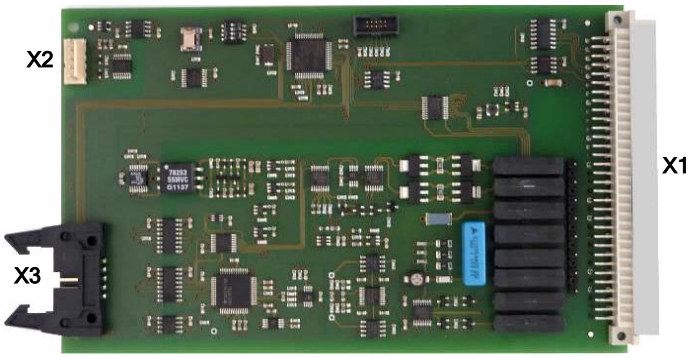
GTS TEST SOLUTIONS GUARDIAN TEST SYSTEM Item no. 21248

ADX2

Features

- Potential-free measurement board
- 24-bit resolution
- DCV, ACV, resistance, diode, capacitance
- Dialectic strength ±200V DC or V_{peak}
- Integrated scope function
- 4-pole resistance measurement, minimum resolution 30µΩ

The ADX2 board is a universal measurement board for our Guardian Test System. It is the backward compatible successor to the ADX1 board, and can replace the old board without any modifications to the test programmes. It contains a fast and high-resolution A/D converter and is controlled by an ARM controller. In addition to multimeter measurement techniques, the board includes in integrated storage oscilloscope used to record analog signals up to 400 kHz.



ADX2 measurement board

Application

The ADX2 board is often used in connection with our channel switches (relay matrix) for automatic measurements during a function test of electronic assemblies and devices. Component tests (in-circuit tests) of resistors, diodes, transistors, capacitors, etc. are also possible

4-Pole measurement

4 channel switches are required for 4-pole measurements in order to separately route the sense and drive signals to the component to be measured. This compensates for the contact resistance and allows precise measurement of low resistances.

Short-circuit and connection tests

Short-circuit and connection tests offer an easy method to detect production errors such as solder bridges, interruptions and commutations. In addition, the setpoint connections are first checked in a defined range of measurement channels and then it is verified that no additional connections exist. An efficient algorithm reduces the number of measurements in the process, leading to a shorter test duration.

Pinfinder

This function scans the measurement channels cyclically and displays the channels that are connected to positive measuring input ADX+. Our WinGuard software displays the connected measurement channels when the testing pins of a needle adapter are touched with a measuring tip.

Specification

Operating voltage	5V ±0.1V, approx. 350mA
A/D converter	ADS1672, 24-bit resolution
Input resistance	100K, 10 MΩ or high-resistance
Dialectic strength	200 VDC or 140 VAC eff.
X1 connector	RS-422 Guardian log, 64-pin multipole connector DIN 41612
X2 connector	USB COM port for fast transfers from the data logger
	5-pin header RM 2.54
X3 connector (optional)	8 GPIOs for expansion, 10-pin header 90°, RM 2.54
PCB dimensions	100 x 160 cm

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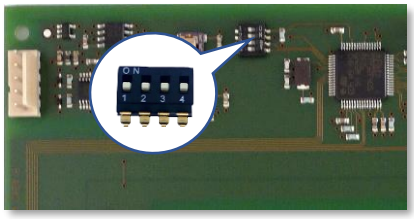
Specification

Measurement type	Measurement range	Resolution	Accuracy	Measuring current
DC voltage	± 500.00 mV	6 nV	0.25 %	-
DCV	± 5.0000 V	60 nV	0.10 %	-
	± 50.000 V	0.6 µV	0.10 %	-
max. ±200V DC	± 500.00 V	6 µV	0.10 %	-
AC voltage	300.00 mV	6 nV	0.5 %	-
ACV RMS value	3.0000 V	60 nV	0.10 %	-
	30.000 V	0.6 µV	0.10 %	-
max. 140V AC	300.00 V	6 µV	0.10 %	-
Resistance	200.00 Ω	6 µΩ	0.25 %	1mA
	2.0000 KΩ	60 µΩ	0.10 %	100µA
	20.000 KΩ	0.6	0.10 %	10µA
	200.00 KΩ	60	0.10 %	1µA
	2.0000 MΩ	0.6 Ω	0.10 %	100nA
	20.000 MΩ	60 Ω	0.25 %	10nA
Diode measurement	0-4.5V	60 nV	0.20 %	1mA

Addressing



Swtich 1 is reserved for controller programming and must always be in the OFF position Switch 2 controls the polarity of the measurement board. The standard position in ON (AC17=Plus, AC19=Minus). The OFF position reverses the poles of the measuring inputs (AC17= Minus, AC19=Plus) to facilitate backward compatibility of older ADX1 boards. Information: Switch position changes are only implemented after a power up.

1 indicates switch position ON
0 indicates switch position OFF

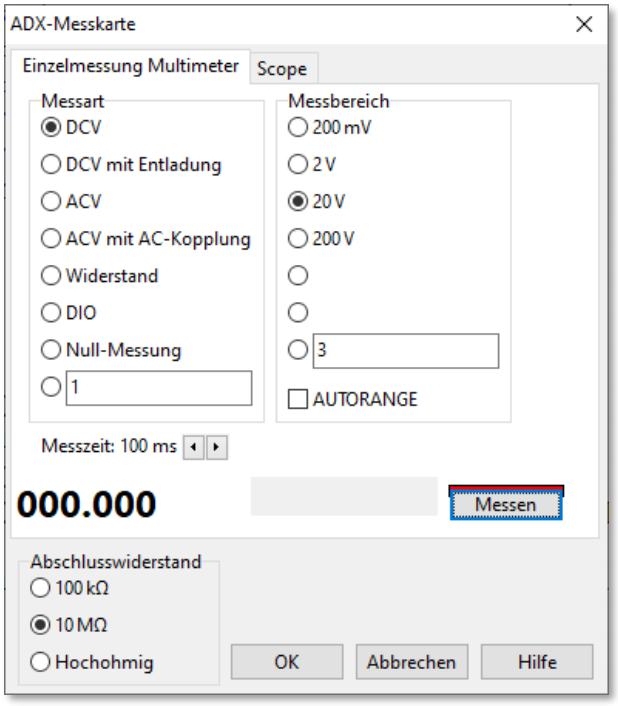
Card address	Switch no. 4 3 2 1
64	0 0 0 0
65	0 1 0 0
66	1 0 0 0
67	1 1 0 0

Pinout

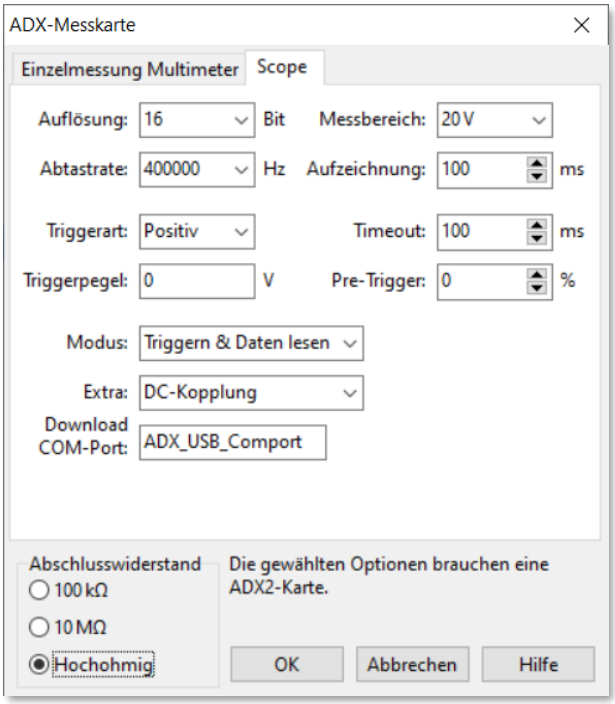
X3 connector

PIN	SIGNAL
AC1	5 V
A2	GND
C2	RXD +
A3	RXD -
C3	GND
A4	TXD +
C4	TXD -
AC5	GND
A6	ext. Trigger +
C6	ext. Trigger -
AC17	Sense +
AC19	Sense -
AC21	Drive +
AC23	Drive -
AC25	Sense 2 + (opt)
AC27	Sense 2 - (opt.)

Multimeter mode



Scope mode



This window controls the scope functions. 'Trigger' mode initiates scope measurement, i.e. the measurement board scans the input with the selected frequency and checks whether the trigger criterion has been met. If it has, recording will be initiated. In this mode, WinGuard does not wait for the trigger and can generate the signal that needs to be measured with the subsequent lines of script. If the expected signal is not received, the measurement will be aborted after the set timeout.

In 'Read Data' mode, data from the ADX2 board is transferred to a PC. Following this step, the data can be displayed and analysed in the WinGuard scope. More information on this process can be found in the WinGuard documentation.

'Trigger & Read Data' modes perform both steps in direct succession. This setting is suitable for constantly repeating signals, e.g. square waves.

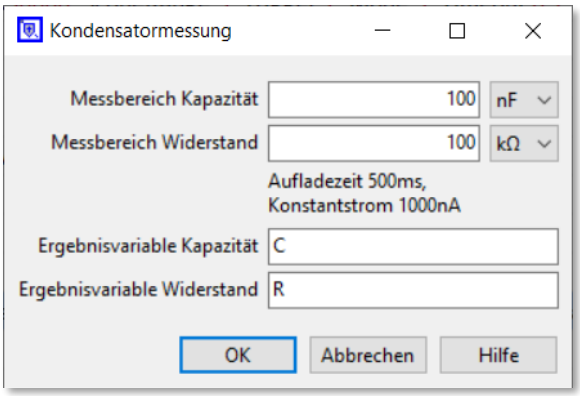
'Delete Data Buffer' resets the storage in the ADX2 board.

The ADX2 board features a constant current source that can be connected to the measuring inputs in order to discharge the capacities in a controlled manner. This function is used during short-circuit tests and capacitance measurements. It can also be activated by selection 'Discharge' in the 'Extra' field during scope measurements.

Scope features

- Resolution 8 or 16-bit
- Measurement range: ±200mV, ±2V, ±20V, ±200V
- Scanning frequency: 200 Hz to 400 KHz
- Recording: max. 16,000 readings
- Type of trigger: Controlled by positive edge, negative edge of software
- Trigger level: Must remain within the selected measurement range.
- Mode: Trigger, Read Data, Trigger & Read Data (combined), Delete Data Buffer
- Extra: DC coupling, AC coupling, discharge
- Download COM port: USB COM port for fast transfers from the data logger

Capacitance measurement



This command is used to measure a capacitor and resistor connected in parallel. WinGuard calculates a suitable constant current on the basis of the entered reference input variables. The ADX2 uses this current to charge the capacitor and records the resulting waveform. An algorithm then uses this waveform to calculate the capacitative and resistive components and transfers both values to the specified variables.