1 Introduction

Vipdens 130 is a portable, battery operated, pocket-size,combination b/w reflection and transmission densitometer for density and dot percentage measurements. The automatic measuring mode seIection is activated onIy when you caIibrate the densitometer to zero. Selection ao the different function can be done by using key B.

1.1 Modes

Reflection mode
DENS   Density
DOT   Dot gain (Murray Davies)
NEG DOT   Percentage measurements negativ
DOT SIZE   Percentage measurements

Transmission mode
DENS   Density
DOT   Screen percentages
NEG DOT   Screen percentages negativ
SOFT DOT   Soft Screen percentages
NEG SOFT DOTSoft Screen percentages negativ

1.2 ReIeasing the measuring head

Release measuring head from its locked position by puIling the locking knob firmly. The display automatically switches off

after about 20 seconds to save battery power. To reca1l the last value in the display, simply press key A or B briefly.

2   Zero setting

The reflection or transmission mode is selected automatically by the Vipdens I30 and the display shows "REFL" or "TR" the automatic selectiono is activated only when you zero the densitometer. Zero setting can be done in any desired function.If zer0 setting is effected in:

DENS   .000
DOT, DOT SIZE, SOFT DOT   0.0
NEG DOT, NEG SOFT DOT   100.0

wi1l be shown in the display.

2.1   Zero setting in the reflection mode

• Place aperture on your reference, press key A and push down the measuring head whilst keeping key A depressed. Do not release the measuring head or key A before "REFL", " 000", "0.0" or "100.0" comes up in the display.

Note !
The last zero reference is stored in the memory of the

microprocessor even if the unit has been switched off. Make sure that the densitometer is set to zero if a new white reference is to be used.

2.2 Zero Setting in the transmission mode

- PIace aperture at a set position on the light table where all measurements will be made.
- Push down the measuring head whilst keeping key A depressed. Do not release the measuring head or key A before "TR", ".000", "0.0" or "100.0" comes up in the dispIay.

Note!

The last zero reference is stored in the memory of the m
icroprocessor even if the unit has been switched off. Make sure
that the densitometer is set to zero if a new white reference is to
be used. Measurements have to be made in the seame marked
area of the light table where zero was set.

3. Measuring function

3.1 Densitv measurement
3.1.1 Density measurement in reflection - mode
- Zero the machine (see .section 2.1)
- Select "REFL DENS" function by using key B as often as
  necessary.
- Place aperture on the required patch
- Push down the measuring head until the density value
  appears in the display.

- The different functions, Percent, Negativ Percent and Dot Size can now be called into the display by using key B.

Note !

In order to call the Percent- , Negativ Percent and Dot S ize values correspondig to the measured Density vaIue into the display, it is neccesary to input the solid patch values as descript in point 3.2.1, 3.3.1 and 3.4.1.

3.1.2 Density measurement in transmission - mode

- Zero the machine (see section 2.2)
- Select "TR DENS" function by using key B as often necessary
- Place aperture on the required patch.
- Push down the measuring head until the density value appears in the display

- The different functions, Percent, Negativ Percent, Soft Dot and Neg Soft Dot can now be called into the display by using key key B.

3.2 Dot gain (Murray Davies) and screen percentages

3.2.1 Dot gain (Murray Davies) in the reflection mode
- Zero the machine (see section 2.1)
- Select "REFL DOT" function by using key B as often as necessary .
- Place aperture on the solid patch
- Press key B and push down the measuring head whilst keeping key B depressed until "100.0" comes up in the display.
- Place aperture on the required dot % area patch and push down measururing head untiI the digital value comes up in the display.

- Any number of dot % measurements can now be made.

3.2.2 Screen percentages in transmission mode

- Select "TR DOT" function by using key B as often as necessary.
- Zero the machine (see section 2.2)
- Place aperture on the solid patch press key B and push down the measuring head whilst keeping key B depressed until "100" comes up in the display.
- Place aperture on the required dot are patch and push down measuring head until the digital value comes up in the display

- Any number of dot percentage measurements can now be made.

Important !

Measurements have to he made in the same area of the light table where zero was set.

3.3 Screen percentages negativ in the reflection and transmission mode

3.3.1 Screen percentages negativ in the reflection mode

- Zero the machine (see section 2.1)
- Select "REFL NEG DOT" function by using key B as often as necessary.
- Place aperture on the required dot % area patch and push down measuring head until the digital value comes up in the display.

- Any number of neg dot % measurements can now be made.

3.3.2 Screen percentages negativ in the transmission mode
- Zero the machine (see section 2.1)
  - Select "TR NEG DOT" function by using key B as often as necessary.
- Place aperture on the required dot % area patch and push down measuring head until the digital value comes up in the display.

• Any numher of neg dot % measurements can now be made.

Important !
Measurements have to be made in the same area of the light
table where Zero was set.

3.4 Dot Size in the reflection mode and Soft Dot in the transmission mode (see appendix)

3.4.1 Dot size in the reflection mode

- Zero the machine (see section 2.1)
- Select "DOT SIZE" function by using key B as often as necessary. (U.K. see note)
- Place aperture on the solid patch
- Press key B and push down the measuring head whilst keeping key B depressed until "100" comes up in the display.
- Select "DOT SIZE ADJ" mode by pressing keys A and B simultaneously
- Place aperture on the required dot % area patch and push down measuring head until the digital value e.g 75 comes up in the display.

- Use keys A or B to adjust the Vipdens 130 to the requested value e.g. 50.
  Key A to reduce the displayed value
  Key B to increase the displayed value

- Select function "Dot Size" by pressing key A and B simultaneously
- Any numher of dot % measurements can now he made.

3.4.2. Soft dot

- Zero the machine (see section 2.2)
- Select "SOFT D0T" fUnction by using key B as often as necessary
- Select "SOFT D0T ADJ" mode by pressing keys A and B simultaneously
- Place aperture on the required dot % area patch and push down measuring head until the digital value e.g. 54 comes up in the display.

- Use keys A or B to adjust the Vipdens 130 to the requested value e.g. 50.
  - Key A to reduce the displayed value
  - Key B to increase the displayed value

- Select function "Soft Dot" by pressing kev A and B simultaneously
- Any number of Soft dot % measurements can now be made.

3.5 Neg Soft Dot in the transmission mode

- Zero the machine (see section 2.2)
- Select "NEG SOFT DOT" function by using key B as often as necessary
- Select "SOFT DOT ADJ" mode by pressing keys A and B simultaneously - Place aperture on the required neg dot % area patch and push down measuring head until the digital value e.g. 46 comes up in the display.

- Use keys A or B to adjust the Vipdens 130 to the requested value. value e.g. 50.

    Key A to reduce the displayed value
    Key B to increase the displayed value

- Select function "Neg Soft Dot" by pressing key A and B simultaneously
- Any numher of Neg soft dot % measurements can now be made.

4 Slope

With a simple operation the slope factor of the VIPDENS can be calibrated to match that of other densitometers. Calihration is digital. and can be performed with reference either to a required density value or to a given slope factor (if known). The slope adjustment can be made for the transmission and reflection mode separately without influencing the other mode.The automatic selection is activated when you zero the densitometer (see section 2).

4.1 Conditions for adapting the Vipdens to other machines

- Both densitometers must work on the same principle (optical system)
- Both densitometers must be set to zero, on the same reference.
- The measurement for comparative calibration must be on a medium density range.

4.2 Procedure

- Select "DENS" function by using key B as often as necessary.
- Press keys A and B simultaneously, which causes the currently set s1ope factor to appear in the display (original 1000)

- Place aperture on the required density patch and push down the measuring head until the digital value e.g. 1.80 comes up in the display.
- The other densitometer, against which the VIPDENS is to be calibrated, shows a density of 1.75.
  - Use keys A or B to adjUst the Vipden~ to the requested value i.e 1.75.

        Key A to reduce the displayed value
        Key B to increase the displayed value

  - To cancel "DENS ADJ" mode press keys A and B simultaneously again.

The densitometers are now compatible, and the new slope factor can he read on the display by briefly pressing keys A and B simultaneously.

The VIPDENS is supplied with the slope set to a value of 1.000 in the reflection and transmission mode. This value can be reset within a range of 750 to 1.250 to any required slope value. Press either key A or key B to decrease or increase the display value until the required digital slope value is shown. This procedure does not require any measurement operation, and the values attained (multipliers) can he adjUsted at any time.

5 Replacing the batteries

lf the "LO BAT" sign appears in the display batteries should be replaced.

- Undo the ~crews of the battery housing and remove the cover
- Change the 4 batteries (Type: see chapter 10), positioning them according to the polarity marks on the case
- Refit the cover and reinsert the screws.
- Zero the machine and check the slopes (reflection and transmission).

6 Electronic output

The VIPDENS 130 is supplied with a serial interface.

RS 232 standard output format

baud rate 1200. 8bit. no parity, 1 stophit
equivalent 7bit, paritv . = 0, lstopbit

7 Operating errors

An operation or calibration error on position %, causes the
"EEE" message to appear. The measurement procedure must
now he repeated from the beginnig

Other errors:
• Unit closed over the point to be measured for less than 0.5
  seconds. No value will be displayed.

- Light table:
  For transmission measurements always use the same area on a
  light table with a stable light source

8 Packing

VIPTRONIC instruments are supplied in an unbreakable
packing, which should be kept safely in case the instrument
ever need.to be returned for servicing.

9 Service

Every VIPTRONIC item is stringently quality-tested before
leaving the factory. If any trouble should occur however please
contact one of our service departements.

10 Technical data VIPDENS 130

Measuring range	Reflection:	
	Density	0.00...2.50
	Dot	0...100
	Neg Dot	100. ..0
Dot Size:	(Max, decrease on 50% : 40%)	
	Transmission:	
depending on the light $\Rightarrow$	Density:	0.00...6.00

intensity of Your light souree (light table)	Dot:	0...100
	Neg Dot:	100...0

Soft Dot and Neg Soft Dot:	(Max. decrease on 50% : 10%)
Slope	Digital. for reflection and transmission separately
Linearity Repeatability Accuracy	-+D 0,005 (-+0.5%) for reflection and transmission
Digital display	LCD. digit height 10 mm
Aperture	4,0 mm diameter
Power suppley	4 x 1.5 V alkaline batteries Size AA (Mignon) IEC: LR6
Measurements per battery set	> 100.000
Dimensions	144x83x41mm
Weight	350g

Appendix

DOT SIZE ACCORDING TO THE YULE NIELSON FORMULA

"Total dot gain" ist the sum of mechanical dot gain and optical dot gain. Mechanical dot gain is the increase in dot size from film to proof produced by physical causes such as light scatter or undercutting in film contacting or platemaking or by the physical spreading of the ink image in plate-to-blanket and blanket to paper printing squash. Optical dot gain (sometimes referred to as "Apparent dot gain") is a visual effect caused by light entering paper through printed and unprinted areas. After diffusion between the fibers of the paper, the light is re-emitted through the printed an unprinted area.

The new Vipdens 130 allows to measure mechanical dot gain with the Dot Size function.

SOFT DOT

Digital " ghost Dot" compensation improves the accuracy of first generation halftone readings. Non-printing dots, characterized by their low density, will not reproduce on plate and press. Specific shop conditions determine the minimum, actual usable dot. The Vipdens 130 allows these conditions to be accurately interpreted and displayed when desired using the Soft Dot function.

GENERAL INFORMATION

Under the mode " DOT SIZE" hides the Yule Nielson Formula
Under the mode "DOT" the Murray Davies Formula

" DOT SIZE"   =MECHANICAL DOT SIZE
"DOT"   =Y0UR VISUAL IMPRESSION

Yule Nielson Formula: a = 1 10 Dtln
1 -10-

1 10- Dt
Murray Davies FormUla: a = ~
1 -10-
Dt Density of the tint
D~ = Density of the solid 1 6