

ADMX2001B Commands set (green commands surrounded by {...} are for SPI bridge only)

COMMANDS	SHORT	PARAMETERS	DESCRIPTION
		MEASURE	
z	z		Initiate impedance measurement
temperature	tem	[<cls fht>]	Display module temperature and set units
initiate	init		Initializes for triggered measurement(s)
trigger	trigg		Triggers the measurement
abort	abo		Aborts the measurement
		MEASUREMENT CONFIGURATION	
frequency	fre	[<frequency>]	Set measuring frequency in [KHz] (0.2Hz..10MHz)
magnitude	mag	[<magnitude>]	Set generator magnitude (0.14..2.25V p-p)
offset	off	[<offset>]	Generator DC offset in [V]
setgain	set	[<auto> [<ch0 ch1> [<gain>]]]	Set channel gains (auto off) or set gains to auto
trig_mode	tri	[<internal> <external>]	Set trigger mode to internal/external
average	ave	[<n>]	Number of samples to average
display		[<model number>]	Set display mode
		MEASUREMENT TIMING	
mdelay	mde	[<n>]	Set the measurement delay in [ms]
tdelay	tde	[<n>]	Set the triggered delay in [ms]
		MULTIPOINT/SWEEP CONFIGURATION	
count	cou	[<n>]	Set the sample count for measurements
tcount	tco	[<n>]	Set the trigger count
sweep_type frequency		<frequency start> <frequency end>	Frequency sweep [KHz] with start-end conditions
sweep_type magnitude		<magnitude start> <magnitude end>	Magnitude sweep with start-end conditions
sweep_type offset		<offset start> <offset end>	Offset sweep with start-end conditions
sweep_type off			Sweep is switched off
sweep_scale	swe	[<linear log>]	Set sweep scale as linear or logarithmic
		COMPENSATION AND CALIBRATION	
compensation	com	[<on off reset open short rt <rt_value> xt <xt_value> >]	Setup of compensation
rdcomp	rdc		Read compensations
storecomp		[<coefficient> <value>]	Store compensation coefficient
calibrate	cal		Reads the current status of calibration
calibrate open	cal open		Runs the open calibration routine
calibrate short	cal short		Runs the short calibration routine
calibrate rt xt	cal rt xt	rt <rt_value> [xt <xt_value>]	Runs the load calibration with custom rt and xt
calibrate on	cal on		Enables the application of calibration
calibrate off	cal off		Disables the application of calibration
calibrate reload	cal reload		Reload calibration coefficients from flash
calibrate commit	cal commit	{pass} [<HEX_timeStamp>]	Stores all calibration coefficients flash
calibrate erase	cal erase	{pass}	Erase all calibration coefficients stored in flash
calibrate list	cal list	<freq>	List calibration coefficients in FLASH for freq
calibrate switch	cal swith	<evalkit defaults>	switch between evalkit user coefficients in flash
rdcal	rdc	[<vgain> <igain>]	Display calibration coefficients loaded in memory
resetcal	resetc	[<vgain> <igain>]	Reset the calibration coefficients in the memory
storecal		[<vgain> <igain> <coefficient> <value>]	Write individual calibration coefficients to RAM
		UTILITY	
*!dn?			Read module ID and firmware
help	hel	[<command>]	Help command
get_attr	get		Fetches and displays attributes value
error_check	err	[<on off>]	Switch on/off error checking
cls	cls		Clear terminal screen
history	his		Display command line help history
reset	res		Reset the module
selftest	sel	[<run>]	Run selftest or show the result
echo_mode	ech	[<on off>]	Switches on/off the echo mode of UART
gpio_ctrl		<n>	Digital Output Pins – n value 0..255
void		[<anything >, ...[<anything >]]	Void command, accepts 0 to 4 parameters
\B0 (char >°<)			Single byte 0xB0 resets the bridge and ADMX2001

Z MEASURE

COMMAND:

z - initiate measurement

SYNOPSIS:

z

DESCRIPTION:

Measure impedance with the present settings.

If sweep_type is given then it generates the number of samples as determined by the 'count' command.

Additional information for 'z' command:

display,tcount,count,offset,frequency, magnitude,setgain commands can impact the output

TEMPERATURE

COMMAND:

temperature - Display module temperature and set temperature unit.

SYNOPSIS:

temperature [<cls | fht>]

DESCRIPTION:

Display current module temperature. Set display temperature unit to degree celsius (cls) or fahrenheit (fht). If no parameter is given then current module temperature is displayed.

INITIATE

COMMAND:

initiate - Initializes the module for triggered measurement(s)

SYNOPSIS:

initiate

DESCRIPTION:

Initializes the module for measurement. This command puts the module in the WAIT_FOR_TRIGGER" state and disables certain commands.

TRIGGER

COMMAND:

trigger - Triggers the measurement

SYNOPSIS:

trigger

DESCRIPTION:

Performs the measurement if the board is waiting for a trigger else, the trigger fails. If all triggers are completed, the state is set to IDLE.

ABORT

COMMAND:

abort - Aborts the measurement

SYNOPSIS:

abort

DESCRIPTION:

Aborts the measurement and sets the state to IDLE. All disabled commands are enabled after the abort command.

FREQUENCY

COMMAND:

frequency - sets frequency of the test signal in [KHz]

SYNOPSIS:

frequency [<frequency>]

DESCRIPTION:

Sets the test signal to <frequency>, where <frequency> is a floating point number in kHz. Valid input range is between 0.0kHz and 10.0MHz.

MAGNITUDE

COMMAND:

magnitude - sets the magnitude of the test signal in [V]

SYNOPSIS:

magnitude [<magnitude>]

DESCRIPTION:

Sets the test signal <magnitude>, where <magnitude> is a floating point number representing peak output voltage. Valid input range is between 0.0 and 2.4

OFFSET

COMMAND:

offset - sets dc bias (offset) of the test signal in [V]

SYNOPSIS:

offset [<offset>]

DESCRIPTION:

Sets the test signal's dc bias to <offset>, where <offset> is a floating point number representing dc bias voltage. Valid input range is between -2.5 and +2.5

SETGAIN

COMMAND:

setgain - display (or set) voltage and current measurement channel gain (measurement range)

SYNOPSIS:

setgain [<auto> | [<ch0 | ch1> [<gain>]]]

DESCRIPTION:

<auto> enables the autorange functionality for both the current and voltage gain settings

Set the voltage measurement channel gain (ch0) or current measurement channel gain (ch1). Notice that when setting the gain of any channel the auto gain is switched off.

Voltage measurement channel gain options are 0,1,2,3 which correspond to 1,2,4,8 (V/V) respectively

Current measurement channel gain options are 0,1,2,3 which correspond to 100, 1k, 10k, 100k (Ohm) respectively

If no parameters are given then presently set gain setting(s) is reported.

TRIG_MODE

COMMAND:

trig_mode - Sets trigger mode

SYNOPSIS:

trig_mode [<internal> <external>]

DESCRIPTION:

Set the trigger mode to internal or external.

trig_mode internal - Does immediate measurement

trig_mode external - Waits for external trigger & then measures

If no parameter is given then the current state is displayed.

AVERAGE

COMMAND:

average - set or display the sample average

SYNOPSIS:

average [<n>]

DESCRIPTION:

Set the sample average for impedance (admittance) measurements to <n> where <n> is an integer with range [1, 65536]. If no parameter is given then the sample average setting is reported.

DISPLAY

COMMAND:

display - set or display measurement model

SYNOPSIS:

display [<model number>]

DESCRIPTION:

Set the measurement model number:

- 0 - Equivalent series capacitance and resistance (Cs,Rs)
- 1 - Equivalent series capacitance and dissipation factor (Cs,D)
- 2 - Equivalent series capacitance and quality factor (Cs,Q)
- 3 - Inductance and equivalent series resistance (Ls,Rs)
- 4 - Equivalent series inductance and dissipation factor (Ls,D)
- 5 - Equivalent series inductance and quality factor (Ls,Q)

- 6 - Impedance in rectangular coordinates (default) (R,X)
- 7 - Impedance in magnitude and phase in degrees (Z,deg)
- 8 - Impedance in magnitude and phase in radians (Z,rad)
- 9 - Capacitance and equivalent parallel resistance (Cp,Rp)
- 10 - Equivalent parallel capacitance and dissipation factor (Cp,D)
- 11 - Equivalent parallel capacitance and quality factor (Cp,Q)
- 12 - Inductance and equivalent parallel resistance (Lp,Rp)
- 13 - Equivalent parallel inductance and dissipation factor (Lp,D)
- 14 - Equivalent parallel inductance and quality factor (Lp,Q)
- 15 - Admittance in rectangular coordinates (G,B)
- 16 - Admittance in magnitude and phase in degrees (Y,deg)
- 17 - Admittance in magnitude and phase in radians (Y,rad)
- 18 - off

If no parameter is given then the LCR reports presently set model number.

MDELAY

COMMAND:

mdelay - set or display the measurement delay in milliseconds

SYNOPSIS:

mdelay [<time (msec)>]

DESCRIPTION:

Set the delay between the measurements selected by the 'count' command to <n> where <n> is an integer with range [0, 65536]. If no parameter is given then the measurement delay setting is reported. Use this delay to allow sufficient settling time between readings in a sweep.

TDELAY

COMMAND:

tdelay - set or display the trigger delay in milliseconds

SYNOPSIS:

tdelay [<time (msec)>]

DESCRIPTION:

Set the trigger delay between measurement cycles selected by the 'tcount' command to <n> where <n> is an integer with range [0, 65536]. If no parameter is given then the trigger delay setting is reported.

COUNT

COMMAND:

count - set or display the sample count

SYNOPSIS:

count [<n>]

DESCRIPTION:

Set the sample count for impedance (admittance) measurements to <n> where <n> is an integer with range [1, 255]. If no parameters is given then the sample count setting is reported.

TCOUNT

COMMAND:

tcount - set or display the trigger count

SYNOPSIS:

tcount [<n>]

DESCRIPTION:

Set the trigger count to <n> where <n> is an integer with range = [1, 65536].

The trigger count value determines how many times the measurement cycle set by the 'count' command is repeated. If no parameter is given then the tcount setting is reported.

SWEEP_TYPE

COMMAND:

sweep_type - set the sweep type and range

SYNOPSIS:

sweep_type [<frequency | magnitude | offset | off> [<Sweep Start> <Sweep End>]]

DESCRIPTION:

Sets the Sweep Type to be a sweep on frequency, ac magnitude, or dc bias (offset) of the test signal <Sweep Start> and <Sweep End> determine the first and last point of the sweep. Can be ignored for 'off' option.

The number of points in the sweep is set by the 'count' command.

If no parameter is given then the sweep parameter is reported.

SWEEP_SCALE

COMMAND:

sweep_scale - set the sweep scale

SYNOPSIS:

sweep_scale [<linear|log>]

DESCRIPTION:

Set the scale for the sweep loop

Decides the type of increments between the limit values of the sweep decided by the range.

If no parameter is given then the sweep_scale setting is reported.

COMPENSATION

COMMAND:

compensation - executes fixture compensation routines or displays the present compensation settings

SYNOPSIS:

compensation [<on | off | reset | open | short | rt <rt_value> | xt <xt_value>] >]

DESCRIPTION:

This command will execute the following compensation routines depending on the parameter given:

'**compensation on**' - enables the application of compensation correction coefficients to the readings returned by the module
'**compensation off**' - disables the application of compensation correction coefficients to the readings returned by the module
'**compensation reset**' - resets the compensation coefficients
'**compensation open**' - runs the open compensation routine
'**compensation short**' - runs short compensation routine
'**compensation rt** <rt_value> xt <xt_value>' - runs the load compensation routine using <rt_value> and <xt_value> as the true resistance and reactance values of the device under test
'**compensation**' - if no parameter is given then the current compensation settings are displayed

RDCOMP

COMMAND:

rdcomp - Display compensation coefficients available in memory.

SYNOPSIS:

rdcomp

DESCRIPTION:

This command displays compensation coefficients available in memory

STORECOMP

COMMAND:

storecomp - Load user-defined compensation coefficients <value> to memory

SYNOPSIS:

storecomp [<coefficient> <value>]

DESCRIPTION:

This command writes an individual compensation coefficient <value> to memory

Individual <coefficient> list: Ro, Xo, Go, Bo, Rs, Xs, Gs, Bs, Rg, Xg, Gg, Bg

CALIBRATE

COMMAND:

calibrate - executes calibration routines or displays the present calibration status

SYNOPSIS:

calibrate [<on | off | open | short | reload | rt [xt] | commit [timestamp] | erase | list | switch [evalkit / default] | passwd >]

DESCRIPTION:

This command will execute the following routines depending on the parameter given:

'**calibrate**' - displays calibration status, including time and temperature of the last commit

'**calibrate open**' - runs the open calibration routine on the presently selected measurement range

'**calibrate short**' - runs the short calibration routine on the presently selected measurement range

'**calibrate rt** <rt_value> xt <xt_value>' - runs the load calibration routine using <rt_value> and <xt_value> as the true resistance and reactance values of the device under test

'**calibrate on**' - enables the application of calibration coefficients to the readings returned by the module (default mode)

'**calibrate off**' - disables the application of calibration and compensation coefficients

'**calibrate reload**' will reload calibration coefficients from flash memory to the RAM

'**calibrate commit**' - stores all calibration coefficients in the RAM into the flash memory (will ask for password – default is **Analog123**)

'**calibrate commit** <unix epoch time in seconds>' - stores all calibration coefficients in the RAM into the flash memory and sets the date and time

'**calibrate erase**' - Erase all calibration coefficients stored in flash memory.

'**calibrate list** <freq>' – lists for frequency all available calibrations in flash, without <freq> will list all frequencies which have calibrations in flash

'**calibrate switch** <evalkit / default>' - used to switch between evalkit | user coefficients sets stored in flash memory.

'**calibrate passwd**' - change cal commit password to a new one (default password is **Analog123**)

Maximum password length is 12 characters.

Characters beyond this length will be ignored

Additional information for calibrate command:

setgain, offset, frequency, magnitude, tdelay, mdelay, and average commands can impact the calibration coefficients derived.

The load calibration routine should be executed after open and short calibration (when applicable)

RDCAL

COMMAND:

rdcal - Display calibration coefficients loaded in memory.

SYNOPSIS:

rdcal [<vgain> <igain>]

DESCRIPTION:

This command displays calibration coefficients for the selected <vgain igain> combination (measurement range) available in memory.

Valid range for <vgain> and <igain> is 0 to 3 for AC and DC calibration coefficients.

<vgain> and <igain> for the present measurement range can be found with the 'setgain' command.

RESETCAL

COMMAND:

resetcal - Reset the calibration coefficients in the memory, based on the measurement mode selected (AC or DC)

SYNOPSIS:

resetcal [<vgain> <igain>]

DESCRIPTION:

This command resets calibration coefficients for the given <vgain> and <igain> to defaults

Valid range for <vgain> and <igain> is 0 to 3 for AC and DC calibration coefficients

If no <vgain> and <igain> arguments are provided, the command resets all the coefficients available in memory

for the measurement mode presently set

STORECAL

COMMAND:

storecal - Write individual calibration coefficients to RAM

SYNOPSIS:

storecal [<vgain> <igain> <coefficient> <value>]

DESCRIPTION:

This command assigns <value> to individual calibration coefficients to the RAM without running the calibration routines.

The coefficients are selected by the respective <vgain> and <igain> as defined by the 'setgain' command

Individual <coefficient> list: Ro, Xo, Go, Bo, Rs, Xs, Gs, Bs, Rg, Xg, Gg, Bg, Rdg, Rdo

*IDN?

COMMAND:

*idn? - display module identification string

SYNOPSIS:

*idn?

DESCRIPTION:

This command displays the module identification string and firmware build date.

HELP

COMMAND:

help - command help

SYNOPSIS:

help [<command>]

DESCRIPTION:

Display command line help summary. Specific help if <command> is given.

GET_ATTR

COMMAND:

get_attr - Prints attributes value

SYNOPSIS:

get_attr

DESCRIPTION:

Fetches and displays attributes value.

ERROR_CHECK

COMMAND:

error_check - Enable (on) or Disable (off) ADC overflow/FIFO error check

SYNOPSIS:

error_check [<on | off>]

DESCRIPTION:

Enable (on) or Disable (off) ADC overflow/FIFO error check (on)
If enabled impedance values are not returned on error Instead error message is displayed.
If no parameter is given then the current state is displayed.

CLS

COMMAND:
cls - clear the terminal display

SYNOPSIS:
cls

DESCRIPTION:
Clear the terminal display.

HISTORY

COMMAND:
history - show command history

SYNOPSIS:
history

DESCRIPTION:
Display command line help history.

RESET

COMMAND:
reset - Reset module state

SYNOPSIS:
reset

DESCRIPTION:
This command resets the module state to default

SELFTEST

COMMAND:
selftest - Self test status

SYNOPSIS:
selftest [<run>]

DESCRIPTION:
Prints self test status.
run - Re-runs the self test.

INFO : Open the test leads before running self-test

ECHO_MODE

COMMAND:

echo_mode - Enable (on) or Disable (off) CLI loopback character printing

SYNOPSIS:

echo_mode [<on | off>]

DESCRIPTION:

Enable (on) or Disable (off) loopback printing characters while typing on CLI.

If disabled, the characters are not displayed to user when they are typed in.

If no parameter is given then the current state is displayed.

This is a hidden command.

GPIO_CTRL

COMMAND:

gpio_ctrl - Control GPIO'S: 1 -> Turn On and 0 -> Turn Off

SYNOPSIS:

gpio_ctrl [<n>]

DESCRIPTION:

where [<n>] ranges from [0 to 255]

Total of 8 GPIO'S are supported, all the GPIO'S are output enabled.

Each GPIO is control by 1 bit in the argument. The ADMX2001B features eight general purpose digital output pins, intended for controlling external MUXes or other peripherals. Support was added in version 1.2.2. The outputs are broken out on EVAL-ADMX2001EBZ, and can be accessed on pins 9-10 of P6, and pins 1-6 of P7. They can be set with the command gpio_ctrl <N> where N is a decimal from 0-255, and each of the 8 inputs are controlled by the respective bit for that position. Digital output 0 corresponds to the LSB. For instance, configuring gpio_ctrl 133 (1000 0101 in binary) will set high P6 pin 9, and P7 pins 1 and 6.

Header : Pin Number	Bit Number	N Setting
P6 : 9	0	1
P6 : 10	1	2
P7 : 2	2	4
P7 : 3	3	8
P7 : 4	4	16
P7 : 5	5	32
P7 : 6	6	64
P7 : 7	7	128