

Agilent

U2781A Six-Slot USB Modular Instrument Chassis

Data Sheet



Agilent Technologies

Features

- **Six 55-pin backplane module slots**
- **High-density data acquisition**
- **Internal and external 10 MHz reference clock**
- **Simultaneous Synchronization Interface (SSI)**
- **Star trigger**
- **External trigger-in and trigger-out signals**
- **Temperature and fan speed monitoring**
- **Compatible with Hi-Speed USB 2.0 and USBTMC 488.2 standards**
- **Bundled software — Agilent Measurement Manager (AMM)**
- **Rackmount kit available as an option**



Introduction

The Agilent U2781A USB modular instrument chassis is a high-performance 4U high chassis that comes with a 200 W universal AC power supply and a built-in protection circuit. This portable chassis can house up to six Agilent USB modular products. The U2781A targets a wide range of applications in both industrial and scientific environments in the research and development (R&D), design-validation, and manufacturing fields. The primary advantage of this chassis is its synchronization capability between modules. This can help you to lower your cost of testing and accelerate your test system integration and development.

The U2781A is equipped with an internal 10 MHz reference clock for each module slot. There are two temperature sensors to monitor the internal temperature and a built-in fan to maintain the internal temperature. The trigger bus enables the USB modular products to trigger signals to each other.

Supported products

The chassis supports the following USB modular products:

- USB modular data acquisition (DAQ) including
 - U2300 Series USB modular multifunction DAQ devices
 - U2500 Series USB modular simultaneous sampling multifunction DAQ devices
 - U2600 Series USB modular isolated digital I/O devices
- USB modular instruments including
 - U2701A/U2702A USB modular oscilloscope
 - U2722A USB modular source measure unit
 - U2741A USB modular digital multimeter
 - U2751A USB modular switch matrix
 - U2761A USB modular function generator

Easy setup

The U2781A comes with a Hi-Speed USB 2.0 interface that allows you to set up your chassis easily. The 55-pin backplane connector allows you to perform hot-swapping connectivity on the modular products, without turning off the AC power. This gives you the flexibility you need when using any USB modular product in the chassis for synchronization.

High-density data acquisition

The U2781A chassis increases the number of available channels when any U2300 Series, U2500 Series, and U2600 Series products are slotted into the chassis. For example, when you slot six U2300 Series products in the chassis, it allows for an expansion of up to 384 channels, providing a high-density data acquisition solution.

Easy-to-use bundled software

The AMM bundled application software allows you to configure the trigger mode easily in the Chassis Trigger pop-up window. Since AMM offers a standard user-friendly graphical user interface (GUI), you can configure the modular products synchronization without having to do any programming.

System option

The U2781A modular instrument chassis has a mountable rackmount kit, which can be ordered separately (see Optional accessories). This allows for a better setup when it is integrated into a test system.

Standard shipped accessory

- Power cord
- USB Extension Cable
- Agilent U2781A USB Modular Instrument Chassis Quick Start Guide
- Agilent USB Modular Products Reference CD-ROM
- Agilent Automation-Ready CD (contains the Agilent IO Libraries Suite)
- Functional Test Certificate

Optional accessories

- U2905A rackmount kit for U2781A six-slot USB modular instrument chassis

Internal and external 10 MHz reference clock

The U2781A is equipped with a 10 MHz reference clock to provide sample clock signals to the chassis. It is also used to synchronize the timebase of the USB modular instruments slot into the chassis for more precise measurements.

Simultaneous Synchronization Interface

SSI provides synchronization between the modular products in the chassis by allowing the modules to be configured as Master or Slave. The Master module sends the SSI signal to the Slave module via the backplane trigger bus. Then, the Slave module receives the signal and begins synchronization with the Master module. There are two SSI configuration modes available — single Master-multiple Slaves and multiple Masters-multiple Slaves. Please refer to the *Agilent U2781A USB Modular Instrument Chassis User's Guide* for more information.

Triggering using a star trigger bus

The U2781A comes with a star trigger bus, which offers precise synchronization between USB modular products and the external trigger signal. The star trigger bus provides dedicated trigger lines between the external trigger input and slotted USB modules. You can also achieve precise triggering between each USB modular product via the synchronized routing of the star trigger.

External trigger-in and trigger-out capability

The table below shows the USB modular products triggering capability.

Modular Products	Configure as Master ^[1]	Configure as Slave ^[2]
U2300 Series	Yes	Yes
U2500 Series	Yes	Yes
U2600 Series	Yes	Yes
U2701A/U2702A^[3]	Yes	Yes
U2722A^[3]	Yes ^[4]	Yes
U2741A	No	Yes
U2751A	No	No
U2761A	Yes	Yes

^[1] The Master module sends the SSI trigger-out signal to the Slave module via the backplane trigger bus.

^[2] The Slave module receives the SSI trigger-in signal and begins synchronization with the Master module.

^[3] U2722A cannot trigger U2701A/U2702A and vice versa.

^[4] Triggering can only be done through SCPI command.

Product Characteristics and General Specifications

REMOTE INTERFACE

- Hi-Speed USB 2.0
- USBTMC class device

POWER CONSUMPTION

- 400 VA maximum
- Installation Category II

OPERATING ENVIRONMENT

- Operating temperature from 0 °C to +55 °C
- Relative humidity at 15% to 85% RH (non-condensing)
- Altitude up to 2000 meters
- Pollution Degree 2
- For indoor use only

STORAGE COMPLIANCE

-20 °C to 70 °C

SAFETY COMPLIANCE

- Certified with:
- IEC 61010-1:2001/EN 61010-1:2001 (2nd Edition)
 - USA: UL61010-1: 2004
 - Canada: CSA C22.2 No.61010-1:2004

EMC COMPLIANCE

- IEC/EN 61326-1 1998
- CISPR 11: 1990/EN55011:1991, Class A, Group 1
- CANADA: ICES-001: 1998
- Australia/New Zealand: AS/NZS 2064.1

ACOUSTIC EMISSION

- Sound pressure level: 45.5 dB(A)
- Sound power level: 56.6 dB(A)

SHOCK AND VIBRATION

Tested to IEC/EN 60068-2

DIMENSION (WxDxH)

270.00 mm x 271.20 mm x 197.00 mm

WEIGHT

3.7 kg (without any modules slotted in)

WARRANTY

Three years

System Requirements

PROCESSOR

1.6 GHz Pentium IV or higher

OPERATING SYSTEM

- One of the following Microsoft® Windows® versions:
- Windows XP Professional or Home Edition (Service Pack 1 or later)
 - Windows 2000 Professional (Service Pack 4 or later)

BROWSER

Microsoft Internet Explorer 5.01 or higher

AVAILABLE RAM

512 MB or higher recommended

HARD DISK SPACE

1 GB

PREREQUISITES

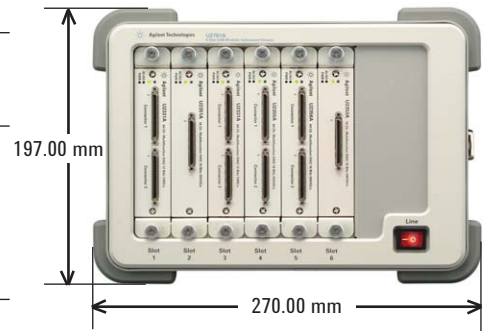
- Agilent IO Libraries Suite 14.2^[1] or higher
- Agilent T&M Toolkit 2.1 Runtime version^[2]
- Microsoft .NET Framework version 1.1 and 2.0^[2]

^[1] Available in Agilent Automation-Ready CD

^[2] Bundled with Agilent Measurement Manager software application installer

Product Outlook and Dimension

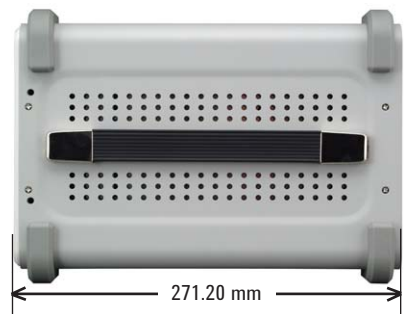
Front View



Rear View



Side View



Electrical Specifications

Power Supply AC Input	
Input voltage range	100 to 240 VAC
Input frequency range	50 to 60 Hz
Power consumption	400 VA maximum
Efficiency	75%
Power Supply DC Output	
Output rated voltage	12 VDC
Max output rated current	16.7 A
Max output rated power	200 W
Over voltage protection	13.2 to 16.2 V

Internal 10 MHz Reference Clock	
Accuracy	25 ppm for operating range
Slot to slot skew	350 ps
External 10 MHz Reference Clock	
Auto detection level	Yes
Input frequency range	10 MHz
Input magnitude	100 mVpp to 5 Vpp (sine/square wave)
Input impedance	50 $\Omega \pm 5 \Omega$
Damage level	10 Vrms
External Trigger In	
Compatibility	TTL
V _{IH} (Positive threshold voltage)	2.0 V
V _{IL} (Negative threshold voltage)	0.8 V
Hold time	8 ns pulse width
Input voltage range	0 to 5.0 V
Slot to slot skew	350 ps
External Trigger Out	
V _{OH}	2.9 V
V _{OL}	0.1 V
Output voltage range	0 to 3.3 V

Mechanical Specifications

Physical Layout	
Number of USB module slots	6
Dimension of each module slot	25.40 mm (W) x 174.54 mm (D) x 105.00 mm (H)
Dimension of chassis	270.00 mm (W) x 271.20 mm (D) x 197.00 mm (H)
Weight	3.7 kg
Power LED	ON/OFF type
USB Backplane	
Connector	55 pins Ernet male type C
Input signals	External 10 MHz clock in (BNC connector) External trigger in (BNC connector)
Output signal	Trigger out (BNC connector)
Cooling Fan	
Number of fans	2
Fan speed	3300 rpm \pm 10%
Noise	37 dB(A)
Power (each fan)	2.52 W



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Revised: July 17, 2008

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Printed in USA, Sept 29, 2008

5989-5762EN



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