Data Acquisition System

DAQ-9600

Expand Your Measuring Tentacles

The DAQ-9600 data acquisition system has seven high-quality modules and a built-in 6 1/2 digit multimeter to provide you with an efficient and accurate data acquisition.

The system measures and converts 14 different input signals: Temperature with thermocouples, RTDs and thermistors; DC/AC voltage; 2-wire and 4-wire resistance; frequency and period; DC/AC current and capacitance; direct strain and bridge strain.

Your data acquisition is controlled by logging and observing results in a variety of display options for easier analysis. A free DAQ software assists you in controlling measurement channels for your specific test configurations from multiple data acquisition units.

DAQ – Data Logger SOFTWARE

GW INSTEK
Simply Reliable

Data Acquisition

| |

Multiplexer

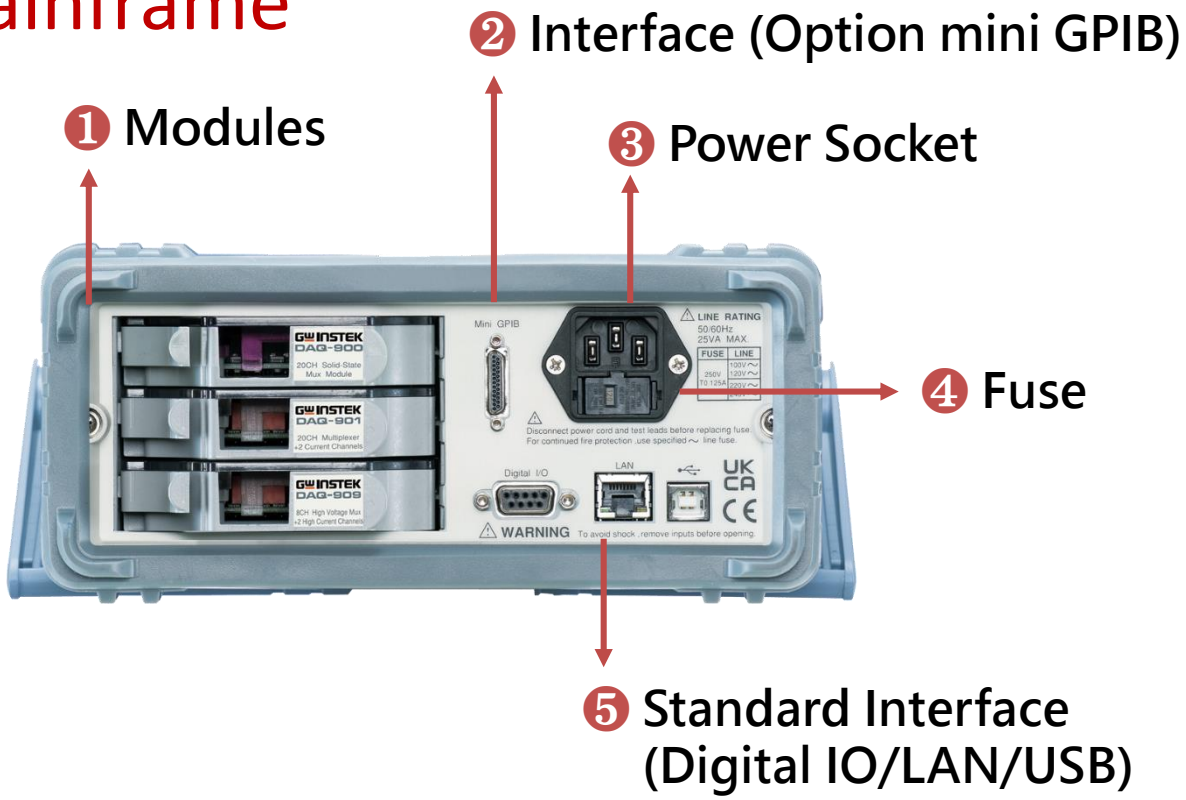
+

Mainframe

Digital IO	LAN	USB	GPIB
Standard	Standard	Standard	Option

6 ½ digits Accuracy

3-slot Mainframe



Features (Mainframe)

※ Large 4.3" TFT color display
※ 3-slot mainframe with built-in 6 ½ digit DMM
※ Basic 0.0035% DCV accuracy
※ 7 selectable switch modules
※ Up to DC 600 V / AC 400 V Voltage Measurement (DAQ-909 module)
※ Up to 450 channels/s scan rate
※ Up to 100 kilo points internal memory
※ Measures and converts 14 different input signals:
Temperature with thermocouple, RTDs and thermistor; dc/ac volts; 2- and 4-wire resistance; frequency and period; dc/ac current and capacitance; direct and bridge strain
※ Commands compatible with the DAQ970A
※ USB storage supports copy/log data in standalone operation
※ Interfaces: Digit I/O, LAN, USB host/device and mini GPIB(optional)
※ Free PC software DAQ-Data logger, allows easy configuration and control of tests

Features (Modules)

DAQ-900 **20-Channel Universal Multiplexer (Solid State Relay)**
※ Scanning speed up to 450 channels per second
※ 2-wire and 4-wire scanning
※ Built-in temperature cold junction reference
※ 120 V switching

DAQ-901 **20+2 Channels Universal Multiplexer (Armature Relay)**
※ The scanning speed can reach 80 channels per second
※ 2-wire and 4-wire scanning
※ Built-in temperature cold junction reference
※ 300 V switching
※ The extra 2 channels can directly measure the current (1 A / per channel)

DAQ-903 **40-Channel Single-Ended Multiplexer**
※ The scanning speed can reach 80 channels per second
※ Single-wire switching is suitable for common-low applications

DAQ-904 **4 x 8 Matrix**
※ The switching speed 3 ms
※ 32 2-wire intersections
※ 300 V, 1 A switching
※ Up to 96 crosspoints (3 slots)

DAQ-907 **Multifunction Module**
※ 16 bits of digital input and output
※ 100 kHz totalizer input
※ Two modes: ± 12 V analog outputs or ± 24 mA outputs

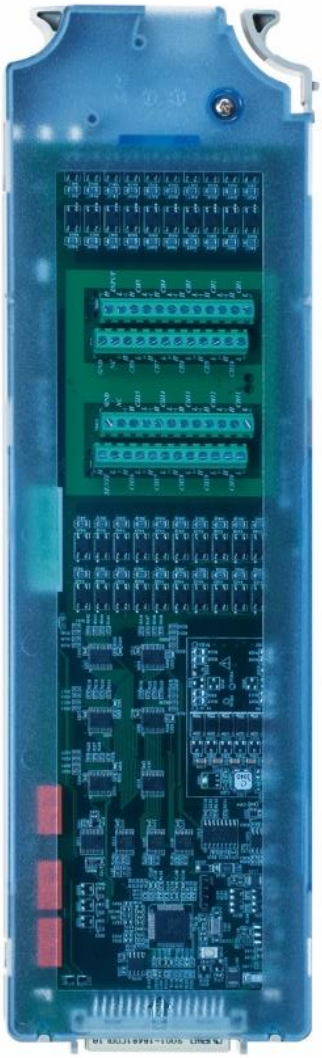
DAQ-908 **20-Channel Actuator/General Purpose Switch**
※ SPDT (Form C) latching relays
※ 300 V, current 1 A actuation and control

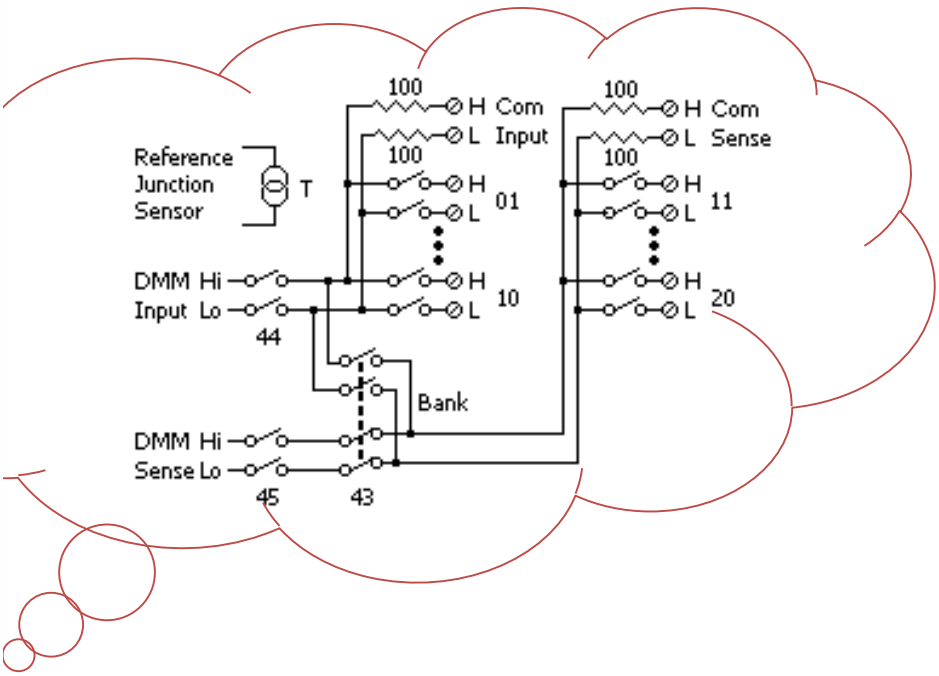
DAQ-909 **8+2 Channels High Voltage High Current Multiplexer**
※ The switching speed 3 ms
※ DC voltage 600 V, current 2 A
※ 2-wire and 4-wire scanning
※ Additional 2 channels can directly measure current (2 A / per channel)

DAQ-900

20-Channel Universal Multiplexer (Solid State Relay)

※ Scanning speed up to 450 channels per second
※ 2-wire and 4-wire scanning
※ Built-in temperature cold junction reference
※ 120 V switching



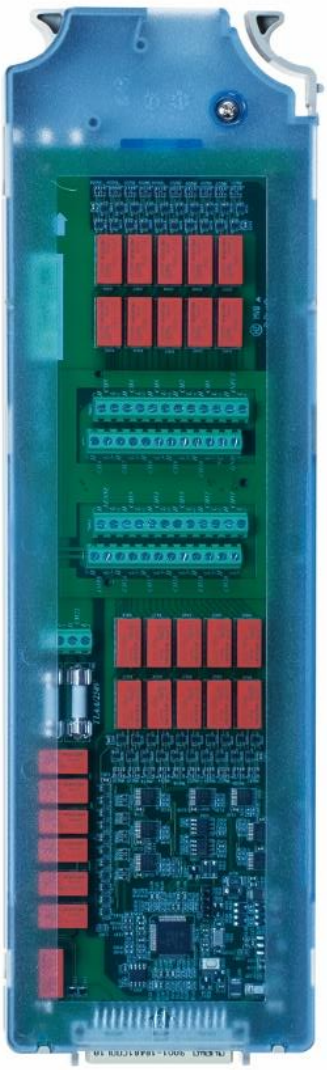


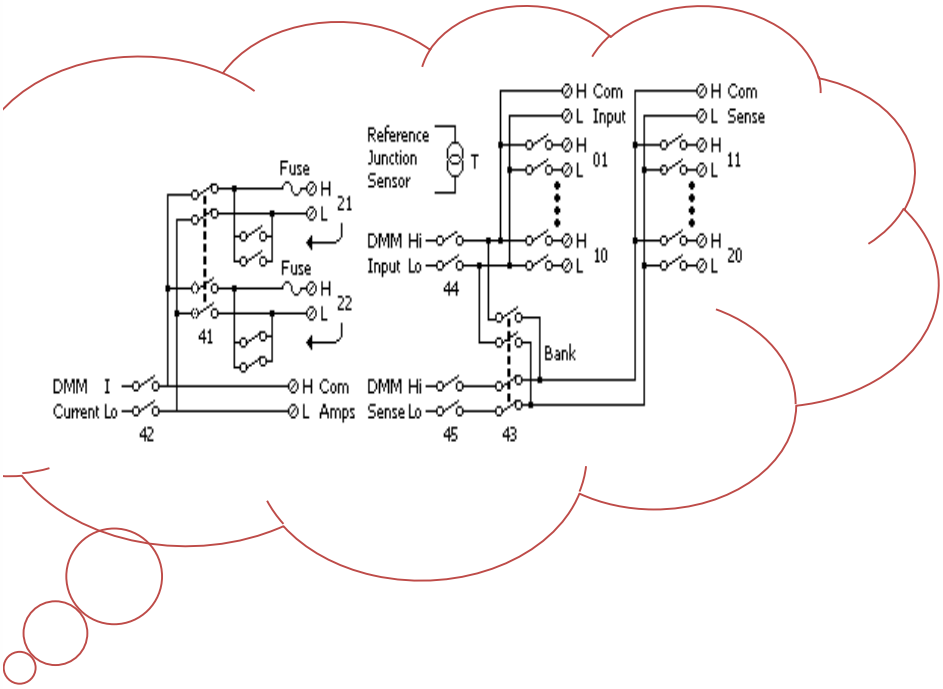
DAQ-900 is a solid state relay module that provides two groups (A/B) of 10 2-wire channels each. All 20 channels are switchable to high (HI) and low (LO) inputs, providing fully isolated inputs for the built-in digital meter or external instruments. During 4-wire resistance measurements, the channels of group A are automatically paired with the channels of group B to provide power and sense connections. The module has a built-in cold junction reference, which can greatly reduce errors caused by thermal gradients when measuring thermocouples

DAQ-901

20+2 Channels Universal Multiplexer (Armature Relay)

※ The scanning speed can reach 80 channels per second
※ 2-wire and 4-wire scanning
※ Built-in temperature cold junction reference
※ 300 V switching
※ The extra 2 channels can directly measure the current (1 A/each channel)





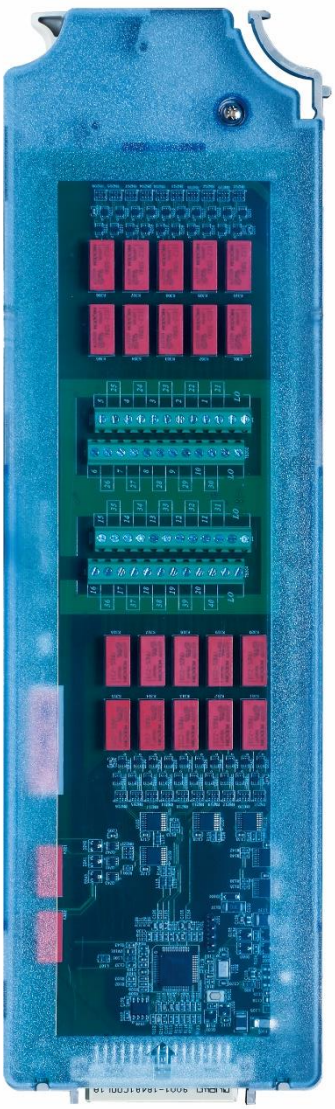
DAQ-901 is a comprehensive multiplexer for general scanning. The same module can mix 2-wire and 4-wire channels; at the same time, the additional 2 current input channels can be used for AC and DC current measurement without external shunt resistors (maximum 1 A per channel).

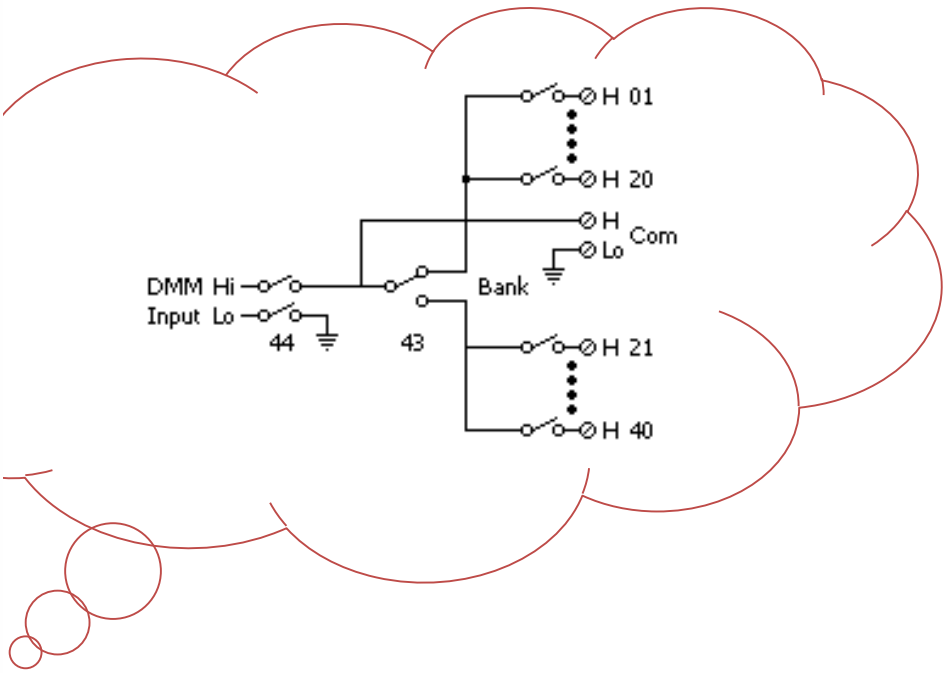
DAQ-901, a total of 22 channels, intensive multi-function switching and a scan rate of up to 80 channels per second, is suitable for various data acquisition applications.

DAQ-903

40-Channel Single-Ended Multiplexer

※ The scanning speed can reach 80 channels per second
※ Single-wire switching is suitable for common-low applications
※ 2-wire scanning (except current)





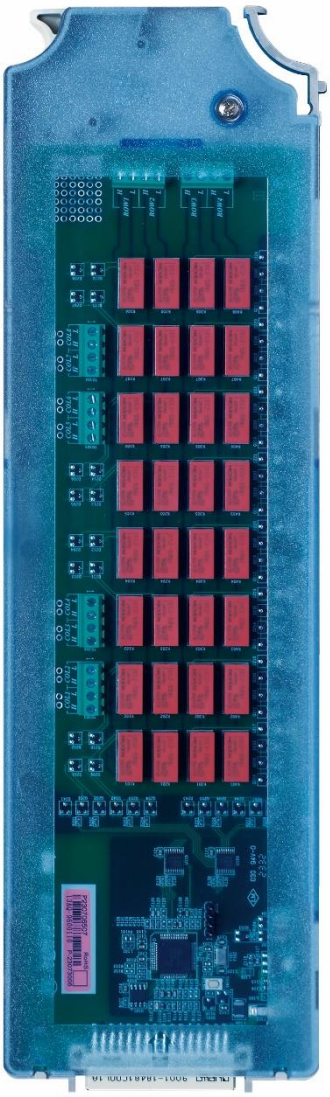
DAQ-903 can switch 40 single-wire inputs per module. It can be used for common-low applications such as battery testing, component characterization and desktop testing. The low-voltage connection is isolated from ground and can be floated up to 300 V.

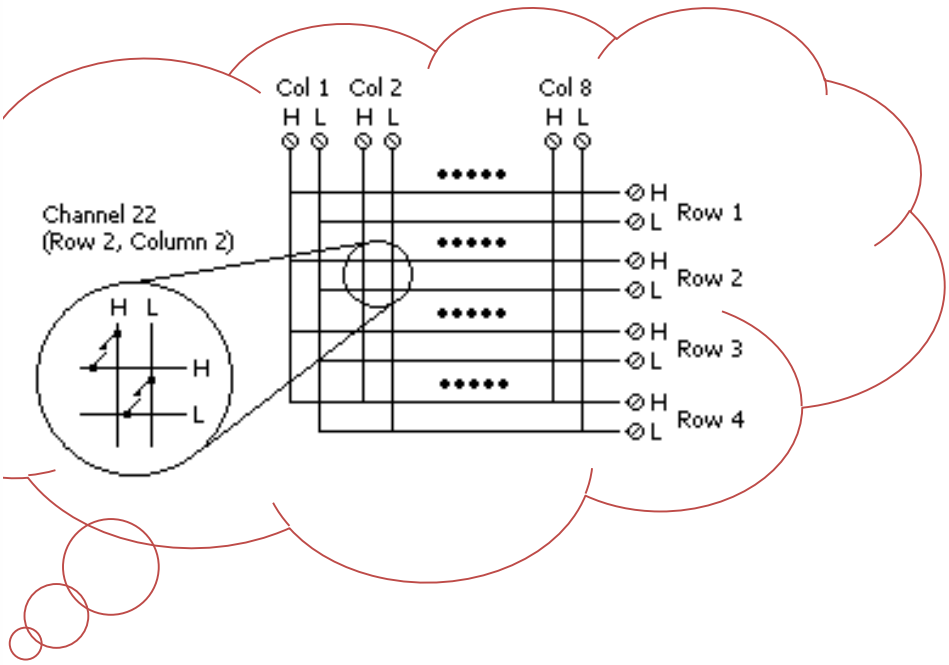
DAQ-903 also supports all 2-wire internal measurements except current.

DAQ-904

4 x 8 2-Wire Matrix

※ The switching speed 3ms
※ 32 2-wire intersections
※ 300 V, 1 A switching
※ Up to 96 crosspoints (3 slots)





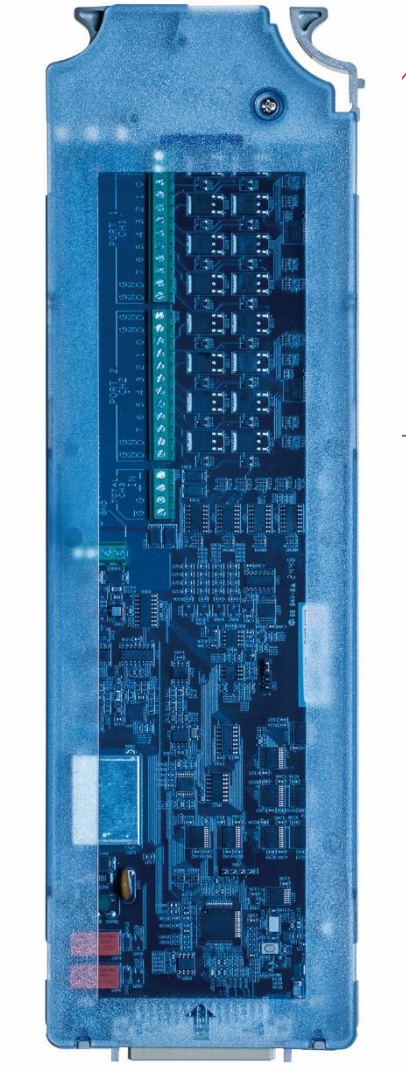
DAQ-904 module can provide the most flexible connection path between your DUT and the test system, allowing different test instruments to be connected to multiple points on the DUT at the same time.

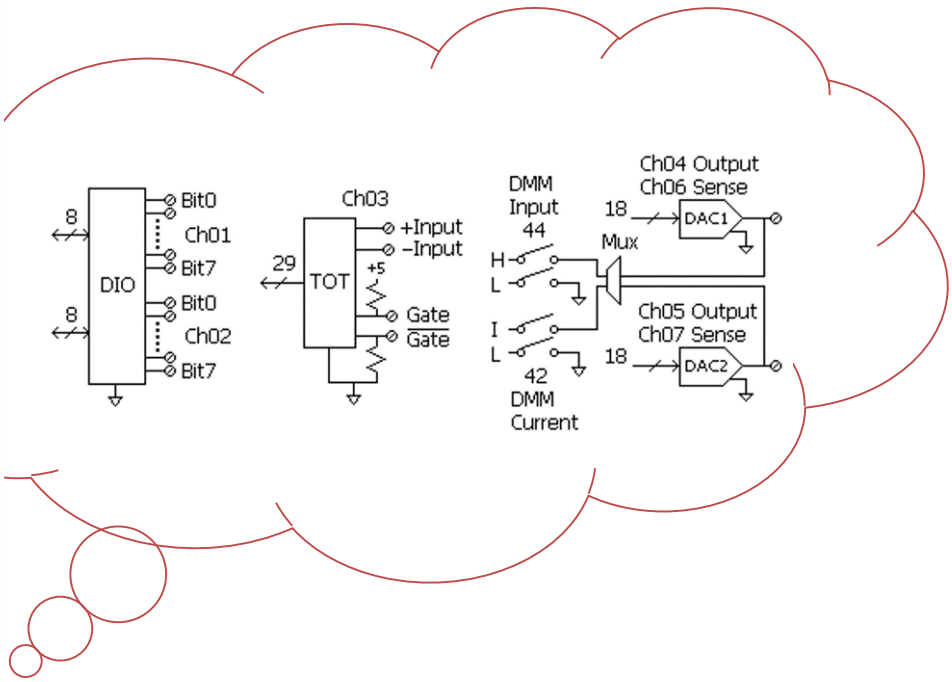
DAQ-904 can connect the rows and columns of multiple modules to build larger matrices, such as 8 x 8, 4 x 16...etc. Up to 96 crosspoints can be built in a single instrument.

DAQ-907

Multi-function Module

※ 16 bits of digital input and output
※ 100 kHz totalizer input
※ Two analog modes: ± 12 V outputs or ± 24 mA outputs





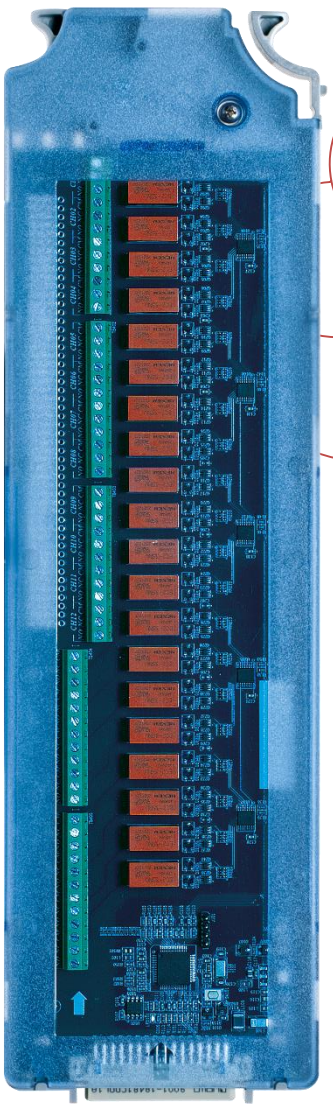
DAQ-907 provides great flexibility for various sense and control applications. It engages two 8-bit digital input and output ports, a 100 kHz gated totalizer, and two ± 12 V or ± 24 mA analog outputs—all on a single earth-referenced module. The digital inputs and totalizer input may be included in a scan. Alarm limits for the digital and totalizer inputs are evaluated continuously, capturing and logging alarm conditions even between scans.

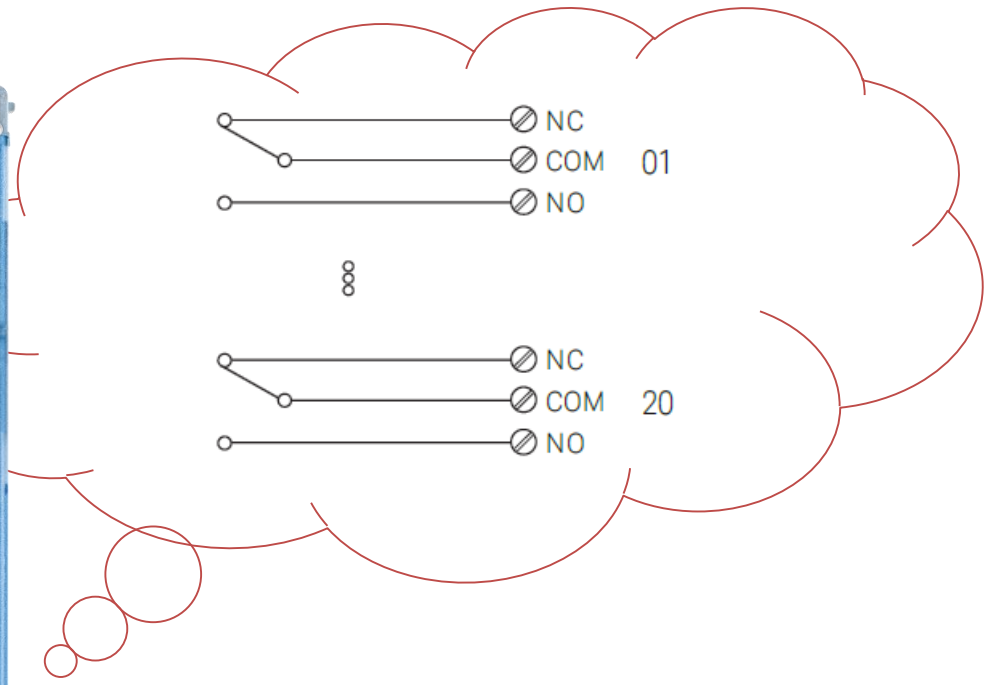
In addition, it has two additional channels (DMM INPUT and DMM CURRENT) that can sense output current when sourcing voltage or output voltage when sourcing current.

DAQ-908

20 Channels Actuator/General Purpose Switch

※ SPDT (Form C) latching relays
※ 300 V, current 1 A actuation and control



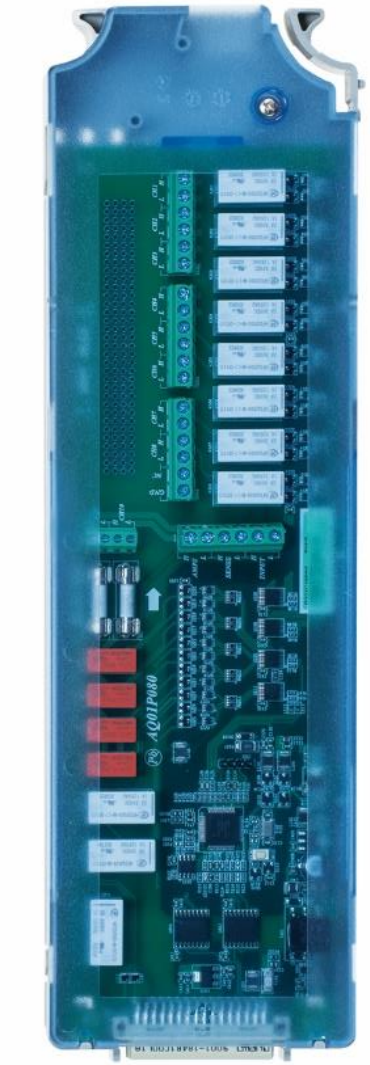


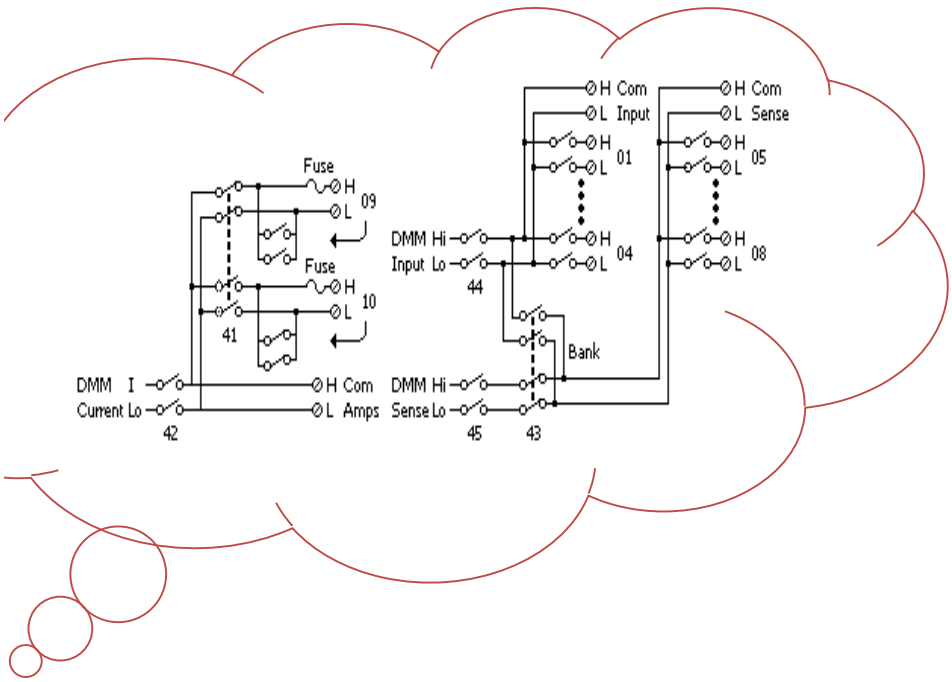
DAQ-908, a general purpose switch module with 20 independent single pole double throw (SPDT) relays, can be used for power cycling in DUTs, control indicator lights and status lights. DAQ-908 can also activate external power relays and solenoid valves. While combining DAQ-908 with matrix and multiplexer modules, switching systems can be customized. 300 V and 1 A contact can handle up to 50 W, which is sufficient for multiple powerline switching applications.

DAQ-909

8+2 Channels High Voltage High Current Multiplexer

※ The scanning speed reaches 60 channels per second
※ DC voltage 600 V, current 2 A
※ 2-wire and 4-wire scanning
※ Additional 2 channels can directly measure current (2 A/each channel)





DAQ-909 is a multiplexer specially designed for high voltage, providing 8 channels for DC 600 V / AC 400 Vrms voltage measurement. The additional 2 current input channels can be used for AC and DC current measurement, external shunt resistors are not required (maximum 2 A / per channel).

Modules Characteristics

A single mainframe can insert up to three modules (in any combinations).
The built-in digital multimeters of DAQ-9600, except DAQ-904, DAQ-907 and DAQ-908, can be connected and used via DAQ-900, DAQ-901, DAQ-903 and DAQ-909 multiplexers.

	Multiplexer	Multiplexer	Multiplexer	Matrix	Multifunction	Switch	Multiplexer
	DAQ-900	DAQ-901	DAQ-903	DAQ-904	DAQ-907	DAQ-908	DAQ-909
CH No.	20	20+2	40	4 x 8		20	8+2
Speed (Scan)	450 CH/s	80 CH/s	80 CH/s				60 CH/s
Internal DMM measurement functions supported							
AC/DC Voltage	√ [2,3]	√	√				√
AC/DC Current		√					√
Freq./Period	√	√	√				√
2Wire Resistance	√ [1]	√	√				√
4Wire Resistance	√ [1]	√					√
Thermocouple	√	√					√ [5]
2Wire RTD		√	√				√
4Wire RTD		√					√
Thermistor		√	√				√
Capacitance		√	√				√
Characteristics – typical: Input (DC、AC rms)							
Voltage (V)	120 V	300 V	300 V	300 V	±12 V	300 V	DC 600 V AC 400 V
Current (A)		1 A			±24 mA		2 A
Characteristics – typical: Others							
T/C CRJ Accuracy	0.8°C	0.8°C					
Lifetime (No Load)	see [4]	10M	10M	10M	10 M	10M	100M
Lifetime (Rated Load)	see [4]	100k	100k	100k	100 k	100k	100k

1. For the measurement of 100 Ω and 1 kΩ resistance ranges, it is recommended to use 4-wire resistance. The maximum resistance range of DAQ-900 is 1 MΩ.
2. When measuring AC voltage, the input impedance will decrease with frequency. A source impedance of 5 Ω or less will maintain specification over frequency. A source impedance of 50 Ω or less will maintain specification in the 5 kHz range.
3. For DC voltage measurement, if the integration time is short and the source impedance is high, more stabilization time may be required.
4. The module has an armature backplane and 2-wire/4-wire relays with a life of 100 M cycles (unlimited life cycle within FET Bank)
5. Need to use an extension cable moving the cold junction outside the chassis and manually set the reference temperature value.

Datasheet

Switch Modules

Model Name	Model description	Type	Speed (Scan)	Max volts	Max amps	Comments
DAQ-900	20 ch Multiplexer	2-wire solid state (4-wire selectable)	450	120 V		Built-in cold junction reference
DAQ-901	20 ch Multiplexer + 2 current channels	2-wire armature (4-wire selectable)	80	300 V	1 A	Built-in cold junction reference 2 additional current channels (22 total)
DAQ-903	40 ch Single-Ended Mux	1-wire armature (common low)	80	300 V		No four-wire measurements
DAQ-904	4x8 Two-Wire Matrix	2-wire armature		300 V		
DAQ-907	Multifunction Module	16 bits of digital input and output		42 V		Open drain
		100 kHz totalizer input		42 V		Input threshold selectable
		Two 18-bit analog output		±12 V	±24 mA	Max 40 mA total output per frame
DAQ-908	20-Channel Actuator /General-Purpose Switch	SPDT/form C		300 V		
DAQ-909	8 ch Multiplexer + 2 current channels	2-wire armature (4-wire selectable)	60	DC 600 V AC 400 V	2 A	High voltage / high current channels

SPECIFICATIONS

DISPLAY	4.3" Color TFT LCD		
SLOT	3		
Sample Rate	38.4 k SPS (max.)		
Internal memory	100 k_Sample (nonvolatile)		
Measurement Characteristics			
	Range	Resolution	Accuracy (*)
DC Voltage	100 mV to 600 V	0.1 µV to 1 mV	0.0035%
AC Voltage	100 mV to 300 V	0.1 µV to 1 mV	0.05%
Resistance	100 Ω to 1000 MΩ	0.1 mΩ to 1000 Ω	0.01%
Frequency	3 Hz to 300 kHz		0.01%
DC Current	1 µA to 2 A	1 pA to 1 µA	0.05%
AC Current	100 µA to 2 A	100 pA to 1 µA	0.10%
Capacitance	1 nF to 100 µF	0.000 1nF to 0.01 µF	2%
Temperature (TC)	-200 °C to 1820 °C	0.002 °C to 0.01 °C	0.2 °C
Temperature (TM)	-80 °C to 150 °C	0.01 °C	0.01 °C
Temperature (RTD)	-200 °C to 600 °C	0.002 °C	0.06 °C
General Information			
USB storage	Available		
Interface	Digital I/O, LAN and USB host/device		
Optional Interface	mini GPIB		
Power Source	AC 100 V/120 V/220 V/240 V ± 10%		
Dimensions (W x H x D)	267 mm x 107 mm x 380 mm		
Weight	Approx. 4.5 kg		

* : The accuracy is based on the value measured with DAQ-901.

Specifications subject to change without notice.

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