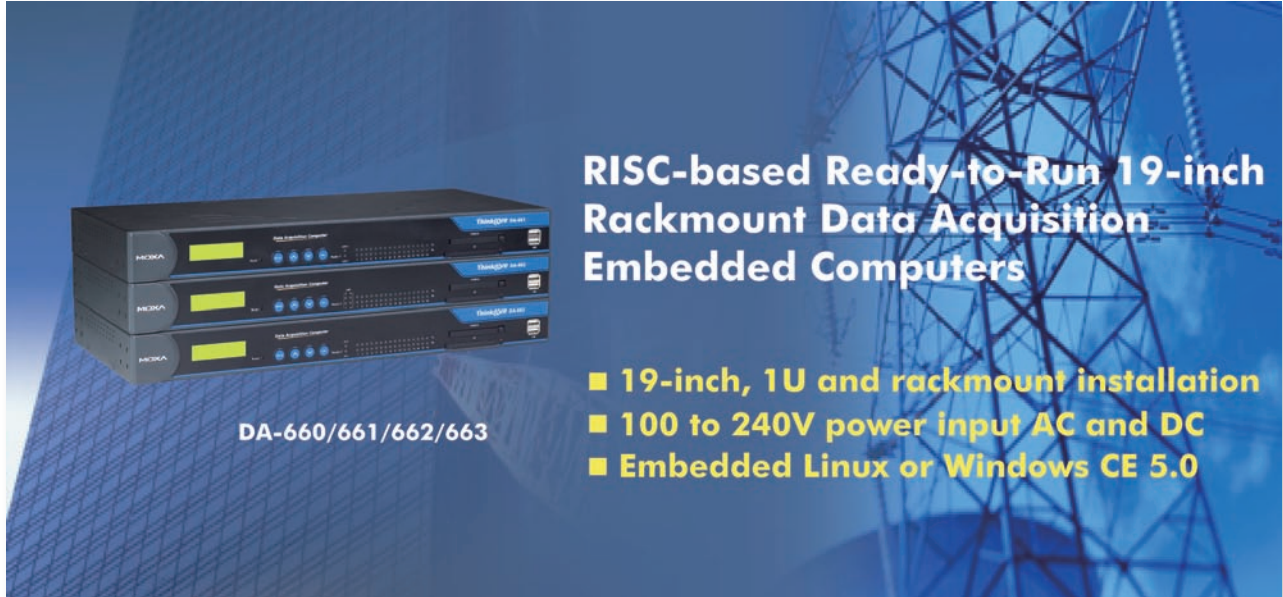


# ThinkCore DA-660 Series

RISC-based 19-inch Rackmount Data Acquisition Embedded Computers



**RISC-based Ready-to-Run 19-inch Rackmount Data Acquisition Embedded Computers**

- 19-inch, 1U and rackmount installation
- 100 to 240V power input AC and DC
- Embedded Linux or Windows CE 5.0

DA-660/661/662/663

## DA-660 Series Overview

The four ThinkCore DA-660 Series models (DA-660/661/662/663) are RISC-based, ready-to-run embedded computers designed for industrial data applications. The computers feature 8 or 16 RS-232/422/485 serial ports, multiple Ethernet or fiber ports, and are based on the Intel XScale IXP-422/425 communication processors. These great features are packed into a standard 1U, 19-inch wide rack-mounted rugged enclosure. The robust, rack-mountable mechanism design provides the hardened protection needed for industrial environment applications, and lets users easily install the embedded computers on a standard 19-inch rack. DA-660 embedded computers are not only suitable for the IT machine control room, but also for the critical assets found in the control and automation systems on industrial plant floors and in electric power utility substations. In order to make them suitable for many different industrial applications, the DA-660 embedded computers can accept a range of power inputs (from 100 to 240V, either AC or DC). Because of the no hard disk, fan-less, energy efficient design, DA-660 computers generate a minimal

amount of heat, and can operate reliably 365/7/24 in heavy duty, harsh industrial environments to deliver strongly reliable, powerful computing. You can expect the kind of high performance required for multifunctional controller usage. In addition to the 8 or 16 serial ports, the DA-660 computers also come with PCMCIA, CompactFlash, and USB sockets for storage expansion, providing added convenience for customers who wish to expand storage capacity for data logging and recording.

You may choose from the pre-installed, ready-to-run, open standard Linux OS, or the more common WinCE OS for your software program development. The built-in SDK provides a convenient tool for developing control programs, and follows the common programming procedures used on a standard PC. The software you develop for your own applications can be stored in the onboard Flash memory. The DA-660 computers make it easy to build control systems with distributed architecture on embedded technologies such as for SCADA systems, plant floor automation, and power electricity monitoring.

## Top Performance

The Intel XScale IXP-422 or IXP-425 processor provides high performance for data collection and data processing.

## Ready-to-Run

The ready-to-run embedded Linux or Windows CE 5.0 operating system supports Windows Tool Chain, serial to Ethernet protocols, web server, database, middlewares, and drivers to reduce application program development effort. Software developers can easily port and upload their software to ThinkCore DA-660 Series embedded computers.

## Robust File System

The Linux's JFFS2 and Windows CE's TFAT file systems can log all file access data with time stamp to prevent the file system from crashing when the system is writing data to the file system and the power shuts down.

100-240V AC/DC Power Inputs

The ThinkCore DA-660 Series supports 100-240V AC/DC power inputs; this is particularly beneficial since they can be implemented in various applications, such as power substation automation and power monitoring.

19-inch, 1U and Rackmount Design

The standard 19-inch, 1U and rackmount design makes it easy to install the DA-660 computers, and provides the hardened protection needed for industrial environments.

Powerful Serial Communication

DA-660 computers come with 8 or 16 software-selectable RS-232/422/485 serial ports that support a communication speed of 50 to 921.6 Kbps. As an added benefit, all DA-660 Series serial ports support Any Baudrate.

Powerful Network Communication

DA-660 computers come with 2 or 4 Ethernet ports, or 2 multi-mode fiber ports. Multiple network interfaces not only provide more options for device connection, but also provide a convenient way to build system redundant architecture. By adding the appropriate interface card, the PCMCIA slot can be used to support fixed LAN, WLAN, and even cellular communication connections.

Various Storage Options

DA-660 Series computers come with CompactFlash and USB ports, making the DA-660 Series convenient as a control unit for storage expansion and data logging.

LCM Display and Keypad

The LCM display and keypad on the DA-660's top panel is useful for on-site configuration and troubleshooting.

Reliability

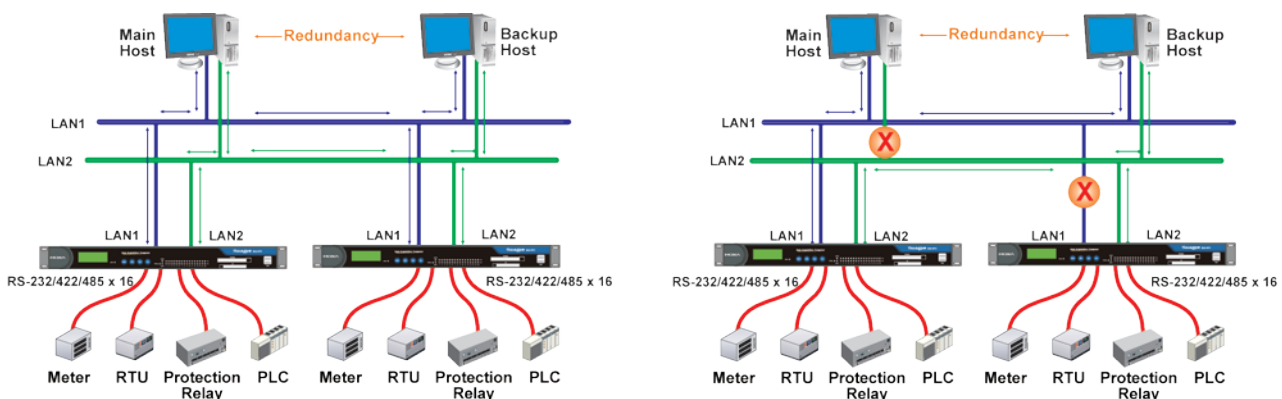
The fanless, low power consumption, no moving part design increases reliability, allowing the DA-660 to operate reliably 24 hours a day, 365 days a year.

5-year Warranty

The DA-660 comes with Moxa's solid 5-year warranty, which is 2.5 times longer than the traditional 2-year warranty for industrial PCs.

Typical Application

DA-660's redundant networking can be used for electric utility substations and factory floor automation.



## ThinkCore DA-660 Series Product Comparison Chart

Model Name	DA-660-8	DA-660-16	DA-661-16	DA-662-16	DA-663-16
CPU	Intel XScale IXP-422 266 MHz	Intel XScale IXP-422 266 MHz	Intel XScale IXP-425 533 MHz	Intel XScale IXP-425 533 MHz	Intel XScale IXP-425 533 MHz
RAM	128 MB	128 MB	128 MB	128 MB	128 MB
Flash	32 MB	32 MB	32 MB	32 MB	32 MB
OS	Linux, WinCE 5.0	Linux, WinCE 5.0	Linux, WinCE 5.0	Linux, WinCE 5.0	Linux, WinCE 5.0
Network Interface	10/100 Mbps x 2 RJ45 Connector	10/100 Mbps x 2 RJ45 Connector	10/100 Mbps x 2 RJ45 Connector	10/100 Mbps x 4 RJ45 Connector	100Base Multi-Mode x 2 SC Connector
Serial Port	RS-232/422/485 x 8 RJ45 Connector	RS-232/422/485 x 16 RJ45 Connector	RS-232/422/485 x 16 RJ45 Connector	RS-232/422/485 x 16 RJ45 Connector	RS-232/422/485 x 16 RJ45 Connector
Serial Protection	15 KV ESD for all signals				
Data Bits	1, 1.5, 2				
Stop Bits	5, 6, 7, 8				
Parity	none, even, odd, space, mark				
Flow Control	RTS/CTS, XON/XOFF, RS-485 ADDC™				
Speed	50 bps to 921.6 Kbps				
Serial Console	RS-232 x 1 RJ45 Connector				
USB 2.0 Host	N/A	N/A	2	2	2
PCMCIA	N/A	N/A	Cardbus x 1*	Cardbus x 1*	Cardbus x 1*
Storage Expansion	N/A	N/A	CompactFlash x 1**	CompactFlash x 1**	CompactFlash x 1**
LCM	2 x 16 Text Mode				
Keypad	4	4	4	4	4
Real Time Clock	Yes	Yes	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes	Yes	Yes
Watchdog Timer	Yes	Yes	Yes	Yes	Yes
Reset Button	Reset x 1	Reset x 1	Reset x 1	Reset x 1	Reset x 1
Power Input	100 to 240V AC/DC	100 to 240V AC/DC	100 to 240V AC/DC	100 to 240V AC/DC	100 to 240V AC/DC
Power Consumption	15W	15W	20W	20W	20W
Dimensions (W x D x H)	480 x 198 x 45 mm (with rackmount ears) 440 x 198 x 45 mm (w/o rackmount ears)				
Weight	2.6 kg	2.6 kg	2.6 kg	2.6 kg	2.6 kg
Operating Temperature	-10 to 60°C (14 to 140°F) 5 to 95% RH				
Storage Temperature	-20 to 80°C (-4 to 176°F) 5 to 95% RH				
Regulatory Approvals	EMC: CE Class A, FCC Class A; Safety: UL, cUL, TÜV				
Warranty	5 years	5 years	5 years	5 years	5 years

\* PCMCIA is designed for 802.11b/g wireless LAN card expansion.

\*\* CompactFlash is designed for Flash memory card expansion.

# ThinkCore DA-660

**RISC-based 19-inch Rack-mounted Data Acquisition Embedded Computer with 8/16 Serial Ports, Dual Ethernet**



## Features

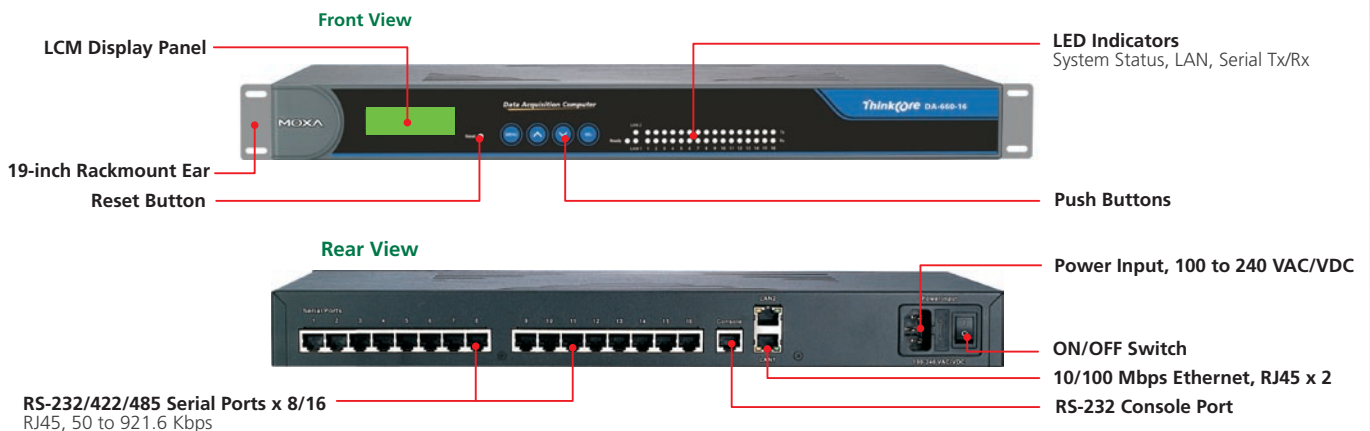
- > Intel XScale IXP-422 266 MHz processor
- > 128 MB RAM on-board, 32 MB flash disk
- > 8/16 RS-232/422/485 serial ports
- > Dual 10/100 Mbps Ethernet
- > Standard 19-inch rackmount installation, 1U height
- > Wide range of power input voltages from 100 to 240V, both AC and DC
- > LCM display and keypad for HMI
- > Ready-to-Run Linux and Window CE 5.0 communication platforms
- > Robust, fanless design



## Overview

ThinkCore DA-660 embedded computers come with 8/16 software-selectable RS-232/422/485 serial ports, making them suitable for a variety of industrial applications, and two 10/100 Mbps Ethernet ports are included for network redundancy. In addition, the DA-660 is designed with a standard 19-inch, 1U rackmount rugged enclosure, and is embedded with a 100-240V AC/DC power input. The combination of features gives users an ideal, robust, and reliable solution for ready-to-run applications such as data acquisition and power substations.

## DA-660 Appearance



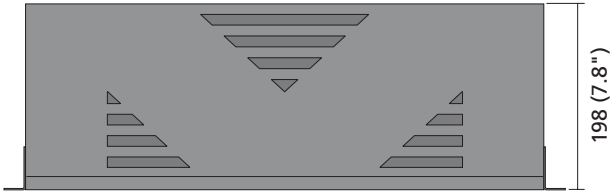
• Dimensions

Unit = mm (in)

**DA-660-8**



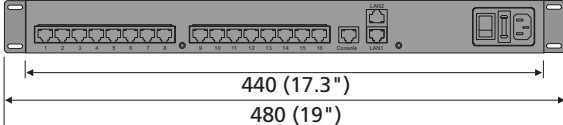
**DA-660-16**



**DA-660-8**

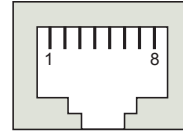


**DA-660-16**



• Pin Assignments

Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

• Hardware Specifications

**System**

- CPU:** IXP-422 266 MHz
- DRAM:** 128 MB onboard
- Flash:** 32 MB onboard
- LCM:** 2 x 16 Text Mode
- Keypad:** 4 membrane buttons
- Console Port:** RS-232 x 1, RJ45, support PPP
- Other:** RTC, buzzer, Watchdog Timer
- OS:** Built-in embedded Linux or Windows CE 5.0

**Network Communication**

- LAN:** 10/100 Mbps x 2, RJ45
- Protection:** Built-in 1.5 KV magnetic isolation protection

**Serial Communication**

- Serial Ports:** RS-232/422/485 x 16, software-selectable, RJ45, (8 for DA-660-8)
- Protection:** Built-in 15 KV ESD protection for all signals
- Data Bits:** 5, 6, 7, 8
- Stop Bits:** 1, 1.5, 2
- Parity:** None, Even, Odd, Space, Mark
- Flow Control:** RTS/CTS, XON/XOFF, RS-485 ADDC™
- Speed:** 50 bps to 921.6 Kbps, supports Any Baudrate

**LEDs**

- System:** Ready x 1
- LAN:** 10M/100M x 2

**Serial:** TxD x 16, RxD x 16 (8 for DA-660-8)

**Power Requirements**

- Power Input:** 100 to 240 VAC/VDC auto ranging (47 to 63 Hz for AC input)
- Power Consumption:** 12W

**Mechanical**

- Dimensions (WxDxH):**  
480 x 198 x 45 mm (19 x 7.8 x 1.77 in) (including rackmount ears)  
440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in) (without rackmount ears)
- Weight:** 2.6 kg

**Construction Material:** SECC sheet metal, 1 mm

**Mounting:** Standard 19-inch rackmount

**Environmental**

- Operating Temperature:** -10 to 60°C (14 to 140°F), 5 to 95% RH
- Storage Temperature:** -20 to 80°C (-4 to 176°F), 5 to 95% RH

**Regulatory Approvals**

- EMC:** FCC Part 15, CISPR 22 Class A  
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024

**Safety:** TÜV: IEC/EN60950

UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00

**Warranty:** 5 years



## Software Specifications

### Linux

**Kernel Version:** 2.4.18

**Boot Loader:** Redboot

**Protocol Stacks:** TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

**File System:** JFFS2 (on-board flash)

**System Utilities:** bash, busybox, tinylogin, telnet, ftp, scp

#### Supporting Services and Daemons:

telnetd: Telnet Server daemon  
ftpd: FTP server daemon  
sshd: Secure shell server  
Apache: Web server daemon, support PHP and XML  
MySQL: Database Server and Client  
OpenVPN: Virtual private network service manager  
iptables: Firewall service manager  
pppd: dial in/out over serial port daemon & PPPoE  
snmpd: snmpd agent daemon  
inetd: TCP server manager program

#### Application Development Environment:

MOXA Linux API Library  
Linux Tool Chain: Gcc, Glibc, GDB  
Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)  
UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

#### Device Drivers:

Watchdog Timer (WDT), UART, RTC, Buzzer, LCM, Keypad  
MOXA 2G NPort Real TTY Driver

### Windows CE 5.0

**Boot Loader:** Redboot

**System Utilities:** Windows command shell, telnet, ftp, web-based administration manager

**File Systems:** TFAT (on-board flash)

**Protocol Stacks:** TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

#### Supporting Services and Daemons:

Telnet Server: Allows remote administration through a standard telnet client  
FTP Server: Used for transferring files to and from remote computer systems over a network.  
Web Server (httpd): WinCE IIS, offering ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.  
Dial-up Networking Service: RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting

#### Application Development Environment:

MOXA WinCE 5.0 SDK  
C Libraries and Run-times  
Component Services (COM and DCOM)  
Microsoft Foundation Classes (MFC)  
Microsoft® .NET Compact Framework  
XML, including DOM, XQL, XPATH, XSLT, SAX2  
SOAP Toolkit  
Winsock 2.2

#### Device Drivers:

Watchdog Timer (WDT) API, UART, RTC, Buzzer, LCM, Keypad

## Ordering Information

### ThinkCore DA-660-16-LX

RISC-based 19-inch Rack-mounted Data Acquisition Computer with 16 Serial Ports, Dual Ethernet, Linux OS

### ThinkCore DA-660-16-CE

RISC-based 19-inch Rack-mounted Data Acquisition Computer with 16 Serial Ports, Dual Ethernet, WinCE 5.0

### ThinkCore DA-660-8-LX

RISC-based 19-inch Rack-mounted Data Acquisition Computer with 8 Serial Ports, Dual Ethernet, Linux OS

### ThinkCore DA-660-8-CE

RISC-based 19-inch Rack-mounted Data Acquisition Computer with 8 Serial Ports, Dual Ethernet, WinCE 5.0

## All items include

- 1 DA-660
- Quick Installation Guide
- 19-inch Rackmount Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Power Cord
- Product Warranty Statement



# ThinkCore DA-661

*RISC-based 19-inch Rackmount Data Acquisition Embedded Computers with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash and USB*



## Features

- > Intel XScale IXP-425 533 MHz processor
- > 128 MB RAM on-board, 32 MB flash disk
- > 16 software-selectable RS-232/422/485 serial ports
- > Dual 10/100 Mbps Ethernet ports
- > 15 KV ESD surge protection for all serial signals
- > Supports PCMCIA CardBus for WLAN 802.11b/g wireless network
- > CompactFlash and USB slots for storage expansion
- > Standard 19-inch rackmount, 1U height installation
- > Wide range of power input voltages from 100 to 240V AC/DC
- > LCM display and keypad for HMI
- > Ready-to-run Linux or Windows CE 5.0 platform
- > Robust, fanless design

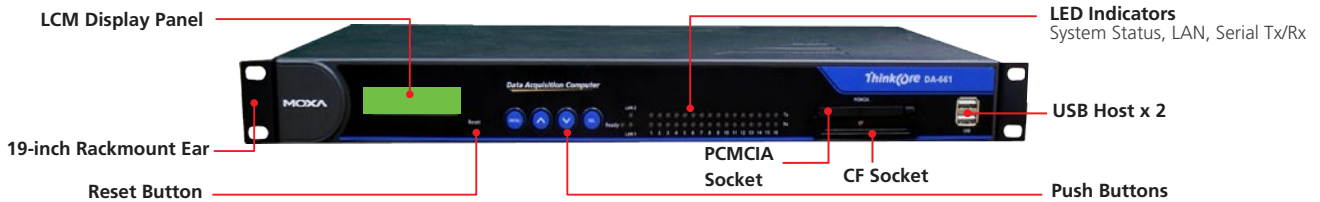


## Overview

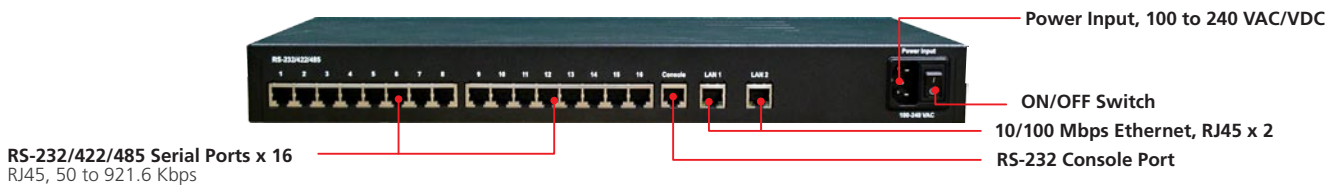
ThinkCore DA-661 embedded computers come with 16 software-selectable RS-232/422/485 serial ports, making them suitable for a variety of industrial applications, and two 10/100 Mbps Ethernet ports are included for network redundancy. In addition, the DA-661 has a PCMCIA socket to provide 802.11 b/g wireless LAN card expansion, and the CompactFlash and USB sockets make it easy to expand data capacity. The combination of features gives users an ideal, robust, and reliable solution for harsh industrial environments.

## DA-661 Appearance

### Front View



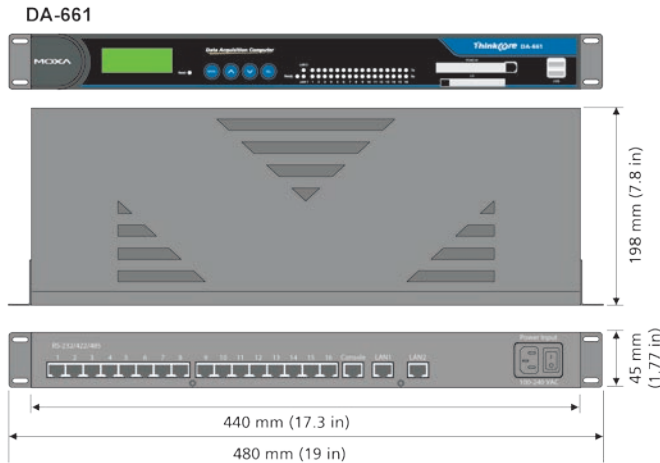
### Rear View



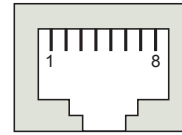
Dimensions

Pin Assignments

Unit = mm (in)



Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

Hardware Specifications

System

- CPU:** IXP-425 533 MHz
- DRAM:** 128 MB onboard
- Flash:** 32 MB onboard
- LCM:** 2 x 16 Text Mode
- Keypad:** 4 membrane buttons
- Console Port:** RS-232 x 1, RJ45, supports PPP
- Other:** RTC, buzzer, Watchdog Timer
- OS:** Built-in embedded Linux or Windows CE 5.0

Network Communication

- LAN:** 10/100 Mbps x 2, RJ45
- Protection:** Built-in 1.5 KV magnetic isolation protection

Serial Communication

- Serial Ports:** RS-232/422/485 x 16, software-selectable, RJ45
- Protection:** Built-in 15 KV ESD protection for all signals
- Data Bits:** 5, 6, 7, 8
- Stop Bits:** 1, 1.5, 2
- Parity:** None, Even, Odd, Space, Mark
- Flow Control:** RTS/CTS, XON/XOFF, RS-485 ADDC™
- Speed:** 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

- System:** Ready x 1
- LAN:** 10M/100M x 2
- Serial:** TxD x 16, RxD x 16

Power Requirements

- Power Input:** 100 to 240 VAC/DC auto ranging (47 to 63 Hz for AC input)
- Power Consumption:** 20W

Mechanical

- Dimensions (WxDxH):** 480 x 198 x 45 mm (19 x 7.8 x 1.77 in) (including rackmount ears)  
440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in) (without rackmount ears)
- Weight:** 2.6 kg
- Construction Material:** SECC sheet metal, 1 mm
- Mounting:** Standard 19-inch rackmount

Environmental

- Operating Temperature:** -10 to 60°C (14 to 140°F), 5 to 95% RH
- Storage Temperature:** -20 to 80°C (-4 to 176°F), 5 to 95% RH

Regulatory Approvals

- EMC:** FCC Part 15, CISPR 22 Class A  
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024
- Safety:** TÜV: IEC/EN60950  
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00
- Warranty:** 5 years



## Software Specifications

### Linux

**Kernel Version:** 2.6.10

**Boot Loader:** Redboot

**Protocol Stacks:** TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

**File System:** JFFS2 (on-board flash)

**System Utilities:** bash, busybox, tinylogin, telnet, ftp, scp

#### Supporting Services and Daemons:

telnetd: Telnet Server daemon  
 ftpd: FTP server daemon  
 sshd: Secure shell server  
 Apache: Web server daemon, support PHP and XML  
 MySQL: Database Server and Client  
 OpenVPN: Virtual private network service manager  
 iptables: Firewall service manager  
 pppd: dial in/out over serial port daemon & PPPoE  
 snmpd: snmpd agent daemon  
 inetd: TCP server manager program

#### Application Development Environment:

MOXA Linux API Library  
 Linux Tool Chain: Gcc, Glibc, GDB  
 Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)  
 UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

#### Device Drivers:

Watchdog Timer (WDT), UART, RTC, Buzzer, LCM, Keypad  
 MOXA 2G NPort Real TTY Driver

### Windows CE 5.0

**Boot Loader:** Redboot

**System Utilities:** Windows command shell, telnet, ftp, web-based administration manager

**File Systems:** TFAT (on-board flash)

**Protocol Stacks:** TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

#### Supporting Services and Daemons:

Telnet Server: Allows remote administration through a standard telnet client

FTP Server: Used for transferring files to and from remote computer systems over a network.

Web Server (httpd): WinCE IIS, offering ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.

Dial-up Networking Service: RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting

#### Application Development Environment:

MOXA WinCE 5.0 SDK  
 C Libraries and Run-times  
 Component Services (COM and DCOM)  
 Microsoft Foundation Classes (MFC)  
 Microsoft® .NET Compact Framework  
 XML, including DOM, XQL, XPATH, XSLT, SAX2  
 SOAP Toolkit  
 Winsock 2.2

#### Device Drivers:

Watchdog Timer (WDT) API, UART, RTC, Buzzer, LCM, Keypad

## Ordering Information

### ThinkCore DA-661-16-LX New

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, Linux OS

### ThinkCore DA-661-16-CE New

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, WinCE 5.0

### All items include

- 1 DA-661
- Quick Installation Guide
- 19-inch Rackmount Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Power Cord
- Product Warranty Statement



# ThinkCore DA-662

RISC-based 19-inch Rackmount Data Acquisition Embedded Computers with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash and USB



## Features

- > Intel XScale IXP-425 533 MHz processor
- > 128 MB RAM on-board, 32 MB flash disk
- > 16 software-selectable RS-232/422/485 serial ports
- > Quad 10/100 Mbps Ethernet ports
- > 15 KV ESD surge protection for all serial signals
- > Supports PCMCIA CardBus for WLAN 802.11b/g wireless network
- > CompactFlash and USB slots for storage expansion
- > Standard 19-inch rack-mount, 1U height installation
- > Wide range of power input voltages from 100 to 240V AC/DC
- > LCM display and keypad for HMI
- > Ready-to-run Linux or Windows CE 5.0 platform
- > Robust, fanless design

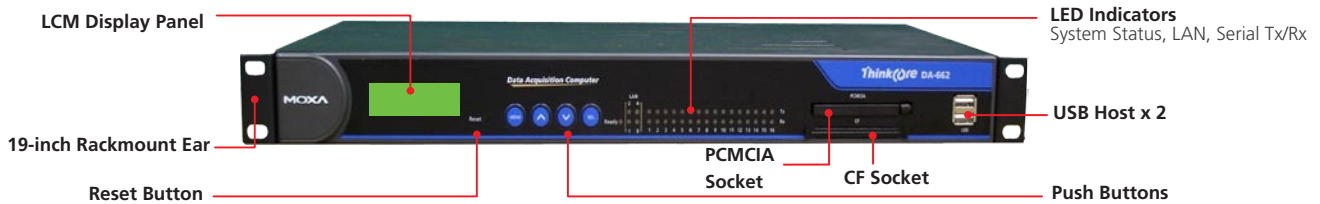


## Overview

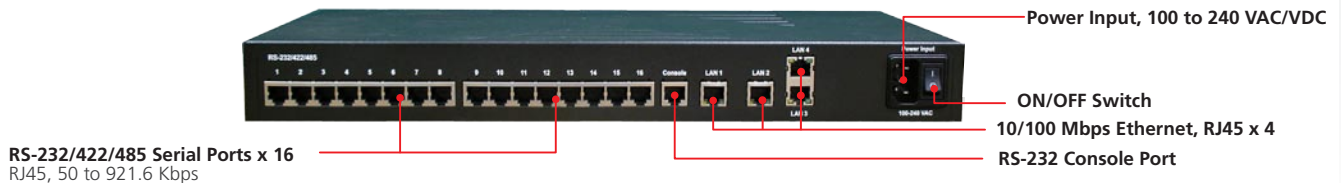
ThinkCore DA-662 embedded computers come with 16 software-selectable RS-232/422/485 serial ports, making them suitable for a variety of industrial applications, and four 10/100 Mbps Ethernet ports are included for network redundancy. In addition, the DA-662 has a PCMCIA socket to provide 802.11 b/g wireless LAN card expansion, and the CompactFlash and USB sockets make it easy to expand data capacity. The combination of features gives users an ideal, robust, and reliable solution for harsh industrial environments.

## DA-662 Appearance

### Front View



### Rear View

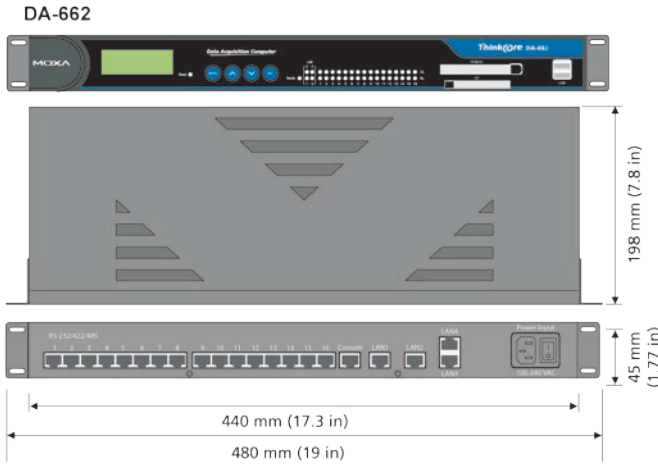


ThinkCore DA-662

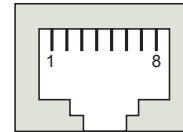
• Dimensions

• Pin Assignments

Unit = mm (in)



Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

• Hardware Specifications

**System**

- CPU:** IXP-425 533 MHz
- DRAM:** 128 MB onboard
- Flash:** 32 MB onboard
- LCM:** 2 x 16 Text Mode
- Keypad:** 4 membrane buttons
- Console Port:** RS-232 x 1, RJ45, supports PPP
- Other:** RTC, buzzer, Watchdog Timer
- OS:** Built-in embedded Linux or Windows CE 5.0

**Network Communication**

- LAN:** 10/100 Mbps x 4, RJ45
- Protection:** Built-in 1.5 KV magnetic isolation protection

**Serial Communication**

- Serial Ports:** RS-232/422/485 x 16, software-selectable, RJ45
- Protection:** Built-in 15 KV ESD protection for all signals
- Data Bits:** 5, 6, 7, 8
- Stop Bits:** 1, 1.5, 2
- Parity:** None, Even, Odd, Space, Mark
- Flow Control:** RTS/CTS, XON/XOFF, RS-485 ADDC™
- Speed:** 50 bps to 921.6 Kbps, supports Any Baudrate

**LEDs**

- System:** Ready x 1
- LAN:** 10M/100M x 4
- Serial:** TxD x 16, RxD x 16

**Power Requirements**

**Power Input:** 100 to 240 VAC/VDC auto ranging (47 to 63 Hz for AC input)

**Power Consumption:** 20W

**Mechanical**

- Dimensions (WxDxH):**  
480 x 198 x 45 mm (19 x 7.8 x 1.77 in) (including rackmount ears)  
440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in) (without rackmount ears)
- Weight:** 2.6 kg
- Construction Material:** SECC sheet metal, 1 mm
- Mounting:** Standard 19-inch rackmount

**Environmental**

- Operating Temperature:** -10 to 60°C (14 to 140°F), 5 to 95% RH
- Storage Temperature:** -20 to 80°C (-4 to 176°F), 5 to 95% RH

**Regulatory Approvals**

- EMC:** FCC Part 15, CISPR 22 Class A  
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024

**Safety:** TÜV: IEC/EN60950

UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00

**Warranty:** 5 years

## Software Specifications

### Linux

**Kernel Version:** 2.6.10

**Boot Loader:** Redboot

**Protocol Stacks:** TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

**File System:** JFFS2 (on-board flash)

**System Utilities:** bash, busybox, tinylogin, telnet, ftp, scp

#### Supporting Services and Daemons:

telnetd: Telnet Server daemon  
 ftpd: FTP server daemon  
 sshd: Secure shell server  
 Apache: Web server daemon, supports PHP and XML  
 MySQL: Database Server and Client  
 OpenVPN: Virtual private network service manager  
 iptables: Firewall service manager  
 pppd: dial in/out over serial port daemon & PPPoE  
 snmpd: snmpd agent daemon  
 inetd: TCP server manager program

#### Application Development Environment:

MOXA Linux API Library  
 Linux Tool Chain: Gcc, Glibc, GDB  
 Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)  
 UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

#### Device Drivers:

Watchdog Timer (WDT), UART, RTC, Buzzer, LCM, Keypad  
 MOXA 2G NPort Real TTY Driver

### Windows CE 5.0

**Boot Loader:** Redboot

**System Utilities:** Windows command shell, telnet, ftp, web-based administration manager

**File Systems:** TFAT (on-board flash)

**Protocol Stacks:** TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SMTP, Telnet, FTP, PPP

#### Supporting Services and Daemons:

Telnet Server: Allows remote administration through a standard telnet client  
 FTP Server: Used for transferring files to and from remote computer systems over a network.  
 Web Server (httpd): WinCE IIS, offering ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.  
 Dial-up Networking Service: RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting

#### Application Development Environment:

MOXA WinCE 5.0 SDK  
 C Libraries and Run-times  
 Component Services (COM and DCOM)  
 Microsoft Foundation Classes (MFC)  
 Microsoft® .NET Compact Framework  
 XML, including DOM, XQL, XPATH, XSLT, SAX2  
 SOAP Toolkit  
 Winsock 2.2

#### Device Drivers:

Watchdog Timer (WDT) API, UART, RTC, Buzzer, LCM, Keypad

## Ordering Information

### ThinkCore DA-662-16-LX New

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, Linux OS

### ThinkCore DA-662-16-CE New

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, WinCE 5.0

### All items include

- 1 DA-662
- Quick Installation Guide
- 19-inch Rackmount Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Power Cord
- Product Warranty Statement



# ThinkCore DA-663

**RISC-based 19-inch Rackmount Data Acquisition Embedded Computers with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash and USB**



## Features

- > Intel XScale IXP-425 533 MHz processor
- > 128 MB RAM on-board, 32 MB flash disk
- > 16 software-selectable RS-232/422/485 serial ports
- > Dual 100Base Multi-mode Fiber ports
- > 15 KV ESD surge protection for all serial signals
- > Supports PCMCIA CardBus for WLAN 802.11b/g wireless network
- > CompactFlash and USB slots for storage expansion
- > Standard 19-inch rack-mount, 1U height installation
- > Wide range of power input voltages from 100 to 240V AC/DC
- > LCM display and keypad for HMI
- > Ready-to-run Linux or Windows CE 5.0 platform
- > Robust, fanless design



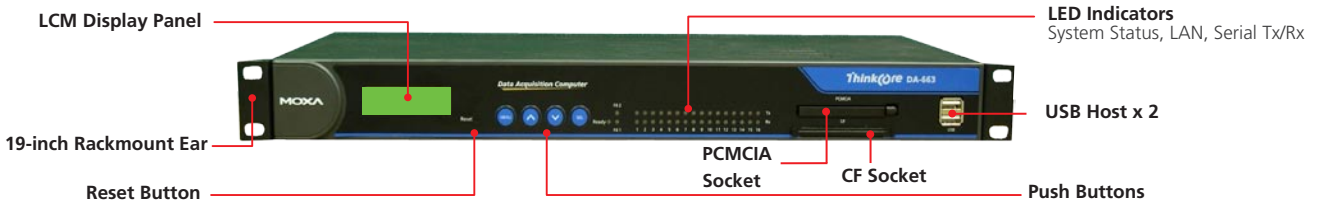
ThinkCore DA-663

## Overview

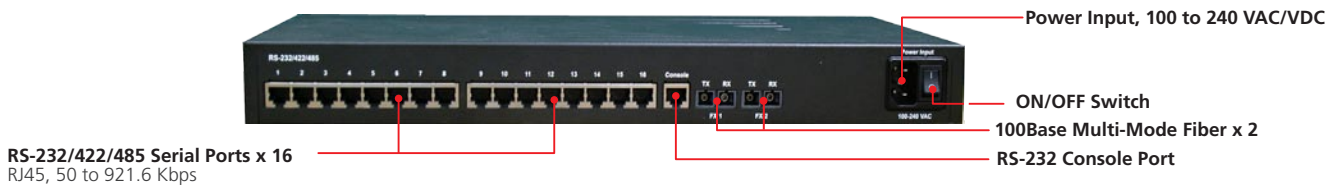
ThinkCore DA-663 embedded computers come with 16 software-selectable RS-232/422/485 serial ports, making them suitable for a variety of industrial applications, and dual 100Base Multi-mode Fiber ports for network redundancy. In addition, the DA-663 has a PCMCIA socket to provide 802.11 b/g wireless LAN card expansion, and the CompactFlash and USB sockets it easy to expand data capacity. The combination of features gives users an ideal, robust, and reliable solution for harsh industrial environments.

## DA-663 Appearance

### Front View



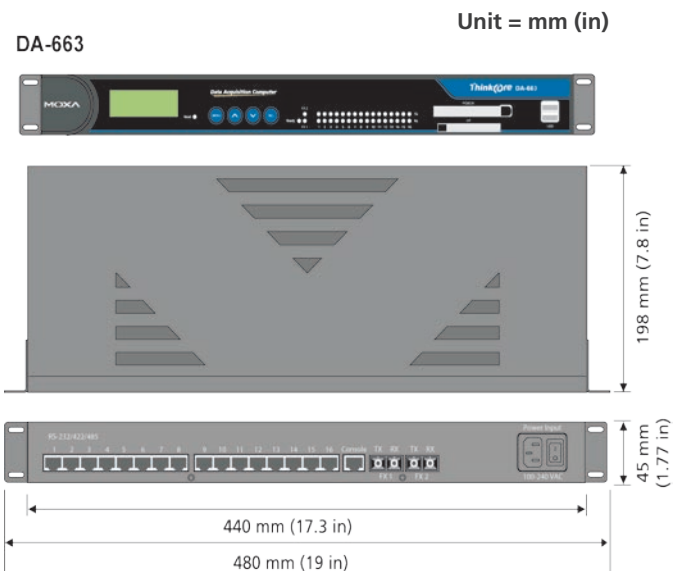
### Rear View



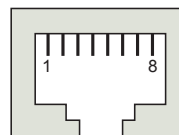


• Dimensions

• Pin Assignments



Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

• Hardware Specifications

**System**

- CPU:** IXP-425 533 MHz
- DRAM:** 128 MB onboard
- Flash:** 32 MB onboard
- LCM:** 2 x 16 Text Mode
- Keypad:** 4 membrane buttons
- Console Port:** RS-232 x 1, RJ45, supports PPP
- Other:** RTC, buzzer, Watchdog Timer
- OS:** Built-in embedded Linux or Windows CE 5.0

**Network Communication**

- Optical Fiber:** 100Base Multi-mode Fiber ports x 2  
SC connector
- Link Distance:** Up to 2 km
- Optical Wavelength:** 1,300 nm typical
- Data Rate:** 155 Mbps

**Serial Communication**

- Serial Ports:** RS-232/422/485 x 16, software-selectable, RJ45
- Protection:** Built-in 15 KV ESD protection for all signals
- Data Bits:** 5, 6, 7, 8
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- Speed:** 50 bps to 921.6 Kbps, supports Any Baudrate

**LEDs**

- System:** Ready x 1

**Fiber:** 100Base FX x 2

**Serial:** TxD x 16, RxD x 16

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**System Utilities:** Windows command shell, telnet, ftp, web-based administration manager

**File Systems:** TFAT (on-board flash)

**Protocol Stacks:** TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

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