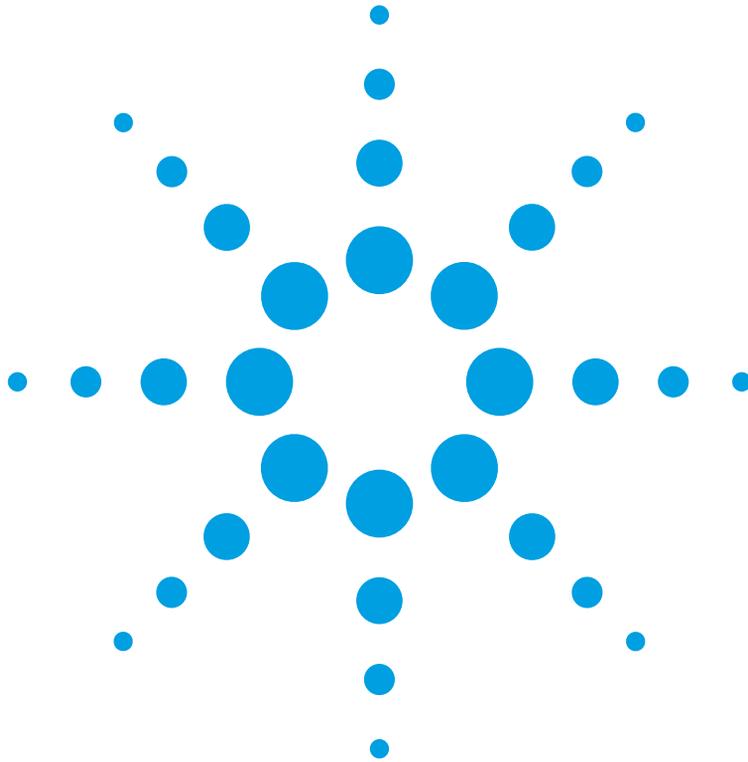


Agilent N1022A
Active Probe Adapter
User Guide



Agilent Technologies

Notices

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Safety Notices

CAUTION

Caution denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in damage to or destruction of the product. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.

WARNING

Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning sign until the indicated conditions are fully understood and met.

Contents

N1022A Active Probe Adapter 1

General Safety Considerations 2

Instrument Markings 3

Using the Probe Adapter 4

Inspecting the N1022A 4

Connecting the N1022A 5

Static-Safe Workstation 8

Reducing ESD Damage 9

Specifications and Regulatory Information 10

Specifications 10

Regulatory Information 13

Declaration of Conformity 14

Service 15

Checking Probe Power Outputs 15

Returning the N1022A 16

Agilent Technologies Service Offices 17

Contents

N1022A Active Probe Adapter

The N1022A Active Probe Adapter provides the interface to connect an Agilent Infiniimax Active Probe to an Agilent 86100-series Infiniium DCA. To use the N1022A requires that firmware revision A.03.05 or later be installed on the Infiniium DCA.

The Infiniimax Active Probes include the following: 1131A, 1132A, and 1134A. Other supported active probes include the 1152A, 1156A, 1157A, and 1158A.

CAUTION

When using the N1022A, always work at a static-safe work station and wear a wrist-strap or heel-strap. [Refer to “Static-Safe Workstation” on page 8.](#)

CAUTION

The probe adapter connections can be damaged if it is dropped from excessive heights onto a hard surface.



General Safety Considerations

This product has been designed and tested in accordance with the standards listed in the Manufacturer's Declaration of Conformity, and has been supplied in a safe condition. The product documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

Before using this product, review the safety information for cautions and warnings.

Use this product according to the enclosure protection provided. This product does not protect against the ingress of water. This product protects against finger access to hazardous parts within the enclosure.

WARNING

If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.

WARNING

No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock, do not remove covers.

WARNING

To prevent electrical shock, disconnect the Agilent N1022A from probe power before cleaning. Use a dry cloth to clean the external case parts. Do not attempt to clean internally.

CAUTION

Do not use too much liquid in cleaning the product. Water can enter the adapter, damaging sensitive electronic components.

CAUTION

This product is designed for use in INSTALLATION CATEGORY II and POLLUTION DEGREE 2, per IEC 61010-1 and 664 respectively.

Installation Category: Installation Categories (overvoltage categories) are determined by the transient overvoltage levels that may be expected. CAT I: Mains isolated. CAT II: Line voltage in appliance and to wall outlet. CAT III: Line voltage behind wall outlet to next level of distribution.

Instrument Markings



The instruction manual symbol. The product is marked with this warning symbol when it is necessary for the user to refer to the instructions in the manual.



The laser radiation symbol. This warning symbol is marked on products which have a laser output.



The AC symbol is used to indicate the required nature of the line module input power.



The Standby symbol is used to mark the position of the instrument power line switch.



The CE mark is a registered trademark of the European Community.



The CSA mark is a registered trademark of the Canadian Standards Association.



The C-Tick mark is a registered trademark of the Australian Spectrum Management Agency.

ISM1-A

This text denotes the instrument is an Industrial Scientific and Medical Group 1 Class A product.

ICES/NMB-001

This text indicates product compliance with the Canadian Interference-Causing Equipment Standard.

Using the Probe Adapter

There are a few things to consider when connecting the N1022A Active Probe Adapter to an active probe and the Infiniium DCA.

- The dynamic range of the system will be 3.2 V (6.4 Vp-p), which with probe offset, covers most digital technologies.
- The Infiniium DCA provides both power and offset control to the active probe adapter through the plug-in module front panel connector.
- Probe offset is changed by adjusting the vertical offset control located on the plug-in module front panel. The control should be adjusted to center your signal within the 5V peak-to-peak (12 volts peak-to-peak for slow signals) dynamic range of the probe.

Available Accessories

The following accessory is available from Agilent.

8 in-lbs torque wrench: P/N 8710-1764

Cleaning the N1022A

If the probe adapter requires cleaning, disconnect it from both the instrument and the probe. Wipe with a soft cloth dampened with a mild soap and water solution. Make sure the adapter is completely dry before reconnecting to the probe and instrument.

Inspecting the N1022A

Inspect the shipping container for damage.

Keep a damaged shipping container or cushioning material until the contents of the shipment have been checked for completeness and the probe adapter has been checked mechanically and electrically.

Inspect the probe adapter.

- If there is mechanical damage or defect, or if the probe adapter does not operate properly or pass performance tests, notify your Agilent

Technologies sales office.

- If the shipping container is damaged, or the cushioning materials show signs of stress, notify the carrier as well as your Agilent Technologies sales office. Keep the shipping materials for the carrier's inspection. The Agilent office will arrange for replacement of the N1022A at Agilent's option without waiting for claim settlement.

Connecting the N1022A

CAUTION

When using the N1022A, always work at a static-safe work station and wear a wrist-strap or heel-strap. Refer to “Static-Safe Workstation” on page 8. Electrical channel input circuits can be damaged by electrostatic discharge (ESD). Therefore, avoid applying static discharges to the front-panel input connectors. Avoid touching the front-panel input connectors without first touching the frame of the instrument. Be sure that the instrument is properly earth-grounded to prevent buildup of static charge.

- 1 Connect the N1022A probe adapter to the module's electrical input connector. This requires holding the N1022A connector steady while turning the module's input connector. This action threads the module's connector into the N1022A's connector. Torque the connection to 8 in-lbs. An 8 in-lbs torque wrench is available from Agilent. Order part number 8710-1764.

CAUTION

To ensure a good connection and to avoid damaging the connectors, tighten the connection to 8 in-lbs of torque. After the adapter is connected, do not allow the adapter to rotate on the front-panel connection. For more information on caring for precision electrical connectors, refer to the online help that is accessed from the 86100B Infiniium DCA's menu bar.

Using modules with 2.4 mm electrical input

The N1022A can be directly connected to any 86100-series or 83480-series with a 3.5 mm electrical channel input. You can also connect the probe adapter to a module with 2.4 mm electrical input. However, in order to connect to a 2.4 mm input, you must use a 2.4 mm (F) - 3.5 mm (M) adapter, Agilent part number 85130-60010.

- 2 Connect the probe adapter's power connector to the module's front-panel Probe Power connector for the associated channel. Do not make the connection to any Aux Power connector, if one is present on the module's front

Connecting the N1022A

panel. Connecting to an Aux Power connector prevents the probe from being automatically calibrated.

- 3 Connect the probe output to the probe adapter input. The probe tip should not be connected to a device under test at this time.

CAUTION

The probe power cable connector automatically locks in the mating power connector. To separate the connection, you must pull on the knurled part of the cable connector housing. This releases the lock. If you pull directly on the power cable, the connectors will not release and may damage the connector or cable. An effort has been made to design this active probe adapter to take more than the average amount of physical and electrical stress. However, the technologies necessary to achieve high performance do not allow the probe to be unbreakable. Treat the probe adapter with care.

NOTE

During operation, the N1022A probe adapter's temperature may feel warm when you touch it. This is normal and does not indicate a problem.

NOTE

Before using the active probe adapter with an active probe, perform a probe calibration. When the probe has been calibrated, the dc gain, offset zero, and offset gain will be calibrated. The degree of accuracy specified at the probe tip is dependent on the instrument system specifications.

- 4 If the Infiniium DCA is in operation, the **Probe Channel** dialog box will appear on the instrument display screen. See [Figure 1 on page 7](#).

When the Infiniium DCA is not in operation

If the probe and probe adapter is connected to the module front panel when the DCA is not in operation, the **Probe Channel** dialog box will not appear on the instrument display screen when the DCA is turned on. To open the Probe Channel dialog box, choose **Setup > Channels > Channel X**, then click **Probes**.

- 5 In the **Probe ID** list, click the probe model that is currently connected to the probe adapter. This will ensure that the correct probe is specified to the instrument.

NOTE

If you are using an AutoProbe style probe that is not listed in the supported probe list, select one of the probes from the supported list that is closest in type to your unspecified probe.

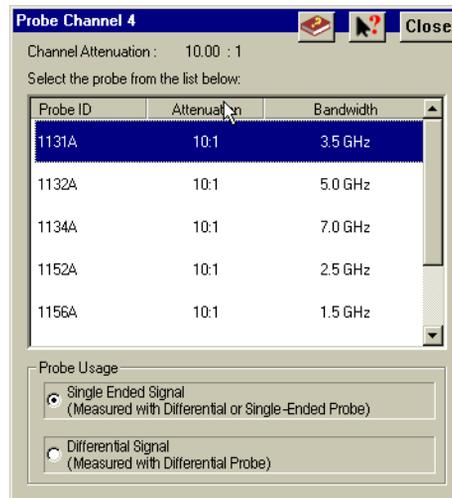


Figure 1. Probe Channel Dialog Box

- 6 Click **Close**. You can now change the probe tips or probe attenuation. You can also perform a probe calibration. You can access information about probe attenuation and probe calibration in the Infiniium DCA Help system.

Using modules with 2.4 mm electrical input

The N1022A can be directly connected to any 86100-series or 83480-series with a 3.5 mm electrical channel input. You can also connect the probe adapter to a module with 2.4 mm electrical input. However, in order to connect to a 2.4 mm input, you must use a 2.4 mm (F) - 3.5 mm (M) adapter, Agilent part number 85130-60010.

Static-Safe Workstation

Electrostatic discharge (ESD) can damage or destroy electronic components. All work on electronic assemblies should be performed at a static-safe workstation. The following figure shows an example of a static-safe work station using two types of ESD protection:

- Conductive table-mat and wrist-strap combination.
- Conductive floor-mat and heel-strap combination.

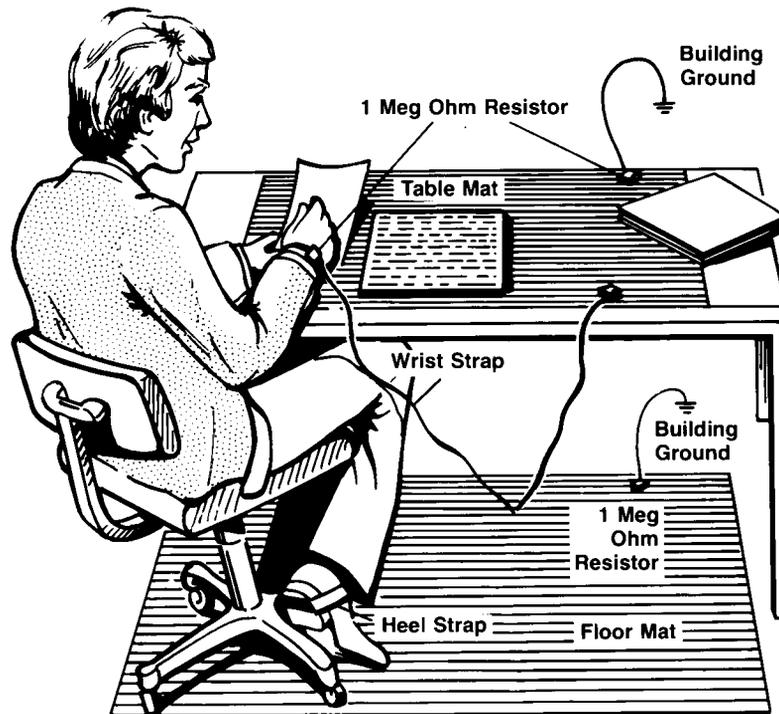


Figure 2. Static Safe Workstation

Both types, when used together, provide a significant level of ESD protection. Of the two, only the table-mat and wrist-strap combination provides adequate ESD protection when used alone.

To ensure user safety, the static-safe accessories must provide at least 1 M Ω of isolation from ground. Refer to [Table 1](#) for information on ordering static-safe accessories.

WARNING

These techniques for a static-safe work station should not be used when working on circuitry with a voltage potential greater than 500 volts.

Reducing ESD Damage

The following suggestions may help reduce ESD damage that occurs during testing and servicing operations.

- Personnel should be grounded with a resistor-isolated wrist strap before removing any assembly from the unit.
- Be sure all instruments are properly earth-grounded to prevent a buildup of static charge.

Table 1. Static-Safe Accessories

Agilent Part Number	Description
9300-0797	Set includes: 3M static control mat 0.6 m \times 1.2 m (2 ft. \times 4 ft.) and 4.6 cm (15 ft.) ground wire. (The wrist-strap and wrist-strap cord are not included. They must be ordered separately.)
9300-0980	Wrist-strap cord 1.5 m (5 ft.)
9300-1383	Wrist-strap, color black, stainless steel, without cord, has four adjustable links and a 7 mm post-type connection.
9300-1169	ESD heel-strap (reusable 6 to 12 months).

Specifications and Regulatory Information

This section lists specifications and characteristics and regulatory information of the probe adapter.

Specifications

The distinction between specifications and characteristics is described as follows:

- Specifications describe warranted performance over the temperature range 0°C to +55°C and relative humidity <95% (unless otherwise noted). All specifications apply after the temperature of the probe and the probe adapter has been stabilized after 30 minutes of continuous operation.
- *Characteristics* provide useful information by giving functional, but nonwarranted, performance parameters. *Characteristics are printed in italics.*

Review the following specifications to ensure that your operating or storage environment is suitable for the adapter.

Table 2. Environmental Specifications (1 of 2)

Operating Temperature	0° C to +55°C
Storage Temperature	-40° C to +70°C
Use	Indoor
EMC	Conducted and radiated Emission is in compliance with CISPR 11 Class A and IEC 61326
ESD Tolerance	4kV contact 8kV air discharged
Operational Humidity (type tested)	95% R.H. (non-condensing) at +40°C (+104°F)
Altitude	Up to 4600 meters

Table 2. Environmental Specifications (2 of 2)

Storage Humidity (type tested)	90% R.H. (non-condensing) at +65°C (+149°F), 24 hrs
Shock (type tested)	30 g (half sine), 11 msec pulse
Vibration (type tested)	Random, 0.21g rms, 5 to 500 Hz, 10 minutes per axis Sine, 0.5g (0 to peak), 5 to 500 Hz, 1 octave/min
Weight	200 g (7 oz) max
Dimensions (excludes power cable)	
Height	34 mm (1.34 in.)
Weight	38 mm (1.50 in.)
Length	61 mm (2.4 in.)
Power Cable Length	200 mm (7.9 in.) from connector tip to N1022A body

Table 3. Performance Specifications (1 of 2)

Frequency Range (<i>Characteristic</i>)	0 - 18 GHz
Power Input	+17V 225 mA -17V 225 mA
Output Voltage	+12V ±5% -12V ±5% V prog ±5% -V prog ±5%
Output Current	0 - 200 mA (+12V) 0 - 200 mA (-12V) 0 - 200 mA (V prog) 0 - 200 mA (-V prog) ≤ 200 mA combined current: +12V and V prog ≤ 200 mA combined current: -12V and -V prog
Probe Compatibility*	Compatible with all Infiniimax active probes, such as the 1131A/1132A/1134A and other active probes such as the 1152A/1156A/1157A/1158A.

Specifications

Table 3. Performance Specifications (2 of 2)

Connector I/O (see figure below)	
DCA Connector	Custom ruggedized 3.5 mm connector
Probe Connector	Precision BNC connector
Power Connector	Lemo push-pull 7-pin circular connector (works only with probe power)
System Compatibility	Compatible with Agilent 86100-series Infiniium DCA

*Other Infiniium instruments in compliance with the Autoprobe interface can be added using the Probe dialog box located in the Infiniium graphical user interface.

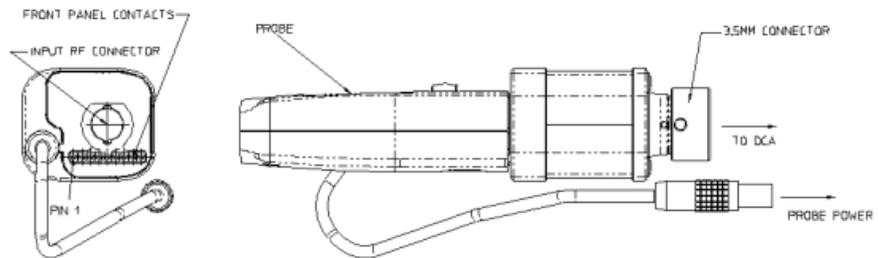


Figure 3. N1022A I/O Connections

Regulatory Information

Electrostatic Discharge Immunity - IEC 61000-4-2: 1995 passes criterion B. According to IEC 61000-4-2: 1995, system measurement may be affected when electrostatic discharges of 2 kV or more are applied to the outer surfaces of the N1022A probe adapter when it is connected as part of a measurement system.

Compliance with Canadian EMC Requirements

This ISM device complies with Canadian ICES-001.
Cet appareil ISM est conforme a la norme NMB du Canada.

Compliance with German Noise Requirements

This is to declare that this instrument is in conformance with the German Regulation on Noise Declaration for Machines (Laermangabe nach der Maschinenlaermrrerordnung -3.GSGV Deutschland).

Table 4. Notice for Germany: Noise Declaration

Acoustic Noise Emission	Geraeuschemission
LpA < 70 dB	LpA < 70 dB
Operator position	am Arbeitsplatz
Normal position	normaler Betrieb
per ISO 7779	nach DIN 45635 t.19

Declaration of Conformity

Declaration of Conformity

DECLARATION OF CONFORMITY	
According to ISO/IEC Guide 22 and CEN/CENELEC EN 45014	
Manufacturer's Name:	Agilent Technologies, Inc.
Manufacturer's Address:	1400 Fountaingrove Parkway Santa Rosa, CA 95403-1799 USA
Declares that the product	
Product Name:	Probe Adapter
Model Number:	N1022A
Product Options:	This declaration covers all options of the above product.
Conform to the following product specifications:	
EMC: IEC 61326-1:1997+A1:1998 / EN 61326-1:1997+A1:1998	
<u>Standard</u>	<u>Limit</u>
CISPR 11:1990 / EN 55011-1991	Group 1, Class A
IEC 61000-4-2:1995+A1:1998 / EN 61000-4-2:1995	4 kV CD, 8 kV AD
IEC 61000-4-3:1995 / EN 61000-4-3:1995	3 V/m, 80 - 1000 MHz
Safety: IEC 61010-1:1990 + A1:1992 + A2:1995 / EN 61010-1:1993 +A2:1995 CAN/CSA-C22.2 No. 1010.1-92	
Supplementary Information:	
The products herewith comply with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carry the CE-marking accordingly. EMC tests in IEC/EN 61326-1 requiring AC mains power could not be performed because this product operates on DC power only, and cannot be connected to AC mains.	
	
Santa Rosa, CA, USA	14 November, 2002
Greg Pfeiffer/Quality Engineering Manager	
For further information, please contact your local Agilent Technologies sales office, agent or distributor.	

Service

Service for the N1022A Active Probe Adapter is by replacement only. To order a new N1022A, contact your local Agilent Technologies Sales Office. Return the failed probe adapter to your local Agilent service center.

If the probe adapter is still under warranty or is covered by an Agilent maintenance contract, it will be replaced under the terms of the warranty or contract.

Refer to “[Agilent Technologies Service Offices](#)” on page 17 to contact the Agilent Call Center or your local service center.

Checking Probe Power Outputs

The probe power output is located on the front panel of the probe adapter, surrounding the BNC input.

Use [Table 5 on page 16](#) to check the power output at the connectors. The DCA module provides the probe adapter with +17V and -17V supplies. The probe adapter generates the +12 V and -12 V supplies and the +3 V and -3 V supplies.

Measure the voltages with respect to the DCA mainframe’s front panel ground connector (located above the power switch) or the outside conductor of the Cal BNC connector.

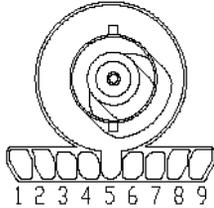
CAUTION

Do not attempt to measure voltages at pins 3 through 7.

Any failure may be a problem with the probe adapter assembly.

Returning the N1022A

Table 5. Probe Power Outputs

Pin	Supply	Power Output
1	+3V	
2	-3V	
3	Offset	
4	NC	
5 and ring	Probe ID	
6	NC	
7	R_p	
8	-12V	
9	+12V	

Returning the N1022A

When the probe adapter is returned to an Agilent service office for servicing, it must be adequately packaged and have a complete description of the failure symptoms attached.

Please notify the service office before returning your probe adapter for service. Any special arrangements for the adapter can be discussed at this time. This will help the Agilent service office repair and return your adapter as quickly as possible.

- 1 Write the following information on a tag and attach it to the probe adapter. Include any specific performance details related to the problem. The following information should be returned with the instrument.
 - Company name and return address.
 - Name and phone number of technical contact person.
 - Probe adapter model number.
 - Probe adapter serial number.
 - Description of the service required or failure indications.

CAUTION

Cover electrical connectors to protect sensitive components from electrostatic damage.

CAUTION

Use original packaging or comparable. Instrument damage can result from using packaging materials other than the original materials. Never use styrene pellets as packaging material. They do not adequately cushion the instrument or prevent it from shifting in the carton. They may also cause instrument damage by generating static electricity.

- 2 Return the probe adapter in its case or pack the adapter in foam or other shock absorbing material and place it in a strong shipping container.
- 3 Seal the shipping container securely.
- 4 In all correspondence, refer to the probe adapter by model number and full serial number.
- 5 Retain copies of all shipping papers.

Agilent Technologies Service Offices

Call Center

For technical assistance, you can contact your local Agilent Technologies Call Center.

- In the Americas, call 1 (800) 452-4844
- In other regions, visit <http://www.agilent.com> and click **Contact Us**.

Service Center

Before returning an instrument for service, you must first call the Agilent Technologies Instrument Support Center.

- In all regions, call (800) 403-0801

Agilent Technologies Service Offices

Index

A

Accessories, 4
Agilent offices, 17

C

CE mark, 3
cleaning, 2, 4, 17
CSA mark, 3

D

Declaration of Conformity, 14

E

EMC requirements, 13
environmental specifications, 10
ESD
 reducing damage caused by ESD, 9
 static-safe work station, 9

I

inspecting, 4
ISM1-A, 3

N

noise declaration, 13
noise requirements, 13

P

performance specifications, 11
probe power outputs, 15

S

sales and service offices, 17
service
 returning the probe adapter, 16
 sales and service offices, 17
 service and replaceable parts, 15
specifications
 environmental, 10
 performance, 11

T

temperature, 6
torque wrench, 4

U

using, 4

Index