Data Broadcast Systems

EXHIBIT NEEDED FOR FCC CERTIFICATION
EUT: Data Broadcast Modem; Type: DB102

Functional description

Philips Consumer Electronics
roadcast Services

Data B

DB102 Interface

Interface Specification

Author	:	P. Vink and M. Haket
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TABLE OF CONTENTS

1. INTRODUCTION

1.1 Purpose
The purpose of this document is to give information for (software) developers to design (sub-) systems interfacing with the PHILIPS DB102 Data Broadcast modem.
1.2 Scope
This document describes the complete (software) interface of the PHILIPS DB102 Data Broadcast modem, embedded software versions 2.0 and higher. Some global (hardware) specifications are also presented.
The DB102 decoders are identified with the following (12NC) codes:

DB102SER/US	9022 440 10202
DB102ISA/US	9022 440 10102

1.3 Definitions and abbreviations
1.3.1 Definitions

1.3.2 Abbreviations

A	Ampere, unit of current.
CARRIAGE RETURN	ASCII character, value 13
?	CARRIAGE RETURN
Cm	Centimetre, 1/100th of a metre, unit of length
DC	Direct current
G	Gram, 1/1000th of a kilogram, unit of weight
Hz	Hertz, unit of frequency
ISA	Industrial Standard Architecture
KHz	1.000 Hz, unit of frequency
MHz	1.000.000 Hz, unit of frequency
Ohm	Unit of electrical resistance
V	Volt, unit of Voltage
W	Watt (= VA), unit of power consumption

1.4 Referenced documents
1.4.1 Controlling documents
This document is dependent on the following documents:

1.4.2 Controlled documents
This document defines the existence of the following documents:

1.4.3 Background information
The following documents are relevant to the context of the document but do not affect the contents in any way:

[NABTS] Title:	Joint EIA/CVCC Recommended Practice for Teletext: North American Basic Teletext Specification (NABTS)

Version:	EIA-516-1988
Publisher:	Electronic Industries Association
Date:	March 1988

CHANGE HISTORY

Date	Person	Version	Reason
09-jun-1997	Peter Vink	1.0	First document for DB102
03-jul-1997	Peter Vink	1.1	Reviewed + additions
01-mar-1998	Peter Vink	1.2	Additions due to several c hange requests (sw release 2.05)
06-jun-1998	Peter Vink	1.3	Layout change, new name

Distribution

2. GLOBAL

The Philips Data Broadcast Modem series DB102 (further referred to as DB102) is a device that can retrieve NABTS-information out of a standard NTSC television signa l.

It comes in two versions; the standalone device (extension SER, 12

nc: 9022 440 10202) and a 16-bit
Plug&Play PC-ISA-card (extension ISA, 12nc: 9022 440 10102).
2.1 Hardware specifications
2.1.1 Common
Input TV-signal: VHF/UHF, 75 Ohm unbalanced, full frequency range from channel 2 (55.25 MHz) to channel 69 (801.25 MHz)
2.1.2 DB102SER/US specific

Dimensions:	8 w x 15 d x 3 h cm
Weight:	250 g
Interface:	RS232
Input voltage:	5V DC
Power consumption:	< 2.5W

2.1.3 DB102ISA/US specific

Dimensions:	12.8 w x 14 d x 2.5 h cm
Weight:	135 g
Interface:	ISA 16-bit, Plug&Play compatible

2.2 Software interface
Although the hardware interfaces of both versions differ, the software interface is the same, viz.
RS232 (8 bits, 1 stop bit, no parity).
The DB102SER/US is attached to one of the PC COMM-ports and operates at the baudrates 19k2, 28k8, 38k4, 57k6 and 115k2. The factory default is 19k2.

The DB102ISA/US has a build on UART (16550A compatible) that operates at the baudrates 345k6 and 691k2. This is achieved by up scaling the PC-set baudrates with a factor 12 (28k8 becomes 345k6, 57k6 becomes 691k2). It is therefor possible to use standard COMM-port drivers to communicate with the DB10xISA/US. The factory default is 57k6.

The DB102ISA/US onboard UARTs IRQ and I/O-address can be configured automatically using the standard Plug&Play protocol or manually using the eight onboard dipswitches

Dipswitch 1: Enable/Disable Plug&Play auto-configuration

Dipswitch 1	Function
ON	Plug&Play auto-configuration enabled
OFF	Plug&Play auto-configuration disabled

If Plug&Play auto-configuration is enabled, the IRQ number and I/O address of the DB102ISA card are automatically set during the Plug&Play initialisation-phase. The settings of all other dipswitches

are ignored.
If Plug&Play auto-configuration is disabled, the IRQ number and I/O address of the DB102ISA card
are defined by dipswitches 3 to 8 (see below).

Dipswitch 2: Not used.

Dipswitch 3 and 4: I/O address setting (COMM-port)

Dipswitch 3	Dipswitch 4	Function
OFF	OFF	I/O Address 3F8 - 3FF (COM1)
ON	OFF	I/O Address 2F8 - 2FF (COM2)
OFF	ON	I/O Address 3E8 - 3EF (COM3)
ON	ON	I/O Address 2E8 - 2EF (COM4)

Dipswitches 5 - 8: IRQ setting

Dipswitch 5	Dipswitch 6	Dipswitch 7	Dipswitch 8	Function
OFF	OFF	OFF	OFF	not applicable
ON	OFF	OFF	OFF	not applicable
OFF	ON	OFF	OFF	not applicable
ON	ON	OFF	OFF	IRQ3
OFF	OFF	ON	OFF	IRQ4
ON	OFF	ON	OFF	IRQ5
OFF	ON	ON	OFF	IRQ6
ON	ON	ON	OFF	IRQ7
OFF	OFF	OFF	ON	not applicable
ON	OFF	OFF	ON	IRQ9
OFF	ON	OFF	ON	IRQ10
ON	ON	OFF	ON	IRQ11
OFF	OFF	ON	ON	IRQ12
ON	OFF	ON	ON	not applicable
OFF	ON	ON	ON	not applicable
ON	ON	ON	ON	IRQ15

NOTE: Although the serial interface of the DB102 permits a higher character input rate, the DB102
can only handle input characters at 1kHz.
The DB101/SER has 7 LEDs on the front side. The following table explains the function of each
LED.

LED	Function
CPU	Indicates CPU activity
DCC	Indicates DataCastCarrier (valid signal carrying VBI data)
DC	Indicates DataCast (signal contains datacast data)
TxD	Indicates Transmission of data from modem to user
RxD	Indicates Reception of data from user to modem
Err	Indicates Internal errors such uncorrectable headers or discontinuity.

Possible loss of data.
PWR Indicates power on/off

2.3 Data reception
The DB102 can handle a number of different data services in parall
el. For this, the modem has so-
called 'address-slots' (the DB102 has four of these address-slots)
. In every address-slot, a service
address is defined with the transmission-protocol of that service.
Depending on the transmission-
protocol, the service is automatically enabled (transparent protoc
ol) or disabled (all other protocols)
in which case the transmitter can only enable the reception of the
service.
.
3. COMMAND SET
All commands used with the Philips DB102 Data Broadcast modem are
send to the modem using an
AT-like protocol.

The commands send to the modem are referred to as a command line.
The syntax of a command line
is as follow:

AT!<cmd>?

AT! : ASCII characters 'A', 'T', and '!'
<cmd> : one of the possible DB102 commands
? : CARRIAGE RETURN

To make the command line easy to read, several spaces may be inclu
ded. They will be ignored by the
modem.

Commands may be entered either uppercase or lower-case letters. Th
e command line will be executed
after the input of the CARRIAGE RETURN.
3.1 Modem reply
As a reply to a command, the modem outputs the requested data (if
applies) and one of the following
ASCII-strings:

ASCII string
Name
Description

OK

Command OK
Command processed without errors

ERROR01
Command error
Command syntax error or input out of range

ERROR11
EEPROM read error
Error during read-operation from non-volatile RAM

ERROR12
EEPROM write error
Error during write-operation to non-volatile RAM

ERROR40
Transmission not found
The selected transmission has not been found

Beside these five ASCII-strings, the DB102 has five more strings t
hat it can output in response to any
(hardware) failure:

ASCII string
Name
Description

ERROR10
EEPROM init error
Non-volatile RAM not correctly initialised

ERROR21
Tuner read error
Error during read-operation from tuner

ERROR22
Tuner write error
Error during write-operation to tuner

ERROR30
Fifo overflow
An overflow of the internal fifo has occurred, possible loss of da
ta

Furthermore, text strings are sent to indicate empty slots, unavai
lable features, etc. These strings are

explained per command. Note that a Fifo overflow can sometimes not be prevented, especially during intensive operations such as scanning etc. Therefore, error 30 does not necessarily mean a critical failure.

3.2 Commands

3.2.1 Read address slot

Syntax: AT!An?

Description: Output the service address of address slot n. First three digits form the service packet address. The last digit is the transmission protocol (refer to Chapter 6).

If the address slot is empty, the output will be 'SLOT EMPTY'.

3.2.2 Write address slot

Syntax: AT!An=m

Description: Set address slot n to the new service address m. The first three digits are the service packet address. The last digit defines the transmission protocol used by the service.

To clear an address slot, m should be omitted.

For instance:

? To set address slot one to service-address 9FF, using transmission protocol zero, enter:

AT! A1=9FF0?

? To clear address slot one, enter:

AT! A1=?

(Spaces may be omitted).

3.2.3 Read status address slot

Syntax: AT!ASn?

Description: Outputs the status of the address slot n.

The first digit is the activation-status of the slot (0: slot deactivated, 1: slot activated).

The second digit is the transmission protocol selected for this slot.

The third digit is the enabling-status of the service address (0: slot disabled, 1: slot enabled).

The next 32 bytes are the hex-representation of the bitfield of the service address.

Note that the length of this string is 34 bytes, which is one larg
er than an NABTS
packet.

If the address slot is disabled or the transmission protocol does
not allow the
transmission of bitfields, the bitfield will output as 0's.

If the address slot is empty, the output will be 'SLOT EMPTY'.
3.2.4 Address slot activate
Syntax: AT!AAn=m

Values: AT!AAn=0: Address slot n is deactivated
AT!AAn=1: Address slot n is activated

Description With this command an address-slot can (temporarily
) be deactivated. The
enabling-status and the bitfields will be preserved but they will
not be updated.
3.2.5 Read baudrate
Syntax: AT!B?

Description: The baudrate-setting stored in volatile RAM is dis
played. This is not necessarily
the same as the present baudrate of the modem.
3.2.6 Set baudrate
Syntax: AT!B=n

Description: This command is a request to the DB102 to switch t
o the specified baudrate n. If
the modem cannot communicate at this baudrate, 'ERROR01' is return
ed and the
present baudrate is maintained.
If a switch is possible, the modem returns 'OK' at the present bau
drate and then
switches to the new baudrate.
The new baudrate will not automatically be stored in the internal
non-volatile
memory of the modem! This should be done using the 'Bstore' comman
d.
3.2.7 Store baudrate
Syntax: AT!Bstore

Description: The present baudrate is stored in the internal vol
atile memory of the modem.
3.2.8 Data output
Syntax: AT!Dn

Values: AT!D0: The output of received data is temporarily halted
.
AT!D1: The output of received data is resumed.
3.2.9 Read frequency
Syntax: AT!F?

Description: Output the current frequency (in Mhz).
3.2.10 Set frequency
Syntax: AT!F=n

Description: Set tuner to the new frequency n (in Mhz).
3.2.11 Read H-register
Syntax: AT!Sr?

Description: The value of H-register r is read and outputted (r
efer to Chapter 5). r is a decimal
number in the range [00-42] (always two digits), the output is hex
adecimal.

3.2.12 Write H-register
Syntax: AT!Hr=n

Description: The contents of H-register r is changed to n (refe
r to Chapter 5). r is a decimal
number in the range [00-42] (always two digits), n is a hexadecima
l value of two
digits.

3.2.13 Read identification
Syntax: AT!In

Values: AT!I, AT!I0: Display serial number of modem.
AT!I1: Display modem version.
AT!I2: Display software version.
AT!I3: Display personal number2.

Description: A string of maximum 16 characters is outputted.
3.2.14 Set personal number2
Syntax: AT!I=id

Values: AT!I=Hn
AT!I=Ln

Description: The peronal number, which is diplayed each time wh
en the command AT!I3 is given, is
set and stored in non-volatile memory. Because of the maximal leng
th of an input string, the string
has to be set in two steps: The High three bytes and the Low three

bytes, indicated by starting the
string with an 'H' or 'L' respectively. This character is followed by 6 hexadecimal digits.
Once the personal number has been given a value (High and Low) other than zero, it can not be
changed anymore.

3.2.15 Modem reset

Syntax: AT!RESET

Description: The modem is reset. This is the same as switching the modem off and on.

3.2.16 Scan

Syntax: AT!S

Description: The modem will scan the entire band for transmissions.
The output will be a list of frequencies (in Mhz)

3.2.17 Read S-register

Syntax: AT!Sr?

Description: The value of S-register r is read from non-volatile memory and outputted (refer to
Chapter 4).

3.2.18 Write S-register

Syntax: AT!Sr=n

Description: The contents of S-register r in the non-volatile memory is changed to n (refer to
Chapter 4).

3.2.19 Write synchronisation string

Syntax: AT!SYNC

Description: A synchronisation string is outputted by the modem. This string consists of 33
bytes and has the following format:

0x01, 0x01, 0x00, 0x00, …. , 0x00, 0x00, 0x00, 0xFF (32 bytes)

The string is not seen as a command reply and is therefor not encapsulated in an
output-protocol frame. It is also not followed by an 'OK'-message.

3.2.20 Automatic tune

Syntax: AT!T

Description: If the tuner is locked onto a transmission (video detection status = 1), it will to find

the frequency with the optimum reception quality for this transmis
sion.
If the tuner is not locked or no transmission is found, 'ERROR40'
is outputted.
3.2.21 Tune up
Syntax: AT!T+

Description: The DB102 searches for the next transmission in th
e band
If no transmission if found, 'ERROR40' is outputted.
3.2.22 Video status
Syntax: AT!Vn

Values: AT!V0: Display the video detection status (0 = no video,
1 = video)
AT!V1: Display the AFC status of the tuner.

Description: The requested state is outputted.
3.2.23 Read video input
Syntax: AT!VIN?

Description: The current video input is outputted (1 = tuner, 2
=cvbs).

3.2.24 Set video input3
Syntax: AT!VIN=n

Values: AT!VIN=1 Select tuner
AT!VIN=2 Select cvbs

Description: selects which video input to use.

4. S-REGISTERS
4.1 Register 0 (Output protocol)
Range: 0 to 3

Default: 0 (transparent)

Description: Defines the output protocol used by the DB100.
4.2 Register 1
Not used.
This register is kept blank on purpose in order to ensure a simila
r interface for db101 and db102.
4.3 Register 2 (Silent mode)
Range: 0 or 1

Default: 0 (not in silent mode)

Description: In silent mode, all runtime error-messages are sup
pressed. Modem replies as a result
of command-inputs are not suppressed.
4.4 Register 3 (Filter mode)
Range: 0: Check Header, data and suffix.
1: Check Header and suffix
2: Check Header
3: No check

Default: 0

Description: Depending on the filter mode, the Header is checke
d for Hamming-correctness and
for presence in one of the address slots, the data is checked for
odd parity and the
suffix is checked using a Longitudinal Parity Check. If data does
not have odd parity
mode 0 should not be used. Note that in mode 3 no filtering by add
ress slot is
possible.
4.5 Register 4 (Framingcode)
Range: 0x00 to 0xFF

Default: 0xE7

Description: Every video line containing data is identified by
one byte called the 'framingcode'. In
a NABTS transmission this byte is standard 0xE7 but other values a
re possible for
different formats.
4.6 Register 5 (Video detection mode)
Range: 0: No video check
1: Tuner Locked to signal
2: Tuner locked to strong signal
3: Hardware video check
4: Valid data present
5: Software video check

Default: 0x0

Description: Sets the method that is used to determine a valid
signal. This method is connected to
the Video LEDs (external version) , the V0 command, and the scanni
ng commands.

4.7 Register 6 (Data Length)4
Range: 0x00-0xFF

Default: 0x0

Description: If set, the values in this register override t
he values that are normally used for the start
and length of the User Data.
5. H-REGISTERS
The H-registers give direct access to various hardware registers o
f the DB101, they should be used
with extreme care as they may cause conflicts with normal software
operation. Furthermore, the
registers that are not mentioned here are not accessed at all.
5.1 Register 00 (Packet Number)
Range 0x00 to 0x2D

Default: 0x2D

Description: Sets the size of the internal buffer (in packets).
Note that the minimum size is 1, writing
a 0 resets the packet buffer. Normally kept at maximum size of 45
packets.

5.2 Register 01 (Acquisition control 1)
Range 0x00 to 0xFF

Default: 0x00

Description: Together with Acquisition control 2, this register
controls the acquisition hardware.
Changing this register will cause conflicts with software operatio
n! Register has the
following format:

525/625 | HAM | FCE | HUNT | X | X | X | X

Bits have the following meaning: 525/625 = expected transmission,
HAM = en(dis)able
hamming correction of first two data bytes, FCE = #errors allowed
in Framing Code,
HUNT = en(dis)able amplitude searching.

5.3 Register 02-24 (Line Controls)
Range: 0x00 to 0xFF

Default: 0x00 or 0xFF

Description: Enable and Disable acquisition on a certain line a
nd specify what type of data to receive.

Registers 2- 23 apply to lines 2-23 respectively. Register 24 appl
ies to all lines from 24
till end of field (visible). First and second nibble specify even
and odd field. Important
values: 0x0 = acquire Euro WST, 0xF = do not acquire.

5.4 Register 32 (Framing Code)
Range: 0x00 to 0xFF

Default: 0x00

Description: Framing code to use for acquisition, used if the d
ata type differs if data type (in Line
control) highest bit is 1. default is Euro-WST.

5.5 Register 35 (Acquisition control 2)
Range: 0x00 to 0xFF

Default: 0x00

Description: Together with Acquisition control 1, this register
controls the acquisition hardware.
Changing this register will cause conflicts with software operatio
n! Register has the
following format:

X | X | CLK1 | CLK2 | PAD | CVBS | DB | X

Bits have the following meaning: CLK = clock frequency (should alw
ays be 00), PAD =
en(dis)able adding of padding bytes to data until next line, CVBS
= select input, DB =
use Data Filter registers for filtering.

5.6 Registers 36-39 (Data Filters)
Range: 0x00 to 0xFF

Default: 0x00

Description: Specify four MRAG values that are filtered. Only p
ackets with MRAG value (after
hamming decode) equal to one of the values in DB registers are pas
sed. Changing this
register will cause conflicts with normal software operation. Enab
led and disabled by the
DB bit in AC2 register.

5.7 Register 40 (Data Received, read only)

Range: 0x00 to 0xFF

Description: Data and signal conditions. Register has the following format:

FC8V | FC7V | VPSV | PPV | CCV | X | VSQ | 525R

Bits have the following meaning: FC8V = data with no errors in FC, FC7V = data with 1 error in FC, VPSV = VPS data received, PPV = PAL+ data received, CCV = Closed caption data received, VSQ = Video signal quality, 525R = 525 line transmission.

5.8 Registers 41-42 (Line Received, read only)
Range: 0x00 to 0xFF

Description: Information about current line (= line that is currently acquired) Registers have the following format:

X | X | F1/F2 | LN8 | LN7 | LN6 | LN5 | LN4

LN3 | LN2 | LN1 | LN0 | DT3 | DT2 | DT1 | DT0

Bits have the following meaning: F1/F2 = field, LN = line number, DT = data type.

6. TRANSMISSION PROTOCOL
A transmission protocol between the decoder and the transmitter enables the transmitter to control for that particular service every decoder by its unique DecoderID. Depending on the protocol selected, a number of functions are available.
6.1 Transmission protocol 0 (TRANSPARENT)
All received data is forwarded without any form of processing.
An address-slot is automatically enabled if this transmission-protocol is selected.
6.2 Transmission protocol 1 (ADVANS-compatible)
This protocol is used by the EUROCOM- and ADVANS-modems and it enables the transmitter to

influence some settings of every individual modem by using three b
yte sequences:

<0x8A><'4'><S#><S#><1 byte CSUM> : Turn service ON
<0x8A><'5'><S#><S#><1 byte CSUM> : Turn service OFF
<0x8A><'6'><S#><BitField><1 byte CSUM> : Set new bitfield

S# : 6 byte binary number (= ModemID)
BitField : 16 byte binary number
CSUM : CSUM is calculated by adding the complete sequence mod 2
56

The modem will recognise these sequences and respond to them if S
matches the Modem ID of the
modem. The sequences will not be filtered out of the data stream.
An address-slot is automatically disabled if this transmission-pro
tocol is selected.
6.3 Transmission protocol 2
This protocol consists of two commands that must be send at the st
art of a data packet. The rest of
that packet is discarded by the DB102. In order to prevent data be
ing interpreted as commands
character stuffing is used for the first byte. So if a packet not
containing commands starts with a DLE-
character, two DLE-characters have to be send. The DB100 automatic
ally filters out one of these
characters.

<DLE><0x0><S#><CSUM> : Turn reception OFF
<DLE><0x1><S#><CSUM> : Turn reception ON

DLE : character (0x10)
S# : 6 byte binary number (= ModemID)
CSUM : CSUM is calculated by adding the complete sequence mod 2
56

The modem will recognise these sequences and respond to them if S#
matches the Modem ID of the
modem. All sequences will be filtered out of the data stream.
An address-slot is automatically disabled if this transmission-pro
tocol is selected.
7. OUTPUT PROTOCOL
The output protocol between the decoder and the receiver (PC) enab
les the receiver to detect from
which service data is derived in case of reception of multiple ser
vices.
7.1 Protocol 0 (TRANSPARENT)
All the received data is outputted directly. Is not possible to de

termine on which address-slot the data
is received. Modem-replies are followed by a CARRIAGE RETURN.
7.2 Protocol 1
All data is outputted in the following format:

Slot# | CI | Len | received data | CRC16

The slot number equals the address-slot on which the data is recei
ved.

Modem replies carry slotnumber 0xFF and CI 0x00.
7.3 Protocol 2 (ADVANS-compatible
In this protocol all the data is encapsulated in a 'frame'.

0xE1 | 0xEF | 0xE2 | 0xE6 | 0x00 | Len | CSUM | Slot# | CI
| received data | CSUM

The slot number equals the address-slot on which the data is recei
ved.
Modem replies carry slotnumber 0xFF and CI 0x00.
7.4 Protocol 3 (Full)
Data is outputted in lines of 33 bytes being the complete NABTS pa
cket that was originally
transmitted (see [NABTS] for further specifications).
Lines containing modem replies start with the hamming uncorrectabl
e bytes 0xF4 and 0xF4.
The sync-string (see 3.2.17) starts with the bytes 0x01 and 0x01 t
hat are also hamming uncorrectable.
7.5 Protocol 4 (Synchronise)
Data is outputted in lines of 34 bytes being the original Packet,
as in protocol 3, preceded by a special
key 0xF3, replies start with 0xF3 0xF4 0xF4. This protocol simplif
ies synchronising to the start of a
packet after loss of bytes.

version 2.05 and up
version 2.05 and up

Only present for ISA versions
Experimental register in version 2.05

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Section	05 :	DB102 Interface Security		:	
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Project :	Error! Reference source not found.			Security :	
Volume	Error! Reference source not found.	:	Error! Reference source not found.	Date :	Error! Reference source not found.
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PHILIPS

Data Broadcast Systems

Product Specifications DB100 SER

DB100SER Portable External RS232 decoder

Designed specifically for reception of broadcast data services using the Teletext medium with PC or notebook. It will receive and decode Packet 31 (WST Section 21) services as well as Teletext.

Features:

- Small sized
- Standard RS232 interface
- The decoder can extract the Teletext data transmitted during the Vertical Blanking Interval (VBI) from either an off-air signal using the on-board tuner, or from a composite video signal (optional).
- Data broadcast reception capabilities:
  - Packet 31 reception to WST Section 21
  - Throughput 5 KBytes/sec (3 VBI line-pairs)
  - Full repeat/continuity processing and CRC error detection
  - Full VBI processing capabilities
  - 4 independent services in parallel
- Conditional access:
  - unique address for every decoder (6 bytes) - each service is separately controllable by the transmitter (on, off and 16 bytes bit field)
- Teletext reception capabilities:
  - Separate mode reception of 1 page of Teletext (sequential Teletext, 625 lines)
- Optional:
  Throughput 14.4 KBytes/sec
  Full Field mode (max. 562.5 KBytes/sec)
  US Teletext, NABTS, MOJI (525 lines)
  Chinese Teletext (625 lines)
  Wide Screen Signalling (WSS), Video Programming Signal (VPS), PDC
  Closed Caption (Europe, US)

System:

- Philips Multimedia tuner of FI1200MK2 family, system CCIR B/G
- New Philips Digital Data Slicer
- Complies with European regulations on radiation, signal handling and immunity (EN55022: 1994 + EN550082-1: 1992), Equipment Safety Law (EN60950: 1992 + A1: 1993 + A2: 1994)
- TÜV certification mark

Software:

- TV channel scan function, scans all available RF TV channels, automatically identifying all recognisable TV Broadcasts and Teletext services which transmit the WST Packet 8/30 Broadcast Service Data Packet (BDSP)
- All decoder functions are software controlled using proprietary "AT" command set, similar to that found in many modems.

Hardware:

- Inputs: UHF/VHF: 75 ohms unbalanced
  Baseband video (optional)
- Data/Teletext Outputs: RS232 (Optional other interfaces)
- Dimensions: 8 w x 15 d x 3 h cm
- Weight: 250g
- Power consumption less than 2.5 W