

SmartStep Components....

Programmable/Switch Controllers:

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MCE/Weinschel's approach starts with the Model 8210A SmartStep Interface which provides a flexible, low cost solution for the control and operation of electromechanical switches and programmable step attenuators using standard communication interfaces. The 8210A represents a new concept in device control applications for bench test and subsystem designs.

/// Designed to interface with Weinschel's new line of SmartStep programmable attenuators and other electromechanical devices.

/// Simplifies your bench test setups and subsystem design.

/// Available in two standard communication interfaces:

- Model 8210A-1: GPIB/IEEE-488 (HS-488 ready)
- Model 8210A-2: RS-232, RS-422, RS-485

Each model contains similar capabilities and provides switch-selectable parameters to tailor the interface's operation.

SmartStep Programmable Attenuators:

Pg 141 (3200T), 144 (3250T) & 157 (150T)

Weinschel's approach also includes a new generation of intelligent programmable step attenuators with a built-in digital interface. These models are designed to simplify the control and integration of these devices into subsystem and bench applications.

The SmartStep attenuators feature a microcontroller-based driver that provides a TTL-level digital interface for control of the attenuator relays or solid-state circuitry. This new feature simplifies operation and interfacing requirements, while at the same time providing for greatly enhanced flexibility over past designs.

These SmartStep Devices contain non-volatile configuration memory used to hold a wide variety of attenuator and driver-dependent parameters, including serial number, attenuator cell dB values, mechanical relay or solid-State (GaAs FET & PIN) configurations, and switching requirements which are all accessible via the Device Interface Bus (DIB).

SmartStep Attenuator Units for Rack or Bench Use:

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MCE/Weinschel's 8310 & 8311 Series SmartStep Attenuator Units represent Weinschel's newest concept in programmable attenuation for bench test and subsystem applications. Standard 8310 Series designs house and control various Weinschel Programmable Attenuator Models (3200T, 150T, and 4200 Series) via front panel controls or standard communications interfaces including GPIB (IEEE-488) and RS-232/RS-422 /RS485. The standard units combine the features of the Weinschel 8210A Device Controller with a front panel user interface to form a flexible, easy to use solution.

Most 8310 Series are single channel configurations where RF signal is routed through either the front or rear mounted Ports A & B but can be configured for up to four channels of attenuation, RF switching, or other functions and other features such as:

- /// Multi-Channel attenuation paths (up to 4 input/outputs).
- /// Relative vs. Nominal attenuation step function.
- /// Wide choice of Frequency & Attenuation Ranges.
 - dc to 1, 2, 3, 18 & 26.5 GHz
 - up to 127 dB
 - Solid-State (GaAs FET & PIN)
 - Relay Switched
 - 50 & 75 Ω Configurations
- /// High Accuracy & Repeatability.
- /// Easily mounted into racks or cabinets designed per EIA RS-310 or MIL-STD-189.

Plug & Go Switch/Relay Drivers:

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Standard as well as custom designed Switch/Relay Driver Cards are available for controlling a wide variety of electromechanical switches and other TTL devices. For example, one of our standard designs contains eight electromechanical relays for output and control.

The relays are Form C (SPDT) latching type, which along with various jumper configurations, can be used with the 8210A to control a variety of devices such as RF Switches (+28V and latching) and other TTL compatible devices. This card also provides an optional three-pin external power connector which can be used to supply power to the device's under control, to simplify wiring. This external power is not used by the control circuitry on the relay driver, and its use is completely application dependent.

The Virtual Device....

Sometimes, when constructing a system or subsystem, you cannot find a device that provides quite the functionality that you require. Assume you need a large attenuation range, but a small incremental step size. Typically, one would be forced to use two physical attenuators connected in series to achieve this goal. For example, let's assume there is a requirement for an attenuator with a total attenuation >80 dB, with a resolution of 1dB over the dc-18 GHz frequency range. One could combine a Model 150T-70 0-70/10 dB steps) with a Model 150T-11 0-11/1 dB steps) to meet this goal. Unfortunately, the programming burden has increased dramatically, since you must now not only write the software to control two separate devices, but also develop an algorithm for determining the appropriate settings for each device.

In addition, if your requirements were to change perhaps to a larger attenuation range, or a different step size, these algorithms would have to change accordingly. The 8210A provides a solution to this dilemma with the ability to create and define a virtual device. A virtual device allows the user to construct a device by combining the attributes of several physical devices, and be able to program this combination as if it were one physical device! Revisiting our example above, we can create a virtual attenuator with an attenuation range of 81/1 dB steps, effectively creating a 150T-81. Controlling this new device requires no more programming than controlling a single attenuator.

The 8210A supports up to 32 virtual attenuator devices, each of which allow up to four physical attenuators to be combined into a single device. The virtual attenuator uses the Attn Protocol command set, providing the same programming interface as other attenuator devices.

During the setup process, the user assigns a name to the virtual attenuator, which may be stored in the 8210A's non-volatile EEPROM memory for future use. During the power-up configuration process, the 8210 will automatically recall and assign these virtual devices.

The SmartStep Approach....

Using Weinschel's Smartstep approach a customer can easily design and layout subsystems in minutes that includes a wide range of Plug & Go programmable attenuators and other standard microwave and RF components which can be controlled over various standard communications interfaces. Weinschel offers subsystem design and manufacturing services to help you implement this new approach into your specific program. This approach is ideal for specialized wireless communication test applications for Cellular, PCS, Modem, and CATV equipment and systems.

Subsystem design options can include standard controller interfaces (IEEE-488.1, RS-232, RS-422 and others); attenuation ranges up to 127 dB with resolutions of 0.25 dB; front panel and menu controls; 75 Ω configurations; attenuation/switching schemes; individual to complex matrix/channel configurations; specialized testing and calibration; and custom packages. Refer to page 170 for examples.

Specific driver configurations can also be designed for operating your devices or retrofitting an existing device with the SmartStep Approach!

Conclusion....

Whether you're designing your own switching/combining/attenuation wireless simulation system or require a turnkey solution, contact Weinschel for a wide range of standard products or custom engineered subsystems at 800-638-2048, 301-846-9222 or e-mail us at sales@weinschel.com!

