



KÁBEL-TV RENDSZEREKET GYÁRTÓ ÉS FORGALMAZÓ MAGYAR - AMERIKAI KFT.

A HUNGARIAN - AMERICAN LTD. COMPANY FOR MANUFACTURE AND SALES OF CABLE TV EQUIPMENT

# **CW-3081 PROGRAMMER**

FOR USE WITH THE CW-3000, CW-1000 AND CW-1600 SERIES  
CABLE TELEVISION HEADENDS

## **USER'S MANUAL**

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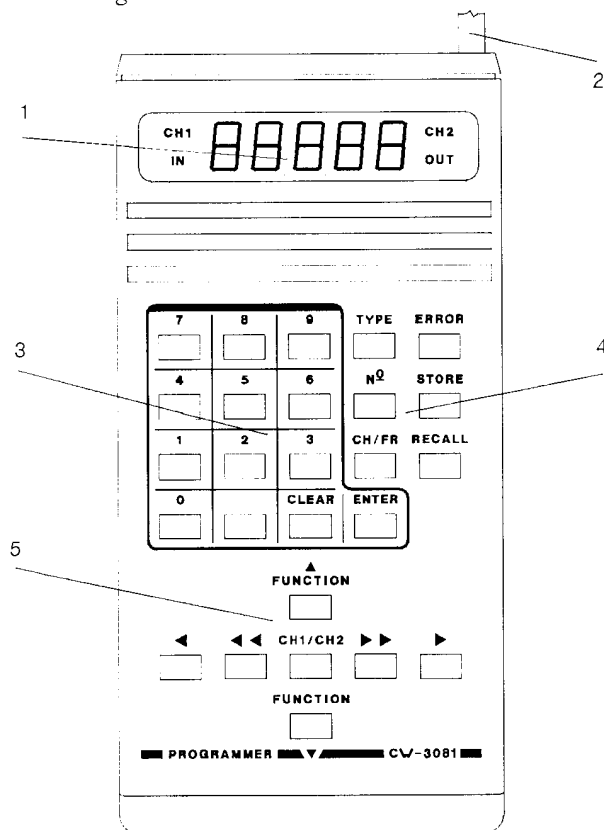
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## INTRODUCTION

This programmer unit has been designed to set the parameters of the CW-3000, CW-1600 and CW-1000 series cable television headends. Using the programmer, programming or reprogramming of the parameters of the individual system-components according to the requirements can be made easily and quickly. The microprocessor allowed a very simple design, and its intelligence will lighten your job.

### What does that mean?

- You need not identify the units, the **PROGRAMMER** does it automatically. The menu driven programming system offers the parameters to be set eg. signal frequencies, levels etc.
- The parameter values can be set by numeric keys or stepping up/down.
- The **PROGRAMMER** does not permit out of range settings and calls attention to the errors.
- The small size and the careful outer design ensures easy handling even under bad conditions.



- 1 DISPLAY
- 2 CABLE
- 3 NUMERIC KEYS
- 4 SPECIAL KEYS (FUNCTIONS)
- 5 STEPPING KEYS

## CONNECTING THE PROGRAMMER

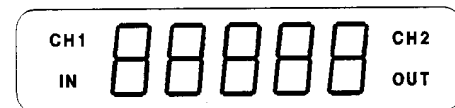
Connect the 6-pin plug of the **PROGRAMMER** (notch upside) into the "CONTROL I/O" or "**PROGRAMMER IN/OUT**" socket on the front panel of the unit to be programmed. Improper connection is not possible. The **PROGRAMMER** is powered directly from the unit to be programmed while connected. (No power-on switch).

For connecting the programmer, the unit does not need to be switched off. After connecting the **PROGRAMMER**, the readout 'no co' (no connection) appears in the display, then after 4 seconds the first parameter to be set will follow.

Now you can set the parameters, store the new settings then disconnect the **PROGRAMMER**. Without storing, the new setting will not be saved.

## PARTS OF THE UNIT

### 1. Large-sized LED display



The display comprises 5 digits in 7-segment format. The inscriptions beside the display field are as follows:

**CH1:** channel 1

**CH2:** channel 2

**IN:** input frequency

**OUT:** output frequency

'CH1', 'CH2' are used to distinguish the channels at 2-channel units. When the current parameter refers to both channels, these inscriptions do not light.

'IN' or 'OUT' inscriptions light when input or output frequencies are displayed respectively.

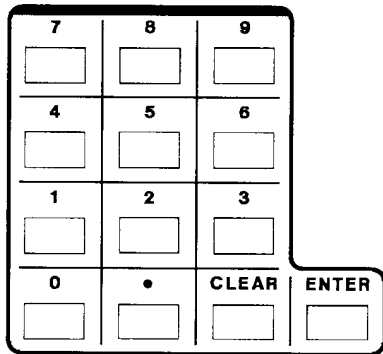
Inscriptions may appear in the display field, as well. These are messages for the user or identifiers for the current parameters. In these cases the numbers can occupy only the rest of the display field.

### 2. Spiral cable

It connects the **PROGRAMMER** to the 'CONTROL I/O' or '**PROGRAMMER IN/OUT**' socket of the unit to be programmed.

**3. Numeric keys**

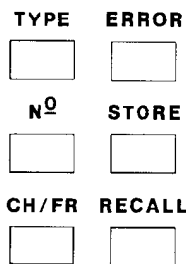
They are used for direct parameter setting as follows.



- 0...9 numbers
- . decimal point
- CLEAR clears numeric settings, (the preceding data remain valid)
- ENTER completes numeric setting

**4. Special keys**

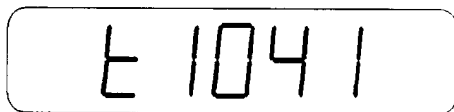
These keys have special functions as follows



**TYPE (F1) key:**

At continuous pressing the 4-digit type number of the unit will appear.

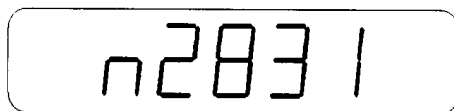
Identifier: t (type)



**N° (F2) key:**

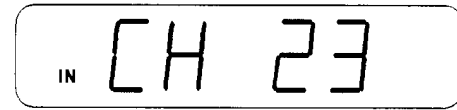
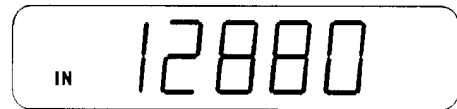
Press and hold it to display the 4-digit serial number.

Identifier: n (number)



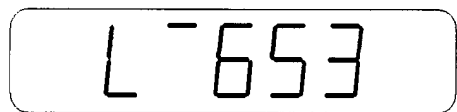
**CH/FR (F3) key:**

In case of 3.00 or later software versions this key selects whether vision carrier frequency or channel number will be given as parameter. When using channel numbers, to each channel number a fix frequency value belongs, fine tuning is not possible.



In the CW-1000 system, this button has an other, rarely used function. It can be used to enter or leave the menu system of the optional board. Pressing this key has no effect if the optional board is not built in or has no parameter to be set.

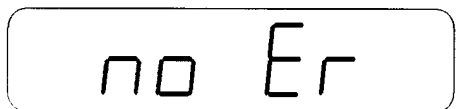
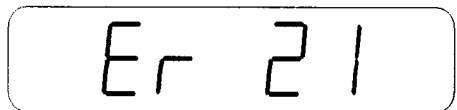
This menu is identified by the upper line between letters and numbers.



**ERROR key:**

Press and hold it to display the error code number for the unit. The flashing display calls attention to the error.

In the display, the error code is preceded by 'er' (error). At normal operation 'no Er' (no error) message will appear.



**STORE key:**

After setting all the parameters to be set this key activates the memory write cycle. When pressing, the display will blank for about 1 second. The unit can store the setting for a 10 year period. The maximum number of reprogrammings is 10,000. In 2 seconds after disconnecting the PROGRAMMER, the programmable unit will neglect the new setting, if it was not stored.

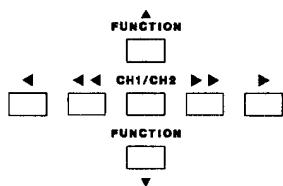
**RECALL key:**

It recalls the stored value of the displayed parameter. It can be used after modification of the current parameter if the previously stored value is to be reset.

When displaying frequency difference (AFC position, tuning), this key can be used for reducing the difference by tuning the frequency directly.

**5. Stepping keys**

In the current menu they can sequentially select the programmable parameters and change the parameter values stepwise.



## CH1/CH2:

At units accommodating two channels, it is used for selection channel 1 or 2. Pressing the key means the selection of the logically first parameter, at the same time.

## FUNCTION UP:

It selects the next parameter.

After reaching the last parameter the first one will appear again.

## FUNCTION DOWN:

It selects the previous parameter.

After reaching the first parameter the last one will be displayed again.

- < It slowly decreases parameter values step by step.  
At continuous pressing it starts repeating steps after a short delay.
- << Fast decrease of parameter values step by step.  
It starts repeating just after depressing.
- > Slow increase of parameter values step by step.  
Press and hold it to repeat steps after a short delay.
- >> Press to increase parameter values quickly.  
It starts repeating just after depressing.

## HOW TO USE THE PROGRAMMER

1. Connect the **PROGRAMMER** to a unit according to the connection instructions. Supply voltage results in a 'no co' (no connection) message in the display, and after 4 seconds the first programmable parameter appears.

Inscription 'IN' or 'OUT' lights when input or output frequencies are displayed, respectively.

Inscription 'CH1' or 'CH2' lights to identify the selected channel in a 2-channel unit.

2. Press the **FUNCTION UP/DOWN** keys to move in the current menu and query every parameter. At continuous stepping in a certain direction, after the end the beginning comes again. In 2-channel units press **CH1/CH2** to query the parameters of the other channel.

3. The parameters usually are both readable and adjustable.

Select one frequency parameter and modify its value by the <<, <, >, >> keys. These keys can be pressed continuously. The displayed value is always valid: the unit is set to that. New values can be set by the numeric keys as well, this setting must be completed with pressing the **ENTER** key. The **PROGRAMMER** does not permit out of range settings.

Read-only parameters cannot be modified (eg. AFC position and tuning) and the possibility modification can be disabled (eg. output level).

At some parameters identifying text is displayed on the left of the digit field. The explanations for the abbreviations are listed in the Supplement at the end of this description.

4. When the desired parameters are set, press the **STORE** button to store them. The unit will save the new setting and then the **PROGRAMMER** can be disconnected. When you "lose your way" during programming, disconnect the **PROGRAMMER** without **STORE** and then connect again. You will get back to the starting point. You can go back to the original factory parameter setting by pressing keys **ERROR** and **5** simultaneously if your software is 3.00 or later version.

## OPERATION

After connection, the **PROGRAMMER** automatically recognizes the type of the unit. It means that only channels and parameters existing in the current unit can be displayed. Lighting 'CH1' or 'CH2' identifies the channel selected by the **CH1/CH2** key.

Inside a given menu, any parameter can be selected by the **FUNCTION UP/DOWN** keys. The parameters can be imagined along a circle where the moving is stepped by these keys.

The **PROGRAMMER** has various menus, but setting the parameters of the main menu is usually enough. The user can freely move from one menu to another.

When connecting the **PROGRAMMER**, pressing **CH1/CH2** or changing menus, parameters are always displayed in logical order, usually the input frequency is the first one.

Some of the displayed parameters cannot be modified: some menu items are designed to query the given parameter only (eg. AFC position, tuning), or changing the given parameter is disabled (eg. output level). If the existing value is proper, step to the setting of the next parameter.

New parameter values can be set in two ways:

1. By the stepping keys: <<, <, >, >>

In this case the displayed value is always valid, as the unit is set to it. When the displayed number does not change, the value cannot be modified, or it is at the range limit.

2. By the numeric keys: 0...9, ., **CLEAR**, **ENTER**

After keying in the digits, the setting must be completed by pressing the **ENTER** key, as the unit accepts the new value only this way.

Some part of the display field (occupied by letters) can be used only for parameter identifiers or messages. This area comprises the separating space between the groups of letters and numbers, too.

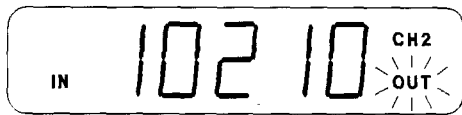
At read-only parameters the numeric keys are switched off. Wrong keying can be interrupted at any time by pressing the CLEAR key, then the previous value will be displayed again. Numeric keying can be interrupted by other keys, but the respective instruction will also be executed.

Negative numbers cannot be keyed in, but negative values can be displayed.

Frequency values are generally displayed in MHz units (sometimes in kHz). In other cases the displayed code numbers can be identified with the help of the relevant charts. Zero means switching off or minimum value.

Input and output frequencies are automatically set to raster values by the PROGRAMMER. The raster is usually larger than the least significant digit (LSD) value (e.g. at the TV Modulator the raster is 62.5 kHz or 50 kHz).

Warning messages can be displayed, as well. For example 'IN' or 'OUT' begin flashing when the difference between the input and output frequencies is too small. In this case the inscription of the current parameter lights continuously and the inscription on the other side will flash.



At continuous pressing, keys usually do not repeat except stepping (up and down) keys and inquiries. The fast stepping keys (<<, >>) repeat immediately, slow stepping keys (<, >) begin repeating after a short delay.

## SPECIAL INFORMATION

The following information is given for those interested in the detailed operation of the PROGRAMMER

### I. Secondary commands

The PROGRAMMER has a few additional instructions which can be activated by the simultaneous pressing of the ERROR key and another key.

#### ERROR and 0 keys:

Press and hold them to display the type number of the PROGRAMMER.

Identifier: t (type)

#### keys ERROR and 1:

Press and hold them to display the software version of the PROGRAMMER.

Identifier: Pv (Programmer version)

#### keys ERROR and 2:

Press and hold them to display the software version of the unit.

Identifier: v (version)

#### keys ERROR and 3:

Press and hold them to run the display test program.

#### keys ERROR and 4:

Signal level measurement for CW-3000 series units.

It displays the numeric values of the parameters shown by the LED indicator row on the front panel of the CW-3000 unit.

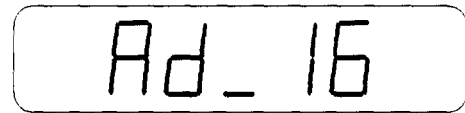
Identifier: M (Measuring)

#### keys ERROR and 5:

Recalls the original factory parameters, with software version 3.00 and higher

## II. Second menu

Some special parameters are placed in the second menu. Setting of these parameters is not necessary. Press the ERROR and CLEAR keys simultaneously to enter or leave this menu. The PROGRAMMER operates similarly to the normal case. This menu is identified by the underlining mark between the letters and numbers. Storing of special parameters is not necessary.



The second menu is similar at the units of different types.

### Programmable parameters:

#### TV STANDARD (StA)

Range: 1...4

The parameter is used to select the proper channel-frequency chart.

- 1 D/K standard
- 2 B/G standard
- 3 I standard
- 4 L standard

#### FINE FILTER TUNING (FFt)

Range: 1...4 (CW-3000 series units only)

It is used for fine tuning the filter of the TV MODULATOR.

#### REFRESH TIME (rt)

Range: 0..8

- 0 no refresh
- 1 5 minutes and 28 seconds
- 2 2 minutes and 44 seconds
- 3 1 minute and 22 seconds
- 4 41 seconds
- 5 20 seconds
- 6 10 seconds

7 5 seconds

8 2.5 seconds

The units refresh themselves repeatedly as listed above, to maintain correct operation. Environmental disturbances (e.g. thunder-stroke) may cause operational disorders, and the repeated refreshing can eliminate them. This parameter can be used to set the maximum duration of the operating trouble. As refreshing itself can also cause disturbances, so frequent refreshing is not practical. The original factory setting is 10 seconds.

**BUS ADDRESS (Ad)**

**Range: 1...250**

It needs to be set only, when more than one unit are controlled simultaneously by a personal computer. Every unit should be connected through interfaces and can be selected by its own address (1...250) through the bus system.

The address can be optional within the range, but two different units are not allowed to have the same address. At most 250 units can be connected to the bus at the same time.

**TYPE OF OPTIONAL BOARD (EXTENDER TYPE: E)**

**Range: the valid optional board types.**

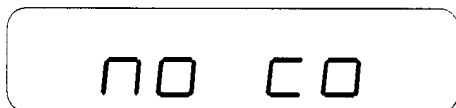
This parameter is to be set when optional board is used, its type number should be set here. Only the board type numbers referring to the given unit will be accepted by the **PROGRAMMER**. When the selected type is not correct or there is no board inside, an error message will appear. Type number of 1000 on the display means that there is no optional board built in.

**III. Error types**

Error messages or flashing display call attention to disorders.

**1. Error messages on the display:**

'no co' (no connection)



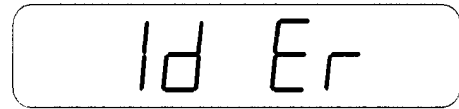
At power on, it is normal for a few seconds. It does not disappear or appears during operation when there is no proper connection between the **PROGRAMMER** and the unit.

Possible cause: wrong connection or microprocessor malfunction.

**'Id Er' (Identifying Error)**

At power on, the **PROGRAMMER** cannot identify the unit.

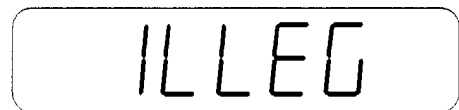
Cause: EEPROM failure



**'ILLEG' (ILLEGal command)**

The unit cannot understand the command from the **PROGRAMMER**.

Possible cause: a new type **PROGRAMMER** is used to set an old version unit.



**2. Flashing display:**

The display starts flashing when error occurs in the unit or the error code changes. Press any key to stop flashing. Press and hold the **ERROR** key to display the error code. The error codes refer to the internal control lines of the unit. This information helps the user especially when installing optional boards.

**Error codes:**

- 1 EEPROM memory does not store
  - 2 EEPROM control sum error
  - 10...19 I<sup>2</sup>C line 1 CW-1000 board 1  
CW-3000 CS7/1,2
  - 20...29 I<sup>2</sup>C line 2 CW-1000 board 2  
CW-3000 CS8/CS9/1,2
  - 30...39 I<sup>2</sup>C line 3 CW-1000 optional board, and  
CS9/CS10/1,3  
CW-3000 CS8/CS9/1,3
  - 40...49 I<sup>2</sup>C line 4 (EEPROM and ADC line)
- In 2-channel units board 1 is CH1, board 2 is CH2.
- x0 the given I<sup>2</sup>C line is stuck at zero
  - x1...x5 the serial number of the faulty IC on the given board, along the signal flow during WRITE (no acknowledge).
  - x6...x9 the serial number of the faulty IC on the given board, along the signal flow during READ (no acknowledge).

## SUPPLEMENT

## Summary of the parameter identifications in the display

<b>A</b>	audio frequency	<b>M</b>	measuring
<b>A</b>	address	<b>Mu</b>	muting on/off
<b>Ad</b>	address	<b>ML</b>	muting level
<b>AF</b>	AFC on/off	<b>n</b>	No. (serial number)
<b>AFC</b>	AFC on/off	<b>no co</b>	no connection
<b>ALC</b>	gated ALC on/off	<b>no Er</b>	no error
<b>AU</b>	automatic operation on/off	<b>no PA</b>	no parameter to be set
<b>bA</b>	bandwidth	<b>oFr</b>	offset frequency
<b>bP</b>	by-pass on/off	<b>on</b>	switch on/off
<b>CH1</b>	channel 1	<b>OUT</b>	output frequency
<b>CH2</b>	channel 2	<b>PIF</b>	picture IF
<b>CLA</b>	clamper on/off	<b>POL</b>	polarisation
<b>CLI</b>	white clipper on/off	<b>Pv</b>	programmer version
<b>co</b>	code switch on/off	<b>r</b>	right channel input frequency
<b>d</b>	delta frequency	<b>rEF</b>	zero carrier reference on/off
<b>dE</b>	deviation	<b>rP</b>	zero carrier reference position
<b>dt</b>	display test	<b>rt</b>	refresh time
<b>dF</b>	delta frequency	<b>S</b>	stereo frequency (left channel)
<b>dP</b>	de-emphasis	<b>SCA</b>	sound carrier on/off
<b>E</b>	extender type	<b>SEL</b>	sound select
<b>Er</b>	error	<b>SFr</b>	sound frequency
<b>FFt</b>	fine filter tuning	<b>SL</b>	sound carrier level
<b>IA</b>	input attenuator	<b>SnL</b>	signal on/off
<b>Id Er</b>	identifying error	<b>So</b>	sound
<b>IF</b>	IF bandwidth	<b>StA</b>	standard
<b>IF</b>	IF value	<b>StE</b>	stereo on/off
<b>ILLEG</b>	illegal command	<b>t</b>	type
<b>IN</b>	input frequency	<b>tE</b>	test
<b>L</b>	left channel input frequency	<b>tI</b>	clamper time constant
<b>L</b>	level	<b>v</b>	version (software)
<b>Lnb</b>	LNB power on/off		
<b>LE</b>	level		
<b>Lo</b>	local oscillator frequency		
<b>Lr</b>	left+right on/off		

This description is valid from **PROGRAMMER** software version 1.06, and from **CW-1000** and **CW-3000** unit software version 3.00.