Agilent Technologies

Measure Ohms and Farads Read Me

readme.txt (ready for printing)
MEASURE OHMS and FARADS using your PC and a card !
Hello,
this file will give info on:

1) the virtual instruments of PCMessGeraete using a certain Card.
2) data of this card (for comparison with other cards).
3) features and operation of OhmANDFarad.vxe - program.
4) how to use another card by changing the source-code (*.vee).
5) unpacking and installation

(1) Principle of Virtual Instruments using a card
The idea is very simple: Almost all digital test-equipment uses AD
-converters.Using a multiple I/O-card offers this feature as well.
The program reads the data-words of the ADC(s) and converts them
to Volts (DC,AC,mixed as chosen by the user) for a VOLTMETER or
the same input(s) to show the trace or spectrum of the signal
(SCOPE, TRANSIENT RECORDER or SPECTRUM ANALYZER).
If the card has DA-converter(s) to offer, which can be run from a
FIFO on the card, you will be able to load the FIFO with data
points of the signal and run that GENERATOR without any further
access to the card being necessary. This means, you can create
stable frequency NOT depending on the computer !
Combining GENERATOR(s) and VOLTMETER produces WOBBLERS, OHM-,
CAPACITY- or IMPEDANCE-Meters. A DISTORTION ANALYZER can be rea-
lized by a generator (internal or external) and a calculation of
spectral data.

(2) Data of card
ME3000 VEC3 of MEILHAUS (www.meilhaus.com) has these main data:
16 multiplexed analog inputs (opto-isolated) with max. sampling
rate of 500kHz (one channel. 2 ch.: 250kHz and so forth) at
max. +/-10V using a FIFO with max. 2kB. 12 Bit resolution.
4 analog outputs max. +/- 10V with 4k FIFO at 100 to 500 kHz,
depending on voltage difference between points. (This enables
i.e. 100kHz square-wave or at least 10kHz sine with 50 points
a period)
FOR SWITCHING purposes, there are 32 digital I/O-ports, which
can be set as two different 16-Bit-ports.
There is a PULS-WIDTH-Modulated TTL-Generator (max. 30kHz) and
there are two counters to be used freely (Which gives the oppor-
tunity to build an "Universal Counter").

(3) HELP-TEXT is given here:

3.1 CAPACITY

Measuring Current and Voltage:
==========
NO electrolytic capacitors, NO VariCaps, range: >10pF to >1uF
==========
using f=1kHz,100Hz,10Hz according to range.Amplitude:10V (sine)
After starting,an automatic zero-correction measurement is done.
(attn: warning popups)
Measurement Cycle: appr. 3 sec
Resolution: 3 Digits.
You may choose single or recurrent measurement:
[cont <-> single]

If you chose single you may keep the result:
[keep] and have to continue with [next].
Values kept with [keep] can be tranferred to EXCEL(Office 97up)
using [to EXCEL]-switch.

MIND:
Values with extremely changing results may indicate wrong range !
HARWARE:
connect PIN 35,20,59 to PIN 10,13,21,60,74: Analog to PC-ground
connect PIN 55 to 58 and 75 to 78 to ground (not used inputs)
connect 10kOhm-Resistance (<=1%, 1/4W) to ground. 2nd PIN of
resistor connected to PIN 17 is INPUT1 for Cx.
connection of PIN 33 to PIN 72 is INPUT2 of Cx (= supply voltage)

3.2 OHMs / DIODE-Testing

(1) Diode-test:
==========
Threshold Diode:
<1.5 Volt at diode at 5V supply-voltage (DC)
Indications:
+ ->>- - for feed-thru-
+ -||- - for cut-off-direction

(2) Resistance-Measurement:
==========
appr. 1 Ohm thru 3MOhm. More than 20MOhm show "Overrange"

The error in the range of 500 Ohm is appr.+/- 0.2% and increa-
ses to the end/start of the range.
Umax = 10V (open end), Imax = 2mA (shortcut).

The key [cal] enables "calibration":
Use a defined resistance in the range of 1kOhm thru 100kOhm
and press [cal].
A popup with potentiometer appears. Vary this until the desired
value is shown.
[OK] closes instrument.

HARDWARE:
Ground connections as above !
connect 5kOhm-Resistance (<=1%, 1/4W) to ground. 2nd PIN of
resistor connected to PIN 37 is INPUT1 for Rx (or Diode).
connection of PIN 33 to PIN 72 is INPUT2 of Rx (= supply voltage)

FURTHER INFO will be supplied if you "double-click" the *.vxe:
- on the panel
- clicking: [HELP] and [INFO] even though, you don't
have the card !

(4) Adapt to other card
Changing the source-code to use another board:
Use FIND to look for all appearances of "me3000". This will offer
102 appearances. You "simply" have to change all these by the
appropriate calls for the functions of the other card. If your
card has VEE-drivers with it, you can use them. Otherwise, you
must create them.The files referred to in LOAD LIBRARY must be
changed as well. Though this is very easy to be done, it becomes
somewhat fatiguing !

(5) Unpack and Instal
You got a zip-File, which includes:
Me3000.dll = the dll of the used board, to be copied to:
c:program filespcmess (create this directory !!)
me3000vee.h = the header-file for the used board, to be copied to:

c:program filespcmess (create this directory !!)
OhmANDFarad.vee = the actual program AND
OhmANDFarad.vxe = the runtime-version of it.

You will not be able to run the program without board.So, you may
wish to visit our web-site: www.pcmess.de and download the
*.vxe-file of the complete program (PCMessprof) as a DEMO for this
(and other) boards.
The demo shows all the capabilities of our "virtual instruments"
(Don't mix it up with the NATIONAL term !).
You may get more information and / or source code by contacting us!
Source code, of course, is not sent without payment, which you will understand.
ALL MAIL should be sent to: adn_at_pcmess@vr-web.de, an address,
which should be only for ADN-users(and is therefore NOT included
in our mail-list on our homepage)!

Have fun and success with this !

Peter
