



Instructions

Digital clock

LUMEX 5 and LUMEX 7 With NTP





General

Digital clock for indoor application with 4 digits and colon displaying time.

The digits consists 7 segments.

Example:

23:59

Digital clock for indoor application with 4 digits and colon displaying time. The digits consists 7 segments.

Example:

23:59:48

The configuration of the clock is made via a WEB-browser . The digital clock is synchronised by a NTP server. The colon will flash when time from the NTP server is accepted.

The clock has adjustable light intensity. The intensity of display has 8 levels.

If power failure occurs the display is turned off. After power failure the display is turned on and it will show the correct time.

LAN connection

The digital clocks are equipped with a RJ45 (10BASE-T) connector for direct connection to the LAN via a Power-Over-Ethernet switch. Each clock has a unique IP address. The IP address, gateway, subnet mask and server IP address is set up via a WEB-browser. If DHCP is used the clock will receive its IP address automatically from the DHCP server.

The clock has standard IP fall back address 192.168.3.10.

NTP

To distribute correct time to different users in a Local Area Network (LAN) the Network Time Protocol (NTP) is used. NTP is a part of the protocol family TCP/IP. Westerstrand digital clocks type Ethernet LAN are operated and controlled by Time distributed in the Network



Functional description

Start up

When the power cable is connected to the electronics the digital clock will show bars in the display. As soon as the clock has received and accepted the NTP signal, the display will show correct time and the colon between hours and minutes will start flashing.

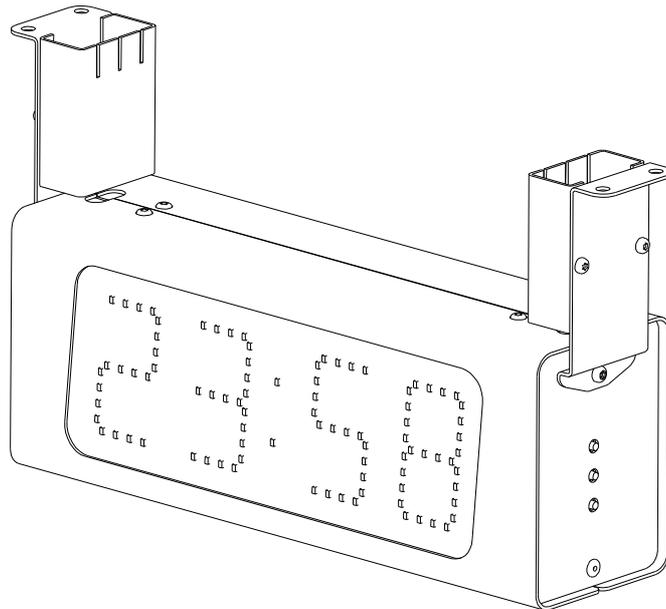
Automatic “take over function”

In case the NTP would disappear, the built-in quartz crystal will take over control of correct time.

Installation

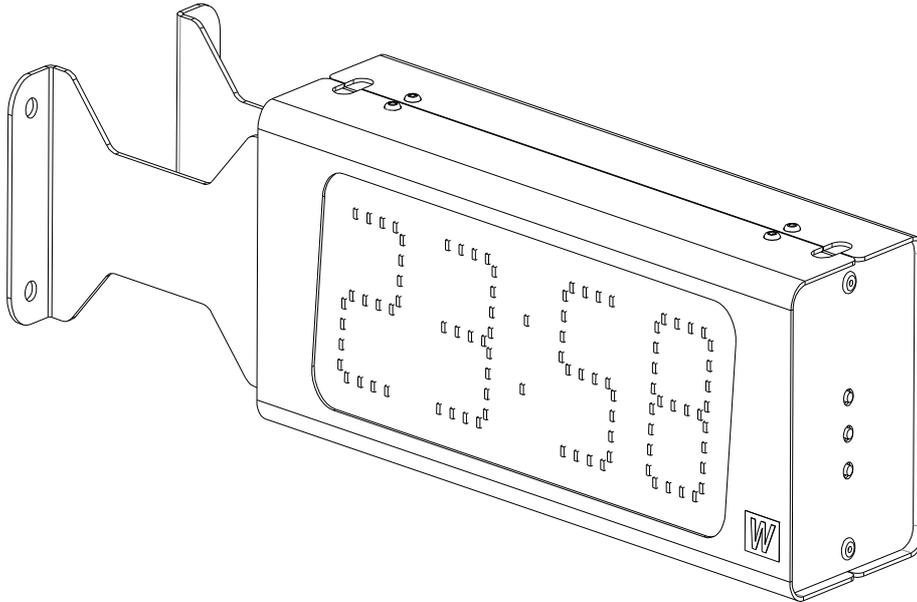
- Unscrew 4 screws, 2 above and 2 below. Remove the back plate from the casing and mount it on the wall.
- Connect the LAN cable to RJ45 (10BASE-T).
- Connect the power 230VAC, 50Hz. according to page 6. When the clock is permanently installed a readily accessible disconnect device shall be incorporated in the fixed wires.
- Mount the casing.
- Configure the digital clock.

Installation ceiling mounted



- Unscrew 2 screws under the service front (the front when you have R,F,P buttons to the right). Remove the front.
- Mount the 2 holder at the digital clock and mount it.
- Connect the LAN cable to RJ45 (10BASE-T).
- Connect the power 230VAC, 50Hz. according to page 7. When the clock is permanently installed a readily accessible disconnect device (2-polar, 3 mm contact gap) shall be incorporated in the fixed wires.
- Assemble the front and the cover for the holder.
- Configure the digital clock.

Installation wall mounted

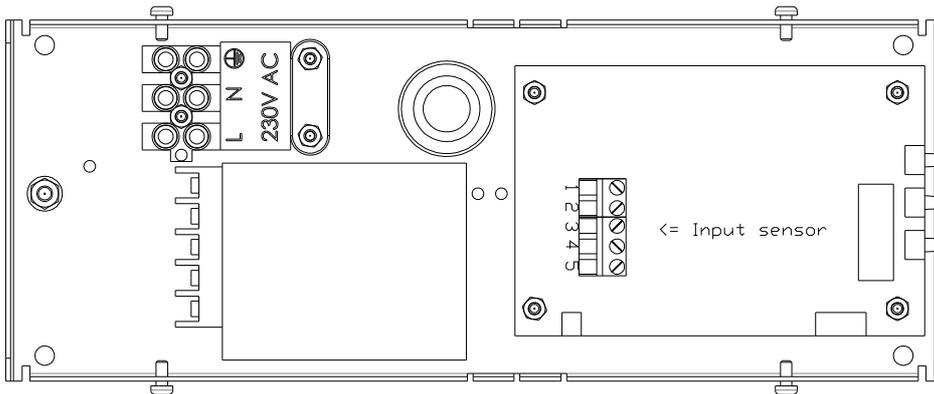


- Unscrew 2 screws under the service front (the front when you have R,F,P buttons to the right). Remove the front.
- Mount the digital clock.
- Connect the LAN cable to RJ45 (10BASE-T).
- Connect the power 230VAC, 50Hz. according to page 7. When the clock is permanently installed a readily accessible disconnect device (2-polar, 3 mm contact gap) shall be incorporated in the fixed wires.
- Assemble the front.
- Configure the digital clock.

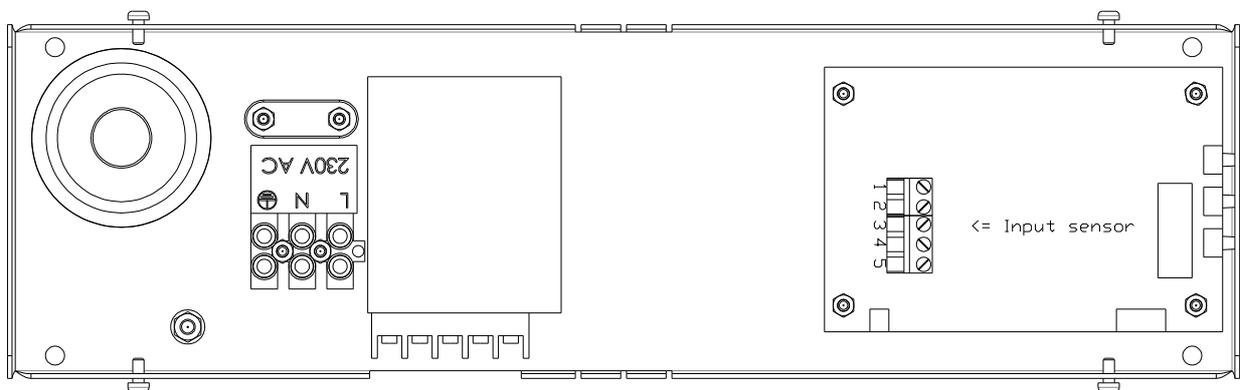


The power connections are made at the back plate (see below.)

LUMEX 5



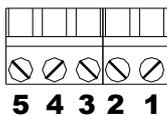
LUMEX 5/S, LUMEX 7, LUMEX 7/S



Connection temperature sensor (this is an option).

Temperature sensor connection

- 1 Brown
- 2 Black
- 5 Screen



WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet:
E-mail:

www.westerstrand.se
info@westerstrand.se



Configuration using a WEB-browser

Password

A password is required. Always enter user *admin*. Default password is *password*. If the first letter of the password is blank no question about user and password will appear.

If you forget the password, then a TELNET session must be started. The last line shows a number of characters within square brackets []. Contact Westerstrand and enter this value.

Anslut till 192.168.14.201 ? X

Användarnamn och lösenord krävs för servern 192.168.14.201 på Klockan höger om kartan..

Varning: Den här servern begär att du ska skicka ditt användarnamn och lösenord på ett sätt som inte är säkert (grundläggande autentisering utan säker anslutning).

Användarnamn: admin

Lösenord:

Kom ihåg lösenordet

OK Avbryt

After login a function menu is displayed:



Status >>
General >>
Network >>
NTP >>
Help >>



Status >>



- Status >>
- General >>
- Network >>
- NTP >>
- Help >>

Box 133
SE-545 23 Töreboda, Sweden
Tel: +46 (0)506 48000

DUX-F

IP=192.168.2.1
MAC=00-90-C2-EE-08-E8

 UTC=2014-07-09 11:35:27.877 Wed
LT=2014-07-09 13:35:27.877 Wed (Summer)
Country/Timezone=+1d (Berlin,Brussels,Paris) ,UTC=60 min.
Summertime from 25 Mar 01:00, Wintertime from 25 Oct 01:00 (UTC)
NTP server=192.168.1.1
Number of time settings=12

 Dimmer(915) = 8 : 128

 Two days ago= min. 23 °C, max. 24 °C, average. 23 °C
 Yesterday = min. 20 °C, max. 23 °C, average. 22 °C
 Today = 24 °C (min. 24 °C, max. 24 °C, average. 24 °C)
No Alarms

 Uptime=681 seconds
Firmware=DUX-B149 (Nov 26 2013 11:20:04)

Temperature information.
The temperature is read once per minute

Show status of the clock. The information is refreshed every 10th second or by a click on button *Refresh*.

MAC Unique address. Always 00-90-C2-aa-bb-cc. The last 3 numbers (aa-bb-cc) are found on the network card, e.g. EE08E8.

Dimmer(991) = 7:116 991 - Input value from sensor: Low..High means Light..Dark.
7 – Display intensity: 1 means low and 8 means high intensity.

ALARM	EXPLANATION
NTP Timeout	No answer from the DCF-server within 24 hours.
NTP fail	Problem with an individual NTP request, e.g. no answer within 3,5 seconds or network problem.
DNS resolve	Can not identify the NTP server.
A/B Hour	No reply from the hour sensor for side A/B.
A/B Min	No reply from the minute sensor for side A/B.
A/B Sec	No reply from the second sensor for side A/B.

WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet:: www.westerstrand.se
E-mail: info@westerstrand.se



General >>

Program general parameters



Westerstrand Urfabrik AB
Box 133
SE-545 23 Töreboda, Sweden
Tel: +46 (0)506 48000

General

Name	Lumex5_temp
Contact	Joakim
Location	Serverrum
Time (format YYMMDD HHMM)	170217 1600
Format	time=7:59, date=28.9
Show time (s)	2
Show temperature (s)	4
Temp. offset (-9..9 °C)	0
Temp. alarm low (°C)	-990
Dimmer (1..8)	1
Password	****
Firmware Download	<input type="checkbox"/>

12/24 hour format 12h 24h
Show date (s)
Temp. alarm high (°C)
repeat

Status >>
General >>
Network >>
NTP >>
Help >>

Name Symbolic name, max. 48 signs. This name is shown in the status menu.

Contact Information used and sent by SNMP.

Location Information used and sent by SNMP.

Time Set time manually. The colon will stop flashing. If NTP time is read the colon will start flashing again.

Format Select time and date format.

```
time=7:59, date=28.9
time=7:59, date=28.09
time=7:59, date=9.28
time=7:59, date=09.28
time=07:59, date=28.9
time=07:59, date=28.09
time=07:59, date=9.28
time=07:59, date=09.28
```

12/24 hour format Select 12- or 24 hour clock.

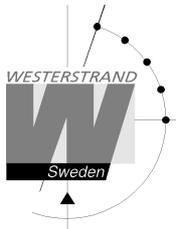
Show time(s)/ Select display interval in seconds for time, date and temperature.
Interval 0-25 seconds.

WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet:: www.westerstrand.se
E-mail: info@westerstrand.se



date(s)/
temperature(s)

- Temp offset** Correction of sensor value, max. 9°C.
- Temp. alarm** An alarm is generated if the temperature is outside the limits.
Low/high Avoid alarms by setting impossible values, e.g. -990 and 990.
- Dimmer low/high (1-8)**
Dimmer interval.
Always low intensity: low/high=(1,1). Always high intensity: low/high=(8,8)
- Password** Enter a new password. The password must be repeated. Ignore password by choosing a password with a blank as 1st character.
- Firmware** On: Open the clock for firmware download. The clock display becomes black. After restart this
Download value always is *off*. Also see section Firmware below.
- Save** Save parameters. If new password was entered then the clock will restart. Then the web reader (e.g. Internet Explorer) also must be restarted.

Network >>

Enter general network parameters.

Network

DHCP <input checked="" type="checkbox"/>	
IP <input type="text" value="192.168.2.1"/>	IP fallback <input type="text" value="192.168.3.10"/>
Gateway <input type="text" value="192.168.1.1"/>	Subnetmask <input type="text" value="255.255.240.0"/>
DNS <input type="text" value="192.168.1.12"/>	

SNMP Setting

SNMP <input type="checkbox"/>	
SNMP server <input type="text" value="192.168.14.1"/>	

Mail setting

Mail <input type="checkbox"/>	
Mail server <input type="text" value="192.168.1.10"/>	
From <input type="text" value="info@westerstrand.se"/>	To <input type="text" value="16213@home.se"/>

Wait 15 seconds after [Save and restart], then press Refresh

- DHCP** Off – Static IP address according to IP below.
 On – DHCP IP address with fallback according to IP fallback below.

WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet:: www.westerstrand.se
E-mail: info@westerstrand.se



IP/IP fallback IP address

Gateway Network gateway

Subnetmask Network subnet mask

SNMP If SNMP is ON the clock will send SNMP traps to the selected SNMP server. The clock also will answer SNMP poll requests. Please contact Westerstrand for more information about SNMP and MIB-files.

Mail If Mail is ON the clock will send a message when an error is generated. The subject contains the symbolic name. A mail also is sent at midnight about temperature information.

Mail server SMTP mail server address

From Source e-mail address. Some mail servers require a valid e-mail address.

To Destination e-mail address. Only one recipient is supported.

NTP >>

Enter NTP parameters.

NTP	
DHCP server	<input checked="" type="checkbox"/>
NTP server	192.168.1.1
Broadcast/Multicast Client	<input type="checkbox"/>
Country/Timezone	+1d (Berlin,Brussels,Paris)
Interval(s)	60

Wait 15 seconds after [Save and restart], then press Refresh

DHCP server No: Select NTP server according to NTP Server below
Yes: The DHCP server will allot a NTP sever according to option 42 in the DHCP protocol (see RFC 2132 for more information). Then the NTP Server below will be obsolete. The time offset information to UTC (DHCP option 2) is ignored, so the country information below always must be set.

NTP Server Select NTP server, e.g. *192.168.1.237* or as an URL *ntp1.sp.se*. Also see DHCP server above.

Broadcast/Multicast Client Accept NTP broadcast messages. If Broadcast Client is checked and no broadcast NTP messages are received, then NTP request to 'NTP server' will start automatically according to 'Interval(s)'.
will start automatically according to 'Interval(s)'.

WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet:: www.westerstrand.se
E-mail: info@westerstrand.se



Country/Timezone

Select country/Timezone. A NTP server sends UTC time. The clock will correct this to local time and adjust for DST (Daylight Saving Time) automatically. A rule for DST (Daylight Saving Time) for each country is hard coded in the firmware. Also see DHCP server above.

Country/Region	Winter	Summer	Timezone acronym
GBR	UTC+0	UTC+1	WET/WEST
CET	UTC+1	UTC+2	CET/CEST
FIN	UTC+2	UTC+3	EET/EEST
ISR	UTC+2	UTC+3	IST/IDT
UAE	UTC+4	UTC+4	GST
IND	UTC+5½	UTC+5½	IST
UTC	UTC+0	UTC+0	UTC

Interval (s)

Interval in seconds between NTP requests.

Help>>

A short help file in PDF format is displayed.

SNMP

General

SNMP is enabled in function Network. The clock will send traps to the management server and answer on polls. The SNMP functions have been tested with a freeware program from IReasoning (www.ireasoning.com) and with Castle Rocks Management Console SNMPc. MIB files: WESTERSTRAND.MIB and WESTUR.MIB. Contact Westerstrand for further information.

Example

Temperature low limit was set to 18 (°C). When the temperature sensor is read (once per minute) a trap is generated

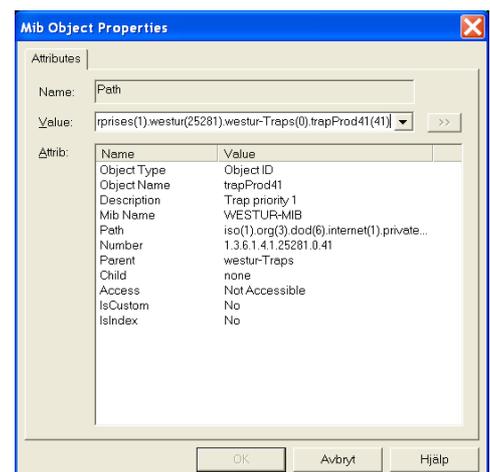
The web browser will show:

Two days ago= min. 15 °C, max. 22 °C, average. 19 °C

Yesterday = min. 17 °C, max. 20 °C, average. 17 °C

Today = 15 °C (min. 15 °C, max. 15 °C, average. 15 °C)

Alarm=Temp. low





A trap 41 with data 6 is transmitted. The pictures are from program SNMPC.

Severity	Date	Time	Source	Message
Normal	2008/08/26	08:51:49	201.Lumex_5	08:51:49* [192.168.14.81]: Device Up
Info	2008/08/26	08:54:06	201.Lumex_5	08:54:06* [192.168.14.81]: Status OK
Normal	2008/08/26	09:30:14	201.Lumex_5	09:30:14 [192.168.14.81]: Reset (29) **OK**
Info	2008/08/26	10:50:35	201.Lumex_5	10:50:35 [192.168.14.81]: No_alarms (0)
Severe	2008/08/26	10:54:13	201.Lumex_5	10:54:12 [192.168.14.81]: Temperature_low (6)
Warning	2008/08/26	10:54:34	201.Lumex_5	10:54:34* [192.168.14.81]: Status fail, 1 error(s)
Normal	2008/08/26	11:10:44	201.Lumex_5	11:10:44* [192.168.14.81]: Device Up

Event Properties...
Full Message Text: 10:54:12 [192.168.14.81]: Temperature_low (6)



Traps

Traps are cleared automatically.

Trap	Explanation
41	Sever error
42	Major error
43	Minor error
44	Automatic removal of a unique trap 41-43 or information.
45	No error. Will clear trap 41-44.

Trap	Data	MIB text	Explanation
45	0	No_alarms	The clock has no errors
41	1	NTP_timeout	NTP timeout
41	2	NTP_fail	A NTP request failed
42	3	Resolve	DNS resolve failed
41	6	Temperature_low	The temperature is below lower limit
41	7	Temperature_high	The temperature is above higher limit
44	29	Reset	Power up

Poll

The picture on the next page shows all OIDs. Use OID 'NumberOfAlarms' (1.3.6.1.4.1.25281.1001) for check number of alarms.



Picture from SNMPc:

The screenshot shows the SNMPc interface with a tree view on the left and a list of MIB values on the right. The tree view is expanded to show the 'dux' folder under 'westur'. The 'numberOfAlarms' MIB is highlighted in blue. The list of MIB values on the right includes:

- WESTERSTRAND-MIB|dux.1=59
- WESTERSTRAND-MIB|dux.2=86357
- WESTUR-MIB|duxError=No_alarms(0)
- WESTERSTRAND-MIB|dux.6=0
- WESTERSTRAND-MIB|dux.7=166
- WESTERSTRAND-MIB|dux.8=168
- WESTERSTRAND-MIB|dux.9=536870977
- WESTUR-MIB|duxTempNow=15
- WESTUR-MIB|duxTempMin=14
- WESTUR-MIB|duxTempMax=15
- WESTUR-MIB|duxTempAve=14
- WESTUR-MIB|ErrorTime=11:44:06
- WESTERSTRAND-MIB|westur.100.0=36 20
- WESTUR-MIB|alarm1.0=Temp. low
- WESTUR-MIB|alarm2.0=Temp. low
- WESTUR-MIB|alarm3.0=Temp. low
- WESTUR-MIB|alarm4.0=Temp. low
- WESTUR-MIB|alarm5.0=Temp. low
- WESTUR-MIB|alarm6.0=Temp. low
- WESTUR-MIB|firmware.0=DUX-A1 20 (Aug 26 2008 10:49:30)
- WESTUR-MIB|numberOfAlarms=1**
- WESTUR-MIB|ipDefault=192.168.14.81
- WESTUR-MIB|ipFallback=192.168.14.81
- WESTUR-MIB|ipGateway=192.168.1.1
- WESTUR-MIB|ipSubnetmask=255.255.240.0
- WESTUR-MIB|ipSNMPserver=192.168.14.1
- WESTUR-MIB|ntpServer=192.168.14.104
- WESTUR-MIB|upTime=3415
- WESTUR-MIB|nationCode=sweden(46)
- WESTUR-MIB|clockType=web_model
- WESTUR-MIB|manual=1787LLVV.pdf, LL=language, VV=version
- WESTUR-MIB|clockIdent=Digital Clock Lumex 5 with DS18S20 sensor

Below the screenshot, a table provides details for the selected MIB:

Name:	numberOfAlarms
OID:	1.3.6.1.4.1.25281.1001
Descr:	Number of alarms



RASER

This program is used for finding network clocks and setting parameters. RASER sends broadcast messages on UDP port 9999. All Westerstrand Ethernet controllers will answer.

Install with setup file SETUP_RASERxxx.EXE (xxx=version e.g. 105). Icon 'RaSer' is created on the desktop. Start the program. Click on button [Help]. Manual RASER.PDF is displayed. Check this manual for further information.

Find a Westerstrand Ethernet module

```
// Broadcast 2014-07-10 14:22:24. Firmware mask=DUX-B, IP mask= 255.255.255.255
01 192.168.002.001(D) DUX-B149 (Nov 26 2013 11:20) DUX-B          00-90-C2-EE-08-E8  82
// Total number of answers: 30
```

1. Set firmware mask. Examples:

* Search all Westerstrand Ethernet modules (default)
DUX-B Search only modules called DUX-F, e.g. DUX-F144

2. Set IP mask. Examples:

255 Broadcast to all, i.e. 255.255.255.255 (default)
13 Only show answers from segment 255.255.13.255

3. Click on button [Search]. The box becomes green. Program RASER will timeout after 5 seconds. Break a search by a click on [Break].

Example: Here, a search for all modules with firmware DUX-B was made. A total of 30 modules were found, but only one corresponds to mask DUX-B.

WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet: www.westerstrand.se
E-mail: info@westerstrand.se



Parameters

Set parameters in selected clocks. Blank fields will be ignored by the controller.

NTP server:

Select NTP server, e.g.

192.168.1.237

ntp1.sp.se

Country:

Select country. This information is used by the controller to calculate the local time from the NTP server message.

Interval:

Set interval in seconds between time requests.

The screenshot shows a software window titled "RASER version 1.05 - Search Westerstrand ethernet modules". Inside, there are fields for "Firmware mask" (DUX-A104) and "IP mask" (255). A "Parameters" dialog box is open, containing the following fields and options:

- NTP server: 192.168.1.237
- Country: SWE (dropdown menu)
- Interval: 67
- Reply:
- Restart:
- Transmit button

Reply:

Send an answer from modules affected by the parameters. This assumes that checkbox [Restart] is unmarked. See section *Find a Westerstrand Ethernet module* above for the reply format.

NOTE. Firmware DUX-A will automatically restart so replies never are displayed.

Restart:

Force restart the controller.

Transmit:

Send selected parameters. At least 4 letters in the beginning of the firmware mask must correspond to the real firmware name.

More functions:

If the info window is right-clicked more functions are displayed.

- | | |
|---------------------|--------------------------|
| [Clear] | Blank the info window |
| [Log communication] | Log communication. Test. |
| [About] | Show program information |

WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet:: www.westerstrand.se
E-mail: info@westerstrand.se

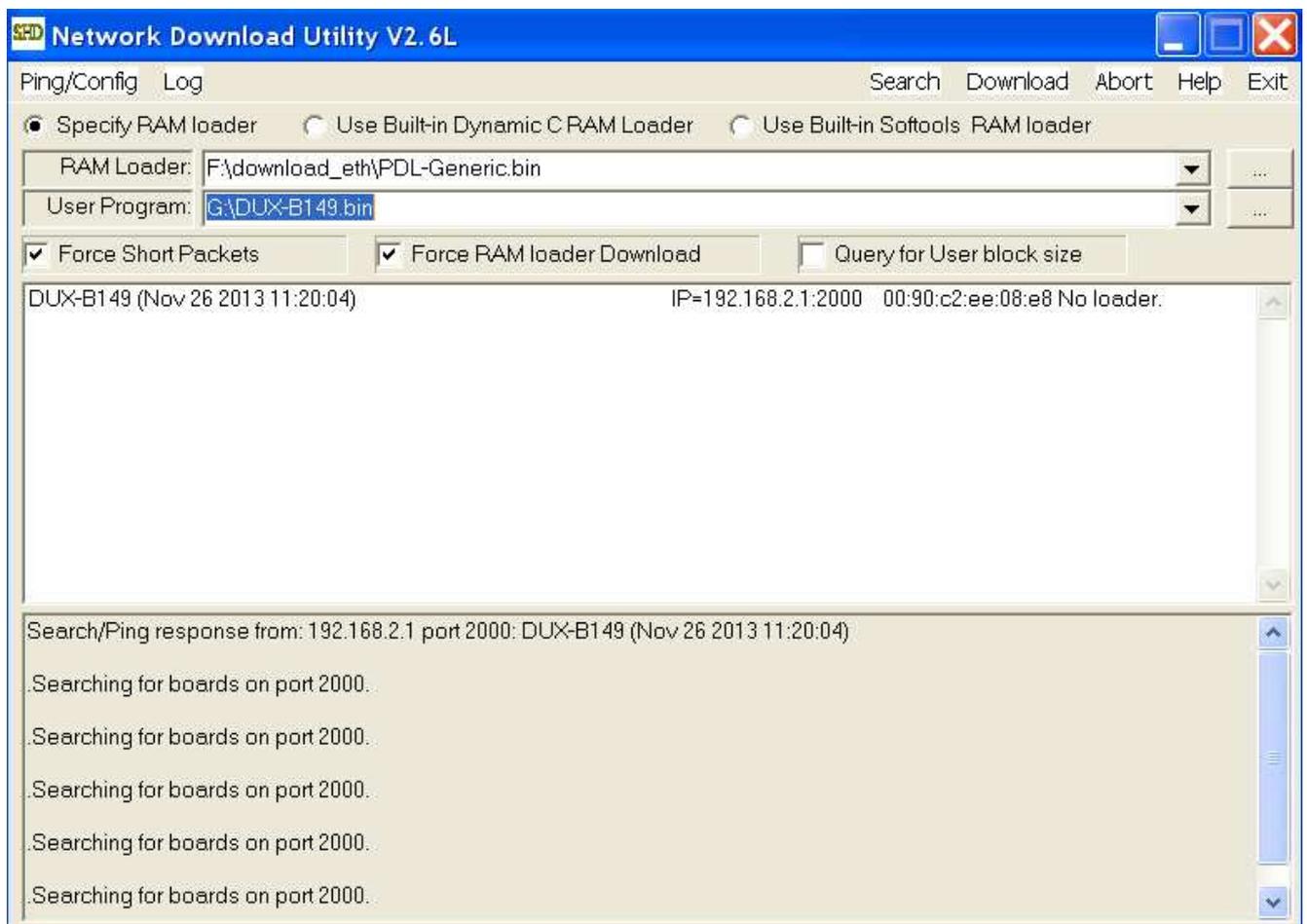


Firmware

With program UDPDownload.exe new firmware could be download via Ethernet.
Before download current clock firmware must be activated. This is done from the Web I function *Genera*>>. Select *Firmware Download/On* and *Save*. The clock display became black.

Start program UDPDownload.exe.
Select RAM Loader *PDL_Generic.bin*. This file is found on the same folder as UDPDownload.exe.
Select new firmware file. Here *DUX-B149.BIN*.

The program searches for activated download units.



Here only one unit with IP address 192.168.2.1 was found. A new search could be done by entering *Search*.

Select the clocks for downloading new firmware. No select is required if only one clock was found.
Enter *Download*. The download starts automatically. After download the clocks restarts and the white screen will be blank.

Check the clocks on the network with program RASER.

WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet:: www.westerstrand.se
E-mail: info@westerstrand.se



Technical data

Network:	
Protocols supported:	SNTP, RFC1769, SNMP v1 Enterprise MIB (RFC 1155 - 1157), HTTP, Telnet
Transport protocol:	TCP/IP
IP address assignment:	Fix IP address or DHCP
Compatibility:	Ethernet version 2/IEEE 802.3
Ethernet:	Supports 10BASE-T (RJ45) connections
Device Management:	Web-Based
Additional information:	Support for DNS
Temperature range:	0 °C till +40 °C.
Temp.sens.(factory opt.):	Dallas DS18S20 with accuracy 0.5°C from -10°C to 85°C.