

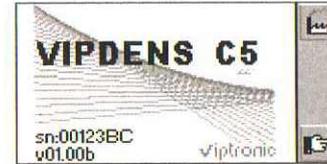
2 OPERATION

2.1 Functional elements



2.2 Getting started

Slide the lock on the left side to the back to release the measuring head. When the instrument is powered-up the first time or after a reset, the start-up screen appears.



Start-up screen of Vipdens C5



Start-up screen of Vipdens C5LT

The bottom left part of the screen lists the serial number and the firmware version of the instrument. This information is important for troubleshooting.

The factory default settings of the **Vipdens C5/C5LT** have all automatic functions enabled. For most users, these are the preferred options. It is also set to right hand use with the pass/fail indicator disabled.

Use the Factory Presets function  to reset the instrument to its original state whenever required. All configuration settings like reference values, tolerances and slope and function options are reset to the factory defaults.

2.2.1 Power saving mode



The instrument utilizes a power saving mode to conserve battery life. After approximately 30 seconds of inactivity, the **Vipdens C5/C5LT** goes into power saving mode. The power saving mode is indicated on screen with the Sleep symbol after which the display fades out. A key press, measurement, power connection (if not connected), or USB connection will wakeup the instrument. The instrument returns to the last active screen.

2.2.2 Toolbar



The toolbar appears on the right of the display and shows the available functions using symbols. Use the UP and DOWN keys to highlight the buttons. A black frame indicates which function is currently highlighted. Press the ENTER key to use the corresponding function.

2.2.3 The main tool bar

The functionality of the main tool bar depends on the configuration in the setup mode:

-  Selects the measurement function (zeroing, solid density, halftone, balance, etc.)
-  Pre-selects the filter for the next measurement (only available if auto color detection is off)
-  Toggles Pass/Fail indicator and switches between paper relative and delta density (only available if a reference set is selected)
-  Activates the setup mode

2.2.4 Symbols and Functions

2.2.4.1 General functions

-  Next display
-  Previous display
-  Open next tab (set-up group)
-  Select next item inside the tab
-  Modify status of highlighted item
-  Edit reference values and tolerances
-  Increase highlighted value
-  Decrease highlighted value
-  Go to settings display
-  Restore factory defaults

2.2.4.2 Measurement functions

-  Auto-detect next measurement
-  Measure default patch (Solid if all auto-functions are switched off)
-  Measure paper
-  Measure halftone (Dot Gain)
-  Measure balance
-  Measure Color Match (4 density display)
-  Measure Cyan, Magenta, Yellow, or Black
- 
- 
- 

2.2.4.3 Setup groups

-  Automatic functions ON/OFF
-  Solid references and tolerance
-  Shadow halftone references and tolerances
-  Midtone halftone references and tolerances
-  Highlight halftone references and tolerances
-  Balance references and tolerances
-  Slope settings

2.2.4.4 Automatic functions

-  Automatic zeroing (paper recognition)
-  Automatic halftone patch recognition (shadow, midtone, highlight)
-  Automatic balance patch recognition
-  Automatic trapping patch recognition
-  PFI (pass fail) function OFF
-  PFI on with Reference set 1, 2, 3, or 4
-  Switch between right hand usage and left hand usage

2.2.4.5 User advise symbols

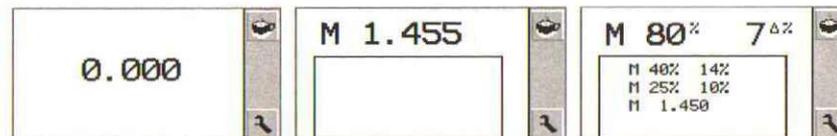
-  Density or dot gain too low. Open ink key
-  Density or dot gain too high. Close ink key
-  Instrument is busy
-  Instrument is going into power saving mode
-  Low Battery
-  USB interface connected to Host

2.3 Quick Start

With the automatic functions of **Vipdens C5/C5LT** you can immediate start to work. For many jobs, there is no need to select modes, settings etc. or press a measurement key. In this mode, the following settings are activated:

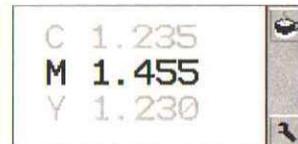
- Automatic paper recognition (measure paper white to zero the instrument)
- Automatic color recognition (CMYK)
- Automatic patch type recognition
 Vipdens C5: solid, shadow dot gain, midtone dot gain, highlight dot gain, gray balance, trapping patch with primary recognition and print sequence determination
 Vipdens C5LT: solid and gray balance recognition
- Automatic tolerance check with Pass/Fail indicator and correction advice

After a measurement, the **Vipdens C5/C5LT** shows zero, solid density or a dot gain value (for halftone patches). This depends on the patch type that has been detected.

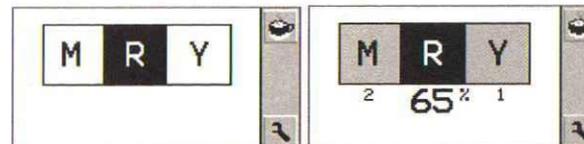


Below, you can see the measurement history. The most recent measurement is on top.

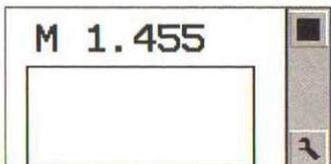
A balance measurement shows three density values, and the color that is most out of balance appears in bold.



For trapping patches, you can measure solid patches in no specific order. After measuring the patches, the display shows the trapping value and the print sequence.



If you are only interested in density values, you can set the instrument to display density only. Use the UP/DOWN keys to highlight the auto icon  and press ENTER. The icon changes to Solid  and all subsequent measurements are density measurements or zero if paper is measured.



If you would like to return to the automatic mode again, use the UP/DOWN keys to highlight the Solid icon  and press ENTER. The instrument is reset to full automatic mode.

The **Vipdens C5/C5LT** can be configured to show density/dot gain as absolute values or as difference values. Use the UP/DOWN keys to highlight the Setup icon  and press ENTER to change the settings.

2.4 Adjusting instrument settings

2.4.1 Restore factory settings



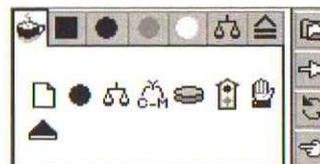
Use the UP/DOWN keys to highlight the Factory defaults icon and press ENTER.

While the instrument resets, it displays a Busy symbol for about 2 seconds. Afterward the factory defaults are restored and you can start measuring.

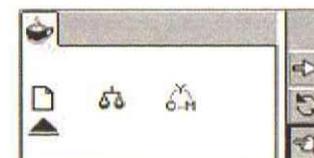
2.4.2 Enter setup mode



The default setting for the **Vipdens C5/C5LT** is the full automatic mode. Select the Next icon to change the instrument settings.



Settings of Vipdens C5



Settings of Vipdens C5LT

There are 7 groups of settings for references and tolerances. Click on the tab to access the individual sections:

 Automatic functions ON/OFF. Selected functions will be available in the main tool bar.

Reference and tolerance settings for:

-  Solid
-  Shadow halftone
-  Midtone halftone
-  Highlight halftone
-  Balance
-  Slope settings

2.4.3 Enable/disable auto functions

Use the toolbar on the right for the following functions:

-  Open the next tab
-  Select an item from the selected tab
-  Modify the status of the currently selected item
-  Previous display

An arrow indicates the currently active item. A disabled auto-function is marked with a black frame. If you want to use disabled auto functions, you can manually access them from the main tool bar.

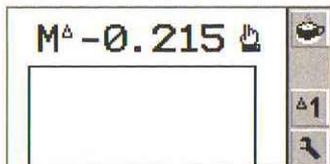
2.4.4 Enable/disable Pass/Fail Indicator

The Pass/Fail-Indicator (PFI)  is multi-state and has several options available:

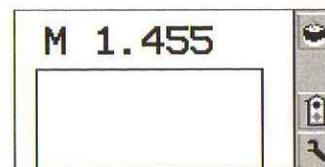
-  Pass/Fail Indicator is disabled
-  Pass/Fail Indicator is enabled and reference set 1 is used
-  Pass/Fail Indicator is enabled and reference set 2 is used
-  Pass/Fail Indicator is enabled and reference set 3 is used
-  Pass/Fail Indicator is enabled and reference set 4 is used

After changing these settings, you can start your measurement right away. The instrument will automatically switch to the main measurement screen.

After you enable a reference set and exit the setup mode, the toolbar shows PFI enabled and the main tool bar displays the selected reference set. All subsequent measurements will be displayed as difference to the reference.



Use the UP/DOWN keys to select the Reference icon . Press ENTER to turn PFI off and display paper relative densities.



Use the UP/DOWN keys to select the PFI icon . Press ENTER to turn PFI on and display delta density display.

2.4.5 Setup references and tolerances

The reference set 1 can be modified. The reference sets 2 to 4 are locked and use predefined values. Use the reference sets for the following application cases:

- Reference set 1: **in-house standard - editable**
- Reference set 2: **glossy coated paper**
- Reference set 3: **matt coated paper**
- Reference set 4: **un-coated paper**

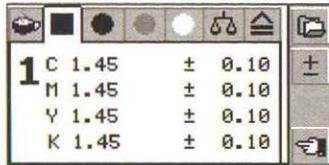
You can modify reference set 1 if PFI is disabled () or if reference set 1 is selected (). If reference sets 2 to 4 are selected, the tab sheets display the corresponding references and tolerances, and the Modify function is disabled.

A reference set consists of references and tolerances for the following patches:

-  Solid
-  Shadow halftone
-  Midtone halftone
-  Highlight halftone
-  Balance

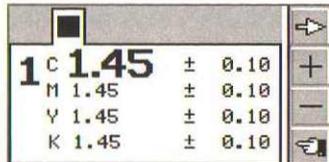
2.4.5.1 Solid references and tolerances

Use Next  until the Solid reference tab is highlighted.



1	C	1.45	±	0.10
	M	1.45	±	0.10
	Y	1.45	±	0.10
	K	1.45	±	0.10

The sheet displays the current reference and tolerance values for densities. Select Edit  and press ENTER to access the Edit mode. The first value is active and the toolbar shows the navigation and value editing functions.



1	C	1.45	±	0.10
	M	1.45	±	0.10
	Y	1.45	±	0.10
	K	1.45	±	0.10

Use  to increase or  to decrease the active value.

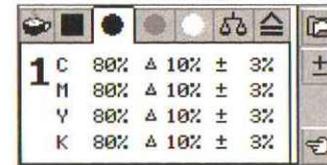
Use Next  to move to the next item.

You can also create reference values by measuring a reference patch. Measure the substrate first followed by the reference patches for CYAN, MAGENTA, YELLOW and BLACK (if available). The instrument identifies the measured color and the proper value is highlighted. The measured density value is displayed and can be modified if necessary. The tolerance is set automatically to 7% of the corresponding solid density.

Use Previous  to exit the edit mode.

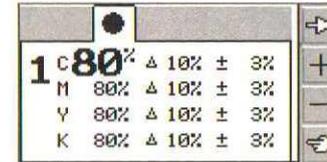
2.4.5.2 Dot gain references and tolerances

Use Next  until the Dot gain reference tab is highlighted.



1	C	80%	Δ	10%	±	3%
	M	80%	Δ	10%	±	3%
	Y	80%	Δ	10%	±	3%
	K	80%	Δ	10%	±	3%

The sheet displays the current reference values for nominal, dot gain, and tolerance. Select Edit  and press ENTER to enter the Edit mode. The first value is active and the toolbar shows the navigation and value editing functions.



1	C	80%	Δ	10%	±	3%
	M	80%	Δ	10%	±	3%
	Y	80%	Δ	10%	±	3%
	K	80%	Δ	10%	±	3%

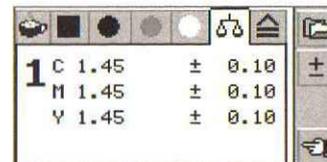
Use  to increase or  to decrease the active value.

Use Next  to move to the next item.

Use Previous  to exit the edit mode.

2.4.5.3 Balance references and tolerances

Use Next  until the Balance reference tab is highlighted.



1	C	1.45	±	0.10
	M	1.45	±	0.10
	Y	1.45	±	0.10

The sheet displays the current reference and tolerance values. Select Edit  and press ENTER to enter the Edit mode. The first value is active and the toolbar shows the navigation and value editing functions.

1	C	1.45	±	0.10	
	M	1.45	±	0.10	
	Y	1.45	±	0.10	

Use **+** to increase or **-** to decrease the active value.

Use Next  to move to the next item.

You can also create reference values by measuring a reference patch. Measure the substrate first followed by the reference patch for Balance. The instrument identifies the measured color and the proper value is highlighted. The measured value is displayed and can be modified if necessary. The tolerance is set automatically to 7% of the corresponding solid density.

Use Previous  to exit the edit mode.

2.4.6 Slope setup

Use Next  until the Slope tab is highlighted.

C	1000	0.00			
M	1000	0.00			
Y	1000	0.00			
K	1000	0.00			

The sheet displays the current slope settings and all densities are zero. Select Edit  and press ENTER to enter the Edit mode. The first value is active and the toolbar shows the navigation and value editing functions.

2.4.6.1 Manually entering slope values

C	1000	0.00			
M	1000	0.00			
Y	1000	0.00			
K	1000	0.00			

Use **+** to increase or **-** to decrease the active value. The value is increased or decreased by 5.

Use Next  to proceed to the next item.

2.4.6.2 Slope adjustment by measurement

You can also adjust slope by taking measurements on reference patches. Measure white paper first to zero the instrument. Next, measure the reference patch. The instrument identifies the measured color and displays the density value.

C	1000	0.00			
M	1000	1.45			
Y	1000	0.00			
K	1000	0.00			

Use **+** to increase or **-** to decrease the active value. The value is increased or decreased by 0.01 D and the slope will be adjusted accordingly.

Use Next  to move to the next item. If you now measure a density, the proper slope value is applied and the instrument displays the adjusted density value.

Use Previous  to exit the edit mode.

2.5 Measuring

2.5.1 General

Important: For best results, make sure that sample and instrument are positioned securely on a flat and stable surface.

To take a measurement, use the target to position the instrument on the patch. Lower the measuring head and hold it down until the instrument displays the measurement value.

After a successful measurement, the instrument displays the measurement values.

2.5.2 Measuring in automatic mode

Accurate measurements right out of the box

In the automatic mode, you can take measurements without pressing any keys. In this mode, the **Vipdens C5/C5LT** offers the following automated functions:

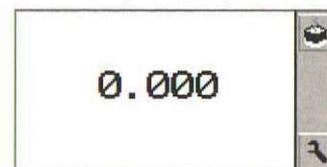
- Automatic paper recognition (measure paper white to zero the instrument)
- Automatic color recognition (CMYK)
- Automatic patch type recognition (solid, shadow dot gain, midtone dot gain, highlight dot gain, gray balance, trapping patch with primary recognition and print sequence determination)
- Automatic tolerance check with Pass/Fail indicator and correction advice

After a measurement, the **Vipdens C5/C5LT** either shows zero, solid density or a dot gain value (for halftone patches). For a Balance patch, the display shows three density values. For Trapping, the display shows a message asking you to measure solid patches. This depends on the patch type that has been detected. In fully automatic mode, the instrument identifies the measured color and the patch type automatically.

The **Vipdens C5/C5LT** can be configured to show density/dot gain as absolute values or as difference values.

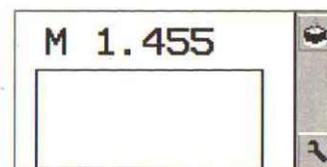
2.5.2.1 Measuring paper white

You can zero the instrument by measuring white paper. The measured paper reference value is stored until you measure white paper again.



2.5.2.2 Solid density patch measurement

When you measure a solid density patch, the instrument displays a single density value of the measured color.

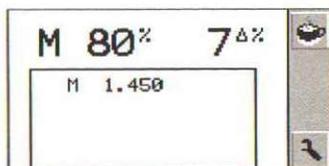


The instrument keeps a history of the density measurement data. The most recent measurement is displayed on top and the previous density readings are displayed below.



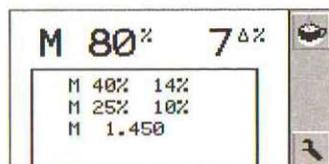
2.5.2.3 Halftone patch measurement

When you measure a solid first and then the halftone patches of the same color, the instrument displays the dot gain values.



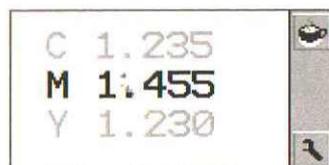
The instrument determines the nominal of the patch (shadow, midtone, highlight) and displays it as a reference value. The dot gain value is displayed on the right.

The instrument keeps a history of the halftone measurement data. The most recent measurement is displayed on top and the previous halftone readings are displayed below.



2.5.2.4 Balance patch measurement

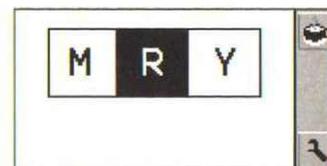
When you measure a balance patch, the instrument displays three density values. The color that is most out of balance appears in bold. This out of balance value should be corrected first.



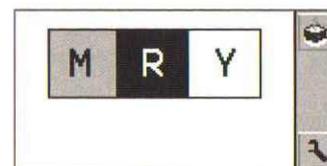
The instrument "knows" that changing magenta will affect the yellow density. If yellow and magenta are both out of balance, magenta will be indicated as the out of balance color.

2.5.2.5 Trapping patch measurement

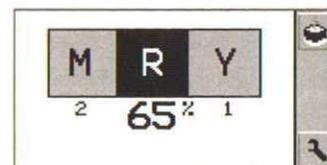
When you measure a trapping patch, the instrument displays the trapping color (red, green, blue) and the two composing primary colors:



Afterwards, measure one of the primary solid color patches. The measured patch is displayed with gray background.

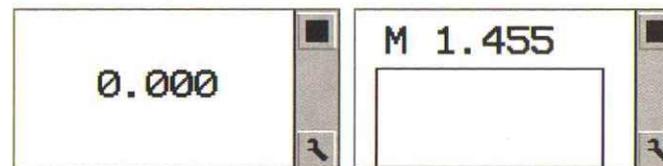


Now measure the other primary solid color patch. The instrument determines the first printed color and the second printed color and displays the trapping value.



2.5.3 Measuring density only

Many applications require just density values and automatic zeroing. Use the UP/DOWN keys to select the automatic function  and press ENTER. The instrument goes into density only mode. The automatic zeroing function is still active, but all other measurements are density only.



Use the UP/DOWN keys to select solid density  and press ENTER. The instrument returns to full automatic mode.

2.5.4 Measuring in semiautomatic mode

You can use the setup mode to enable or disable the following automatic functions:

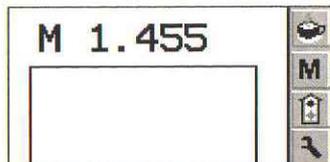
-  Paper: disable this function to enable the instrument to measure bright colors. If you turn this function off, then you have to zero by selecting the function manually
-  Color: disable this function to pre-select the density filter on spot colors
-  Dot Gain: disable this function to measure density over a sheet if there are big deviations in density. When measuring a halftone patch, the instrument displays density values
-  Grey Balance: disable this function to show black density values after measuring a balance patch
-  Trapping: disable this function to show the color match function
-  on the main toolbar. Use the color match function to compare spot colors
-  Tolerance Check: disables the tolerance check, the Pass/Fail indicator and the correction advices

In semi-automatic mode, you can take measurements without pressing a key. The buttons are only used to pre-select the type of measurement, if it differs from the standard solid patch measurement.

- White paper measurement for zeroing
- Halftone measurement of the most recently measured solid of the same color
- Balance measurement and simultaneously displays 3 densities
- Cyan, Magenta, Yellow, or Black.

This mode allows the measurement of color balance and print curve.

If you disable an automatic function, it will appear on the tool bar and you can select it manually.



Select the patch type function  to use one of the disabled functions for the next measurement. The symbol changes to the symbol of the next patch:

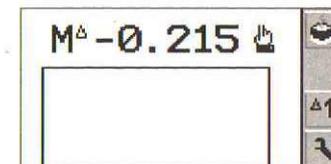
-  Default patch. If all auto-functions are disabled, this is a solid patch
-  White paper measurement for zeroing
-  Halftone measurement for dot gain
-  Balance measurement

Use the color function  to select the color of the next measurement.

 Next measurement is made with Cyan, Magenta, Yellow or Black.

2.5.5 Measuring with PFI (pass fail indicator) enabled

The **Vipdens C5/C5LT** has an integrated Pass/Fail indicator. If you take a measurement, the measurement values are compared to references and tolerances, and the display shows the difference. A red light flashes if the measurement is out of tolerance while a green light indicates the measurement is OK.



If the measurement is out of tolerance, a little hand symbol indicates the type of corrective action:

-  The measured value is too low. Open ink key.
-  The measured value is too high. Close ink key.

If the instrument is in PFI mode, a delta symbol is displayed next to the color. A grey rectangle around a color value indicates that the color is out of tolerance.

The instrument keeps a history of the density measurement data. The most recent measurement is displayed on top and the previous density readings are displayed below.

M ^Δ -0.215			
C	-0.025	Δ1	
Y	0.235		
K	0.005		
Y	-0.125		

3 Application cases

3.1 Special functions (FAQ)

3.1.1 Zeroing on 'dark' paper

The instrument is zeroed if:

- Automatic paper recognition is enabled and the density difference between the most recent white paper measurement and the current measurement is less than 0.14 D for all colors.
- White paper is selected as the next measurement (see section "Measuring density only").

If you want to zero on a dark paper, you have to first zero the instrument on an intermediate dark paper and afterwards on the dark paper. You can also zero the instrument in semi automatic mode.

- Enter setup and disable paper recognition
- Exit setup and select the paper function  (see section "Measuring density only")
- Measure the dark paper. The instrument is now properly zeroed
- Enter setup and enable paper recognition again

The instrument will zero on this dark paper even in automatic mode, until zeroing on a bright substrate.

3.1.2 Measure density only (similar to manual mode in previous instruments)

Use the UP/DOWN keys to select the automatic function  and press ENTER. The instrument now measures density or white paper only. Measurements on trapping or balance patches will result in density readings. Use the UP/DOWN keys to select the solid button  and press ENTER. The instrument is reset to full automatic mode.

In some jobs, the measurement values may show a large deviation across the control strip due to specific conditions of the job. In this case in full automatic mode, the instrument would display halftone values on

a solid patch with low density. To read density only, disable the automatic halftone function . Trapping and balance patches are read as trapping or balance readings.

3.1.3 Measure spot color density with preselected filter

Open setup and disable the color function and zero the instrument.

Select the color function  from the tool bar and press ENTER until the proper filter is selected. Measure the patch.

3.1.4 Measure density difference

Open setup, disable the color and the automatic zero function, and exit setup. Select the color function  and press ENTER until the proper filter is selected. Select the patch type function  and press ENTER until the zeroing symbol is displayed. Measure the reference patch. The density is stored as a reference value and the following measurements are compare against this reference. The instrument displays difference values.

3.1.5 Measure dot area and print curve

In order to measure dot area other than the three default references (highlight, mid-tone, and shadow), deactivate the automatic halftone function. In order to avoid zeroing on highlights below 20%, disable also the auto-paper function.

- Select the patch type function  and press ENTER until the paper symbol  is displayed. Then measure paper to zero the instrument.
- After zeroing, measure the solid patch of the color. The density value is displayed.
- Select the patch type function again and press ENTER until the dot symbol is displayed.

Now measure the halftone patches. The dot area of the patch will be displayed.

3.1.6 Measure color balance



To measure color balance, you have to disable the auto trapping recognition. Open setup and select the functions setup card. Select the Trapping icon  and select the edit function . The status of this function changes to color match . The color match function is now available on the main toolbar.

First zero the instrument on paper. Select the patch type function and press ENTER until the color balance function symbol is selected. Now measure any type of color. The densities for cyan, magenta, yellow, and black are displayed.

C	1.235	
M	1.455	
Y	1.230	
K	1.435	

To compare spot colors, you need to disable the auto paper function in the setup. Select the patch type function and press

ENTER until the paper symbol  is selected. Measure the reference color. Select the patch type function and press ENTER until the color balance is displayed. Next, measure the sample. The instrument displays the density differences for C, M, Y and K.

C-0.	0.235	
M	0.455	
Y-0.	0.230	
K	0.435	