PACSystems™ RXi2-UP Industrial PC

Reliable, Ruggedized, High-Performance Computing

Introduction

PACSystems RXi2 IPCs offer a range of processor choices, increased and faster storage, improved graphics, and enhanced security features.

The PACSystems RXi2-UP IPC delivers rugged, high- performance computing capabilities to run HMI, historian, and analytics applications right at the machine, to enable improved real-time control of operations and better integration into plant-wide systems.

Combining outstanding computing capabilities with the added expandability of 1, 2 or 4 PCI Express slots and CFast storage, the PACSystems RXi2-UP is ideal for a range of demanding industrial applications.

High-Performance Computing

The PACSystems RXi2-UP IPC has high-performance Intel Xeon processors, up to 32GB of ECC RAM, 5 Gigabit Ethernet interfaces, and industrial grade SSD disk storage to complete the high-performance design.

It provides additional application flexibility with both, mini PCI Express and low-profile PCI Express slots. This expandability combined with advanced CPUs delivers high-performance, computing.

PACSystems RXi2-UP IPC incorporates patented thermal monitoring technology with sophisticated passive cooling techniques to provide the highest performance, fanless industrial edge computing platform. So, it can operate at peak computing performance in extended temperature ranges right at the machine, without having to throttle the CPU.

Pre-Loaded Edge Analytics and SCADA

Do more at the edge with the PACSystems RXi2-UP optionally pre-loaded with Emerson's Movicon.NExT HMI/SCADA software. This industrial PC delivers a powerful and tightly integrated solution with reliable, industrial computing and innovative, scalable and flexible automation software. Based on OPC UA, Movicon.NExT is the first integrated automation software platform for connectivity, IIoT, machine HMI, HMI/SCADA and plant analytics.

Movicon.NExT enables connectivity to many native and integrated communication protocols. It provides enhanced visualization tools, including WPF, XAML and 3D graphics, and also enables data recording independent of data format used. With Movicon.NExT, users also get integrated scripting, an alarm management system, and analytics capable of acquiring production data in real time. These analytics provide KPI and OEE performance data, calculate machine downtime and can be used in tracking and scheduling production.

Greater Uptime

All aspects of the PACSystems RXi2-UP IPC have been engineered for reliability in harsh industrial environments, from the use of all industrial grade components to its fanless design. To help keep data and operations secure, the PACSystems RXi2-UP utilizes Trusted Platform Module (TPM) and Microsoft Secure Boot technology. Security coupled with PACSystems RXi2-UP's strong shock and vibration resistance and available RAID storage options keeps your data protected and maximizes uptime.

Enhanced Productivity & Lower Total Cost of Ownership (TCO)

The PACSystems RXi2-UP IPC combines high performance with reliability, enhancing productivity and reducing total cost of ownership.

The PACSystems RXi2-UP IPC delivers low TCO through features such as compact size, reduced maintenance, low power consumption, and ease of future performance upgrades enabled by our innovative rugged COM Express CPU architecture.

Feature	Benefit
7th Generation Intel® Xeon® CPUs	Delivers high-performance computing for applications that load, manipulate and store large amounts of data, or handle multiple communication ports in real-time.
Fanless operation	A robust, reliable solution with no moving parts and minimized dust contamination.
5 Gigabit ethernet ports (Four with Time SYNC IEEE1588 and 802.1AS)	Network implementation flexibility. Multiple high-speed Ethernet links for communication-centric applications with support for deterministic transfer of data/commands.
0, 1, 2 or 4 PCIe expansion slots	Add new functionality on demand to support specific application needs.

Specifications

Processor	
7th Generation Intel® Xeon®	Intel® XEON® Processor E3-1505M v6, 35/45W 4c8t 3.0GHz (-4.0GHz) 8MB
	Intel® XEON Processor E3-1505L v6, 25W 4c8t 2.2GHz (-3.0GHz) 8MB
	Intel® XEON® Processor E3-1501M v6, 45W 4c4t 2.9GHz (-3.6GHz) 6MB
Memory	
	Up to 32GB DDR4-2400
	Soldered, with ECC
Storage Interfaces	
	Primary storage device – M.2 SATA Gen3 (User-installed M.2 NVMe SSD supported)
	Secondary storage option – Twin 2.5" SATA drive bays, hot swap and RAID (0 or 1 configuration) enabled on specific SKUs.
	CFast slot, user accessible, supports boot, hot plug
Ethernet	
	Four 1-gigabit Ethernet channels – RJ-45 standard
	One 1-gigabit Ethernet channel w/ remote management capability, Intel's AMT – RJ45

[1] Additional features may be added by customization, please contact your regional sales representative to inquire.

[2] Operating temperature is dependent on the CPU and SSD choice, application software, orientation of the heat sink fins at free convection.
  For detailed recommendations please refer to Hardware Reference Manual or contact support team.

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Wireless Communication	
	User-installed and certified LTE modem capability using mini-PCIe with UIM card holder
	User-installed Wifi/Bluetooth radio capability using M.2 or mini-PCIe or PCIe expansion slot (FCC certified module required)

Graphics Interface	
	Twin DisplayPort++ 1.2 for a total of 3 independent displays for up to 4K resolution

USB Interface	
	Four USB 3.0 external
	Two USB 2.0 internal

Serial Communications	
	2 to 4 channels
	Two RS232, two RS422/485 depending on SKU

Expansion	
	Mini-PCIE card site for user-installed/certified NvSRAM, WiFi, Bluetooth, LTE modem card or other M.2 communications slot for user-installed WiFi and Bluetooth
	PCI Express expansion slots: – Zero – One Gen3 x4 – Two Gen2 x4 – Four: 1 slot Gen2 x4 and 3 slots Gen2 x1

LED	
	LED indictors: Power, TPM, Temperature, SATA
	Ethernet Link/Activity
	One User Defined LED

Others	
	Timers: Legacy PC-AT, HPET
	Twin Watchdog Timers (OS, application)
	Holistic, system-level, thermal monitoring
	RTC with Lithium coin cell battery

Power	
	Input: 24V DC (±25%) with surge protection
	Maximum current: 3.5A

Environmental			
All values under typical conditions without added expansion slot cards. Extended temperature variants are available upon request. The maximum extended temperature ranges mentioned in the table below are achievable with a specific choice of CPU and storage, and without extension cards installed in the system. *For detailed information please read the manual.*	Range	Operating[2]	Storage
	Standard	0°C up to +70°C	-40°C up to +85°C
	Extended	-40°C up to +70°C[2]	-40°C up to +85°C
	Humidity	5-95% @ +40°C	5-95% @ +40°C
	Altitude	6,600 ft. (2.0 km)	40000 ft. (12 km)

Firmware	
	UEFI AMI Aptio® 5

[1] At 100% CPU load temperature range requires vertical orientation of the heat sink fins at free convection.

[2] Operating temperature is dependent on the CPU and SSD choice, application software, orientation of the heat sink fins at free convection. For detailed recommendations please contact support team.

[3] Extended Temperature Range available upon request.

[4] RAID when using HDD (v.s. SSD) Drives brings Operating Temperature limits down to a maximum of 40°C depending on chosen HDD and HDD workload.
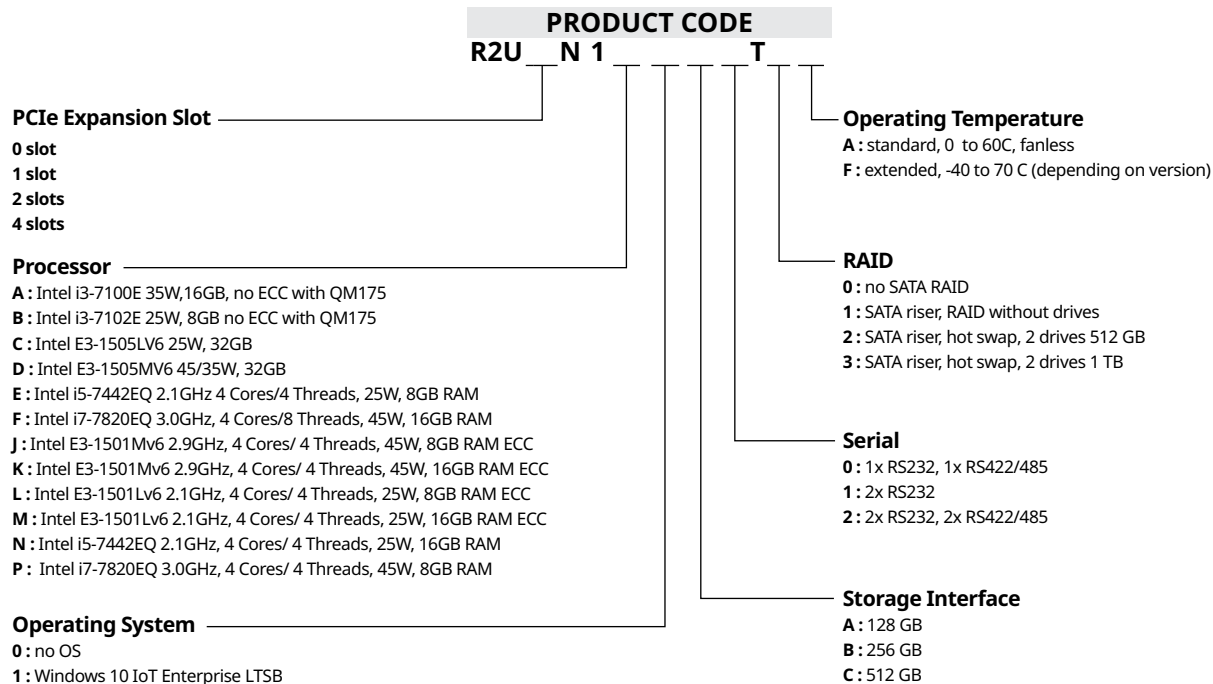
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Mechanical	
	Rugged aluminum and stainless-steel housing for optimal thermal management and durability
	IP20 – Protection against particles
	Flat and Slim (Book) mounting orientation options
Software Support	
	Microsoft® Windows® 10 IoT 2019 LTSC
	Linux® Kernel 4.9 (not pre-loaded)
	VxWorks® 7.0 (not pre-loaded)
	Movicon.NExT 4.1 and above (pre-loaded options available)
	Pro.Lean™ (pre-loaded options available)
Safety & EMC	
	IEC/UL62368
	CE, FCC
Dimensions (H x W x D)	
Dimensions	0-slot: 252 x 203 x 108.5 mm (9.92 x 8 x 4.24 in)
	1-slot: 252 x 203 x 135.5 mm (9.92 x 8 x 5.33 in)
	2-slot: 252 x 203 x 155.5 mm (9.92 x 8 x 6.13 in)
	4-slot: 252 x 203 x 195.5 mm (9.92 x 8 x 7.70 in)
Weight	0-slot: 3.9 kg (8.60 lbs)
	1-slot: 4.2 kg (9.26 lbs)
	2-slot: 4.4 kg (9.70 lbs)
	4-slot: 4.7 kg (10.34 lbs)

[1] Additional features may be added by customization, please contact your regional sales representative to inquire.
[2] Operating temperature is dependent on the CPU and SSD choice, application software, orientation of the heat sink fins at free convection.
For detailed recommendations please refer to Hardware Reference Manual or contact support team.

Understanding Part Number Nomenclature

PRODUCT CODE

R2U ___ N 1 ___ ___ ___ T ___ ___

PCIe Expansion Slot

0 slot
1 slot
2 slots
4 slots

Processor

A : Intel i3-7100E 35W,16GB, no ECC with QM175
B : Intel i3-7102E 25W, 8GB no ECC with QM175
C : Intel E3-1505LV6 25W, 32GB
D : Intel E3-1505MV6 45/35W, 32GB
E : Intel i5-7442EQ 2.1GHz 4 Cores/4 Threads, 25W, 8GB RAM
F : Intel i7-7820EQ 3.0GHz, 4 Cores/8 Threads, 45W, 16GB RAM
J : Intel E3-1501Mv6 2.9GHz, 4 Cores/ 4 Threads, 45W, 8GB RAM ECC
K : Intel E3-1501Mv6 2.9GHz, 4 Cores/ 4 Threads, 45W, 16GB RAM ECC
L : Intel E3-1501Lv6 2.1GHz, 4 Cores/ 4 Threads, 25W, 8GB RAM ECC
M : Intel E3-1501Lv6 2.1GHz, 4 Cores/ 4 Threads, 25W, 16GB RAM ECC
N : Intel i5-7442EQ 2.1GHz, 4 Cores/ 4 Threads, 25W, 16GB RAM
P : Intel i7-7820EQ 3.0GHz, 4 Cores/ 4 Threads, 45W, 8GB RAM

Operating System

0 : no OS
1 : Windows 10 IoT Enterprise LTSB

Operating Temperature

A : standard, 0 to 60C, fanless
F : extended, -40 to 70 C (depending on version)

RAID

0 : no SATA RAID
1 : SATA riser, RAID without drives
2 : SATA riser, hot swap, 2 drives 512 GB
3 : SATA riser, hot swap, 2 drives 1 TB

Serial

0 : 1x RS232, 1x RS422/485
1 : 2x RS232
2 : 2x RS232, 2x RS422/485

Storage Interface

A : 128 GB
B : 256 GB
C : 512 GB

Example: R2U 2 N 1 D 0 B 2 T 0 F

Ordering Information

Part Number	Description	Operating Temperature
R2U0N1B0A1T0A	RXi2-UP IPC, Dual Core i3-7102E, 2.1GHz, 0 Slot, 128GB SSD, 8GB DDR4, 2xRS232, 5xRJ45, No OS	0°C up to +60°C
R2U0N1B1A1T0A	RXi2-UP IPC, Dual Core i3-7102E, 2.1GHz, 0 Slot, 128GB SSD, 8GB DDR4, 2xRS232, 5xRJ45, Windows 10	0°C up to +60°C
R2U0N1E0A1T0A	RXi2-UP IPC, Quad Core i5-7442EQ, 2.1GHz, 0 Slot, 128GB SSD, 8GB DDR4, 2xRS232, 5xRJ45, No OS	0°C up to +60°C
R2U0N1E1A1T0A	RXi2-UP IPC, Quad Core i5-7442EQ, 2.1GHz, 0 Slot, 128GB SSD, 8GB DDR4, 2xRS232, 5xRJ45, Windows 10	0°C up to +60°C
R2U0N1J0B1T0A	RXi2-UP IPC, Quad Core XEON E3-1501M, 2.9GHz, 0 Slot, 256GB SSD, 8GB DDR4 ECC, 2xRS232, 5xRJ45, No OS,	0°C up to +60°C
R2U0N1J1B1T0A	RXi2-UP IPC, Quad Core XEON E3-1501M, 2.9GHz, 0 Slot, 256GB SSD, 8GB DDR4 ECC, 2xRS232, 5xRJ45, Windows 10	0°C up to +60°C
R2U1N1B0A1T0A	RXi2-UP IPC, Dual Core i3-7102E, 2.1GHz, 1 Slot, 128GB SSD, 8GB DDR4, 2xRS232, 5xRJ45, No OS	0°C up to +60°C
R2U1N1B1A1T0A	RXi2-UP IPC, Dual Core i3-7102E, 2.1GHz, 1 Slot, 128GB SSD, 8GB DDR4, 2xRS232, 5xRJ45, Windows 10	0°C up to +60°C
R2U1N1E0A1T0A	RXi2-UP IPC, Quad Core i5-7442EQ, 2.1GHz, 1 Slot, 128GB SSD, 8GB DDR4, 2xRS232, 5xRJ45, No OS	0°C up to +60°C
R2U1N1E1A1T0A	RXi2-UP IPC, Quad Core i5-7442EQ, 2.1GHz, 1 Slot, 128GB SSD, 8GB DDR4, 2xRS232, 5xRJ45, Windows 10	0°C up to +60°C
R2U1N1J1B1T0A	RXi2-UP IPC, Quad Core XEON E3-1501M, 2.9GHz, 1 Slot, 256GB SSD, 8GB DDR4 ECC, 2xRS232, 5xRJ45, Windows 10	0°C up to +60°C

Ordering Information

Part Number	Description	Operating Temperature
R2U1N1F1A1T0A	RXi2-UP IPC, Quad Core i7-7820EQ, 3.0GHz, 1 Slot, 128GB SSD, 16GB DDR4, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10	0°C up to +60°C
R2U1N1C0A1T0A	RXi2-UP IPC, Quad Core XEON E3-1505Lv6, 2.2GHz, 1 Slot, 128GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, No OS	0°C up to +60°C
R2U1N1C1A1T0A	RXi2-UP IPC, Quad Core XEON E3-1505Lv6, 2.2GHz, 1 Slot, 128GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10	0°C up to +60°C
R2U2N1J1B2T0A	RXi2-UP IPC, Quad Core XEON E3-1501M, 2.9GHz, 2 Slot, 256GB SSD, 8GB DDR4 ECC, 2xRS232, 5xRJ45, Windows 10	0°C up to +60°C
R2U2N1F1A2T0A	RXi2-UP IPC, Quad Core i7-7820EQ, 3.0GHz, 2 Slot, 128GB SSD, 16GB DDR4, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10	0°C up to +60°C
R2U2N1D0A2T0A	RXi2-UP IPC, Quad Core XEON E3-1505Mv6, 3.0GHz, 2 Slot, 128GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, No OS	0°C up to +60°C
R2U2N1D1A2T0A	RXi2-UP IPC, Quad Core XEON E3-1505Mv6, 3.0GHz, 2 Slot, 128GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, Windows	0°C up to +60°C
R2U2N1C0B2T0F	RXi2-UP IPC, Quad Core XEON E3-1505Lv6, 2.2GHz, 2 Slot, 256GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, No OS	-40°C up to +70°C
R2U2N1C1B2T0F	RXi2-UP IPC, Quad Core XEON E3-1505Lv6, 2.2GHz, 2 Slot, 256GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10	-40°C up to +70°C
R2U4N1F0A2T0A	RXi2-UP IPC, Quad Core i7-7820EQ, 3.0GHz, 4 Slot, 128GB SSD, 16GB DDR4, 2xRS232, 2xRS422/485, 5xRJ45, No OS	0°C up to +60°C
R2U4N1F1A2T0A	RXi2-UP IPC, Quad Core i7-7820EQ, 3.0GHz, 4 Slot, 128GB SSD, 16GB DDR4, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10	0°C up to +60°C
R2U4N1C0B2T0A	RXi2-UP IPC, Quad Core XEON E3-1505Lv6, 2.2GHz, 4 Slot, 256GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, No OS	0°C up to +60°C
R2U4N1C1B2T0A	RXi2-UP IPC, Quad Core XEON E3-1505Lv6, 2.2GHz, 4 Slot, 256GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10	0°C up to +60°C
R2U4N1D0C2T0A	RXi2-UP IPC, Quad Core XEON E3-1505Mv6, 3.0GHz, 4 Slot, 512GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, No OS	0°C up to +60°C
R2U4N1D1C2T0A	RXi2-UP IPC, Quad Core XEON E3-1505Mv6, 3.0GHz, 4 Slot, 512GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10	0°C up to +60°C
R2U2N1C1A1T1A	RXi2-UP IPC, Quad Core XEON E3-1505Lv6, 2.2GHz, 2 Slot, 128GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10, RAID	0°C up to +60°C
R2U4N1D1A2T1A	RXi2-UP IPC, Quad Core XEON E3-1505Mv6, 3.0GHz, 4 Slot, 128GB SSD, 32GB DDR4 ECC, 2xRS232, 2xRS422/485, 5xRJ45, Windows 10, RAID	0°C up to +60°C

Pre-Loaded Software Devices

Part Number	Description	Operating Temperature
R2U2N1D3B1T1F	RXi2-UP Industrial PC: Intel® E3-1505Mv6 CPU, 32GB RAM, 256GB SSD, RAID, 2 PCIe Slots, No Drives, -40 to 70C, Windows, Movicon.Next, Alarm Dispatcher, Web Client, PRO.LEAN, 20000 Tags	-40°C up to +70°C