

Moving from the HP 3852A Data Acquisition System to the Agilent 34980A Switch/Measure Unit

Application Note

What's your application?

Different types of hardware and software are typically required for monitoring multiple points, controlling external processes, or testing electronic modules. The HP 3852A was most often used for monitoring and control. The Agilent 34980A has much of this capability as well as RF and microwave switching used in production test.

The legacy of the HP 3852A

When the HP 3852A was designed, computers and I/O were slow. It was necessary to have an internal processor to do much of the work of controlling the data flow from the plug-in modules. The 3852A was state-of-the-art in its time in this respect, but was more complex to use and costly to upgrade than modern day modular products. For example, high-speed data transfers required the use of a GPIO interface and DMA controller.



Today's test environment

Now fast PC's and LAN connectivity offload much of the demand on the test equipment; allowing the focus to be more on the quality of the measurement and switching requirements. The 34980A represents the best of several generations of experience in Agilent-designed modular systems with switch, measure, and control capability.

Scanning vs. matrix switches

The 3852A was mainly focused at low frequency monitoring or data acquisition, which resulted in many versions of relay and FET multiplexers. On the other hand, the 34980A has a broader frequency range of multiplexers extending up to 20 GHz. In addition, three different matrix switch modules provide a cost effective means of connecting multiple external instruments to different points on a device under test.



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Temperature and strain measurements

Accurate temperature measurements are key in many applications, especially in design verification. The one-year accuracy specs of the 34980A are better than most of the 90-day specs of the 3852A. Although the 34980A does not have internal strain bridge completion, its optional 6 1/2 digit DMM when used with external bridges provides more accurate measurements than the 3852A.

General purpose switches

The 34980A has the same capability as the 3852A or better, and has twice the number of channels per module.

Digital input/outputs

Modern devices demand wider patterns, deeper memory, and higher speeds. The 34980A has a DIO module with two 32-bit banks, 64 K bytes of memory per 8-bit channel, and a 10 MHz update rate. This far exceeds the capability of the 3852A.

Analog outputs

The 3852A had a 4ch, 12-bit isolated DAC for static outputs and a 2ch, 14-bit DAC with update rates to 800 KHz for simple waveform generation.

The 34980A has a 4ch, 16-bit DAC module with an update rate of 200 K samples/sec and up to 512 K points of shared memory. In addition, the 34980A has a multifunction module with 32-bit DIO, 2ch of DAC, and a 100 KHz totalizer.

What doesn't the 34980A have?

Being more oriented to electronic function test, it doesn't have a 100 KSa/s A/D and high-speed scanning muxes. But with a single channel DCV measurement of 3000 readings/sec and a scanning rate of 1000 channels/sec, the 34980A actually meets most data acquisition needs nearly as well as the 3852A.

Agilent code conversion service

If you're thinking about converting your 3852 to the 34980A switch measure unit, an Agilent engineer can recommend an efficient path to help you migrate successfully. Our 34980A Code Conversion Services will help you preserve existing functionality as you

migrate to the 34980A and free up resources for other tasks. As part of our Code Conversion Service we will

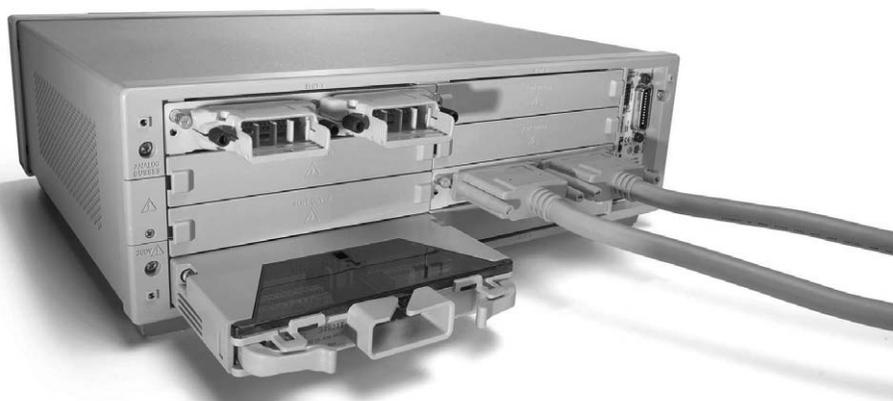
- Review existing code and associated documentation
- Convert code to the new switch measure unit and
- Test the new code with your test system to verify the same functionality

For more information on this capability contact your local Agilent office.

3852A module replacements

This table provides module replacement recommendations based on a few key specs. Be sure to review the details of your 3852A application to determine all the specs that you must have to meet your needs.

For additional information on selecting the correct replacement module or configuring a complete system, go to www.agilent.com/find/34980A.



3852 to 34980 Migration Cross Reference

	Description	Key Spec
3852A	8-slot Chassis	GP-IB
3853A	10-slot Extender	
44701A	5 1/2 Digit DMM	1600 rdgs/sec
44702A/B	13-bit Voltmeter	100 Krdgs/sec
44704A	16-bit Voltmeter	100 Krdgs/sec
44705A/H	20ch Relay Mux	<2 μ V offset, 250 V
44706A	60ch SE Relay Mux	<200 μ V offset, 42 V
44708A	20ch Mux w/ TC	<2 μ V offset, 170 V
44708H	20ch Hi-V Mux w/TC	<10 μ V offset, 250 V
44717A/18A	10ch 120/350 ohm Strain	Bridge completion
44705F	20ch FET Mux	450ch/sec, 16 V
44708F	20ch FET w/ TC	450ch/sec, 16 V
44709A	20ch FET	100 Kch/sec, 16 V
44710A	20ch FET w/ TC	100 Kch/sec, 16 V
44711A/B	24ch FET	100 Kch/sec, 16 V
44712A	48ch SE FET	100 Kch/sec, 16 V
44713A/B	24ch FET w/TC	100 Kch/sec, 16 V
44719/20A	10ch 120/350 ohm Strain	Bridge completion
44730A	4ch Track/Hold Mux	
44732/33A	4ch 120/350 Dyn. Strain	
44726A	2ch Arb DAC	15-bit, \pm 10 V, 800 KHz
44727A	4ch Voltage DAC	12-bit, static, \pm 10 V
44727B	4ch Current DAC	12-bit, static, \pm 10 V
44727C	2ch V, 2ch I DAC	12-bit, static, \pm 10 V
44721A	16ch Dig Input w/Tot	5, 12, 24, or 24 VDC
44722A	8ch Dig Input w/Tot	24, 120, or 240 VAC
44723A	16ch High Speed Dig I/O	150 KHz
44724A	16ch Iso Dig Output	55 V, 500 ma sink
44725A	16ch GP Relay Form C	30 V, 1.5 A
44728A	8ch GP Relay Form C	300 V, 2 A
44729A	8ch Power Controller	250 VAC, 2.5 A RMS
44714A	Stepper Motor Control	
44715A	5ch Counter/Totalizer	10 MHz, 5 V
44736A	Breadboard	+5 V, \pm 20 V, 7 W max

	Description	Key Spec
34980A	8-slot Mainframe	LAN, USB, GP-IB
n/a		
Opt DMM	6 1/2 Digit DMM	3000 rdgs/sec
n/a		
n/a		
34921A	40ch Armature Mux w/ TC	<3 μ V offset, 300 V
34923A	40/80ch Reed Mux	<100 μ V offset, \pm 150 V
34921A	40ch Armature Mux w/ TC	<3 μ V offset, 300 V
34921A	40ch Armature Mux w/ TC	<3 μ V offset, 300 V
34921A	40ch Armature Mux w/ TC	Use external bridge
34925A	40/80ch FET Mux	1000ch/sec, \pm 80 V
34925A	40/80ch FET Mux	Use external reference
34925A	40/80ch FET Mux	1000ch/sec, \pm 80 V
34925A	40/80ch FET Mux	Use external reference
34925A	40/80ch FET Mux	1000ch/sec, \pm 80 V
34925A	40/80ch FET Mux	1000ch/sec, \pm 80 V
34925A	40/80ch FET Mux	Use external reference
34925A	40/80ch FET Mux	Use external bridge
n/a		
n/a		
34951A	4ch DAC w/ Waveform	16-bit, \pm 16 V, 200 KHz
34951A	4ch DAC w/ Waveform	16-bit, \pm 16 V, 200 KHz
34951A	4ch DAC w/ Waveform	16-bit, \pm 16 V, 200 KHz
34951A	4ch DAC w/ Waveform	16-bit, \pm 16 V, 200 KHz
34952A	32-bit Dig I/O, 2ch DAC, Tot	5 V in, 5- 42 V out
n/a		
34950A	64-bit Dig I/O, 2ch Counter	10 MHz
34952A	32-bit Dig I/O, 2ch DAC, Tot	42 V, 400 ma sink
34937A	28ch Form C, 4ch Form A	300 V, 1 A
34937A	28ch Form C, 4ch Form A	300 V, 1 A
34938A	20ch Form A Relay	250 VAC, 5 A
n/a		
34950A	64ch Dig I/O, 2ch Counter	10 MHz, 1.0 V to 5 V
34959A	Breadboard	+5 V, +12 V, 6 W max

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Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you receive your new Agilent equipment, we can help verify that it works properly and help with initial product operation.

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Phone or Fax

United States:

(tel) 800 829 4444

(fax) 800 829 4433

Canada:

(tel) 877 894 4414

(fax) 905 282 6495

China:

(tel) 800 810 0189

(fax) 800 820 2816

Europe:

(tel) 31 20 547 2111

Japan:

(tel) (81) 426 56 7832

(fax) (81) 426 56 7840

Korea:

(tel) (080) 769 0800

(fax) (080)769 0900

Latin America:

(tel) (305) 269 7500

Taiwan:

(tel) 0800 047 866

(fax) 0800 286 331

Other Asia Pacific Countries:

(tel) (65) 6375 8100

(fax) (65) 6755 0042

Email: tm_ap@agilent.com

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