

User Manual



DK - Technologies



PT0710M

DK-Technologies A/S
Marielundvej 37D
DK-2730 Herlev
Denmark
t +45 44 85 02 55
f +45 44 85 02 50
e info@dk-technologies.com
w www.dk-technologies.com

PT0710M User Manual



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DK-Technologies A/S

Marielundvej 37D

DK-2730 Herlev

Denmark

t +45 44 85 02 55

f +45 44 85 02 50

e info@dk-technologies.com

w www.dk-technologies.com

1 Important notes



1.1 Disclaimer

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1.2 Purpose

Any fitness for purpose legislation or other determination that may be applied in the area where this equipment is installed must take due cognisance that it is designed for use in professional broadcast, audio and video systems by appropriately trained personnel. The equipment is not intended for use in a domestic environment and regulations designed for such situations are not applicable.

1.3 After sales modifications

Any modifications to the equipment not specifically authorised and approved by DK-Technologies A/S may invalidate the equipment warranty. This includes changes to cabling and variations to the recommended installation as detailed in the documentation issued by DK-Technologies A/S. Modifications can invalidate EMC and safety features designed into this equipment and the manufacturer can not be liable for any legal proceedings or problems that may arise relating to such modifications. No sales agent or other person involved in the supply chain is permitted to authorise variations from the content of this documentation.

1.4 Applicable versions

This manual is intended for use with PT0710M meters running software version 2010-01-18 and later.

2 General views



2.1 Rear view



2.2 Enhanced unit

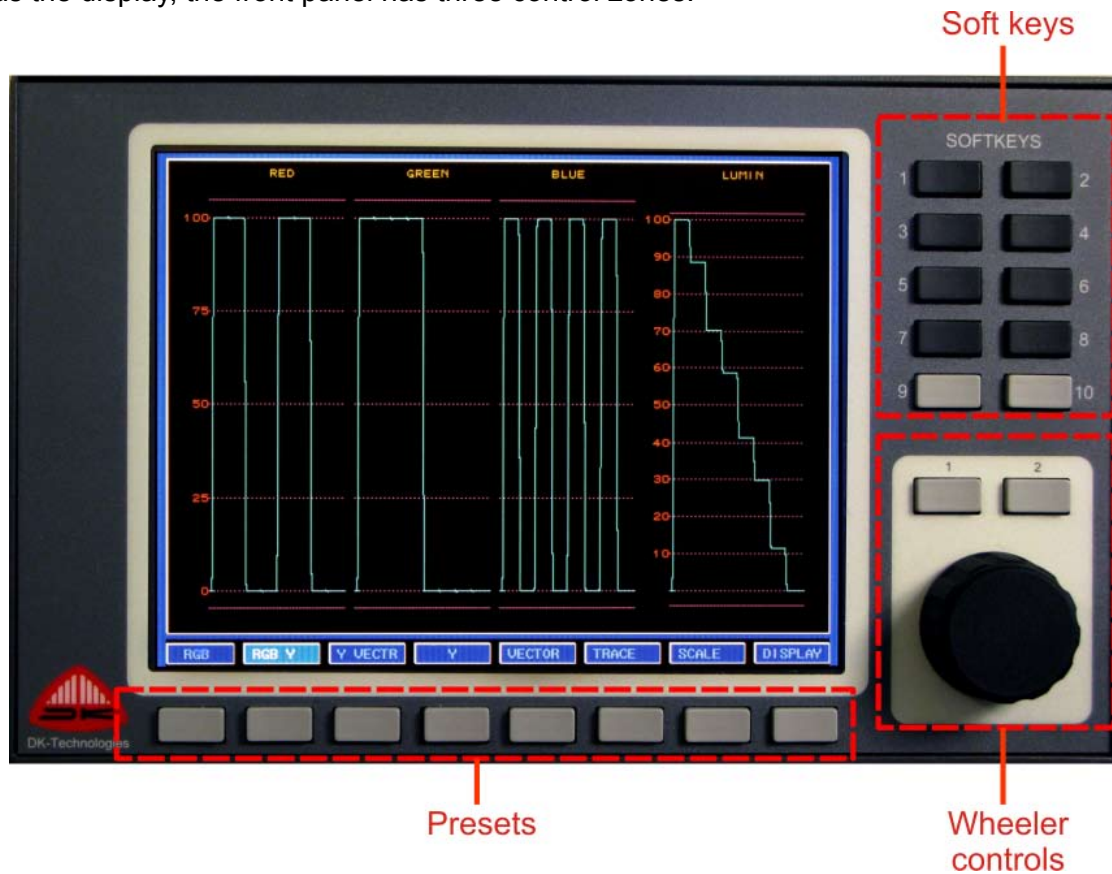
The PT0710M is a modular unit with a variety of optional cards and accessories. Any given unit will be fitted with the items ordered for it and the representations shown in this documentation are designed to show the range of features that can be possible with these products. They are not necessarily an offer for sale, nor undertaking that those exact versions are available to be ordered. The optional software update is normally necessary to allow extra modules to operate. The only one that can be used without this update is the external sync module.



3 Front panel areas



As well as the display, the front panel has three control zones.



3.1 Wheeler controls

The rotary Wheeler is used when scrolling through menu options to make selections. The wheeler area has three switches associated with it.

Button 1 switches the display between video and audio modes, unless the function has been disabled, locking the unit as either an audio or video meter. See section 5.3.

Button 2 enables or hides the MANAGER mode that gives access to the SETUP mode.

Switch 3 is a push switch on the rotary Wheeler and this is used when scrolling through menu options to make selections.

3.2 Presets

The eight preset buttons have one set of functions when the meter is in the audio mode, and a different eight when in video. In the basic meter, these presets are fixed, but they can be re-defined by the user when the software update has been installed.

3.3 Softkeys

The ten Softkeys have varying functions, depending on the mode of the unit. They operate when the Manager and Setup modes (enabled by Wheeler button 2) are active. The function of each soft key in that mode of the meter is shown on screen with an array of labels that echo the button positions.

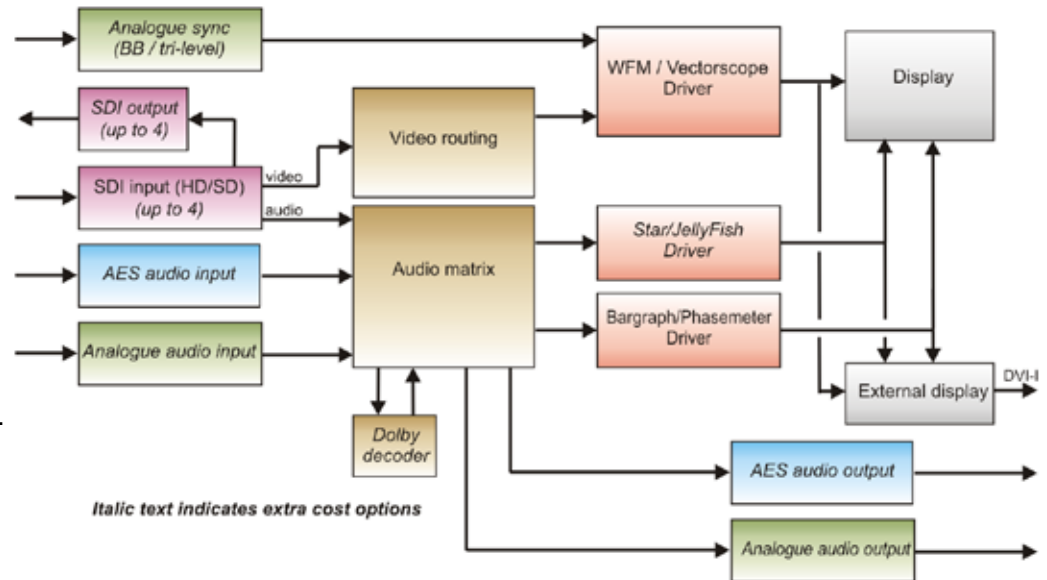
4 Meter architecture



4.1 Block diagram

The meter contains a number of system blocks, several of which are extra cost options. A comprehensively equipped system may contain some of the elements as shown below. The limited number of module slots means that not all options can be installed simultaneously.

This diagram is a simplified one and does not show several of the meter's potential capabilities such as displaying multiple SDI inputs simultaneously but it does serve to give an overview of some of the system. Those elements which are extra cost options are indicated by italic lettering.



4.2 Configurations

The basic version of the PT0710M has no AES or analogue audio inputs and only one SDI input. That SDI input can be either HD or SD and the meter will auto-switch between the two modes. It can display the luminance and the RGB converted versions of the incoming signal. An external analogue synchronisation input, audio and video outputs and extracting audio from Dolby encoded signals are all extra cost options.

Standard PT0710M meters can also display on bargraphs all of the 16 audio signals (mono) that could be embedded into an SDI signal. A stereo audio phase indicator with both a bargraph and a goniometer (audio “phase-scope”) can be augmented to the full StarFish / JellyFish display with an optional software upgrade. The basic software also allows display of RGB signals derived from the incoming colour signals and also provides a vectorscope display. Viewing the waveform of the Cr and Cb colour difference components is possible with the optional software upgrade.

That same software upgrade is also necessary to allow most of the optional hardware modules to function. The number of option modules that can be fitted is limited only by the available slots on the rear of the meter. The power and utility modules are always required, as is at least one module for SDI input(s) which leaves space for up to seven additional modules.

The DVI output port is of the DVI-I type, carrying not only the digital signal, but also an analogue one that, via a suitable adapter cable, can feed a VGA monitor. The DVI port also has the secondary purpose of providing a link for the optional PT0700R remote ‘Client’ panel. Linking one of these to the PT0710M provides an additional control and display unit. Instructions for configuring and using a client panel are provided in the PT0700R manual.

5 Basic information

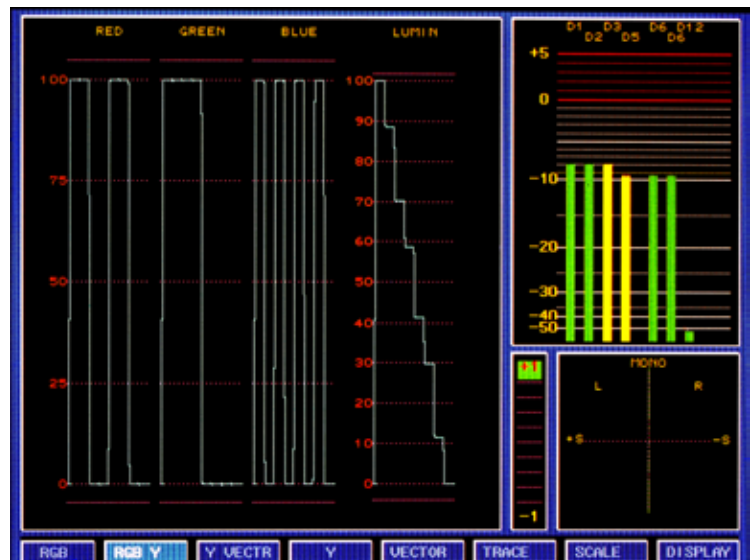


The PT0710M is capable of displaying the input signal in many different ways which are described in detail later in this guide. It can be helpful to have a brief overview of setting up the meter for your primary needs and leaving more advanced configuration till later.

5.1 Initial switch-on

It is recommended that the meter is left in the factory delivery mode initially as it provides a quick way to undo any mistakes you might make when first devising your own configurations. Once you are confident that your settings are the ones you need, they can be saved as the defaults. When the password protection system is turned off, new defaults can be saved.

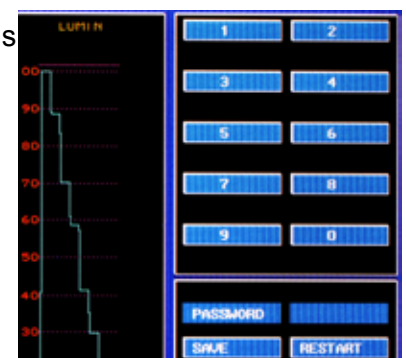
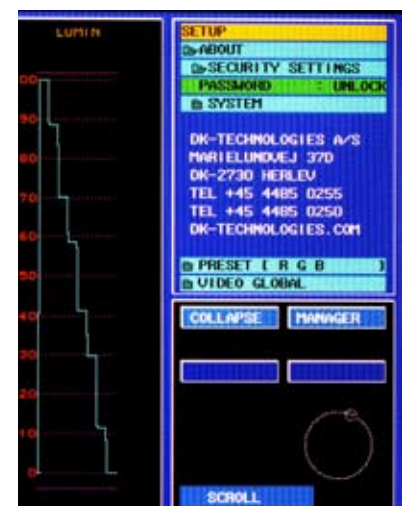
The meter default mode can be video, audio or, as shown here, audio and video combined. When not in the combined mode, the display and the presets are switched between the audio and video mode using Wheeler button 1. When in combined mode, Wheeler button 1 does not change the display, but it changes the presets which are active.



5.2 Saving defaults

If the password protection system has been turned off new defaults are saved whenever changes are made. The password is always re-enabled each time the meter is powered up. The factory set password protection can be disabled as follows:

1. Enable the CONTROL DISPLAY (Wheeler button 2)
2. Enter SETUP (Softkey 10)
3. Use the rotary Wheeler control to highlight ABOUT and press the Wheeler which will open a drop down menu. Scroll down to SECURITY SETTINGS and press the wheeler again which will show that the system status is LOCKED.
4. Scroll to the PASSWORD option and press the Wheeler. This can allow a new password to be defined using the ten Softkeys. If none are pressed, the default password of 0000 remains. This is taken as entered if the Wheeler is pressed for a second time.
5. The system status is now shown as UNLOCK(ed) and making changes to the meter configuration when it remains unlocked allows those changed settings to become the new power-up defaults. Deciding whether to have the meter locked or unlocked allows some changes to be made on a temporary basis and such modifications easily abandoned, and others can become new defaults.





6. The EXIT button is Softkey 10 and this can be used to come out of the setup mode and allows the full screen to carry signal images. When drop down lists occupy a major part of the control display, Softkey 9 can be used to COLLAPSE the list. This is an alternative to pressing the Wheeler.
7. Re-starting the meter will automatically re-lock the meter system. It can also be locked without re-booting if the password entry mode is selected (step 4 above) and the SAVE button (Wheeler button 1) is pressed.
8. It is recommended that you do not change the password until you are confident that you are familiar with setting meter configurations. If you do create a new password, be sure to record it accurately as only by knowing it, or having help from the customer support team at DK-Technologies, can any further changes then be made to the meter.

Once you are happy that the required defaults are known, unlock the meter and enter the preferred settings.

A typical example that might be a useful first step is to set the audio meter scale to the one used in your organisation. The steps to change that are shown below.

1. Enable the CONTROL DISPLAY (Wheeler button 2)
2. Enter SETUP (Softkey 10)
3. Use the rotary Wheeler control to highlight PRESET [STEREO].
4. Press the Wheeler which will open a drop down menu. Scroll down to BARGRAPH OPTION and press the wheeler again which opens a further drop down menu.
5. Scroll to SCALE and press the Wheeler then scroll to the preferred meter scale and press the Wheeler once more. The required scale is then selected.
6. The scale option list can be closed by pressing COLLAPSE (Softkey 9) to close the list, or Softkey 10 can exit the Setup menu, leaving the Control Display visible.

If the system was locked, these settings will be lost upon re-powering the meter but if it was unlocked, they will be the new defaults.

5.3 Video/Audio on power up

The choice of whether the PT0710M displays audio, video or both can only be changed when the password protection is unlocked. That choice then becomes the new power-up default. To change the setting, first turn off password protection if it is on (see section 5.2).

1. In the SETUP mode scroll to the ABOUT folder and press the Wheeler then scroll to SYSTEM and press the Wheeler again.
2. Scroll to SERVER and press the Wheeler and this will open a drop down list allowing the power condition to be set.
3. As soon as the Wheeler is pressed to make the start-up selection, the meter is automatically restarted.
4. If the LOCK option is selected, the meter can no longer be switched between audio and video modes, effectively disabling the audio / video button, Wheeler button 1.

The selection of SERVER above is accompanied with a further drop down list for CLIENT. This is because the PT0710M meter can operate as a server supporting a client panel. Documentation and procedures for using the system in a server/client mode are described in the User Manual for the PTO700R client terminal.



5.4 Software versions

The meter is supplied with the software as ordered, and those upgrades necessary to allow operation of any optional hardware modules that have been bought. From time to time new software versions will be made available. When new features have been added, these upgrades need to be purchased. Before discussing software upgrades with DK-Technologies or with your dealer, or before requesting technical support, make sure you know what version of software is currently in use and also your activation key. These can be checked by opening the SYSTEM MANAGER.

1. Press Wheeler button 2 then Softkey 10. Scroll to the ABOUT item and press the Wheeler.
2. Scroll to the SYSTEM option and press the Wheeler then scroll to the SOFTWARE and press the Wheeler again.
3. The software release information is then displayed.

For software to operate, the meter must have a valid activation key and one is installed as part of the manufacturing process. Before deciding to upgrade your software it is essential you check that the activation key is valid for the new version which it is intended for installation. Installing new software without having a key which is valid for the new software version can render your meter inoperable.

To check the key currently in use, do steps 1 to 3 above then scroll to ACTIVATION KEY and press the Wheeler. The activation key has twelve hexadecimal digits, which means that any round "0" looking characters are zeros, not the letter "O".



5.5 Hardware versions

When calling for technical support or exploring upgrade options, you will be asked for details of the hardware in your meter. To view this on screen, repeat steps 1 to 3 above and scroll to HARDWARE and press the Wheeler. The serial number of the unit and other values embedded into the hardware and/or firmware are displayed.

Information about the hardware modules currently plugged in and enabled is also displayed.

6 Presets



6.1 Default presets

The meter has eight preset buttons beneath the screen and as delivered, a range of frequently used functions are assigned to some or all of those. Eight presets are defined for the audio mode of the meter and another set of eight for the video mode. In the standard version of the PT0710M, the presets cannot be modified, though the preset menu remains the way to access some of the global audio and video preferences.

6.2 Delivery presets

Video

The default functions of presets are displayed across the bottom of the screen, directly above the relevant buttons. When in the video mode the first 5 buttons allow alternative views of the video aspects of the incoming SDI signal.



The other three buttons allow rotation of the Wheeler to make modifications to the displayed image.

- | | |
|---------|--|
| TRACE | adjusts the brightness of the video signal trace to be higher or lower than the value which has been stored under VIDEO GLOBALS as described in section 7.3. This can be varied to allow particular details of the video trace to be seen more easily. |
| SCALE | adjusts the brightness of the graticule lines video signal trace to be more or less than that which was saved as part of the video global option. It does not affect the calibration values that are shown on-screen. |
| DISPLAY | allows the overall screen brightness to be increased or decreased to suit the ambient lighting conditions. The overall brightness of the audio meter displays are also varied by entering this video mode. |

Audio

Seven alternative audio presets are displayed across the bottom of the screen, directly above the relevant buttons. These display alternative audio inputs on appropriate numbers of bargraphs.



The right-most button, labelled METER, opens up a new set of audio related functions for the preset buttons. Once this has been done, it is possible to return to the normal preset functions by using the left-most button, now labelled EXIT.



The extra functions include:

| | |
|-------|---|
| PEAK | which adds an extra indication on top of the audio bargraph that displays the true peak value of the audio signal and holds that for two seconds, or until there is a higher peak value. |
| HOLD | causes the peak indicator to retain the high level indefinitely and not just for two seconds. The held value is cancelled by using the CLEAR button. |
| CLEAR | functions with the HOLD button to cancel held values. |
| +20dB | boosts all audio meter readings by a factor of 10, a gain of 20 dB. This allows low level signals to be measured more precisely. A red "+20" warning shows in the top left of the screen whenever this function is enabled. |

7 Settings for video



Setting gamut warnings and adjusting the screen display is done by entering the MANAGER mode (using Wheeler button 2) and then SETUP (Softkey 10). Any changes you make will become new defaults if the password mode is not locked, but will not be retained upon re-starting, if it is locked.

7.1 Y axis values

The video levels are often displayed as percentages of the peak signal. An alternative meter scale can be used with the mV levels the signal would have in an analogue domain where 100% equals 700 mV. To change between the scale modes:

1. Scroll to the PRESET [R G B] folder and open it by pressing the Wheeler.
2. Scroll to the Y-LABEL folder and again press the Wheeler.
3. Select the required scale marking by scrolling to it and selecting with the Wheeler push switch.

7.2 Gamut warnings

The VIDEO GLOBAL folder is only visible when the system is unlocked. Opening this folder allows gamut warnings and the display settings to be adjusted. To set the gamut warning thresholds scroll to the VIDEO GLOBAL folder and select it by pressing the Wheeler. Scroll to GAMUT and again press the Wheeler to open the folder. The values of the parameters are changed by highlighting the line, pressing the Wheeler, then rotating it to change the value. Once the required value is shown, the value is entered by once more pressing the Wheeler.

ERROR COUNT is the number of successive samples that are outside the thresholds before triggering the gamut warning message is shown.

MAX Y is the highest level of luminance signal that can be applied before the gamut alarm is displayed. The values are shown in either mV or as percentages depending on the Y axis labels selected.

MIN Y is the low level luminance threshold that can activate the gamut warning.

The maximum and minimum thresholds for the RGB and colour difference values are adjusted similarly.

7.3 Measuring video signals

Parameters such as numbers of lines, frame rates, timing shifts and CRC errors can be measured numerically.

1. Selecting the video mode (Wheeler button 1)
2. Enabling the MANAGER (Wheeler button 2)
3. Choose the MEASURE mode (Softkey 8).

7.4 Timing

Enter the measure mode as described in 7.3 and open the TIMING folder by scrolling to it and pressing the Wheeler. The shift between the analogue sync input and the SDI input signal (or signals if the meter has more than one SDI input), is shown in nano seconds. For each input signal, there is a folder which if opened shows the time shift as the number of lines that represents.

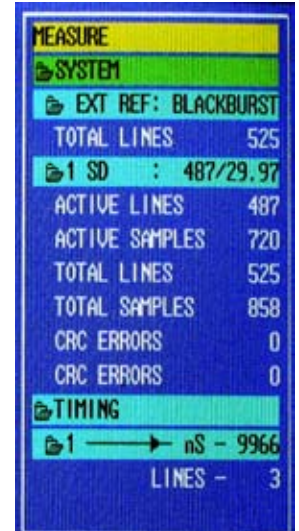




7.5 System video parameters

When in the MEASURE mode which is entered as shown in 7.3, the SYSTEM folder can be opened by scrolling to it and pressing the Wheeler.

- EXT REF is a folder giving information about the analogue sync reference that is connected.
- 1 is a folder containing details of SDI input number 1. When there are additional inputs, a folder 2, 3, 4 etc., will also be shown.
- The folder title line also shows if the signal is an SD or HD one, the number of active lines and the frame rate. To view further details of the incoming SDI signal open the folder by scrolling to it and pressing the Wheeler.



7.6 Display intensity

The primary setting of the display brightness for audio and video modes is adjusted to suit ambient light conditions as described in 6.2. The INTENSITY folder allows the brightness of the video trace and the graticule lines to be adjusted separately within the overall image limits. The brightness values range from -700 and +60. To adjust them:

1. Scroll to, and open the INTENSITY folder by clicking on it with the Wheeler.
2. To adjust brightness of the video trace, scroll to the TRACE line and click on it with the Wheeler.
3. Rotate the Wheeler to adjust the brightness to the required value which changes in near real time. Values between -60 and +60 will normally be found most useful.
4. Press the Wheeler again to save the value and allow scrolling to other menus or reverting to MANAGER mode.

The brightness of the graticule lines can be adjusted in a similar way by opening the SCALE folder instead of TRACE. Settings between -60 and 60 will normally give the most useful results.

8 Settings for audio



Making changes to the system with the password mode unlocked will create new power-up defaults. Having the system locked limits the changes that can be made and they are only temporary and are lost on re-powering the unit. Section 5.2 provides the steps for making a change to the bargraph meter scale.

Routing through the audio matrix within the PT0710M is managed via the fixed presets. These can be modified only when the meter has the optional software upgrade. When this has been purchased and installed, a number of additional options are provided.

8.1 Redefining a preset

When the optional software upgrade has been purchased, the following steps allow a preset to be modified.

1. Put the meter into the audio or video mode user Wheeler button 1.
2. If the meter is not already unlocked, the security mode must be changed as described in section 5.2.
3. Scroll down using the Wheeler to the VIDEO or AUDIO section of the menu, depending which set of presets is to be updated. The already selected preset will be shown with the name currently assigned to it. If a different preset is to be re-defined, press the required preset button. Press the Wheeler to open the folder for that preset.
4. The folder contains a number of sub-folders, the exact content depending on the software version and whether the meter is in audio or video mode.
5. Use the Wheeler to select the required folder and pressing it again will show all the available options beneath it. In some cases these may be additional folders and in others there will be selectable options with tick boxes which contain a solid white block when active. To change a selection, scroll to the required option and press the Wheeler.
6. Some items that have many alternative selections, for example audio matrix assignments, show the current assignment by way of a function and a right-pointing arrow indicating the destination. These are changed by scrolling to the required line then pressing the Wheeler. A blinking cursor beneath any part of the highlighted line means that parameter can be changed by rotating the Wheeler. Once the required parameter has been changed, press the Wheeler again to activate the change.

9 External display



9.1 Server / client

To distinguish between the image displayed on the front screen of the PT0710M and the one which can be sent through the DVI-I port to an external monitor, the PT0710M screen is referred to as the SERVER and the remote screen as the CLIENT. The CLIENT screen can be any suitable external monitor that is available, or it can be the PT0700R, made by DK Technologies. This resembles the front of the PT0710M and as well as providing a second display screen, it has controls to allow a wide range of remote control functions. The facilities and operation of the PT0700R are described in the separate user manual.

9.2 Connecting external displays

The monitor output port on the PT0710M is of the DVI-I type. This means that it carries the digital signal for a DVI monitor and this same digital signal can also connect to an HDMI display using a suitable adapter cable. Use only standard cables designed for the purpose, and observe the cable length limitations. Suitable DVI extender units may be used and refer to the data and instructions provided by their makers to ensure the suitability for the purpose.

9.3 Selecting displays

Managing the image on the external display is similar to that for the local one. To make changes, the meter must be unlocked by going to the SECURITY SETTINGS folder and entering the password.

- 1 Scroll to the SYSTEM folder and open it by pushing the Wheeler and the scroll to the CLIENT folder.
- 2 To make the external display screen (client) show the same audio or video signals as the server screen, select the CLIENT DISABLE option. The image for both screens is then managed by going to the SERVER folder and making the required choices. Selections are made by scrolling to the required option and pressing the Wheeler.
- 3 UNLOCK and LOCK are for use in conjunction with a PT0700R and allow the buttons AUDIO / VIDEO button (Wheeler button 1) on the client to be enabled and disabled.
- 4 The choice of AUDIO or VIDEO can be made but only affects the client display when the client is enabled.



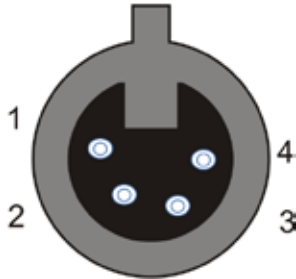
10 Connections and modules



10.1 Standard PT0710M

The non-enhanced version of the PT0710M has the following connections.

XLR4 - DC power input



This normally comes from the supplied mains power adapter which has a standard IEC 6032 C14 style AC inlet.

If the DC connection to the meter needs to be re-wired or the meter powered in some other way the connections are as follows:

Pin 1 0 volts

Pin 4 +12 to +36 volts DC

This view shows the wiring side of the cable mounted female connector.

USB connector

The USB port is the primary I/O connection for management of the PT0710M. It is of the USB-B style, typically found on equipment such as printers and does not provide or receive power. It is intended to be connected to a Windows PC and the use of DK applications and methods for software updates are described in section 12.

9 pin D connector

This is for factory use and has no user function on current versions of the meter.

RJ45 Ethernet port

Network connectivity is included but not implemented on current versions of the unit.

DVI-I connector

A secondary picture display can be connected. A digitally fed DVI monitor can be connected directly but the output from the PT0710M is a DVI-I type. This means the connector also carries a VGA signal so that a suitable adapter cable can allow an analogue VGA monitor to be used instead of a digital one.



10.2 Optional I/O modules

The following option modules can be added to the PT0710M:

| | |
|----------------|--|
| PT0760M-ANAREF | External Analogue Black Burst/Tri Level reference with loop through. |
| PT0760M-SDI-2I | 2 channel HD/SD input |
| PT0760M-SDI-4I | 4 channel HD/SD input |
| PT0760M-SDI-1O | 1 channel HD/SD video output |
| PT0760M-I/P-8A | 8 channel analogue audio input |
| PT0760M-I/P-8D | 4 channel digital audio input |
| PT0760M-O/P-8A | 8 channel analogue audio output |
| PT0760M-O/P-8D | 4 channel digital audio output |
| PT0760M-DOLBYE | Dolby E/D (AC3) decoder |



Analogue sync input

The range of optional modules includes an analogue external sync input to receive a tri-level or black burst sync signal. This is via a BNC connection and is a bridging input, designed to have a 75 ohm load applied to the passive loop through output. This is the only option module that can be used without the software upgrade being installed.

Additional HD/SD SDI input

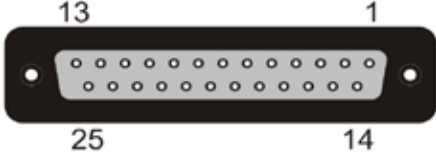
When the PT0710M is fitted with multiple video inputs and the necessary software, it takes on many of the characteristics of the PT0760M. For further information on using multiple video inputs, refer to the PT0760M user manual. All SDI inputs auto-switch between SD and HD modes and provide 75 ohm terminating loads.

Video output

When fitted, the video output is a buffered repeat of the incoming HD/SD SDI signal. When there is more than SDI input and output, the outputs each carry the equivalent input signal. SDI output 1 carries SDI input 1 and SDI output 2 carries SDI input 2 and similarly for all the others fitted.

8 channel analogue audio input

This provides 8 balanced inputs for line level analogue audio signals with each having an input impedance greater than 10K ohms. Connection is through a 25 pin D connector, requiring a male cable connector. The wiring connections are as shown below:

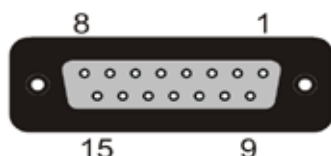
| Signal | | Pin | | Signal | | Pin |
|--------|--------|-----|--|--------|--------|-----|
| Chan 1 | Hot | 14 |  | Chan 5 | Hot | 17 |
| Chan 1 | Cold | 2 | | Chan 5 | Cold | 5 |
| Chan 1 | Ground | 1 | | Chan 5 | Ground | 4 |
| Chan 2 | Hot | 3 | | Chan 6 | Hot | 6 |
| Chan 2 | Cold | 16 | | Chan 6 | Cold | 19 |
| Chan 2 | Ground | 15 | | Chan 6 | Ground | 18 |
| Chan 3 | Hot | 20 | | Chan 7 | Hot | 23 |
| Chan 3 | Cold | 8 | | Chan 7 | Cold | 11 |
| Chan 3 | Ground | 7 | | Chan 7 | Ground | 10 |
| Chan 4 | Hot | 9 | | Chan 8 | Hot | 12 |
| Chan 4 | Cold | 22 | | Chan 8 | Cold | 25 |
| Chan 4 | Ground | 21 | | Chan 8 | Ground | 24 |



4 channel digital audio input

The four AES inputs allow up to 8 mono legs of audio to be connected. Connections are on balanced 110 ohm circuits going via a 15 pin D connector, requiring a male cable connector. Alternatively, the inputs can be through unbalanced 75 ohm circuits on BNC connections are provided. Do not attempt to use both connections simultaneously. The D connector wiring connections are as shown below:

| Signal | | Pin |
|---------|--------|-----|
| Chan 1 | Hot | 2 |
| Chan 1 | Cold | 9 |
| Chan 1 | Ground | 1 |
| Chan 2 | Hot | 11 |
| Chan 2 | Cold | 3 |
| Chan 2 | Ground | 10 |
| Chassis | Ground | 4 |

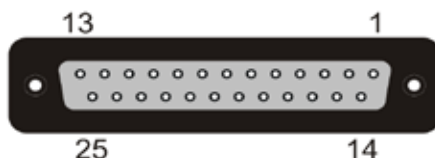


| Signal | | Pin |
|---------|--------|-----|
| Chan 3 | Hot | 15 |
| Chan 3 | Cold | 8 |
| Chan 3 | Ground | 7 |
| Chan 4 | Hot | 14 |
| Chan 4 | Cold | 6 |
| Chan 4 | Ground | 13 |
| Chassis | Ground | 12 |

8 channel analogue audio output

This provides 8 balanced line level analogue outputs with each coming from a low impedance below 50 ohms. Connection is through a 25 pin D connector, requiring a male cable connector. The wiring connections are as shown below:

| Signal | | Pin |
|--------|--------|-----|
| Chan 1 | Hot | 14 |
| Chan 1 | Cold | 2 |
| Chan 1 | Ground | 1 |
| Chan 2 | Hot | 3 |
| Chan 2 | Cold | 16 |
| Chan 2 | Ground | 15 |
| Chan 3 | Hot | 20 |
| Chan 3 | Cold | 8 |
| Chan 3 | Ground | 7 |
| Chan 4 | Hot | 9 |
| Chan 4 | Cold | 22 |
| Chan 4 | Ground | 21 |

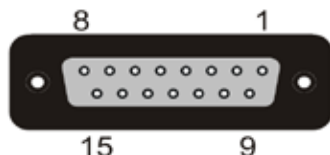


| Signal | | Pin |
|--------|--------|-----|
| Chan 5 | Hot | 17 |
| Chan 5 | Cold | 5 |
| Chan 5 | Ground | 4 |
| Chan 6 | Hot | 6 |
| Chan 6 | Cold | 19 |
| Chan 6 | Ground | 18 |
| Chan 7 | Hot | 23 |
| Chan 7 | Cold | 11 |
| Chan 7 | Ground | 10 |
| Chan 8 | Hot | 12 |
| Chan 8 | Cold | 25 |
| Chan 8 | Ground | 24 |

4 channel digital audio output

Up to 8 mono legs of audio can be carried by the four AES outputs. Connections are duplicated with unbalanced 75 ohm connections through BNC connectors and 110 ohm circuits going via a 15 pin D connector, requiring a male cable connector. The D connector wiring connections are as shown below:

| Signal | | Pin |
|---------|--------|-----|
| Chan 1 | Hot | 2 |
| Chan 1 | Cold | 9 |
| Chan 1 | Ground | 1 |
| Chan 2 | Hot | 11 |
| Chan 2 | Cold | 3 |
| Chan 2 | Ground | 10 |
| Chassis | Ground | 4 |



| Signal | | Pin |
|---------|--------|-----|
| Chan 3 | Hot | 15 |
| Chan 3 | Cold | 8 |
| Chan 3 | Ground | 7 |
| Chan 4 | Hot | 14 |
| Chan 4 | Cold | 6 |
| Chan 4 | Ground | 13 |
| Chassis | Ground | 12 |

Dolby E/D (AC3) decoder

The Dolby decoder has no external connections and is assigned into signal paths via the audio matrix. See section 8.1 for the routing options that can be created.

11 System health



The development of abnormal operating conditions can be checked using the HEALTH MONITOR. This is accessed by having the meter unlocked and opening the SYSTEM folder and scrolling to HEALTH MONITOR.

Four separate temperature indications are used to show the internal conditions. These are as shown below, together with typical values for a healthy system.

| | |
|----------------------|-----|
| TEMPERATURE FPGA | 61C |
| TEMPERATURE SPLY | 56C |
| TEMPERATURE FAN | 22% |
| TEMPERATURE CALIBRAT | |

Modest variation from these values is normal, but care must be taken to ensure the unit has adequate ventilation and that the air vent on the rear of the power module is not obstructed.

12 DK utility program

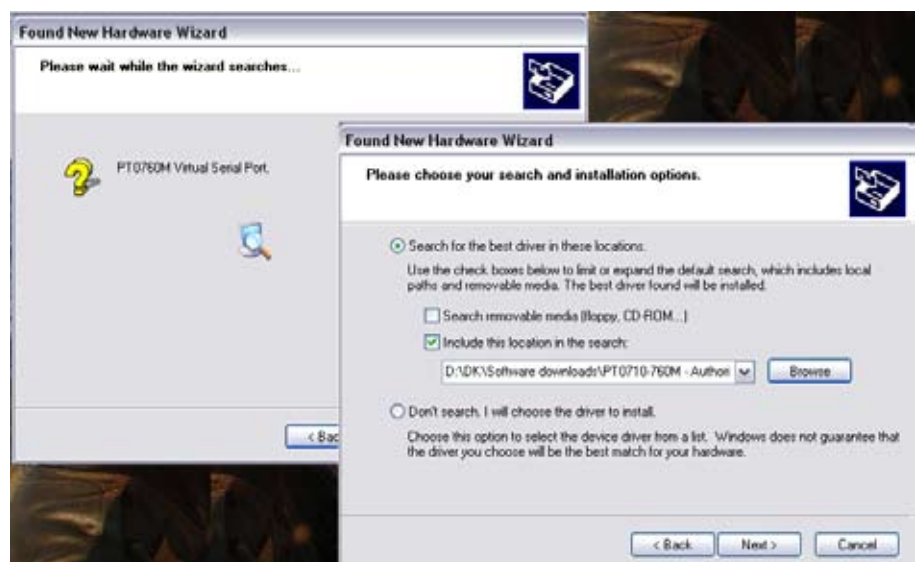
12.1 USB connection to PC

Before any DK utilities can be used or software updated, a DK meter driver must be installed on your Windows PC. DK programs are designed to run only on PCs operating on Windows XP or Windows Vista.

- 1 Connect the PT0710M meter to the a PC USB port and ensure the meter and PC are switched on. The PC will detect new hardware and attempt to begin a software installation process.
- 2 Do not have the PC attempt its automatic software location option but click the option that you have a disk and then browse to the location of the file PT0760M_XP.INF for Windows XP systems, or PT0760M_VISTA.INF for Windows Vista systems. This may be CD/DVD drive if you are installing from a disc that was supplied, or to some location you have saved these files if you downloaded them from the DK Technologies web site (www.dk-technologies.com).
- 3 The security system of the Windows install process may query if you are sure you wish to install this software or to stop. Continue with the installation and when it is completed the PC will be able to communicate with the meter.

12.2 DK_Update

There are on-line procedures for updating software via the DK web server and this will ensure you always get the most recent version of software for your meter. To use this method, the PC must have bi-directional access to the DK web server without fire walls interfering. This may require permissions creation and appropriate settings to be devised for network systems within your company.





Alternatively, if you have been supplied with the new DK software on disc or have downloaded it through another computer the off line method can be used.

- 1 Run the DK program DK_UPDATE. If you are unsure that your copy of the update program is itself up to date, and the PC is connected to the internet, clicking on CHECK FOR UPDATES will confirm the status of your utility.
- 2 If the USB driver for the DK meter has just been installed it may be necessary to click the REFRESH PORTS button. If you are unsure which COM port has been assigned for the connection to the DK meter, click FIND INSTRUMENT.
- 3 Once the port is confirmed, click CONNECT and information about the meter will be displayed. As some of the meter systems are shared in common, it is normal for the meter to be identified as a PT0760M.
- 4 Clicking on the “+” symbols allows additional detail to be learned about various facets of the meter including software activation license key codes, meter scales, hardware and firmware revisions etc. If planning to request new software or contact DK Technical Support, it can be helpful to use the Windows “Print Screen” function to get a copy of information you may need.
- 5 To install a new file into the meter, click on NEXT and on the following screen select the file to be installed.
- 6 If you do not already have a backup copy of the currently installed software, you may wish to make one by ticking the BACKUP OLD SOFTWARE option box.
- 7 When you click on NEXT the software installation begins, once any backup that was requested has been completed.



13 Product support

If any aspect of your product gives cause for concern or you wish to enquire about options and upgrades, the normal point of contact is the dealer who supplied the unit. In case of difficulty locating them, DK-Technologies will be pleased to assist as fully as possible. No unit should ever be returned to DK Technologies without prior agreement that this is the right procedure and a Return Authorisation Number must be obtained from DK and shown on the package and accompanying paperwork.



DK-Technologies A/S
Marielundvej 37D
DK-2730 Herlev
Denmark
t +45 44 85 02 55
f +45 44 85 02 50
e info@dk-technologies.com
w www.dk-technologies.com