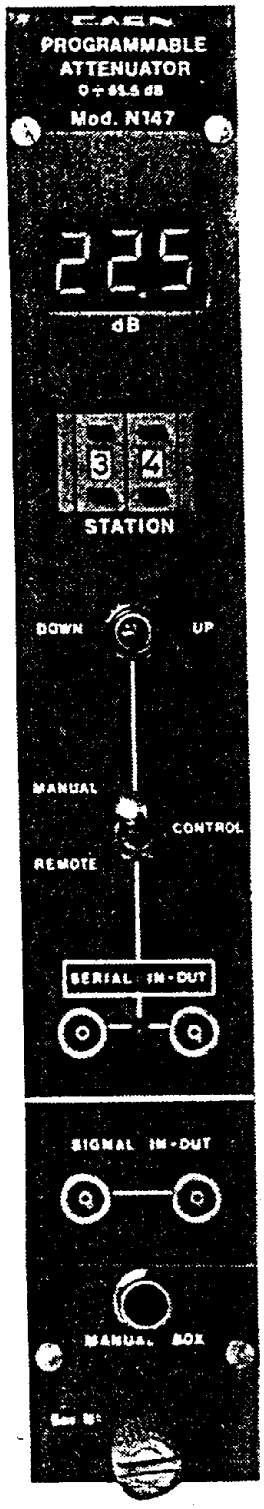

Technical Information Manual

MOD. N 147

PROGRAMMABLE ATTENUATOR

TABLE OF CONTENTS

FEATURES

- Attenuation selectable from **0.0 to 65.5 dB**, step **0.5 dB**.
- One NIM module wide.
- LED display of the programmed attenuation (dB).
- Non-volatile storage of the attenuation. At restart, the last active attenuation is restored.
- The module can be moniterd and controlled **locally or remotely.** In remote mode the unit can be programmed with the CAENET Manual Controller (Mod. **A 119A**), or with the CAENET CAMAC Controller (Mod. **C 117A**).
- Remote programming, with a single Controller, of up to 100 Modules is possible by daisy-chaining units with the CAENET serial line link and protocol.

DESCRIPTION

Model N 147 is a programmable attenuator which combines the accuracy and reliability of passive resistive cells, with the flexibility and ease of use of a microprocessor-based system.

A three-digit LED display shows the current attenuation, given in decibel. This value is also stored in a non-volatile memory and is automatically loaded when the Module is powered up or restarted.

The Module can be programmed **locally** or **remotely,** depending on the position of of the MANUAL/REMOTE locking switch. When the locking switch is in the central position the attenuation is locked to its current value.

- In **local** mode (switch in MANUAL position) the attenuation is set on the incremental switch labeled UP / DOWN.

- In **remote** programming (switch in REMOTE position), control can be made either with the CAENET Manual Controller A 119A or with the CAENET CAMAC Controller C 117A.

- Up to 100 modules can be programmed from a single Controller via the CAENET serial line link and protocol. For that, each module has a two digit thumbwheel switch for the module identification (the station number), connectors for the CAENET serial line coaxial cable, and a plug to power a Manual Controller.

SPECIFICATIONS

ATTENUATION RANGE	.....	0.0 to 65.5 dB
RESOLUTION	.....	0.5 dB
ACCURACY	.....	≤ 1% per cell (0 ÷ 70°C)
RISE / FALL TIME	.....	≤ 1.7 ns (0 dB) ≤ 4 ns (all other)
INSERTION LOSS	.....	≤ 0.2 dB
INPUT /OUTPUT IMPEDANCE	.....	50 Ω
INPUT / OUTPUT DELAY	.....	6 ± 0.3 ns
MAX INPUT POWER	.....	200 mW
REFLECTIONS	.....	≤ 15% (worst case)

All Connectors are **LEMO 00** type.

POWER REQUIREMENTS:

+ 6 V 580 mA
+ 12 V 190 mA (without Manual Controller)
+ 12 V 640 mA (Manual Controller connected)

REMOTE PROGRAMMING

CAENET MANUAL CONTROLLER (A 119A) OPERATIONS

- Link the Manual Box to the Module with a 50 Ω coaxial cable (either directly or through daisy-chaining). Set the N 147 switch to REMOTE. Power the Manual Box by connecting its power cord to the Module's power plug.

- At start-up, the A 119A displays a message showing the software version number on the top-line (version 2.3) and, on the bottom line, the message "ROLL TO SELECT', to select device type. Press ROLL key until N 147 appears. Now press the # key to start the dialogue with a Programmable Attenuator.

- Remember that by pressing the # (acknowledge) key the cursor can be moved through the available fields. The # key is also used to activate the comand or control just entered; in this case the # key is pressed at the end of the command / control sequence.

- After device type selection, address the Module by pressing the ENTER key followed the Module two-digit station number, as it appears on the two-digit display (thumblewheel switch) of the front panel of the specific N 147 to be addressed, and the # key.
- If the Module is on, the LEDs on the Manual Box blink rapidly and the active on the N 147 is shown on the bottom row, far right. To change value press # to move the cursor to the SET field at top. Then press ENTER plus the new value, and the # key.
- Pressing RESET stops the dialogue and freezes the current attenuation value.
- If anything is wrong, the LEDs blink slowly and the Manual Box flags an error code on its display. In Version 2.3, error messages are the following:
  ERR .....Generic error in a DATA READ operation.
  OUT ..... Attempt to select a parameter value out of range.

CAENET CAMAC CONTROLLER (C 117A) OPERATIONS

The supported CAMAC Functions are the following:

- **F(17)** starts the dialogue with the N 147 by selecting device type and the specific module to monitor or control, via its station number:
  - lines W9 to W16 hold the integer 101 (decimal) to address the N 147 modules.
  - lines W1 to W8 hold the station number (0 to 99), to select the specific Module among the other N 147 connected to the CAENET link.

- **F(0)** reads the attenuation (dB) multiplied by two and converted to an integer, on lines R1 to R16.

- **F(0)** is also used for **error monitoring.** An error has occurred if the returned value is a negative integer. In Version 2.3, the codeis:
  -1 ..... Generic error in a DATA READ operation,
  -3 ..... Attempt to select a parameter value out of range.
  Any function's call should be followed by an F(0) call to verify that the operation was correctly executed.

- **F(16)** loads into the N 147 the attenuation (dB) multiplied by two and converted to an integer, stored on lines W1 to W16.

- **F(9)** performs a general reset. The same effect is obtained by pressing the RESET push button on the C 117A front-panel. The RESET comandstops the connections between the module and the CAENET controller and locks the current attenuation value.