A SENSYS networks partner

Sensys Networks VDS240 Wireless Vehicle Detection System

FLEX-CC CARD

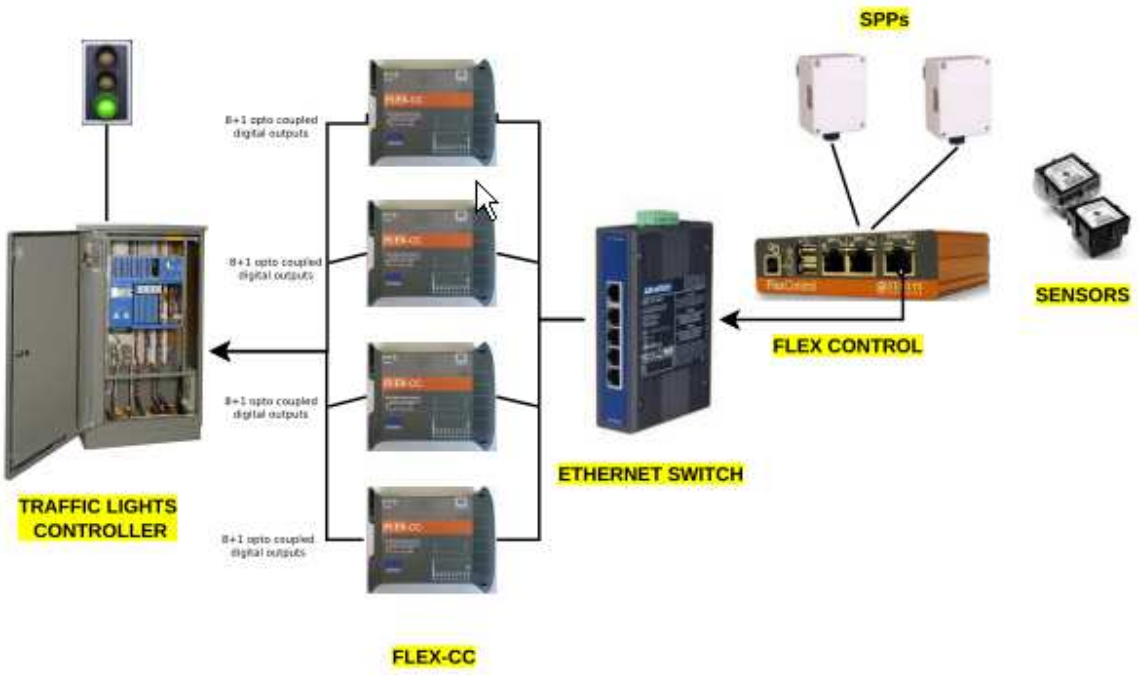
Guide

Version 1.08

1 FLEX-CC Card

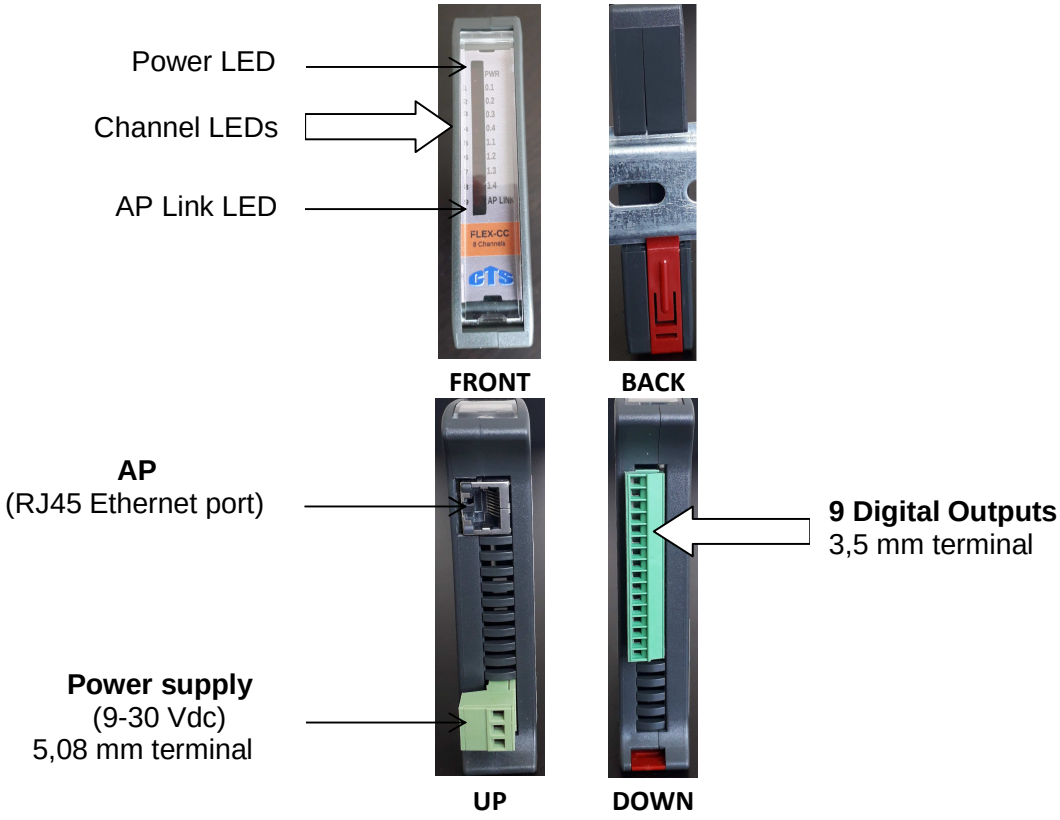
CTS FLEX-CC Contact Closure Card is designed to interface Sensys Networks FlexControl or FlexAP Access Points (AP) to traffic lights controllers, from all makes and models, via 8 + 1 opto coupled digital outputs (CC-EUR-9 model) or 8 + 1 Solid State Relays digital outputs (CC-EUR-9-R model).

Up to 4 FLEX-CC can be connected at the same time to an AP.



1.1 Specifications

Interfaces	10/100Base-T Ethernet port, RJ45 connector RS-485 (optional, for custom applications)
I/O	8 + 1 opto coupled digital outputs (CC-EUR-9 model) 8 + 1 Solid State Relays digital outputs (CC-EUR-9-R model). Max positive voltage to be applied to common terminal: 48Vdc Max current/channel: 40mA 5 digital inputs (optional, for custom applications)
Input voltage	9÷30 Vdc
Power consumption	1,2 Watt
Weight	125 g
Dimensions	100 x 120 x 25 mm
Operating temperature	-20 °C ~ +70 °C
Mounting	DIN mount
Compliance	EN 50293:2012



1.2 Power supply

FLEX-CC must be powered with a DC source within the range 10-30Vdc (1,2 W).

WARNING! Values greater than the maximum allowed may damage the device seriously.

FLEX-CC must be connected directly to Ground using the terminal block on the power supply connector. The connection must be performed through a wire with section at least of 2.5mmq, to a copper equipotential bar of adequate section.

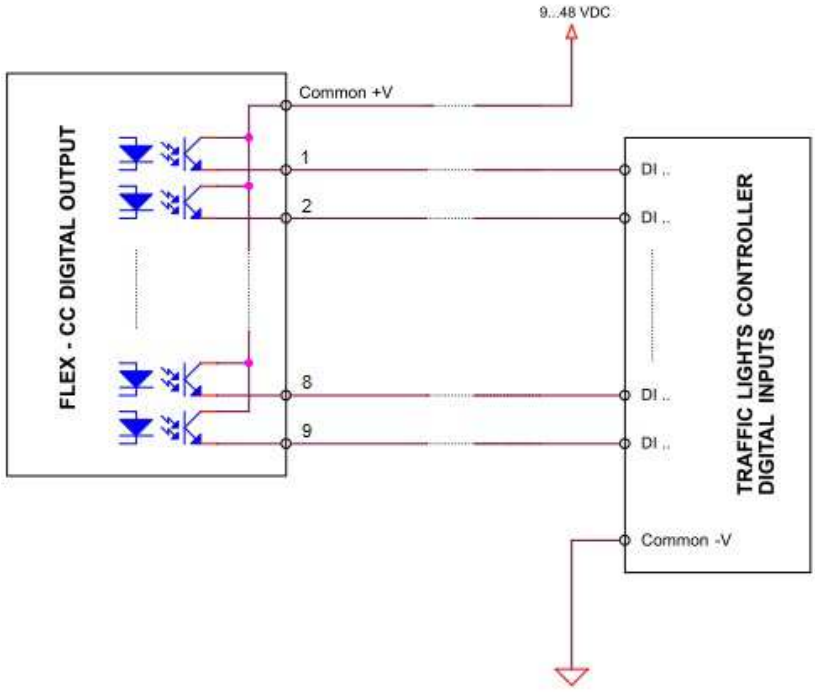
To guarantee a good noise rejection, keep this connection as short as possible and take care to place it far away to the other cables.

1.3 Digital Outputs

FLEX-CC provides 8 + 1 digital outputs, whose status is displayed by LEDs on the front panel of the card. Outputs 1...8 are user configurable via Traffic Dot.
Output 9 is not configurable and represent the FLEX-CC / AP link status: led off means disconnected link, led on means connected link.

1.3.1. CC-EUR-9 model.

CC-EUR-9 provides 8 + 1 (AP LINK) opto coupled digital outputs
The following diagram shows the digital outputs connection.

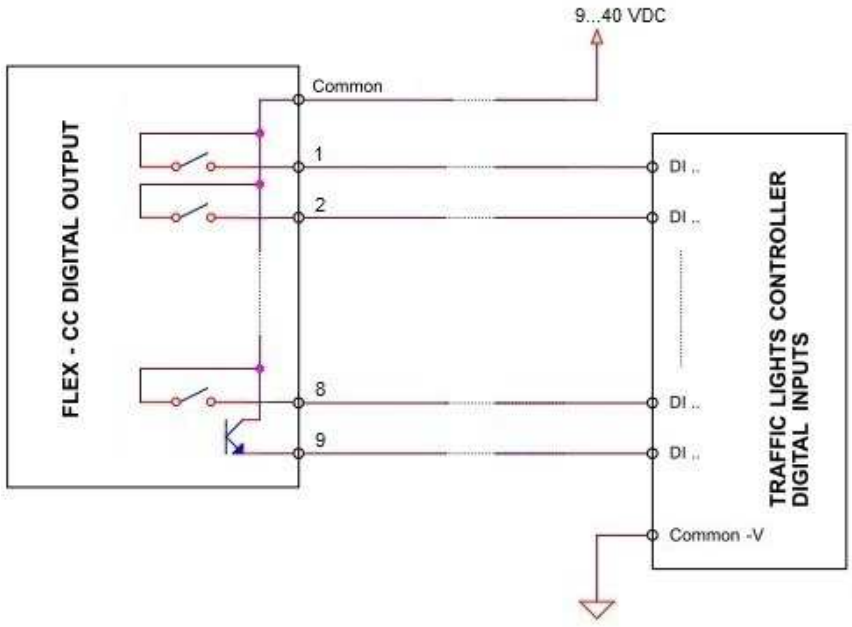


The maximum current available for each channel is 40mA
The maximum positive voltage that can applied to the common terminal is 48Vdc

⚠ An outputs short circuit may damage permanently the device.

1.3.2. CC-EUR-9-R model.

CC-EUR-9-R provides 8 solid state relay outputs + + 1 opto coupled digital output (AP LINK) .
The following diagrams show two different digital outputs connections



The maximum positive voltage that can applied to outputs 1…8 is 40VAC (peak)

The maximum current available for each output 1…8 is 50mA

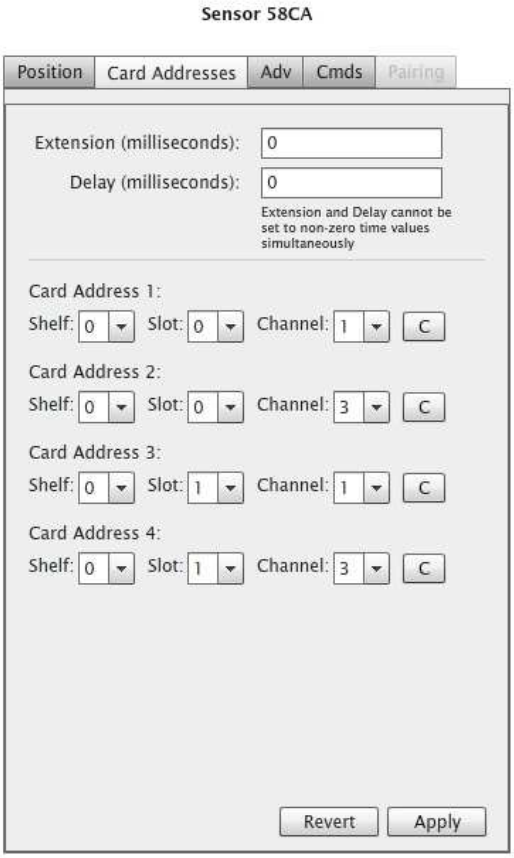
⚠ The AP LINK output 9 is available only for positive voltages applied to Common terminal

⚠ An outputs short circuit may damage permanently the device.

2 Using TrafficDOT

2.1 Sensor/Output mapping

FLEX-CC is handled by TD as a Virtual Card (VC). Up to 4 cards per AP can be connected at the same time.
The user created VCs on TD must be configured to match the FLEX-CC slot numbers (see later Setup page for how to configure FLEX-CC slot numbers).
The shelf field of the card address must always be set to 0.



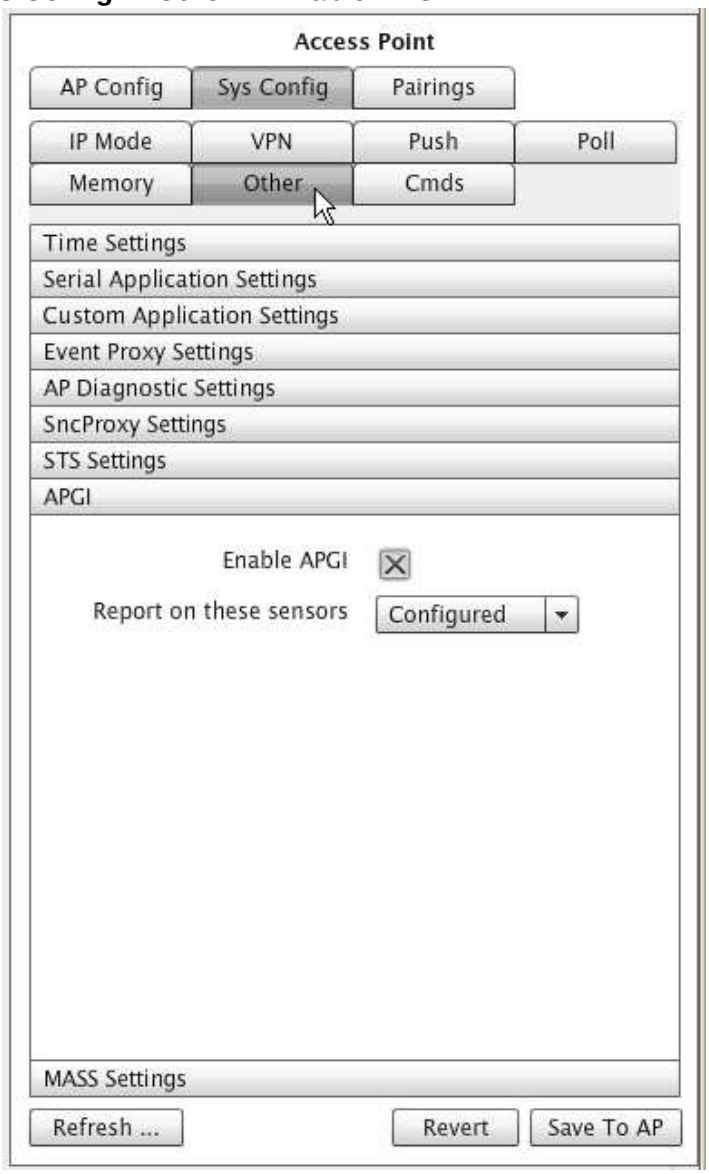
FLEX-CC slots/channels are factory set as follows:

FlexCC Digital output	Slot	Channel
1	0	1
2	0	2
3	0	3
4	0	4
5	1	1
6	1	2
7	1	3
8	1	4

2.2 APGI protocol enabling

The generic interface (APGI) supports communications between Sensys Networks access points, sensors and contact closures from other vendors, using a direct Ethernet interface.
The AP APGI protocol must be enabled in order to work with FLEX-CC.

Menu AP -> Sys Config -> Other -> Enable APGI



3 WEB Interface

The factory IP address of FLEX-CC is **192.168.2.123**.
The user can access FLEX-CC home page by entering this IP address in a web browser (Chrome, IE, Firefox, …).

3.1 Monitor page

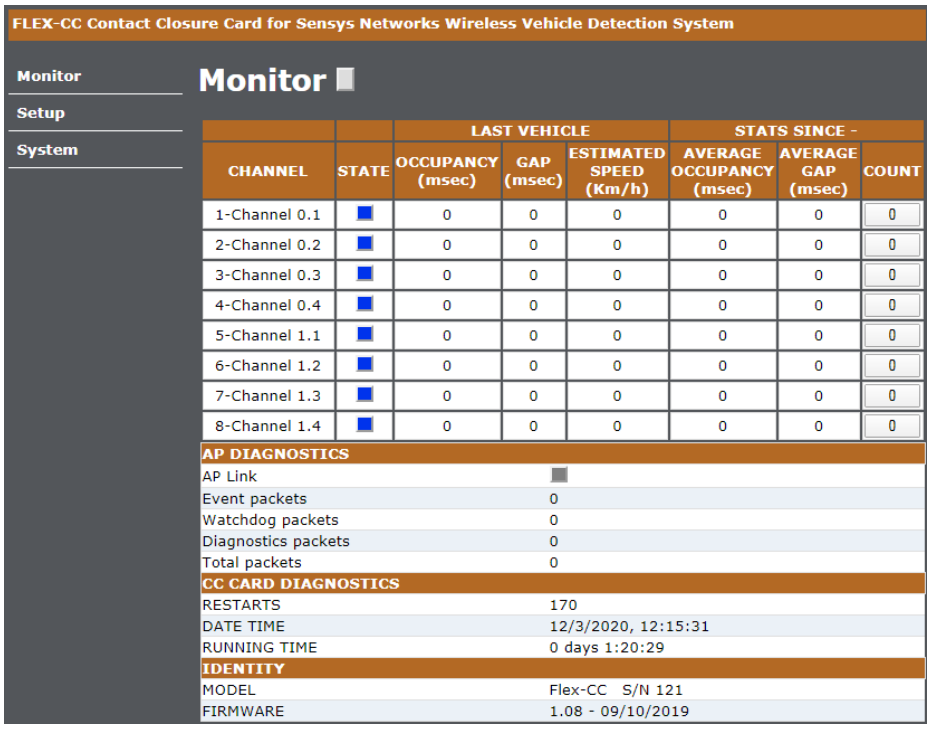
The Monitor page (home page) is arranged in four sections:

- a STATISTICAL section, where, for each channel, are shown:
  - sensor state (when a vehicle is present then the button is blue)
  - last vehicle occupancy
  - gap (time spacing) between last vehicles
  - last vehicle estimated speed
  - average occupancy of the last aggregation period
  - average gap of the last aggregation period
  - vehicles count of the last aggregation period

- an AP DIAGNOSTIC section, where the received AP packets counts are shown.

- a CC CARD DIAGNOSTIC section, where the restart count, date/time and running time are shown.

- an IDENTITY section.



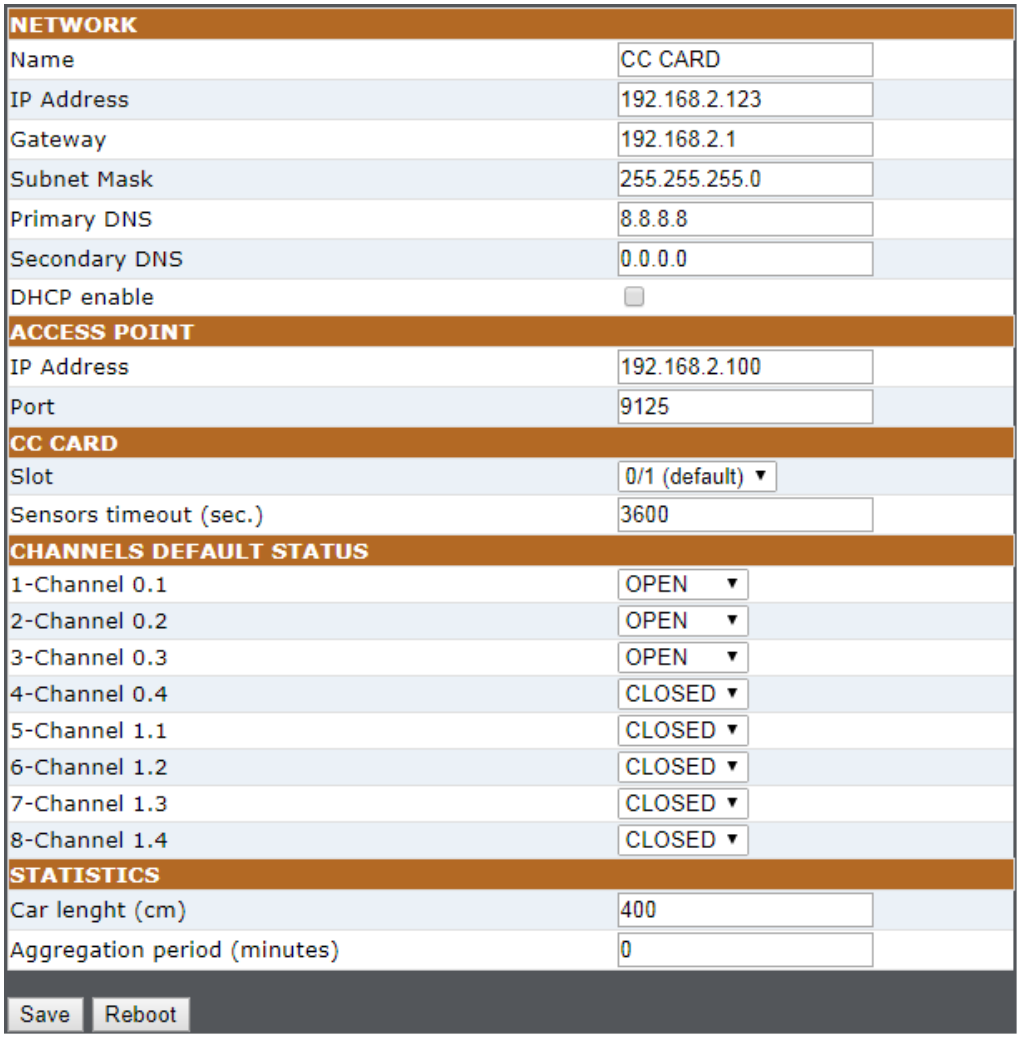
		LAST VEHICLE			STATS SINCE -		
CHANNEL	STATE	OCCUPANCY (msec)	GAP (msec)	ESTIMATED SPEED (Km/h)	AVERAGE OCCUPANCY (msec)	AVERAGE GAP (msec)	COUNT
1-Channel 0.1		0	0	0	0	0	0
2-Channel 0.2		0	0	0	0	0	0
3-Channel 0.3		0	0	0	0	0	0
4-Channel 0.4		0	0	0	0	0	0
5-Channel 1.1		0	0	0	0	0	0
6-Channel 1.2		0	0	0	0	0	0
7-Channel 1.3		0	0	0	0	0	0
8-Channel 1.4		0	0	0	0	0	0

AP DIAGNOSTICS	
AP Link	
Event packets	0
Watchdog packets	0
Diagnostics packets	0
Total packets	0
CC CARD DIAGNOSTICS	
RESTARTS	170
DATE TIME	12/3/2020, 12:15:31
RUNNING TIME	0 days 1:20:29
IDENTITY	
MODEL	Flex-CC S/N 121
FIRMWARE	1.08 - 09/10/2019

3.2 Setup page

The Setup page is arranged in four sections:

- NETWORK section, where to configure the network interface
- AP section, where to set the AP details
- CC Card section, where to set the FLEX-CC addr slots and the channel timeout after which the channel is forced to the default value.
- CHANNELS DEFAULT STATUS section where to set the default status for each channel, that is assumed when the AP Link is off or the sensor is not operating.
- STATISTIC section, where to set the sample car length (use for computing the estimated speed) and the aggregation period



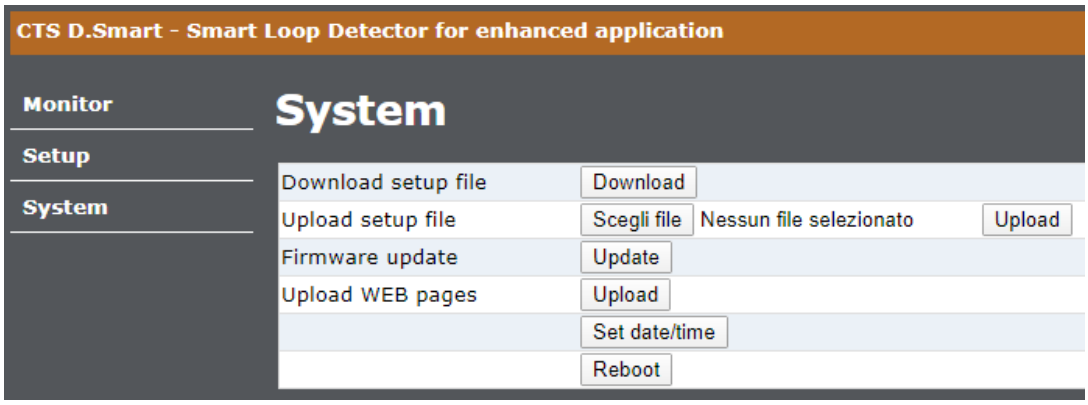
The user must push the SAVE button and then the REBOOT button in order to apply the changes.

The network interface is factory set as follows:

IP ADDRESS FLEX-CC	192.168.2.123
IP ADDRESS AP	192.168.2.100
PORT NUMBER AP	9125
SLOTS	0-1

3.3 System page

In the system page the user may do various operations such as download/upload of the setup file, firmware update, web pages update, date/time setting and reboot.



3.3.1. Download setup file

For reserved use.

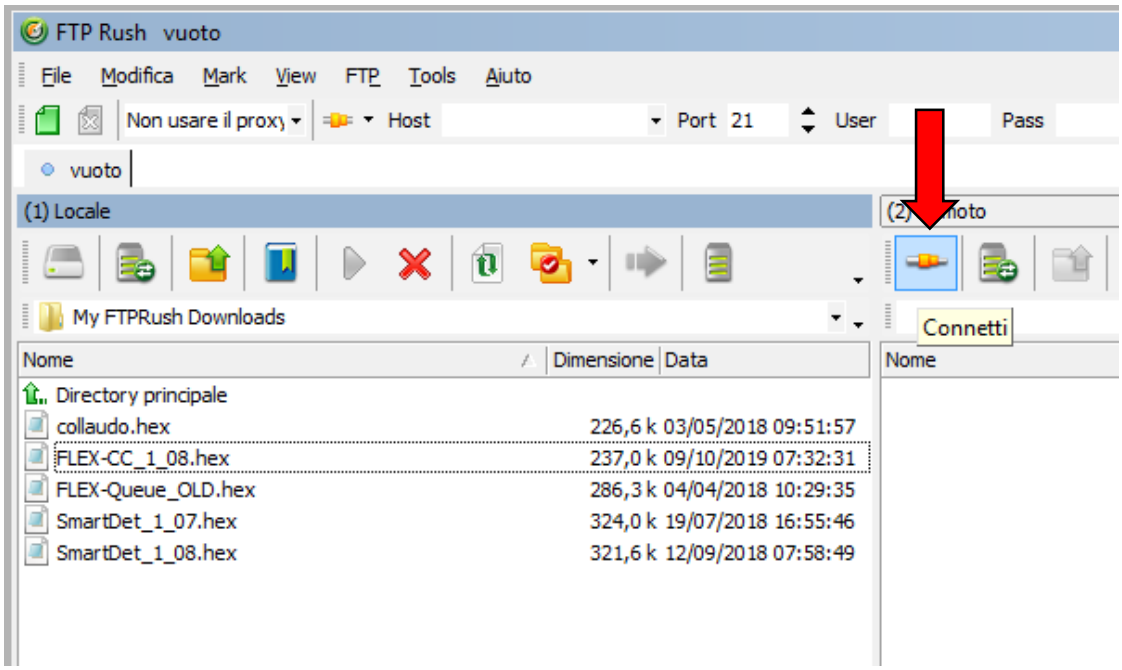
3.3.2. Upload setup file

For reserved use.

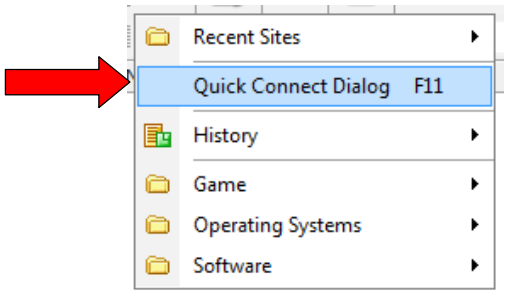
3.3.3. Firmware update

First of all, in order to run the firmware update the user must install on his pc the package FTP Rush or an equivalent TFTP client.
FTP Rush is a free FTP/TFTP client software that can be downloaded from https://www.wftpserver.com/ftprush.htm

Once FTP Rush is running click on the new connection button indicated by the red arrow.

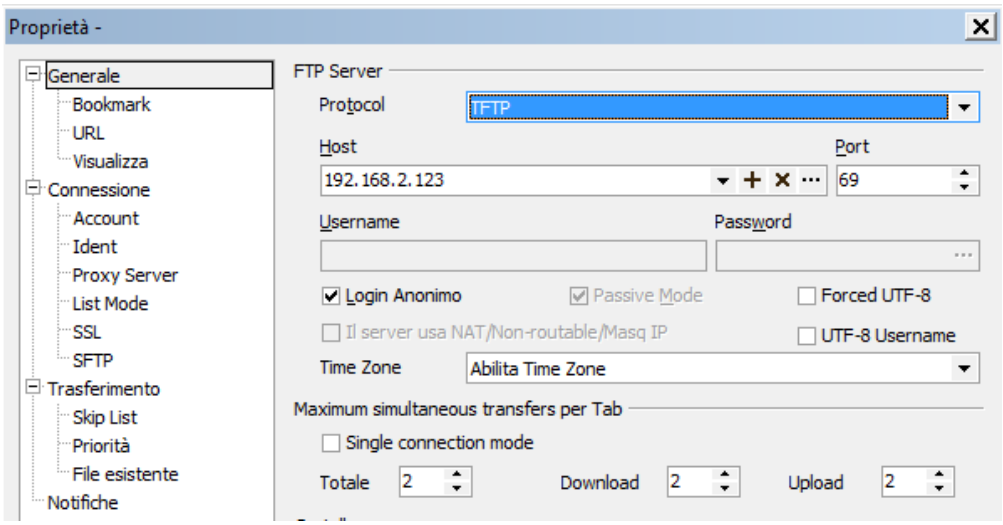


Then select *Quick Connect Dialog*:

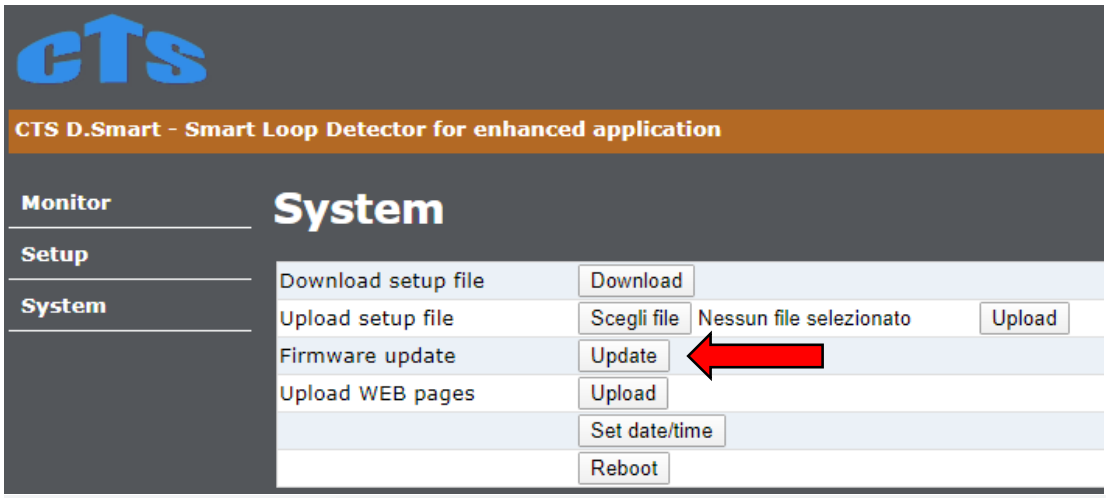


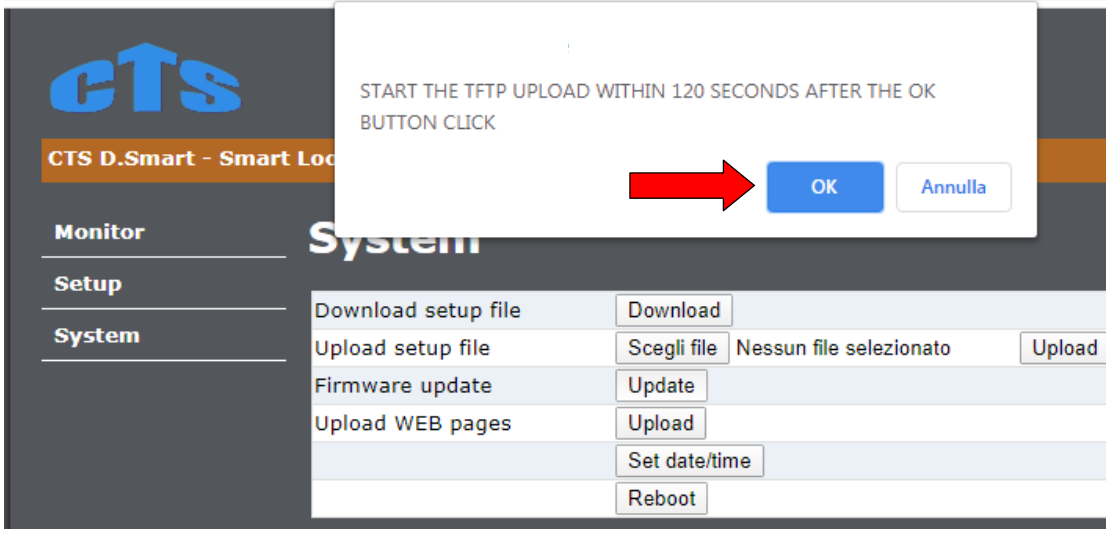
In the next window select TFTP, host address 192.168.2.123, port 69.

192.168.2.123 is the default address of the FLEX-CC: if you changed it then the new address must be used.



Now you have to enable the firmware update on FLEX-CC by clicking the firmware update button of the System page.

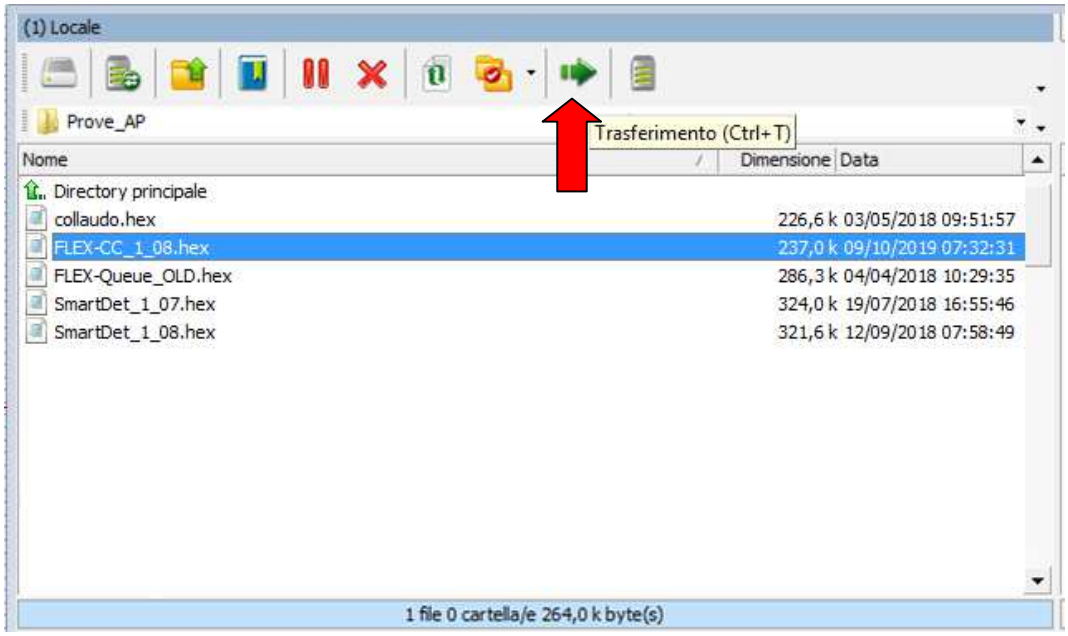




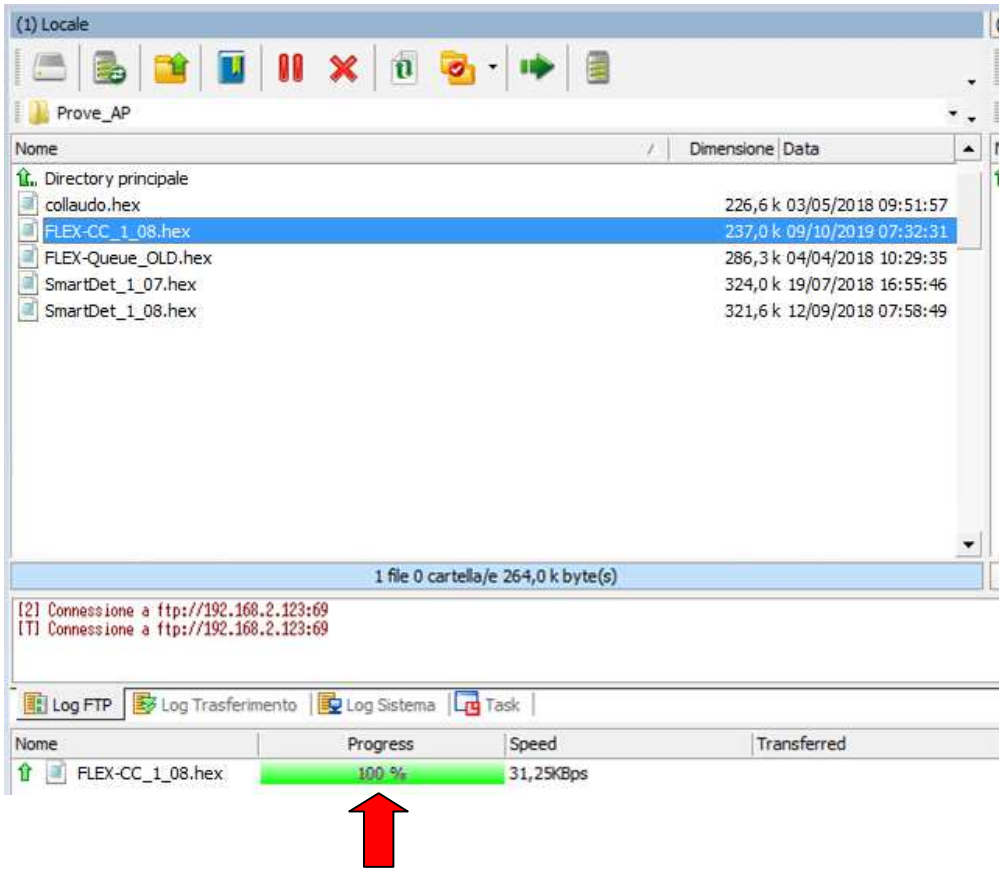
Now you have to go back to the FTP Rush window and select the firmware file to transfer.

The firmware filename starts usually with "FLEX-CC" followed by the version number and the extension “hex”. These files are released by CTS whenever a new firmware release is available.

Once selected the file click the 'Transfer' button to start the file transfer.



When the transfer is complete the progress bar reaches 100%.



FLEX- CC restarts automatically without any further operation.

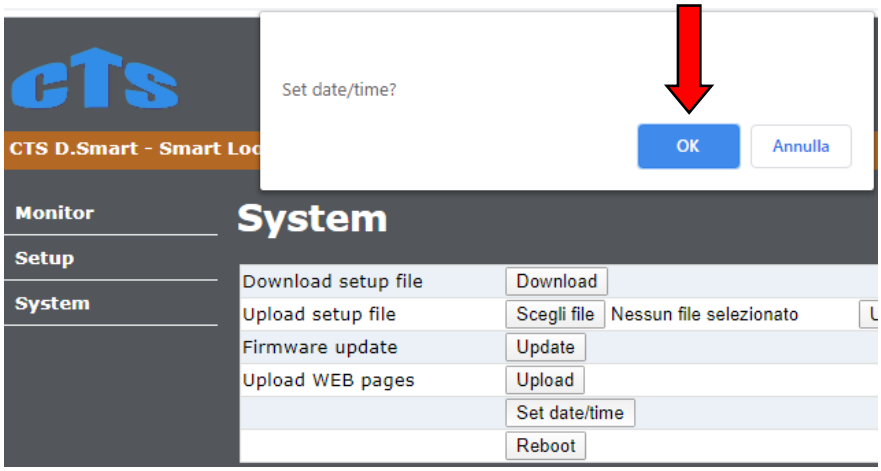
Finally, go back to the FLEX- CC Monitor page and check the new firmware version.

3.3.4. Upload WEB pages

For reserved use.

3.3.5. Set date/time

Set FLEX-CC date/time to the browser date/time.



3.3.6. Reboot

Performs a FLEX-CC reboot .