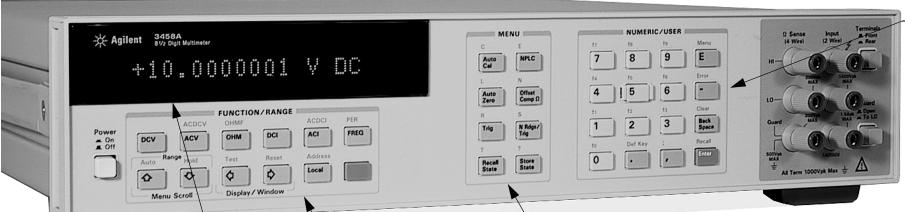
A User's Guide to Keysight 3458A Front Panel Operation



Numeric/User Kevs

- 10-Kev Pad for Numeric Entry
- Deep RECALL buffer of Executed Commands
- · MENU type selection
- 10 Battery Backed Up User Definable Keys F0-F9

Auto-Calibration (ACAL)

The Keysight 3458A Auto-Calibration (ACAL) function removes measurement e component temperature and time drift. For maximum accuracy, ACAL should be every 24 hours. For example, additional Vdc volts gain errors due to temperature reduced from 1 ppm/°C to 0.15 ppm/°C (over 6:1) using ACAL. In ACV volts, ac error due to temperature changes are reduced from 30 ppm/°C to less than 1 pp 30:1) using ACAL. The time to perform a complete ACAL is about 12 minutes. A takes about 1 minute, ACAL DCV takes about 2 minutes, and ACAL OHM takes 9 minutes. For monitoring temperature changes, the Keysight 3458A provides th mand (found in the command Menu) to measure the internal instrument temperature the User's Guide for more details. ACAL keystroke sequence.

Configuration for Highly Accurate Measurements with the Keysight 3458A

(You should perform an ACAL every 24 hours for the appropriate function aft Keysight 3458A has been powered-on and in a stable temperature environm mum of four hours.)

Function	Comment	Key Sequence	
DCV			
RESET	Power-on state (VDC)	(blue Reset	
NPLC 200	Integration Time (1)	NPLC 2 0 0 Enter	
NDIG 8	8 1/2 Digits	(blue N 8 Enter	
	ACV_		
RESET	Power-on state	(blue Reset	
ACV	Function Vac	ACV	
SETACV SYNC	Synchronous AC	(blue S 🗗 Þ 🛈 Enter	
RES .002	Max AC Reading Res.	(blue R 🗗 🕒 0 0 2 Enter	
LFILTER ON	Internal LP Filter (2)	(blue L ♥ 🗘 🖒 tr	
OHMS			
RESET	Power-on state	(blue Reset	
OHMF	Function Four-Wire Ohms	(blue OHMF	
OCOMP ON	For R <= 100 kOhms (3)	Offset Comp #	
DELAY 1	Adds 1 s delay (4)	(blue C 🗗 🗗 🛘 Enter	
NPLC 200	Integration Time	NPLC 2 0 0 Enter	
Longer integration	times reduce measurement	noise and increase measurement resolu-	

- Recommended for frequencies less than 50kHz.
- OCOMP ON turns on the offset compensation feature of the Keysight 3458A. OCOMP ON minimizes the effect of any thermally generated offset voltage from creating errors in resistance measurements.
- Adds 1 s settling delay to reduce effects of dielectric absorption errors of cabling and the resistor under test

• GPIB Bus Address

Menu Keys

Command Menu

Commonly Used Commands

· Shifted Alphabetic Entry Points into

A 5-Minute Tutorial of Front Panel Operation

Function/Range Keys

• Immediate Execute Function Keys

• Manual Range and Menu 🗗 🔯

Example 1: Making a measurement with any function after turning on the Keysight 3458A. The ACV function serves as a typical example of the immediate execute keys found in the Function/Range key group. Connect the appropriate signal to the input terminals and press the keys shown.

Command	Key Group	Key Sequence	
ACV	Function/Range	ACV	
(Any other function key in the Function/Range Key Group acts similarly; the Keysight 3458A changes function, automatically ranges, and begins measurements.)			

RESET Function/Range (blue Reset (RESET returns the Keysight 3458A to the powered-on state.)

Reading/Menu Display

• Command Menu

Status Annunciators

· Alphanumeric Reading, Units, and Functions

Example 2: Making a precision Vdc measurement on the 10 V range.

Command	Key Group	Key Sequence
RESET	Function/Range	(blue Reset
DCV	Function/Range	DCV
10 V Range	Function/Range	or
	case, XX.XXXXX V DC (X is a always displayed for easy ra	
Leading zeros are	always displayed for easy ra	nge identification)
· ·	, , ,	
NPLC 100	Menu Numeric/User	NPLC 0 0 Enter
NPLC 100	Menu	NPLC

Numeric/User

The shifted Menu Keys allow alphabetic access to all Keysight 3458A commands and command parameters. The commands and command parameters are scrolled from A to Z by using the Menu Scroll keys (and and) found in the Function/ Range keys. Command parameters are accessed by using the Display/Window keys and , also found in the Function/Range keys, after the command is

Example 3: Making a very precise Vac measurement using the Synchronous ACV measurement function. (At power-on, the Keysight 3458A is set to the generally more useful Analog ACV measurement function if you select ACV, but you should use Synchronous ACV for very precise measurements of periodic waveforms.)

Command	Key Group	Key Sequence	
RESET	Function/Range	(blue Reset	
ACV	Function/Range	ACV	
SETACV SYNC	Function/Range	(blue	
	Menu	S	
	Function/Range	₽ ₽ 0	
	Numeric/User	Enter	
(The MORE INFO annunciator should be illuminated. The MORE INFO annunciator indicates that some part of the measurement configuration is in a non-standard state. To view this information press . Your display should show SETACV SYNC. Now press again; the display is returned to the measurement state.)			
RES .002	Function/Range Menu	(blue R	
	Function/Range	Ð	
	Numeric/User	. 0 0 2 Enter	

(The RES command sets the % resolution of the measurement. A function change causes RES to default to RES .01 (0.01%) with reading rate of 1 per 3 s.)

LFILTER ON	Function/Range	(blue
	Menu	L
	Function/Range	₽
	Numeric/User	Enter
(Suggested for inputs w	ith frequencies helow 50kH	7 \



(Sets the display to 8 1/2 digits.)



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Short Cuts

Store and Recall Instrument Setups

Store and Recall can significantly reduce the number of keystrokes necessary for a complex configuration. Simply pressing Store, pressing a Numeric Key X (0-127) and pressing Enter, stores the state of the Keysight 3458A as a state to recall by pressing Recall X. Shipped with the Kevsight 3458A is a small plastic overlay that fits on key 5 to document your User Key and Stored State definitions. Use Example 3 and perform the following:

Key Sequence

SSTATE 1	Menu	Store State	
	Numeric/User	1 Enter	
(Stores the Keysight 3458A's state in stored state 1.)			
RESET returns the Key	Function/Range sight 3458A to the powered	(blue Reset -on state.)	
RSTATE 1	Menu Numeric/User	Recall State 1 Enter	
(Returns the Keysight 34	I58A to stored state 1.)		

Kev Group

User Definable Kevs

Command

		e Store and Recall command c/User Key Group to be any s	ds, you can also define any of t string of commands.	he User key
rors caused by e performed	Let's use Example 3 of	one more time to show how t	his feature works.	
re changes are dditional gain pm/°C (over ACAL ACV	Command DEFKEY DEFAU (Clears all previou	Key Sequence LT (blue Def Ke	ey 🛈 Dinter	
s about ne TEMP? com-	DEFKEY F0, " (Ready to accept of	commands.)		
ature. Refer to				
ter the nent for a mini-	SETACV SYNC RES .002 LFILTER ON	(blue R &)	(blue; 0 0 2 (blue; 0 0 Enter	
	DEFKEY F1, " MATH NULL (MATH NULL disp ments.)	<u> </u>	(four times) ▼ (eight times) the first and subsequent measu	ure-
	Now Use It! (blue ft) Enter (blue ft) Enter (Note the MATH a	nnunciator is turned on.)		
nter		ouffer recalls previously ente	ered commands. If you have pe ect to have the results listed be	
2 Enter	Command	Key Group	Key Sequence	
	RECALL (MATH NULL shot	Function/Range Numeric/User uld appear in the Display.)	(blue Recall	
nter	shipped, only the mos	ands alphabetically, you use to the commonly used command.	the Menu Keys. As the Keysigh s are available in this "SHORT' enu Key with the "FULL' parame	" menu. To

. As the Keysight 3458A is in this "SHORT" menu. To ne "FULL' parameter.

Command	Key Group	Key Sequence
MENU FULL	Function/Range	(blue
	Numeric/User	Menu
	Function/Range	û
	Numeric/User	Enter

Printed in Malaysia Edition 2 July 2014 © Keysight Technologies 1988-2014