Quick Reference Card

for
HP Models 6812A, 6813A, 6814B, 6834B
AC Power Source/Analyzers

and
HP Models 6841A, 6842A, 6843A
Harmonic/Flicker Test Systems
(Normal Mode Operation)

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Display Annunciators

The three phase annunciators indicate which phase is being controlled or metered. In a single-phase instrument only the Phase 1 annunciator will light. In a 3-phase instrument the Phase Select key can be used to select one of the three phases or all three phases simultaneously. When simultaneous control is selected, all three-phase annunciators are illuminated.

CV This annunciator is lit when the output voltage is regulated.
CC Indicates that the output is in rms current limit.
CR & CP Not used.
Unr Indicates that the output is unregulated.
Dis Indicates that the output state is OFF.
Tran Indicates that an output transient (step, pulse, or fault) is initiated.
OCF Indicates that the over-current protection state is ON.
Prot Indicates that the output has been disabled by one of the protection features.
Cal Cal indicates that calibration mode is ON.
Shift Indicates that the Shift key has been pressed.
Rmt Indicates that the selected Remote programming interface (either HP-IB or RS-232) is active.
Addr Indicates that the interface is addressed to talk or listen.
Err Indicates that there is an error in the SCPI error queue.
SRQ Indicates that the interface is requesting service.
Meter Indicates the front panel measurement functions.
Output Indicates the output coupling.

SYSTEM Keys

Press to change the ac source’s selected interface from remote operation to local (front panel) operation. Pressing this key has no effect if the interface state is already Local, Local-with-Lockout, or Remote-with-Lockout.

Error

Address

Error Functions

ERROR<value> Displays the system error codes stored in the SCPI error queue. If no errors exist, a 0 is displayed. The Err annunciator is lit when there are errors.

Address Functions

| ADDRESS <value> | Set HP-IB address |
| INTF HP/IB/RS232 | Set interface |
| BAUDRATE 300/1200 | Set baud rate |
| 2400/4800/9600 | |
| PARITY None/Even/Odd | Set parity |
| LANG SCPI ED012 | Set language |
| NOUTPUTS 1|3 | Select number of output phases (1) |

Save

Recall

Save Functions

Press to save an existing ac source state in nonvolatile memory. Up to 16 states can be saved (0-15).

Recall Functions

Press to place the ac source into a previously saved state. Up to 16 states can be recalled (0-15).

First press and release this blue shift key to select a SHIFT function. The Shift annunciator lights when this key is pressed.
### Function Keys

#### Current Functions
- **CURR:LEY <value>**: Set output rms current limit (4)
- **CURR:PEAK <value>**: Set immediate peak current limit (3)
- **CURR:PEAK.T <value>**: Set triggered peak current limit (3)
- **CURR:PEAK.M FIXED I STEP**: Set peak current limit mode (3)
- **PULSE I LIST**

#### Voltage Functions
- **VOLT <value>**: Set AC output voltage (4)
- **VOLT:T <value>**: Set triggered voltage (4)
- **VOLT:M FIXED I STEP**: Set voltage mode (4)
- **PULSE I LIST**
- **RANGE 150 / 300**: Set voltage range (2, 4)
- **OFFSET <value>**: Set DC offset voltage (3)
- **OFFSET:T <value>**: Set triggered DC offset voltage (3)
- **OFFSET:M FIXED I STEP**: Set DC offset voltage mode (3)
- **PULSE I LIST**
- **SLEW <value>**: Set voltage slew in V/Sec (4)
- **SLEW:T <value>**: Set triggered voltage slew (4)
- **SLEW:M FIXED I STEP**: Set voltage slew mode (4)
- **PULSE I LIST**
- **OFF:SLW <value>**: Set immediate DC offset voltage slew V/Sec (3)
- **OFF:SLW:T <value>**: Set triggered DC offset voltage slew (3)
- **OFF:SLW:M FIXED I STEP**: Set DC offset voltage slew mode (3)
- **PULSE I LIST**
- **ALC INT I EXT**: Set voltage sense source
- **ALC:DET RTIME I RMS**: Set voltage sense detector (3)

### Shape Functions
- **SHAPE SINE I SQUARE**: Set immediate shape
- **CSIN I <user>**: Set triggered shape
- **SHAPE:T SINE I SQUARE**: Set shape mode
- **CSIN I <user>**: Set clipping level
- **CUP <value>**: Set clipping level

### List Functions
- **COUNT <value>**: List repeat count
- **CWEF: <index> <value>**: Dwell list
- **FREQ: <index> <value>**: Frequency list
- **FSLW: <index> <value>**: Frequency slew rate list
- **IPK: <index> <value>**: Peak current limit list (3)
- **OFFS: <index> <value>**: DC voltage list (3)
- **GSLW: <index> <value>**: DC offset voltage slew rate list (3)
- **PHASE: <index> <value>**: Phase list (4)
- **SHAP: <index> SINE I SQUARE**: List of shapes
- **CSIN I <user>**: List of shapes
- **STEP ONCE I AUTO**: Set response of list to triggers
- **TTLT: <index> ON I OFF**: Trigger OUT pulse list
- **VOLT: <index> <value>**: AC voltage list (4)
- **VSLW: <index> <value>**: Voltage slew rate list (4)

### Pulse Functions
- **WIDTH <value>**: Set pulse width
- **COUNT <value>**: Set number of output pulses
- **DCYCLE <value>**: Set pulse duty cycle
- **PER <value>**: Set pulse period count
- **HOLD WIDTH I DCYCLE**: Set parameter held constant

### Output (on/off)
This key toggles the Output on and off. When off, the source out output is disabled and the DIs annunciator is on.

### Notes:
1. Valid for Model HP 6834B only.
2. Valid for Models HP 6814B/6834B/6843A only.
4. Phase selectable on HP 6834B.
FUNCTION Keys

Phase
Freq

Phase Functions
- PHASE <value> Set output phase (4)
- PHASE: <value> Set triggered phase (4)
- PHASEM: FIXED | STEP Set phase mode (4)

Frequency Functions
- FREQ <value> Set output frequency
- FREQ: <value> Set triggered output frequency
- FREQM: FIXED | STEP Set frequency mode
- SLEW <value> Set frequency slew in Hz/sec
- SLEW: <value> Set triggered frequency slew
- SLEWM: FIXED | STEP Set frequency slew mode

ENTRY Keys

These keys let you scroll through different choices in a parameter list that apply to a specific function. If the function command has a numeric range, these keys automatically increment or decrement the existing value.

The numeric keys 0 through 9 are used to enter numeric values.

Press Shift and this key to enter a minus.
Press this key alone to enter a decimal point.

Until you press the Enter key, the values or parameters you enter with the other Entry keys are displayed but not entered into the source.

Press Shift and this key to enter an exponent.

Clear Entry
Press Shift and this key to abort a keypad entry and clear the value. When editing a list, pressing Clear Entry truncates or clears the list at the presently displayed list point. Press this key alone to backspace and delete the last digit entered.

Calibration
Press Shift and this key to access the calibration menu. Refer to appendix B in the User's Guide for more information.

Phase Select
This key applies to 3-phase sources only. Pressing this key successively selects phase one first, then phase two, then phase three, and then all three phases.
SCPI Commands

[SOURce:] LIST (Continued)

IVAL [LEVEL] <n> [.<n>]
  :POINTS?
  :SLEW <n> [.<n>]
  :POINTS?
  :OFFSet <n> [.<n>]
    = -1
    :SLEW <n> [.<n>]
      :POINTS?

\[PHASEx\]

[IMMediate | ADJ ust] <n>
  :MODE FIXed | STEP | PULSe | LIST
  :TRIGgered <n>

\[PULSe\]

:COUNT <n> | INFINITY
  :DCYClE <n>
  :HOLD WIDTh | DCYClE
  :PERiod <n>
  :WIDTh <n>

[VOLTage]

[LEVEL]

[IMMediate]
  :AMPLitude <n>
  :TRIGgered
    :AMPLitude <n>

\[SENSe | D\C\]

:DETector RTIMe | RMS
  :SOURce INT | EXT
  :MODE FIXed | STEP | PULSe | LIST
  :OFFSet <n>
    = [IMMediate] <n>
    :MODE FIXed | STEP | PULSe | LIST
      :TRIGgered <n>
        :SLEW
          = [IMMediate] <n> | INFINITY
          :MODE FIXed | STEP | PULSe | LIST
            :TRIGgered <n> | INFINITY

\[FRoM\]

[LEVEL] <n>
  :STATe <bool>
  :RANGes 150 | 300
  :SLEW
    = [IMMediate] <n> | INFINITY
    :MODE FIXed | STEP | PULSe | LIST
      :TRIGgered <n> | INFINITY

\[STATus\]

:OPERation
  [:EVENT]?
  :CONDition?
  :ENABLE <n>
  :NTRansition <n>
  :PTRansition <n>

:PRESet
  :QUEStionable
    [:EVENT]?
    :CONDition?
    :ENABLE <n>
    :NTRansition <n>
    :PTRansition <n>

\[SISTem\]

:CONFigure
  :OUTputs 1 | 3
  :ERRor?
  :VERSiOn?
  :LANGuage SCPI | E9012
  :LOCaI
  :REMote
  :RWLock

\[TRIGger\]

[TRANsient | SEQuence1]

[IMMediate]
  :SOURce BUS | EXTernal | IMMEDIATE
  :DElay <n>

:SYN chronize | SEQuence2
  :SOURce PHASEx | IMMEDIATE
  :PHASex <n>

:ACQuire | SEQuence3

[IMMediate]
  :SOURce BUS | EXTernal | TTL Trig
    :SEQUence1
      :DEFine TRANsient
      :SEQUence2
      :DEFine SYN chronize
      :SEQuence3
      :DEFine ACQuire
<table>
<thead>
<tr>
<th>Error</th>
<th>Description</th>
<th>Error</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No error</td>
<td>1</td>
<td>Non-volatile RAM RDO section checksum failed</td>
</tr>
<tr>
<td>-100</td>
<td>Command error</td>
<td>2</td>
<td>Non-volatile RAM CONFIG section checksum failed</td>
</tr>
<tr>
<td>-101</td>
<td>invalid character</td>
<td>3</td>
<td>Non-volatile RAM CAL section checksum failed</td>
</tr>
<tr>
<td>-102</td>
<td>Syntax error</td>
<td>4</td>
<td>Non-volatile RAM WAVEFORM section checksum failed</td>
</tr>
<tr>
<td>-103</td>
<td>Invalid separator</td>
<td>5</td>
<td>Non-volatile RAM STATE section checksum failed</td>
</tr>
<tr>
<td>-104</td>
<td>Data type error</td>
<td>6</td>
<td>Non-volatile RAM LIST section checksum failed</td>
</tr>
<tr>
<td>-105</td>
<td>GET not allowed</td>
<td>7</td>
<td>RAM selftest</td>
</tr>
<tr>
<td>-108</td>
<td>Parameter not allowed</td>
<td>11-31</td>
<td>DAC selftest error, expected &lt;cr&gt;, read &lt;value&gt;</td>
</tr>
<tr>
<td>-109</td>
<td>Missing parameter</td>
<td>40</td>
<td>Voltage selftest error, output 1</td>
</tr>
<tr>
<td>-112</td>
<td>Program mnemonic too long</td>
<td>41</td>
<td>Voltage selftest error, output 2</td>
</tr>
<tr>
<td>-113</td>
<td>Undefined header</td>
<td>42</td>
<td>Voltage selftest error, output 3</td>
</tr>
<tr>
<td>-121</td>
<td>invalid character in number</td>
<td>43</td>
<td>Current selftest error, output 1</td>
</tr>
<tr>
<td>-123</td>
<td>Numeric overflow</td>
<td>44</td>
<td>Current selftest error, output 2</td>
</tr>
<tr>
<td>-124</td>
<td>Too many digits</td>
<td>45</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-129</td>
<td>Numeric data not allowed</td>
<td>46</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-131</td>
<td>Invalid suffix</td>
<td>47</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-138</td>
<td>Suffix not allowed</td>
<td>48</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-141</td>
<td>Invalid character data</td>
<td>49</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-144</td>
<td>Character data too long</td>
<td>50</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-148</td>
<td>Character data not allowed</td>
<td>51</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-150</td>
<td>String data error</td>
<td>52</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-151</td>
<td>invalid string data</td>
<td>53</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-158</td>
<td>String data not allowed</td>
<td>54</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-160</td>
<td>Block data error</td>
<td>55</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-161</td>
<td>invalid block data</td>
<td>56</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-168</td>
<td>Block data not allowed</td>
<td>57</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-170</td>
<td>Expression error</td>
<td>58</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-171</td>
<td>invalid expression</td>
<td>59</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-178</td>
<td>Expression data not allowed</td>
<td>60</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-200</td>
<td>Execution error</td>
<td>61</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-212</td>
<td>Settings conflict</td>
<td>62</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-222</td>
<td>Data out of range</td>
<td>63</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-223</td>
<td>Too much data</td>
<td>64</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-224</td>
<td>Illegal parameter value</td>
<td>65</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-225</td>
<td>Illegal macro label</td>
<td>66</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-227</td>
<td>Macro error</td>
<td>67</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-272</td>
<td>Macro execution error</td>
<td>68</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-273</td>
<td>Illegal macro label</td>
<td>69</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-276</td>
<td>Macro recursion error</td>
<td>70</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-277</td>
<td>Macro redefinition not allowed</td>
<td>71</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-310</td>
<td>System error</td>
<td>72</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-350</td>
<td>Too many errors</td>
<td>73</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-400</td>
<td>Query error</td>
<td>74</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-410</td>
<td>Query INTERRUPTED</td>
<td>75</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-420</td>
<td>Query UNTERMINATED</td>
<td>76</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-430</td>
<td>Query DEADLOCKED</td>
<td>77</td>
<td>Current selftest error, output 3</td>
</tr>
<tr>
<td>-440</td>
<td>Query UNTERMINATED after indefinite response</td>
<td>78</td>
<td>Current selftest error, output 3</td>
</tr>
</tbody>
</table>

- 401: CAL switch prevents calibration
- 402: CAL passcode is incorrect
- 403: CAL not enabled
- 404: Computed readback cal constants are incorrect
- 405: Computed programming cal constants are incorrect
- 406: Incorrect sequence of calibration commands
- 600: Systems in model list have different list lengths
- 601: Requested voltage and waveform exceeds peak voltage capability
- 602: Requested voltage and waveform exceeds xfmr volt-second rating
- 603: Command only applies to RS-232 Interface
- 604: Trigger received before requested number of pre-trigger readings.
- 605: Requested RMS current too high for voltage range
- 606: Waveform data not defined
- 607: VOLT, VOLT:SLEW, and FUNC:SHAPE modes incompatible
STATUS QUERY EXAMPLE:
STAT Q/EVENT 1526
EXPLANATION:
626 + 552 = 1178 (bit 8 and bit 6)
Both bit 8 and bit 6 status conditions have occurred.