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HELP Overview
The HP 3235 Switch/Test Unit provides high integrity signal switching with some measurement and signal source capabilities in a versatile, rack-mountable instrument. The key features of the HP 3235 include the following:

* Each frame (HP 3235 mainframe or HP 3235E extender frame) has a 10-slot plug-in cage.

* Up to seven HP 3235E extender frames may be connected to an HP 3235 mainframe for a total of 80 slots.

* Various switching and instrument-type plug-in modules are available with the HP 3235.

* Four backplane analog buses allow isolated signal routing between plug-in modules and between mainframe and extender buses.

* Two trigger buses route digital trigger signals between plug-in modules and between mainframe and extender frames.

* The Quick Interconnect Fixture permits the test system operator to quickly change cabling connections to the HP 3235.
END HELP

HELP Using the Panel
This driver for the HP 3235 provides nine panels that incorporate most of the key features of the HP 3235.

- Main Panel
- Status Panel
- Control Panel
- Self Test
- Backplane Trig
- Timer Channel
- Interrupt/Error
- Misc Panel
- About Panel

Each panel allows you to set up a different set of HP 3235 features.
END HELP

HELP Main Panel
The main panel allows you to display the different cards that are installed in the HP 3235. The card description, slot number, and the appropriate HP ITG driver for each

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card is shown.  To display the cards in
an HP 3235E extender frame, change the frame
number at the bottom of the panel (0-7).

The different cards that can be installed in
the HP 3235 are:

  HP 34501 32-Channel Armature Relay
  HP 34502 32-Channel Reed Relay
  HP 34503 GP Relay Multiplexer
  HP 34504 Coaxial Multiplexer
  HP 34505 50 Ohm RF Multiplexer
  HP 34506 Coaxial Matrix
  HP 34507 32-Chn Mercury-Wetted Relay
  HP 34508 75 Ohm RF Multiplexer
  HP 34509 Relay Driver Module
  HP 34510 Power Actuator
  HP 34511 64-Channel Armature Relay
  HP 34512 Triaxial Matrix Module
  HP 34513 50 Ohm GP RF-Relay
  HP 34514 75-Ohm GP RF-Relay
  HP 34515 High Voltage Relay Mux
  HP 34516 256 Crosspint Matrix
  HP 34520 Multimeter
  HP 34521 AC/DC Source
  HP 34522 Digital I/O
  HP 34523 Breadboard Module
  HP 34524 D/A converter
END HELP

HELP Status Panel
This subpanel allows you to display error
numbers and error messages from the HP 3235.

Syntax
-----------------------------------
01  INCOMPLETE COMMAND
02  SYNTAX
03  CANNOT RE-TYPE A VARIABLE
04  ERROR IN #A BLOCK
05  ARRAY SIZE OR TYPE MISMATCH
06  COMMAND TOO LONG

Parameters
---------------------------------------
61  OUT OF RANGE
62  EMPTY SLOT
63  NO SUCH EXTENDER
64  WRONG CARD TYPE
65  COMMAND INCOMPATIBLE WITH SETUP
66  SUBSCRIPT OUT OF BOUNDS
67  ARRAY TOO SMALL
68  ON BLOCK NOT FOUND
69  MUST BE IN LOCAL
70  SETTINGS CONFLICT
71  INVALID FUNCTION
72  NO HP-IB DEVICE
```

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General
---
81 COMMAND TIMEOUT
82 BUSY TOO LONG
83 BP ERROR FROM SLOT
84 UNEXPECTED INTR
85 SYSTEM TRIG TOO FAST
86 PROHIBITED SWITCH

System
---
91 SYSTEM ERROR
92 BUS ERROR
93 SYSTEM TRAP
94 MATH ERROR
95 CPU EXCEPTION

Multimeter
---
101 ILLEGAL TRIGGERING SETUP
102 MM TRIG TOO FAST
111 PERIOD CAL ILLEGAL
112 EXT OHMS CAL ILLEGAL
113 AC OFFSET CAL ILLEGAL
114 CAL SWITCH NOT ENABLED
115 CAL SWITCH ENABLED
116 CAL INPUT OUT OF RANGE
121   AC OFFSET ACAL FAIL
122 AC FLATNESS ACAL FAIL
123 OHMS PRECHARGE ACAL FAIL
124 EXT OHMS ACAL FAIL
131 CAL MEMORY LOST
132 AUTO CAL MEMORY LOST -- ACALINIT
        required
133 BAD CHECKSUM ON
134 MM Hardware Error
135 MM timeout

Digital I/O
---
151 INTERRUPT OVERRUN

Source and D/A Converter
---
161 MIN/MAX LIMIT ERROR
162 EXCESSIVE TERMINAL VOLTAGE, RELAYS
    OPEN
163 ENABLE CAL RAM
164 CAL RAM FAIL
165 SPURIOUS HW ERROR, RELAYS OPEN
166 ERROR STUCK, CARD
167 ADJUST FAILED

Power Actuator
---
169 FIXTURE LOW CURRENT

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Self-Test
--------------------------------
201 PON TEST
202 DTACK FAIL
203 CARD ID FAIL
204 CARD BUSY (D7) STUCK HIGH
205 CARD BUSY (D7) STUCK LOW
206 BUSY TOO SHORT
207 BUSY TOO LONG
208 RE-TRIG BUSY TIME FAIL
209 BP/BUSY STUCK LOW
210 RELAY READBACK FAIL
211 TRIGGER BUS FAIL
212 HP-IB CTLR TEST
221 MM SELF TEST
222 DIG SELF TEST
223 RELAY OPEN
224 RELAY SHORTED
225 TRIGBUF FAIL
226     SOURCE SELF TEST
227 RELAY DRIVER SELF TEST
228 DAC SELF TEST
229 HV MUX SELF TEST
230 256 XPT SELF TEST
END HELP

HELP Control Panel
This subpanel allows you to change the
HP 3235 control panel operation.

* Click on Display (Off,On) to enable or
  disable the control panel display.  Any
  message that would have gone to the
  control display can be uploaded to the
  text bar to the right of Display.

* Click on MON to display keywords, results
  from a scan, or the state of one or all
  plug-in modules.  If you select '1 Channel'
  or '1 Slot', an input bar appears in which
  you can enter the channel or slot number.

  NOTE: Slot number takes the form 'es00',
    where e is the mainframe or extender
    number, and s is the slot number.
    Channel number takes the form 'esnn',
    where e is the mainframe or extender
    number, s is the slot number, and nn is
    the channel number.

* INBUF (Off,On) enables or disables the
  HP 3235 input buffer.

* Power-On SRQ (Off,On) enables or disables
  assertion of the HP-IB SRQ (service
  request) line at power-on.
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* The 3235 Ready query will return a "1"
  when the HP 3235 is ready to execute a new
  command. This command is useful only when
  the input buffer is enabled (On).
END HELP

HELP Self Test
This subpanel allows you to execute self-
testing of the HP 3235. To execute a test,
click on the appropriate Slot List box, and
enter the slot list you want to test. For
FTEST SYS, there are only two choices for
Slot List- 'SYS 0' and 'SYS 1'.

NOTE: The slot list parameter can specify a
  single slot (es00), multiple slots (es00,
  es00,...), sequential slots (es00-es00),
  groups of sequential slots (es00-es00,es00-
  es00), or any combination of slots and
  groups. (e is the mainframe or extender
  number and s is the slot number)

DTEST performs a fixtured self-test on the
switching modules in the specified slots and
returns the measured path resistance in ohms.
Up to 10 modules can be tested at a time
using one HP 34520 Multimeter with the
appropriate diagnostic fixture.

FTEST performs a fixtured self-test on the
plug-in modules in the specified slots or on
all plug-in modules connected to the
HP 34520 Multimeter. A special self-test
calibrates the HP 34521 AC/DC Source Module
and HP 34524 D/A Converter Module from the
HP 34520 Multimeter. Up to 10 switching
modules can be tested at a time using one
HP 34520 Multimeter with the appropriate
diagnostic fixture.

FTEST SYS performs a self-test of the HP 3235
trigger bus system. This command does not
change the hardware or software state of the
mainframe or extenders.

TEST performs a confidence test on the plug-
in modules in the specified slots and also
tests the optional control panel. The
confidence test does not change the hardware
or software state of the mainframe or
extenders. External diagnostic fixtures are
not required by teh TEST command.
END HELP

HELP Backplane Trig
This panel allows you to set up the HP 3235

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backplane trigger bus.

* Click on AutoTB (Off,On) to enable or disable the automatic trigger bus connections between the mainframe and extenders.

* BPout Bus (0..7) designates which backplane trigger bus, in the specified frame, sources a signal into the switching network for that frame.

* DRIVEBPn selects the source to drive the trigger bus in the specified mainframe or extender with AUTOTB OFF. Both n (destination trigger bus) and Source can be changed.

* DRIVEETBn specifies the frame and source in that frame to drive the extender trigger bus between frames. Both n (extender bus being driven) and Source can be changed.

* DRIVEEXT selects the source to drive the External Trigger Out BND on the mainframe.

* DRIVETBn selects the source (other than a plug-in module) to drive the specified trigger bus in all frames from the mainframe with AUTOTB ON. Both n (the trigger bus which is used) and Source can be changed.

* TB Query (Bus0,Bus1) returns the logic level ("0" or "1") of the backplane trigger bus in the specified frame.

NOTE: BPout, DRIVEBPn, DRIVEETBn and TB? output the current frame number as part of the command. For convenience, the frame number is displayed on this panel, however, to change the FRAME# you must go to the Main Panel of the driver.
END HELP

HELP Timer Channel
This subpanel allows you to control the HP 3235 Timer Channels. You can specify either Timer Channel 0 or Timer Channel 1 by toggling the control in the lower-right corner of the panel.

* Click on Timer Output (Off,On) to enable or disable the specified Timer Channel.

* Read Count reads the current counter value on the specified timer channel.

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* Set Count sets the counter value for the specified timer channel. The count is decremented from the specified value when clock pulses are received. The first clock pulse that occurs after the counter reaches zero will reload the counter with the given value.

* Pulse/SQWave allows you to choose between a pulse output or a square wave output. Choosing Pulse outputs a low-to-high pulse from the specified timer channel. Choosing SQWave outputs a continuous square wave from the specified timer channel.

Pulse output:

  * The first box allows you to control the width of the pulse.

  * The second box allows you to choose the units for the width. Note, however, that the type of units chosen will affect the width range that you can enter in the first box. Choosing Seconds limits the width to at least 1, while choosing Pulses limits the width to at most 1.

Square wave output:

  * The first box allows you to change the period of the square wave.

  * The second box allows you to choose the units for the period of the square wave. Similar limitations on ranges as explained above for pulse output also apply to the period of the square wave.

NOTE: The PULSE or SQWAVE command is not actually sent to the instrument until you click on the Go! button.

* Timer Interrupt enables or disables internal (mainframe) interrupts from the specified timer channel.

* Source (Intern,Backplane,ExtTrgBus, ExtInBNC) sets the clock source for the specified timer channel.
END HELP

HELP Interrupt/Error
This subpanel allows you to change/query the HP 3235 interrupts and errors. This subpanel is valid only for the HP 34522

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DIO and HP 34523 Breadboard modules.

Interrupts:

You can Enable or Disable any interrupt that you choose.

* Choose either System or Slot# as the interrupt you want to enable/disable. In the case of Slot#, you must also enter the slot number of the interrupt you want to enable/disable. Slot# is of the form esnn, where e is the mainframe or extender number, s is the slot number, and nn is the device number.

* Click either the Enable box or the Disable box to enable/disable the interrupt.

* Interrupt Query returns the address of the most recent slot to interrupt and be serviced. If no interrupt has been serviced since power-on, a reset, or the last INTR? command, "-1" is returned.

Errors:

You can enable or disable the plug-in module you choose from generating an HP 3235 error state when a plug-in module error occurs.

* Enter the slot number of the plug-in module you want to enable/disable. Slot# is of the form esnn, where e is the mainframe or extender number, s is the slot number, and nn is the device number.

* Click either the Enable box or the Disable box to enable/disable the module.

END HELP

HELP Misc Panel

This panel allows you to change various miscellaneous controls on the HP 3235.

* You can execute a Power-on Reset.

* You can lock/unlock the HP 3235 control panel keyboard.

Powerfail Components:

* You can specify the powerfail state of any relay as Open, Closed, or Same. The relay number is of the form esnn, where e is the mainframe or extender number, s is

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the slot number, and nn is the relay number.

* The Fixture query returns a "0" if the quick interconnect mechanism of the mainframe is open or "1" if closed.

END HELP

HELP Components

The following table summarizes the component names and values for the HP 3235 instrument driver. For information about using this summary, see the chapter, "Fine-tuning Your Program," in the HP ITG "User's Handbook."

The table's first column lists the component name. The second column lists the values the component allows. The third column lists the component's initial value.

COMPONENT NAME	ALLOWED VALUES	INITIAL VALUE
Autotb	OFF,ON	ON
Bpout_bus	0 .. 1	0
Cardslot		
Chan_num	STRING[4]	""
Disable_Error	-32768 .. 32767	
Disable_Intr	-32768 .. 32767	
Disp	OFF,ON	ON
Drivebp_source	OFF,ETB0,ETB1, EXTIN,TIMER0, TIMER1,LOW,HIGH	OFF
Drivebp_trigger_bus	0 .. 1	0
Driveetb_source	OFF,BP,ETB0,ETB1, EXTIN,TIMER0, TIMER1,LOW,HIGH	OFF
Driveetb_trigger_bus	0 .. 1	0
Driveext	OFF,TB0,TB1, EXTIN,TIMER0, TIMER1,LOW,HIGH	OFF
Drivetb_source	OFF,EXTIN,TIMER0, TIMER1,LOW,HIGH,	OFF

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	TRG	
Drivetb_trigger_bus	0 .. 1	0
Dtest	STRING[80]	""
Dtest_res	STRING[16]	""
ERROR_NUM	-32768 .. 32767	INVALID
ERROR_STRING	STRING[256]	
Enable_Error	-32768 .. 32767	
Enable_Intr	-32768 .. 32767	
Fixture	OPEN,CLOSED	OPEN
FrameNumber	0 .. 7	
Ftest	STRING[80]	""
Ftest_res	STRING[16]	""
Ftestsys	DEFAULT, ADDITIONAL	DEFAULT
Ftestsys_res	STRING[4]	""
Get_help	STRING[32]	"HELP"
Get_help_temp	STRING[256]	
Inbuf	OFF,ON	OFF
Intr_Timer0	DISABLE,ENABLE	DISABLE
Intr_Timer1	DISABLE,ENABLE	DISABLE
Intr_query	-32768 .. 32767	
Lock	OFF,ON	OFF
Mon	HPIB,CHAN,ALL, STATE,STATEALL, OFF	OFF
Output_type	PULSE,SQUARE	PULSE
Output_type1	PULSE,SQUARE	PULSE
PONReset	-32768 .. 32767	
Pf_command	OPEN,CLOSE,SAME	OPEN
Pf_relay	STRING[5]	""

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Ponsrq	OFF,ON	OFF
Pulse_Units0	SECONDS,PULSES	PULSES
Pulse_Units1	SECONDS,PULSES	PULSES
Pulse_Width0	<variable>	1
Pulse_Width1	<variable>	1
Pulse_start0	-32768 .. 32767	
Pulse_start1	-32768 .. 32767	
Pulse_step0		1
Pulse_step1		1
Pulse_timer0	ZERO,ONE	ZERO
Read_count0		
Read_count1		
Ready	-32768 .. 32767	
Reset	-32768 .. 32767	
Set_count0	0 .. 65535	
Set_count1	0 .. 65535	
Set_output0	OFF,ON	OFF
Set_output1	OFF,ON	OFF
Sqwave_Units0	SECONDS,PULSES	PULSES
Sqwave_Units1	SECONDS,PULSES	PULSES
Sqwave_Width0	<variable>	1
Sqwave_Width1	<variable>	1
Sqwave_start0	-32768 .. 32767	
Sqwave_start1	-32768 .. 32767	
Sqwave_step0		1
Sqwave_step1		1
Stringtemp	STRING[128]	
Switch_panel	-32768 .. 32767	

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Switch_panel_back	-32768 .. 32767	
Tb_query_value	-32768 .. 32767	INVALID
Tb_trigger_bus	BUS0,BUS1	BUS0
Test	STRING[80]	""
Test_res	STRING[4]	""
Timer_source0	INT,BP,ETB0, ,ETB1,EXTIN	INT
Timer_source1	INT,BP,ETB0, ,ETB1,EXTIN	INT
ToTimerChan0	-32768 .. 32767	
ToTimerChan1	-32768 .. 32767	
Use	0 .. 7900	0
Which_intrrupt	SYS,SLOT	SYS

END HELP

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