN rail or panel surface: 5 to 9 Hz amplitude 3.5 mm, 9 to 150 Hz acceleration 9.8 m/s <sup>2</sup> (1G), 2 hours per axis on each of three mutually perpendicular axes (IEC61131-2)				
<b>Shock Resistance</b>	147 m/s <sup>2</sup> (15G), 11 ms duration, 3 shocks per axis on three mutually perpendicular axes (IEC61131-2)				
<b>Weight</b>	230g	190g	AC model: 230g DC model: 240g	AC model: 250g DC model: 260g	AC model: 305g DC model: 310g

Notes: \*1. CPU module + 7 I/O modules. \*2. CPU module (including 250 mA sensor power) + 4 I/O modules. \*3. CPU module + 4 I/O modules. \*4. CPU module (including 250 mA sensor power). \*5. CPU module (24V DC)

### CPU Dimensions - Slim

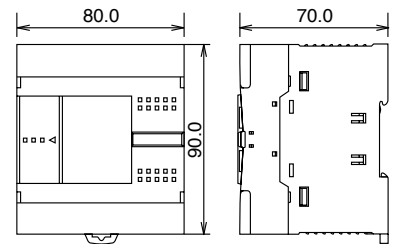


FC5A-D16RK1, FC5A-D16RS1

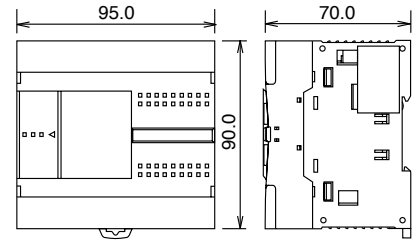


FC5A-D32K3, FC5A-D32S3

### CPU Dimensions - Brick



FC5A-C10R2, FC5A-C16R2  
FC5A-C10R2C, FC5A-C16R2C



FC5A-C24R2, FC5A-C24R2C

All dimensions in mm.

#### Slim Models



16 I/O Points

32 I/O Points

#### All-In-One Models



10 I/O Points

16 I/O Points

24 I/O Points



IDEC Corporation  
1175 Elko Drive  
Sunnyvale, CA 94089  
800-262-IDEC (4332)  
Fax: 408-745-5258

www.idec.com

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