GLT2200N BMS Network Operator Station

Application

BMS network operator station for higher-level building management functions and for connecting controllers.

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Description of BMS Network Operator Station

The GLT2200N BMS network operator station increases the usability of the BMS. With BMS version 9, the SM33 software module is a component of the basic module.

Using a BMS network operator station, you can:

- Operate the BMS remotely
- Use an Ethernet network
- Connect printers to print out malfunction messages and for printing from all BMS programs
- Connect any Kieback&Peter DDC devices
- Plan malfunction message processing that is separate from the BMS
- Display a screen output (indicated by malfunction message symbol)
- Use BMS network operator station output (output in operating and malfunction messages) incl. the Alarm screens SM20 software module

Once plants have been planned on the BMS, they can also be accessed on remote BMS network operator stations, or terminals. BMS network operator stations act as data concentrators in a similar way to a DCS.

In addition to BMS network operator stations, a network can also contain several BMS.

Whenever the BMS is restarted, the BMS network operator stations are rebooted independently, thus ensuring automatic operational readiness even after an interruption to the power supply.

BMS network operator stations contain either a hard disk or a flash disk. Software only needs to be maintained on the BMS. Only one copy of the parameterization and plant schematics exists. Any changes made on the BMS network operator station also take effect on the BMS. The BMS operator perceives only the effect of the entries on the BMS network operator station. This means that any programs can be opened from the BMS and BMS network operator station. This is where the benefits of the multitasking/multi-user real-time operating system QNX come to the fore.

NOTICE

Configuration must be carried out by qualified technicians only.

System Requirements

- Pentium III 800 MHz
- 512 MB RAM
- 16 MB AGP graphics card

The BMS network operator station works via Ethernet with a transfer speed of 10 Mb/s or 100 Mb/s.

The network operator station supports all onboard and PCI network cards that are also supported on a BMS. The BMS network operator station and BMS are connected via cable compatible with Ethernet. Optical fiber/glass fiber cables with converters or twisted pair cables are possible, i.e. 10Base-T and 100Base-TX, 10Base-T, 10Base-2 and 10Base-5 for GLT2287/PCI can be used.

► Note the information regarding routers and bridges.

The BMS should also have at least 512 MB RAM. Communication with a BMS network operator station (terminal) is enabled via the dongle for the BMS.

Hardware Installation

► Connect the BMS network operator station to the BMS via the network.

► Make sure that all connections and the correct cable are actually present.

Planning/Planning Template

The planning template assists you with planning and documenting the BMS network. During installation, enter all the necessary information in the following table. Keep the completed table at the network operator station.

NOTE

Entries are case-sensitive.

	Please enter or tick
Software module SM33 installed?	
Is the BMS connected via QNET over raw Ethernet or over IP?	QNET over raw Ethernet
	or
	QNET over IP
Unique host name	
Domain	
Information for BMS: See chapter “Information required from the BMS”, page 6. - BMS name	
- Host name	
- Redundant host name	
- BMS domain	
- BMS IP address	
- Redundant BMS IP address	

Setting up the Network Operator Station

On the BMS installation CD, you will see the menu item “New installation of operating place”. A separate setup CD for the network operator station is not required.

There are two ways of connecting the network operator station with the BMS:

► Connect the network operator station with the BMS either via QNET over raw Ethernet or QNET over IP.

The recommended operating mode for the network operator station is over IP. This ensures that it can be used on networks with IP routers.

NOTE

The previous method (QNET over raw Ethernet) and the new method (QNET over IP) do not work in mixed operation. The hard disk must be at least 32 MB (types: EIDE flash disk, EIDE hard disk, SATA hard disk). The first network card to be recognized is always used. The network data rate should be 100 Mb/full-duplex. DHCP is not possible (on either the BMS or network operator station); static IP addresses must be used.

QNX network packets are encapsulated in IP packets of type 106 = QNX (HEX 6A).f Neither TCP nor UDP is used. For comparison: 1 = ICMP 6 = TCP 17 = UDP 83 = VINES 106 = QNX. The IP routers may need to be configured so that IP packets of type 106 are forwarded. Only one network operator station can be connected via a NAT router (NAT = Network Address Translation). The NAT router cannot transfer incoming QNX IP packets to different IP addresses. (With UDP + TCP, this is possible due to the port numbers.)

NOTE

When installing a network operator station from CD, the configuration of the network operator station is not retained.

The language code is saved on the network operator station. At present, German and English are available.

The application programs on the network operator station use the BMS server’s TCP/IP interface. This means that other gateways entered there do not need to be entered on the network operator station.

For the time being, existing network operator stations of version BMS 8.24 and higher can continue to be operated with QNET without any changes.

Preparing the GLT2200N-02 Network Operator Station (BMS Version < 9.08)

The following settings are not necessary for BMS higher than V9.08.

Before you install the BMS software, you must deactivate the AHCI mode of the mainboard. To do so, proceed as follows:

- Shortly after switching on the network operator station, press [**Del**].

  The BIOS for the mainboard opens.
- Enter the password and confirm your entry by pressing [**Enter**].
- In the BIOS menu, select “Integrated Peripherals” using the arrow keys and confirm the selection by pressing [**Enter**].
- Set the variable “SATA RAID/AHCI Mode” to “Disabled”.
- Save the change and leave the BIOS by pressing [**F10**].
- Confirm the query with “Yes”, press [**Y**] and then [**Enter**].

NOTICE

Do not make any other changes in the BIOS settings as this may cause the network operator station not to work!

Installing the Network Operator Station

When installing the network operator station from CD, you will receive a confirmation prompt and then the first hard disk including all partitions will be deleted. The QNX bootloaders and a QNX partition are set up.

- Boot from the installation CD.

  The language selection screen is displayed.

- Select the desired language.
- Select installation mode “6” (New installation of operating place).
- Create a partition.

  The network operator station is installed.
- Restart the system.

CAUTION

Following a BMS update, the BMS network operator station is rebooted. Starting the BMS triggers the BMS network operator station to boot up automatically.

Configuring the Network Operator Station

When booting the network operator station, the current configuration is displayed in text mode.

- Press the [**s**] key within 10 seconds to perform or modify the configuration.
- To make a change, enter the relevant number and then the change.

NOTE

The host name must be unique within the network; it must not occur more than once in this or any other domains.

NOTE

The domain is required for communication creation.

- Finally, save the data by entering “99”.

Network operator station display — Operating mode QNX network over raw Ethernet		
1	Network mode:	QNET_RAW
2	Host name:	terminal
7	BMS domain:	gltv8
0	Cancel	
99	Save and quit configuration	

Network operator station display — Operating mode QNX network over IP		
1	Network mode:	QNET_OVER_IP
2	Host name:	terminal
3	IP address:	10.250.66.71
4	Network mask:	255.255.0.0
5	Gateway:	0.0.0.0
6	BMS host name:	server
7	BMS domain:	gltv8
8	BMS IP address:	10.250.66.102
9	Redundant BMS host name:	
10	Redundant BMS IP address:	0.0.0.0
0	Cancel	
99	Save and quit configuration	

BMS Configuration for Network Operator Station

In the Settings/Operating places dialog box, the BMS configuration has the option “QNX network over IP”. This option must be activated for IP operation.

- When setting up the network operator station, make the following entries in the BMS configuration:

Host name: The name entered in the configuration menu for the network operator station under “2 Hostname”. The default name is terminal.

Name: This is any text that is then displayed in the status bar for the network operator station.

Once configuration has been performed on the BMS and the BMS system has been restarted, you can start the network operator station.

After configuring the BMS network operator station, the network driver is loaded from the local hard disk. As soon as the network operator station accesses the BMS, the remaining drivers (e.g. graphics card, sound card) are loaded by the BMS, and the BMS user interface is started.

If the network is disconnected for more than 5 minutes, the network operator station will restart.

Information required from the BMS

In order to configure the network operator station, the following entries are required from the BMS:

NOTE

These parameters must match the entries in the BMS configuration.

- Host name
- Redundant host name
- BMS domain
- BMS IP address
- Redundant BMS IP address

In the BMS, you will find these parameters in the configuration. You will only find the relevant settings in the network settings.

► Log onto the BMS as “MAINTENANCE”.

Under ***Tools/Configuration*** you will find the settings for:

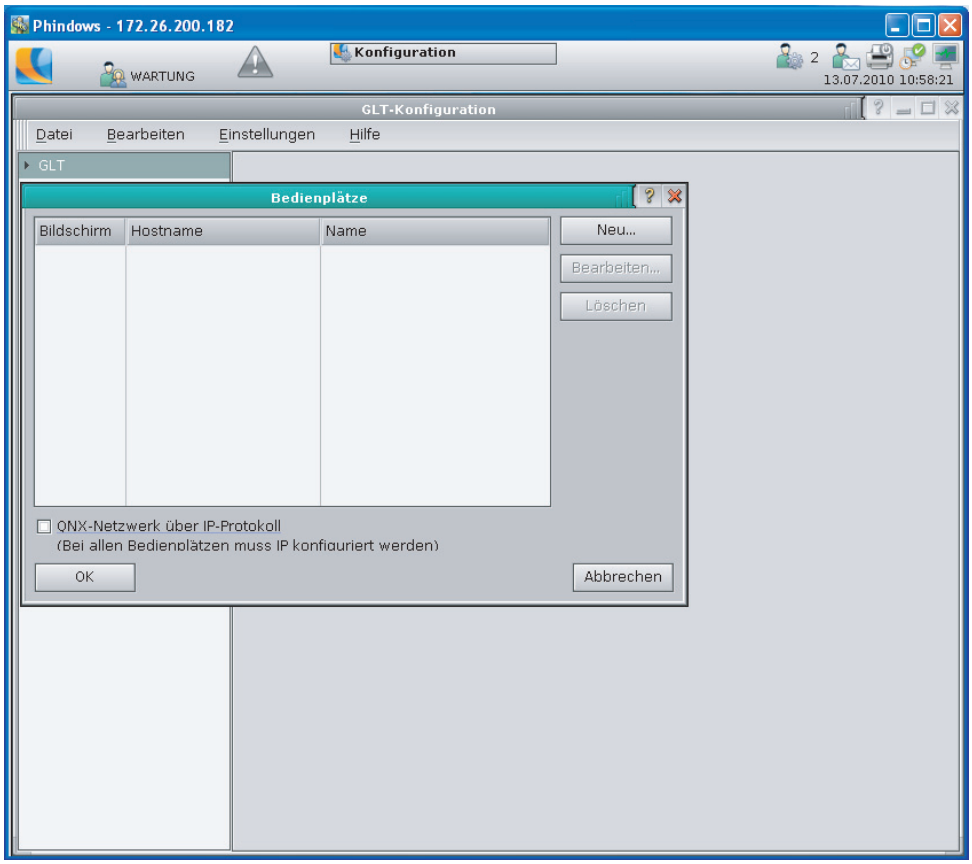
- Operating place
- Network

On the screens for ***BMS server*** and ***Network*** you can call up the information that you need to configure the network operator station:

- BMS name
- Host name
- Domain name

You do not need to change the configuration here.

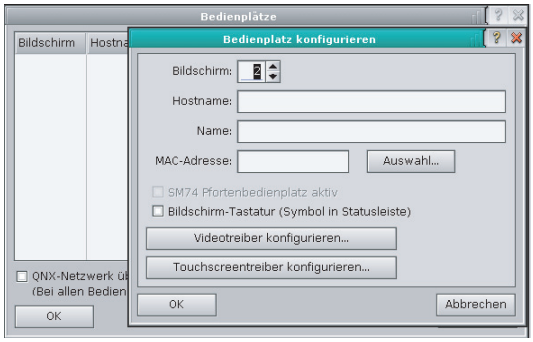
► Create the new network operator station in the BMS under ***Tools/Configuration/Settings/ Operating places***:



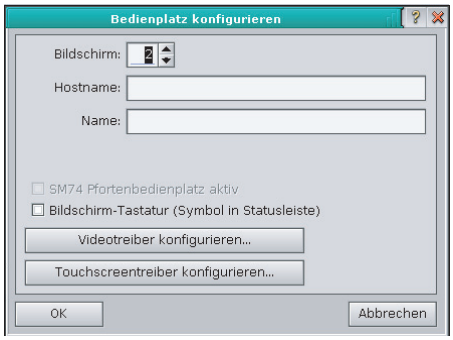
► Click on [**New**].

Depending on the operating mode of the network operator station, you will see the following screen.

QNX network over raw Ethernet:



QNX network over IP:



► On both screens, enter the host name of the network operator station and the name.

► For a QNX network over raw Ethernet, choose the MAC address.

NOTE

The network operator station host name must be unique in the network, however there are no restrictions when it comes to the name.

► Configure the touchscreen driver.

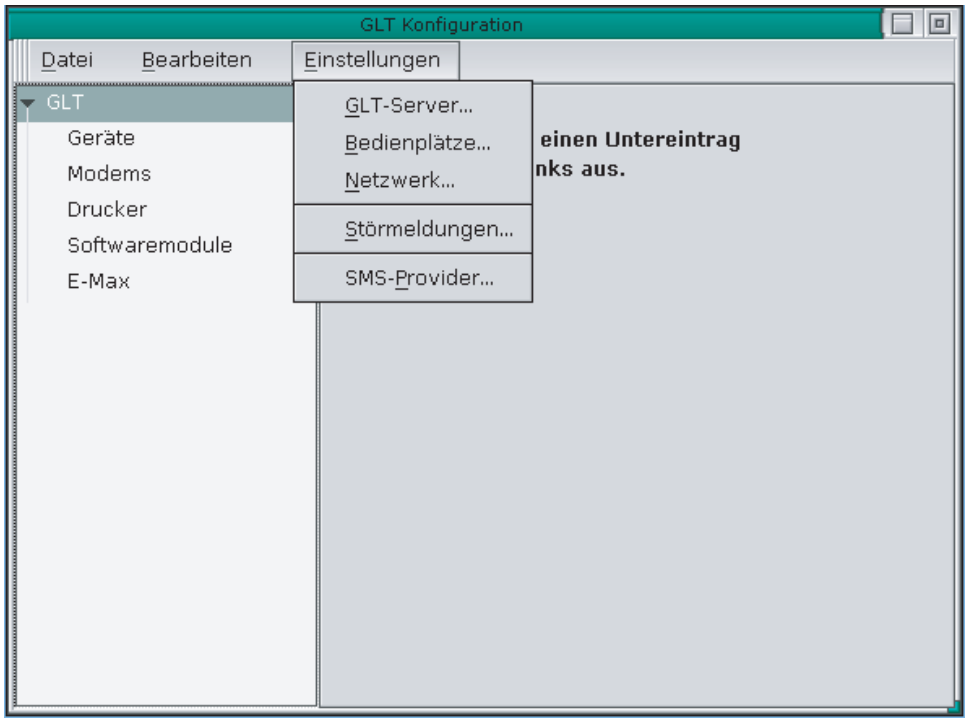
- Save the settings via ***File/Save***.
- Once you have made the settings, it is necessary to reboot the BMS.

NOTE

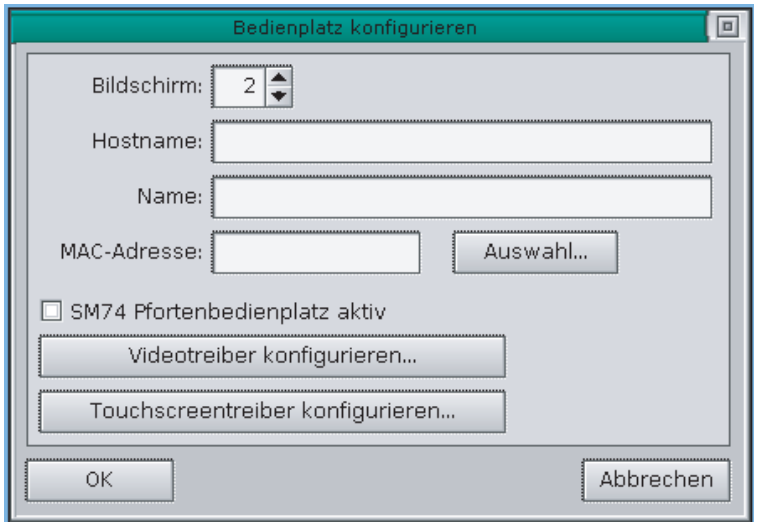
Simply restarting the BMS is not sufficient.

Installation in the BMS Configuration

- Make sure that the network operator station is connected to the BMS.



- Open the network operator station configuration screen via ***Configuration*** under ***Settings***.



- Define the screen number (required for malfunction message output).
- Choose a host name for the BMS network operator station.

NOTE

The host name is used for communication within the network. You can choose any name but it must be unique within the network. The host name appears as a screen name on the BMS.

- Click [**Selection**] to receive the MAC address of the network operator station.
- Save the configuration with [**OK**].

NOTE

Once you have performed the configuration, you must start the BMS system.

Diagnosis

System commands are available to test whether the BMS network operator station is active.

► Enter “ls/net”.

The name of the network operator station must appear.

Virtual data points for monitoring the BMS Network Operator Station

Address type	Permitted address	Description
1.1.0:5 F90/N	1.1.0:5 F90/4	The data point “1.1.0:5 F90/N” reflects the status of the network operator station with the screen number N. N can be between 2 and 99. The data points can be accessed in the structured parameterization by selecting them directly. During normal operation, the status value is 0. In the event of a malfunction (e.g. network interruption), the value changes to 1. After approx. 2 minutes of interruption, a network operator station is classed as “interrupted”.
1.1.0:5 F99/N	1.1.0:5 F99/4	The data point “1.1.0:5 F99/N” reflects the status of the BMS with the BMS number N (number in the remote control). N can be between 2 and 99. The data points can be accessed in the structured parameterization by selecting them directly. During normal operation, the status value is 0 (BMS active). In the event of a malfunction (e.g. network interruption) the value changes to 1.

DDC Devices on the BMS Network Operator Station

All Kieback&Peter DDC devices can also be connected to BMS network operator stations as well as being connect to the BMS. DDC devices on BMS network operator stations behave like DDC devices that are connected to the BMS directly via the serial interface.

In order to set up the DDC devices connected to the BMS network operator station, the relevant node name (host name) for the BMS network operator station is entered in the BMS configuration in the***Devices***menu.

In the entire network, a P90 controller only exists once. P90 controller numbers are only assigned once, or sequentially.

DDC devices on a BMS network operator station are displayed in the structured parameterization. However, DDC devices that are connected to a BMS are only displayed locally in the distributed network on each BMS in the ***Parameterization*** program.

Routers and the QNX Network

All network operator stations must always be transparent in the entire network.

This transparency may potentially be prevented by routers.

Routers connect subnets. Only data packets that the router can understand and that are addressed to the router are interpreted as routed. Therefore, only implemented routing protocols are processed.

Hybrid routers are suitable for BMS network operator stations. This bridge/router is an enhanced multiple-protocol router.

All packets that cannot be routed (because the corresponding protocol is not implemented in the router or cannot be routed at all) are bridged.

NOTE

The functions of the router are far more complex than described here. The BMS network operator station does not always work via every router.

Bridges and the QNX Network

Bridges expand the limits of a network in terms of the number of stations and the linear expansion. Bridges also enable the linking of subnets, irrespective of the physical transfer medium.

As QNX uses the same packet format and protocol on all IEEE 802-based networks, you could create bridges between Ethernet, token ring, and FDDI networks and use them in practice without any problems.

NOTE

Modems, serial heating logbooks and E-Max cannot be configured on the BMS network operator station.