PROFLINE
an International Datacasting Company

USER MANUAL
SFD-IP
Stereo FM Demodulator

R·D·S

Contents:

1. GENERAL

PROFline

Thank you for selecting this fine piece of equipment.
This user manual will help you in installing and operating this product on your network.

The philosophy of PROFline is to develop and to produce equipment that is in conformity with the international standards, and is in no-way proprietary. In the last decade we have developed and

produced digital- and analogue audio transmission products for a wide range of customers on the world market.

The PROFline SFD is a “state of the art” broadcast quality FM demodulator with an extremely accurate reproduction capability. The demodulator is a total FM-demodulator system of which the input frequency can be freely selected within the 87.5 to 108 MHz band using the keypad on the front.
The very high technical specifications of the SFD are combined with exceptionally stable characteristics.
For many years now PROFline is preferred supplier for major global and local broadcast companies all over the world.

FM Radio Demodulator SFD
The SFD responds to the demands from the professional broadcast market.
It is build around a high dynamic range FM-tuner with high selectivity, switchable wide and narrow IF bandwidth.
The SFD is able to log 64 alarm events and has an extended range of alarm capabilities.
For RDS-analyzing there are several RDS-monitoring functions available in the SFD.

For further information, please contact PROFline.

2. INSTALLATION

Before connecting the SFD to the mains, please check the unit for any traces of damage on mechanical or electrical parts.

The SFD is a 19” 1U rack-mounting unit with connector access at the rear side. The power rating and heat generation are such that the unit can be placed in a 19” cabinet without special cooling facilities. However, sufficient clearance must be maintained between the SFD and other equipment (1U gap). If the other equipment generates a great amount of heat and/or the ambient temperature becomes too high, additional measures will have to be taken to dissipate the heat and guarantee reliable operation.
The unit can be mounted at the front of a 19” rack using an appropriate mounting set. However, the use of lateral support is strongly recommended.
Please check the following chapters when connecting the SFD in the application so maximum performance is guaranteed.

Special care should be taken with respect to the safety regulations (earthing) as well as the proper mounting of the (RF) connectors.

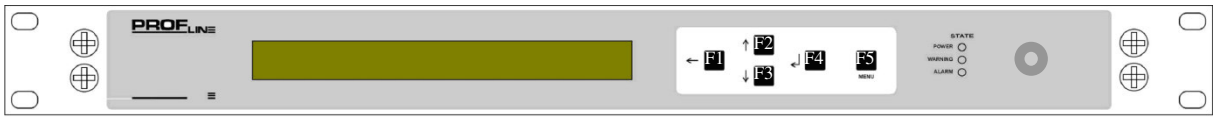
Warning!
Do not attempt to open the SFD as there are no user-serviceable parts inside and warranty is void! For upgrading please contact PROFline or your local distributor.
For contact information please refer to chapter 8 “Support”.

3. OPERATION

The SFD was designed for professional use in broadcast environment and has a user friendly operating menu available through the keypad and display on the front side. The rear panel has also self-explaining connections and will be explained in chapter 5 “Connections”.

3.1. KEYPAD

The buttons on the front, are function keys (← -menu). With the function keys all adjustments can be performed at the fronted of the SFD.



F1	←	=	STOP INPUT / MENU BACK-STEP
F2	↑	=	STEP RIGHT / INCREASE VALUE
F3	↓	=	STEP LEFT / DECREASE VALUE
F4	↵	=	CONFIRM (ENTER)
F5	menu	=	OPEN MENU / CLOSE MENU

To change settings and/or values, please perform the following steps.

- Push on [menu] to select the menu function
- Select the submenu (visible by flashing name) by pushing function keys ↑ and ↓.
- Confirm the selection by pushing ↵
- Select the following submenu or setting (visible by flashing name) by pushing ↑ and ↓
- Put the SFD in the Editing mode by pushing ↵ the setting starts flashing
- Now change the setting according to the manual by using ↑ and ↓, ← and ↵ confirm the new setting by pushing the ↵ button until the setting stops flashing (the name will now start flashing).
- To leave the menu without storing the new value, please push on ←
- When settings are performed push on ← to leave the submenu or push [menu] to return to the operating mode.

In short:

Step 1	Call menu ([menu])
Step 2	Select (↑, ↓, ← and ↵)
Step 3	Confirm by pushing ↵ button until setting stops flashing
Step 4	Close all menus [menu] or close sub menu (←)

Step 2 and 3, depending of the value to be changed, are to be repeated several times.

Attention!
For quickly increasing or decreasing the settings, ↑ or ↓ should be hold for more than 1 second. After this period, value steps rapidly changes until the key is released.

3.2. DISPLAY

When connecting the SFD to the mains, the unit will start up and after ± 4 seconds the selected display mode will appear on the display.

3.2.1. DEFAULT MODE

SFD	[▄ ▄]	*	Program	PFC: 240/100 kHz
In: A	96.20 MHz		68 dBµV	OUT: STEREO

SFD : **S**tereo **F**m **D**emodulator, or Toggled with **REMOTE** when the SFD is remote controlled.

[▄ ▄] : VU indication of received audio. When a stereo signal is received the VU indicator will show: [▄ ▄] in case of o mono signal it will show [▄]

***** : This symbol indicates the availability of RDS-data at the received frequency

Program : Preset name or when RDS is available this shows the RDS-name.
When the external MPX-input is selected by the user, the name will be toggled with **MPX EXT**.
When the SFD is forced to the external MPX-input (with see chapter 4.3) this display will toggle with **MPX EXT !**, so here is the **extra explanation point**.

Note: When the internal clock of the SFD is not set the display will only show **SET CLK!**

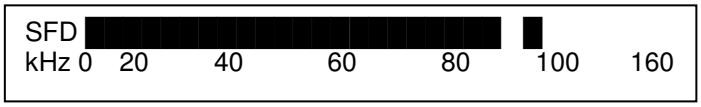
PFC: 240/100 kHz : Setting of the **P**rogrammable **F**ilter **C**onfiguration
The indication is: IF-bandwidth **(240)** / AF-bandwidth **(100)**

In: A 96.20 MHz : The input parameters are shown here, RF-input A, and input frequency 96,20 MHz
If the input-level becomes lower than the **MUTE-level** (see chapter 4.1) the frequency will be toggled with the word **MUTED**.

68 dBµV : Level of the RF-signal at the selected RF-input

OUT: STEREO : Gives information about the audio signals at the XLR-outputs (Mono or Stereo)

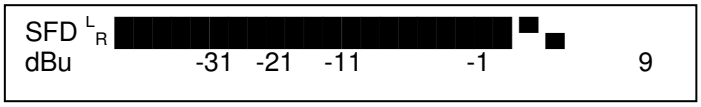
3.2.2. MPX-DEVIATION



SFD : **S**tereo **F**m **Demodulator**, or Toggled with **REMOTE**,
when the SFD is remote controlled.

This VU-meter displays a measurement of the deviation of the complete MPX-signal.
This VU-meter has a peak hold function, which can be reset by pressing the ← button.

3.2.3. AUDIO PM (dBu)

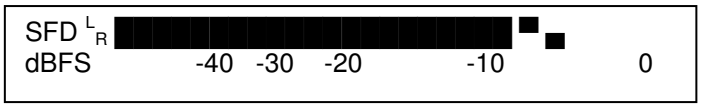


SFD : **S**tereo **F**m **D**emodulator, or Toggled with **REMOTE**,
when the SFD is remote controlled.

This VU-meter displays a measurement of the audio-level at the XLR-outputs.

Note: When there is a stereo signal at the XLR-outputs, there will be two independent VU-indicators at the display.
When the audio signals are mono, the VU meter will switch to one indicator, for Left and Right.

3.2.4. AUDIO PPM (dBFS)



SFD : **S**tereo **F**m **D**emodulator, or Toggled with **REMOTE**,
when the SFD is remote controlled.

This VU-meter displays a measurement of the digital audio-level at the digital XLR-output.

Note: When there is a stereo signal, there will be two independent VU-indicators at the display.
When the audio signal is mono, the VU meter will switch to one indicator, for both Left and Right.

3.2.5. RDS DEFAULT

SFD TA=YES TP=OFF PI=8203 DI=STEREO PS=Radio3FM PTY=Pop Music

SFD : **S**tereo **F**m **D**emodulator, or Toggled with **REMOTE**, when the SFD is remote controlled.

TA= : Indication of received TA (Traffic Announcement) information (YES or NO)

TP= : Indication of received TP (Traffic Program) information (ON or OFF)

PI= : Received PI (Program Identification) information (4 digit hexadecimal number)

DI= : The received DI (Decoder Identification control) (MONO or STEREO)

PS= : Received PS (Program Service name) information

PTY= : PTY (Program TYpe) information

When one or more data-items are not available the display will show **----------**

3.2.6. RDS RADIOTEXT

SFD MS=MUSIC AF(A)=<95.20 MHz 95.8> RT=<Radio 3FM 24h> CT=20:00 02-02-2002

SFD : **S**tereo **F**m **D**emodulator, or Toggled with **REMOTE**, when the SFD is remote controlled.

MS= : Music / Speech switch code

AF= : Alternative Frequency .
Both AF methods A and B are supported (automatically selected by the SFX)
The displaying method of both AF-list methods differ from each other.
These different methods are indicated with A or B by the SFX.

Method A: This list is decoded in the background and all decoded data will be scrolled.
If a new list is decoded the current list will finish scrolling and will be followed by the new one.

Method B: This list is decoded in real time.
After decoding one AF-list, the tuning frequency and the number of alternative frequencies is displayed.
The alternative frequencies itself are not displayed!
If the next AF-list is decoded, this one will be displayed.
The SFX displays as many AF-lists in real time as possible, however it can skip displaying a list because they follow up each other too fast to display.

RT= : The Radio Text will be scrolled here

CT= : The received Clock and date information (Clock Time and date)

When one or more data-items are not available the display will show **----------**

3.2.7. MEASUREMENT

SFD	SS= 69dBuV	PILOT= 7.1 kHz
RDS= 1.9 kHz	BER= 0%	MAX DEV= 62kHz

SFD : **S**tereo **F**m **D**emodulator, or Toggled with **REMOTE**, when the SFD is remote controlled.

SS= : Signal Strength of the tuned frequency at the RF-input

PILOT= : The measured Pilot (19 kHz) deviation of the received signal

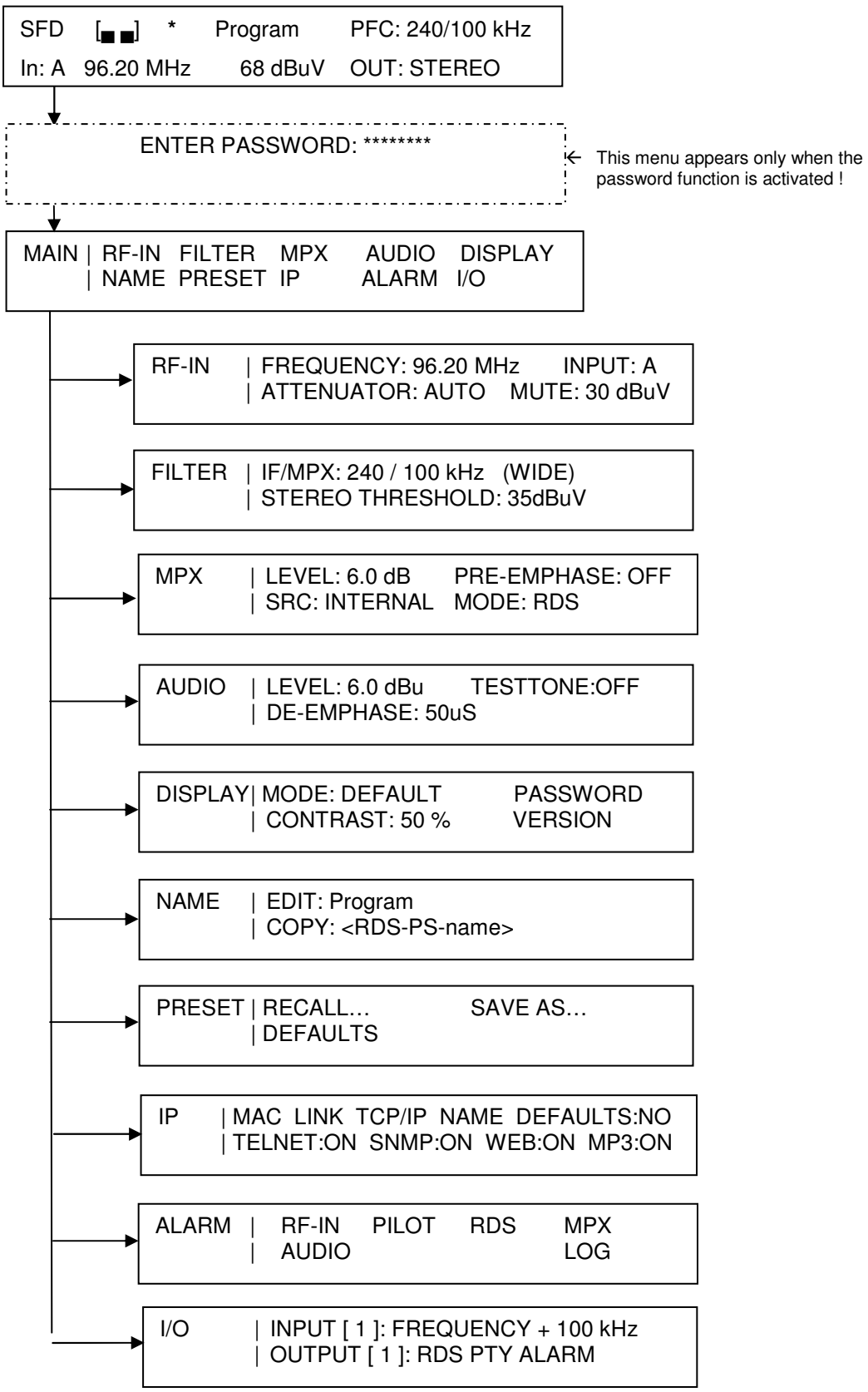
RDS= : The measured RDS (57 kHz) deviation of the received signal

BER= : The Block Error Rate of the decoded RDS-data
0 % is error free

MAX DEV= : Measurement of the maximum FM-deviation of the received program.
This figure is the maximum (peak hold) deviation which can be reset by pressing the ← button.
When the receiver frequency is changed, the peak-value will automatically be cleared.

3.3. MENU STRUCTURE

Following diagram reflects the menu structure of the SFD



4. SETTINGS

After pushing [menu] one time, the main menu will appear. The main menu will show all available submenus:

```
MAIN | RF-IN   FILTER   MPX     AUDIO   DISPLAY
     | NAME   PRESET   IP   ALARM        I/O
```

4.1. RF-IN

When selecting the submenu “RF-IN”, the following settings will become available:

```
RF-IN   | FREQUENCY: 96.20 MHz      INPUT: A
        | ATTENUATOR: AUTO    MUTE: 30 dBuV
```

- FREQUENCY : Receiver frequency (i.e.: 96.20 MHz) **(87.5-108 MHz).**
- INPUT : Selected RF-input **(A / B)**
- ATTENUATOR : Attenuation of the RF-input **(0 – 40 dB or AUTO**)
- MUTE : When the RF-input level becomes lower than this level, the RF-input will be muted. **(1 – 50 dBuV or OFF)**

4.2. FILTER

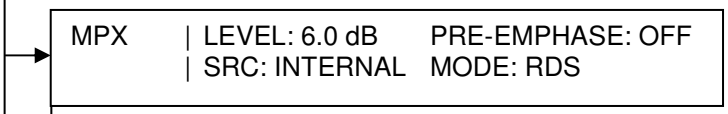
The “FILTER” menu is responsible for the IF- and AF- filter settings.

```
FILTER  | IF/MPX: 240 / 100 kHz   (WIDE)
        | STEREO THRESHOLD: 35dBuV
```

- IF/MPX : IF- and AF-filter settings
  240 / 100 kHz (wide IF(240 kHz), full MPX (100 kHz)-processing)
  180 / 100 kHz (small IF(180 kHz), full MPX (100 kHz)-processing)
  180 / 15 kHz (small IF(180 kHz), mono MPX (15 kHz)-processing)
- STEREO THRESHOLD : RF-input level on which the filters will automatically switch back to 180/ 15 kHz **(adjustable: 20-50 dBµV)**
  The stereo threshold has an 5 dBuV hysteresis.
  i.e.: stereo threshold level = 30dBuV,
  the SFD will switch to mono (180/15 kHz) at 30dBuV,
  to switch back to the original settings, the SFD needs 35dBuV.

4.3 MPX

When selecting the submenu “MPX”, the following settings can be adjusted:



→ LEVEL : Level of MPX-signal at the BNC-connectors (MPX-out)
(adjustable 0 dB / +11 dB)

→ PRE-EMPHASE : Pre-emphase filter for the External MPX-input. **(ON / OFF)**
This option can be switched **ON** when there is a straight (not pre-emphased) –mono-audio-signal on the External MPX-input .

→ SRC : The MPX-source used for modulating the PLL transmitter.
INTERNAL/EXTERNAL(AUTO)/EXTERNAL(100kHz)/EXTERNAL (15kHz)

Internal: The MPX-signal from the receiver-part is used for modulating the PLL transmitter.

External (auto): The signal at the EXTERNAL MPX-input (Sub D15) is used for modulating the PLL transmitter.
The filters of the SFP will be acting the same way as in the INTERNAL mode.
So it will automatically switch at the Stereo threshold level, and the signal will be muted when it comes lower then the mute level.

External (100 kHz): The signal at the EXTERNAL MPX-input (Sub D15) is used for modulating the PLL transmitter.
The filters of the SFP will stay at 100 kHz so there will be an 100 kHz (full stereo) filter over the MPX-signal.
The receiver will keep on working but the signal will not be muted and filters will no longer be switched automatically.

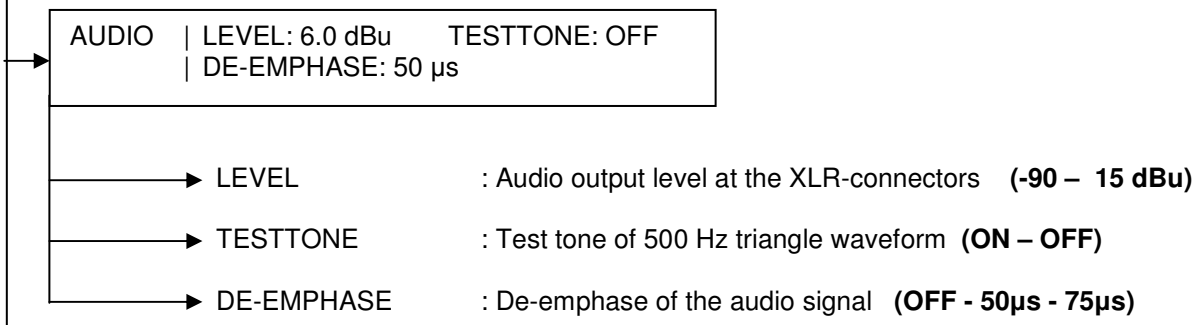
External (15 kHz): The signal at the EXTERNAL MPX-input (Sub D15) is used for modulating the PLL transmitter.
The filters of the SFP will stay at 15 kHz so there will be an 15 kHz filter (Mono) over the MPX-signal. The receiver will keep on working but the signal will not be muted and filters will no longer be switched automatically.

Note: In internal mode it is possible to force the MPX-input to external.
To do so, pin 15 of the sub D15 connector should be grounded.
The display will show: **SOURCE: FORCED EXTERNAL**
The MPX-filter will switch to 100kHz when FORCED EXTERNAL

→ MODE : Selects the type of RDS (Radio Data System) decoding.
The SFD supports 2 different standards;
- RDS (European)
- RBDS (USA, Canada & Latin America)

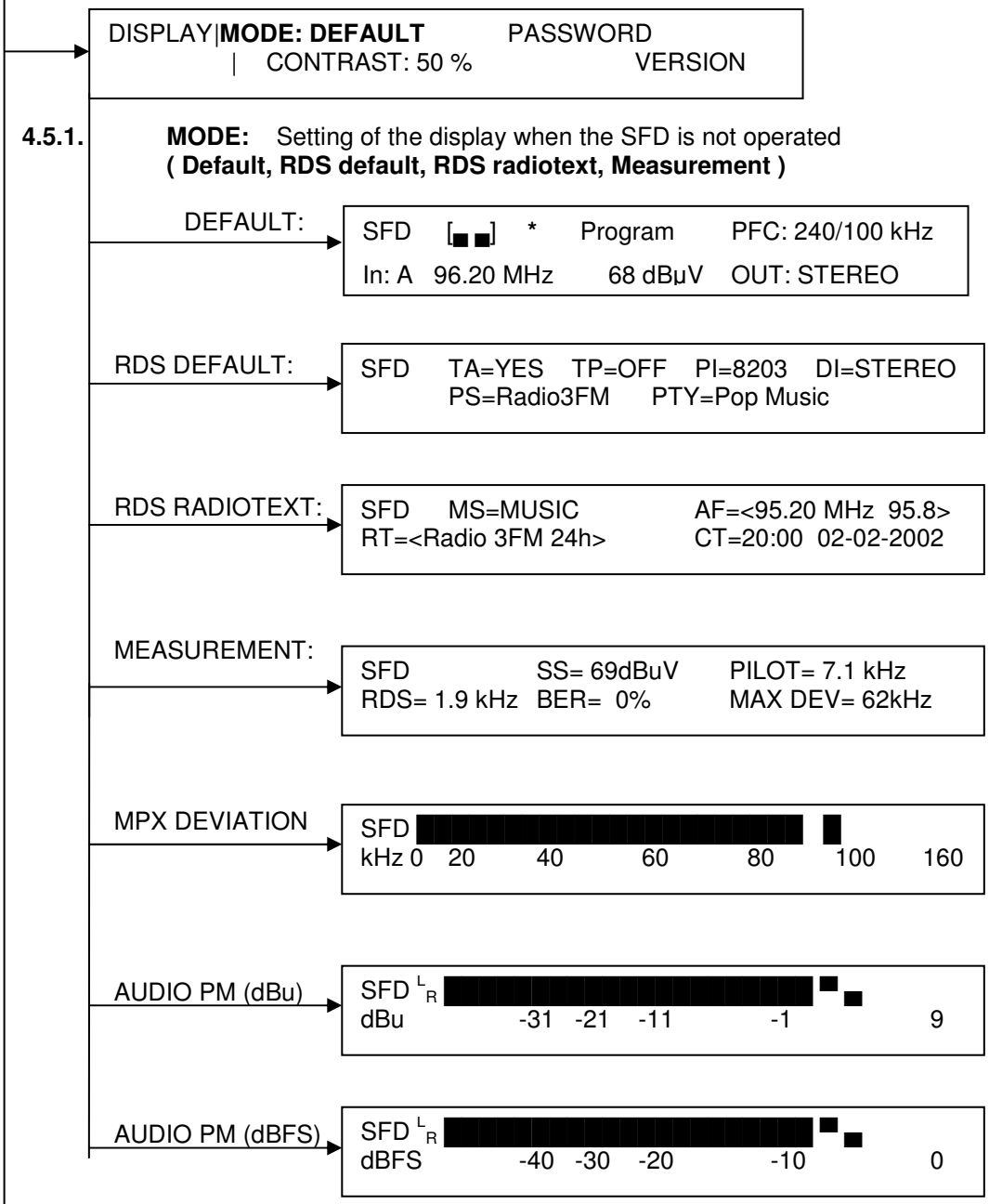
4.4. AUDIO

When selecting the submenu “AUDIO”, the following settings can be adjusted:



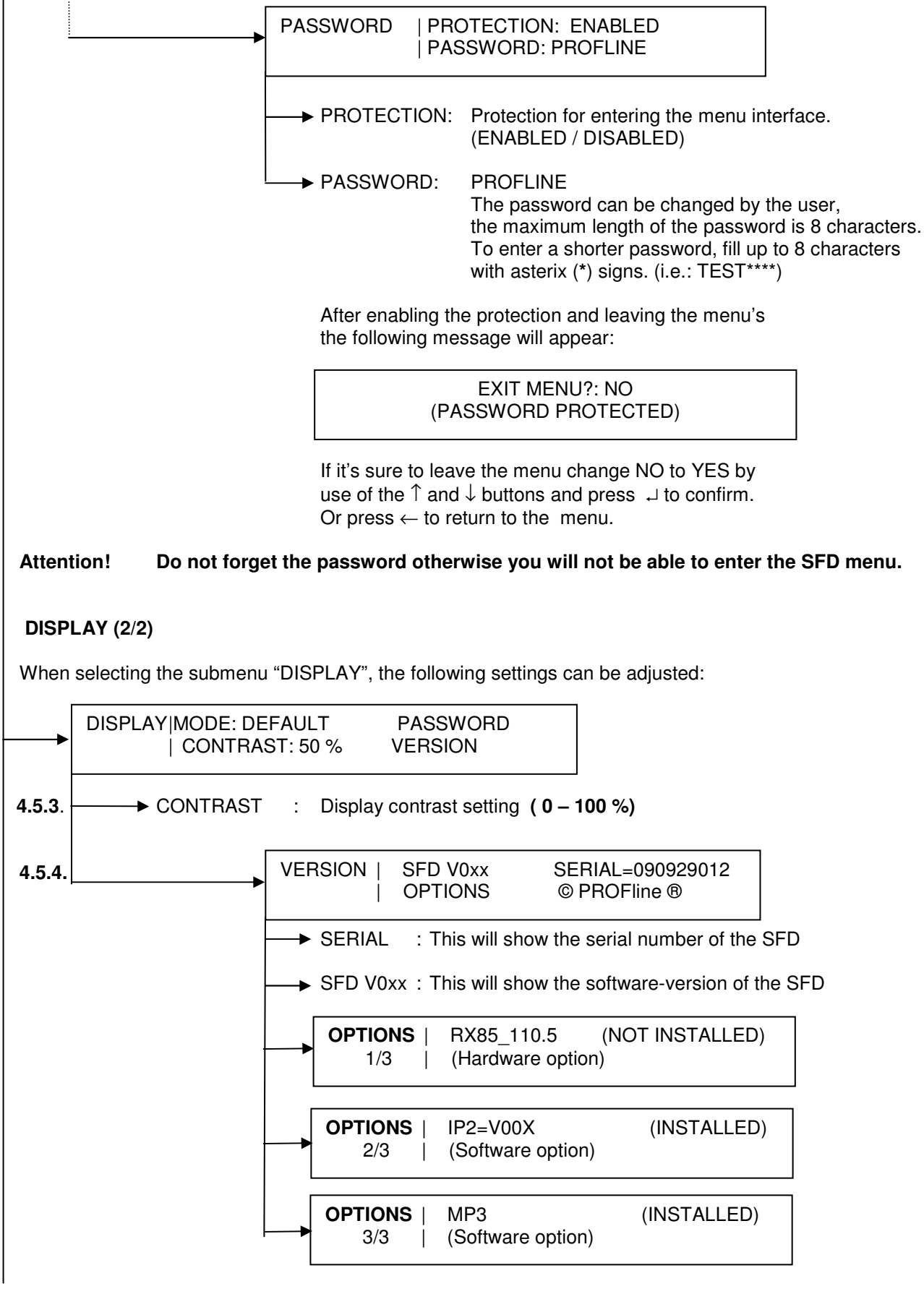
4.5. DISPLAY (1/2)

When selecting the submenu “DISPLAY”, the following settings can be adjusted:



Note!:
When the SFD is in the default mode, the display-mode can be adjusted by pushing the ↑ and ↓ buttons
This setting will not affect the settings in the display-menu and is therefore not stored in the memory.

4.5.2 PASSWORD



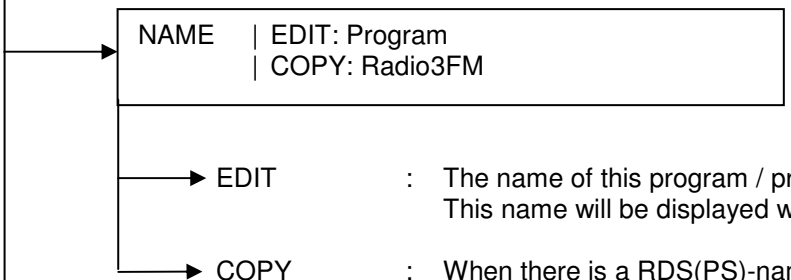
Attention! **Do not forget the password otherwise you will not be able to enter the SFD menu.**

DISPLAY (2/2)

When selecting the submenu "DISPLAY", the following settings can be adjusted:

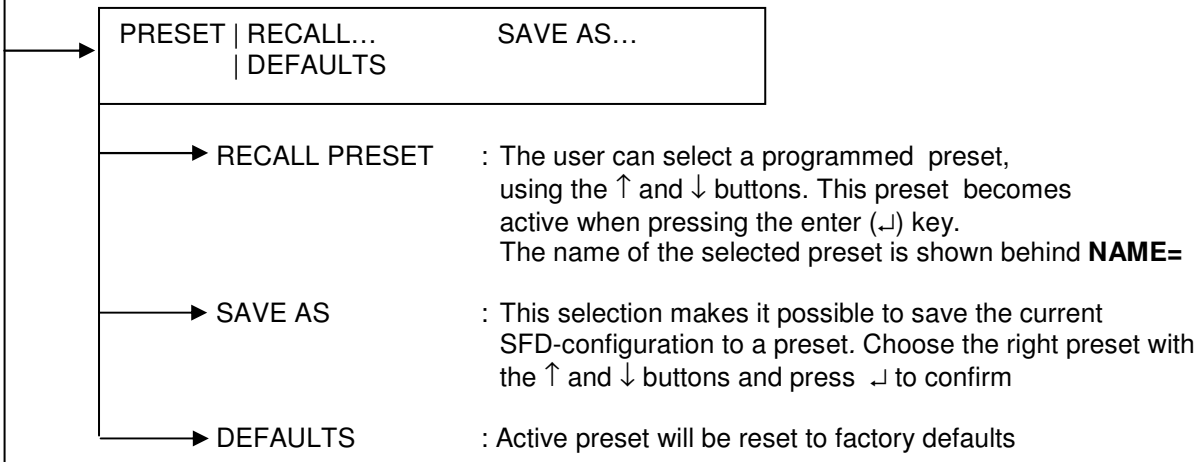
4.6. NAME

The submenu “NAME” incorporates the name settings for this program / preset:



4.7. PRESET

The submenu “PRESET” displays the SFD preset management.



It’s recommended, when saving the variables from a program, to save also the name of this program (see submenu “**NAME**”). This gives the user, besides the preset number, an extra identification when using “RECALL PRESET” or “SAVE AS”.
In Program and Recall mode, while stepping through the presets 1 to 64, the display will show the name of the program (preset).

4.8. IP

The IP mode can be chosen to either DHCP or Manual.

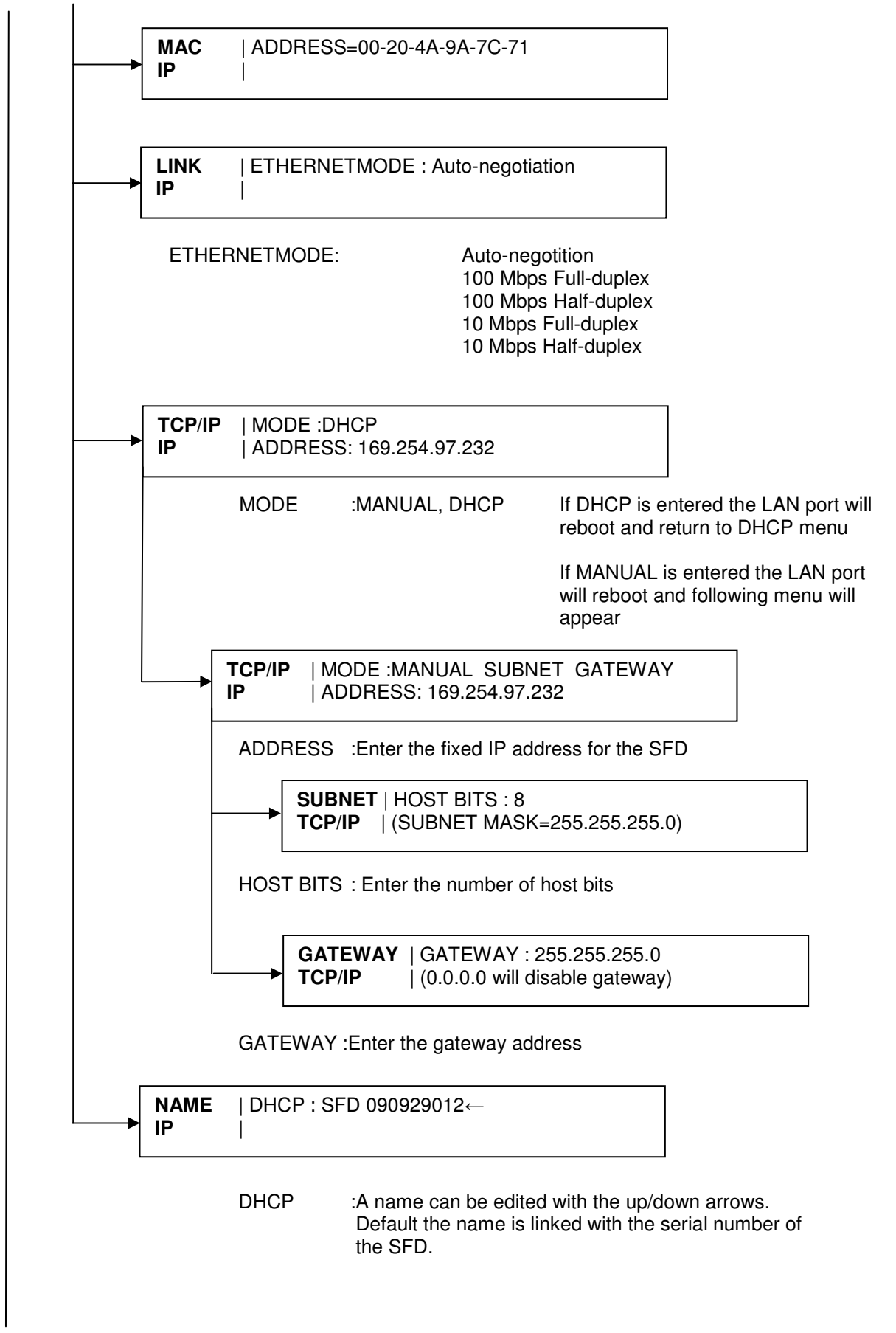
IP	MAC LINK TCP/IP NAME DEFAULTS : NO TELNET: ON SNMP: ON WEB:ON MP3:ON **(*)**

DEFAULTS	:NO, YES	IP, factory defaults are loaded (changing the setting results in a LAN port reboot)
TELNET	:ON, OFF	Detailed IP application configuration see Appendix (changing the settings results in a LAN port reboot)
SNMP	:ON, OFF	SFD remote control and measurement (changing the settings results in a LAN port reboot)The SNMP application note is available on request)
WEB	:ON, OFF	Enabling or disable the WEB GUI functionality (changing the settings result in a LAN port reboot) (see below information about the login)
MP3 **(note *: Optional)**	:ON, OFF	MP3 audio streamed over network The port number and IP address needs to be configured in TELNET (see appendix)

Login username and password.
The default values are for IP version below version 5 (1):
Username: admin
Password: password

The default values are for IP version 5 and higher (1) (2):
Username: admin
Password: Pr0fl1ne (The symbol 0 is zero sign)

Note 1: Please verify the IP version in the menu:
MAIN DISPLAY OPTIONS OPTIONS 2/3
Note 2: In case you have upgraded the IP software to version 5, the WEB GUI password is **not** changed. We recommend to load the defaults after the upgrade, this will result in one password (Pr0fl1ne) for the Telnet and WEB GUI access. In the Telnet session you can change the password as required.



4.9. ALARM

4.9.0. ALARM GENERAL

In order to receive an alarm on the relay outputs, make sure that the alarms are properly configured !!!!

The following settings are available in the ALARM menus;

MODE : OFF = Warning and Alarm are switched off

: Warning Only = Warning light on the front will be activated

: Warning+RelayA = Warning light on the front will light up and, after the alarm delay, the warning light will be changed into an alarm light and relay A will become active.

: Warning+RelayB = Warning light on the front will light up and, after the alarm delay, the warning light will be changed into an alarm light and relay B will become active.

: Warning+RelayC = Warning light on the front will light up and, after the alarm delay, the warning light will be changed into an alarm light and relay C will become active.

WARNING DELAY = Delay in seconds before the warning light will be activated
ALARM DELAY = Delay in seconds before the alarm light and relay will be activated

Note!
1. Warning Delay is programmable between 0 and 599 seconds
2. Alarm Delay is programmable between 1 and 600 seconds

The warning-delay should always be less then the alarm-delay.
When the warning-delay is entered higher than the alarm-delay, the alarm-delay will automatically be set to the warning-delay-time + 1 second.

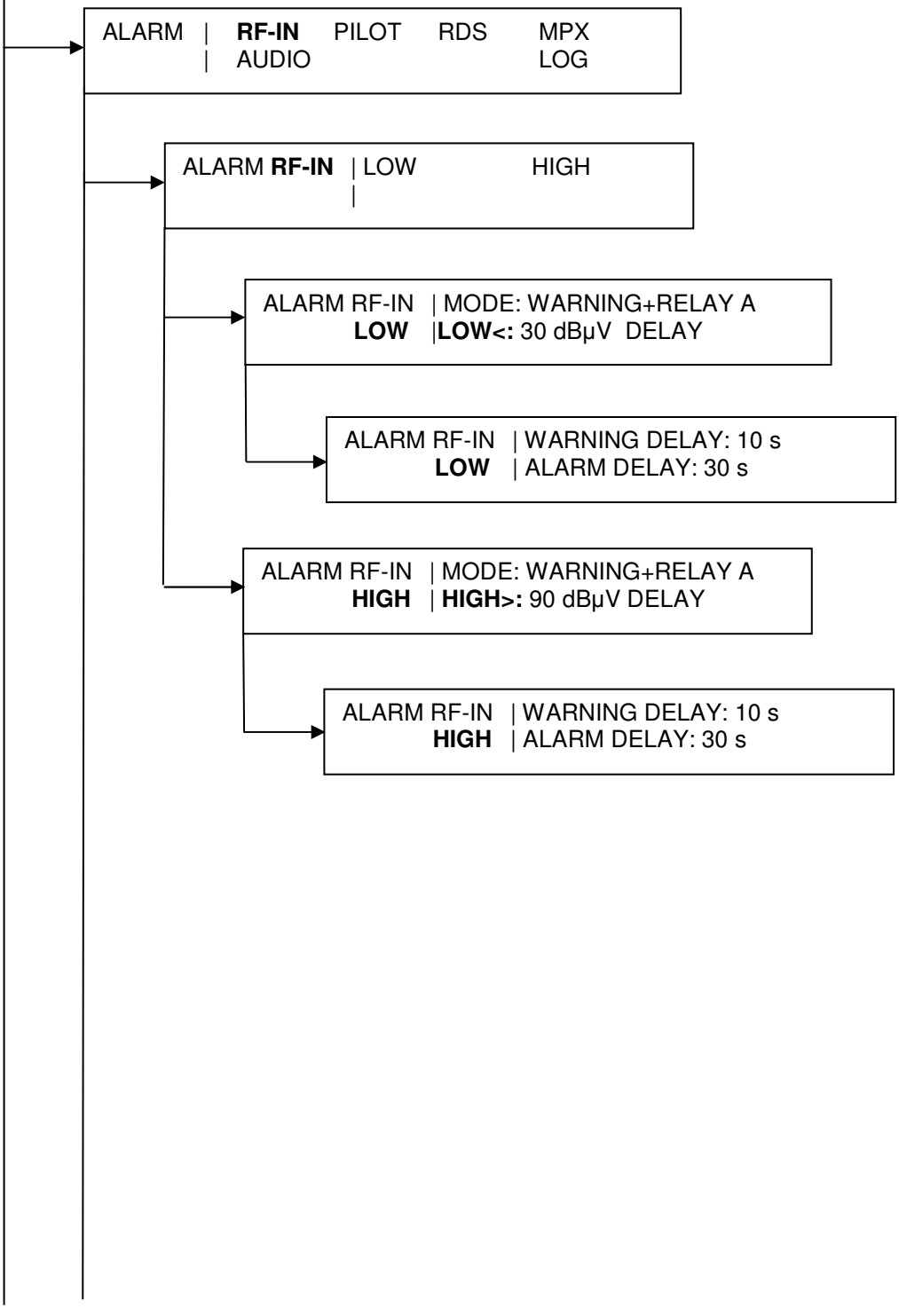
4.9.1. RF-IN ALARM

The RF-IN alarm can be activated by two causes; (these each have their own menu's)

*** RF-input level to LOW (1 – 120 dBµV)**
*** RF-input level to HIGH (1 – 120 dBµV)**

Both alarm-levels can be configured individually.

The alarm and warning delays can be adjusted in the sub-menu **DELAY.**

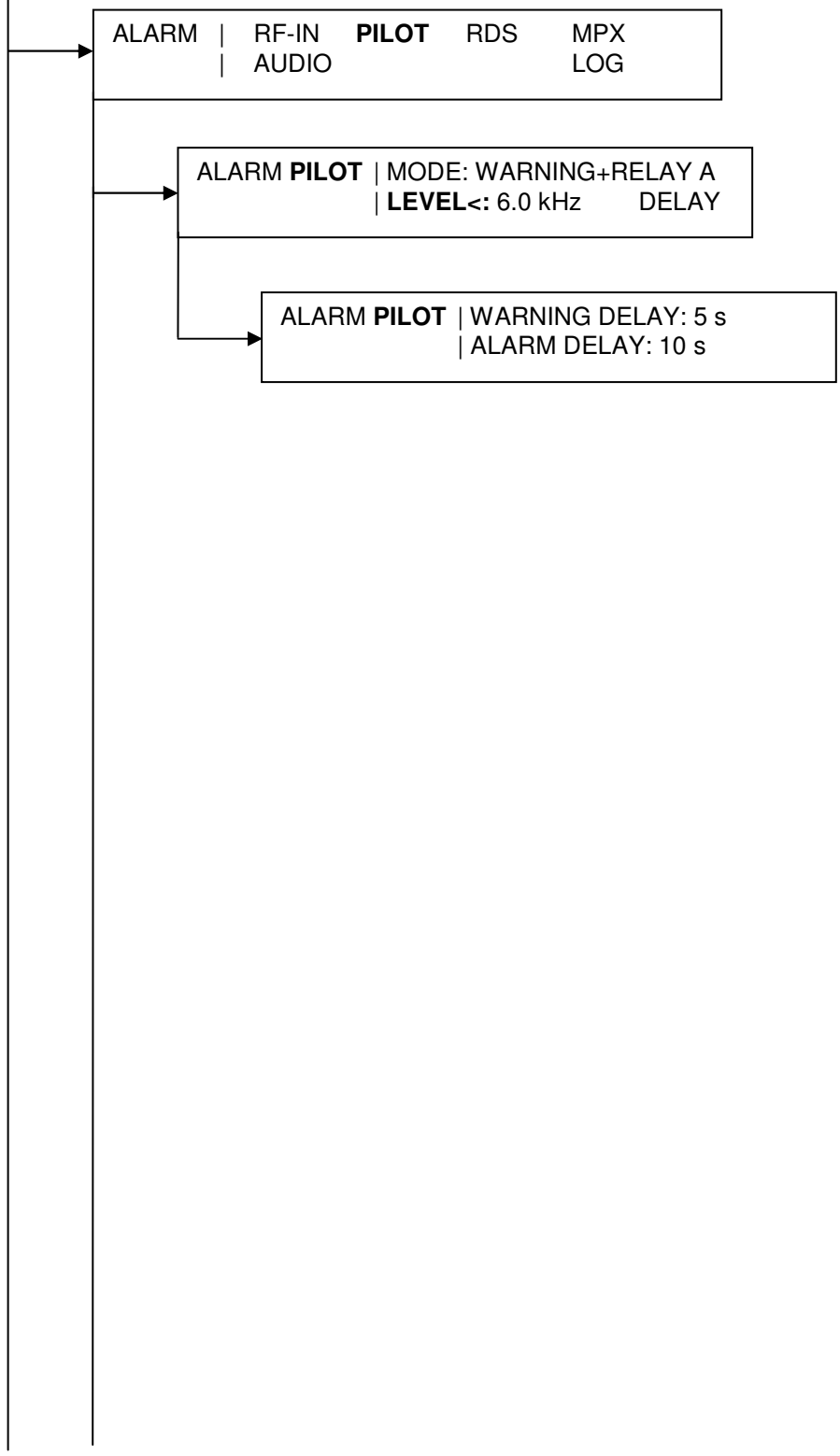


4.9.2. PILOT ALARM

The PILOT alarm can be activated by a too low pilot-deviation.

*** Pilot level to LOW (0.1 – 15 kHz)**

The alarm and warning delays can be adjusted in the sub-menu **DELAY.**



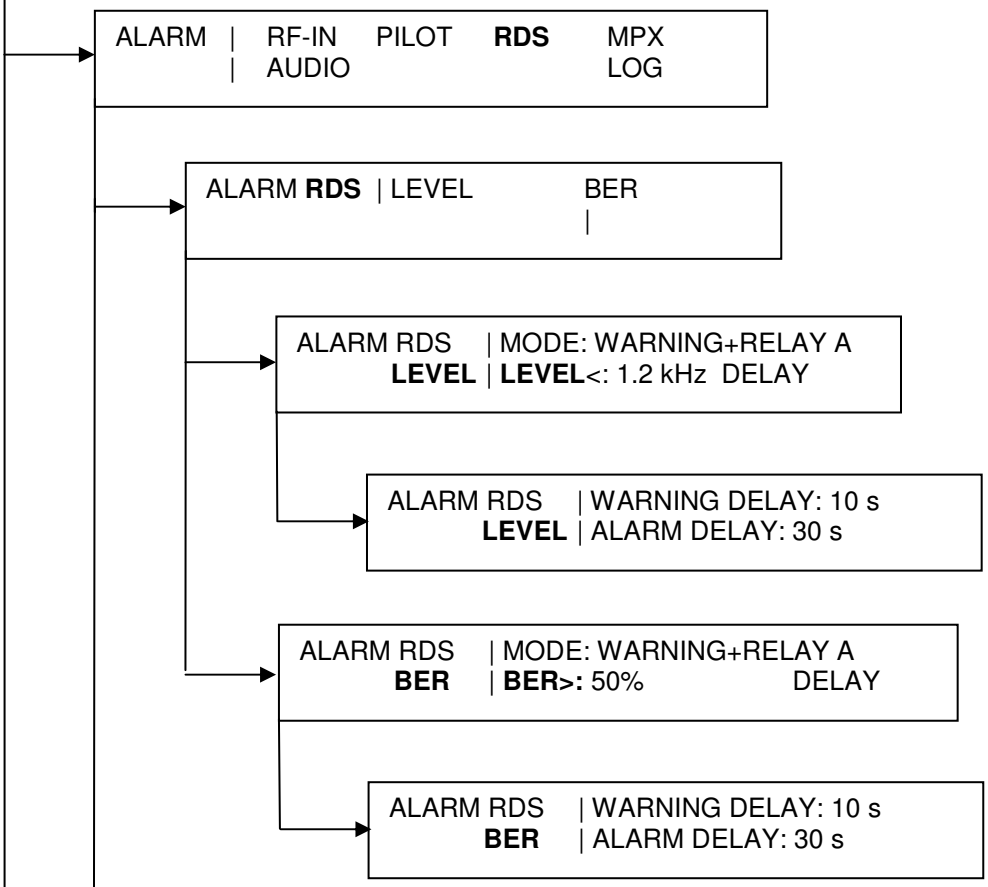
4.9.3. RDS ALARM

The RDS alarm can be activated by two causes; (these each have their own menu)

*** RDS level to LOW (0.1 – 6.0 kHz) (RDS-deviation to LOW)**
*** BER to HIGH (0 – 99 %) (Block Error Rate of the RDS-data)**

Both alarm-levels can be configured individually.

The alarm and warning delays can be adjusted in the sub-menu **DELAY.**

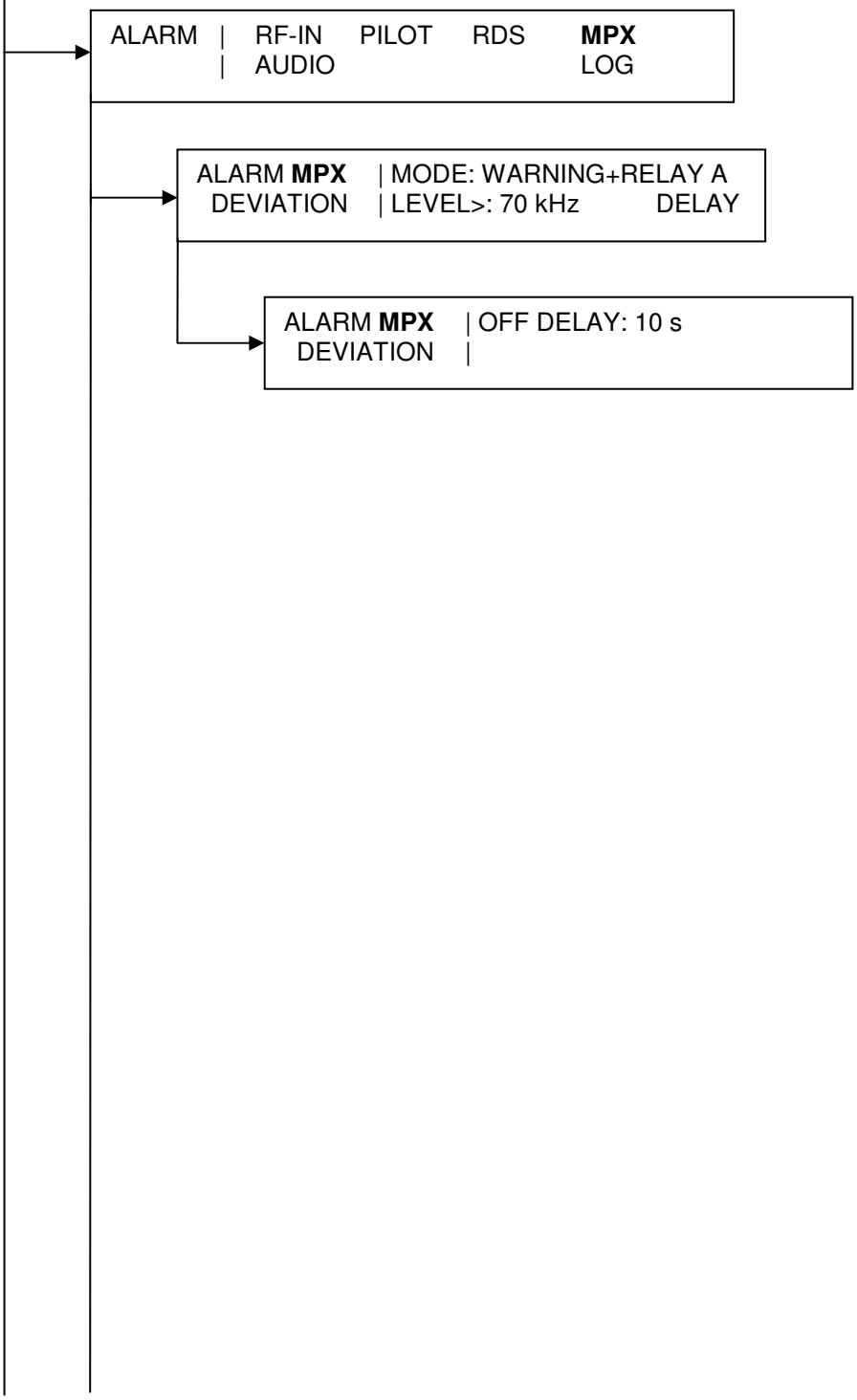


4.9.4. MPX ALARM

The MPX alarm can be activated by a too high MPX-deviation.

*** MPX-deviation to high: (0 – 159 kHz)**

Unlike other alarm's, the MPX-alarm has no **DELAY** for activating the alarm, so the alarm will come up immediately after a too high MPX-deviation.
The de-activating time for this alarm can be set in the delay menu. This means that in the period, entered in this menu, no exceeding of the MPX-deviation may occur in order to turn off this alarm.



4.9.5. AUDIO ALARM

The AUDIO alarms can be activated by three causes; (these each have their own menu's)
All audio alarms are related to a lower audio deviation then entered in the menu!

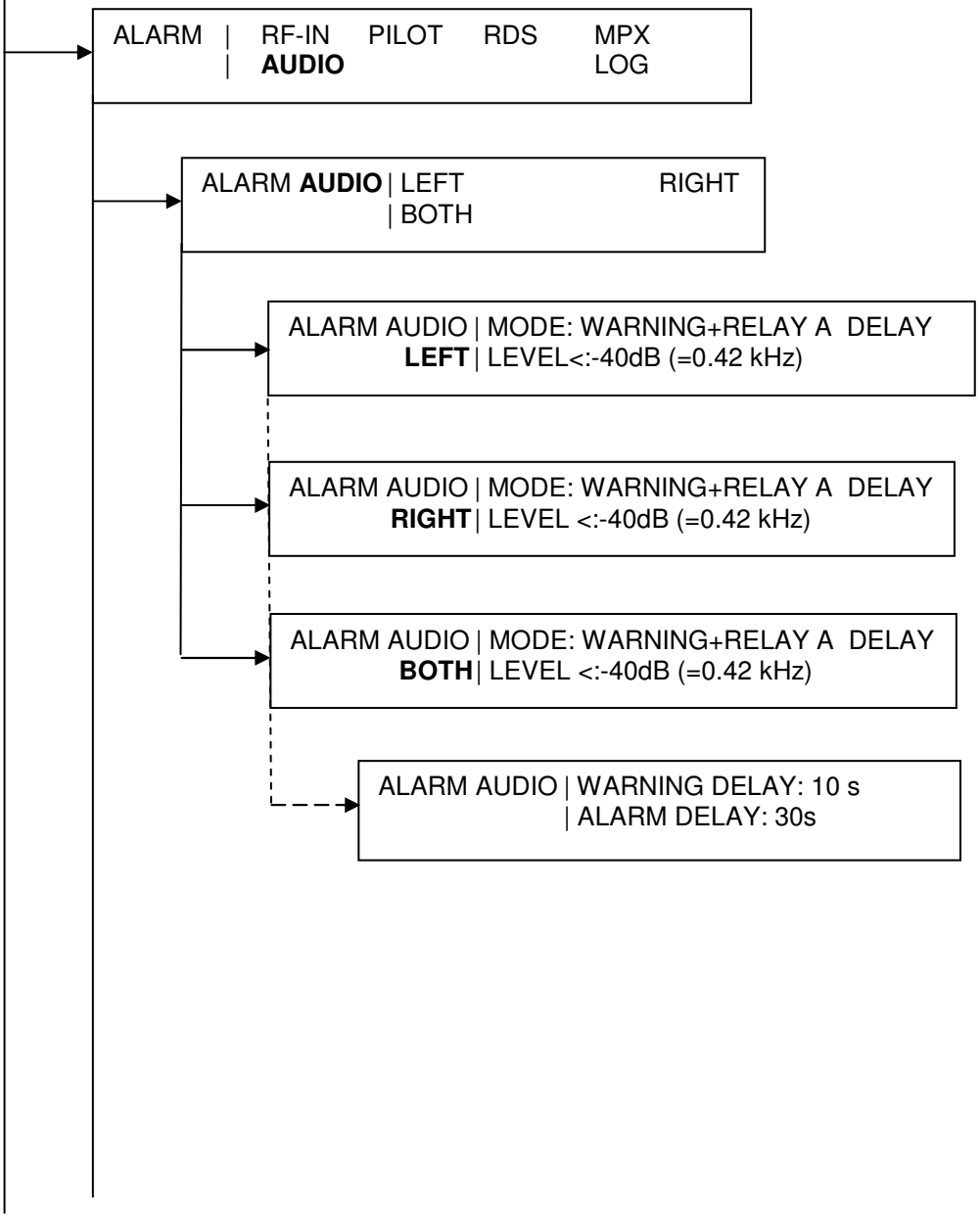
All three alarm-levels can be configured individually.

*** Level Left : (0 dB (40.0 kHz) ←→ -50dB (=0.14 kHz)) (monitoring of Left audio channel only)**

*** Level Right: (0 dB (40.0 kHz) ←→ -50dB (=0.14 kHz)) (monitoring of Right audio channel only)**

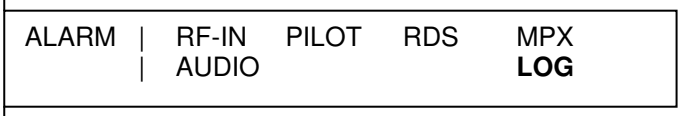
*** Level Both: (0 dB (40.0 kHz) ←→ -50dB (=0.14 kHz)) (monitoring of Left and Right audio-channel, this alarm will be activated if both Left and Right are below the alarm-level during entered delay-time)**

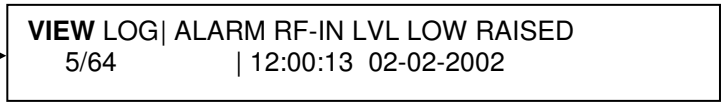
The alarm and warning delays can be adjusted in the sub-menu **DELAY.**



4.9.6 LOG

The Log menu gives access to the following parameters

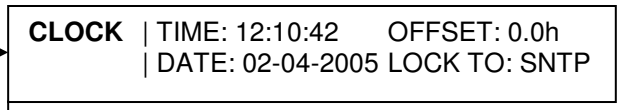




The log will show the alarms, which were Raised and Cleared.
In the example the **RF-IN level** is dropped below the chosen level.
The LOG-displays: ALARM RF-IN LVL LOW RAISED , with the time and date of the occurrence. (LVL = Level)

The LOG is able to display the last 64 events.
The LOG is made in a FIFO configuration, so the first event that occurred is the first that will be deleted from the LOG (after 64 events)

Note: POWER ON and POWER OFF are also displayed in the LOG (with time and date)

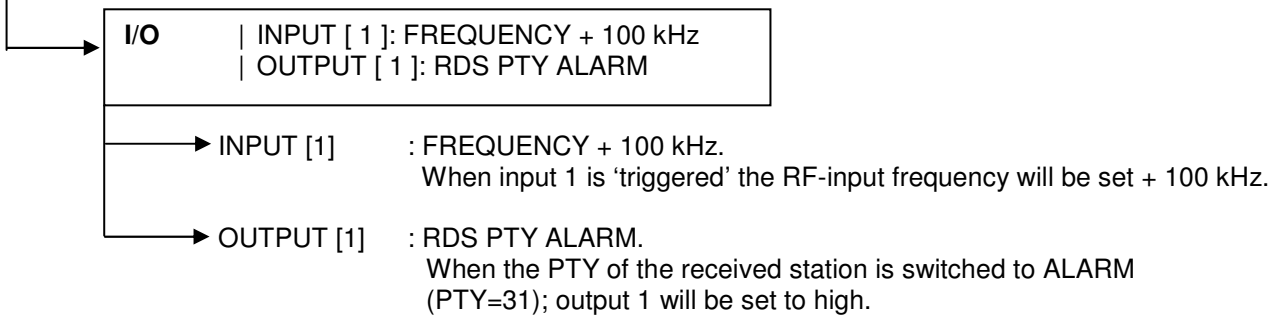


- TIME: HH:MM:SS
- DATE: DD-MM-YYYY
- OFFSET: It is possible to give a time offset (for LOG use only). This can be used for a radio station that broadcasts a different time than the local-time (offset adjustable between -12 and + 12 hours).
- LOCK TO: To lock the internal clock to the time received from the RDS-data of SNTP (OFF / RDS / SNTP)

CLEAR LIST: When selecting CLEAR LIST, the NO-sign will start flashing.
If necessary change NO into YES with the ↑ and ↓ buttons and press ↵ to confirm.
The Log list will now be emptied.
The display will show: **CLEAR LIST: (EMPTY)**

4.10 I/O

In the submenu “I/O”, the following settings can be set:



Input’s and output’s each have four individual configurable in/output’s.
These can be found at the SUB-D9 connector I/O at the backside of the SFD.

Input settings make it possible to assign a SFD (internal) function to an input signal.
The output is TLL compatible (0 to 5 Volt DC).

Assignable input functions are:

Input A/B	The input will switch to the other RF-input
Frequency + 10 kHz	The RF-input frequency will be increased with 10 kHz
Frequency + 100 kHz	The RF-input frequency will be increased with 100 kHz
Frequency - 10 kHz	The RF-input frequency will be decreased with 10 kHz
Frequency - 100 kHz	The RF-input frequency will be decreased with 100 kHz
Preset +	The next preset will become active
Preset –	The previous preset will become active
Preset x (x = 1 to 64)	The SFD will switch to Preset x (which becomes active)
NOT USED	No function assigned

Input pulse, TLL compatible, falling edge sensitive, pulse length =>100 millisecond

Output settings make it possible to assign a SFD (internal) measurement to an output signal.
The output is TLL compatible (drive-level output: 20mA each port)

Measurements available are:

RDS TA	When RDS TA-bit is set the output will be TRUE
RDS TP	When RDS TP-bit is set the output will be TRUE
RDS TA & TP	When RDS TA and the TP-bit are set the output will be TRUE
RDS MS	When RDS M/S-bit is set to Mono the output will be TRUE
	When RDS M/S-bit is set to Stereo the output will be CLEARED
RDS PTY NEWS	When RDS PTY is set to NEWS set the output will be TRUE
RDS PTY ALARM	When RDS PTY is set to ALARM set the output will be TRUE
MPX MONO/STEREO	When received signal is Mono the output will be TRUE
	When received signal is Stereo the output will be CLEARED
NOT USED	No function assigned

5. Connections

From left to right:

1. Mains connection : IEC panel mount plug with fuse
2. I/O Connector : Sub D9 female (See 5.1 I/O Connectors)
3. Local Area Network : RJ-45
4. Digital output : XLR male (Impedance 110 Ω)
5. Audio output left : XLR male (Impedance is 600 Ω)
6. Audio output right : XLR male (Impedance is 600 Ω)
7. RDS DATA-connector : Sub D9 female (See 5.1 I/O Connectors)
8. I/O & Alarms connector: Sub D15 male (See 5.1 I/O Connectors)
9. MPX-output 1 : BNC
10. MPX-output 2 : BNC
11. Audio left & right : RCA-Cinch 2x
12. RF-input B : BNC 75 Ω
13. RF-input A : BNC 75 Ω
14. Ground chassis : M 6

5.1. I/O Connectors

I/O connector TTL

9-pole sub-D female connector:

1 : input #1	6 : input #2
2 : input #3	7 : input #4
3 : Ground	8 : output 1
4 : output 2	9 : output 3
5 : output 4	

Data connector

9-pole sub-D female connector:

1 = 4 = 6 (Connected)	7 = 8 (Connected)
2 : Data out	9 : n.c.
3 : Data in	
5 : GND	

AUDIO LEFT/RIGHT (XLR male)

1 : ground
2 : signal +
3 : signal -

Digital output connector (XLR male)

1 : ground
2 : signal +
3 : signal -

I/O & Alarms connector

15-pole sub-D male connector:

1 : RELAY C Common	11 : RELAY B NO
2 : RELAY C NO	12 : RELAY A NC
3 : RELAY B NC	13 : ground
4 : RELAY A Common	14 : ground
5 : RELAY A NO	15 : MPX-FORCE-IN
6 : MPX-OUT	
7 : SCA-IN	Alarm= Common and NO
8 : MPX-IN	No alarm= Common and NC
9 : RELAY C NC	
10 : RELAY B Common	

6. Specifications SFD

RF unit

Frequency input	: Fully adjustable from 87.5 to 108 MHz, 10 kHz steps
RF tuning stability	: < 500 Hz
RF input sensitivity	: 5 to 110 dBµV
RF inputs, main and spare	: 2 x BNC, 50/75 Ohm
Return loss	: >20 dB

Selectivity

Narrow:

Selectivity at ± 90 kHz	: >-3 dB
Selectivity at ± 200 kHz	: >-54 dB
Selectivity at ± 300 kHz	: >-95 dB
Selectivity at ± 400 kHz	: >-110 dB
Selectivity at ± 300 kHz	: Iw/Iu =-40 dB(mono) (*)

Wide:

Selectivity at ± 120 kHz	: >-3 dB
Selectivity at ± 200 kHz	: >-30 dB
Selectivity at ± 300 kHz	: >-65 dB
Selectivity at ± 400 kHz	: >-100 dB
Selectivity at +/-300 kHz	: Iw/Iu = -23 dB(stereo) (*)
Image rejection	: >100 dB
IF rejection	: >110 dB
AM rejection at 30% AM/75 kHz dev.	: >72 dB
RF Attenuation	: Automatic or manual
Adjacent channel suppression	: See selectivity specs
Muting threshold	: On/Off or adjustable 0 - 50 dBµV
Stereo threshold	: Adjustable 20 - 50 dBµV
Channel separation (Wide)	: >48 dB 1 kHz typical >50 dB
	: >45 dB 100 Hz-500 Hz
	: >30 dB 10 kHz-15 kHz
Channel separation (Narrow)	: >30 dB 1kHz

Note *: Iw/Iu means the relation between the **I**nput **w**anted signal and **I**nput **u**wanted signal

Stereo decoder

Audio level adjustments L&R	: from -90 dB to 15 dB(steps 0.1 dB)
L/R separation	: > 46 dB (1 kHz mod. / 40 kHz dev.) typ.> 50 dB
Phase	: < 5º, 40 Hz -15 kHz
De-emphases	: Adjustable 0-50-75µsec
19 kHz suppression	: > 50 dB
Distortion	: < 0.2%,1 kHz mod. / 40 kHz dev.
S/N 1 kHz (at 75 kHz deviation)	
RMS 20Hz-20 kHz	: > 75 dB mono, >73 dB stereo
QP CCIR	: > 70 dB mono, >65 dB stereo
S/N 1 kHz (at 40 kHz deviation)	
RMS 20Hz-20 kHz	: > 72 dB mono, >70 dB stereo
QP CCIR	: > 70 dB mono, >65 dB stereo

Audio main output	: XLR male, 1=GND 2=+ signal 3=- signal
Output impedance	: 20 Ohm balanced
Audio frequency	: 20 Hz-15 kHz, ± 0,3 dB: ref=500 Hz /40 kHz deviation/ 6 dBu
Phones	: Stereo jack 6.3 mm on frontpanel,150 Ohm, 50µS de-emphasis
MPX-output level	: from 0 dB to 11 dB(0,1 dB steps)
MPX output impedance	: normal termination 600 Ohm : minimum termination 75 Ohm
MPX output connector	: 2 BNC connectors
Digital output	: AES EBU ,XLR balanced
Test tone output, 500 Hz	: 500 Hz triangle

Measurement functions

Large VU audio input (pm -dBFS)	: -60 dBFS to 0 dBFS
MPX deviation level	: from 0 to 160 kHz (step 1 kHz)
RF level	: from 0 to 120 dBµV
Pilot level 19 kHz	: from 0 to 15 kHz(step 0.1 kHz)
RDS level 57 kHz	: from 0 to 6 kHz(step 0.1 kHz)
RDS BER level	: from 0 to 100%(step 1 %)
RDS applications	: MS, CT ,RT, AF, PS, PI, DI, TA, TP, PTY, Clock
Alarm logging	: 64 level deep logging of alarms are stored in a FIFO memory

Management functions

TELNET	: Basic network settings and basic SNMP settings
SNMP (Simple Network management Protocol)	: V1 and V2c supported
WEB	: Remote control access over IP

Optional

MP3 streaming	: MP3 audio streamed over network : configuration in TELNET

Data and Alarm ports rear panel

I/O connector	: TTL compatible (drive level output: 20mA each port) input level 0-5Vdc
RDS data port	: RS 232 protocol: UECP (RS 232)
MPX input	: via SUB-D15 impedance 600 Ohm.
MPX input pre-emphasis	: 0 µsec for stereo use , or 50 µsec for mono use
RDS/SCA input	: impedance 600 Ohm
MPX output nr 3	: 600 Ohm for monitoring of receiver input
Alarm connection (relay contacts)	: Sub-D25 connector female
Alarm set up, menu-controlled	: Alarm choice A/B/C delay 1 to 600 seconds
Audio level	: -50 dB to 0 dB (step 1dB) for Right or Left channel
MPX deviation level	: from 0 to 160 kHz (step 1 kHz)
RF level	: min RF/max RF from 1 to 119 dBuV
Pilot level 19 kHz	: from 0 to 15 kHz (step 0.1 kHz)
RDS level 57 kHz	: from 0 to 6 kHz (step 0.1 kHz)
RDS BER level	: from 0 to 100% (step 1 %)

General

Main power	: 100 to 240 VAC, 50 to 60 Hz, maximum 30 Watt
Power connection	: IEC panel-mount plug filter with fuse 2.5 AT
Headphones connection	: Stereo jack 6.3 mm
Safety and EMC	: In accordance to CE regulations
Operation ambient temperature	: 5 to 45 ºC (storage -5 to 65 ºC)
Housing dimensions, weight	: 19 inch x 1u x 300 mm (depth), 5 kg

Specifications are subject to change without notice.

7. RDS data output SFD

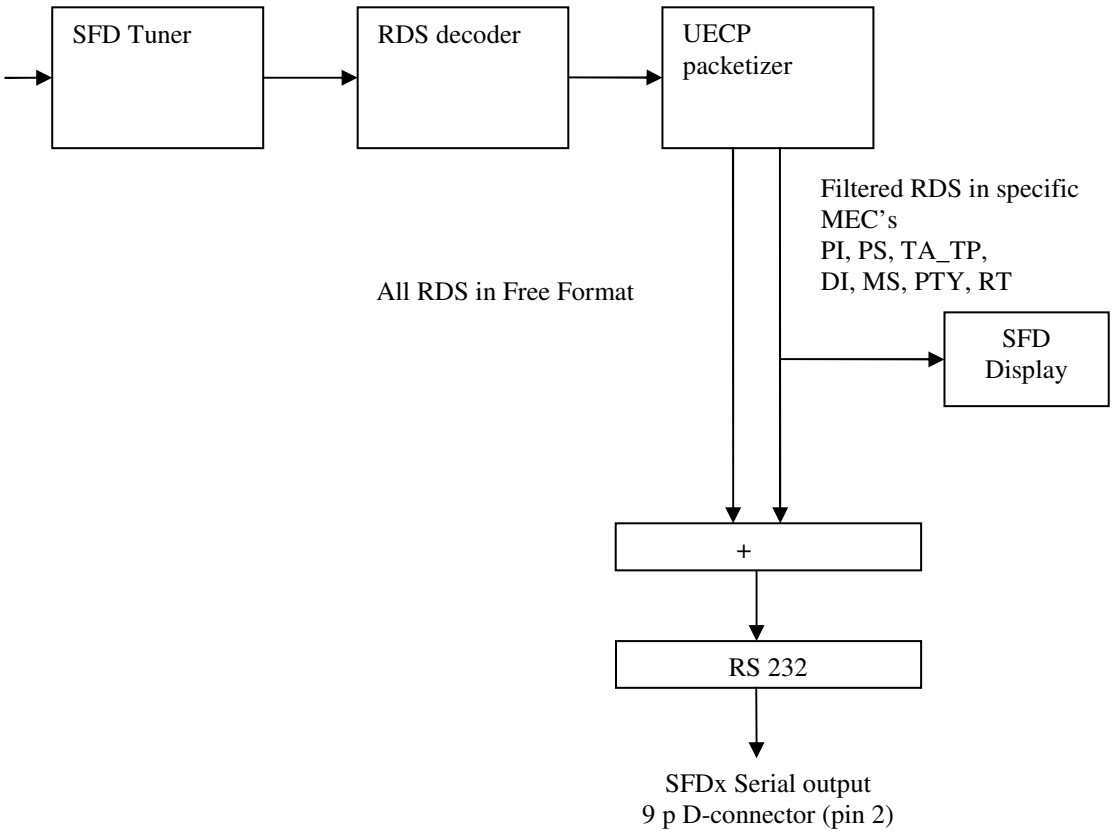


Table with RDS messages and MEC's as defined in the UECP 6.01.

RDS message	**MEC**
PI (Programme identification)	0x01
PS (Programme service name)	0x02
TA_TP (Traffic-announcement Traffic-programme identification)	0x03
DI (Decoder identification)	0x04
MS (Music/speech switch)	0x05
PTY (Program Type)	0x07
RT (Radio Text)	0x0A
FF (Free-Format)	0x24

At the next page the Free-Format group format and convention is explained as described in the UECP final version 6.01. (copyright RDS Forum, Geneva, Switzerland).

3.3.26 Message Name: Free-format group

Message Element Code: 24

Function: To add a group to the free-format buffer for that group type.

Format:

	MSB LSB	
MEC	24	
MED	00..1F	Bits 4..1: Group Type number Bits 0: Group Version A or B
MED	00..7F	Bit 7: Set to 0 Bits 6..5: Buffer Configuration Bits 4..0: Block 2, 5 Bits
MED	00..FF	Block 3 (MSB)
MED	00..FF	Block 3 (LSB)
MED	00..FF	Block 4 (MSB)
MED	00..FF	Block 4 (LSB)

Conventions: If free-format data is present in the buffer for the scheduled group, it will be transmitted instead of the "internally generated RDS data". An encoder schedules group transmission according to its group sequence or higher priority event. If free-format data is present in the buffer for a group type which is not scheduled for transmission the free-format data will not be transmitted. Therefore the necessary group for free-format data has to be inserted into the group sequence in addition to the "normal RDS groups".

Bits 6 and 5 of the second MED are coded as follows:

Bit 6	Bit 5	Buffer Configuration
0	0	Information transmitted once only and removed after transmission
0	1	Reserved
1	0	For cyclic transmission, free-format information sets are added to the specified buffer
1	1	Remove all free-format information sets from the specified free-format buffer

Example: <24><07><0C><00><00><AB><DE>

Data for type 3B group, Block 2 data is 0C hex, Block 3 data will be overwritten by PI code because type B group is selected, Block 4 data is AB DE hex. The data is transmitted only once.

8. Support

For support, please contact your local PROFline representative or contact our service department.

Marga Klompélaan 18
6836 BH ARNHEM
The Netherlands
Phone : +31-(0)26 3236969
Fax : +31-(0)26 3233952
Web site : www.profline.nl
e-mail : info@profline.nl

an International Datacasting Company

9. CE-DECLARATION OF CONFORMITY

The undersigned hereby declares, on behalf of;

PROFline B.V.
Marga Klompélaan 18
6836 BH Arnhem
The Netherlands

that the following product;

Equipment : **Stereo FM Demodulator**

Model name : **SFD**

to which this declaration relates, is in accordance with the following Directives:

: EMC-Directive 89/336/EEC

has been designed and manufactured to the following specifications:

Number : Title

EN 60730-1 : Automatic electrical controls for household and similar use,
Part 1: general requirements (February 1995), inclusive amendments A11 + A12 dated February 1996.

EN 50081-1 : Electromagnetic compatibility – Generic emission standard
Part 1: Residential, commercial and light industry.

EN 50082-1 : Electromagnetic compatibility – Generic immunity standard
Part 1: Residential, commercial and light industry.

EN 55013 : Limits and methods of measurement of radio interference characteristics of sound and television broadcast receivers and associated equipment.

EN 50020 : Limits and methods of measurement of immunity characteristics of sound and television broadcast receivers and associated equipment.

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all essential requirements of the Directives.

Signed by: Frank Peters Sengers, Managing Director

Signature:

Arnhem, August 18th, 2009

10. WEEE Disposal Instructions

Disposal Instructions
Do not dispose of this device with unsorted household waste.
Improper disposal may be harmful to the environment and human health.
Please refer to your local waste authority for information on return and collection systems in your area.

Directives de mise au rebut
Ne mettez pas cet appareil au rebut avec les déchets ménagers non triés.
La mise au rebut incorrecte peut être nocive à l'environnement et à la santé humaine.
Veuillez vous renseigner auprès des autorités compétentes de votre localité sur les procédures de renvoi et de collecte dans votre région.

Instruzioni per lo smaltimento
Smaltire questo dispositivo solo in un contenitore previsto per la raccolta municipale di rifiuti separata.
Uno smaltimento improprio può inquinare l'ambiente ed essere pericoloso per la salute delle persone.
Per informazioni sui centre di raccolta locali rivolgersi alle autorità locali competenti per lo smaltimento dei rifiuti.

Instruções de disposição
Não disponha a eliminação deste dispositivo como resíduo municipal não classificado.
Disposição imprópria pode ser danosa ao meio-ambiente a à saúde de seres humanos. Por gentileza consulte a sua autoridade local de eliminação de resíduos para informações sobre os sistemas de retorno e coleta na sua área.

Instrucciones de deshecho
No tire este dispositivo en los contenedores municipales de basura no clasificados para reciclaje. Tirar residuos inapropia-damente puede resultar nocivo para el medio ambiente y para la salud de las personas. Por favor diríjase a las autoridades locales responsables de la eliminación de residuos para obtener información sobre los sistemas de devolución y recolección en su área.

Anweisungen für die Entsorgung
Dieses gerät darf nicht mit unsortiertem hausmüll entsorgt werden. Eine unangemessene Entsorgung kann sich schädlich auf die Umwelt und die Gesundheid auswirken. Bitte beachten Sie die Hinweise der für Ihren Ort zuständigen Behörden zu Rückgabe und Sammelverfahren.

APPENDIX to SFD-IP Telnet session

Basic knowledge of IP is expected to understand and use the next information.

A Telnet session is only possible when:

a) the Telnet application is switched ON. This can be done in the menu MAIN-IP
b) the IP address is known. You can find the IP address in the menu MAIN-IP-TCP/IP.
c) Telnet-client is available. Microsoft supplies the Telnet client with the Operating System.

Below you will find all the necessary steps to start a Telnet Session in conjunction with the SFD-IP

When the SFD-IP is switched to the “manual mode” the default IP address is 192.168.0.1. To make a Telnet connection with the SFD-IP you type: “telnet 192.168.0.1” behind the prompt.

When the SFD-IP is switched to the “DHCP” mode you can find the IP address in the menu: MAIN-IP-TCP/IP.

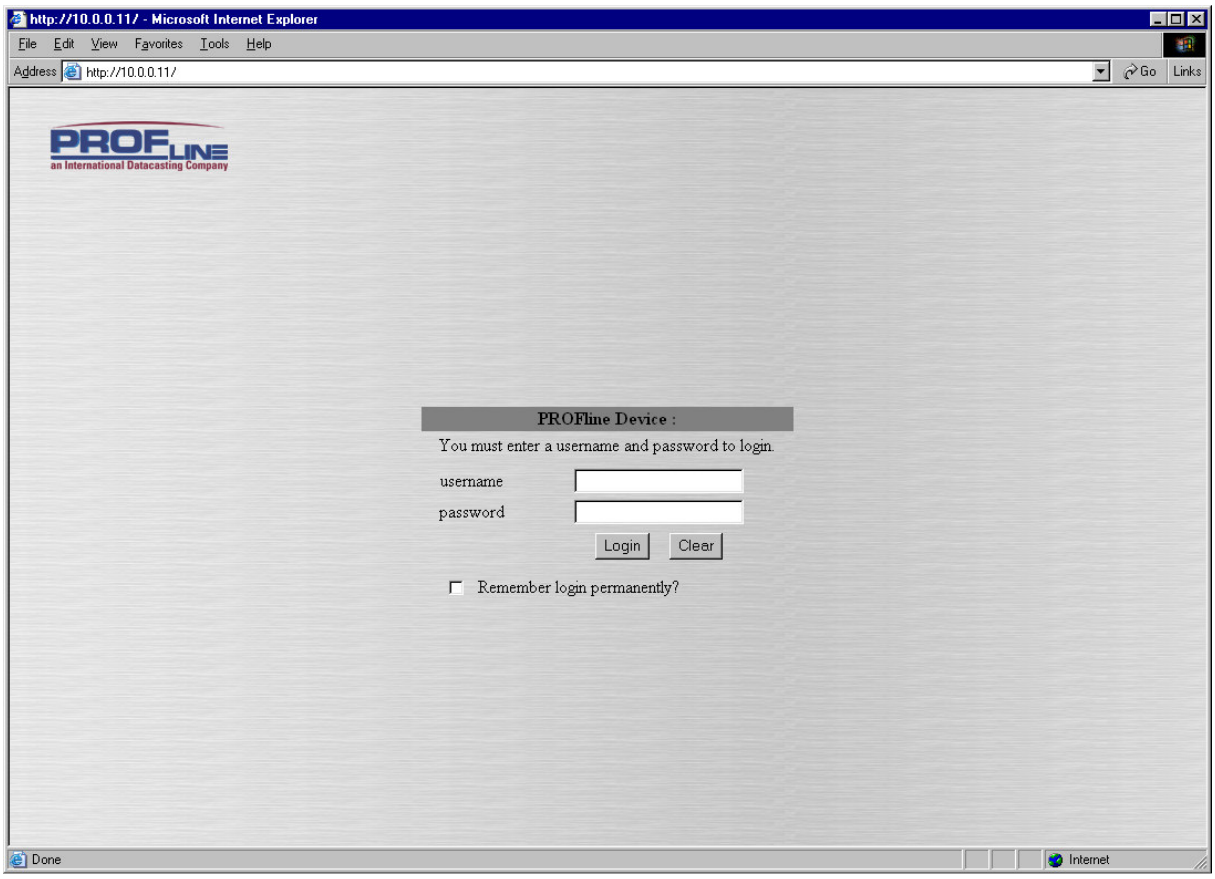
APPENDIX to SFD-IP WEB GUI

Basic knowledge of IP is expected to understand and use the next information.

Using the WEB GUI is only possible when:
a) The WEB application is switched ON. This can be done in the menu MAIN-IP or in a Telnet session (see the APPENDIX Telnet session)
b) The IP address is known. The IP address can be found in the menu MAIN-IP-TCP/IP.
c) Web browser is available, we recommend to use Internet Explorer version 6 or 7.

Be informed that menu’s, sub menu’s settings and measurements that are available via the front panel of the unit are also available via this WEB GUI (excluding the IP and Display menu). The names of menu’s and submenus, settings and measurements are the same as shown at the LCD of the SFD-IP. Detailed description of menu’s and settings can be found in this user manual.

To open the WEB GUI with the Explorer, type the IP address of the unit into the address bar. The following screen will appear.



Login username and password.
The default values are for IP version below version 5 (1):
Username: admin
Password: password

The default values are for IP version 5 and higher (1) (2):
Username: admin
Password: Pr0fl1ne (The symbol 0 is zero sign)

Note 1: Please verify the IP version in the menu: **MAIN DISPLAY OPTIONS OPTIONS 2/3**

Note 2: In case you have upgraded the IP software to version 5, the WEB GUI password is **not** changed. We recommend to load the defaults after the upgrade, this will result in one password (Pr0fl1ne) for the Telnet and WEB GUI access. In the Telnet session you can change the password as required.

Appendix MP3 configuration

1. Is the MP3 option installed?

This document assumes that the MP3 option is installed. You can verify this in the menu: **MAIN DISPLAY VERSION.**

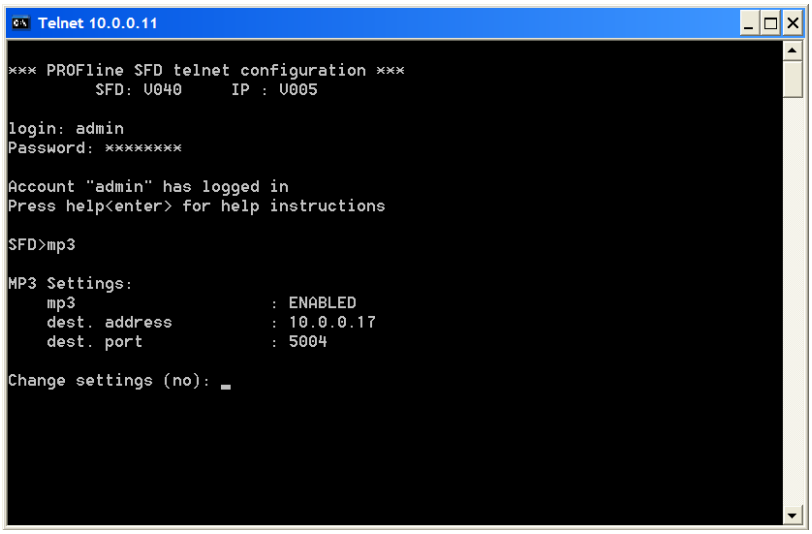
2. Configuration of the MP3 settings

Before the MP3 option can be configured for your system be sure that the options TELNET and MP3 are enabled (=ON) in the menu **MAIN IP** (accessible via the front panel).
Furthermore check the network address of the SFD-IP in the menu **MAIN IP TCP/IP.**

2.1 Open a MS-DOS command prompt on a personal computer inside the same network segment as the SFD-IP device.

2.2 Execute the telnet application using the command: telnet <network address> (i.e. **telnet 192.168.1.100**).

2.3 When the telnet session is connected, the SFD-IP will ask for an user account and password. The login and password depend on the IP version. The IP version is shown on the second line, in the picture the IP version is V005.



The default values are for IP version 5 and higher:
Username: admin
Password: Pr0fl1ne (The symbol 0 is zero sign)

The default values are for IP version below version 5:
Username: admin
Password: password

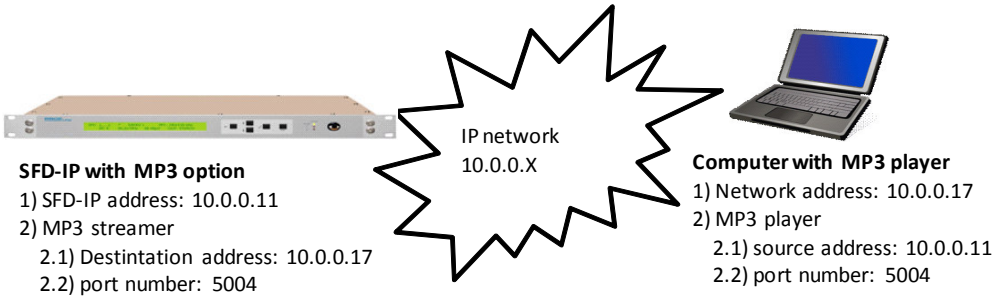
2.4 After login, The telnet command prompt (SFD>) is shown and ready to use. Type “mp3” followed by enter key, to open the mp3 configuration menu.

2.5 The three settings can be changed as required. Changes are only saved when the telnet session is closes with the command “save”.

MP3 **:** Enable or disable
Dest. Address **:** this can be a network broadcast address or a unicast address (see below network diagrams on the next page.
Dest. Port **:** port number free to choose (please make sure that firewalls and routers in the network accept this port number.

3. Network diagrams

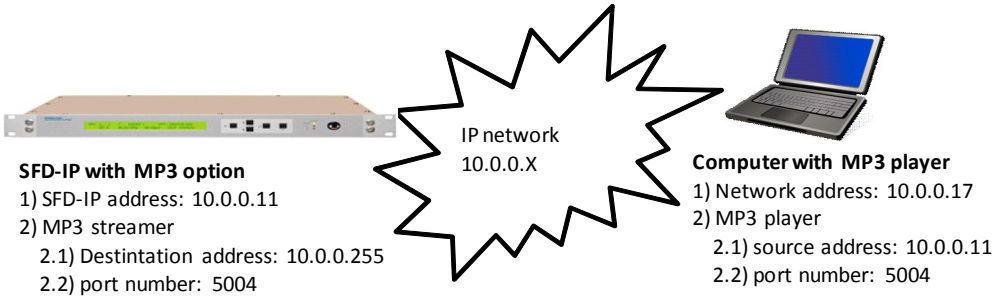
Local IP network with MP3 streamer in a unicast solution.



SFD-IP with MP3 option
1) SFD-IP address: 10.0.0.11
2) MP3 streamer
2.1) Destintation address: 10.0.0.17
2.2) port number: 5004

Computer with MP3 player
1) Network address: 10.0.0.17
2) MP3 player
2.1) source address: 10.0.0.11
2.2) port number: 5004

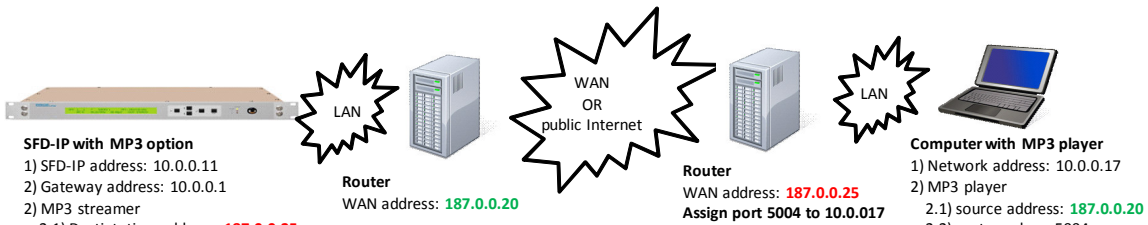
Local IP network with MP3 streamer in a broadcast solution.



SFD-IP with MP3 option
1) SFD-IP address: 10.0.0.11
2) MP3 streamer
2.1) Destintation address: 10.0.0.255
2.2) port number: 5004

Computer with MP3 player
1) Network address: 10.0.0.17
2) MP3 player
2.1) source address: 10.0.0.11
2.2) port number: 5004

WAN solution MP3 streamer in a unicast solution.



SFD-IP with MP3 option
1) SFD-IP address: 10.0.0.11
2) Gateway address: 10.0.0.1
2) MP3 streamer
2.1) Destintation address: **187.0.0.25**
2.2) port number: 5004

Router
WAN address: **187.0.0.20**

Router
WAN address: **187.0.0.25**
Assign port 5004 to 10.0.017

Computer with MP3 player
1) Network address: 10.0.0.17
2) MP3 player
2.1) source address: **187.0.0.20**
2.2) port number: 5004

4. Audio player

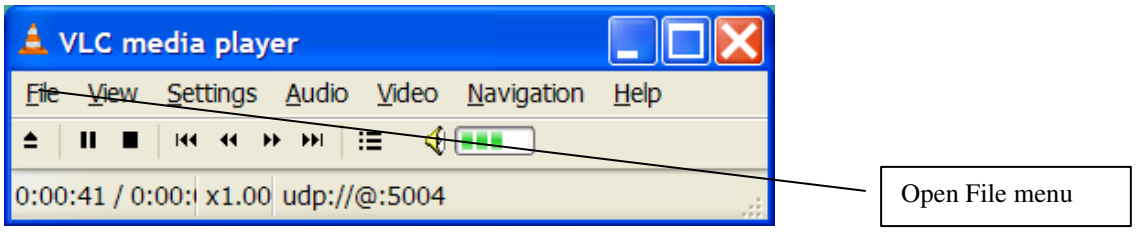
We like to introduce two audio players that can be used for the MP3 streaming application.

- VLC (VideoLan)
- Zinf

4.1 VLC

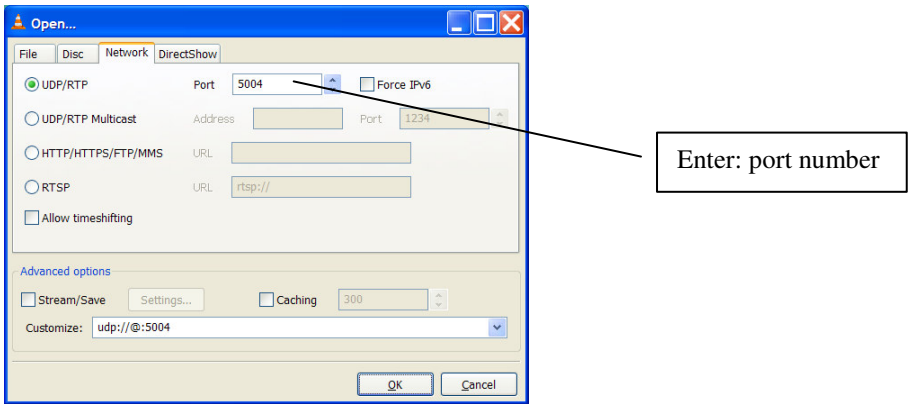
VLC is a product of VideoLan (www.videolan.org), be aware that you need **VLC media player 0.8.6b**, for some reason the newer versions do not work (see below the "about" information).

After installation and activating the application, the following window will appear:



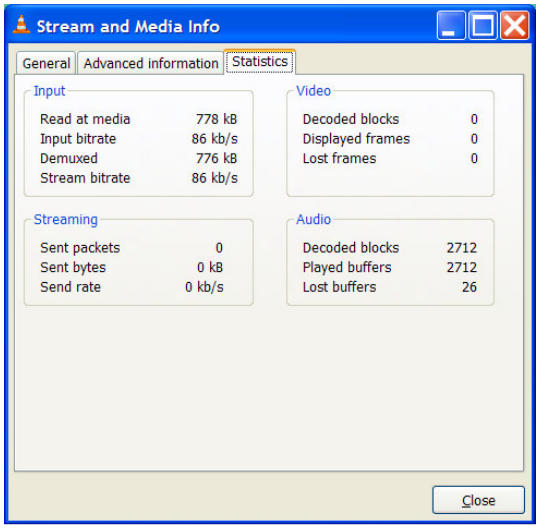
4.1.1 Configure the stream

Open the File menu and you get a drop down menu, select "Open Network Stream". The below tabs will appear, Select the Network tab, select UDP/RTP, edit the port number you have defined in the SFD-IP (Telnet session) and press ok.



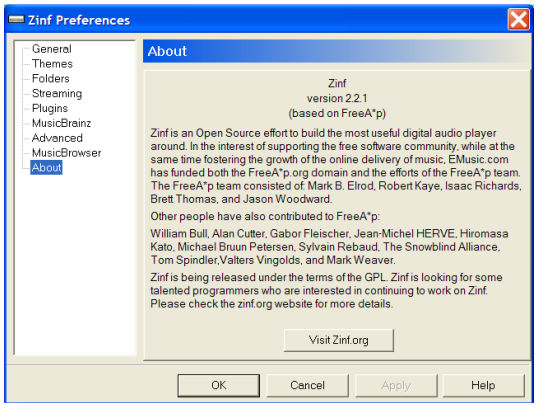
4.1.2 Stream and Media info

Open the menu View, select Stream and Media Info, the following information becomes available.

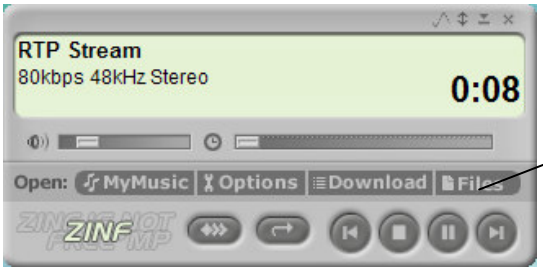


5. Zinf

Information about this product can be found at www.zinf.org.



After installation and executing the application the following window will appear (see next page):

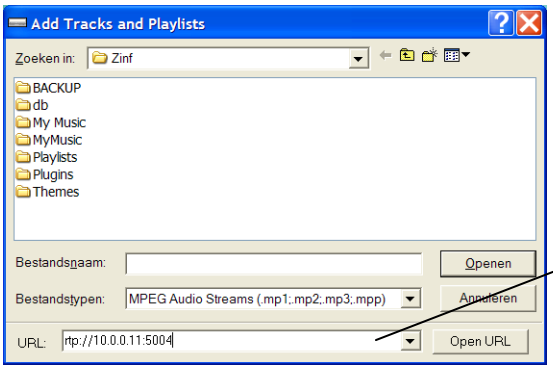


Select Files menu

5.1 Configure the stream

Select the Files menu and the following window will appear with the possibility to open a URL. Edit the URL rtp://<source address>: <port number> (or rtp://@:5004).

- The destination address is the IP address of the SFD-IP, check the network address of the SFD-IP in the menu **MAIN IP TCP/IP.**
- Port number, this is the port number defined in the Telnet session.



Enter: **rtp://<source address>:<port number>**
Or
rtp://@:5004