
System Specifications



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Compact Specifications

Compact PLC System Specifications

The following information describes the technical specifications for the Compact PLC system.

The technical specifications are organized as five tables.

The following table is table 1 of the technical specifications.

Models	PC-A984-120	With one Modbus communication port standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 1.5K words, 8Mhz.
	PC-A984-130	With one Modbus communication port standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 4.0K words, 8Mhz.
	PC-A984-145	With one Modbus communication port and one Modbus Plus peer-to-peer network communication port standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 8.0K words, 8Mhz.
	PC-A984-131	With two Modbus communication ports standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 4.0K words, 8Mhz.
	PC-A984-141	With two Modbus communication ports standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 8.0K words, 8Mhz.
	PC-E984-241	With two Modbus communication ports standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 8.0K words, FLASH RAM (exec only), 16Mhz.
	PC-E984-245	With one Modbus communication port and one Modbus Plus peer-to-peer network communication port standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 8.0K words, FLASH RAM (exec only), 16Mhz.
	PC-E984-251	With two Modbus communication ports standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 16.0K Words FLASH RAM (exec only), 16Mhz, 24K of extended registers.
	PC-E984-255	With one Modbus communication port and one Modbus Plus peer-to-peer network communication port standard, and a slot for an 8 or 32 byte EEPROM; User logic size: 16.0K words, FLASH RAM exec only), 16Mhz, 24K of extended registers.
	PC-E984-258	With two Modbus communication ports standard; User logic size: 16.0K words, State RAM size: 32K words, Total size: 48K words, 128K words of configurable SDA 6X registers, FLASH RAM (exec plus user program storage), 25Mhz, operating temperature -40 ... +70C, the Run, Ready, Modbus 1 and Modbus 2 LEDs are yellow. TOD sync with GPS input terminals.
	PC-E984-265	With two Modbus communication ports and one Modbus Plus peer-to-peer network communication port standard; User logic size: 8.0K words, State RAM size: 16K words, Total size: 24K words, 128K words of configurable SDA 6X registers, FLASH RAM (exec plus user program storage), 25Mhz. TOD sync with GPS input terminals.
	PC-E984-275	With two Modbus communication ports and one Modbus Plus peer-to-peer network communication port standard; User logic size: 16.0K words, State RAM size: 32K words, Total size: 48K words, 128K words of configurable SDA 6X registers, FLASH RAM (exec plus user program storage), 25Mhz, and one PCMCIA slot. TOD sync with GPS input terminals.
	PC-E984-285	With two Modbus communication ports and one Modbus Plus peer-to-peer network communication port standard; User logic size: 32.0K words, State RAM size: 64K words, Total size: 96K words, 128K words of configurable SDA 6X registers, FLASH RAM (exec plus user program storage), 25Mhz, operating temperature -40 ... +70C and one PCMCIA card slot. TOD sync with GPS input terminals.

The following table is table 2 of the technical specifications.

State RAM	A984 & E984-24x/251/2 55	2k
	E984-258/275	32k
	E984-265	16k
	E984-285	64k
	Word size	16 bit
	Technology	CMOS with lithium battery backup
	Battery	100 days minimum backup retention period 5 year replacement period to assure backup capacity
I/O Capabilities	I/O type supported	A120 Series
	Local I/O support	One, I/O Mapped as drop #1
	I/O racks/drop	Four (maximum) one primary rack and up to three secondary expansion racks
	I/O modules/drop	18 (maximum) three in the primary rack and five in each expansion rack
	Power for I/O racks	From the Controller power supply NOTE: Logic side only. User must provide field side power if needed.
	Remote I/O support	None
I/O Capacity (Maximum)	A984-1xx&E984-24x/251/255	256 maximum Discrete I/O points, any mix (0x, 1x) 64 words Register I/O (32 in/32 out) (3x, 4x)
E984-258& E984-265	128 In/128 Out words Total I/O capacity 256 words	
	E984-275	256 In/256 Out words Total I/O capacity 512 words
	E984-285	512 In/512 Out words Total I/O capacity 1024 words
PLC Power	A984 & E984-24x/251/255	24 Vdc -15% +20% maximum steady state input current 1 A @ 24 Vdc
	E984-258/285	24 Vdc -30% +25% maximum steady state input current 1.0A @24 Vdc
	E984-265/275	24 Vdc -20% +25% maximum steady state input current 1.1A @24 Vdc
I/O Bus Power	A984 & E984-24x/251/255	5 Vdc @ 2.5 A
	E984-265/275	5 Vdc @ 3.0 A
	E984-258/285	5 Vdc @ 2.5 A
PCMCIA (E984-275/285)	Current Rating	110 ma @ 5V for -40 ... +855C for AS-FLSH-004C
	Compliance Standard	PCMCIA standard 2.1, type II socket type supported

The following table is table 3 of the technical specifications.

Logic Solve Time	0984/A984 PICs	4.25 ms ... 6 ms/K nodes standard ladder logic (not including end-of-scan diagnostics, I/O processing, or Modbus command handling)
	E984-24x/25x	2.13 ms ... 3 ms/K nodes standard ladder logic (not including end-of-scan diagnostics, I/O processing, or Modbus command handling)
	E984-258/265/275/285	0.2ms/k minimum, average for 1K (binary logic) 0.6ms/k maximum average for 1K (binary logic)
Throughput	0984/A984 PLCs	8 ms ... 11 ms for 64 I/O points and 1K of logic
	E984-24x/25x PLCs Only	4 ms ... 5.5 ms for 64 I/O points and 1K of logic
	E984-258/265/275/285 PLCs Only	6.7 ms average for 6.1K logic 6.2ms average for 4.2K logic 6.1 ms average for 2.5K logic 6.0 ms average for 1.6K logic
Timers (A984, E984-241/25 1/255)	Watch Dog Timer	250 ms, with nominal +10%, selectable time-out
	Time of Day Clock	Variation @ 255 C = < + 30 seconds/month Max. Variation @ 605 C = + 4 minutes/month
Timers (E984-258/265/275/285)	Watch Dog Timer	250 ms (S/W adjustable)
	Time of Day Clock	+ 8.0 seconds/day @ 0 ... 605 C
CPU Diagnostic Procedures	Schedule	Continuous, commencing at power up
	Tests	Available memory for both RAM and ROM, Internal processor resources; Communication with peripheral and/or networked devices; I/O bus during I/O activity
	Normal CPU failure response	Orderly termination of the process and logging of the error condition
	Error code accessibility	From programming panel or DAP, except for catastrophic CPU failure
	Catastrophic failure response	READY LED goes OFF and system fails to respond
	Executive failures (E984's)	If memory checksum fails the RUN LED will blink 3 times for.5 seconds followed by a rest period of 2.5 seconds then the pattern repeats. The controller has detected a STOP ERROR CODE and may require either restarting, reloading of the user logic, or reloading of the executive firmware.

Table 4 of the technical specifications describes physical and agency specifications.

Weight	PC-A984-145	540 g (1.19 lb)
	PC-A984-130	455 g (1.00 lb)
	PC-A984-120	455 g (1.00 lb)
	PC-A984-131	540 g (1.19 lb)
	PC-A984-141	540 g (1.19 lb)
	PC-E984-241	540 g (1.19 lb)
	PC-E984-245	540 g (1.19 lb)
	PC-E984-251	540 g (1.19 lb)
	PC-E984-255	540 g (1.19 lb)
	PC-E984-258	550 g (1.21 lb)
	PC-E984-265	540 g (1.25 lb)
	PC-E984-275	580 g (1.27 lb)
	PC-E984-285	580 g (1.27 lb)
	AS-HTDA-200	330 g (0.73 lb), with cover
	AS-HTDA-201	330 g (0.73 lb), with cover
	AS-HTDA-202	150 g (0.33 lb), with cover
Agency Approvals	A984-120/131/141	VDE 0160; UL 508; CSA 22.2 No.142 and FM Class I, Div 2 Standards
	A984-145, E984-241/251/255	UL 508; CSA 22.2 No.142, FM Class I, Div 2 and Europeans Directive on EMC 89/336/EEC Standards
	E984-258/265/275/285	UL 508; CSA 22.2 No.142, European Directive on EMC 89/336/EEC, and Low Voltage Directive 79/23/EEC Standards. FM Class I, Div 2 is pending.
	E984-258C/265 C/275C/285C	UL 508; CSA 22.2 No.142, and European Directive on EMC 89/336/EEC, and Low Voltage Directive 79/23/EEC Standards. FM Class I, Div 2 is pending. In addition, E984-258C meets EN 50 155 Railway standard.

Note: E984-258/265/275/285 models are available with conformal coating. The conformal coating models are E984-258C, E984-265C, E984-275C, and E984-285C.

Note: E984-258C meets Railway standard EN 50 155 because it has yellow LEDs, extended operating temperature, conformal coating, and can be operated with no battery in addition to other requirements.

Table 5 describes specifications related to programming the Compact PLCs.

Programming	Language	Standard 984 ladder logic instruction set with optional loadables (Custom Loadables, DX Loadables Drum Sequencer)	
	Panel Software	SW-MSxD-9SA	Full-feature Modsoft
		372SPU44001	Concept
		371SPU921000	Modsoft Lite
		SW-MSLA-W9F	Modicon State Language*
		371SPU68001	ProWORX
	Loadable Support Software	SW-AP98-GDA	Custom Loadable Kit
		SW-AP98-SDA	DRUM/ ICMP Function Blocks
		SW-SASI-001	Drum Sequencer Interface
		SW-AP9D-EDA	Event Alarm Recording System (EARS) Loadable
		SW-EUCA-D8L	Engineering Unit Conversion and Alarming (EUCA) Loadable
		SW-HLTH-D8L	984 Health Status (HLTH) Loadable
		309 ULD 455 00	Gas Load able E984-258C/ 265/ 275/285 Only
		309 COM 455 00	XMIT Load able E984-258C/ 265/ 275/285 Only
	SW-IODR-001	Required driver for some I/O modules (See the NOTE below)	
* Only applies to A984-130/145, E984-241/245, and E984-251/255 controllers.			
NOTE: PCFL (Process Control Function Library) panel software is not supported.			

Note: Some A120 I/O modules (DEP 211/214/215/217, DAP217/211, ADU211/ 214/216, DAU204, VIC2xx, and MOT20x) require a loadable (SW-IODR-001) for proper operation when using certain PLCs (A984-1xx, E984-24x/251/255) with Modsoft. In contrast, these separate loadables are not needed when using other PLCs (E984-258/265/275/285). Refer to the *A120 Series I/O Modules User Guide* (890 USE 109 00 formerly GM-A984-IOS).

Environmental System Specifications

All Compact 984 PLCs and all power supplies are designed to the following environmental standards.

The environmental system specifications are provided in the following table.

Operating Conditions	Temperature	0 ... 60C (32 ... 140F) -40 ... +705C E984-258/285 Only	
	Relative Humidity	0 ... 93% noncondensing @ 60C	
	Chemical Interactions	Enclosures and bezels are made with Lexan, a polycarbon that can be damaged by strong alkaline solutions.	
	Altitude	15,000 ft (4500 m)	
	Vibration	10 ... 57 Hz, 0.075 mmDA	
	Free Fall	3 ft (1 m)	
Storage Conditions	Temperature	-40 ... +85C (-40 ... +185F)	
	Relative Humidity	0 ... 93% noncondensing @ 60C	
	Shock	30 g for 11 ms, 3 shocks/axis and direction	
Electromagnetic Susceptibility	Radiated	27 ... 1000 MHz, 10 V/m	
	Surge Withstand	Transients	2 kV on power sup ply and I/O
		Ringwave	2.5 kV on power sup ply and I/O
	Fast Transients	+/- 2 kV for power supply, +/- 1 kV for I/O	
	Electro static Dis charge	+/- 8 kV Air, ten discharges +/- 4 kV Contact, ten discharges	
Power Supply Requirements	P120-000	230Vac, See Appendix D	
	P120-125	125Vdc, See Appendix D	
	P120-250	240 Vac, See Appendix D	
	PRTU-252	240Vac, See Appendix D	
	PRTU-258	240 Vac, See Appendix D	

Note: The E984-258/258C/285/285C PLCs and the related extended temperature I/O modules (ADU254/254C, ADU256/256C, DAP258/258C, DAP252/252C, DAP250/250C, DAP253, DAU252/252C, DEP254/254C, DEP256/256C, DEP257/257C, and FRQ254) can operate at ambient temperatures as low as -40 degrees centigrade under the condition that the system is housed in an enclosure that retains some of the heat dissipated by the system components. A typical system tested required 14 watts heat dissipation to maintain the internal enclosure temperature sufficient for proper operation. In no case can the cold start temperature be lower than -25 degrees centigrade.
