

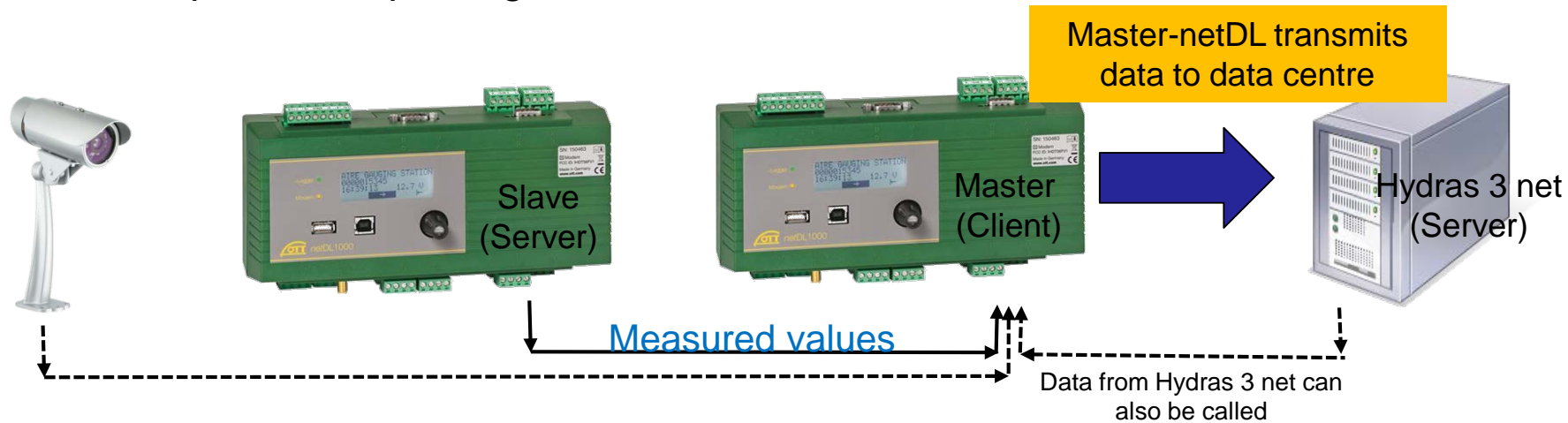


# Tech Tipp: Datatransmission between two OTT netDL via IP (Ethernet)

- Introduction of IP datatransmission between two OTT netDLs
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  - b) Redundant system
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## ■ Master/Slave-coupling

Master-netDL calls data from one or more Slave-netDLs and transmits complete data package to the data centre

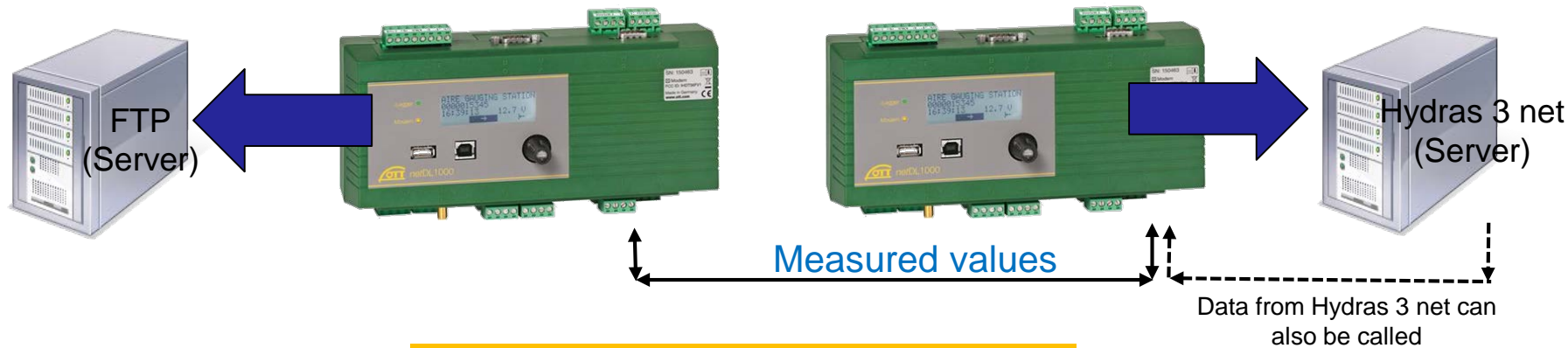


### Application:

- Coupling e.g.: if more than 3 optional input-/output cards are necessary
- Connection of remote measuring sites if it is required that all measured values are available at the Master
- To save a modem or SIM-card

## ■ Redundant system

Both systems collect the data of their sensors and exchange the data. Each system transmits its data to the data centre (independent)



**Both OTT netDLs transmit the complete data on separate ways**

### Application:

- If connection of one OTT netDL (datatransmission to data centre) fails, there are still all data of all sensors available.
- Parameters of the sensors connected to the other OTT netDL can be shown at both OTTnetDLs

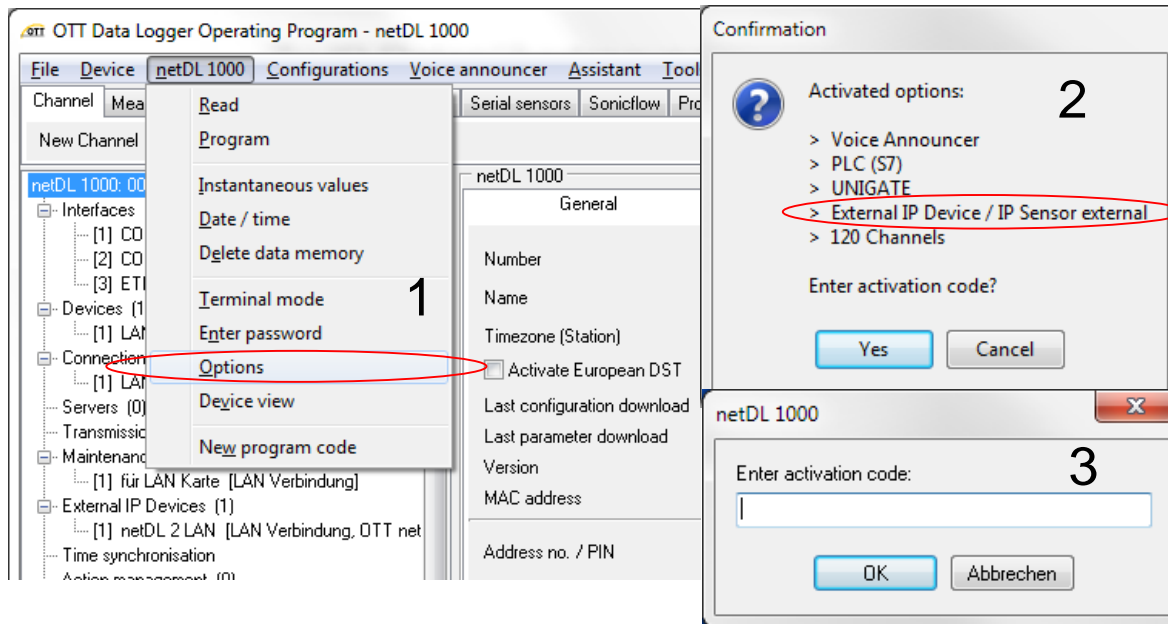
## Coupling possibilities

- Crossed Ethernet cable (direct connection, [like in the following example](#))
- Ethernet cable connected via switch
  - Advantage: switch as intermediate point enables greater cable lengths; enables coupling of several OTT netDLs
- VDSL-Mini Modem
  - Advantage: existing cable can be used
- Fiber optic cable with converter Ethernet to optics
  - Advantage: galvanically separated, enables greater cable lengths
- Closed mobile network (GPRS with own APN or VPN)
  - Advantage: transmission over long distances including the Hydras 3 net data centre
  - Restriction: no stable connection (data gaps possible), no short polling intervals possible!

# 1. Activation of both OTT netDLs with licence code for external IP Device

For IP-datatransmission the payable server option „external IP device“ for the OTT netDL has to be activated by entering a licence code.

To activate the option „external IP device“ proceed as follows:

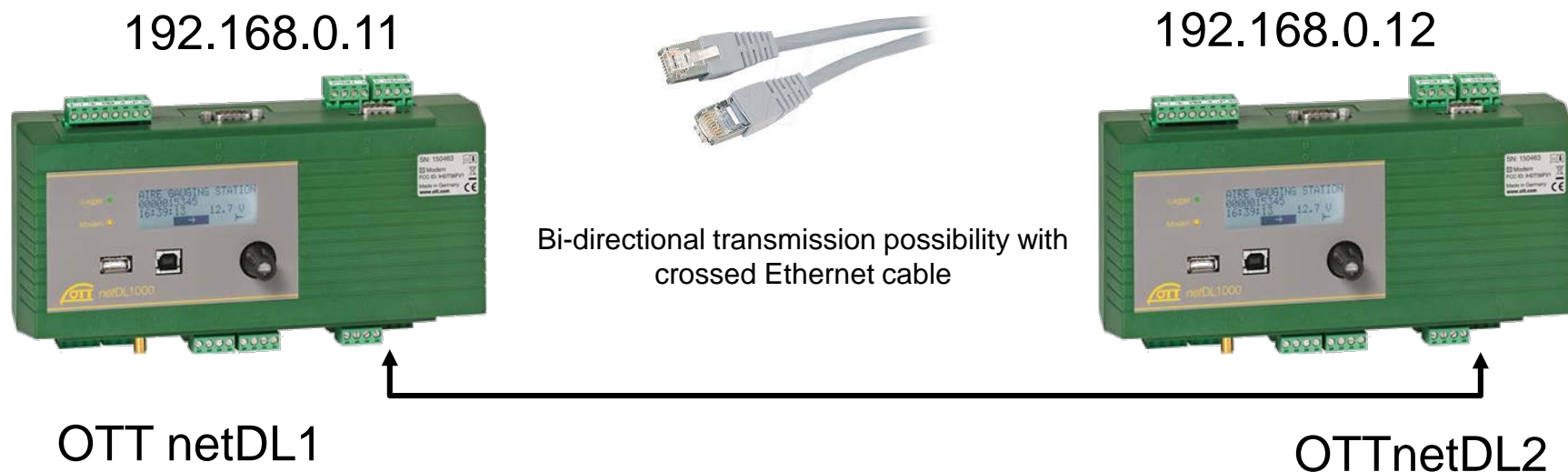


4  
Enter licence code and confirm by „OK“. You'll receive a message when the licence code has been accepted.

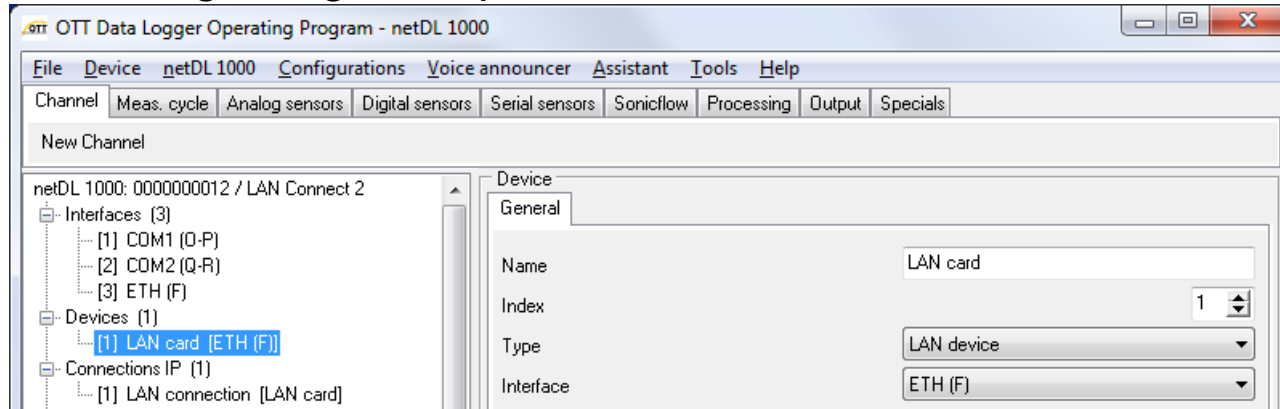
## 2. Allocation of IP addresses of both OTT netDLs at LAN interfaces

Coupling can be made by a direct connection with crossed Ethernet cable or via a local net or the Internet. For more information please read our: TechTipp: IP-Cam connection with OTT netDL.

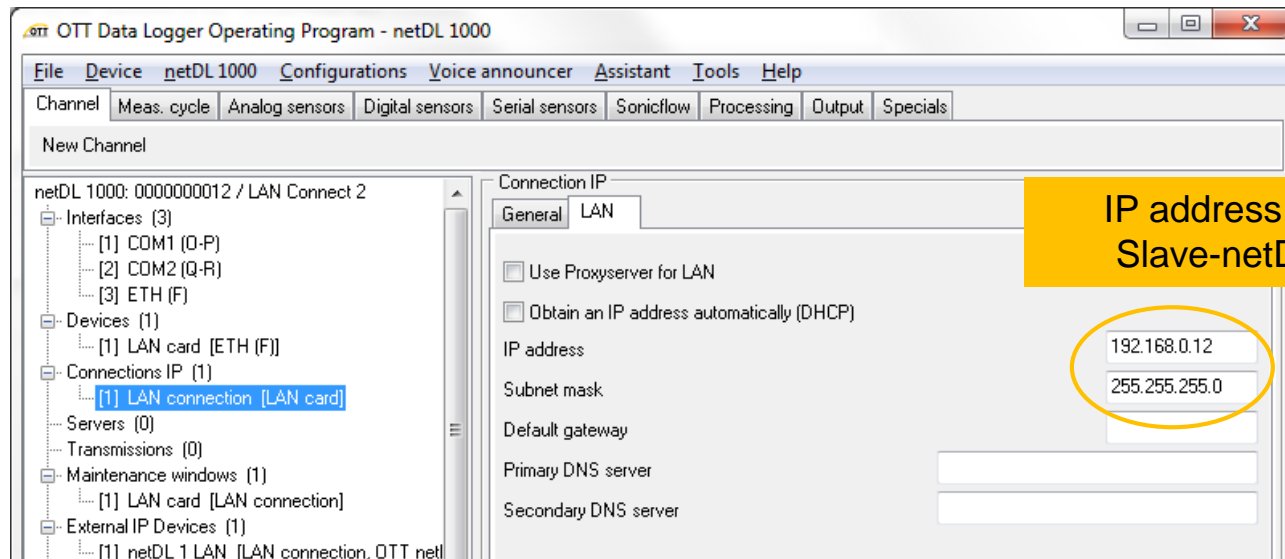
Both OTT netDLs require their own clearly defined IP address and the corresponding subnet mask at their LAN interface. Please contact your administrator.



At the beginning, set up the LAN interface and



the connection, via which data shall be retrieved:

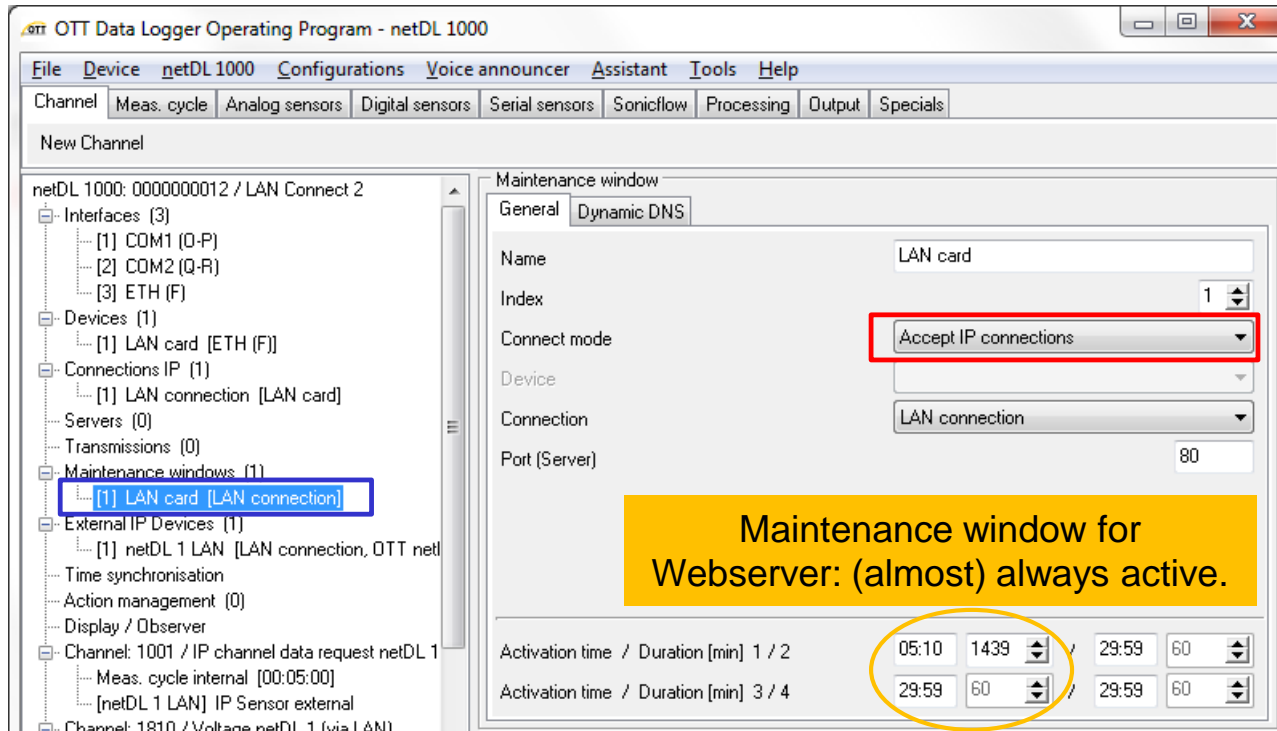




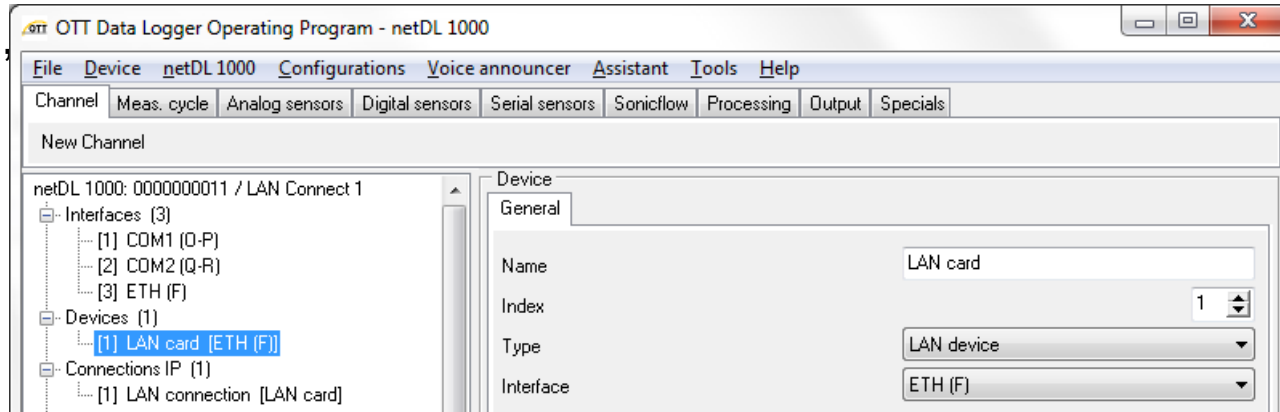
### 3a. Configuration of Slave-netDL

The **Maintenance window** for the Ethernet-interface has to be permanently active for the Slave-netDL (Webserver is always active).

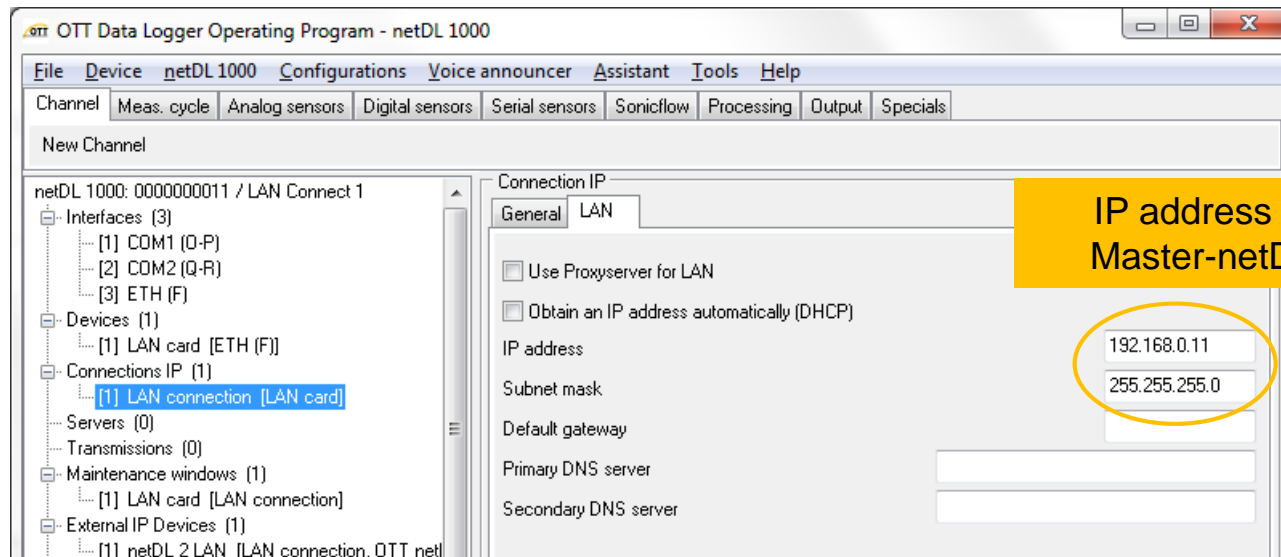
Choose „Accept IP connections as **Connect mode** via the ETH interface .



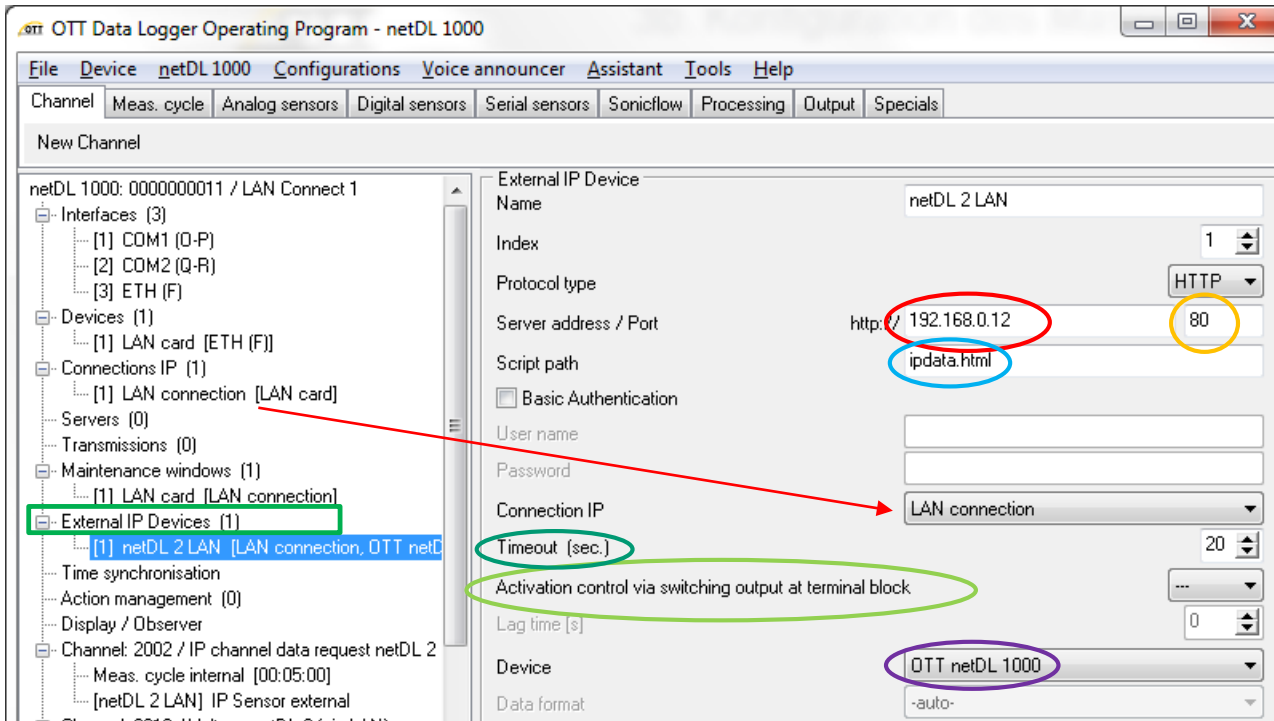
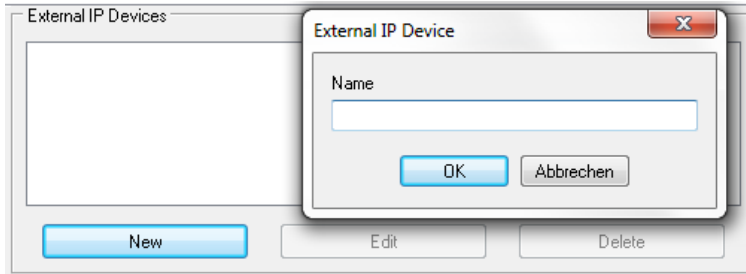
At the beginning, set up the LAN interface and



..the connection, via which data shall be retrieved:



## External IP Devices is used to retrieve data from the Slave-netDL



IP address of Slave-netDL

Usually port 80 for HTTP

OTT internal script for data retrieval from the 2nd OTT netDL (via device template)

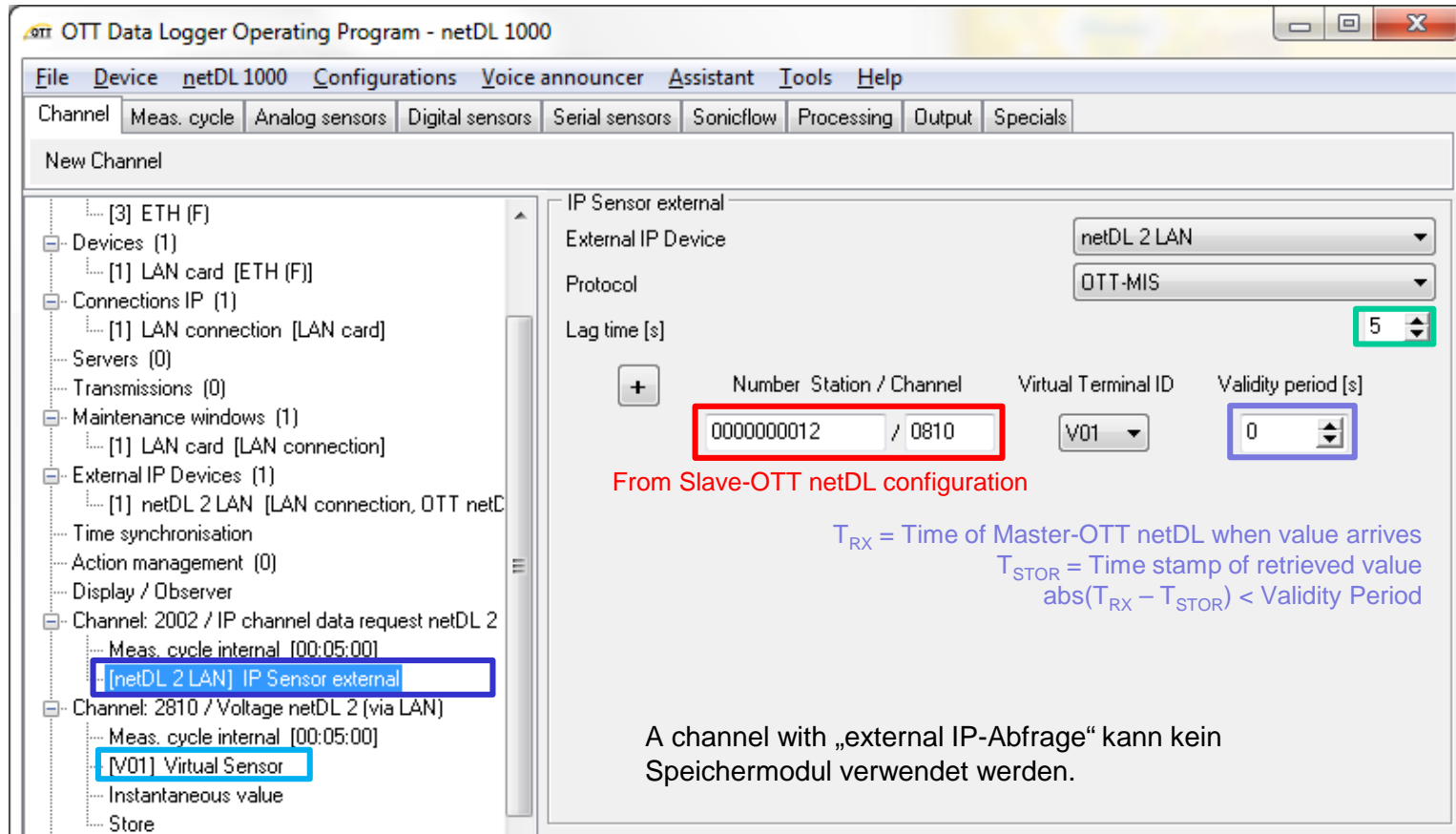
Timeout is the Connect zur Gegenstelle. If there is no TCP handshake to the remote device withing 20 seconds, no data can be transmitted

Used to put on/off an external device, e.g. an IP cam. Not required for the coupling of two OTT netDLs.

Device template

### 3b. Configuration of Master-netDL

Data retrieved from the Slave-netDL is transferred via a **virtual clamp** (buffer memory) to a **virtual sensor** and then saved.



OTT Data Logger Operating Program - netDL 1000

File Device netDL 1000 Configurations Voice announcer Assistant Tools Help

Channel Meas. cycle Analog sensors Digital sensors Serial sensors Sonicflow Processing Output Specials

New Channel

- [3] ETH (F)
  - Devices (1)
    - [1] LAN card [ETH (F)]
  - Connections IP (1)
    - [1] LAN connection [LAN card]
  - Servers (0)
  - Transmissions (0)
  - Maintenance windows (1)
    - [1] LAN card [LAN connection]
  - External IP Devices (1)
    - [1] netDL 2 LAN [LAN connection, OTT netDL 2 LAN]
  - Time synchronisation
  - Action management (0)
  - Display / Observer
  - Channel: 2002 / IP channel data request netDL 2
    - Meas. cycle internal [00:05:00]
    - [netDL 2 LAN] IP Sensor external
  - Channel: 2810 / Voltage netDL 2 (via LAN)
    - Meas. cycle internal [00:05:00]
    - [V01] Virtual Sensor
    - Instantaneous value
    - Store

IP Sensor external

External IP Device: netDL 2 LAN

Protocol: OTT-MIS

Lag time [s]: 5

+	Number Station / Channel	Virtual Terminal ID	Validity period [s]
	0000000012 / 0810	V01	0

From Slave-OTT netDL configuration

$T_{RX}$  = Time of Master-OTT netDL when value arrives  
 $T_{STOR}$  = Time stamp of retrieved value  
 $abs(T_{RX} - T_{STOR}) < Validity\ Period$

A channel with „external IP-Abfrage“ kann kein Speichermodul verwendet werden.

Delay time between internal IP datatransmission and the internal measuring cycle.  
 Example: CBS to Slave-netDL with 55 s measuring time should be retrieved with a delay time of 60 s to get the most recent value.

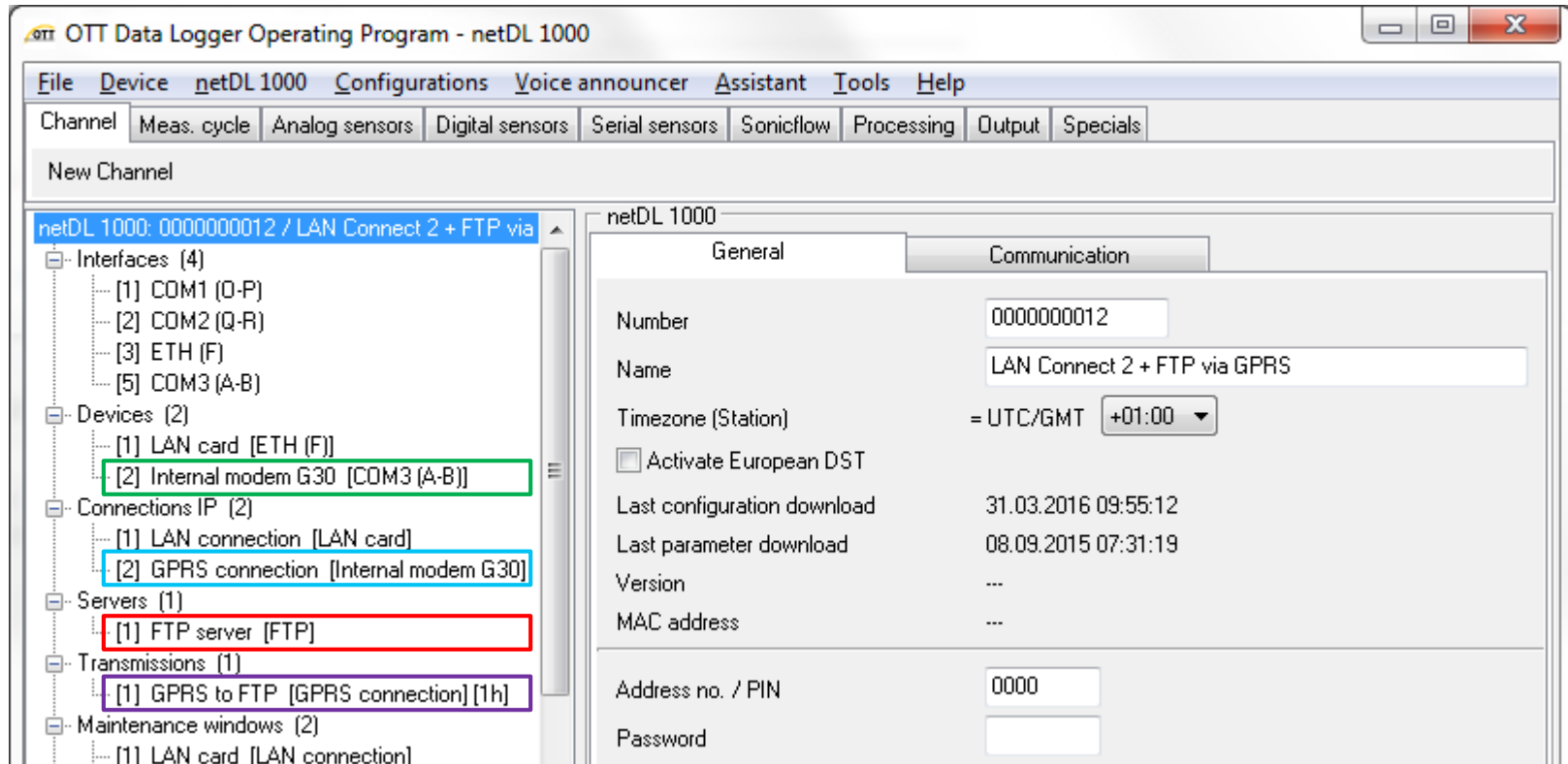
The **Validity period** guarantees that the retrieved value is sufficiently up-to-date. Otherwise error 08 is stored.  
 „0“ deactivates the test.

The datatransmission between the OTT netDLs is configured now.

To set up other ways of datatransmission (see framed modules below) see Tech-Tipp „FTP-datatransmission with OTT netDL“

(<http://www.ott.com/de-de/blog/wp-content/uploads/2015/07/Tech-Tipp-FTP-Transmission-netDL-0727.pdf>)

and use the integrated assistant and help function (key,F1') in the operating program.



## 4. Expansion of the configuration as redundant system

To configure a **redundant system** all previously described steps must be carried out for both OTT netDLs

(The Master device is additionally configured as Slave and vice versa).

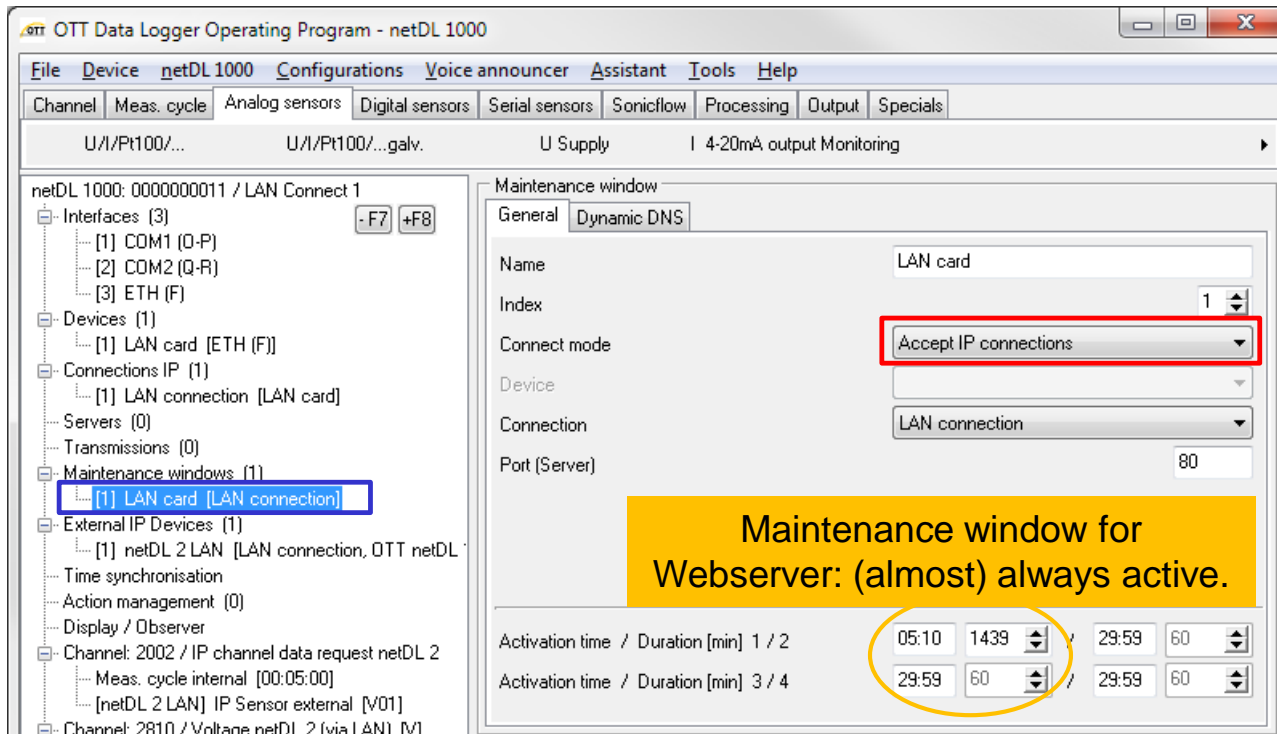


In the following you find the additional steps.

# 4. Configuration of both OTT netDLs for a redundant system

In the OTT netDL 1 (previously Master) only the maintenance window for the activation of the internal webserver must be set up:

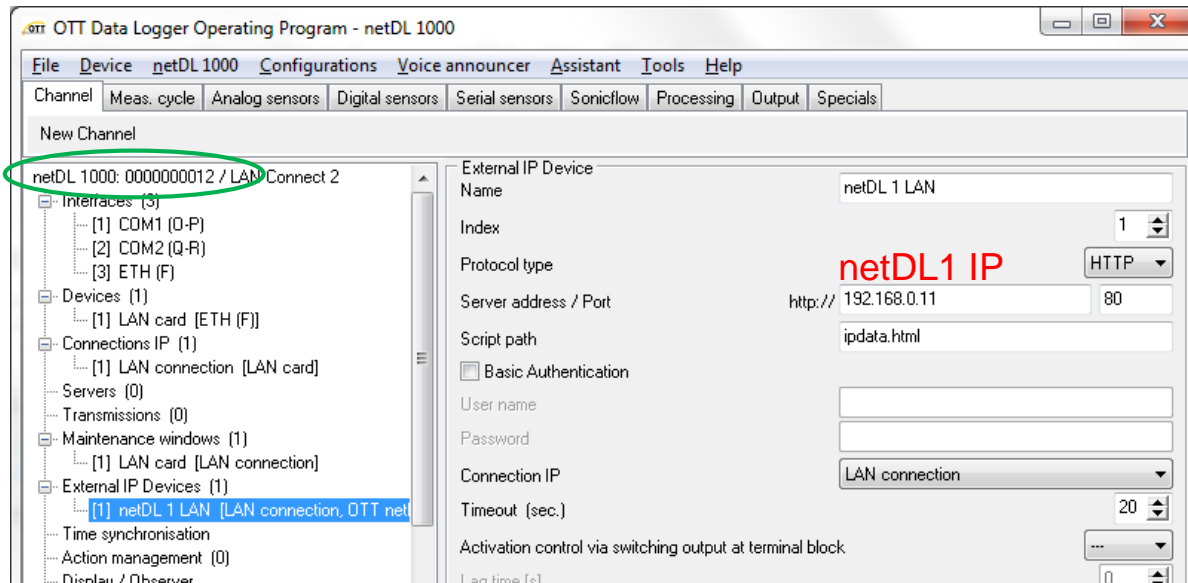
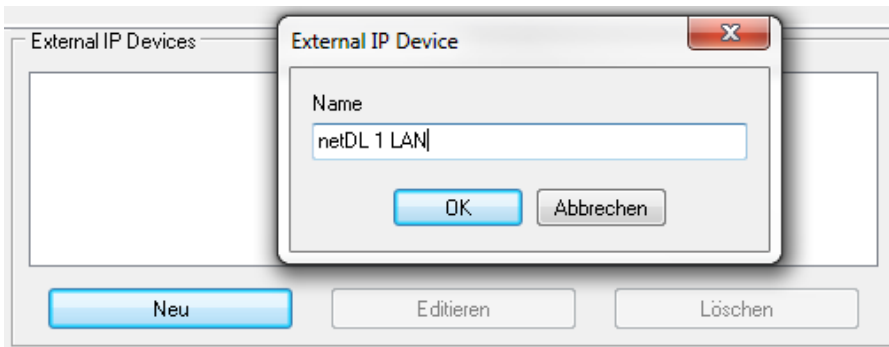
Configuration  
**OTTnetDL1**  
 (0000000011)



# 4. Configuration of both OTTnetDLs for a redundant system

In the OTT netDL 2, the complete data retrieval of OTT netDL 1 (previously Master) has to be set up.

Configuration  
OTTnetDL2  
(0000000012)

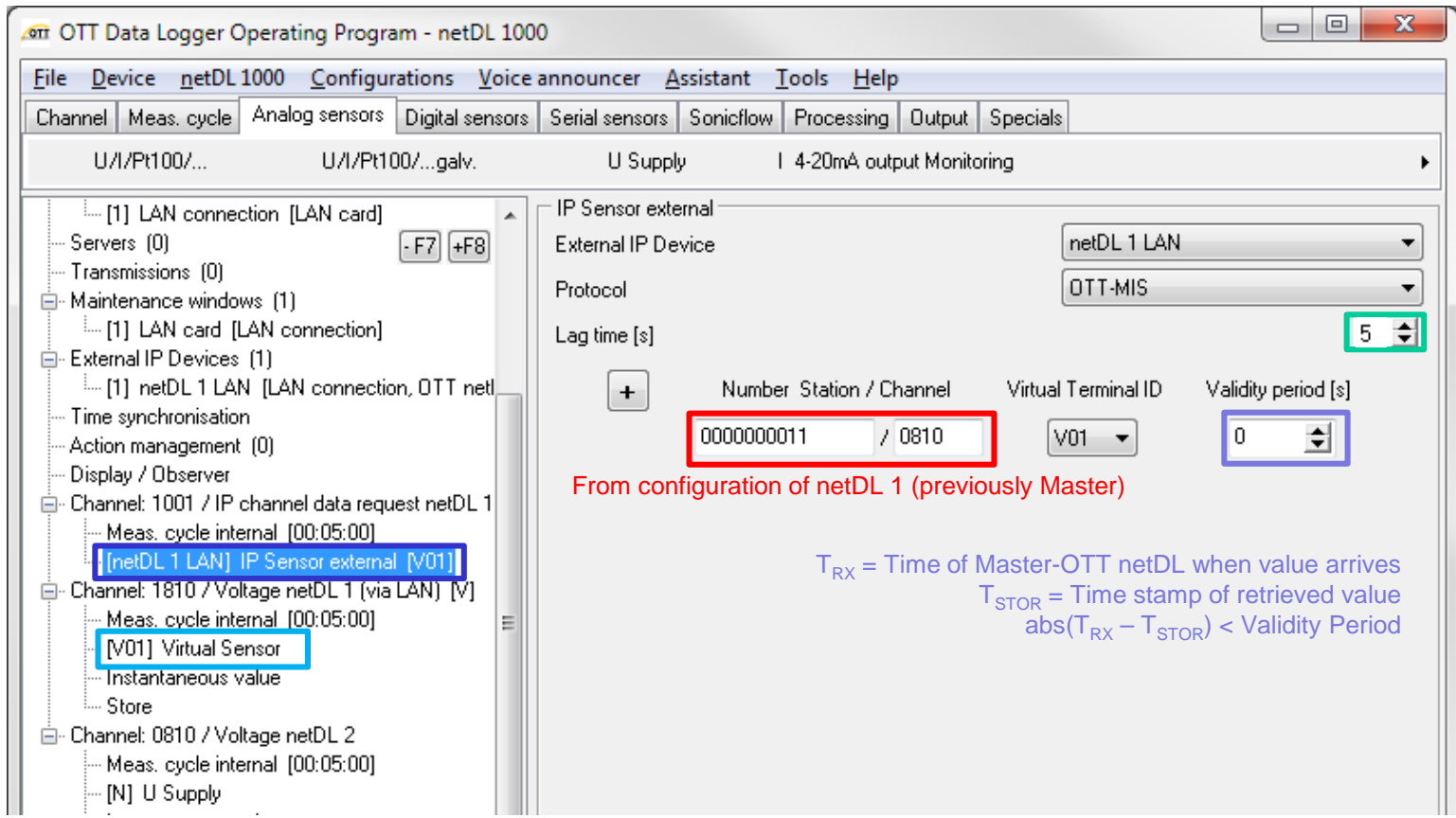


OTT netDL1 (0000000011)  
IP address 192.168.0.11



# 4. Configuration of both OTTnetDLs for a redundant system

## Configuration OTTnetDL2 (0000000012)



From configuration of netDL 1 (previously Master)

$T_{RX}$  = Time of Master-OTT netDL when value arrives  
 $T_{STOR}$  = Time stamp of retrieved value  
 $abs(T_{RX} - T_{STOR}) < \text{Validity Period}$

By using the delay time, it is possible to set the time for polling of the other OTT netDL after all polled sensors have finished their measurements.

For OTT netDLs with direct coupling via crossed Ethernet cable, data retrieval should be started simultaneously on both devices (same delay time; time synchronization), so that they can find each other, in case a communication occurs.

## 5. Final control

netDL 1000 - Instantaneous values: 0000000011 / LAN Connect 1

Sensor number	Instantaneous value	Last stored value
2810 / Voltage netDL 2 (via LAN) [V]	14.1 13:30:29	14.1 13:30:00
0810 / Voltage netDL 1 [V]	14.4 13:30:29	14.5 13:30:00

Refresh      Exit

Standard-Error messages OTT netDL  
(see also user manual)

- Err00** – virtual sensor not connected
- Err02** – communication problem  
(if necessary fix Err05 first)
- Err03** – Bereichsüberschreitung (Sensorparameter to large or too many decimals defined in the OTTnetDL definiert)
- Err04** – Timeout at analogue sensors
- Err05** – cable breakage, wiring mistake, SDI-12 address is wrong,
- Err06** – SDI-12 measurement longer than defined measuring cycle
- Err10** – Logger not active (check power supply) or measuring cycl too fast
- Err15** – Sensor error (see S\_\_ on display → manual of sensor; with SDI-12 mostly )

### Special error messages for external IP sensors:

#### Err07 – no values received:

- Transmission is not set up correctly (other OTTnetDL not available), e.g. IP address or subnet mask is not configured correctly (fields „Devices“ or „External IP Devices“)
- Station- or channel number in the module „IP Sensor external“ is not configured correctly
- ETH card not active (connection via crossed cable) -> restart both OTTnetDLs synchronously

#### Err08 – Time stamp of value is beyond the validity period:

- Is the time of both OTT netDLs synchronous ( $\pm 6$  s with SNTP)? See also next page.
- Validity Period is defined too short (measuring interval of Master-netDL does not correspond with storage interval of Slave-netDL; consider measuring time of sensor or delay time of OTT netDL)
- Data retrieval from Master-netDL is made later than storage in the Slave-netDL (adapt delay time so that value is retrieved shortly after storage)

- Redundant configuration
  - Both OTT netDLs are connected to the Internet and should synchronize the time with an SNTP server (time is set with max. 3 s offset).  
[Automatic synchronization.](#)
- Master-Slave configuration
  - Master-OTT netDL: time synchronization is made via the Internet connection (for datatransmission to measuring network centre). We recommend to put the *Validity period = zero*.
  - Slave-OTT netDL: usually no time synchronization possible, therefore we recommend to check the [time manually in regular intervals and to reset it if necessary](#).  
(not necessary if there is a time server available in the local network)
  - For sensors without totalling function (e.g: PLS), this limitation is irrelevant if the storage interval (Slave-netDL) or polling interval (Master-netDL) is short enough.  
If at all, in very rare cases, minor differences could occur when sensors with totalling function are used (e.g.: OTT Pluvio<sup>2</sup> → solution: connect OTT Pluvio<sup>2</sup> directly to Master-netDL).
- If the time stamp of a polled value lies beyond the specified validity period, Error 8 will be displayed and stored.

Explanation of network and „Subnetting“ from other sources

<http://www.grundlagen-computer.de/netzwerk/was-ist-eine-subnetzmaske-bzw-subnetmask>

<http://www.elektronik-kompodium.de/sites/net/0907201.htm>

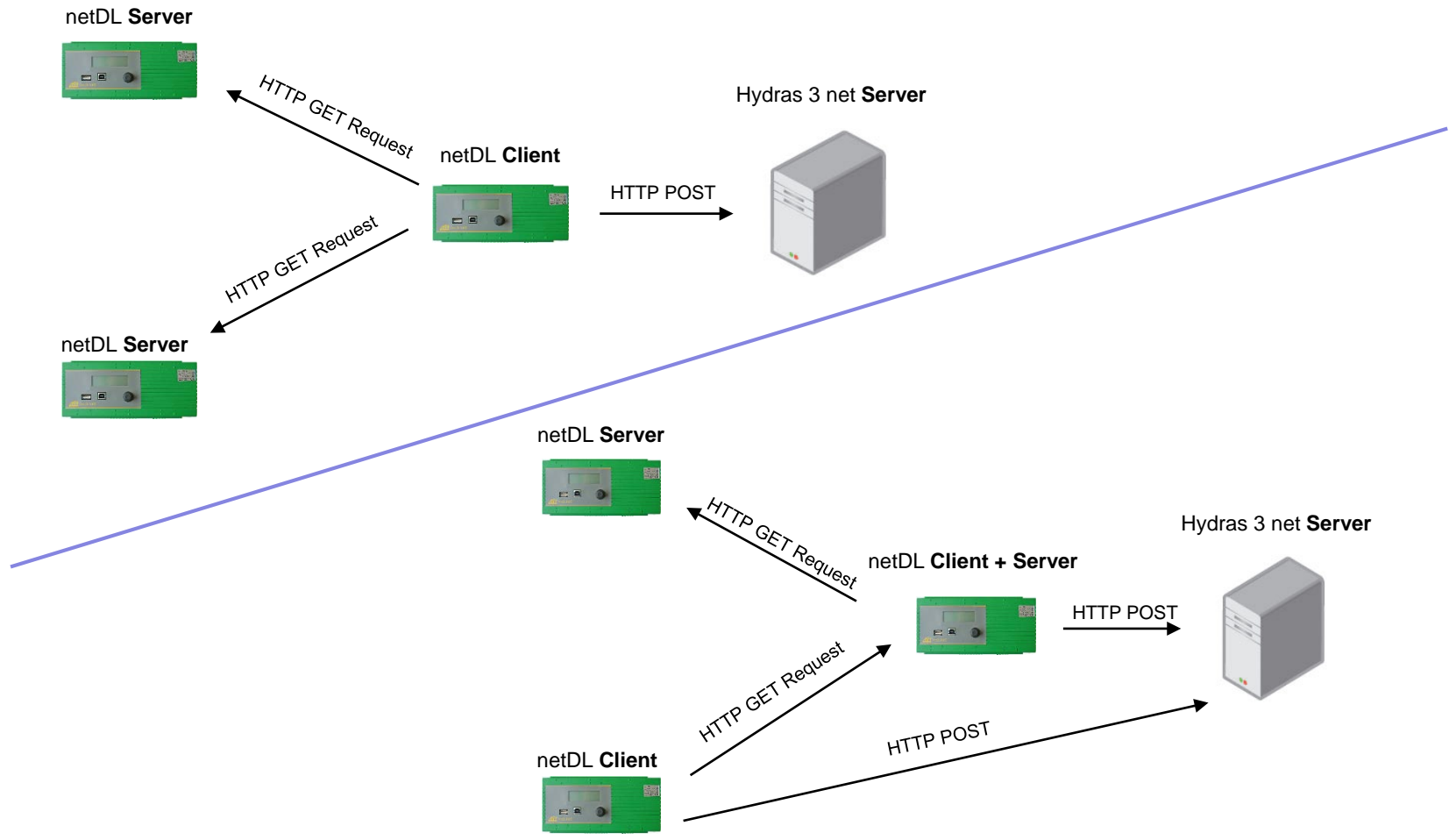
LINK to download of OTT netDL1 and OTT netDL2 configuration

[www.ott.com/misc/Konfigurationen.zip](http://www.ott.com/misc/Konfigurationen.zip)

More Tech-Tipps

<http://www.ott.com/de-de/blog/category/tech-tipp/>

## Further coupling models





*We wish you a lot of success for your  
implementation*

*OTT HydroService  
(Dr. Torsten Dose, Katharina Eichhorn)*

