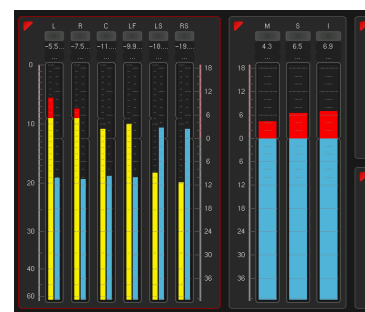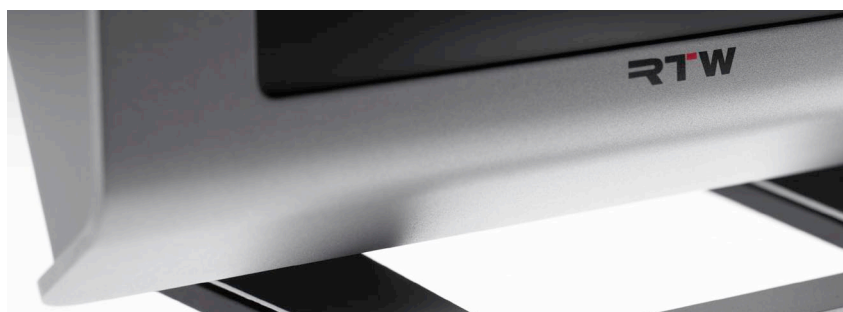Data Sheet
TouchMonitor TM7 Series

TouchMonitor TM7 Series

Modular Software ▪ **Touch Screen** ▪ **Different I/O Options: Analog, AES3, AES3id** ▪ **Highly Flexible Screen Layout**
2-ch. PPM/True Peak ▪ **Multichannel** ▪ **Loudness, LRA, SPL** ▪ **RTA** ▪ **SSA** ▪ **Radar Loudness** ▪ **Premium Peakmeter**

The TouchMonitor TM7 range enters a new level of professional audio metering in terms of precision, performance, efficiency and flexibility. The units are equipped with high-grade 7" touch screens, an easy-to-use graphical user interface, and several audio interfaces.

TouchMonitor TM7 handles audio signals using different audio interfaces: analog, AES3, and AES3id. The mixed use of the analog and digital audio interfaces allows the display of up to 16 input channels simultaneously.

Graphical User Interface

The graphical user interface used in the Touch-Monitor range is controlled simply by using your finger. Instruments can be scaled, randomly positioned and combined for optimized use of available screen space. Multiple instruments of the same type, assigned to different input channels and configurations, can be displayed simultaneously. A comprehensive on-screen help feature supports the user to make setup changes with ease.

Licences

A totally modular software concept means that you only have to purchase features that you actually require. This puts you in control, defining the functionality of an individual TouchMonitor that suits your needs best. At any time new instruments and functions can be added to the device as software modules simply by purchasing and activating a corresponding licence.

Hardware

Common Configuration

- 7" touch screen 16 : 9 TFT (800 x 480 pixel)
- 16-channel audio interfaces
  (analog, AES3, AES3id, selection required, see below)
- Connectors for Ethernet, VGA, 2 x USB 2.0, GPIO, 24 V DC
- Fully scalable, modular software approach for flexible
  configuration and easy on-site upgrades
- Highly flexible screen layout options with scalable
  instruments

- Basic 2-channel Stereo-PPM software: Peak, True Peak,
  Phase Meter, Global Keyboard
- Available software licences (see below):
  - Multichannel,
  - Loudness (ATSC A/85, EBU R128, ITU, ARIB) and SPL,
  - RTA - Real Time Analyzer,
  - SSA - Surround Sound Analyzer,
  - Radar Display,
  - Premium PPM plus Vectorscope

Main Units

20700

TouchMonitor TM7 main unit in a sturdy table-top frame with movable table-stand and power supply.

20700OEM

TouchMonitor TM7 main unit without table-top frame, without table-stand and without power supply, for mounting into front panels, e. g. mixing consoles.

20700-3U

TouchMonitor TM7 main unit in a 19"/3HE/42TE rack-mount housing with power supply for mounting into 19" sub-racks.

20700-VID

TouchMonitor TM7 main unit in a half-19"/3U plug-in module with power suppy for mounting into standard 19" rack-mount cabinets for waveform monitors in video studios.

Hardware (continued)

Audio Interfaces (I/O Options)

Different audio interfaces adapted to the main units are available. Please additionally tell us the order number of the audio interface when ordering a main unit!

HW20711

16-channel audio interface with:
- 8-channel analog inputs (electronically balanced, Sub-D)
- 8-channel digital inputs and outputs
  (transformer balanced, 110 Ohm, 4 x AES3 In/Out, Sub-D)

HW20712

16-channel audio interface with:
- 8-channel analog inputs (electronically balanced, Sub-D)
- 8-channel digital inputs and outputs
  (unbal., 75 Ohm, 4 x AES3id In, 4 x AES3id Out, 8 x BNC)

Software

Standard Software

Every TouchMonitor comes with a basic software package. Beside the signal processing (two channels at a time) and the control functions this software includes a Stereo-PPM with analog scales (DIN5, Nordic, British IIa, British IIb) and digital scales (0 to -60 dB, +3 to -60 dB TruePeak, DIN5, Nordic, British IIa and IIb), peak hold, peak memory, Over indicators, phase correlation meter and a global keyboard for simultaneous control of defined functions in multiple instruments, and for preset recall. It also allows the external control with the integrated GP IO interface. Optionally, different software modules are available as licences.

Software Modules (Licences)

Software modules can be ordered as licences either together with the order of the main unit and the selected audio interface or at a later point in time. Together with the order of the main unit the licence will be activated at delivery.
When a licences is needed at a later point in time, the order process is started from the "Licences" menu of the TM7 unit. A device-specific file for forwarding to RTW is created by the unit. RTW will give back a corresponding file with the activated licence for exactly this unit.

SW20001: Multichannel Mode

Expands the signal routing to Mono, 3.1 Surround, 5.0 Surround, 5.1 Surround and Multichannel (2 to 8 channels in one block, up to 4 blocks with 3G SDI option).

SW20002: Loudness and SPL Display

Expands the basic Stereo-PPM with Loudness functions (EBU R128, ITU-R BS.1770-2/1771, ATSC A/85, and ARIB), SPL functions, and Loudness Range instrument (LRA). Licence SW20001 is required for the display of more than 2 channels.

SW20003: RTA - Real Time Analyzer

Provides on 31 or 61 bands a spectral distribution display of the frequency range of single channels, channel pairs or groups. Additional HP HF band available.
Licence SW20001 is required for the display of more than 2 channels.

SW20004: SSA - Surround Sound Analyzer

Dynamic display for visualizing the interaction of all surround or stereo sound parameter corresponding to the subjective listening impression. Licence SW20001 is required for the display of more than 2 channels.
--- Precondition: Licence SW20002! ---

SW20005: Radar Display

High resolution circular Loudness display corresponding to the Loudness Radar Meter of TC electronic®.
Licence SW20001 is required for the display of more than 2 channels.
--- Precondition: Licence SW20002! ---

SW20006: RTW Premium PPM + Vectorscope

High resolution Multistandard-PPM display with advanced scales, moving coil instruments, and with Audio Vectorscope. Expands licence SW20001 with Multi-Correlator, if activated.
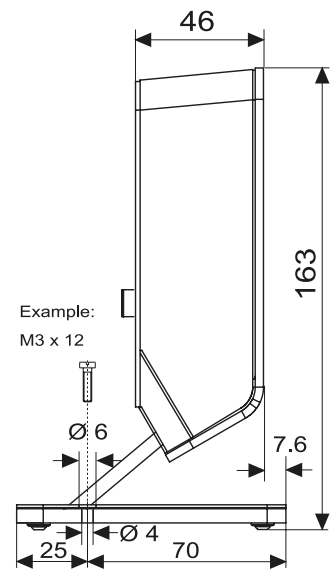

The Loudness Radar Meter is trademark or registerd trademark of TC Electronic A/S, 8240 Risskov, Denmark
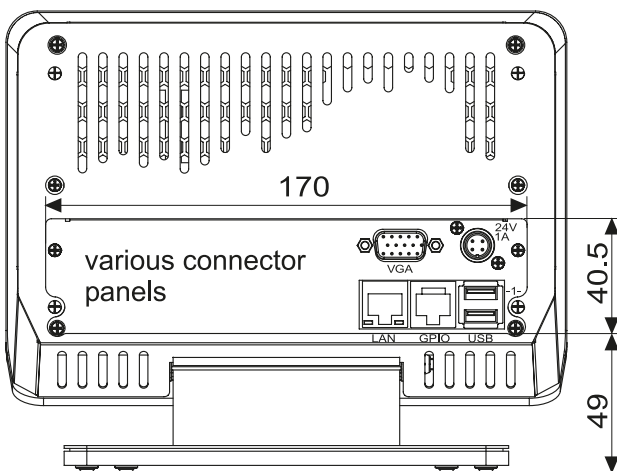
Dimensions

TouchMonitor TM7 20700 Table-Top Unit
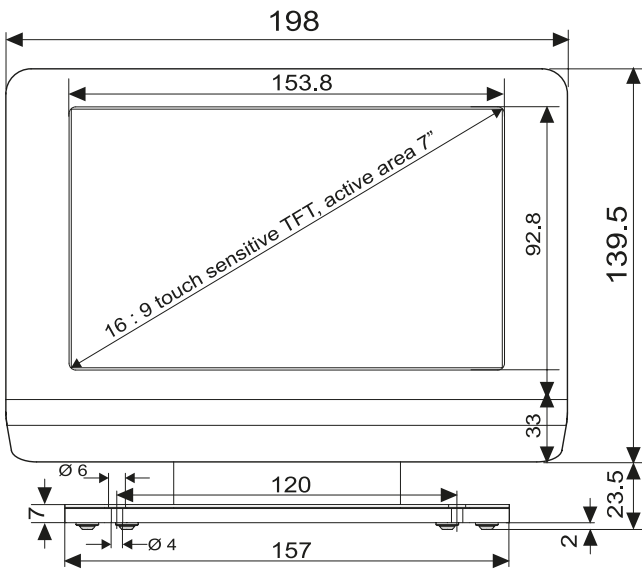
1 | Front view (dimensions in mm)

2 | Side view (dimensions in mm)

3 | Rear view (dimensions in mm)

TouchMonitor TM7 20700OEM Version

1 | Front view (dimensions in mm)

2 | Side view (dimensions in mm)

For adequate ventilation a minimum space is required: min. 10 mm at all sides and min. 100 mm on the rear side!

3 | Rear view (dimensions in mm)
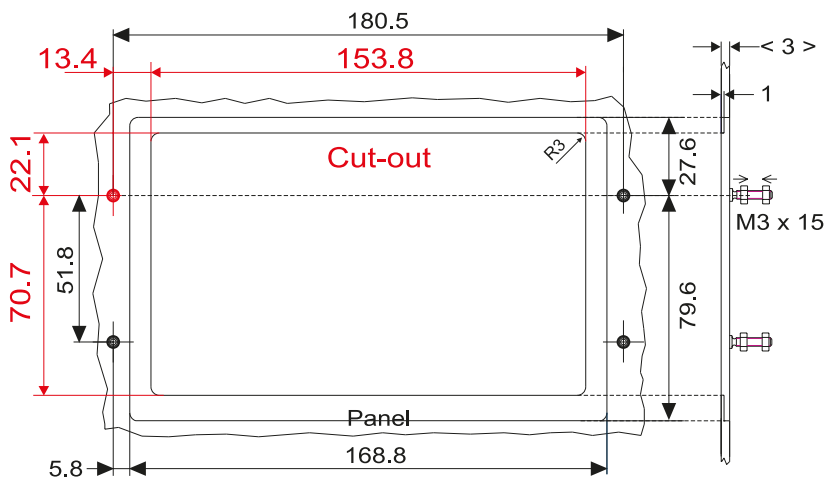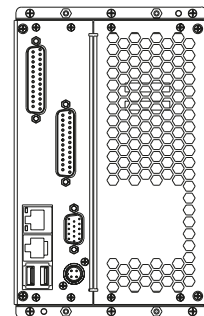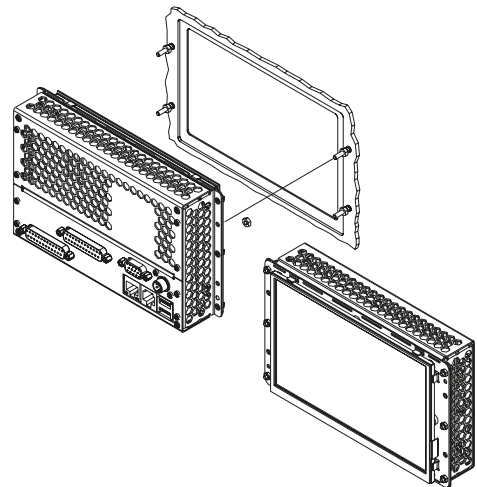
4 | Front panel cut-out (dimensions in mm)

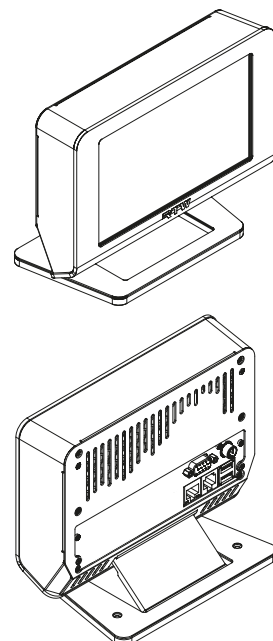5 | Vertical mounting orientation

TouchMonitor TM7 20700-3U Version
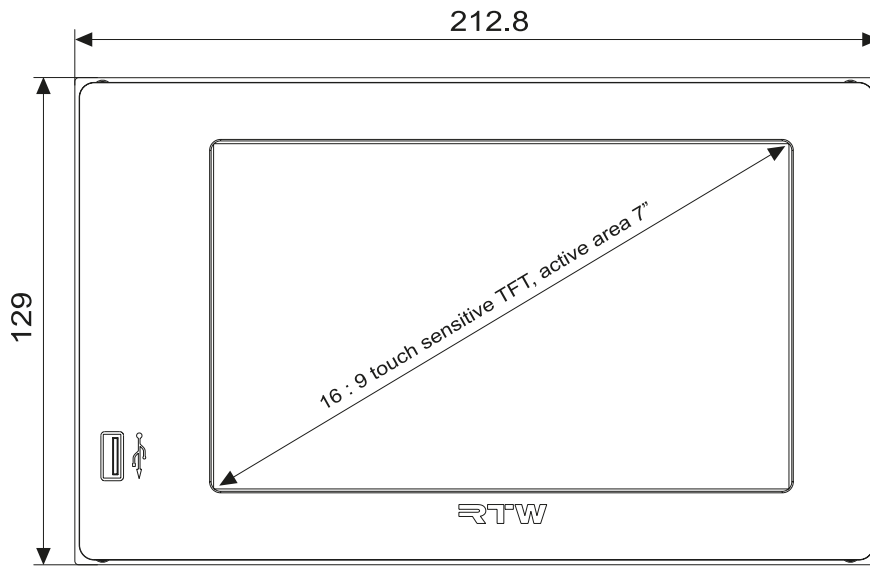
1 | Front view (dimensions in mm)
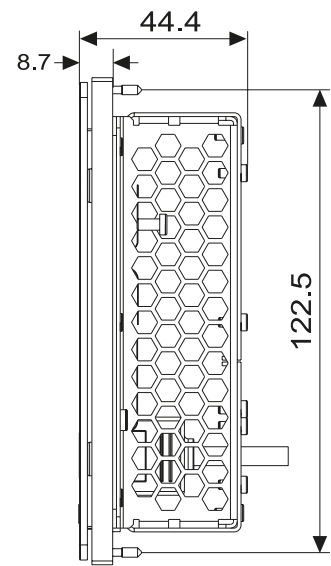
2 | Side view (dimensions in mm)
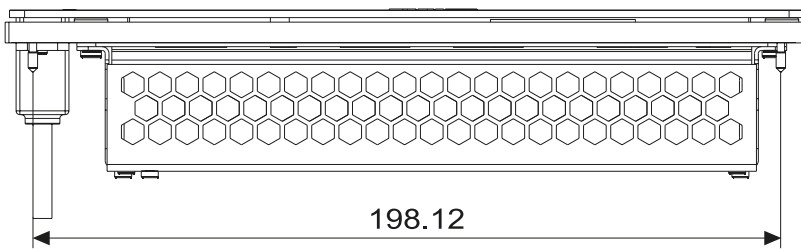
3 | Top view (dimensions in mm)

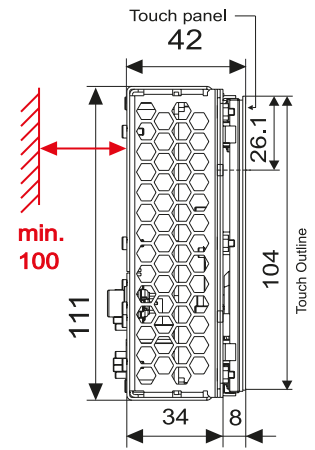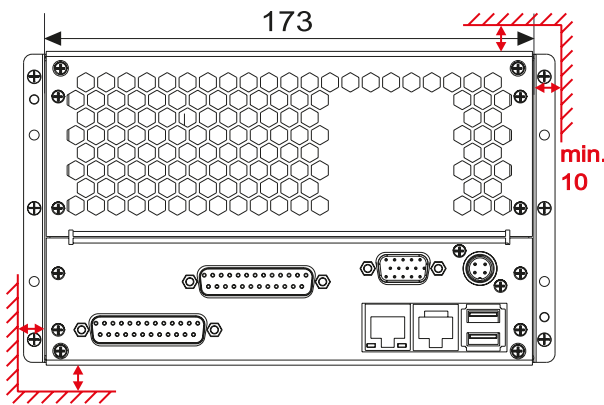20700-3U fits to standard
19"/3U sub racks
(DIN EN 60297-3-101:2004
19"/3U/84HP, not part of delivery)
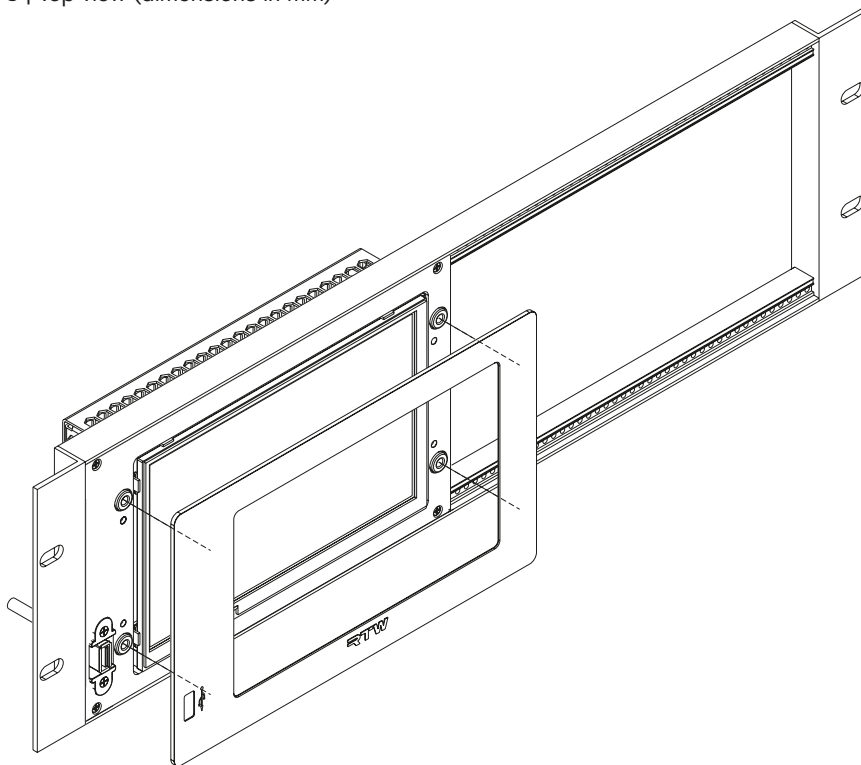
4 | Mounting into standard 19"/3U sub rack
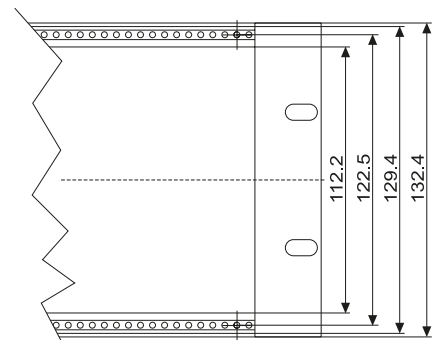
5 | Heights of standard 19"/3U sub racks

TouchMonitor TM7 20700VID Version

22

214.1

132.6

19.28

91.44

21.88

16 : 9 touch sensitive TFT, active area 7"

37.4

152.4

24.3
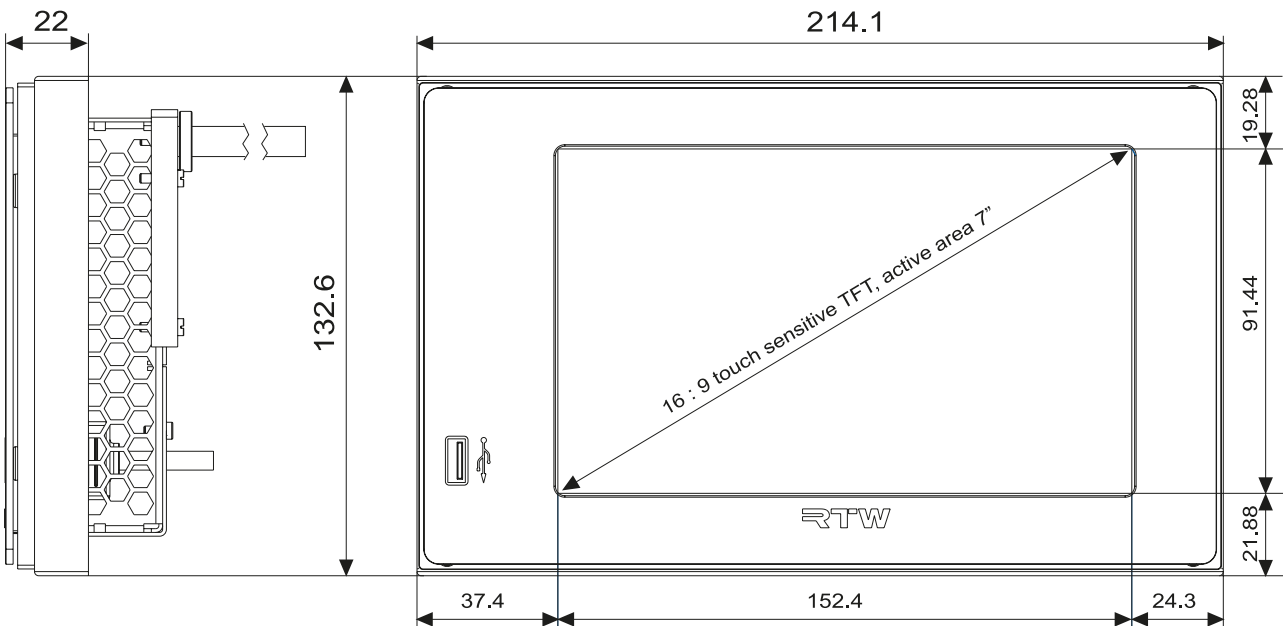
1 | Side view (dimensions in mm)

2 | Front view (dimensions in mm)

407

49

Adapterstangen (2 x)
Mounting adapters (2 x)

M 5

42.7

49.5

175
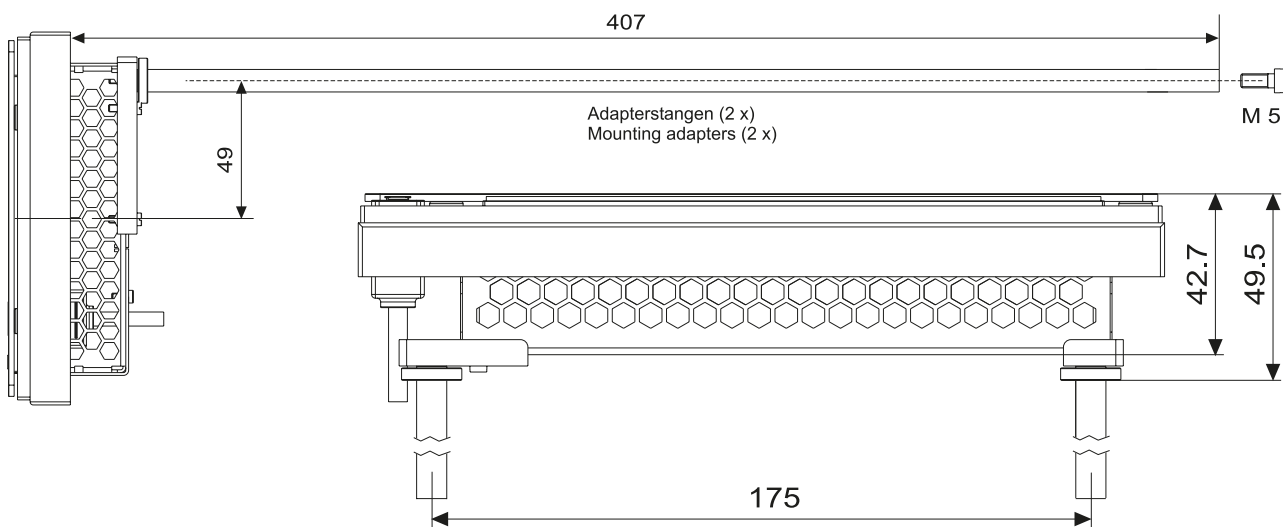
3 | Mounting depth (side view
with adapters, dimensions in mm)

4 | Top view (dimensions in mm)

20700VID fits into standard 19"
rack-mount cabinets for waveform
monitors in video studios
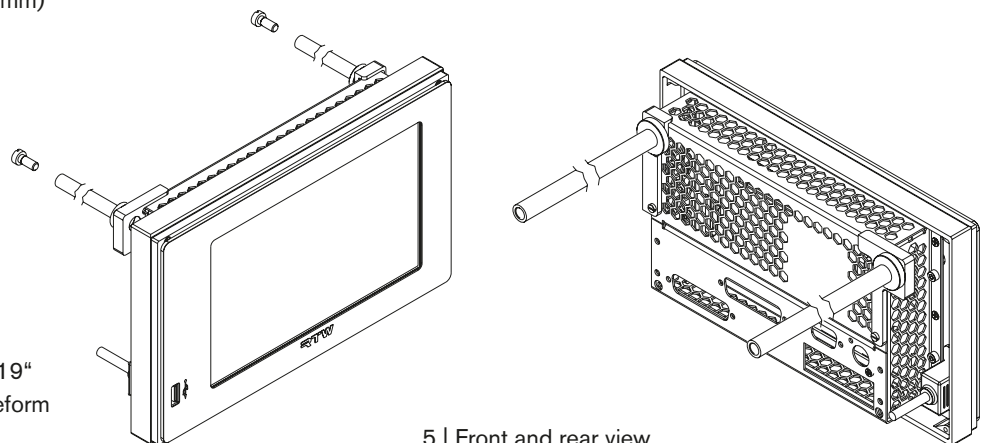
5 | Front and rear view

Connection

Connectors

⚠️ **ATTENTION! - For operating the 20700OEM version an adapted mains adapter is required. RTW recommends the use of the RTW wide voltage power supply 1168-R (100 - 240 V AC/24 V DC, 2.7 A) approved for TouchMonitor and available as an accessory.**
This power supply is included in the 20700 table-top, 20700-3U, and 20700VID packages.

External:
Standard VGA
monitor 16 : 9

4-pin locking low
voltage connector

VGA   24 V DC, 1 A

HW20711 (pictured):	AES3 In/Out 1 - 4 (Sub-D)	Analog In 1 - 8 (Sub-D)	LAN	GP IO	USB A 2.0
HW20712:	AES3id In/Out 1 - 4 (8 x BNC)	Analog In 1 - 8 (Sub-D)	(RJ-45)	(RJ-11)	(Full Speed)

or

External:
USB mouse
Wacom® graphics tablet
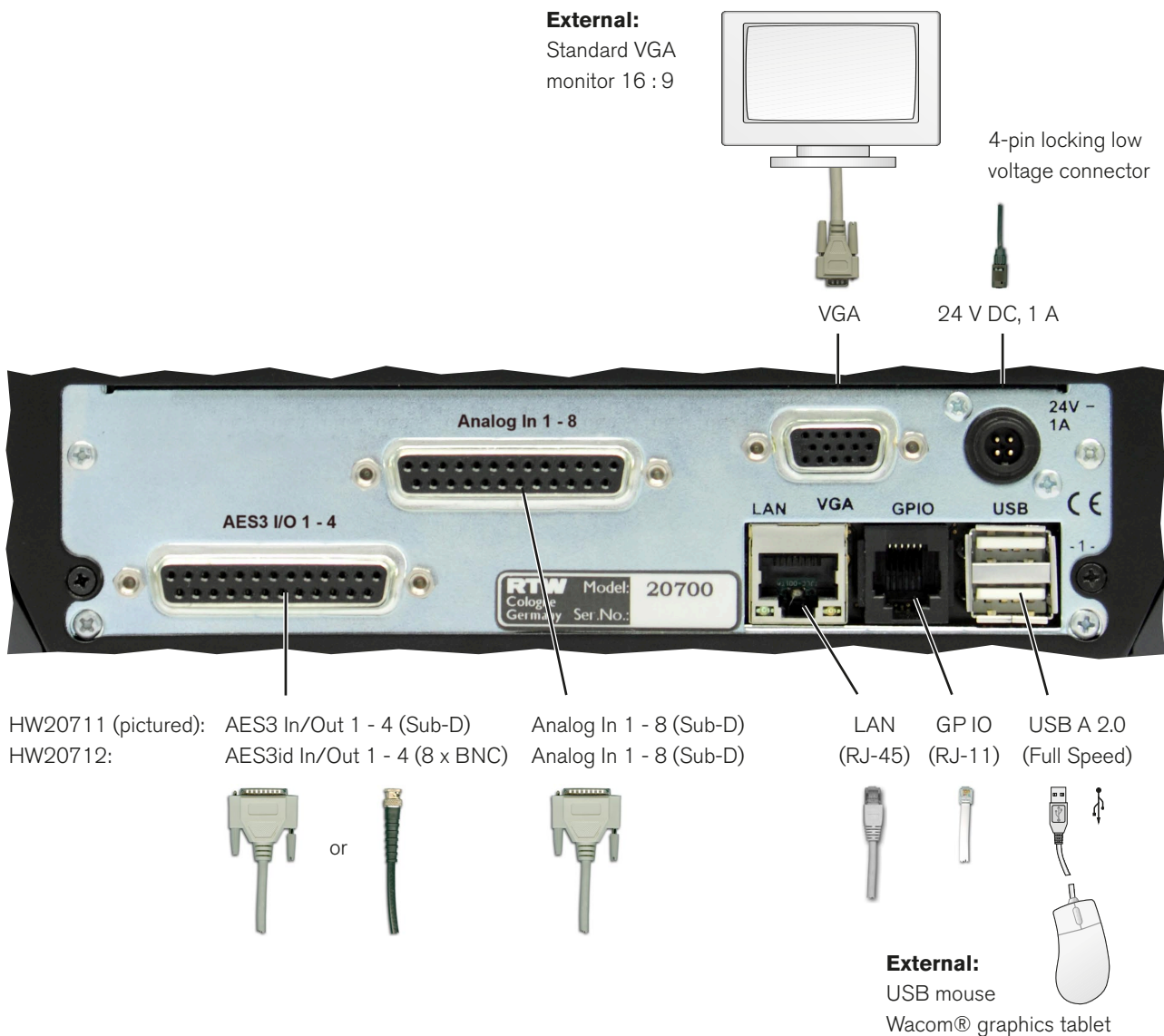
Pin Assignment

VGA (15-pin Sub-D-F)

Pin: Function:

1	R | Video signal
2	G |
3	B |
4	GND
5	GND
6	GND
7	GND
8	GND
9	+5 V
10	GND
11	GND
12	SDA
13	H-sync
14	V-sync
15	SCI

Pin 1 ● Pin 6
Pin 2 ● Pin 7   Pin 11
Pin 3 ● Pin 8   Pin 12
Pin 4 ● Pin 9   Pin 13
Pin 5 ● Pin 10 Pin 14
                 Pin 15
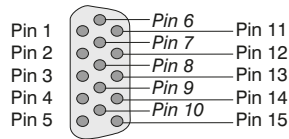
(External view of the connector)

⚠ **NOTE -** The VGA cable shell not exceed 10 to 15 m lenght!

---

24 V - 1 A (4-pin locking low voltage, type Binder 710)

Pin: Function:

1	+24 V DC
2	+24 V DC
3	0 V
4	0 V

Pin 3   Pin 2
Pin 4   Pin 1
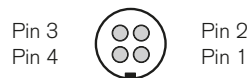
(External view of the connector)

⚠ **NOTE -** An external overcurrent protective device (2 A max.) shall be installed when using an external 24 V DC power supply!

USB-A

2 Full Speed USB 2.0 interfaces for connecting USB memory sticks (for licence handling, presets, et. al.), external mouse or Wacom® tablet

---

GP IO (RJ-11 6P6C socket)

External control of functions and presets recall as defined in the Global Keyboard menu.

Pin: Function:

| 1 | GND |
| 2 - 6 | Function acc. to definition in the menu |

6 5 4 3 2 1

(External view of the connector)

LAN

RJ-45 standard network connector (10/100 MBit)

AES3id In/Out 1 - 4 (unbalanced, BNC-F)

Pin: Function:

Pin: Signal
Ring: Shield/chassis

(External view of the connector)

⚠ **NOTE -** The AES3id inputs are permanently terminated with 75 Ω.

Analog In 1 -8 (electr. balanced, 25-pin Sub-D-F)

Pin: Function:

1	Analog input 8 resp. 16 (+, hot)
14	Analog input 8 resp. 16 (–, cold)
2	Shield/chassis
15	Analog input 7 resp. 15 (+, hot)
3	Analog input 7 resp. 15 (–, cold)
16	Shield/chassis
4	Analog input 6 resp. 14 (+, hot)
17	Analog input 6 resp. 14 (–, cold)
5	Shield/chassis
18	Analog input 5 resp. 13 (+, hot)
6	Analog input 5 resp. 13 (–, cold)
19	Shield/chassis
7	Analog input 4 resp. 12 (+, hot)
20	Analog input 4 resp. 12 (–, cold)
8	Shield/chassis
21	Analog input 3 resp. 11 (+, hot)
9	Analog input 3 resp. 11 (–, cold)
22	Shield/chassis
10	Analog input 2 resp. 10 (+, hot)
23	Analog input 2 resp. 10 (–, cold)
11	Shield/chassis
24	Analog input 1 resp. 9 (+, hot)
12	Analog input 1 resp. 9 (–, cold)
25	Shield/chassis
13	not used

Pin 1   Pin 14
Pin 2   Pin 15
Pin 3   Pin 16
Pin 4   Pin 17
Pin 5   Pin 18
Pin 6   Pin 19
Pin 7   Pin 20
Pin 8   Pin 21
Pin 9   Pin 22
Pin 10   Pin 23
Pin 11   Pin 24
Pin 12   Pin 25
Pin 13
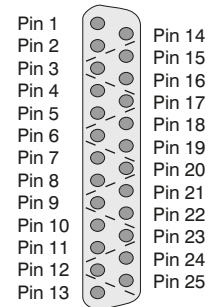
(External view of the connector)

AES3 I/O 1 - 4 (transformer-bal., 25-pin Sub-D-F)

Pin: Function:

| 1 | Digital output 4 resp. 8 (+, hot) |
14	Digital output 4 resp. 8 (–, cold)
2	Shield/chassis
15	Digital output 3 resp. 7 (+, hot)
3	Digital output 3 resp. 7 (–, cold)
16	Shield/chassis
4	Digital output 2 resp. 6 (+, hot)
17	Digital output 2 resp. 6 (–, cold)
5	Shield/chassis
18	Digital output 1 resp. 5 (+, hot)
6	Digital output 1 resp. 5 (–, cold)
19	Shield/chassis
7	Digital input 4 resp. 8 (+, hot)
20	Digital input 4 resp. 8 (–, cold)
8	Shield/chassis
21	Digital input 3 resp. 7 (+, hot)
9	Digital input 3 resp. 7 (–, cold)
22	Shield/chassis
10	Digital input 2 resp. 6 (+, hot)
23	Digital input 2 resp. 6 (–, cold)
11	Shield/chassis
24	Digital input 1 resp. 5 (+, hot)
12	Digital input 1 resp. 5 (–, cold)
25	Shield/chassis
13	not ussed

Pin 1   Pin 14
Pin 2   Pin 15
Pin 3   Pin 16
Pin 4   Pin 17
Pin 5   Pin 18
Pin 6   Pin 19
Pin 7   Pin 20
Pin 8   Pin 21
Pin 9   Pin 22
Pin 10   Pin 23
Pin 11   Pin 24
Pin 12   Pin 25
Pin 13
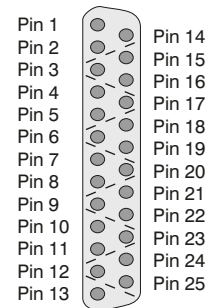
(External view of the connector)

⚠ **NOTE -** The AES3 inputs are permanently terminated with 110 Ω.

Specifications

System

General

Power requirements:	+24 V DC (external 2 A max. overcurrent protective device shall be installed!)
Current drain:	1 A nominal, 2.5 A power-up current (10 µsec.)
Display:	7" TFT touch screen 16 : 9 (800 x 480 pixel)
Connectors:	1 x 15-pin Sub-D-F; VGA output with 800 x 480 pixel, 65.536 colors, 60 Hz, for connection of an optional external 16 : 9 VGA monitor, selectable 4 : 3 mode
	1 x 4-pin locking low voltage connector type Binder 710 (DC)
	2 x USB A; USB 2.0 Full Speed connectors for:

- USB memory sticks (licence handling, preset export and import, software updates)
- external computer mouse for operating
- external Wacom® graphics tablet

	1 x GPIO (RJ-11-6P6C) for defined functions or preset recall
	1 x LAN (RJ-45)
with HW20711:	2 x 25-pin Sub-D-F (analog and digital)
with HW20712:	1 x 25-pin Sub-D-F (analog), 8 x BNC-F (digital)
Dimensions (W x H x D):	• 20700: 198 x 163 x 46 mm
	• 20700OEM: 188 x 109 x 45 mm
	• 20700-3U: 19": 42HP x 3U x 44.5 mm
	• 20700VID: 214.1 x 132.6 x 49.5 mm (without adapters), for video rack cabinets
Weight:	approx. 2.7 kg (without mains adapter)
Operating temperature:	+5° to +40° C

Functions (with all licences activated)

- Operation with one finger (touch sensitive display) or a computer mouse
- Instruments can be scaled and freely positioned
- Multiformat Surround PPM (3.1, 5.0, 5.1, 7.1)
- 2-ch. and multichannel peakmeter
- Loudness-Meter: ITU-R BS.1770-2/1771, EBU R128, ATSC A/85, ARIB, custom mode
- Loudness Range instrument (LRA)
- Radar Loudness Meter (TC electronic®)
- SPL meter
- Moving Coil instrument (BR, VU, Loudness)
- Gain Reduction instrument
- Surround Sound Analyzer
- Stereo Correlator
- 10-fold Multi-Correlator with LFE mode
- 1/3- and 1/6-octave spectrum analyzer
- 2-channel Audio Vectorscope
- AES3 status monitor
- Numerical displays

Analog Inputs

HW20711:	8 analog inputs, Sub-D-F connector, 25-pin
HW20712:	8 analog inputs, Sub-D-F connector, 25-pin
Reference level:	adjustable in the range from 0 dBu to +10 dBu
Maximum input level:	+24 dBu
Impedance:	> 10 kΩ, electronically balanced
Frequence range:	20 Hz to 22 kHz @ 48 kHz

Digital Inputs

HW20711:	4 AES3 inputs (transformer balanced, 110 Ω), Sub-D-F connector, 25-pin, with 4 inputs and 4 outputs
HW20712:	4 AES3id inputs (unbalanced, 75 Ω), 8 BNC-F connectors, 4 inputs and 4 outputs
Sampling rates:	44.1, 48, 96 kHz, synchronisation to digital input signal

Digital Outputs

HW20711:	4 AES3 outputs, Sub-D-F connector, 25-pin, with 4 inputs and 4 outputs
HW20712:	4 AES3id outputs, 8 BNC-F connectors, 4 inputs and 4 outputs
Sampling rates:	referenced to digital inputs or internal clock

Basic Stereo-PPM (Standard Software)

General

Input sources:	analog and/or digital, depending on selected audio interface
2-channel Peakmeter:	for the defined Stereo channel pair L/R
Display:	• Peak level
	• Peak hold
	• Numerical value of the display
Functions:	• Gain (+20 dB, +40 dB acc. to standard)
	• Peak hold on/off
	• Memory
	• Reset

Analog Peakmeter

Analog scales:	• DIN5: +5 .. -50 dB,
	• Nordic: +12 .. -42 dB,
	• BR IIa: 7 .. 1 (British),
	• BR IIb: +12 .. -12 dB (British),
Integration time:	acc. to standard or 20 ms, 10 ms, 1 ms, 0,1 ms
Peak hold indicator:	1, 2, 4, 10, 20, 30 s, manual reset or off

Digital Peakmeter

Word width:	24 bit
Digital scales:	• TP60: +3 .. −60 dB
	• Dig60: 0 .. −60 dB
	• DIN5: +5 .. -50 dB
	• Nordic: +12 .. -42 dB
	• BR IIa: 7 .. 1 (British)
	• BR IIb: +12 .. -12 dB (British),
Headroom/Headroom Ref:	adjustable in the range from 0 to −20 dB in steps of 1 dB
Operation field:	adjustable in the range from 0 to −20 dB in steps of 1 dB
Integration time (Attack):	acc. to corresponding standard or selectable: Sample, 20 ms, 10 ms, 1 ms, 0.1 ms
Gain:	+20 dB, +40 dB (acc. to standard)
High-pass filter:	Off, 5 Hz, 10 Hz, 20 Hz

Specifications (continued)

Peak hold indicator:	1 s, 2 s, 4 s, 10 s, 20 s, 30 s, manual reset or off
Over indicator hold time:	1 s or manual
Over indicator PPM	
- Threshold:	Full Scale, Full Scale -1LSB, Full Scale -2LSB, −0.1 dBFS, −0.5 dBFS, −1 dBFS, −2 dBFS, −3 dBFS
- Attack time:	1 to 15 samples
- Word width:	16 to 24 bit, selectable
Over indicator True Peak	
- Threshold:	adjustable

AES3 Status Monitor

Display:	▪ channel data are displayed as plain text, hex or binary
	▪ Channel selectable
	▪ Audio bit activity
	▪ Hardware status

Global Keyboard

The Global Keyboard is used for simultaneous control of defined functions in multiple instruments, and for preset recall. It also allows the external control with the integrated GP IO interface.

SW20001: Multichannel Mode (Software Licence)

Expands Basic Stereo-PPM to multichannel functions and display

Input sources:	analog and/or digital, depending on selected audio interface
Surround Peakmeter:	for 3.1, 5.0, 5.1, 7.1 formats
Track layout :	selectable for 5.1 Surround:
	▪ SMPTE.TV: L, R, C, LF, LS, RS
	▪ SMPTE.Film: L, LS, C, RS, R, LF
	▪ DTS: L, R, LS, RS, C, LF
	▪ L, C, R, LF, LS, RS
	▪ Film: L, C, R, LS, RS, LF
	preset for 7.1 Surround:
	▪ SMPTE (L, LC, C, RC, R, LS, RS, LF)
Multichannel Peakmeter:	2 to 8 single channels in one defined block (depending on the audio interface up to 4 blocks)
2-channel Peakmeter:	for different Stereo channel pairs
Single-channel Peakmeter:	for different Mono signals

SW20002: Loudness and SPL Display (Software Licence)

Expands the Basic Stereo-PPM with functions for loudness measurement and for SPL display and summed SPL value calculation
For the display of more than 2 channels software licence SW20001 is required.

EBU R128 Loudness Mode

ITU BS.1771 Loudness Mode

ATSC A/85 Loudness Mode

ARIB Loudness Mode

Customer Specific Loudness Mode

Display:	▪ Bargraphs for each single channel (can be combined with PPM bargraphs)
	▪ M bargraph (Momentary - summation of momentary loudness values of all channels for a short span of time)

	▪ S bargraph (Short - loudness summation value of an adjustable dynamic time frame)
	▪ I-Bargraph (Integrated - long term loudness value infinite or manual control)
Numerical display:	for Short (S) and Integrated (I) , also (M), labelling adjustable
Scales:	Loudness scale:
	▪ EBU+9: +9 .. −18 LU
	▪ EBU+18: +18 .. −36 LU
	▪ EBU+9a: 14 .. −41 LUFS
	▪ EBU+18a: −5 .. −59 LUFS
	▪ EBU0: 0 .. −60 LUFS
	▪ ITU+9: +9 .. −18 LU (Loudness Units)
	▪ ITU0: 0 .. −30 LUFS
Weighting filter:	K filter acc. to ITU BS.1770
Target Level:	−23 LUFS; adjustable in the range from −10 to −30 LUFS
Time & Gate Momentary:	
- Window Time:	adjustable in the range from 200 ms to 1000 ms in steps of 100 ms
- Integration Time:	IEC 125 ms Fast, 250 ms (IRT), 500 ms, 750 ms, IEC 1000 ms Slow, 1500 ms, 2000 ms selectable
Time & Gate Short:	
- Integration Time:	3 s; time window adjustable in the range from 1 to 20 s in steps of 1 s
Time & Gate Integrated:	
- Silence Gate:	−70,0 LUFS; adjustable in the range from −80,0 LUFS to −40,0 LUFS in steps of 0.5 LUFS, switchable
- Relative Gate:	−10,0 LU; adjustable in the range from −40,0 LU to 0 LU in steps of 0.5 LUFS, switchable
Level adjustment for the summation:	▪ 0.0 dB (L, R, C), adjustable between −3 and +3 dB in steps of 0.5 dB
	▪ +1.5 dB (LS, RS), adjustable between −3 and +3 dB in steps of 0.5 dB
	▪ Off (LFE), selectable: Off, 0 dB, 10 dB

Loudness Range Instrument (LRA)

Display:	Graphical display of the Loudness Range
Mode:	selectable: LRA Bar, LRA MagicEye, LRA Magi-cEye + I, LRA MagicEye + I + Num
Scale range:	selectable: 6 LU, 10 LU, 20 LU, 30 LU
LRA low range:	2 LU; adjustable in the range from 1 to 20 LU in steps of 1 LU
Comfort zone:	4 LU; adjustable in the range from 1 to 20 LU in steps of 1 LU
LRA high range:	depends on the selected scale range and the spread of the comfort zone
Colors:	selectable for each range

SPL Meter Mode

Display:	▪ Bargraphs for each single channel (can be combined with PPM bargraphs)
	▪ Summation bargraph
Reference point:	adjustable in the range from 68 dB to 88 dB in steps of 1 dB
Weighting:	Linear, A (Leq(A)), C, CCIR (Leq(M)), k
Integration time:	Fast (125 ms), Slow (1 s)

Specifications (continued)

SW20003: RTA - Real Time Analyzer (Software Licence)

Spectral distribution display of the frequency range of single channels, channel pairs or groups.

For the display of more than 2 channels software licence SW20001 is required.

Spectrum Analyzer (RTA)

Input sources:	selectable: all channels without LF, all channels, Front, Rear, L/R, single channels, Stereo pairs, depending on selected mode
Frequency range:	• Norm: 20 Hz to 20 kHz, additional band > 20 kHz switchable • LF: 5 Hz to 5 kHz
Number of bands:	• 1/3-octave: 31 bands, filter acc. to IEC 225 class 2 • 1/6-octave: 61 bands
Weighting filter:	Linear; Linear, A, C selectable
Peak hold indicator:	1 s, 2 s, 4 s, 10 s, 20 s, 30 s, manual reset or off
Measuring range:	45 dB max.
Scaling:	3, 6, 9 dB
Functions:	• Input selection • Peak hold on/off • A, C, Linear weighting • Integration time • Set reference • Scaling • Frequency range • Bargraph arrangement • Display-Hold
Integration time (ballistics):	Impulse, Fast, Slow, Peak (10 ms)

SW20004: SSA - Surround Sound Analyzer (Software Licence)

Dynamic display for visualizing the interaction of all surround parameter corresponding to the subjective listening impression

--- Precondition: Software licence SW20002 is activated. ---

For the display of more than 2 channels software licence SW20001 is required.

Surround-Sound-Analyzer

Display:	• Graphical display indicating the single channel and total program loudness acc. to selected weighting filter (Total Volume Indicator) acc. to selected weighting filters (e. g. SPL or Loudness) • Position and width of phantom sound sources (PSI) • Correlation of adjacent channels in PSI (color) resp. TVI (shape of line): red resp. funnel: negative range, yellow resp. straight line: "0" range, green resp. roof: positive range • Separate correlators for the outer adjacent channels switchable: red: negative range, white: „0" range, green: positive range • Dominance indicator (DMI)

SW20005: Radar Display (Software Licence)

High resolution circular Loudness display corresponding to the Loudness Radar Meter of TC electronic®.

--- Precondition: Software licence SW20002 is activated. ---

For the display of more than 2 channels software licence SW20001 is required.

Radar Loudness Meter

Display:	• Momentary Loudness values (circular) • History (circular) • Measuring time (numerical) • 2 Loudness descriptors (numerical) • Peak
Mode:	Radar or Statistics
Sliding Loudness:	3 s, 6 s, 10 s, 15 s, 30 s, 1 min, 2 min, 4 min, 8 min
Descriptors:	Off, Program Loudness, Loudness Max, Loudness Range, Sliding Loudness (max. 2 at a time)
Speed:	1 min, 4 min, 12 min, 30 min, 1 h, 2 h, 4 h, 12 h, 24 h
Resolution:	3 dB, 4 dB, 6 dB, 8 dB, 10 dB, 12 dB, selectable
Low Level:	-30 to -6 LU

SW20006: RTW Premium PPM plus Vectorscope (Software Licence)

High resolution Multistandard-PPM display with advanced scales and with Audio Vectorscope, Moving Coil, and Gain Reduction instruments. Expands licence SW20001 with Multi-Correlator and with Gain Reduction instrument in multi-channel mode, if activated.

General

Input sources:	analog and/or digital, depending on selected audio interface
Display:	• Peak level • Peak hold • Numerical value of the display • Digital Over
Functions:	• Gain (+20 dB, +40 dB acc. to standard) • Peak hold on/off • Memory • Reset

Analog Peakmeter Extension

Analog scales:	• Zoom10: +10 .. −10, • Zoom1: +1 .. −1, • SMPTE24: +24 .. −30 • SMPTE20: +20 .. −40 • NHK
Integration time:	acc. to standard or 20 ms, 10 ms, 1 ms, 0,1 ms
Peak hold indicator:	1, 2, 4, 10, 20, 30 s, manual reset or off

Digital Peakmeter Extension

Word width:	24 bit
Digital scales:	• TP20: +3 .. −20 dB • Dig20: 0 .. −20 dB • Dig0: +18 .. 0 dB • Dig18: +18 .. −18 dB • Dig40: +20 .. −40 dB • ARD9: +9 .. −60 dB • DIN10: +10 .. -50 dB, • Zoom10: +10 .. −10, • Zoom1: +1 .. −1,
Headroom/Headroom Ref:	adjustable in the range from 0 to −20 dB in steps of 1 dB
Operation field:	adjustable in the range from 0 to −20 dB in steps of 1 dB
Integration time (Attack):	acc. to corresponding standard or selectable: Sample, 20 ms, 10 ms, 1 ms, 0.1 ms
Gain:	+20 dB, +40 dB (acc. to standard)
High-pass filter:	Off, 5 Hz, 10 Hz, 20 Hz

Specifications (continued)

Peak hold indicator:	1 s, 2 s, 4 s, 10 s, 20 s, 30 s, manual reset or off
Over indicator hold time:	1 s or manual

Over indicator PPM

- Threshold:	Full Scale, Full Scale -1LSB, Full Scale -2LSB, −0.1 dBFS, −0.5 dBFS, −1 dBFS, −2 dBFS, −3 dBFS
- Attack time:	1 to 15 samples
- Word width:	16 to 24 bit, selectable

Over indicator True Peak

- Threshold:	adjustable

Moving Coil Instrument
(available in stereo mode only)

Type:	PPM (L/R), PPM (M/S), VU, Loudness, selectable

PPM:

- Channel arrangement:	Dual, Dual + M/S horizontal, Dual + M/S vertical, Stereo horizontal, Stereo vertical
- Scales:	▪ BR IIa: 7 .. 1
	▪ BR IIb: +12 .. −12 dB
- Integration time:	20 ms, 10 ms, 1 ms, 0,1 ms, Sample (nur digital)
- Headroom Ref:	available with digital sources only: −9 dB; adjustable in the range from 0 to −20 dB in steps of 1 dB
- S mode:	only available, if M/S type is selected: M3, M6
- Peak indicator:	Off, Peak, True Peak, BR Peak
- BR Peak Threshold:	6 dB,
	▪ BR IIa: adjustable in the range from 4 to 7 dB in steps of 1 dB
	▪ BR IIb: adjustable in the range from 0 to 12 dB in steps of 1 dB

VU:

- Channel arrangement:	Stereo horizontal, Stereo vertical
- Scale analog:	VU (−20 to +3 dB)
- Scale digital:	VU Digital (−20 to + 3 dB)
- Lead:	0 dB, adjustable in the range from 0 to 10 dB in steps of 1 dB
- Integration time:	20 ms, 10 ms, 1 ms, 0,1 ms
- Peak indicator:	Off, Peak, True Peak

Loudness:

- Channel arrangement:	Dual, Stereo horizontal, Stereo vertical
- Scales:	acc. to Loudness seettings
- Integration time:	acc. to standard
- Peak indicator:	Off, no selectable option available
Numerical display:	switchable

Audio Vectorscope
in Surround mode

(if available):	
- Display modes:	▪ 2-channel
	▪ 4-channel (fixed: L-R above, LS-RS below)
- Inputs:	in 2-channel mode selectable, selection depends on selected format; e. g. for 5.1: L/R, LS/RS, L/C, C/R, L/LS, R/RS
- AGC:	fast/slow
2-channel Stereo mode	
- Inputs:	L-R
- AGC:	fast/slow
- Grid:	L/R or M/S

Multi-Correlator
in Surround mode

(if available):	▪ for each channel pair of 3.1, 5.0, 5.1, 7.1 formats
	▪ LFE mode with 5.1, 7.1 formats to display the correlation between each single channel and LFE channel

- Display:	red: negative range, white: "0" range, green: positive range
- Filter:	low pass filter switchable (300 Hz)

Gain Reduction

Display:	1 bargraph for Stereo and Surround formats, up to 8 bargraphs in multi-channel mode
Input:	Data stream via TCP/IP and LAN (ethernet) interface
Input routing:	external featured streams selectable
Marker:	adjustable threshold for the definition of upper and lower display section
Colors:	32 colors for each bargraph section

Items of Delivery

TouchMonitor TM7 20700:	▪ TM7 main unit in a table-top frame
	▪ selected audio interface
	▪ Basic software (system/Stereo-PPM)
	▪ Table-stand, mains adapter, manual
	Order no.: 20700 (+ HW-No.)

TouchMonitor TM7 20700OEM:	
	▪ TM7 main unit without table-top frame
	▪ selected audio interface
	▪ Basic software (system/Stereo-PPM)
	▪ Manual
	Order no.: 20700OEM (+ HW-No.)

TouchMonitor TM7 20700-3U:	▪ TM7-Haupteinheit im 19"/3HE/42TE-Einbaugehäuse
	▪ gewähltes Audio-Interface
	▪ Basis-Software (System/Stereo-PPM)
	▪ Netzteil, Manual
	Bestellnr.: 20700-3U (+ HW-Nr.)

TouchMonitor TM7 20700VID:	
	▪ TM7-Haupteinheit im Halb-19"/3HE-Einschub
	▪ Adapterstangen für Standard-19"-Einbaugehäuse für Waveform-Monitore mit 407 mm Einbautiefe
	▪ gewähltes Audio-Interface
	▪ Basis-Software (System/Stereo-PPM)
	▪ Netzteil, Manual
	Bestellnr.: 20700VID (+ HW-Nr.)

Optional accessory

- Wide voltage power supply **1168-R** (100 - 240 V AC/24 V DC 2,7 A, table-top unit with corresponding mains cable for different power systems)
- Snake cable **1167** (4 m, 25-pin Sub-D-M connector to 4 x XLR-M and 4 x XLR-F connectors, for digital inputs and outputs)
- Snake cable **1186** (4 m, 25-pin Sub-D-M connector to 8 x XLR-F connectors, for analog inputs)

Product Line-up

TouchMonitor TM7 table-top unit	**TouchMonitor TM7 OEM unit**	**TouchMonitor TM7 19"/3U rack-mount unit**	**TouchMonitor TM7 Half-19"/3U plug-in module**
7" touch screen 16 : 9 TFT, table-top unit with table-stand, power supply Order number: 20700	7" touch screen 16 : 9 TFT, main unit without housing for panel-mounting Order number: 20700OEM	7" touch screen 16 : 9 TFT, main unit with 3U/42HP rack-mount panel for 19" sub racks, power supply Order number: 20700-3U	7" touch screen 16 : 9 TFT, main unit with half-19"/3U plug-in panel for rack-mount cabinets, power supply Order number: 20700VID

Audio Interface Selection (I/O Options)	**max. Channel Count (Hardware)**	**Inputs Analog (balanced)**	**Inputs Digital/Outputs Digital**
add. Order Number: HW20711	8-channel analog In, 8-channel digital In, 8-channel digital Out	1 x 25-pin Sub-D	1 x 25-pin Sub-D (4 x AES3 in, 4 x AES3 Out)
add. Order Number: HW20712	8-channel analog In, 8-channel digital In, 8-channel digital Out	1 x 25-pin Sub-D	8 x BNC (4 x AES3id In, 4 x AES3id Out)

Standard Hardware: Table-top unit with easy-to-use graphical interface, Ethernet, 2 x USB, GPIO, VGA Out, table-stand, mains adapter. Audio Interface Selection required!
Rack-mount units with easy-to-use graphical interface, Ethernet, 2 x USB, GPIO, VGA-Out, mains adapter. Audio Interface Selection required!
OEM unit with easy-to-use graphical interface, Ethernet, 2 x USB, GPIO, VGA-Out. Audio Interface Selection required!

Standard Software: Basic stereo PPM with analog scales (DIN +5, Nordic, British IIa, British IIb) and digital scales (0 to -60 dB, +3 to -60 dB True Peak, DIN, Nordic, British IIa and IIb), global keyboard. Other software modules available as licences.

Licences (Software Modules) Further informationen on http://www.rtw.de/en/produkte/audio-monitore/touchmonitor-tm7.html --> Optionen

Multichannel Mode Order Number: SW20001	Loudness and SPL Display Order Number: SW20002	RTA - Real Time Analyzer Order Number: SW20003	SSA - Surround Sound Analyzer Order Number: SW20004	Radar Display Order Number: SW20005	Premium PPM plus Vectorscope Order Number: SW20006
	SW20001 is required for the display of more than 2 channels	SW20001 is required for the display of more than 2 channels	Precondition: installed SW20002! SW20001 is required for the display of more than 2 channels	Precondition: installed SW20002! SW20001 is required for the display of more than 2 channels	Expands licence SW20001 (if installed) with Multi-Correlator

Dimensions:	**W x H x D in mm (approx.)**
TM7 Table-top unit 20700:	198 x 163 x 46
TM7 OEM version 20700OEM:	188 x 109 x 45
TM7 Rack-mount unit 20700-3U:	42TE x 3HE x 44.5 mm
TM7 Half-19" unit 20700VID:	214.1 x 132.6 x 49.5 m

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RTW