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For user manuals and dimensional drawings, visit the product page resources tab on ni.com.

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NI PXIe- 1078

9-Slot 3U PXI Express Chassis



- Compact form factor; ideal for desktop, rack- mount, or portable applications
- 8 peripheral slots - accepts 3U PXI Express and CompactPCI Express in every slot, PXI and CompactPCI modules in 5 slots
- Up to 250 MB/s per-slot bandwidth (x1 PCI Express), 1 GB/s total system bandwidth
- Low- jitter 10 MHz and 100 MHz reference clocks with 25 ppm stability
- No system timing slot
- 300 W total power available from 0 to 50 °C
- HALT- tested for increased reliability
- Field- replaceable fans
- Optional rack- mount kit
- Optional handle and side feet kit

Overview

The NI PXIe- 1078 chassis kits consist of a low- cost, 9- slot chassis featuring a 4-slot- wide system controller slot, which can accept either an embedded controller or remote controller, and eight peripheral slots. The NI PXIe- 1078 offers the flexibility to populate each peripheral slot with a PXI Express module or populate up to five slots with PXI modules. In addition, it features compact, rugged packaging, and quiet operation, which make it ideal for portable, desktop, and industrial control applications.

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Requirements and Compatibility

OS Information

Any OS

Driver Information

System Driver Set

Software Compatibility

LabVIEW
LabWindows/CVI
Measurement Studio
NI TestStand Development System
NI VeriStand Full Development System
Visual Studio

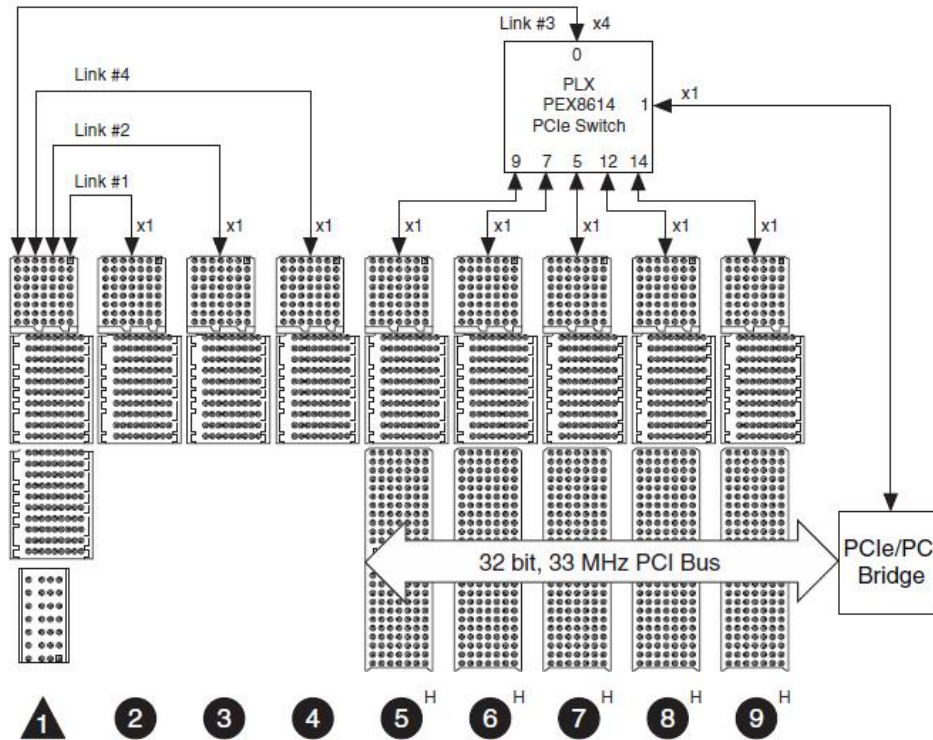
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Application and Technology

Midperformance Backplane

The NI PXIe- 1078 chassis provides the flexibility you need to work with both PXI and PXI Express modules. It features eight PXI Express slots, five of which are PXI hybrid- compatible slots. PXI hybrid- compatible slots can accept either a PXI Express module or a standard PXI module.

The backplane routes three PCI Express (PCIe) links of the system slot to peripheral slots as x1 links (250 MB/s single direction per link). The other link of the system slot is routed as a x4 link to the upstream port of a PCIe switch that in turn provides x1 PCIe links to the remaining peripheral slots. In addition, the backplane features one x1 PCIe link to a PCIe- to-PCI translation bridge. The PXI Express hybrid slots deliver connectivity to either a x1 PCI Express link (for PXI Express modules) or to the 32-bit, 33 MHz PCI bus (for PXI hybrid compatible modules) on the backplane.



NI PXIe- 1078 Backplane Architecture

PXI Timing and Synchronization

For PXI modules, the NI PXIe- 1078 backplane is fully compliant with PXI timing and synchronization standards. The chassis includes a 10 MHz reference clock with an accuracy of ± 25 parts per million (ppm), less than 5 ps jitter, and a maximum slot-to- slot skew of 250 ps. For triggering and handshaking needs, the NI PXIe- 1078 offers the PXI trigger bus.

For PXI Express modules, in addition to PXI timing and synchronization features, the NI PXIe- 1078 backplane delivers a differential 100 MHz reference clock with an accuracy of ± 25 ppm, less than 3 ps jitter, and a maximum slot-to- slot skew of 100 ps.

The NI PXIe- 1078 does not offer a system timing slot, which provides the ability to import/export the 10 MHz clock and PXI triggers. It also does not provide a star trigger. For more advanced timing and synchronization, consider one of the high- performance NI PXI Express chassis.

Compact and Quiet Portable System

The compact and rugged NI PXIe- 1078 weighs 16.6 lb, making it ideal for portable applications. It features an AUTO/HIGH fan- speed selector that provides a HIGH fan- speed setting to maximize cooling and an AUTO fan setting to minimize acoustic emissions. When set to AUTO, the NI PXIe- 1078 chassis monitors air intake temperature and adjusts the fan speed accordingly. When set to AUTO in an environment with an ambient temperature of 25 ° C, the sound pressure level measured at the operator interface is only 49.9 dBA.

Ordering Information

For a complete list of accessories, visit the product page on ni.com.

Products	Part Number	Recommended Accessories	Part Number
NI PXIe- 1078			
Power Cord, 240V, 10A, North American	763068-01	No accessories required.	
NI PXIe- 1078 9- Slot PXI Express Chassis	781622-01	No accessories required.	
PXI-103x and PXIe- 107x side handle and rubber feet kit	781482-01	No accessories required.	
NI PXIe- 1078 Rack Mount Kit	781634-01	No accessories required.	
Power Cord, AC, U.S. 120 VAC	763000-01	No accessories required.	

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Software Recommendations

NI LabVIEW for Test Automation and Validation



Reduce development time with intuitive graphical programming
Communicate with thousands of instruments using free instrument drivers
Take advantage of high- performance technologies such as FPGAs and multicore processors
Incorporate low-cost USB instruments to get started on your test applications

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Support and Services

System Assurance Programs

NI system assurance programs are designed to make it even easier for you to own an NI system. These programs include configuration and deployment services for your NI PXI, CompactRIO, or Compact FieldPoint system. The NI Basic System Assurance Program provides a simple integration test and ensures that your system is delivered completely assembled in one box. When you configure your system with the NI Standard System Assurance Program, you can select from available NI system driver sets and application development environments to create customized, reorderable software configurations. Your system arrives fully assembled and tested in one box with your software preinstalled. When you order your system with the standard program, you also receive system- specific documentation including a bill of materials, an integration test report, a recommended maintenance plan, and frequently asked question documents. Finally, the standard program reduces the total cost of owning an NI system by providing three years of warranty coverage and calibration service. Use the online product advisors at ni.com/advisor to find a system assurance program to meet your needs.

Calibration

NI measurement hardware is calibrated to ensure measurement accuracy and verify that the device meets its published specifications. To ensure the ongoing accuracy of your measurement hardware, NI offers basic or detailed recalibration service that provides ongoing ISO 9001 audit compliance and confidence in your measurements. To learn more about NI calibration services or to locate a qualified service center near you, contact your local sales office or visit ni.com/calibration.

Technical Support

Get answers to your technical questions using the following National Instruments resources.

Support - Visit ni.com/support to access the NI KnowledgeBase, example programs, and tutorials or to contact our applications engineers who are located in NI sales offices around the world and speak the local language.

Discussion Forums - Visit forums.ni.com for a diverse set of discussion boards on topics you care about.

Online Community - Visit community.ni.com to find, contribute, or collaborate on customer- contributed technical content with users like you.

Repair

While you may never need your hardware repaired, NI understands that unexpected events may lead to necessary repairs. NI offers repair services performed by highly trained technicians who quickly return your device with the guarantee that it will perform to factory specifications. For more information, visit ni.com/repair.

Training and Certifications

The NI training and certification program delivers the fastest, most certain route to increased proficiency and productivity using NI software and hardware. Training builds the skills to more efficiently develop robust, maintainable applications, while certification validates your knowledge and ability.

Classroom training in cities worldwide - the most comprehensive hands-on training taught by engineers.

On-site training at your facility - an excellent option to train multiple employees at the same time.

Online instructor- led training - lower- cost, remote training if classroom or on- site courses are not possible.

Course kits - lowest- cost, self- paced training that you can use as reference guides.

Training memberships and training credits - to buy now and schedule training later.

Visit ni.com/training for more information.

Extended Warranty

NI offers options for extending the standard product warranty to meet the life-cycle requirements of your project. In addition, because NI understands that your requirements may change, the extended warranty is flexible in length and easily renewed. For more information, visit ni.com/warranty.

OEM

NI offers design-in consulting and product integration assistance if you need NI products for OEM applications. For information about special pricing and services for OEM customers, visit ni.com/oem.

Alliance

Our Professional Services Team is comprised of NI applications engineers, NI Consulting Services, and a worldwide National Instruments Alliance Partner program of more than 700 independent consultants and integrators. Services range from start-up assistance to turnkey system integration. Visit ni.com/alliance.

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Detailed Specifications

This appendix contains specifications for the NI PXIe-1078 chassis.



Caution Specifications are subject to change without notice.

Electrical

AC Input

Input voltage range	100 to 240 VAC
Operating voltage range ¹	90 to 264 VAC
Input frequency	50/60 Hz
Operating frequency range ¹	47 to 63 Hz
Input current rating	7–3.5 A
Line regulation	
3.3 V	<±0.2%
5 V	<±0.1%
±12 V	<±0.1%
Efficiency	70% typical
Power disconnect	The AC power cable provides main power disconnect.

DC Output

DC current capacity (I_{MP})	
Voltage	Maximum Current
+3.3 V	28.5 A
+5 V	26.5 A
+12 V	23.5 A
–12 V	0.75 A
5 V _{AUX}	1.5 A



Note Maximum total usable power is 300 W.



The –12 V regulation is ± 5% for loads of 10 A or less on the +12 V rail.

Backplane slot current capacity						
Slot	+5 V	V (I/O)	+3.3 V	+12 V	–12 V	5 V _{AUX}
System Controller Slot	15 A	—	15 A	30 A	—	1 A
Hybrid Peripheral Slot with PXI- 1 Peripheral	6 A	5 A	6 A	1 A	1 A	—
Hybrid Peripheral Slot with PXI- 5 Peripheral	—	—	6 A	4 A	—	1 A
PXI Express Peripheral Slot	—	—	3 A	3 A	—	1 A



Notes

Total system slot current should not exceed 45 A.

PCI V (I/O) pins in hybrid peripheral slots are connected to +5 V.

The maximum power dissipated in the system slot should not exceed 140 W.

The maximum power dissipated in a peripheral slot should not exceed 38.25 W.

The maximum combined power available on +3.3 V and +5 V is 125 W.

Chassis Cooling

Per slot cooling capacity	38.25 W
Module cooling system	Forced air circulation (positive pressurization) through two 150CFM fans with High/Auto speed selector
Slot airflow direction	Bottom of module to top of module
Module cooling intake	Bottom of chassis
Module cooling exhaust	Right side, rear, and top of chassis
Power supply cooling system	Forced air circulation through integrated fan
Power supply cooling intake	Front and left side of chassis
Power supply cooling exhaust	Rear of chassis

Environmental

Maximum altitude	2,000 m (800 mbar) (at 25 ° C ambient)
Measurement Category	II
Pollution Degree	2

For indoor use only.

Operating Environment

Ambient temperature range	0 to 50 ° C (Tested in accordance with IEC- 60068-2- 1 and IEC- 60068-2- 2. Meets MIL-PRF- 28800F Class 3 low temperature limit and MIL- PRF- 28800F Class 2 high temperature limit.)
Relative humidity range	20 to 90%, noncondensing (Tested in accordance with IEC- 60068-2- 56.)

Storage Environment

Ambient temperature range	-40 to 71 °C (Tested in accordance with IEC- 60068-2- 1 and IEC- 60068-2- 2. Meets MIL-PRF- 28800F Class 3 limits.)
Relative humidity range	10 to 95%, noncondensing (Tested in accordance with IEC- 60068-2- 56.)

Shock and Vibration

Operational shock	30 g peak, half- sine, 11 ms pulse (Tested in accordance with IEC- 60068-2- 27. Meets MIL-PRF- 28800F Class 2 limits.)
Random Vibration	
Operating	5 to 500 Hz, 0.3 g _{rms}
Nonoperating	5 to 500 Hz, 2.4 g _{rms} (Tested in accordance with IEC- 60068-2- 64. Nonoperating test profile exceeds the requirements of MIL- PRF- 28800F, Class 3.)

Acoustic Emissions

Sound Pressure Level (at Operator Position)

Tested in accordance with ISO 7779. Meets MIL-PRF- 28800F requirements.

Auto fan (up to ~30 °C ambient)	49.9 dBA
High fan	65.4 dBA

Sound Power

Auto fan (up to ~30 °C ambient)	59.3 dBA
High fan	74.1 dBA



Note Specifications are subject to change without notice.

Safety Standards

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

IEC 61010-1, EN 61010- 1
UL 61010- 1, CSA 61010-1



Note For UL and other safety certifications, refer to the product label or the *Online Product Certification* section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

EN 61326- 1 (IEC 61326- 1): Class A emissions; Basic immunity

EN 55011 (CISPR 11): Group 1, Class A emissions
 AS/NZS CISPR 11: Group 1, Class A emissions
 FCC 47 CFR Part 15B: Class A emissions
 ICES- 001: Class A emissions

 **Note** For EMC declarations and certifications, refer to the *Online Product Certification* section.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:
 2006/95/EC; Low- Voltage Directive (safety)
 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Online Product Certification


To obtain product certifications and the DoC for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial not only to the environment but also to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

 **EU Customers** At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste Electrical and Electronic Equipment, visit ni.com/environment/weee.htm.

电子信息产品污染控制管理办法（中国 RoHS）



中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。
 关于 National Instruments 中国 RoHS 合规性信息, 请登录 ni.com/environment/rohs_china。
 (For information about China RoHS compliance, go to ni.com/environment/rohs_china.)


Backplane

Size	3U- sized; one system slot (with three system expansion slots) and eight peripheral slots. Compliant with IEEE 1101.10 mechanical packaging. PXI Express Specification compliant. Accepts both PXI Express and CompactPCI (PICMG 2.0 R 3.0) 3U modules.
Backplane bare- board material	UL 94 V- 0 Recognized
Backplane connectors	Conforms to IEC 917 and IEC 1076- 4-101, and are UL 94 V- 0 rated

System Synchronization Clocks (PXI_CLK10, PXIe_CLK100, PXIe_SYNC100)


10 MHz System Reference Clock: PXI_CLK10

Maximum slot-to- slot skew	500 ps
Accuracy	±25 ppm max (guaranteed over the operating temperature range)
Maximum jitter	5 ps RMS phase- jitter (10 Hz– 1 MHz range)
Duty- factor	45%–55%
Unloaded signal swing	3.3 V ±0. 3 V

 **Note** For other specifications refer to the *PXI-1 Hardware Specification*.

100 MHz System Reference Clock: PXIe_CLK100 and PXIe- SYNC100

Maximum slot-to- slot skew	100 ps
Accuracy	±25 ppm max (guaranteed over the operating temperature range)
Maximum jitter	3 ps RMS phase- jitter (10 Hz– 12 kHz range) 2 ps RMS phase- jitter (12 kHz– 20 MHz range)
Duty- factor for PXIe_CLK100	45%–55%
Absolute differential voltage (When terminated with a 50 Ω load to 1.30 V or Thévenin equivalent)	400 –1000 mV


 **Note** For other specifications refer to the *PXI-5 PXI Express Hardware Specification*.

Mechanical

Overall dimensions

Standard chassis

Height	6.97 in. (177 mm)
Width	14.00 in. (355.6 mm)
Depth	8.43 in. (214.2 mm)

 **Note** 0.625 in. (15.89 mm) is added to height when feet are installed.

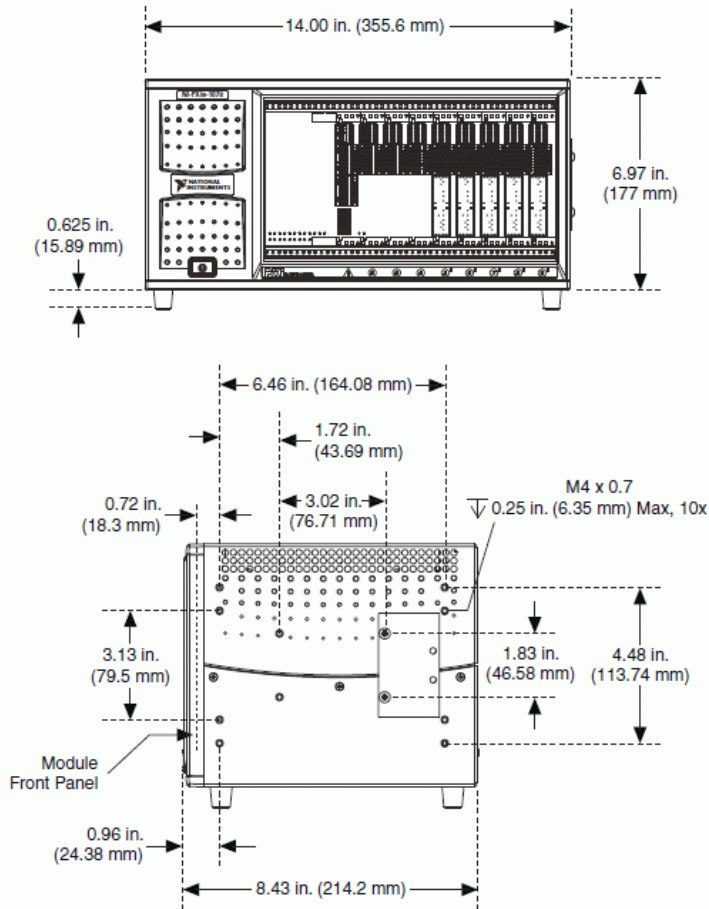
Weight 7.55 kg (16.6 lb)

Chassis materials Stainless Steel, Extruded Aluminum, Cold Rolled Steel, and PC- ABS

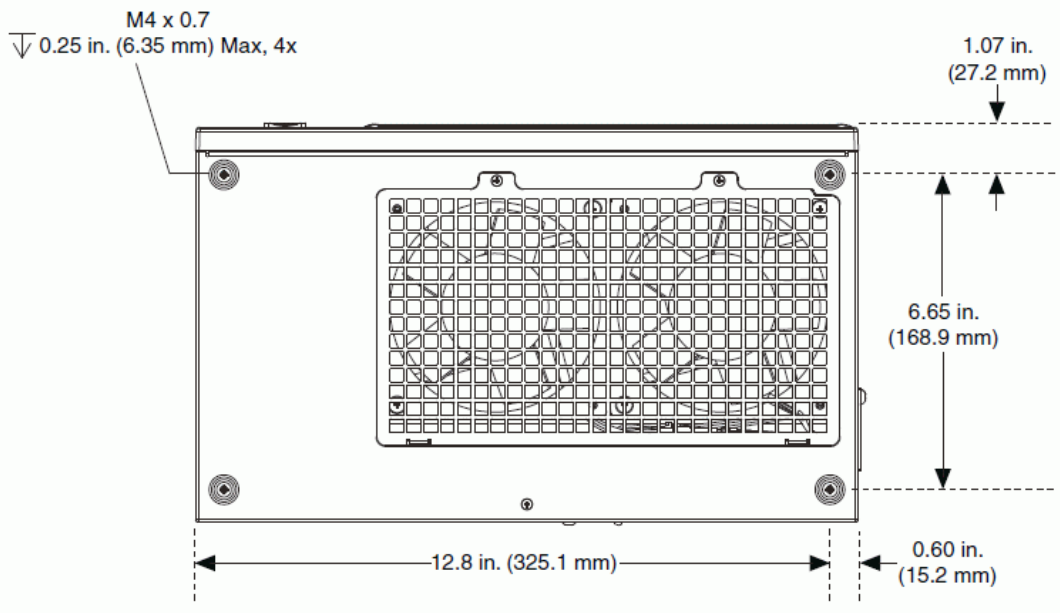
Finish Conductive Clear Iridite on Aluminum, Clear Chromate Zinc Plating on Cold Rolled Steel, Polyurethane Enamel, and Polyester Urethane Powder Paint

The following two figures show the NI PXIe- 1078 chassis dimensions. The holes shown are for the installation of the optional rack mount kits. Notice that the front and rear chassis mounting holes (size M4) are symmetrical.

NI PXIe- 1078 Chassis Dimensions (Front and Side)

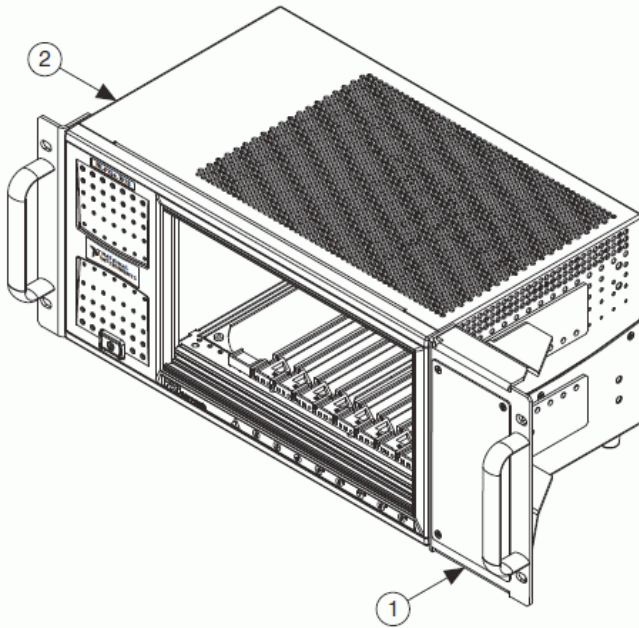


NI PXIe- 1078 Chassis Dimensions (Bottom)



The following figure shows the chassis rack mount kit components.

NI Chassis Rack Mount Kit Components



1 Front Rack Mount Kit	2 NI Chassis
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¹ The operating range is guaranteed by design.

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