

## Powering Up Smart Grid Transformations

High-performance IEC 61850 Substation  
Computers with PRP/HSR Connectivity



Serial

PRP/HSR

IRIG-B

Ethernet

Fiber





## High-performance Substation Computers Built for Smart Grids

Both brownfield and greenfield substation projects require high-speed, high-volume communications that can withstand high EMI/EMC interference. The DA Series is an IEC 61850-3 substation computer that features a powerful Intel® processor and multiple expansion interfaces to enable robust connectivity for smart grids.



### Industry Certified

Certified for power and railway applications such as IEC 61850-3, IEEE 1613, IEC 60255, and EN 50121-4



### RAID Data Protection

Four SSD slots to support Intel® RST RAID 0/1/5/10 for data protection



### Versatile Connectivity for Substations

Multiple standard PCIe expansion interfaces for PRP/HSR, IRIG-B, serial, and Gigabit Ethernet fiber SFP connectivity



### Proactive Monitoring

Remote system status monitoring and alert messages via relays, SNMP traps, and MMS protocol



### Wide Operating Temperature Range

Fanless design with high-performance Intel® Xeon® or Core™ i7/i5/i3 processor and -40 to 70°C operating temperature



### Enhanced Hardware Security

Secure boot with Intel® Boot Guard and TPM 2.0

# Choose a Substation Computer

Designed for power applications, the DA Series computers have passed rigorous EMI/EMC tests and strictly adhere to rigorous industrial standards to ensure long-lasting, reliable operation in power substation and rail wayside traction power systems.



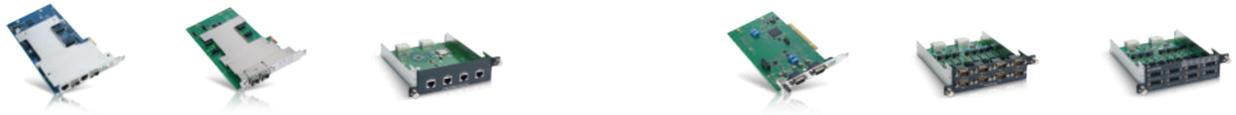
Series	DA-681C	DA-682C	DA-720	DA-820C
CPU	<ul style="list-style-type: none"> <li>Intel® Core™ i3-7100U</li> <li>Intel® Celeron® 3965U</li> </ul>	<ul style="list-style-type: none"> <li>Intel® Core™ i7-7600U</li> <li>Intel® Core™ i5-7300U</li> <li>Intel® Core™ i3-7100U</li> <li>Intel® Celeron® 3965U</li> </ul>	<ul style="list-style-type: none"> <li>Intel® Core™ i7-6600U</li> <li>Intel® Core™ i5-6300U</li> </ul>	<ul style="list-style-type: none"> <li>Intel® Xeon® E3-1505M v6</li> <li>Intel® Xeon® E3-1505L v6</li> <li>Intel® Core™ i7-7820EQ</li> <li>Intel® Core™ i5-7442EQ</li> <li>Intel® Core™ i3-7102E</li> </ul>
System Memory Slot	SODIMM DDR4 slots x 2 (max. 32 GB)	SODIMM DDR4 slots x 2 (max. 32 GB)	SODIMM DDR4 slots x 2 (max. 32 GB)	SODIMM DDR4 slots x 2 (max. 64 GB)
Supported OS	<ul style="list-style-type: none"> <li>Windows 10 IoT Enterprise 2019 LTSC 64-bit</li> <li>Linux Debian 9</li> </ul>	<ul style="list-style-type: none"> <li>Windows 10 IoT Enterprise 2019 LTSC 64-bit</li> <li>Linux Debian 9</li> </ul>	<ul style="list-style-type: none"> <li>Windows 10 IoT Enterprise 2019 LTSC 64-bit</li> <li>Linux Debian 8</li> </ul>	<ul style="list-style-type: none"> <li>Windows 10 Professional</li> <li>Windows 10 IoT Enterprise 2019 LTSC 64-bit</li> <li>Linux Debian 9</li> </ul>
Storage Slot	2.5-inch HDD/SSD slots x 1 mSATA x 1	2.5-inch HDD/SSD slots x 2 mSATA x 1	mSATA slot x 1	2.5-inch HDD/SSD slots x 4 mSATA x 1
Ethernet Ports	GbE (RJ45) x 6	GbE (RJ45) x 6	GbE (RJ45) x 14	GbE (RJ45) x 4
Serial Ports	RS-232/422/485 ports x 2, software-selectable (DB9 male) and RS-485 ports x 10 (terminal block)	RS-232/422/485 ports x 2, software-selectable (terminal block)	RS-232/422/485 ports x 2, software-selectable (terminal block)	RS-232/422/485 ports x 2, software-selectable (DB9 male)
USB 2.0	USB 2.0 x 3	USB 2.0 x 3	USB 2.0 x 2	USB 2.0 x 3
USB 3.0	USB 3.0 x 3	USB 3.0 x 3	USB 3.0 x 2	USB 3.0 x 3
Digital Input	DIs x 6	DIs x 6	–	DIs x 6
Digital Output	DOs x 2	DOs x 2	–	DOs x 2
Expansion Slots	–	Proprietary <sup>1</sup> PCIe slots x 2	Proprietary <sup>1</sup> PCIe slots x 3	PCIe x1 slots x 2, PCIe x4 slot x 1, PCIe x16 slot x 1, PCI slot x 1
TPM	–	–	–	TPM 2.0
Video Output	HDMI x 2	HDMI x 2	DVI-D x 1 VGA x 1	HDMI x 2 VGA x 1
Input Voltage	100 to 240 VDC, 100 to 240 VAC	100 to 240 VDC, 100 to 240 VAC	100 to 240 VDC, 100 to 240 VAC	100 to 240 VDC, 100 to 240 VAC
Dimensions (without ears)	440 x 316 x 44 mm (17.32 x 12.44 x 1.73 in)	440 x 282 x 88 mm (17.32 x 11.08 x 3.46 in)	440 x 301 x 90 mm (17.32 x 12.20 x 3.54 in)	440 x 281.4 x 132.8 mm (17.32 x 11.08 x 5.23 in)
Installation	19-inch rack mounting	19-inch rack mounting	19-inch rack mounting	19-inch rack mounting
Operating Temperature	-40 to 70°C (-40 to 158°F)	-40 to 70°C (-40 to 158°F)	-25 to 55°C (-13 to 131°F)	<ul style="list-style-type: none"> <li>Standard Models: -25 to 55°C (-13 to 131°F)</li> <li>Wide Temp. Models: -40 to 70°C (-40 to 158°F)</li> </ul>
Industrial Standards	IEC 61850-3, IEC 60255, IEEE 1613, EN50121-4	IEC 61850-3, IEC 60255, IEEE 1613, EN50121-4	IEC 61850-3, IEC 60255, IEEE 1613, EN50121-4	IEC 61850-3, IEC 60255, IEEE 1613, EN50121-4

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1. Nonstandard PCIe slot.



## Expansion Cards and Modules



Ethernet	DA-PRP-HSR-I210	DE-FX02-SFP-T	DN-LN04-RJ	Serial	DA-IRIG-B-S-02-T	DN-SP08-I-DB	DN-SP08-I-TB
	PRP/HSR Expansion Card	Ethernet Expansion Card	Ethernet Expansion Module		IRIG-B Expansion Card	Serial Expansion Module	Serial Expansion Module
Ethernet Ports	GbE (RJ45) x 2, GbE (SFP) x 2	100 Mbps (SFP) x 2	GbE (RJ45) x 4	Serial Ports	Single or Differential (DB9 male) x 2	RS-232/422/485-2w ports x 8, software-selectable (DB9 male)	RS-232/422/485-2w ports x 8, software-selectable (terminal block)
Supported Protocols	PRP, HSR	–	–	Baud Rate	–	300 bps to 115.2 kbps	300 bps to 115.2 kbps
Magnetic Isolation Protection	1.5 kV	1.5 kV	1.5 kV	ESD	8 kV	8 kV	8 kV
				Isolation	2 kV	2 kV	2 kV
Bus	Standard PCIe x1	Standard PCIe x1	Proprietary PCIe x1	Accuracy	±1 µs (Time Synchronization), ±500 ms @ 24 hr (Free Running)	–	–
Operating Temperature	-25 to 55°C	-40 to 70°C	-40 to 70°C	Bus	Standard PCI	Proprietary PCIe x1	Proprietary PCIe x1
Supported Models	DA-820C	DA-820C	DA-820C, DA-682C	Operating Temperature	-40 to 70°C	-40 to 70°C	-40 to 70°C
				Supported Models	DA-820C	DA-820C, DA-682C	DA-820C, DA-682C

## Your Trusted Partner in Automation

Moxa is a leading provider of edge connectivity, industrial computing, and network infrastructure solutions for enabling connectivity for the Industrial Internet of Things (IIoT). With over 30 years of industry experience, Moxa has connected more than 65 million devices worldwide and has a distribution and service network that reaches customers in more than 80 countries. Moxa delivers lasting business value by empowering industries with reliable networks and sincere service. Information about Moxa's solutions is available at [www.moxa.com](http://www.moxa.com).