Operating manual DigiDens T6R

The **DigiDens T6R** is a robust and precise black and white densitometer for reproduction and printing houses. Due to its latest sensor and microprocessor technology it is small and handy in size, exceptional in precision and very easy to use. Density and percentage can be measured on transparent films as well as on reflection media like paper and printing plates (new versions only).
You will find more technical data at the end of this manual.

The DigiDens T6R possesses the following important elements:

- **3 Pushbuttons M, C, P,**
- **16-digit LCD-display,**
- **Lightsensor,**
- **Battery case for 3 mignon cells**

Each pushbutton is used for 2 functions. The second function is initiated by pressing the button for a longer period of time (>4 seconds).
Pressing the red pushbutton **P** (power) switches between Reflection (**'R'**) and Transmission (**'T'**). The second function of the red pushbutton P switches the device on or off.

The center button **C** (calibrate) calibrates the device. Second function is the menue mode to modify some parameters.

Pressing button **M** (measure) initiates the measureing process. Second function is the switch to continuous mode (measuring continuously).

The measured value and the parameter modification is displayed on the 16-digit LCD-display.

The precise state of the art light sensor measures densities up to over density 6 in the transmission mode. The strong and constant reflection light source allows measurements up to more than density 2 in reflection mode.
The accuracy of the measurements is excellent.

The device switches off automatically, if no button is pressed within 10 minutes. This feature helps minimizing battery consumption. The power source are 3 mignon cells (batteries or accumulators).

The functions in details:
Button P:
The DigiDens T6R is switched on with this button. If you switch on the device, you first will see the indication **'Wait'** to hold the button. If you release the button before the display switches to **'DigiDens Cal'**, the device switches off (to prevent the device from being switched on accidently). Right to the **'Wait'** you find the version number of the software (e.g. V3.2). Now the device is ready and it should be calibrated for the mode you want to use it (**'R'** or **'T'**).
Keeping the button pressed, leeds to **'Down'**. Now you can release the button and the device is switched off.
Pressing the button **P** for less than 3 seconds toggles between reflection mode (**'R'**) and transmission mode (**'T'**). In reflection mode the integrated light source is switched on during the measuring period.

Button C:
With this center button **C** the calibration is done. The second function is the menue function to modify some parmeters...

Calibration for the transmission mode 'T':
Mark a bright area of your light table with a circle as a measuring area. Inside this circle you do your calibration. Make sure, that **'DigiDens**' is in transmission mode **'T'**. Position the measuring spot of **'DigiDens'** onto clear film on the measuring area. Press button **C** for less than 3 seconds to calibrate. Now the calibration is done.

Calibration for the reflection mode 'R':
In this mode two measurements are recommended. One value for the white and one for the black (to value the reflection of the black). First make sure, that your **'DigiDens'** is in reflection mode and shows a **'R'** in the display. Position the measuring spot of **'DigiDens'** on the brightest white of your reflection media. Press button **C** to indicate the white. The display shows density 0 and percentage 0. Now position the measuring spot on the darkest (black) area and press button **C** again. This density is valuated as black. The display shows the density >0 and percentage 100. Now the calibration is finished. If white is interpreted as black (wrong handling, few cases), toggle the P button to reset the calibration. A new calibration of white invalidates the old black calibration too. If no black is calibrated, density 1.8 is asumed to be 100%. For calibration on printing plates see parameter **Paper** below.

Menue modes:
If you hold the button **C** for longer than 4 seconds, the menue mode is initiated. This mode enables the user to modify some parameters.
The first step is
DotGain (Soft Dot):
You see '**DotGain'** followed by **'T'** or **'R'** on the display (depending in which mode you currently are) and the percentage of Dotgain for the middle tones (around 50%). Factory setting is 0.0%.
With button **M** you can increase this value in steps of 0.5%. With button **P** you can decrease this value in steps of 0.5%.

Pressing button **C** switches to the next parameter (step2) **Paper in reflection mode R**:
This parameter is only relevant for the reflection mode. The percentage values are calculated with the YULE-NIELSEN formula (an improved and generalized variant of the Murray-Davies formula). This formula allows the variation of paper parameters (from bright white paper with excellent black density to grey paper with poor black). The parameter varies from 1 to 40. Factory setting is the medium value 20. Choosing the right parameter needs some experiments in the beginning.
From version 2.9 on it is possible to measure the percentage of a variety of printing plates. Therefore the parameter **Paper** (better 'Media' now) has been extended. Treat printing plates like paper media. The Paper value is related to the contrast on a printing plate. The contrast (the density between the white calibration and the black calibration) on printing plates varies between 0.8 and 1.6. If it is 0.8, Paper value 9 might be a good choise, in case of contrast 1.6, Paper value 13 might be used. To find the right Paper values needs some experimenting, especially if your contrast is negative (negative printing plates). But once the right Paper value is found, the measuring is very stable.

Sens in transmission mode T (Version 3.0):
The Sens Parameter varies the sensitivity. The value is adjustable between 1 and 40. The factory setting is individual to the sensor (see battery cover inside). You also may use this feature to adjust to different light tables. There is the relation: Increasing sensitivity results in falling accuracy. Increase this value only if you need to read high densities. The brighter your light source, the wider the density range (the better).

Pressing button **C** again leads to the next parameter (step3) **Slope adjustment:**
The slope adjustment feature enables the user to adjust the density of **'DigiDens'** to another densitometer. Despite the precision of **'DigiDens'** , there might be a need to vary the density values slightly for compatibility purposes. The slope value can be varied between 1 and 200. The factory setting is 100, which means original slope.
With button **M** you can increase the slope, each step increases the density about 0.33% (e.g. density 3.00 is increased to 3.01 by one step).
With button **P** you can decrease the slope in the same way.

Pressing button **C** again leads to the next parameter (step4) **Display:**
This parameter varies the display of the measured values.
The values 1 to 7 represent

1. show density and percentage, density first
2. show percentage and density, percentage first
3. show percentage only
4. show density only
5. like 1, percentage for negative measurement
6. like 2, percentage for negative measurement
7. like 3, percentage for negative measurement

Factory setting is value 1. With button **M** you can increment this value, button **P** decrements this value.

Pressing the button **C** for a longer period of time (>4 seconds) leaves the menue mode and saves the current parameters (you see **'Save'** on the display). If you want to leave the menue mode without saving the parameters, switch off the device by pressing button **P** for a longer period of time.

Button M:
This button is the measuring button. In the measuring mode (not menue mode, where button **M** is the increment button) button **M** initiates the measuring process. It might take 1 to maximum 8 seconds until the values appear on the display. During this time a **'w'** for wait overloads the mode letter **'R'** or **'T'** to indicate, that the measuring process is in progress. Coming close to the sensitivity limit of the DigiDens T6R displays a **>** to indicate, that the density may be higher than displayed.
The longer times between 2 and 8 seconds only will appear in very dark areas (e.g densities over 4) and only in transmission mode. Pressing the button **M** for a longer period of time will switch to continuous mode (only in transmission mode). In this mode the **'DigiDens'** measures continuously without the need to press button **M** for every measurement. To leave the continuous mode, press any button within this mode.

The 16 digits of the LCD-display allow a guided and simple operation of '**DigiDens T6R'**
The density is leaded by the letter **'D'**, the percentage is trailed by the symbol **'%'**.
The rightmost letter is the mode letter **'R'** for reflection and **'T'** for transmission.
The continuous mode is indicated by a small **'c'** left to the mode symbol. If the batteries go low, an indication **'e'** for empty will be seen.
If you want the default parameters (factory settings) reactivated, than with button **P** you have to press button **M** simultanuously when switching on the device until **'DigiDens Cal'** shows an additional **'r'** for reset. This lasts about 8 seconds.

Technical data:

- density max transmission identical to > 120 dB	> 6 D
- deviation density trans.	+- 0,01 D
- deviation percentage trans.	+- 0,5 %
- density reflection	> 2 D
- deviation density reflection	+- 0,02 D
- deviation percentage refl.	+- 0,5 %
- about 200 000 measurements transmission 100 000 measurements reflection with 1 set of batteries (or accus)	
- Input voltage	2.8 - 5.0 volts
- 3 x 1,5 Volt Mignon batteries or	
- 3 x 1,2 Volt Mignon accus	
- measuring spot diameter	2,5 mm

To change batteries, open the battery case by unscrewing the battery cover. Please place the batteries carefully in the right direction (as shown by the battery symbols) into the battery case.

To let the device always supply reliable values, keep the area around the measuring spot clean.
To avoid unwanted infrared influence (in density ranges higher than 5 is some despite the IR-blocking filter), follow this advice:
Don't expose your DigiDens T6R to heat and in particular: **don't leave the DigiDens T6R and the films you want to measure on the light table while not using.**
Measuring on a light table means relying on the light source of this table. Check from time to time if the light source is still stable.
The power source (batteries or accumulators) should be checked from time to time.
Beside cleaning frequently, no further maintenance is necessary.

This product is subject to change without notice
ColorPartner GmbH
Holzkoppelweg 5
24118 Kiel
Germany