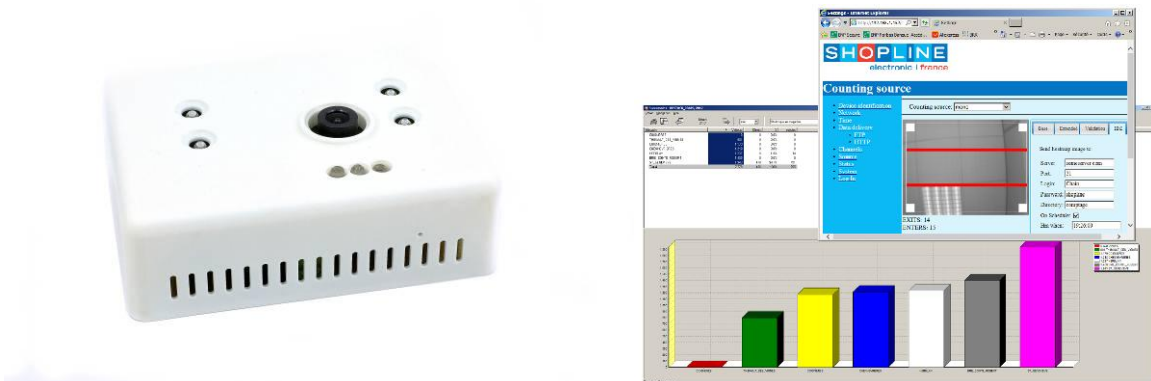




2D_Shop Camera for Video Analytics

Thomas Nenner
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USER MANUAL



The people counter 2D_Shop is an overhead sensor which analyzes infrared Images. This Process makes the device light variations independent that might affects other devices counting accuracy. The advantages from this technology are:

- Bidirectional counting.
- –Accuracy over 95%.
- -No shadows Influence.
- -Good accuracy in low light conditions.

This sensor provides real time analytics locally and on the cloud

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1. Site and hardware considerations

Connections diagram

The camera sends the data on Ethernet on a server:

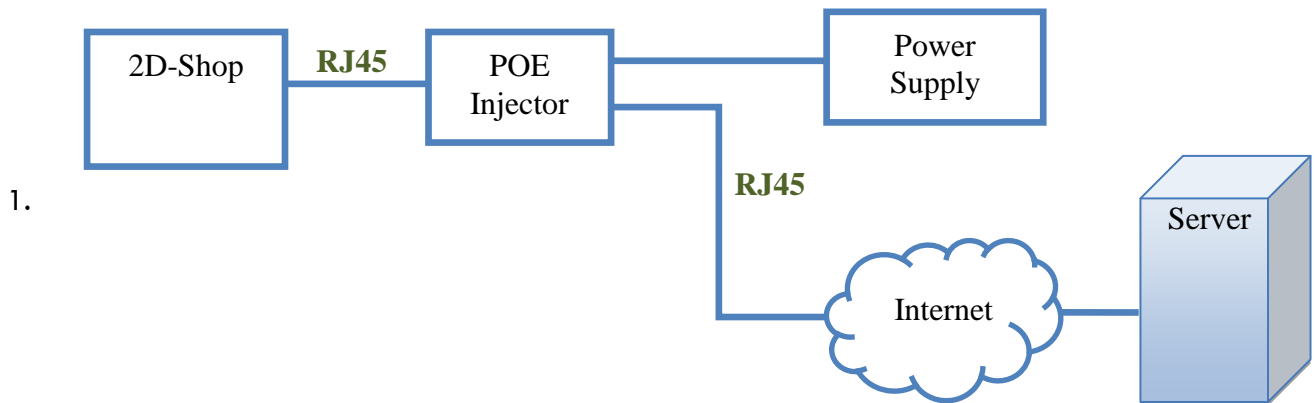


Figure 1 Connection diagram

Coverage :

It depends on the ceiling height and on the optical parameters.

Two models are available :

Standard model for ceilings up to 3.2 meter,

High sensitivity for ceilings up to 4.5 m

Standard model.

It is based on a 3.6 mm lens

Ceiling height	Coverage
2.2 m	1.9 m
2.4 m	2.1 m
2.6 m	2.3 m
2.8 m	2.4 m
3.0 m	2.5 m
3.2 m	2.6 m

Figure 2 Coverage for the standard model

- **High sensitivity**

Ceiling height	Coverage
2.5 m	2.6 m
3.0 m	3.1 m
3.5 m	3.7 m
4.0 m	4.1 m
4.5 m	3.5 m

Figure 3 coverage for the high sensitivity model

Installation

The camera is attached under the ceiling with the omega shaped bracket and a pair of expansion bolts.



Figure 4 back of the camera

Attach the bracket first with a pair of expansion bolts
Then introduce the camera and fasten the 8 mm hex bolt with a 10 mm wrench.
Turn the camera so that it looks parallel to the entrance.

Orientation

The 3 leds must be inside the shop, in order to have a simple default software installation

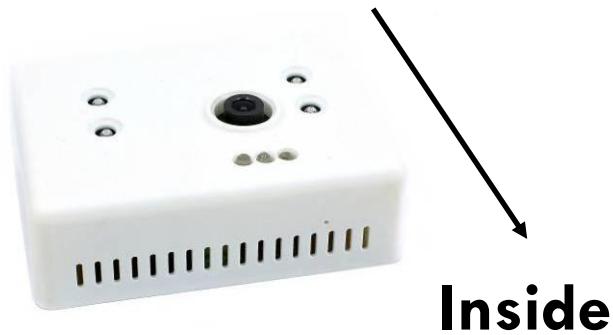


Figure 5 : orientation of the camera

Electrical

On the back of the camera are two connectors :

RJ45 connector : it is a POE link, the network cable carries the power and the Ethernet data.

Green pulse connector : useful when the camera is for infra red beam replacement.

POE Ethernet connection

This camera uses passive POE (power over Ethernet) connector.

The cable carries 0 Volt on pins 7,8, and +48 Volts on pins 4,5

Connecting the camera to an active POE switch will not work.

A POE power supply is provided with the camera :



Figure 6 : POE adapter

- Data in goes to the IT switch
- Data and power out connect to the camera

In case of multiple cameras, a poe switch is desirable.

It must be the **passive type** with power on 4,5 and 7,8 .



Figure 7 : POEswitch passive

When booting up, a multicolor led blinks on the camera, and after boot up it will extinguish.

Cabling

This a reminder only.

Cat 5 or Cat6 Ethernet cable is necessary, with proper A or B cabling as shown in the next figure. Telephone cable will not work properly even on short distances.

Norme EIA/TIA568A

T568A			
Nom	N° Broche	N° Paire	Couleur
RD+	1	1	Blanc-vert
RD-	2	1	Vert
TD+	3	2	Blanc-orange
Non utilisée	4	3	Bleu
Non utilisée	5	3	Blanc-bleu
TD-	6	2	Orange
Non utilisée	7	4	Blanc-brun
Non utilisée	8	4	Brun



Norme EIA/TIA568B

T568B			
Nom	N° Broche	N° Paire	Couleur
RD+	1	1	Blanc-orange
RD-	2	1	Orange
TD+	3	2	Blanc-vert
Non utilisée	4	3	Bleu
Non utilisée	5	3	Blanc-bleu
TD-	6	2	Vert
Non utilisée	7	4	Blanc-brun
Non utilisée	8	4	Brun



Figure 8 normalized cabling A or B

Pulse system compatibility

It happens that on some site no Ethernet cable is available.

Ethernet connector is used for initial tuning.

The green connector carries 4 signals

- Ground , 0V
- Positive voltage

- Entrances
- Exits

A 15 Volts, 2A power supply is necessary. (a 12 V 1A power supply will NOT work)

When detecting the camera will produce a 15 V pulse which can be fed in a dat logger as usual.

IP address switch

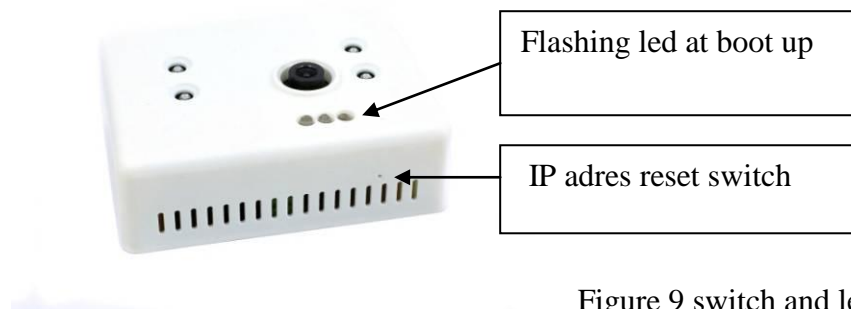


Figure 9 switch and led position

By depressing the IP address switch with a paper clip during 3 seconds, the camera goes back to default address 192.168.1.7.

2. Parameters-Settings

Finding the camera:

The camera is a network device, and all necessary settings are done through a browser, for example internet explorer. We recommend that installer carries a laptop and a switch.

- **New camera**

Default address of new cameras is 192.168.1.7

In order to communicate, set the laptop address to a compatible network : for example 192.168.1.xx

Connect camera to the PC , if necessary use a switch.

On the browser, type 192.168.1.7 then the camera menu must appear.

- **Already programmed camera**

Normally the address is written on the device, and one must repeat the above operation, being sure that the pc is in compatible address.

Suppose the 3d was in 199.188.177.166

We must set our laptop to 199.188.177.xx to be able to communicate.

- **Unknown address**

The Cbox finder program is available to find all devices in the network.

It is available on our website : upgrade.shoplevel.fr

http://upgrade.shoplevel.fr/Utilitaires/cbox_finder.exe

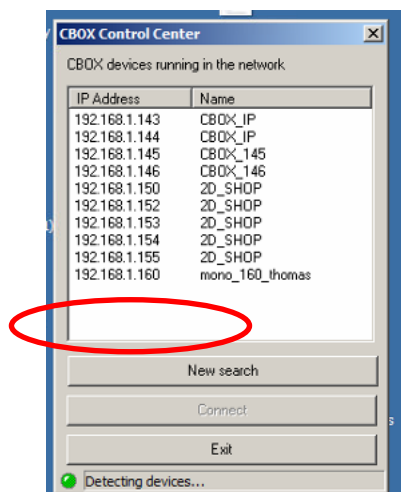


Figure 10 : list of devices in the network

It will show you the list of connected devices to the local network.

Choose your device and press connect to see the device in default browser.

Device identification

This identification is useful in multiple camera use, it has no influence on file generation.

2D_Shop camera . English manual

Remember that hierarchy in people counting in shops is :

Chain of stores Mychain
 Shop Paris
 Door Entrance



The screenshot shows a web browser window titled 'Settings - Internet Explorer' with the address bar displaying 'http://192.168.1.7/'. The browser's toolbar includes icons for BNP Secure, BNP Paribas Banque, Aliexpress, BRK, OneDrive, and Inventel. The main content area features the 'SHOPLINE electronic | france' logo. Below the logo is a blue header with the word 'About'. A left sidebar contains a list of menu items: 'Device identification' (highlighted), 'Network', 'Time', 'Data delivery' (with sub-items 'FTP' and 'HTTP'), 'Channels', 'Source', 'Status', 'System', and 'Log In'. The main content area to the right of the sidebar contains a form with three input fields: 'Device Name:' with the value '2D_Shop', 'Chain:' with the value 'chain', and 'Shop:' with the value 'shop'. An 'Apply' button is located below the 'Shop' field.

Figure 11: Device identification

Network settings



Figure 12 : Network settings

Device is delivered at address 192.168.1.7

DNS is set into the router which will work most of the time, if needed introduce another DNS address. This is quite important as the camera must find the time server on the internet to update internal clock;

Automatic work or DHCP will set automatically parameters, they can be seen by “show current settings”

Time settings

Settings - Internet Explorer
http://192.168.1.7/control/ntp/

SHOPLINE
electronic | france

Time settings

- Device identification
- Network
- Time
- Data delivery
 - FTP
 - HTTP
- Channels
- Source
- Status
- System
- Log In

Internet time

Get Time From Server:
Port:
Time Zone:

System time

Current system time: 2017-03-28 10:55:02

Figure 13: Time settings

Check that this is running fine, because we need the date and time for file generation. We may run on internal clock, but as it may drift one should update time from time to time. Remember that it needs the DNS

Channels

Settings - Internet Explorer
http://192.168.1.7/control/channels/

SHOPLINE
electronic | france

Channels

- Device identification
- Network
- Time
- Data delivery
 - FTP
 - HTTP
- Channels
- Source
- Status
- System
- Log In

Name	Direction	Type	I/2
ch1	Enters	Doors	<input type="checkbox"/>
ch1	Exits	Doors	<input type="checkbox"/>

Counting data for date 2017/03/28:

28/03/2017	10:30	0	0	0	0
28/03/2017	10:45	5	2	0	0

Figure 14 : Channel definition

These features will be included into the file produced.

Name Is the name of the door, should be the same on line 1 and line 2

Direction As shown enters on line 1 and exits on line 2 will give correct results if the camera is oriented with lens toward the inside of the shop.

Type Most of the time the type of counting will be entrance to the shop. It can be set as corridor as well, especially if heatmap is used only.

½ division In some cases, quite rare, accuracy will be improved if both channels are used as entrances added and the total divided by two.

The window shows the number of counts per 15 minutes aggregation time. It cannot be changed. The last two channels are kept for software compatibility with data logger CBOX used with infra red beams.

At the bottom, arrows show recorded data into device memory for approximately one month. In some cases a paste and copy can be useful.

Data delivery

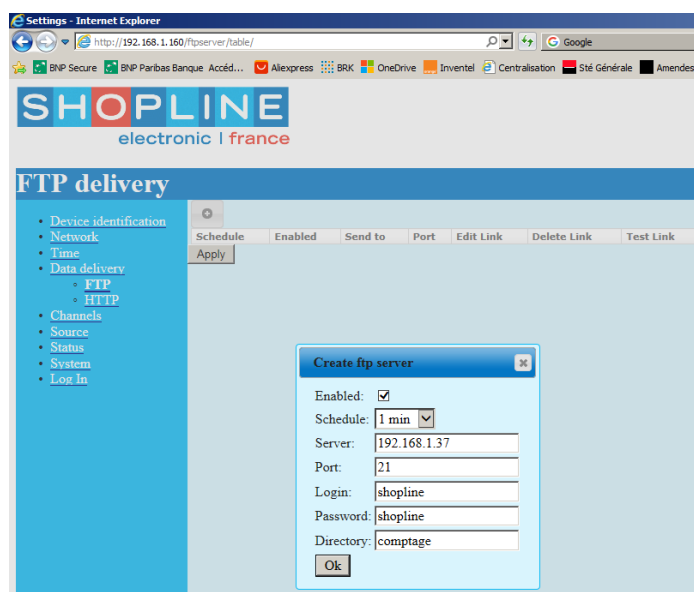


Figure 15 Data delivery

Data can be delivered to some FTP or HTTP server.

Many instances can be installed by the “ADD” button for example to send to local PC and some server.

Most common is the FTP protocol, which needs opening port 21 on the route. It will be described in the software section.

Delivery schedule From once a minute to once a day. In case of a multiple store server be careful not to overload the link and the data base service.

IP address of the server It can be on the local server as seen on the figure, 192.168.1.37 or on a distant server like frequence.shopline.fr

Login Name of the FTP account

Password Name of the password for this account

Directory A directory is created automatically on the server account directory.

The settings which are indicated in the figure will be convenient when configuring a server on a local PC in a shop.

Testing Will ensure that everything is fine and that the file will be safely written on the server

File generated

Files are generated according to proprietary SCB format, aggregation will be 1 file per day as “date.scb”
They are plain text files which can be opened with any editor, like notepad.

Source

This screen shows the image seen by the camera, as well as the region of interest and 2 counting lines.
Underneath one can see the counting results , the arrow shows the direction of entrance, remember that the 3 leds must be inside the shop.

Base

It shows ceiling height and filtering height. This feature is not implemented on the 2D counter, it is indicative for the user.

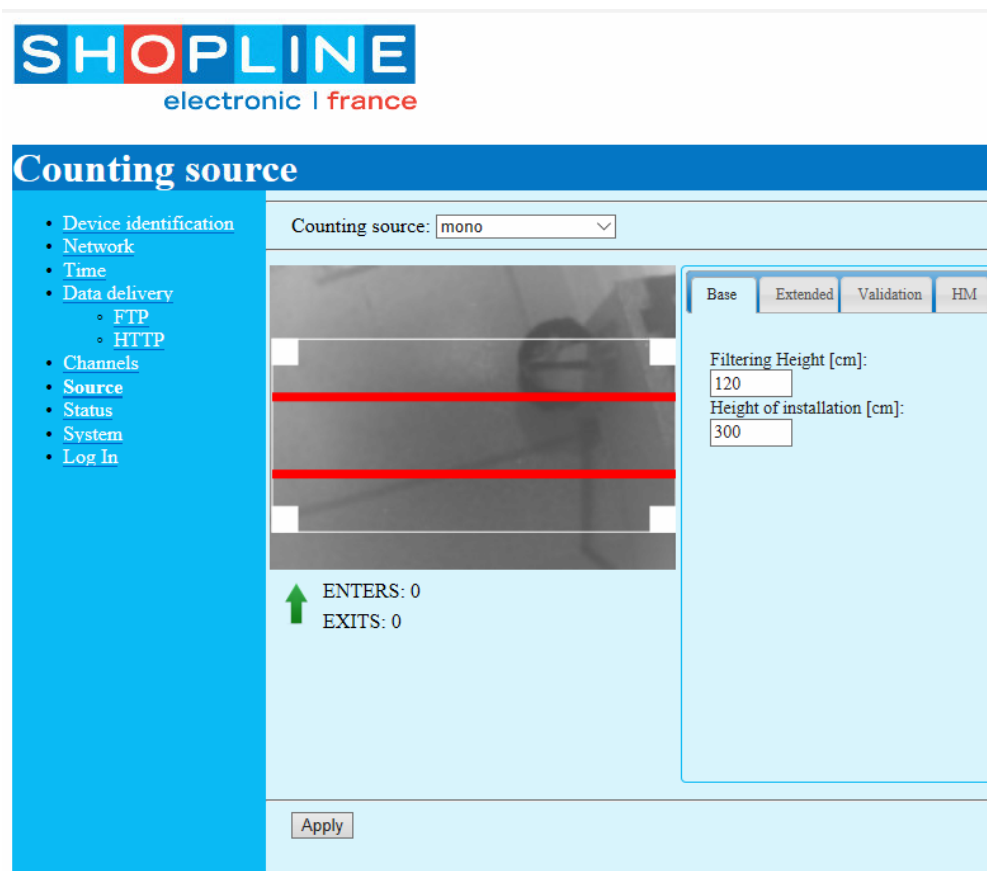


Figure 6 : Base source menu

Extended

This allow you to tune the 2D_Shop versus height and sensitivity

Minimum area filtering of small objects, default is 20

Iso between 1 and 100 % must be set to have a light grey image

Apply sensitivity 1,2,3 filtering dark pixels

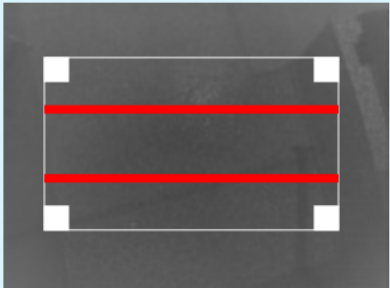
Change the value and validate the input will cause the device to take the new value into account

Make the setting permanent with validation at bottom of the screen

Counting source

- Device identification
- Network
- Time
- Data delivery
 - FTP
 - HTTP
- Channels
- **Source**
- Status
- System
- Log In

Counting source:



↑ ENTERS: 0
EXITS: 0

Apply

Base Extended **Validation** HM

Min contour area:

ISO:

Sensibility:

ROI: (34,46,278,190)
 H1: 89
 H2: 147


Figure 6 Extended menu for gain settings

Validation

Counting source

- Device identification
- Network
- Time
- Data delivery
 - FTP
 - HTTP
- Channels
- **Source**
- Status
- System
- Log In

Counting source:



↑ ENTERS: 0
EXITS: 0

Base Extended Validation **HM**

Length:

Server:

Port:

Login:

Password:

Directory:


On Schedule: ☒


When:

This will send to a FTP server the recording of the image and the counts. One must realize that the volume can be high and overload the server.

Heat map

Counting source: mono




ENTERS: 0
EXITS: 0

Base Extended Validation **HM**

Send heatmap image to:

Server: someserver.com

Port: 21

Login: Chain

Password: shopline

Directory: comptage

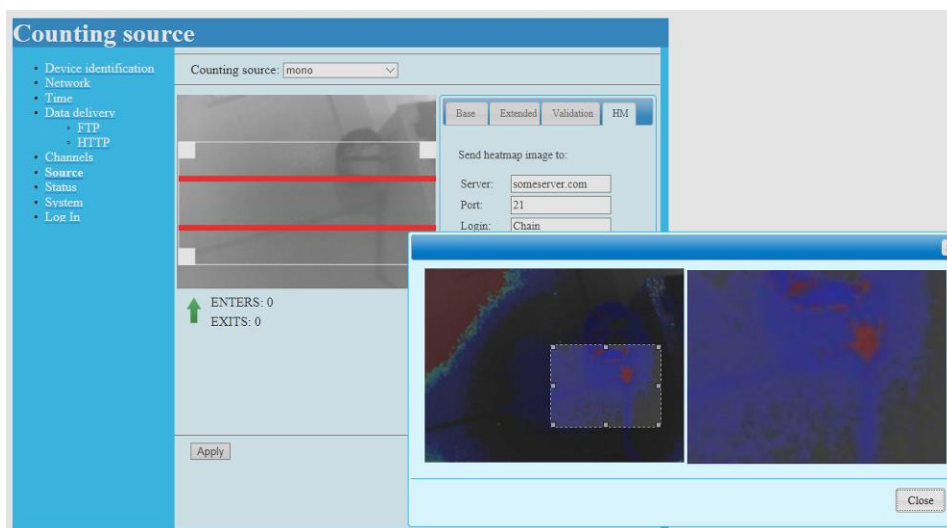
On Schedule: ☒

Hm when: 19:26:00

Show heatmap now

Send heatmap now

The heat map can be seen on the navigator screen and sent to a server for recording and further treatments. Note the zoom on the left image.



Status, and sytem

These pages shows detailed information's for debug and trouble shooting.

Status

- Device identification
- Network
- Time
- Data delivery
 - FTP
 - HTTP
- Channels
- Source
- Status
- System
- Log In

System:

IP: 192.168.1.160
Uptime: 0 days 14 hours 47 minutes 13 seconds
Software version: 5.2.6

Tasks:

Time: 01.04.17 14:01:09 Time succesfully retrieved from pool.ntp.org
Data transfer: 01.04.17 14:47:09 FTP: 170401.scb sent to u'192.168.1.37'
Counting:

Logs:

```
01.04.17 02:06:33 FTP: 170401.scb sent to u'192.168.1.37'  
01.04.17 02:08:03 FTP: 170401.scb sent to u'192.168.1.37'  
01.04.17 02:09:34 FTP: 170401.scb sent to u'192.168.1.37'  
01.04.17 02:11:04 FTP: 170401.scb sent to u'192.168.1.37'  
01.04.17 02:12:35 FTP: 170401.scb sent to u'192.168.1.37'  
01.04.17 02:14:05 FTP: 170401.scb sent to u'192.168.1.37'  
01.04.17 02:15:35 FTP: 170401.scb sent to u'192.168.1.37'
```

System

- Device identification
- Network
- Time
- Data delivery
 - FTP
 - HTTP
- Channels
- Source
- Status
- System
- Log In

Apply New Settings Current changes will be written to the device. The device will be restarted.

Load Default Settings Default settings will be loaded. All changes you did during this session will be lost. You may continue to tune settings without device restart.

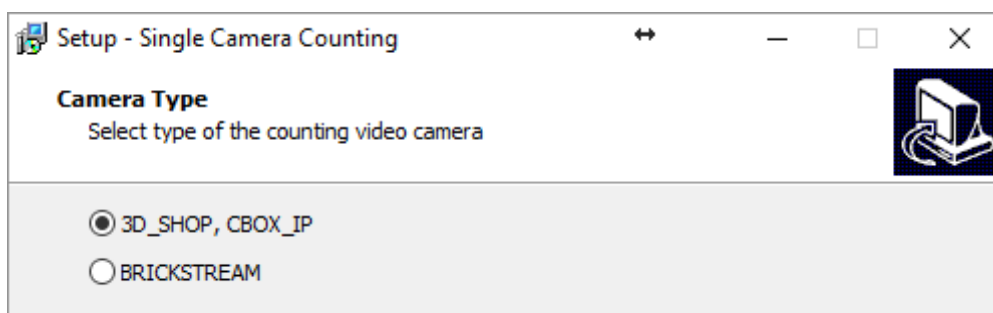
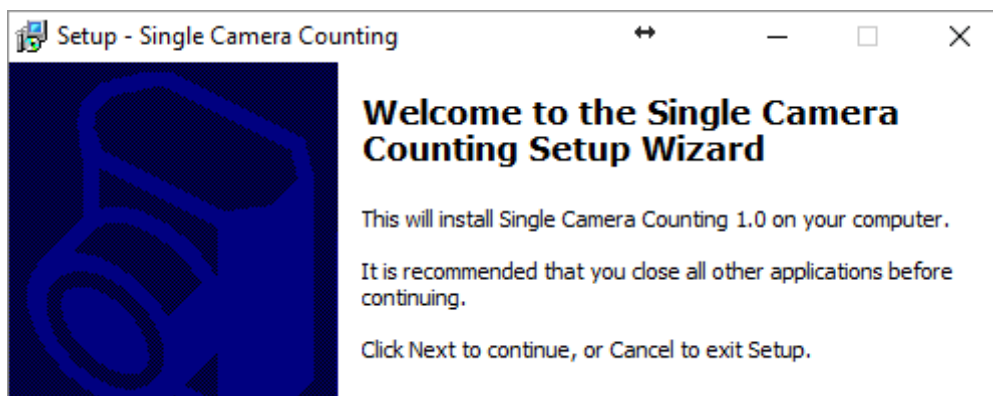
Cancel Changes and Restart All changes you did during this session will be lost. The device will be restarted.

In order to save the entire device configuration you must save changes pressing apply new settings

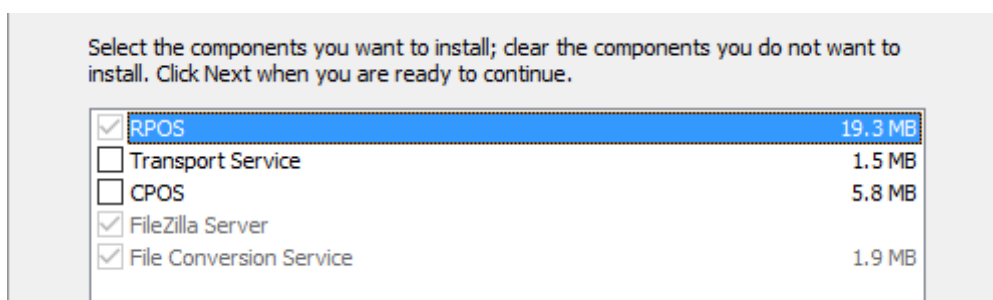
3. Local Server Configuration

A classical way to obtain transformation rate is to mix on the local PC footfall and sales figures. The consequence is that this local PC must be turned into a FTP server. An installer called single camera setup is provided which will setup the popular Filezilla server using default analytic directories, and main video analytic programs.

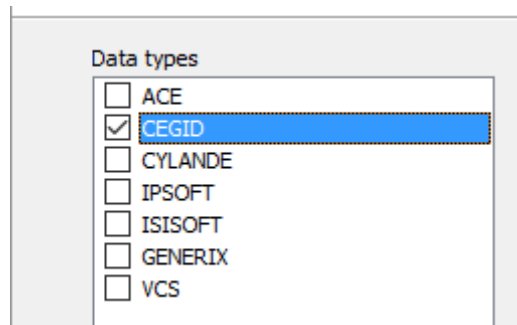
http://upgrade.shoplevel.fr/Distribution%20FR/singlecam_setup.exe



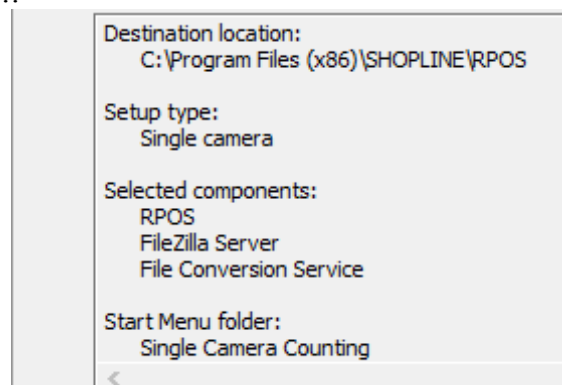
For simplicity click only on the real time part of the analytic, RPOS program



If necessary use one of the popular POS software editor



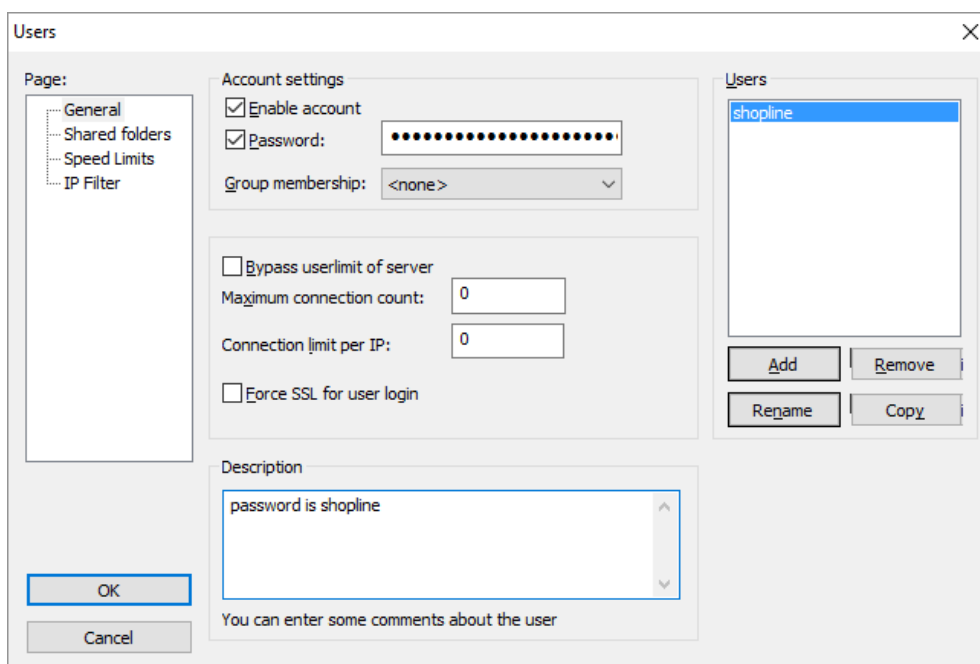
Some technical informations....

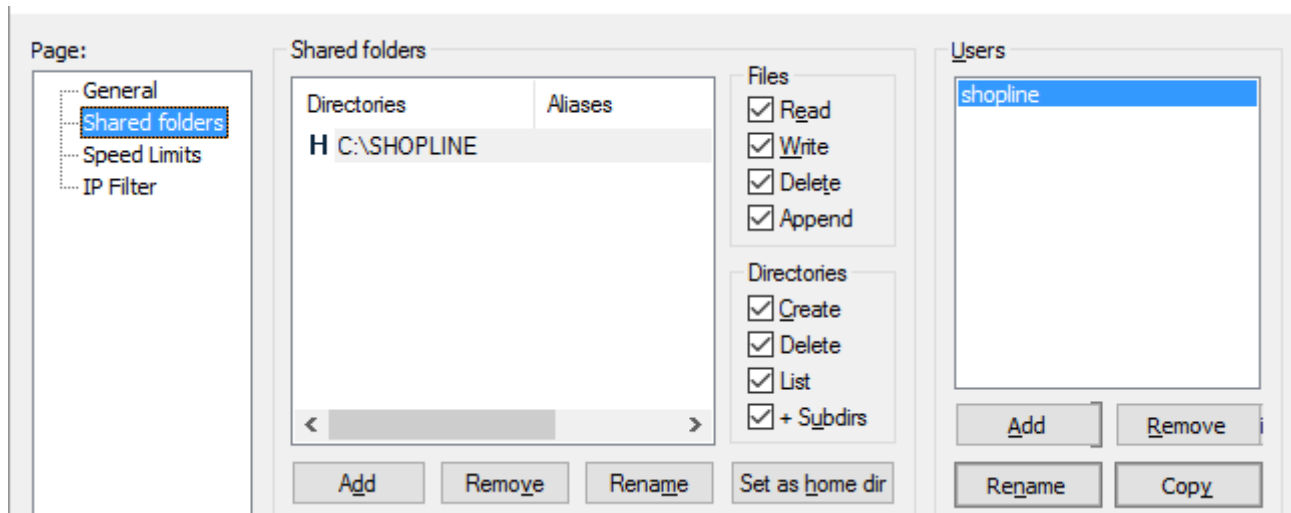


Installation of the FTP server

Check the account and correct :

Login shoplevel
 Password shoplevel
 Main directory shoplevel with all the rights





Technical Channel 21

A window PC is protected by the firewall . You must allow the data traffic on FTP by opening channel 21 on local pc.

GOTO control panel, firewall, advanced , incoming rule, new rule, port , protocol TCP, local port 21, call it FTP.

Check the antivirus for the same

Local PC IP address

The local pc must have a fixed address in same domain as the camera. If the pc is in automatic mode, it must be changed to fixed address.. In this example it is 192.168.1.37

FTP program

Sometime you must give clearance to FTP program itself

Now you can test the ftp data delivery on the camera

Directories

On the camera we remember :

PC address is for example	192.168.1.37
Account name is	shopline
Password	shopline
Directory	comptage
File name	date.scb

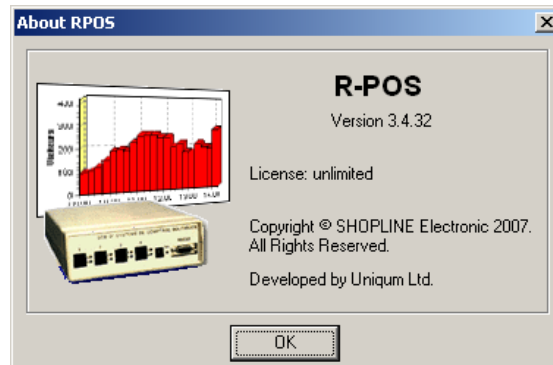
Result is

C:\shopline\comptage\date.scb

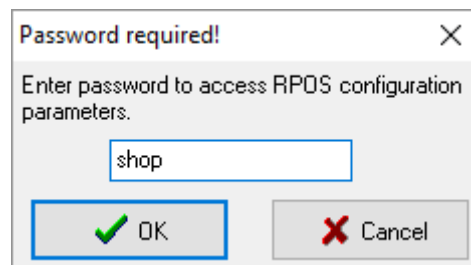
Data are ready for analytics !

4. Real time analytics

After installation, an icon appears called RPOS

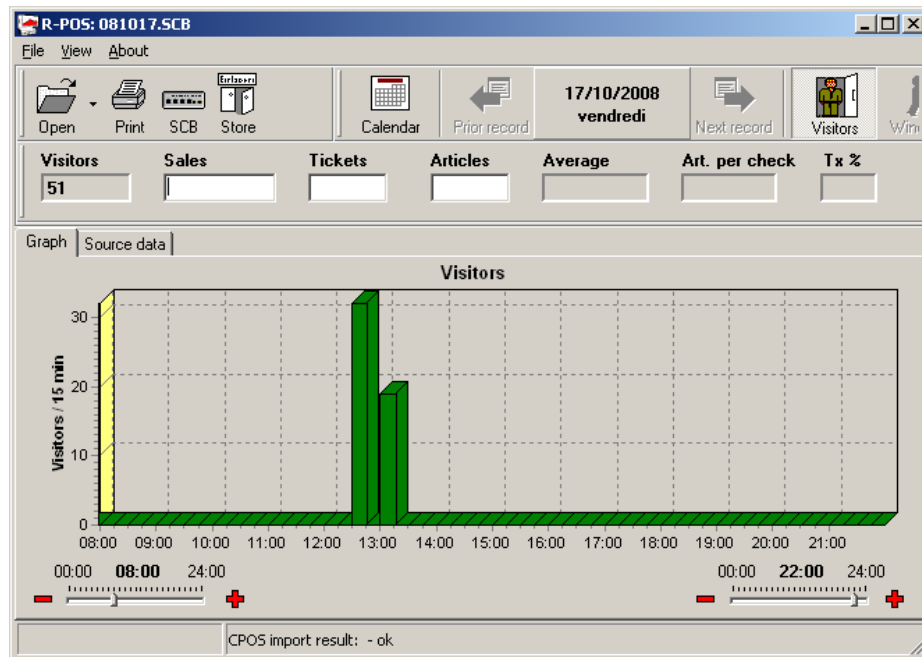


Goto parameters type the password shop



Set RPOS to files in default folder

You are ready to enjoy real time analytics



Documentation

RPOS	Real time analytics
CPOS	Statistical analytic
Transport service	Data transmission to headquarter
Succursales	Headquarter analytics