

Operating Instructions

Monitoringstation MUX 101-DW



Contents

Technical Data	3
Ordering Data	4
General Information	4
Designated Use	4
Safety Instructions	5
Items supplied	6
Identification marking	6
Conditions of use	6
Temperatures	6
Ambient conditions	6
Installation conditions	6
Storage	6
Description of the product	7
1. Housing	7
2. Components and connections	8
3. Basic printed circuit board	9
Installation	10
Wall fixing	10
Cable connection	10
CPU card configuration	12
Connection	12
Configure	14
Factory setting	14
Set FTP-Password	15
Set „User“	15
Set „Password“	15
Set HTTP-Password	15
Set Telnet-Password	15
Set Serial-No.	15
Set TCP/IP configuration	16
Set IP-Address	16
Set „Netmask“	16
Exit MUX configuration	17
End connection	17
Serving the monitoring station	18
Log-in	18
Read values	19
Interpretation of values	19
Configuration	20
Log-out	20
Operation of the monitoring station	20
Importance of the LEDs	20
Declaration of Conformity	24



Important! It is imperative to read and observe all safety Instructions prior to initial operation!

Technical Data

Operating voltage:	38 .. 72 V DC
Power consumption:	typ. 4 VA DC
LED:	BR (housing cover) U ₁ , U ₂ , U ₃ (function control) 1, 2, 4, 8 (measuring channel indication) DCD (internal control) current indication a lead current indication b lead
Measuring channels:	16, optionally for addressable sensors or dry contacts
Programmed as Q-channel:	
Number of sensors/measuring channel:	max. 127
Measuring range:	700 .. 2400 Hz
Input sensitivity:	≥ 35 dB typ. (600 Ω)
Short-circuit-proof	
Channels not measured will be short-circuited	
Measuring voltage U _{ATX} :	Input voltage minus 5 V (e. g. input voltage 60 V results in measuring voltage U _{ATX} = 55 V DC typ.)
Programmed as C-channel:	
Loop resistance:	max. R-loop = U _{ATX} /I _s at switching current I _s = 10 mA typ.
Dimensions (H x W x D):	237 x 355 x 100 mm
Weight :	approx. 2,100 g
CPU card	
Embedded Controller:	SC13 (SC186/40 MHz)
RAM:	512 Kb
Flash:	512 Kb
Compact Flash Card:	16 MB and more
Interfaces	
Ethernet:	10/100Mbit BaseT, Connection: RJ45
RS232:	9600 Baud 8N1, Connection: female 9-pin SUB-D
LED:	12V, 5V, BR, SI, CF, LINK, TRAFFIC
Software	
Operating system:	RTOS
Storing capacity:	720 Measuring points

Ordering Data

Monitoringstation MUX 101-DW	Order-no. 072681.000
Spare parts	
CPU-board MUX 101-DW	Order-no. 072653.000
Basis circuit board DW101	Order-no. 067756.000
Compact Flash-card	Order-no. 072747.000
Delay-action fuse, 5 x 20 mm, 0.315 A	Order-no. 038806.000
Spare parts	
Ethernet cable, 5 m long with PG connector	Order-no. 072782.000

General Information

These operating instructions contain important instructions to ensure safe, appropriate and cost-effective operation of the equipment, to reduce repair costs and downtimes, as well as to raise the equipment's reliability and operational lifetime.

The operating instructions endorse the directives of national regulations for the prevention of accidents and the protection of the environment.

These operating instructions should always be available at the installation site.



These operating instructions shall be read and adopted by anyone assigned to work with/on the equipment, e.g. during maintenance, inspection and repair

In addition to the operating instructions and the mandatory regulations for the prevention of accidents, applicable in the operator's country and at the place of use, the recognized technical regulations for safe and professional operation, shall also be observed.

Designated Use

The MUX 101-DW monitoring station was developed for logging and evaluating measurement readings in a LANCIER Monitoring System.

The monitoring station was developed to collect and analyse measuring data in a LANCIER Monitoring System.

Proper intended use includes adherence to all prescribed operating, service and repair conditions.



Important!

Obey handling instructions. Electrostatic discharge (ESD) damage.

Any non-compliant use excludes the manufacturer from liability for any damages. The operator carries the risk!

Safety Instructions



Important!

It is imperative to read and observe all safety instructions prior to initial operation!

- Keep the operating instructions ready to hand!



Risk of damage to property!

Disconnect the power supply before working on the equipment!



Danger to life!

Disconnect the power supply before working on the equipment!

- The equipment should only be operated in technically-sound condition, for its designated use, with safety and risk awareness in mind, taking into account the operating instructions.
- Malfunctions deleteriously affecting safety in particular must be remedied immediately!
- The monitoring station MUX 101-DW may only be serviced and operated by persons familiar with it who have been informed of the possible risks.
- Do not modify the equipment in any way.



Risk of damage to property!

- Maintenance and repair work should only be performed by trained personnel!
 - Only use original LANCIER Monitoring replacement parts!
-

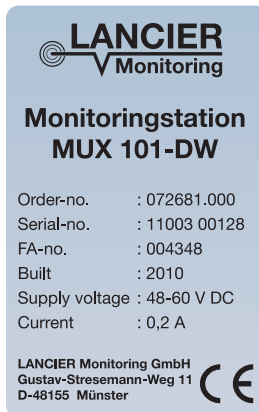
Items supplied

- 1 MUX101-DW
- 1 Screw/rawlplug set for wall fixing
- 2 Dejamming ferrites
- 1 Set of Operating Instructions

Identification marking

The monitoring station is clearly identified by the nameplate with technical data and particulars of the manufacturer. The nameplate is located on the outside of the housing to the right.

Compliance with the directives in force is confirmed by the attached EC declaration of conformity (see back of these operating instructions).



Conditions of use

Temperatures

- Permissible ambient temperature: 0 °C to + 40 °C
The monitoring station is guaranteed to function perfectly in this temperature range.
- Outside this range its operating mode cannot be guaranteed.

Ambient conditions

- Ambient media, particularly those of a chemically aggressive nature, may attack seals, wire and plastic.

Installation conditions

- The monitoring station should be set up in a dry, dust-free and frost-free area, with due regard for the general guidelines relating to workplaces.

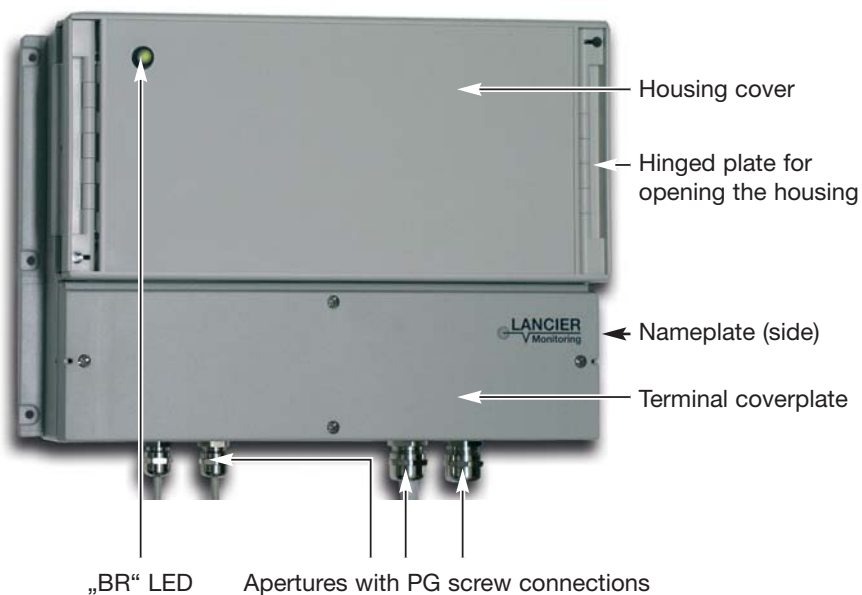
Storage

General storage information

- If the monitoring station is not installed and operated straightaway it must be kept under appropriate storage conditions in dry, dust-free and frost-free premises away from the sunlight.
- for storage purposes it should be plastic or foil wrapped.

Description of the product

1. Housing



2. Components and connections



Risk of damage to property!

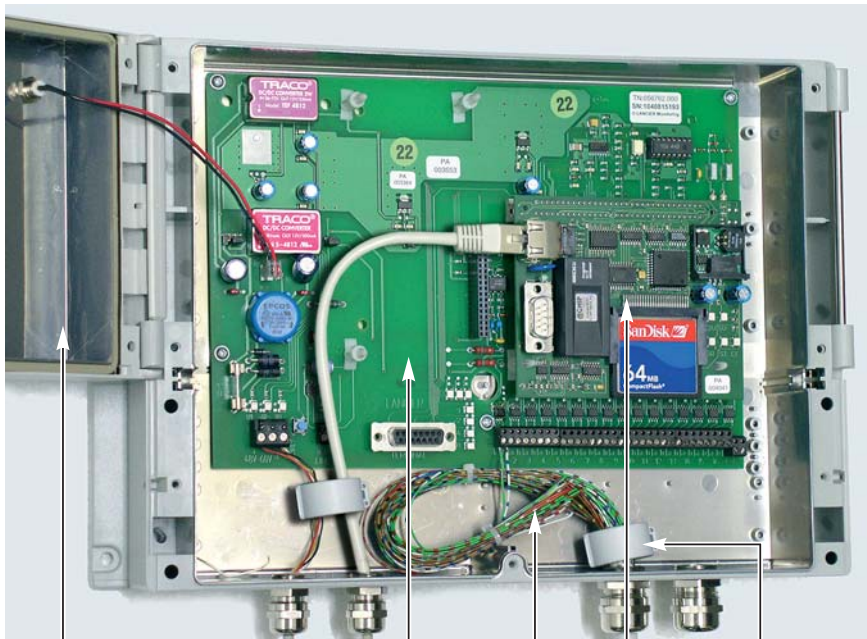
Disconnect the power supply before working on the equipment!



Danger to life!

Disconnect the power supply before working on the equipment!

- Open the MUX 101-DW by unbolting the top cover on the right (arrow) and folding it over to the left.
- Remove cover after loosening the three screws marked with an arrow.



Housing cover

Basic board

CPU card

Measuring pairs

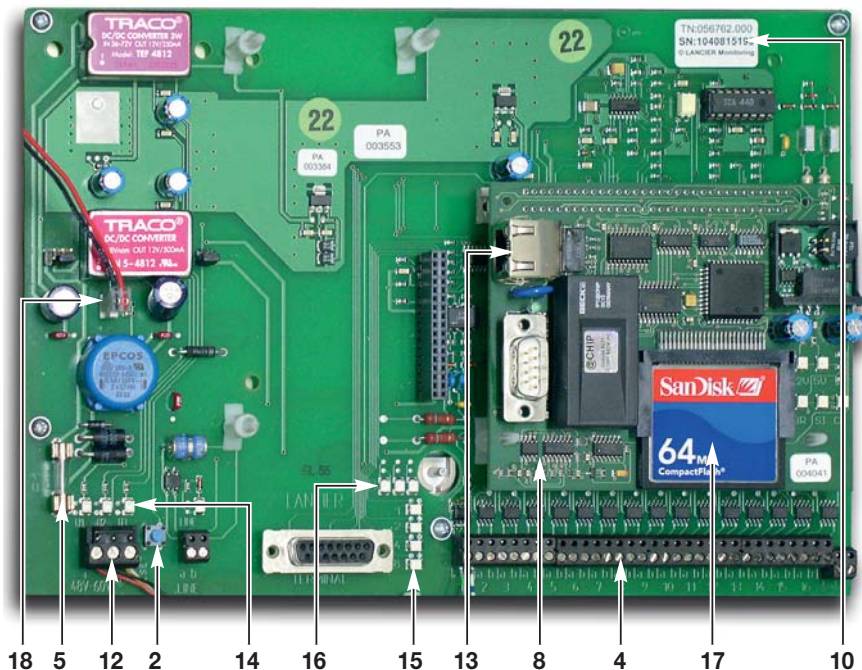
Dejamming ferrite

3. Basic printed circuit board



Important!

Obey handling instructions. Electrostatic discharge (ESD) damage.



- 10 Order no. and serial no.
- 18 Connection for LED „BR“ in housing cover
- 12 Connection for supply voltage
 - 4 Connection for measuring channels 1 to 16
- 13 Connecting socket for ethernet cable
- 2 Reset button
- 14 LEDs U_1 , U_2 , U_3 (function control)
- 15 LEDs 1, 2, 4, 8 (measuring channel indication, binary code)
- 16 LEDs DCD (internal use)
 - active measuring channel b lead
 - active measuring channel a lead
- 5 Delay-action fuse 5 x 20 mm, 0.315 A
- 8 CPU card
- 17 Compact Flash card

Installation

Wall fixing

The MUX 101-DW monitoring station is designed for wall installation. 4 of the 6 drill holes (1) on the side of the housing are provided for the purpose.

The point of installation should be dry and swept clean.

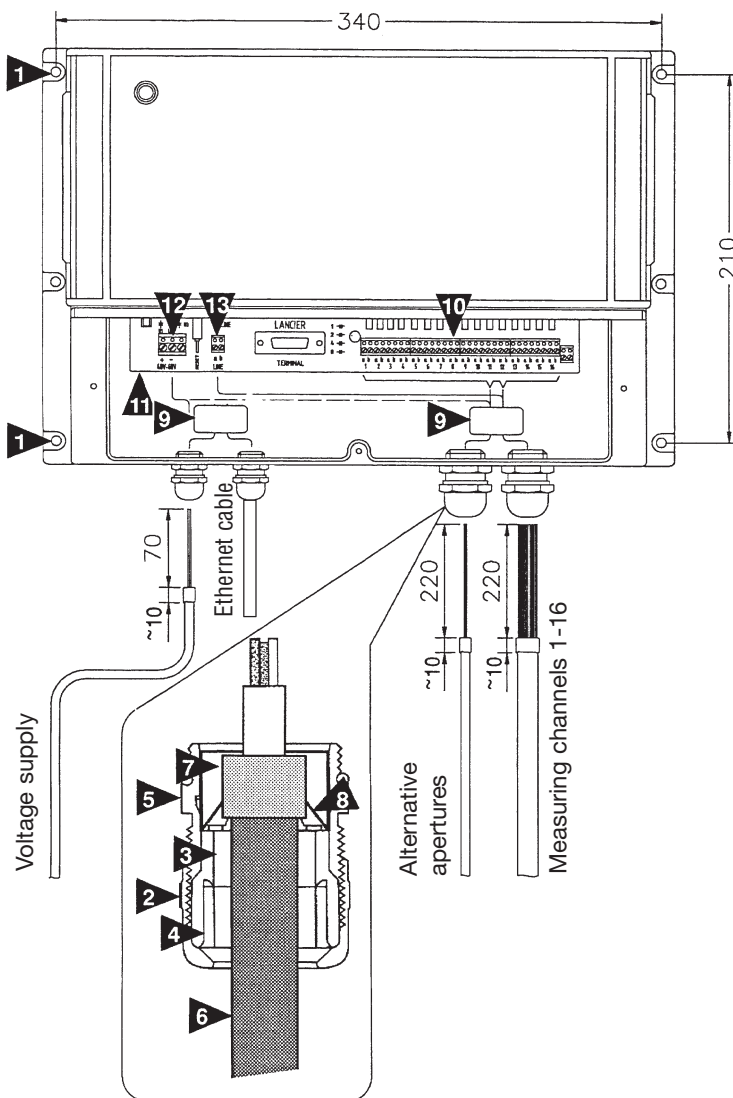
Minimum distance from neighbouring walls and equipment = 100 mm

- Drill 4 holes (diam. 6 mm) in a sustaining wall:
horizontal clearance: 340 mm
vertical clearance: 210 mm
- Use the fixing materials supplied (rawlplug and screws) to install.
- Using the 4 drill holes (1), screw the monitoring station flush to the wall

Cable connection

- Unscrew cap nut (2) with rubber nozzle (3) and plastic ring (4) from the PG screw connection (5) and push over the end of the cable.
- Move cable sheath (6) **without** aluminium screen 220 mm away.
- Move aluminium screen up to 10 mm away from the wire and fold back (7) over the cable sheath.
- Push cable firmly into the screw connection until there is contact between the aluminium screen and the jaws of the clamp (8).
- Place plastic ring (4) with rubber nozzle (3) into the PG screw connection (5), rotating the ring so that the 4 lead ribs on the outside diameter of the plastic ring can be fed into the corresponding slot in the PG screw connection.
- Using a 17 mm combination wrench, tighten PG screw connection cap nut such that there is no strain on the cable.
- Run measuring channel leads through the ferrite nucleus provided (9) and clip on to connections „a“ and „b“ of the respective measuring channel inputs 1 to 16 (10) on the basic printed circuit board (11).
- Run the voltage feed wire direct to the terminal „voltage feed“ clamp (12) and clip on. Using a 13 mm combination wrench, tighten PG screw connection such that there is no strain on the wire.
- Push ethernet cable, including screw connections through an unused housing aperture. Using a 17 mm combination wrench, tighten PG screw connection in the housing such that there is no strain on the cable.
Connect ethernet cable to the CPU card and join the other end of the ethernet cable to the LAN.
- Mount second ferrite nucleus (9) around voltage feed wire and ethernet cable.





Important!

Obey handling instructions. Electrostatic discharge (ESD) damage.



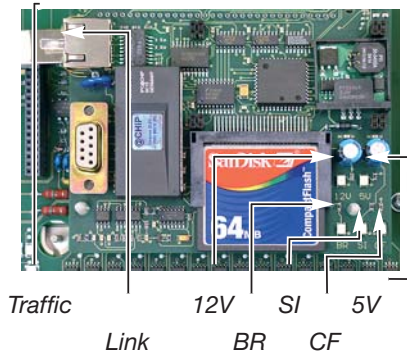
NOTE: It is important to abide by the terms of the EMC Directive!

- Screening (aluminium screen) of the connected cable must also be earthed at the other end of the cable.
- The earthing clamp on the power (12) plug must be connected to earth.

Initial operation

Connection

- Switch on mains and observe CPU card LEDs:
 - the green „12V“ and „5V“ LEDS light up straightaway.
 - the green „BR“ (boot ready) LED lights up after a few seconds if the application is started correctly.
 - the red „CF“ LED flashes on contact with the compact-flash card (application loading).
 - Green „SI“ LED lights up if the server is initialised.
- The RJ45 plug contains other LEDS with the following functions:
 - the green „Link“ LED lights up and signals the LAN connection.
 - the yellow „Traffic“ LED flashes in the presence of data traffic.
- Configure as described in the following pages and lock the housing.



CPU card configuration

Connection

Configure the CPU card via the integrated RS232 interface (9-pole SUB-D, cable not crossed) (may be unnecessary if already installed at LANCIER Monitoring GmbH's factory).

- Connect the laptop or other PC to the CPU card via the RS232 interface
- Start up terminal program, adjust connection features and proceed with connection (illustrated below, using the Windows „Hyperterminal“ Program as an example).



- Run the „Hyperterminal“ software, i.e. under Windows „Start“ -> „(All) Programs“ -> „Accessories“ -> „Communication“ -> „Hyperterminal“
- Enter any name (example: MUX-config) in the „New connection“ window and confirm „OK“ by clicking on the button.

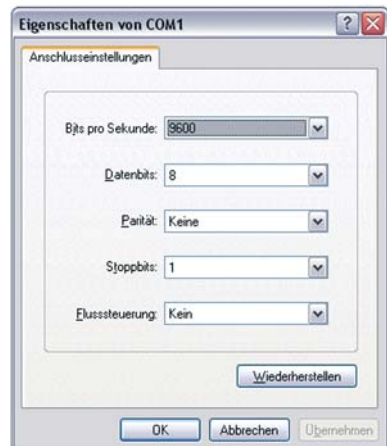


- Select the COM interface used from the pull-down menu in the „Connect with“ window.



- Insert the following values in the „COMX features“ window:
 - **9.600** bps
 - **8** databytes
 - **no** parity
 - **1** stop bit
 - **no** flow control

The CPU connection is configured.



Configure

Enter „Setup“ in the „Hyperterminal“ window to call up the configuration menu. Alterations can now be made without the need for a password.

The main MUX-RTU menu appears:

```

MUX-RTU Menu
=====
<f> FTP-Password
<h> HTTP-Password
<i> IP-Setup
<n> Serial-No.
<t> Telnet-Password
<q> Quit Program

```

For menu control enter the prefixed letters in pointed brackets (example: <f> for FTP password).

Similarly, for submenu control enter the prefixed figures.

The desired adjustments can be made in the input masks appearing

Factory setting

FTP-Password:

User: ftp
Password: ftp

HTTP-Password:

User: http
Password: http

Telnet-Password:

User: tel
Password: tel

IP: 172.16.11.110

Netmask: 255.255.0.0

Gateway: 172.16.10.1



Important!

Reset all passwords for safety reasons!

Set FTP-Password

Enter „f“

FTP menu appears:

```
FTP-Password Config
=====
<0> Exit
<1> User      : ftp
<2> Password : ftp
```

Set „User“

Enter „1“

FTP-User menu appears:

```
Old User : ftp
New User :
```

Previously valid user is displayed. In order to keep it, re-enter the previous entry, otherwise new user name will be recorded. Confirm entry by pressing „Return“ key or „Enter“ key.

Set „Password“

Enter „2“

FTP-Password menu appears:

```
Old Password : ftp
New Password :
```

Previously valid password is displayed. In order to keep it, re-enter the previous entry, otherwise new password will be recorded. Confirm entry by pressing „Return“ key or „Enter“ key.

To exit user configuration

Enter „0“

Return to main menu (see page 14)

Set HTTP-Password

HTTP password is altered in the same way as FTP password.
The HTTP menu is accessed by entering „h“.

Set Telnet-Password

Telnet password is altered in the same way as FTP password.
The Telnet menu is accessed by entering „t“.

Set Serial-No.

Serial number is altered in the same way as FTP password.
Serial number menu is accessed by entering „n“.

- serial number should match nameplate serial number.

Set TCP/IP configuration

Enter „i“

TCP/IP menu appears:

```
Current    TCP/IP-Config
=====
IP         = 172.16.11.110
Netmask    = 255.255.0.0
Gateway    = 172.16.10.1
MAC        = 00:30:56:80:04:AD
```

```
TCP/IP Config Menu
=====
<1> IP-Address
<2> Netmask
<3> Gateway
<0> Exit Menu
```

Set IP-Address

Enter „1“

IP-Address menu appears:

```
Old IP : 172.16.11.110
New IP :
```

The previously valid IP address is displayed. To keep it, re-enter the previous entry, otherwise the new IP address will be entered. Confirm entry by pressing the „Return“ key or the „Enter“ key.

The TCP/IP main menu appears (see above)

Set „Netmask“

The netmask address is altered in the same way as Card-IP address.

The netmask menu is accessed by entering „2“.

Set „Gateway“

The gateway address is altered in the same way as Card-IP address.

The gateway menu is accessed by entering „3“.

Set „MAC“

The MAC address is a one-time identification address firmly incorporated in the hardware and cannot be altered.

Exit TCP/IP configuration

Enter „0“

Return to main menu (see page 14)

Exit MUX configuration

Enter „q“

Good Bye.. Program Exit

End connection

- Click on „Off“ button on the „Hyperterminal“ software menu bar.
- Close the „Hyperterminal“ software.



Important!

The CPU card must be rebooted after configuration. Press the reset key at the main board (see page 9).

Operating the monitoring station

Log-in

Following configuration, MUX101-DW values can, for test purposes, be read in a web environment by an internet browser. Displayed values express frequency data in Hz and are not converted to physical parameters. Since actual values are on the server, limit values cannot be set.

- The MUX101-DW must be connected to the LAN.
- The IP address must be known.
- The internet browser must be installed and started.

Connection is established once the IP address is entered in the browser address field. The start page appears.

A log-in is required:

- Enter user and password, as already established at the time of CPU configuration (**<h> HTTP-Pass-word**), and confirm by clicking the „Submit“ button.
- After 10 minutes service break or log-off, a new log-in is required.



Attention!

Only one user at a time can work on the system. Other users cannot log in before the first user has logged out.

Menu

The following appears on the left-hand menu bar:

- **Home:** back to start page
- **Measure Data:** scan sensor values (real time)
- **Configuration:** view processor data
- **Help:** service assistance
- **Contact:** contact data to LANCIER Monitoring GmbH
- **Logout:** log off

Read values

- Click on the „Measure Data“ menu point
- Select the channel to be measured in the left-hand pull-down menu in the main window
- Select the highest number (127) of sensors in the right-hand pull-down menu. This guarantees that all selected channel sensors are scanned.
- Confirm selection by clicking on the „Select“ button.



A table appears with an empty field for each selected sensor.

- Click on the „Refresh“ button to read sensor values (duration: approx. 2 sec per sensor) and enter in the table. Unmeasured values are displayed as 0.
- The measurement cycle can be interrupted by clicking on the „Break“ button.
- Once the last channel sensor has been scanned, a new scan can be started by clicking on the „Rescan“ button.



Interpretation of values

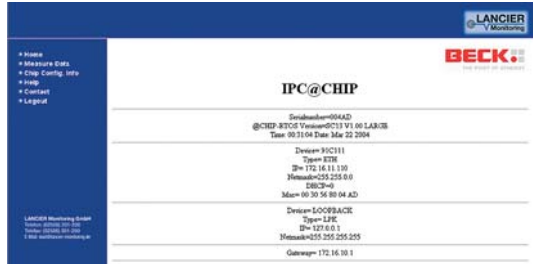
Values may lie in the 700 to 2400 Hz range and are entered in the table by means of a continuous signal.

Signal interference or signal frequencies outside the range are displayed as follows:

- 1 shorted sensor lead or closed contact
- 1 no reliable value (jittery signal)
- 2 no sensor present (no signal edge) or contact open
- 3 smaller 700 Hz, invalid
- 4 bigger 2400 Hz, invalid

Configuration

- Click on the „Configura-
tion“ menu point
- Processor data are dis-
played



Log-out

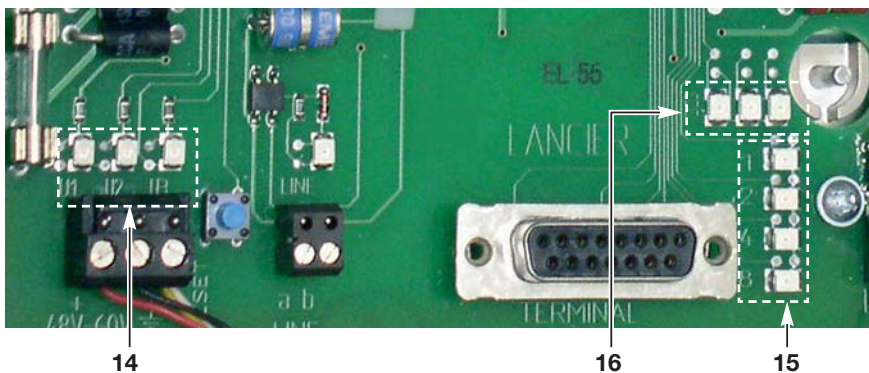
- Click on the „Logout“ menu point
- The monitoring station connection is terminated.

Operation of the monitoring station

The MUX 101-DW monitoring station can now operate independently.
Remote reading and evaluation are normally conducted via the UMS server.

Meaning of the LEDs

While the MUX 101-DW monitoring station is in operation, various LEDs on the base plate (items 14 to 16) indicate differential operating status and may point to faults, directly after installation, for example.



U₁, U₂, U₃ (function control)

LEDs U₁, U₂, U₃ (**14**) are for function control and indicate internal voltages:

U₁: 5V (digital)

U₂: 12V (relay)

U₃: 12V (analog)

1, 2, 4, 8 (measuring channel indication)

LEDs 1, 2, 4, 8 (**15**) indicate in binary code which measuring channel is currently active and read out (e.g. LEDs 1, 2 and 8 light up and measuring channel 11 is read out).

DCD, a, b

- The LED DCD (**16**) is unimportant
- Both LEDs next to the DCD LED indicate the status of the active measuring channel a and b leads.
 - the middle LED = b lead
 - the right-hand LED = a lead
- both LEDs are dark:
Measuring connection OK
- LED a **or** b lights up:
short-circuit (e.g. insulation fault) in the lead concerned.
 - Check measuring connection and eliminate fault.
- LED a **and** b light up:
 - in the case of a contact connection: contact closed.
 - in the case of other sensors: short-circuit in the measuring connection (a against b).
 - Check measuring connection and eliminate fault.

The following LED is located in the housing cover and visible only when the housing is closed:

Operation

The „BR“ LED in the housing cover lights up when the MUX 101-DW monitoring station is in operation.

LANCIER Monitoring GmbH

Gustav-Stresemann-Weg 11
48155 Münster, Germany

Tel. +49 (0) 251 674 999-0
Fax+49 (0) 251 674 999-99
mail@lancier-monitoring.de
www.lancier-monitoring.de



EC Declaration of Conformity

We declare under our sole responsibility, that the product

Make: LANCIER Monitoring
Type: MUX 101-DW

to which this declaration refers, meets the relevant health and safety requirements of the following EC directives:

2006/95/EG	Low voltage directive
2004/108/EG	Electromagnetic compatibility

For proper implementation of the health and safety requirements named in the EC directives the following standard(s) and/or technical specification(s) have been consulted:

EN 60950	Safety of information technology equipment
EN 61000-6-1 and 2	Interference resistance (fault-free operation)
EN 61000-6-3 and 4	Emitted interference

Münster, 22 July 2010


Research and Development


Managing Director