

User's handbook
Digital radio link

EK-MFR/1

EK-CDP/1 board

REGULATORY COMPLIANCE (USA)

This equipment requires licensing for operation under FCC Title 47 part 101

This equipment generates, uses and radiates electromagnetic fields that could cause interference to radio communications, is more important that it is installed and used in accordance with the instruction that are explained in this manual.

It is in conformity with the limits for a Class A computing device pursuant to Subpart B of Part 15 of the FCC Rules, that fixed and guarantee the reasonable protection against such interference when it is used in a commercial environment.

When this equipment is installed in a residential area it could cause interference, in which case the user must provide itself to avoid the interference.

The test results show compliance with the Class A limits for radiated emissions.

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Warning!

The socket utilized for the unit supply must have the appropriate ground conductor.

The connection of the unit , to a socket without the ground conductor, will make the whole equipment dangerous for people safety.

About the repairing of the units please refer to specialized personnel only .

Inside the devices there are voltages which could be dangerous to people.
Before opening the cover switch off the unit, disconnect the connection and the supply cables.

In case of electrical shock please follow the instructions of first aid listed on page 4

Substitute the fuses interrupted with others of the same type and voltage.



The waste disposal of the devices must be executed in the respect of the enforced laws in the country uses.

Eurotek not assumed responsibility for waste disposal in contrast with enforced laws.

LIFE SUPPORT APPLICATIONS.

Eurotek's products are not designed for use as critical components in life support devices or system without the express written approval of the Eurotek S.r.l. As used herein.




- Life support devices or system are devices or system which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
- A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

The information given in this documentation could have variations without forewarning.

The firm Eurotek S.r.l. does not give any guaranty about this documentation.

The firm Eurotek S.r.l. does not consider itself responsible for possible mistakes which could be found in this documentation.

First aid: artificial breathing(mouth to mouth)

1	<p>In case of electric shock you have to ensure the first aids to the patient, but to do this you have to consider two very important things:</p> <ul style="list-style-type: none"> - interrupt immediately the electric circuit; - if the circuit has not been interrupted, do not touch the patient with bare hands; <p>After doing this, without delay contact the nearest mobile unit of first aid and practice to the patient, in case of loss of consciousness, the breathing mouth to mouth as described below.</p>	
2	<p>Put the patient lying on his back with the arms parallel to the body, ensure that he does not have the breathing tracts obstructed (chewing-gum, dental prosthesis, etc.), otherwise set him free from foreign bodies.</p> <p>Kneel near the patient's head and putting a hand under his neck, incline as possible his/her head backwards.</p>	
3	<p>Going on with keeping the patient's head inclined with one hand, use the other one to occlude the nostrils, if you are going to practise the breathing through the oral cavity, or occlude the mouth if you want to do it through the nasal cavity.</p> <p>While doing this begin the auto-oxygenation, with deep breathing.</p> <p>Then practice the artificial breathing blowing in the chosen cavity beginning with ten expirations each minute to go on them with twelve and fifteen.</p>	
4	<p>During the breathing procedure you have to control that the patient's chest dilates, otherwise change cavity where to blow the air because the previous one could be obstructed.</p>	
5	<p>Do not ever stop the artificial breathing until the patient has recovered or the first aid unit has come.</p>	

INDEX

1. GENERAL DESCRIPTION	6
2. BOARD PANEL	7
2.1 BOARD PANEL REPRESENTATION	7
2.2 BOARD PANEL DESCRIPTION	7
3. BOARD MENU	8
3.1 MENU REPRESENTATION.....	8
3.2 MENU DESCRIPTION AND KEYBOARD GUIDE	9
4. WEB PAGE.....	14

1. GENERAL DESCRIPTION

The EK-CDP/1 board allows to connect the EK-MFR/1 unit to the SHF parts inserted into the Eurotek Out Door Units (ODU) and allows the use of every frequency band, at present, available.

Thanks to the use of two N type connectors every single board can control simultaneously two external sections (ODU) in completely independent way one from the other.

We can therefore connect simultaneously a transmission section and receiver section in order to obtain a bi-directional connection simply using only one Mo-demodulator for every single emplacements.

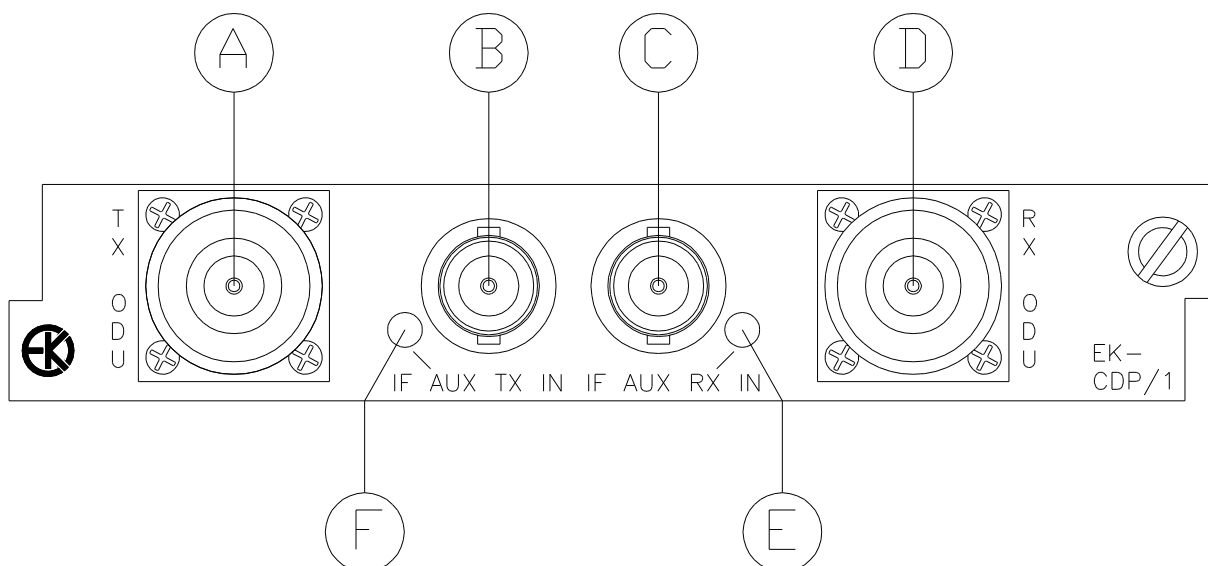
The board has also two auxiliary IF 70 MHz input that can be used as possible reserve signals in both transmission and receiver sites.

From the menu of the EK-MFR/1 we will be able to read several information on the operation of the ODU (OUT DOOR UNIT) like for example the power transmitted, the received field or if there are active alarms. Through the keyboard we will always to decide which ODU we can qualify, send to the transmitting ODU the auxiliary IF eventually at disposal at the input of the board (IF IN TX), set the squelch level of the ODU receiver, set the manual control gain of conversion gain, receive the signal by the ODU receiver or choose an external IF (IF IN RX) and in presence of ODU synthesized change the channel of the radio link.

The board is moreover equipped with a protection circuit that in present of a short circuit on the coaxial cable or in the ODU , to disable the power supply in order to protect the board from ulterior damaging.

2. BOARD PANEL

2.1 Board panel representation



2.2 Board panel description

- A) N type connector.
- B) IF frequency transmission input connector.
- C) IF frequency received input connector.
- D) N type connector.
- E) Yellow led: indicates, if it is on, that the received IF signal, present on the BNC connector (C), is selected.
- F) Yellow led: indicates, if it is on, that the IF signal to transmit, present on the BNC connector (B), is selected.

3. BOARD MENU

3.1 Menu representation

The complete menu of the EK-CDP/1 board is reported below:

Variable name	Variable number
<i>EK-CDP/1</i>	1
<i>>Status</i>	
>> <i>Power Rx</i>	3
>> <i>Power Tx</i>	4
>> <i>Rx Alarm</i>	5
>> <i>Tx Alarm</i>	6
>> <i>Idu Alarm</i>	7
>> <i>Rx Volt o/p</i>	8
>> <i>Tx Volt o/p</i>	9
>> <i>Board Temp</i>	10
>> <i>ODU RX Temp</i>	11
>> <i>ODU TX Temp</i>	12
<i>>ODU RX Set</i>	
>> <i>Ch Rx</i>	13
>> <i>Enable Rx</i>	14
>> <i>IF BW</i>	15
>> <i>Rx</i>	16
>> <i>IF2 Rx</i>	17
>> <i>Sql Lev</i>	18
>> <i>Sql en</i>	19
<i>>ODU TX Set</i>	
>> <i>Ch Tx</i>	20
>> <i>Enable Tx</i>	21
>> <i>IF2 Tx</i>	22
<i>>Revision</i>	
>> <i>DSP</i>	23
>> <i>FPGA</i>	24
>> <i>CPLD</i>	25
>> <i>RamDisk</i>	26

3.2 Menu description and keyboard guide

The user can enter every menu and sub-menu using the “explore menu” key to set the value of any variables, using the “modify variable” key and to confirm the modify, pressing the “enter” key (*EK-MFR/1 user 's handbook, front panel description paragraph*).

>Status

>>Power Rx

The user can read the power rx level of the board with the relative unit of measurement. The value of this parameter can be included between –99dBm and –20dBm.

>>Power Tx

It is possible to read the power tx level of the EK-CDP/1. The limits of this parameter can be included between –40dB and +10dB with a step of 0.1dB.

>>Rx Alarm

Rx Alarm supplies information about the revealed alarm . There are three possibility: if the display shows the “No” write, no alarm are revealed. If the “FDM Lev” write is showed there is not communication between the internal unit and the external unit; if the “ODU” write is showed, an alarm occur in the ODU section.

>>Idu Alarm (*only for ST4 and ST6 configuration*)

When the Yes parameter is showed there is an alarm in progress on the following variable: BB input, IF TX level (refer to EK-UNM/2 board) and TX alarm (refer to EK-CDP/1 board).If the No value is displayed, there is no alarm on the previous variable.

>>Tx Alarm

Tx Alarm supplies information about the revealed alarm . There are three possibility: if the display shows the “No” write, no alarm are revealed. If the “FDM Lev” write is showed there is not communication between the internal unit and the external unit; if the “ODU” write is showed, an alarm occur in the ODU section.

>>Rx Volt o/p

The user can read the value of the voltage on the receiver cable. This value can be included between a minimum value of 20 Volt and a maximum value of 60 Volt.

>>Tx Volt o/p

The user can read the value of the voltage on the transmitter cable. This value can be included between a minimum value of 20 Volt and a maximum value of 60 Volt.

>>ODU RX Temp

Allows to read the ODU receiver temperature. The value is reported in °C.

>>ODU TX Temp

Allows to read the ODU transmitter temperature. The value is reported in °C

>>Board Temp

The Board Temp menu allows to read the temperature of the board.

>ODU RX Set

>>Ch Rx

It is possible, if synthesized ODU are used, to change the receiver channel. The number of the channels are included between 1 and 256 with a step of 1.

>>Enable Rx

This menu allows to enable the receiving ODU (out door unit). If the variable “yes” is settled, the ODU is enabled, while if the variable “no” is settled, the ODU is disabled.

>>IF BW

It is possible to set the receiver IF bandwidth. The available value are: 8 MHz, 20MHz , 28MHz, 36MHz.

>>Rx

The Rx menu allows to set the gain control of the board. There are two possibilities: “agc”, allows an automatic gain control while “mgc” allows a manual gain control.

>>IF2 Rx

It is possible to receive the IF frequency of the ODU when the variable “Yes” is on. This procedure is disabled if the variable “No” is selected. When the “Yes” value is active the yellow led located on the board panel (*board panel description, E*) is light.

>>Sql Lev

The user can set the Squelch level between a minimum value of -99dBm and a maximum value of -20dBm with a step of 1dBm.

>>Sql en

It is possible, with the “Yes” parameter, to enable the Squelch. If the “No” parameter is settled, the squelch is disabled.

>ODU TX Set

>>Ch Tx

It is possible, if synthesized ODU are used, to change the transmitter channel. The number of the channels are included between 1 and 256 with a step of 1.

>>Enable Tx

This menu allows to enable the transmitting ODU (out door unit). If the variable “Yes” is settled, the ODU is enabled, while if the variable “No” is settled, the ODU is disabled.

>>IF2 Tx

It is possible to transmit the IF frequency present on the input board when the variable “Yes” is on. This procedure is disabled if the variable “No” is selected. When the “Yes” value is active the yellow led located on the board panel (*board panel description, F*) is light.

>Revision

This menu allows to read the software revision implemented on the programmable devices of the board. The software configuration of the board is realized to obtain the release of the following programmable devices (DSP, FPGA, CPLD, RamDisk).

The release version of the FPGA is not available because the device is not present on the board.

>>DSP

It is possible to read the software release implemented on the DSP device, on the EK-MFR/1 display.

>>FPGA

The software release does not exist.

>>CPLD

It is possible to read the software release implemented on the CPLD device, on the EK-MFR/1 display.

>>RamDisk

It is possible to read the software release implemented on the RamDisk device, on the EK-MFR/1 display.

The example below explains how to set the frequency value of the gain control of the board (Rx menu).

When the EK-MFR/1 is configured (*EK-MFR/1 user 's handbook, display and keyboard description* paragraph), it is possible, using the “explore menu” keys (*EK-MFR/1 user 's handbook, front panel description* paragraph), to see the boards that are inserted in the system. We suppose to insert the EK-CDP/1 board in the slot number three. The following view appears on the display of the EK-MFR/1:



Pressing the “enter” key, (*EK-MFR/1 user 's handbook, front panel description* paragraph) the user can enter to the EK-CDP/1 menu and using the “explore menu” keys it is possible to see the four main menu of the board: Status, ODU RX Set, ODU TX Set and Revision.



When the ODU RX Set menu is selected (above view), pressing the “enter” key it is possible to enter in the sub-menu of the ODU RX Set menu and, using the “explore menu” keys, to run until the Rx menu as follow:

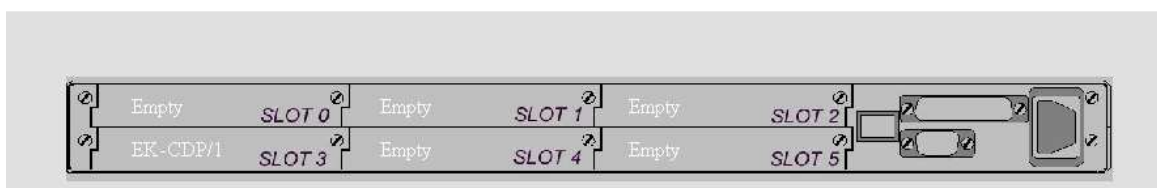
```
Slot 3      EK-CDP/1
  ▶ Settings
    Rx
    = agc
    ⚙️ rw      ⌚ 14:51:00
```

Entering in the Rx menu, it is possible to see the actual value of the board gain control (in the above view: agc). To change the value, push the “enter” key first, with the “modifying variable” keys it is possible to set the new value (in the below view: mgc) and confirm it pressing again the “enter” key. If, after the change, the “escape” key (*EK-MFR/1 user 's handbook, front panel description* paragraph) is pushed, the display returns the previous value.

```
Slot 3      EK-CDP/1
  ▶ Settings
    Rx
    = mgc
    ⚙️ rw      ⌚ 14:51:10
```

4. WEB PAGE

The EK-CDP/1 board is supplied of a web page that allows to obtain a complete view of the status of the board variables. When the EK-MFR/1 system is connected to a terminal unit (PC) and the web pages of the system are loaded (*EK-MFR/1 user 's handbook, web interface chapter*), the user can see the following EK-MFR/1 main web page:



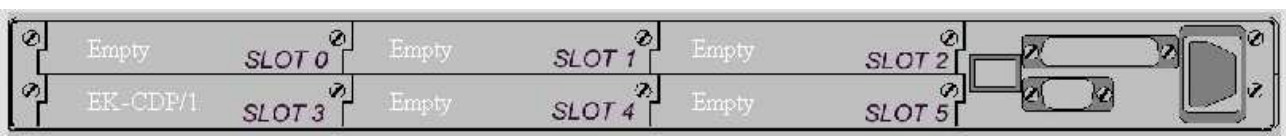
The EK-CDP/1 board is loaded in the slot number three; to visualize the web page of the board it is necessary to move, using a mouse, the cursor on the slot associated to the board (slot 3) and then to click the left mouse button on its. So we obtain the following image:

The web page of the EK-CDP/1 board is showed above. In the top section, are reported the version of the software tool (v 1.2) and the name of the board with the associated slot number (EK-CDP/1 ==> Slot 3). Under the name, of the board, are indicated every menu in dark colour, while the selected menu is in light colour and its variables are displayed on the centre of the page. The down side of the page is featured by the following parameter: the *refresh time* variable allows to set the useful time to confirm the setting of a menu variable. The *time to new refresh* windows gives information about the countdown of the refresh time. The *Set* parameter box allows to confirm the setting of a menu variable. The *output console* line with the *status* square are used to obtain a view of the alarm conditions of the entire system. During the normal working conditions, the output console line returns the No Alarm value; if an alarm is in progress, the following message appears: <<Alarm Active. “n” variables in alarm>>, where n is the number of the variables in alarm. When a menu variable is affected by an alarm, the value of the variable, in the related window, is showed in red colour and also the name of the board became red.

The next example shows how to set a variable value of the board. The procedure to set every variable value is similar to this.

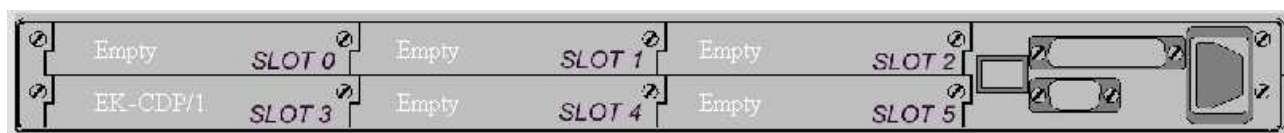
We suppose to enable the transmitting ODU by the Enable Tx variable. This parameter is located in the ODU TX Set menu of the board so when the menu is selected, on the page we can see the following situation:

The screenshot shows the 'All4Digit Software Tool v1.2' interface. At the top, it displays 'EK-CDP/1 ==> Slot 3'. Below this, there are tabs for 'ODU Settings', 'Status', and 'Revision'. Under 'ODU Settings', there are sub-tabs for 'Odu Rx Set' and 'Odu Tx Set', with 'Odu Tx Set' currently selected. The main area contains three settings: 'Channel Tx' with a text input field containing '4', 'Enable Tx' with a dropdown menu set to 'No', and 'IF2 Tx' with a dropdown menu set to 'No'. At the bottom, there is a 'Refresh Time [sec]' section with radio buttons for 1 (selected), 10, and 30, and a 'Time to new Refresh' input field with '1'. To the right is a 'Set Parameter' button and an 'Output Console' area displaying 'No Alarm'. Further right is a 'Status' section with a green indicator light. A red warning message 'be better connected' is visible at the bottom right.



Moving the cursor, using a mouse, on the Enable Tx box and pushing the left mouse button on the black indicator, it is possible to see the available value to insert for this parameter.

The screenshot shows the 'All4Digit Software Tool' v1.2 interface. At the top, it displays 'EK-CDP/1 ==> Slot 3'. Below this are tabs for 'ODU Settings', 'Status', and 'Revision'. Under 'ODU Settings', there are sub-tabs for 'Odu Rx Set' and 'Odu Tx Set'. The 'Odu Tx Set' tab is active, showing three parameters: 'Channel Tx' with a value of 4, 'Enable Tx' with a dropdown menu showing 'No' (selected) and 'Yes', and 'IF2 Tx' with a value of No. At the bottom of the interface, there is a 'Refresh Time [sec]' section with radio buttons for 1, 10, and 30 seconds, and a 'Time to new Refresh' input field set to 1. To the right of this is a 'Set Parameter' button. Further right is an 'Output Console' area displaying 'No Alarm' and a 'Status' indicator showing a green light. At the very bottom, a red text message reads 'be better connected'.



To enable the transmitting ODU, the “Yes” value must be settled as the following figure shows:

Eurotek All4Digit Software Tool v1.2

EK-CDP/1 ==> Slot 3

ODU Settings | Status | Revision

Odu Rx Set | **Odu Tx Set**

Channel Tx: 4

Enable Tx: Yes

IF2 Tx: No

Refresh Time [sec]: ☐ 1 ☐ 10 ☒ 30

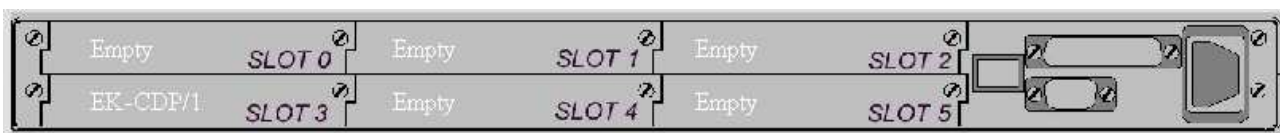
Time to new Refresh: 25

Set Parameter:

Output Console: You can still press "Set" (until new Refresh occurs)

Status: ■

be better connected



We have settled, for example, the refresh time parameter on the 30 seconds indicator, so every thirty seconds the system variables are refreshed. When the refresh countdown is complete the refresh label is flashing. When a new value is loaded in the variable window (in the example Enable Tx = Yes) the user has then seconds for to confirm the value pushing, using the left mouse button, the Set box (a message is showed on the output console line). At the end of the then seconds, if the refresh time is not finished, it is again possible pushing the set box (*you can still press set (until new refresh occurs)* is showed on the output console line); if also the refresh time is at the end, the system reloaded the previous variable value.

When the settings operations are complete, the new loaded value is visible on the EK-MFR/1 display.

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