

TECHKON



SPECTRO **D**RIVE

Manual

Scan-Measurement-System

SpectroDrive

Software

ExPresso 3

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You can reach us at the following address:

TECHKON GmbH

Wiesbadener Str. 27 • D-61462 Königstein/Germany

Telephone: +49 (0)6174 92 44 50 • Telefax: +49 (0)6174 92 44 99

E-mail: info@techkon.com • <http://www.techkon.com>

Welcome

We welcome you among the worldwide community of users of TECHKON products. We are happy that you have selected this high-quality measurement system. It will be a valuable tool for your day-to-day quality control tasks. With this manual we invite you to learn how to use SpectroDrive and the software ExPresso 3.

The manual is divided into three chapters:

Chapter 1: General description of the measurement system

Chapter 2: Installation of TECHKON SpectroDrive and ExPresso 3

Chapter 3: How to use SpectroDrive and the software ExPresso 3

You will be fascinated how easy the system is to use. You will know how to work with SpectroDrive after only a few minutes.

Please get the device registered by using the detachable registration card, which is the last page of this manual. That way we can keep you updated about product news.

Please visit us as well on the internet at <http://www.techkon.com>.

You will find useful information about the complete product range and new software versions.

Do you have any suggestions for improvements or do you require information that goes beyond the contents of this manual? We will be glad to hear from you. Your suggestions or questions make an important contribution to the continuous optimization of our documentation and products.

Your TECHKON Team

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Chapter I

General description of the measurement system

I.1 Product description

TECHKON SpectroDrive, with its automatic color and density measurement capabilities, is the perfect solution to substantially increase press productivity by ensuring consistent print-to-print color accuracy throughout the press run.

The system consists of the following components: The motorized measurement system scans the complete color bar on a printed sheet within seconds and simultaneously sends the spectral measurement data wirelessly to the PC where all relevant information for controlling the printing press is displayed.

The measurement device only has one button to start the measurement process. The PC-software ExPresso 3 has a self-explanatory user interface which can be operated via touch-screen. Installation is simple as well. After a few minutes the system is operable and ready to take measurements.

SpectroDrive can be used as a scanning device as well as a hand held instrument for single measurements. Just take the device from the horizontal track and position it wherever you want to take a color measurement.

The TECHKON ExPresso 3 software offers a comprehensive tool-set comprising measurement of spot colors, support of up to 16 print units, face and reverse printing, display of color density, dot gain, gray balance, CIE $L^*a^*b^*$ -values and recommendations on how to adjust the ink on the press. This is only an excerpt of the complete functionality.

Thanks to its modularity, ExPresso 3 is expandable and versatile. The measurement data can be exported into other software applications that connect real-time to printing presses to enable a 'close loop' turn-key solution. In addition, TECHKON ExPresso can export measured data to standard applications such as Microsoft Excel.

All advantages at a glance:

Easy to handle

- fast, motorized scanning by pressing the green measurement button on the touch-screen or on the device itself
- automatic white calibration
- TECHKON ExPresso PC-software can be operated with or without the touch-screen
- the device can easily be used as hand held device for spot measurements as well

Easy to install

- installation is made within five minutes without any major assembly effort
- complete system is maintenance free
- measurement system can be flipped 180°, if the color bar is on the opposite side of the printed sheet
- wireless, fast data transmission; no cable required
- the mounting table can be inclined up to 45°
- no vacuum air suction is necessary to hold down the printed sheet



Modular and compact

- works with any sheet or press format
- horizontal track can be shipped in any length up to 2100 mm
- space-saving measurement device fits on any table
- delivery contains all components supplied in a practical carrying case

Complete measurement information

- any color bar can be measured (patch size has to match aperture size)
- color bar can be at any location on the printed sheet
- no limitation in paper thickness
- automatic polarizing filter function for densitometric and colorimetric measurements

Accurate

- precise spectral engine with automatically insertable polarizing filter
- patented measurement head for easy positioning conforming to ISO and DIN standards
- UV cut filter option available
- robust design for reliable function in a harsh industrial environment

Fast

- high resolution spectral measurement of a complete color bar within seconds (e.g. 500 mm in only 4 seconds!)
- online-wireless data transmission during scan
- information overview displays relevant parameters for quality control



Using SpectroDrive as a hand held unit is simple. Just position the compact measurement head above the sample and press the green measurement button. The measurement value is transmitted instantly to the PC.



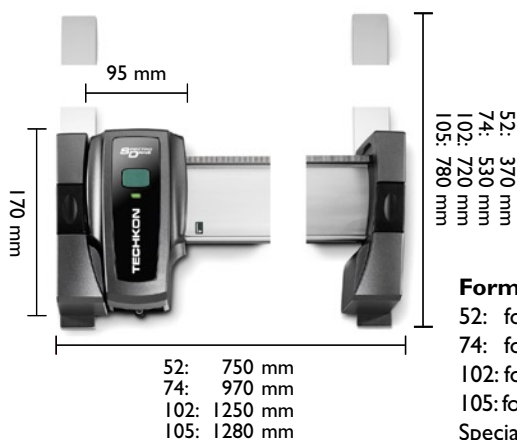
TECHKON SpectroDrive is delivered as a complete turn-key system. Within a few minutes the system is up and running.

One unique feature of SpectroDrive is its flexibility to be used with any press type or format.



SpectroDrive is the ideal extension to TECHKON's renown hand held instruments: **SpectroPlate** is the perfect tool for accurately reading printing plates and **SpectroDens** is the mobile, multi-purpose spectro-densitometer, which can be used at any location.

Dimensions



Formats:

52: for printed sheet 00 (B3+, 370 x 520 mm)
74: for printed sheet 0B (B2+, 520 x 740 mm)
102: for printed sheet 3B (B1+, 720 x 1020 mm)
105: for printed sheet 3B+ (B1+, 780 x 1050 mm)
Special formats (up to 2100 mm system length / 1800 mm scan length) on request

Two different performance packages

The scan-measurement device SpectroDrive and the MS-Windows software ExPresso form a complete quality control system for increasing productivity and quality of a printing press.

There are two different versions available:

SpectroDrive + ExPresso Basic

consists of the spectral measuring device SpectroDrive and the MS-Windows software ExPresso Basic with the following functions:

- ink zone specific density display
- color density for CMYK and spot colors (spectral density)
- densitometric gray balance
- dot area, dot gain and printing contrast
- slur/doubling value
- target values, references, tolerances, OK sheet
- face- and reverse printing
- works with any color bar length
- display of single measurements when used as a hand held device
- supports up to 6 printing units
- measurement data export (e.g. JDF-format)

SpectroDrive + ExPresso Pro

contains the same functions as the “Basic” package and additionally:

- Gray balance display (densitometric)
- ink zone specific colorimetric ΔE display, Lab, LCh, ΔLab , ΔLCh
- “InkCheck” recommendation for ink key setting
- display and evaluation according to ISO 12647, Gracol G7™
- statistical analysis and report generator
- supports up to 16 printing units

I.2 Packing list

Contents of delivery:

- Measurement device SpectroDrive
- Left holder incorporating charging console and white standard, horizontal track, right holder
- Two vertical bars
- AC adapter with universal plugs
- Module for wireless data transmission, USB cable,
- Carrying case, manual with ISO 9000 certificate, screwdriver, 4 screws



The carrying case protects SpectroDrive and parts

- optional: CD with software ExPresso 3, USB-dongle (CD is at the back of the manual).
System requirements: MS-Windows XP, Vista
Recommended touch-screen: Elotouch I727L 17"

Optional accessories:

- Print control strip TECHKON TCS, available as EPS- and pdf-files on CD
- Software-upgrades from ExPresso Basic to ExPresso Pro
- Replacement parts: Left holder with charging console and white standard, rechargeable battery, measurement lamp. All parts are easy to exchange.

Chapter 2

Installation of SpectroDrive and ExPresso 3

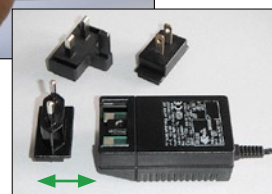
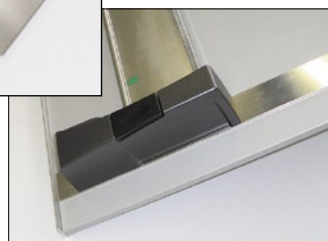
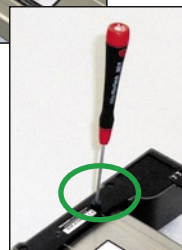
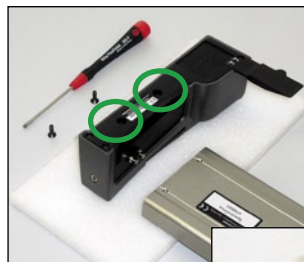
2.1 Assembly of SpectroDrive

- Connect the horizontal track with the left and right holder as shown on the images. Before placing the holders upside down, put a soft material underneath to avoid scratches. Before tightening the first screw, insert the second screw and assure that the holder is correctly aligned.
- The two vertical bars are attached vertically at the right and left side on a flat table. Before taping them with self-adhesive tape it is important to check that they are parallel and have the right distance to each other. We advise to mark the position with a pencil first.

Now attach the two vertical bars, which have self-adhesive tape on the backside, to a table or console with a flat surface. Preferably the table will have a lay-on edge for positioning the printed sheet. Assure, that the vertical bars are parallel and well aligned in order to hold the left and right holder which will attach magnetically to the vertical bars.

- Connect the plug of the AC adapter with the charging console. The AC adapter can be used universally for 100 – 240V. Use only the original TECHKON SpectroDrive AC adapter! (Part no.: FRIWO FW 75550/08).

There are three adapter plugs for different countries. For changing, just pull the plug and push in the new one.



2.1 Installation of the software ExPresso 3

System requirements:

- PC with MS-Windows XP or Vista
- 2 USB ports
- Screen resolution: 1024 x 768 or higher

The software is optimized to be operated with a touch sensitive screen (for example: Elotouch I727L I7").

However, working without a touch-screen by using a conventional mouse/trackpad and keyboard is also possible



Recommended color bar:

Print control strip TECHKON TCS Digital
(included with ExPresso software)

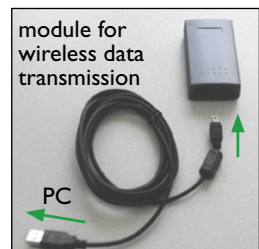
Installation:

It is important to carry out the following steps in the right order, to make sure that the USB device drivers will be installed properly.

1. Confirm that the USB-dongle and the module for wireless data transmission are NOT connected to the PC. Insert the TECHKON CD into the CD drive of the running computer. (You will find the CD in the inlay at the back of the manual.)
2. Select "ExPresso 3 Installation" from the menu.
The installation routine will start automatically.
Follow the steps of the installation, until it is completed.
3. Now, after the installation was finished successfully you can connect the module for wireless data transmission with the USB cable and the USB-dongle to the PC.



4. TECHKON ExPresso can now be launched:



Chapter 3

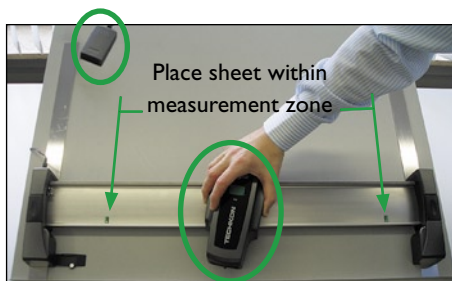
How to use SpectroDrive and the software ExPresso 3

3.1 Operation of SpectroDrive

- Place the measurement device on the horizontal track.
- The module for the wireless data transmission has to be positioned as close as possible to the measurement device with the front pointing to the measurement system as shown on the image.

Please connect it to the PC via the USB cable **after** the installation of the software which was described in the previous chapter.

- By pressing the green measurement button the device will move into the docking-station at the left, where it is automatically charged, which is indicated by a green-flashing LED.
- You can align the measurement system in vertical direction while keeping the black buttons on the left and right holder pressed. First, position the printed sheet at the lower lay-on edge and then move both holders vertically, so that the measurement head is exactly on top of the color patches. It can be helpful to slide the measurement device from one side to the other in order to check that the measurement aperture covers the complete color bar during a scan. It is important that the measurement aperture always covers the color patches completely during the entire scan.



- Single measurements can be easily taken by removing the measurement device from the horizontal track, positioning it on a color patch and pressing the green button.



Paper white calibration

- A paper white calibration can be carried out by keeping the green button pressed for a few seconds. The measurement aperture has to be on top of a non-printed area of the sheet.

It can be performed with SpectroDrive on the track as well as with the measurement device taken off the track.

Automatic turn off

- When the device is not located at the left holder in the charging position and is not in use it will switch off automatically after two minutes. It can be reactivated by pressing the green button on the device.

LED Indicator

The rectangular LED on top of the device will appear in different colors dependent on the device status:

Home position



Green (flashing)

Scan-mode



Blue (+ multicolor)

Single measurement



Magenta

Paper calibration



White

Error



Red (flashing)

In home position the device is in contact with the charging station. During charging the LED will be green and flashing. It will turn to a short-flashing green when the battery is fully charged. Thanks to the charging management there will be no overcharging of the battery.

3.2 Care and maintenance

SpectroDrive is a highly-precise optical instrument. It is designed to work in harsh, industrial environments. However, it should be handled with care. Avoid mechanical shocks, heat, dusty or humid environments!

Cleaning

The **measurement head** with the optical system is sealed against dust and dirt. Take care that the visible, open **measurement aperture** is always free of dust. You can clean the measurement aperture with oil-free, clean compressed air and a brush used for cleaning photographic equipment.

Clean the **device casing** only with a soft cloth and a non-aggressive plastic cleaner. Never use alcohol or chemically aggressive solvent-based cleaners which can destroy the surfaces.

The same procedure is valid for the **white standard** which is integrated in the charging console. If the white standard should be defective, it has to be replaced completely.

The **charging contacts** at the device and on the charging console can be kept clean with a metal contact spray.

Please do not stick any labels at the bottom of the device. This could lead to faulty measurements, because the direct contact – which is important for the correct optical field of depth – might not be maintained.

Error handling

- Should SpectroDrive do not work properly, first check, if the ExPresso software is running correctly. The status bar in the lower right corner will display if the device communicates correctly with the PC. It can be helpful to to plug-off and re-connect the module for the wireless data transmission from the USB connection. Restarting the software ExPresso is also recommended.
- Check that the right measurement device is selected in the software settings. If „SpectroDrive Simulator“ is selected, no real measurements will be carried out.
- Check if the AC adapter is connected correctly to the mains plug and the charging station. Check if SpectroDrive is charged (LED is flashing in green during charging and short-flashing green when fully charged).
- If the device does not communicate with the software and does not work by pressing a button, but the LED is on, move it manually from the charging position. Now, wait until it switches off automatically after two minutes. Then, turn it on again by pressing the green button.

Warranty

The warranty for TECHKON products is 24 months starting with the date of purchase. The invoice is the certificate of warranty. The warranty is invalid if the damage is caused by inadequate use of the device.

Should a TECHKON product do not work according to the specification, please contact us before sending us the device. In most cases we can solve the problem over the phone or via E-mail.

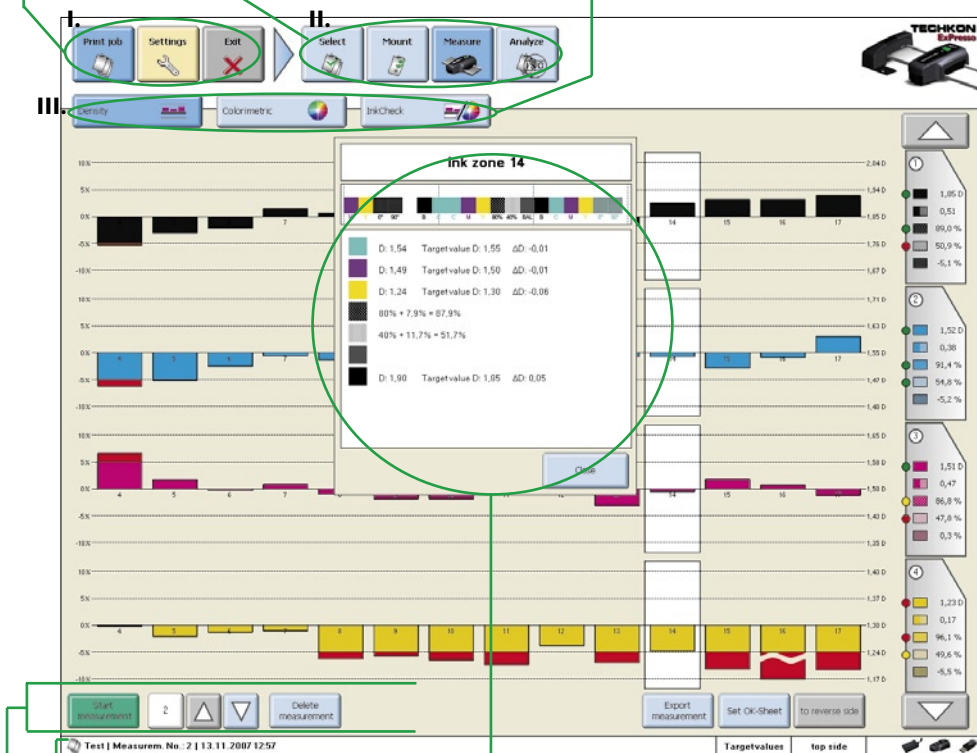
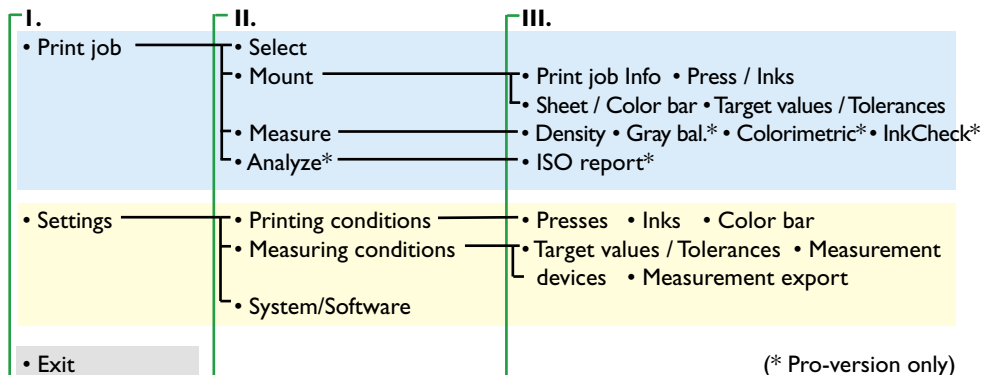
Inspection intervals

TECHKON SpectroDrive is maintenance free. We recommend to validate the complete functionality of the devices in a 24 months time interval in the TECHKON service center. We offer a complete device check as a service package. Please contact us for details.

Please send the device always securely in the carrying case with complete accessories. For a flat fee the device will be cleaned, checked and recalibrated. In case a repair or exchange of components should be necessary we will inform you.

3.3 Software overview

The software is self-explanatory and clearly structured. There are three layers:



In the lower section of the screen there is a command bar and a status bar.

Clicking on the bar graph will display numerical values.

Connection status of:

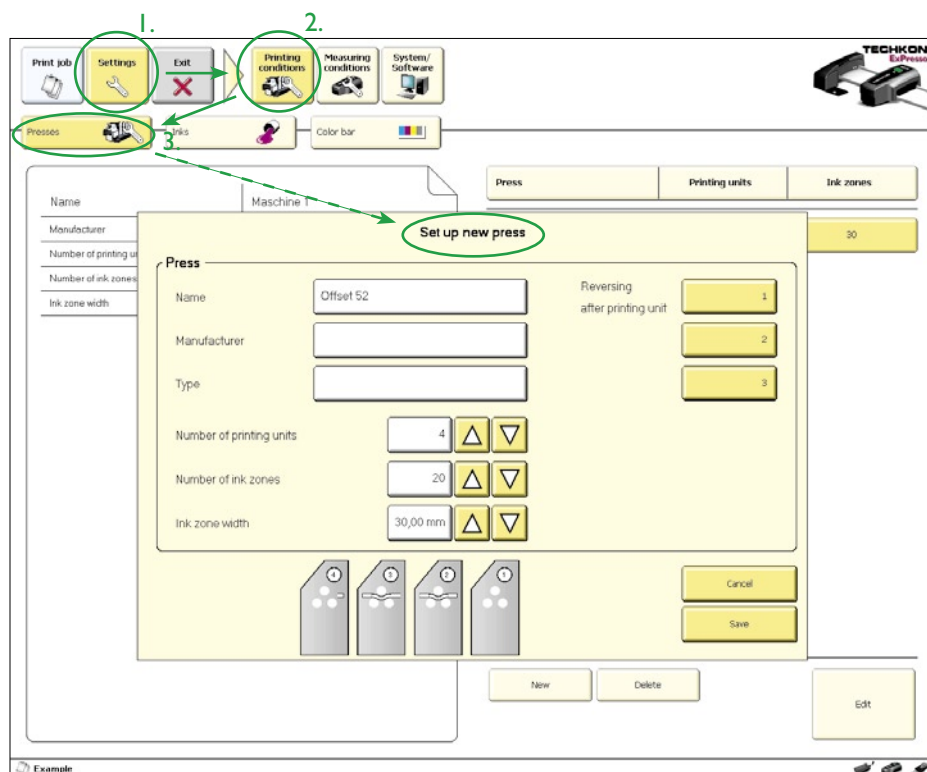
- Wireless module •
- SpectroDrive •
- USB-dongle •

3.4 Software settings

Certain settings are done only once, after the software is installed or have to be changed only occasionally when fundamental parameters have altered. For example the menu language, the selection of the measurement device or the definition of a new printing press will be set once and do not have to be set for each and every print job to be carried out later.

These kind of settings are made by pushing the **yellow** left button “**Settings**” (1.) and then following the sublayers (2. + 3.).

The following example shows the set-up of a new printing press:

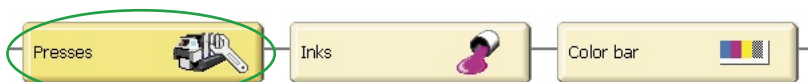


All settings which were made, can later be recalled when defining a “**Print job**”, where the screen will appear in **blue** color.

The following settings can be made:



Printing conditions - Presses



- Name: textbox to define a name of the printing press
- Manufacturer: textbox (not mandatory)
- Type: textbox (not mandatory)
- Number of printing units: 1-6 for ExPresso Basic, 1-16 for ExPresso Pro
- Ink zone width in mm
- Reversing unit if the printing press has a reversing unit, the location can be set

Printing conditions - Inks



The list of inks included in the database is displayed. As the buttons in the lower right corner indicate, new colors can be defined or imported and colors can be duplicated and deleted.

Printing conditions - Color bar



The list of color bars included in the database is displayed. As a standard the TECHKON TCS print control strips are recommended. Other color bars can be used by using the Import-button.

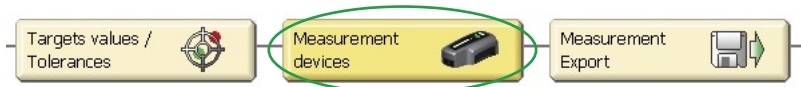


Measuring conditions - Target values / Tolerances



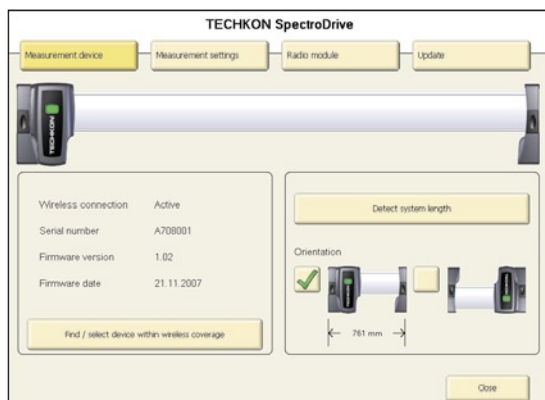
A list of data sets for target values and tolerances will be displayed. It is based on ISO 12647 color values for CMYK. Individual target and tolerance settings can be made as well; also for spot colors.

Measuring conditions - Measurement devices



The measurement devices which can be connected to the ExPresso software are shown. The “SpectroDrive simulator” is a virtual measurement device which can be used for tests and demonstrations when no real hardware device is connected. The “SpectroDrive simulator” will also be used when no hardware protection key (dongle) is connected and the software runs in demo mode.

After selecting SpectroDrive from the list, the following settings can be made:



Tip:

This window can be activated directly by pointing or mouse clicking on the device icon in the upper right corner:



Measuring conditions - Measurement Export



After each measurement, the values can be exported to other applications. Here the settings are made regarding the data format and the location where they should be exported.



System / Software settings



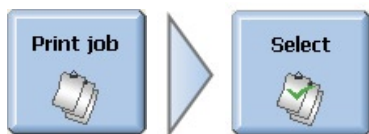
- **Information:** Displays the software version and whether any extension modules are installed.
- **Touch-screen support:** Has to be activated, when a touch sensitive screen is used. It will show a virtual keyboard on the screen, every time a text has to be edited.
- **Printer:** Selection of the printer to be used.
- **Language:** Selection of the menu language.

3.5 Defining and running a Print job

Before running a print job, certain selections have to be made. Everything related with a **Print job** is indicated by the **blue** screen color.

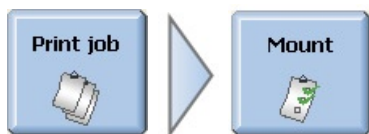
ExPresso has an “Autosave” function. Every Print job will be saved automatically. This applies also for Print jobs which are not completed and will be resumed later.

Selecting a Print job



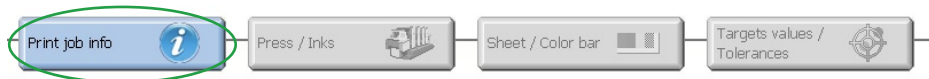
The list contains Print jobs which have been made. A Print job can be resumed by selecting it. If a new Print job to be made resembles a job which is already in the list, it can be duplicated.

Mounting a Print job



Certain selections have to be made, before the measurements can be started.

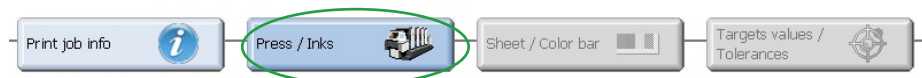
Mount - Print job info



Textual information about the Print job can be edited.

The text entered in “Print job name” will be the title of the data set, which will be automatically saved by ExPresso. It can be selected from the “Print job - Select” menu. During measurements it will be shown in the lower left section of the status bar.

Mount Press / Inks



The press to be used is selected and the printing units are filled with ink. A inking unit can be kept empty as well; for example if a 6-color press is used only for CMYK-print, the last two printing units can be kept empty.

Mount - Sheet / Color bar



The color bar which is printed on the sheet to be measured has to be selected.

By pressing on “Scan color bar length” SpectroDrive will make an automatic test scan and will detect the length of the color bar. As a default, the color bar will be centrally aligned.

Additionally there can be defined in which ink zone the first measurement should start. The connection between the color bar and the ink zones of the printing press is also shown graphically.

Mount - Target values / Tolerances



As the printing units have been filled with ink, now they are assigned with target and tolerance values; preferable tolerance sets according to the printing standard ISO 12647.

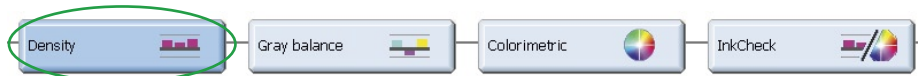
Also, individual tolerances can be edited by pressing the “Edit”-buttons and entering the desired values.

Measuring a Print job



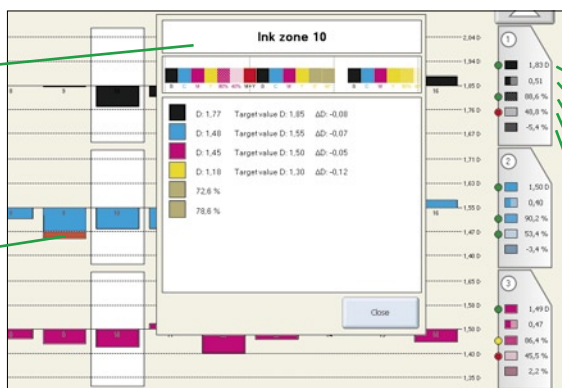
This screen will display all relevant information after a scan measurement. The scan measurement can be started by pressing the green measurement button on the device or on the screen.

Measure - Density



Detailed info for every ink zone by pointing on bar graph.

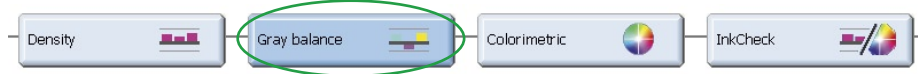
Measurement values out of tolerance will be marked with red top.



Info for all ink zones:

- Solid density
- Printing contrast
- Dot area 80 %
- Dot area 40 %
- Slur/doubling

Measure - Gray balance (ExPresso Pro)



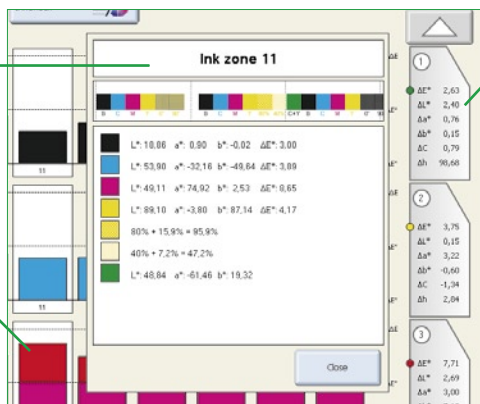
The color bars TECHKON TCS Digital include a gray balance patch compliant with ISO 12647 in every ink zone. The Gray balance display will show densitometric Gray balance values for CMY in a bar graph. At a glance there can be diagnosed if the overprint of CMY is a neutral gray or if it has a color cast.

Measure - Colorimetric (ExPresso Pro)



Detailed info for every ink zone by pointing on bar graph.

Measurement values out of tolerance will be marked with red top.



Info for all ink zones

Measure - InkCheck (ExPresso Pro)

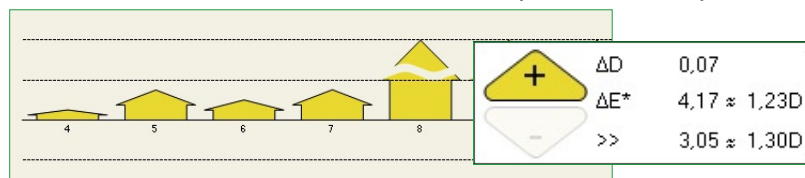


Densitometric values are a direct measure for the ink applied on the paper. They are very process-related, although they are relative values only. Colorimetric values as recommended in print standard ISO 12647 are absolute values, but they are not suited to use them for handling the printing process. The very useful "InkCheck"-function combines the best of both worlds: Spectrally based recommendations how to set the ink keys as used from density in order to meet colorimetric targets required for printing within ISO standards.

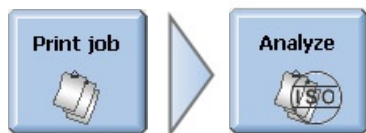
Example:

In this case there is not enough yellow ink applied in ink zone 8.

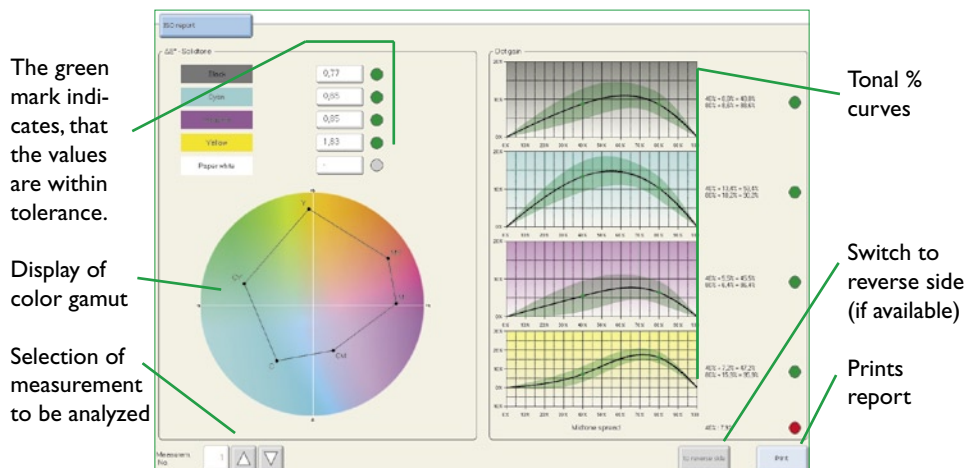
In order to achieve a lower ΔE, the density has to be lifted by 0.07 to D=1,30.



Analyze (ExPresso Pro)



This function allows the evaluation of printing quality according to the international printing standard ISO 12647. The report can be printed as well.



Exit



Just press the Exit-button to quit the ExPresso application. A window for confirmation will appear. There is no need to actively save a Print job or settings made. Since ExPresso has an “autosave” functionality, all data is securely stored already.



Measurement technology

Spectral remission measurement and color density determination to ISO 5-3/4

Measurement geometry

0/45° optics to DIN 5033

Spectral range

400 to 700 nm in 10 nm steps

Measurement aperture

2 x 1,5 mm

appropriate for measuring patches with at least 4 mm height and 3 mm width

UV cut filter optional

Light source

Gas-filled lamp, type A illumination

Polarization filter

Twice linear crossed, switched on and off per software command

Measurement time

Approximately 150 mm/s (equals approx. 4 seconds for 520 mm sheet length); single measurement approx. 1 second (if SpectroDrive is used as hand held device)

White reference

Absolute and relative, absolute white standard integrated in charging console

Illumination types / Standard Observer

A, C, D50, D65 / 2°, 10°

Density filter

DIN 16536, DIN 16536 NB, ISO/ANSI T, ISO/ANSI I, ISO E, spectral density Dmax

Density measurement range

0,00 D – 2,50 D

Dimensions

see page 8

Formats

52: for printed sheet 00 (B3+, 370 x 520 mm)
74: for printed sheet 0B (B2+, 520 x 740 mm)
102: for printed sheet 3B (B1+, 720 x 1020 mm)
105: for printed sheet 3B+ (B1+, 780 x 1050 mm)
Special formats (up to 2100 mm system length, 1800 mm scan length) on request

Repeatability

0,01 D

0,03 CIE ΔEab

Inter-instrument agreement

0,01 D

0,3 CIE ΔEab

Data transmission

Module for wireless data transmission with PC-sided USB connection

Power supply

Rechargeable NiMH battery, regulated recharge via charging console with AC adapter, 100 – 240 V, 47 – 63 Hz
Part no.: FRIWO FW 75550/08

Weight

Measurement device: 820 grams

Contents

see page 9

Software TECHKON ExPresso

Delivery on CD with program protection key (USB dongle) plus CD with TCS Digital System requirements: Windows XP, Vista
Recommended touch-screen: Elotouch 1727L 17"

Functionality of Basic- and Pro-version see page 8

Specifications can be subject to change without notice. All mentioned trademarks and copyrights are recognized. SpectroPlate, SpectroDens, SpectroDrive, InkCheck and TECHKON are registered trademarks of TECHKON GmbH.

Manufacturer certificate

applicable for ISO 9000 documentation

Device: Scan-Measurement System TECHKON SpectroDrive

Serial Number:



Manufacturer: TECHKON GmbH • Wiesbadener Str. 27 • D-61462 Königstein
Telephone: +49 (0)6174 92 44 50 • Telefax: +49 (0)6174 92 44 99
E-mail: info@techkon.com • <http://www.techkon.com>

Certification: The device is compliant with R&TTE directive 1999/5/EC concerning the electromagnetic compatibility EMC and is provided with the CE label. The device is RoHS compliant (class 9).

Certified Standards:

- EN 300 328
- EN 301 489-1/-17
- EN 60950
- CB scheme (for Europe, North America, Japan)
- R&TTE, Annex IV
- FCC Part 15.247
- Japan Test for Wireless LAN, Ordinance regulating radio equipment (2004-03) Art. 2 item 19
- TCB service for USA, Canada and Japan

Notice: This device complies with Part 15 of the FCC Rules [and with RSS-210 of Industry Canada].

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications made to this equipment not expressly approved by TECHKON GmbH may void the FCC authorization to operate this equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

The supplied AC adapter is according to regulations UL, IP 40, IEC 950 and VDE EN-EC10. The device is to be used only with original TECHKON SpectroDrive AC Adapter, 7,5 V DC, Part no.: FRIWO FW 75550/08.

Maintenance:

The device is maintenance free. The measurement aperture has to be kept clean from dust. It can be cleaned with clean, compressed air and an optics brush.

We recommend a functionality check-up every 24 months at the TECHKON service center, which includes the issue of a new Manufacturer certificate.

Warranty:

The warranty for TECHKON products is 24 months starting with the date of purchase. The warranty is invalid if the damage is caused by improper use of the device. Only original TECHKON spare parts and accessories are to be used.

Recycling:

The device is according to §14 ElektroG registered under the EAP no.: DE 98280049. Devices for disposal can be sent directly to the manufacturer.

Calibration:

The integrated spectral sensor is calibrated by a white calibration. After performing a white calibration with the supplied absolute white standard integrated in the charging console, the device is long term stable. We recommend to make a white calibration before every measurement series, to ensure the device is calibrated correctly.

The remission values documented on back of the charging console are derived from a ceramic white standard, which is referenced to measurements taken and certified by the German Institute for Material Testing (Bundesanstalt für Materialprüfung, BAM).

Standards:

The measurement device is manufactured according to the recommendations of the technical standards DIN 5033 part I-9, CIE, DIN ISO 16 536 part I+2 and ISO 5-3.

The accuracy of the device is checked during the manufacturing by spectral measurements on color samples which were measured and certified by the German Institute for Material Testing (Bundesanstalt für Materialprüfung, BAM).

The calculation of colorimetric values is according to the formulas and tables of DIN 6174, DIN 5033 part I-9 and CIE.

The calculation of densitometric values is according to the formulas and tables of DIN 16527 part 3, ISO 5-3 and the handbook of standardization of the German Printing and Media Industries Federation (Bundesverband Druck und Medien e.V.) and fogra (Forschungsgemeinschaft Druck e.V.).

D-61462 Königstein

Place

Date

Signature

Please send this registration card by mail or via telefax to us. This way we can keep you informed in future about product news.

You can send your registration information by E-mail as well.

TECHKON GmbH • Wiesbadener Str. 27 • D-61462 Königstein • Telefax: +49 (0) 6174 92 44 99 • E-mail: info@techkon.com



TECHKON Registration card

☐ Please send me information about
the entire TECHKON product range

☐ Please put my E-mail address on the
mailing list for the TECHKON-Newsletter

TECHKON GmbH
Wiesbadener Straße 27
D-61462 Königstein / Germany

via Telefax to: +49 (0)6174 92 44 99

Name: _____

Company: _____

Department / Job title: _____

Address: _____

City / ZIP-Code: _____

Country: _____

Telephone: _____

Telefax: _____

E-mail: _____

Your TECHKON-Dealer: _____

Device Serial number: _____
(label on the bottom of the device)