p e n d u l u m

Application Note:
CNT-90 Series and Agilent 53131A/132A Compatibility

The Pendulum CNT-90 Series Timer/Counter/ Analyzers, including CNT-90, CNT-90XL and CNT-91/91R, from Spectracom are designed for high-speed and high-resolution measurements over GPIB or USB. The units have a "native SCPI" bus mode with a command set which optimizes every aspect of the instrument performance.

The CNT-90 Series also has a "compatibility mode," which is intended to make life easy for the current user of the 53131A/132A, when he needs to upgrade or duplicate his current GPIB test system, while maintaining as much as possible of the SW control program. In the Compatibility mode, the CNT-90 Series emulates the behavior and responses of a 53131A/132A.

Note: If 53131A/132A commands are sent to a CNT-90 Series unit working in native mode, you must not expect correct response messages.

Since the CNT-90 Series units and the 53131A/132A are not 100% identical units, the compatibility does not reach 100% either. One obvious difference is the response to the Identity Query (*IDN?), where the 53131A answers "HP 53131A" and the CNT-90 answers "Pendulum CNT-90." Other examples are commands that address hardware only found in the 53131A/132A, like the RS232 port.

For the majority of SW programs, very few program changes are needed. All measurement and setting commands are understood, and the response formats are the same. Status registers and SRQ handling are the same.

The compatibility has improved over the years, and for best possible compatibility, the CNT-9x unit should have the latest available firmware. Check the Spectracom website for firmware upgrades.

This application note describes the few incompatibility issues, which the user should be aware of in order to make a seamless drop-in CNT-90 Series replacement with a minimum of trouble.

Responses to Identification Queries
1. Response to *IDN? is "Pendulum CNT-90" instead of e.g. "Agilent 53131A."
2. Response to *OPT? depends on the actual option installed.

Termination
In firmware versions earlier than v1.26, the CNT-90 Series demanded that commands to the instrument must be terminated with EOI. HP/Agilent also accepts NL (without EOI) as termination. If a CNT-90 Series unit with older firmware receives a command string without an accompanying EOI, then

it will wait indefinitely. The remedy is to upgrade the CNT-9x firmware to accept both EOI and NL as terminators.

Missing Functions
The CNT-90 Series incorporates all input settings and all measuring functions from the Agilent/HP counters with one exception. The CNT-90/90XL do not have a Totalize function, so commands beginning with :FUNC:TOT will result in an error message. CNT-91/91R have Totalize.

Missing Hardware
HP/Agilent units have a RS232 port for "talker only" purposes, e.g. for printing measurement results on a serial printer. The CNT-90 Series does not have the RS232 port, so the commands in the table below will result in error messages (see table).

Internal Calibration and Diagnostics
Commands starting with ":CAL" and ":DIAG" are intended for calibration and diagnostics of internal parameters in the HP/Agilent units and are not supported.

Command Set	Error Message
:SYST:COMM:SER:CONT:DTR ON	-110,"Command header error"
:SYST:COMM:SER:CONT:DTR IBF	-110,"Command header error"
:SYST:COMM:SER:CONT:DTR LIM	-110,"Command header error"
:SYST:COMM:SER:TRAN:PAR EVEN	-110,"Command header error"
:SYST:COMM:SER:TRAN:PAR ODD	-110,"Command header error"
:SYST:COMM:SER:TRAN:PAR NONE	-110,"Command header error"
:BAUD 300 ... BAUD 19200	-113,"Undefined header"
:PACE XON	-113,"Undefined header"

USA | 1565 Jefferson Road, Suite 460 | Rochester, NY 14623 | +1.585.321.5800 | sales@spectracomcorp.com
FRANCE | 3 Avenue du Canada | 91974 Les Ulis, Cedex | +33 (0)1 64 53 39 80 | sales@spectracom.fr
UK | 6A Beechwood | Chineham Park | Basingstoke, Hants, RG24 8WA | +44 (0)1256 303630 | info@spectracom.co.uk