

Remote Tableau Drive Unit PTU288-1

User Manual

Description - Installation - Connection - Parameterisation

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1 Introduction

1.1 Description

The product range of the Remote Tableau Drive Unit PTU288-1 allows the actuation of display panels (light emitting diode fields, synoptic tableaux, etc.) via the INFO bus interface of an LST fire detection control panel or an LST extinguishing control panel. The Drive Unit PTU288-1 serves as freely parameterisable INFO bus member, which relays the informations of the fire detection control panel to its built-in buzzer as well as to the LED display fields and LED connection modules, which are connected to the drive unit. In the opposite direction of information the control commands can be sent to the fire detection control panel via the control inputs of the Drive Unit PTU288-1.

The product family of the Remote Tableau Drive Unit PTU288-1 comprises

- ◆ the **Remote Tableau Drive Unit PTU288-1**, which allows to connect three LED Display Fields LAB48-x or LED Connection Modules LAM48-1,
- ◆ the **LED Connection Module LAM48-1**, which can actuate 48 individual light emitting diodes or 48 relays,
- ◆ low current, super bright individual light emitting diodes (name: **LED Assembled "colour" / 10pcs.**) in various colours, with a cord and a connector that is crimped on to it, for connection to the LED Connection Module LAM48-1,
- ◆ two-core connection cords (name: **Cord 2 Wire for LED Connection/10pcs.**) allowing to connect individual light emitting diodes or other devices to the LED Connection Modules LAM48-1,
- ◆ the **LED Display Fields LAB48-x** (which are known from the family of Fire Detection Control Panels Series BC216), each having 96 light emitting diodes arranged in pairs, and
- ◆ the **LED Display Tableaus LAT288-1** and **LAT288-1CE**, into which one Drive Unit PTU288-1 and three LED Display Fields LAT288-1 with a total number of 288 light emitting diodes, which are arranged in pairs, can be installed.



*Fig. 1: The LED display tableaux belonging to the product family of the Remote Tableau Drive Unit PTU288-1, with installed LED Display Fields LAB48-1
Left: LED Display Tableau LAT288-1 in the wall-mount cabinet
Right: LED Display Tableau LAT288-1CE for installation into a 19-inch housing*

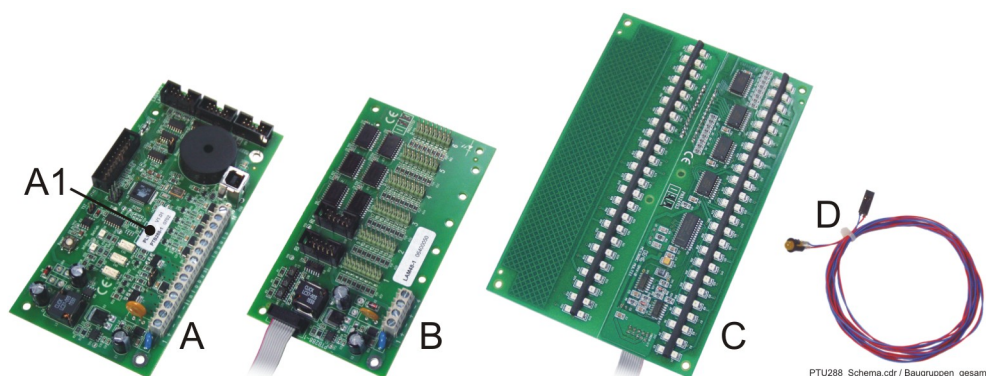


Fig. 2: The componentries of the product family Remote Tableau Drive Unit PTU288-1

- A) Remote Tableau Drive Unit PTU288-1
A1: Label with the firmware release
- B) LED Connection Module LAM48-1
- C) LED Display Field LAB48-x
- D) LED assembled with 2m cord and connector.

Below, in Fig. 3 a typical configuration of an application of the Remote Tableau Drive Unit PTU288-1 is shown. The general information of the fire detection system is displayed on an LED Display Tableau LAT288-1 in the form of a list. On a synoptic tableau, which is provided with an estate layout, the detector alarms and faults/disablements are displayed clearly.

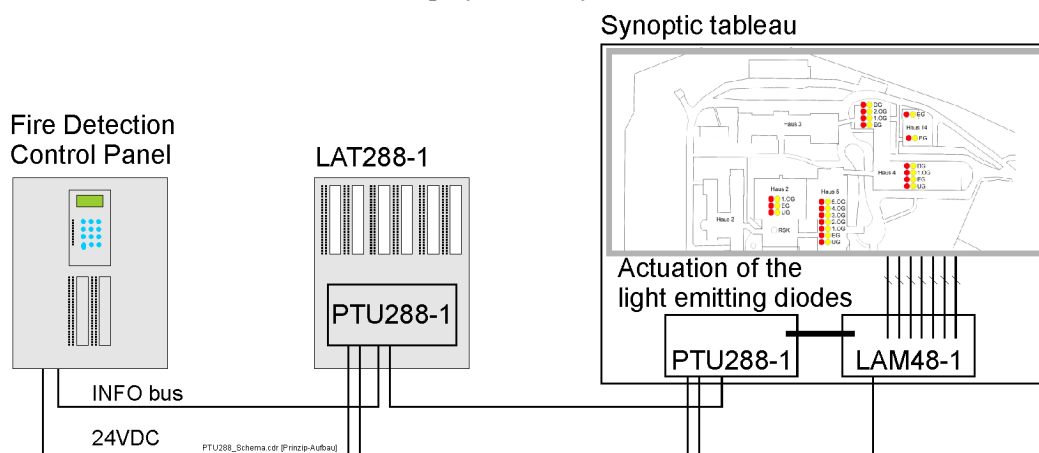


Fig. 3: Schematic diagram of the interconnection of Remote Tableau Drive Units PTU288-1 and an LST fire detection control panel

Centre: LED Display Tableau LAT288-1 with installed Remote Tableau Drive Unit PTU288-1 and max. three installed LED Display Fields LAB48-x

Right: The Remote Tableau Drive Unit PTU288-1 is installed into a customised synoptic tableau and the light emitting diodes of the synoptic tableau are actuated via LED Connection Modules LAM48-1.

This document describes the range of functions of the Remote Tableau Drive Unit PTU288-1 with the firmware version PL170 V1.01. Remote tableau drive units using firmware with another release number can differ in certain functions from the range of functions described in this document. You can find the release number of the firmware on the label of the PTU288-1 componentry (see detail A1 in Fig. 2).

1.2 Features of the product family Remote Tableau Drive Unit PTU288-1

The events of LST Fire Detection Control Panels Series BC216 and BC016 and LST Extinguishing Control Panels Series LC216 are received via the **serial INFO bus interface** of the Drive Unit PTU288-1. The events are filtered and processed according to the individual parameterisation. At the componentries connected to the Drive Unit PTU288-1, the processed information is used to actuate open-collector outputs (OC outputs) with current-limiting resistor, or is displayed by light emitting diode fields.

Three LED Connection Modules LAM48-1 can be connected to a Drive Unit PTU288-1. Each LED Connection Module LAM48-1 provides **48 freely parameterisable OC outputs** for the connection of

48 light emitting diodes, or for connecting **Relay Modules RL58-1 or RL58-2 respectively** in order to convert the OC outputs into max. 48 dry relay outputs.

Instead of the LED Connection Modules LAM48-1, **three LED Display Fields LAB48-x** with a total number of 288 light emitting diodes, which are arranged in pairs, can be connected to a Drive Unit PTU288-1.

Five parameterisable control inputs for transferring commands (lamp test, silencing of the alarming device, etc.) to the Drive Unit PTU288-1, and from there to the fire detection control panel, are arranged on the printed circuit board of the Drive Unit PTU288-1.

A **buzzer**, which is mounted on the printed circuit board, acoustically signals special operating conditions of the fire detection control panel and the Drive Unit PTU288-1.

The Drive Unit PTU288-1 is parameterised by means of the **Parameter Setup Software PARSOFT-1 or PARSOFT-2**. The parameters, which are set in the software, are transmitted from the parameterisation PC to the remote tableau drive unit via the **USB port** of the PTU288-1.

Two different display tableau housings (the **LED Display Tableau LAT288-1** for wall mounting and the **LAT288-1CE** for mounting into a 19-inch housing) are available for displaying a large number of information by means of LED pairs. One Remote Tableau Drive Unit PTU288-1 and three LED Display Fields LAB48-x can be mounted into these housings.

1.3 Types of symbols

Especially important sections of text in this User Manual are indicated with symbols. The following symbols are used:



Means **DANGER!** Ignoring these directions can result in danger to life and health.



Means **ATTENTION!** Ignoring these tips can result in system malfunctions or damage to property.



Means **TIP!** Here the text contains tips for easier operation.



Means that the country-specific and/or the site-specific requirements of the **APPROVALS** of the fire detection system must be observed.

Within the description text

- ◆ PARSOFT menu items are set off by square brackets [],
- ◆ PARSOFT windows are set off by braces { }, and
- ◆ keys of the PC keyboard are set off by angle brackets < >.

1.3.1 Abbreviations

In this User Manual abbreviations that are not familiar in everyday usage are avoided.

An exception is made for the Remote Tableau Drive Unit PTU288-1. In order to improve the readability of this User Manual, this name is frequently abbreviated as "Drive Unit PTU288-1", "drive unit" or "PTU288-1".

Within the functional description, the parameterisation, etc., the term "product family PTU288-1" stands for the whole product family, without specially mentioning the additional components, such as LED Connection Modules LAM48-1, LED Display Fields LAB48-x, etc.

Tips in this User Manual, which refer to LST fire detection control panels, are also valid in the same way for LST extinguishing control panels - unless differences are specially emphasized.

1.4 Important tips

Fire detection systems and devices respectively, must be installed strictly by qualified personnel that is being trained on a regular basis. The specific training of the qualified personnel must be provided by Labor Strauss Sicherungsanlagenbau Ges.m.b.H. Wien (LST) or by persons who are expressly authorized by LST. Country-specific standards, regulations, and guidelines as well as LST specifications must be strictly observed.

To ensure the flawless function of the fire detection system, all devices must be mounted as intended and supplied with voltage. Make sure that all devices are suitable for the expected ambient conditions.



All work to be performed on the componentries of the product family PTU288-1 may only be carried out when no voltage is supplied to the componentries. The installation must be checked prior to applying the supply voltage.



Before and during the installation and connection work being performed on the printed circuit boards, static charges from your body must be reliably discharged by touching an earthed piece of metal.

Fire detection systems must be maintained regularly and according to the country-specific standards. Any required repair work must be carried through immediately.



The Parameter Setup Software PARSOFT-1 or PARSOFT-2 respectively, version 1.21 or higher, is necessary for parameterising the Remote Tableau Drive Unit PTU288-1.

The operating system Windows 2000 or Windows XP must be installed on the PC which is used for loading the parameterisation into the Drive Unit PTU288-1. PCs with older operating systems (for example Windows ME, Windows 98) can not serve the USB interface of the PTU288-1 correctly.

Do not use corrosive or abrasive cleaning agents for cleaning the surface of the LED Display Tableaus LAT288-1 or LAT288-1CE respectively; use only mild household cleaners! Under no circumstances should water or other fluids penetrate the interior of the case!

1.5 Scope of delivery

The components of the product family PTU288-1 are supplied 100% function tested. Please check the delivery for completeness and transport damage before assembling the equipment.

The delivery scope of

- ◆ the Remote Tableau Drive Unit PTU288-1 (LST Part No. 252012),
 - ◆ the LED Connection Module LAM48-1 (LST Part No. 252013) and
 - ◆ the LED Display Field LAB48-x in the various versions with different LED colours,
- includes the respective componentry and the necessary assembly material (screws, spacers, etc.). Furthermore, the documentation of the product family PTU288-1 is enclosed with the Drive Unit PTU288-1.



A USB cable is required for connecting a PARSOFT PC to the Drive Unit PTU288-1. Such a cable is available with LST Part No. 219016 (length: 3m).

The delivery scope of the LED Display Tableaus LAT288-1 (LST Part No. 252010) or LAT288-1CE (LST Part No. 252011) includes:

- ◆ Wall-mount housing consisting of wall piece and case cover with front foil stuck on, or front 19-inch front panel with front foil stuck on,
- ◆ 6 labelling strips for the individual labelling of the light emitting diodes,
- ◆ mounting plate for mounting the PTU288-1 componentry,
- ◆ assembly material that is necessary for attaching the mounting plate, as well as for attaching the housing to the wall or to a 19-inch mounting frame.

The assembled super bright 5mm light emitting diodes in red (LST Part No. 259010), yellow (LST Part No. 259011) and green (LST Part No. 259012), with 2-wire cord and a connector in the 2.54mm grid crimped on to it, and with plastic LED clip, are delivered in packages of 10.

The assembled 2-wire cord (LST Part No. 259013) with a connector in the 2.54mm grid crimped on to it, for connecting customised light emitting diodes or other devices, are delivered in packages of 10.

1.6 Special terms

A few of the special terms that are used frequently in this User Manual are defined below.

- ◆ **Event**

Information of a fire detection control panel, which is reported via the INFO bus, to the Remote Tableau Drive Unit PTU288-1 as well as to other devices that are connected to the INFO bus.

- ◆ **INFO bus**

Serial 20mA data interface, which allows to simultaneously transmit the events of the LST fire detection control panels to a maximum of six devices.

- ◆ **Restart**

The processor system of the Drive Unit PTU288-1 is stopped by pressing the 'Reset' key, and after releasing the key the system is restarted. During this process the outputs of the LED Connection Modules LAM48-1 and the light emitting diodes of the LED Display Field LAB48-1 are deactivated. After the restart process, all current information of the fire detection control panel is again sent to the Drive Unit PTU288-1. This process takes a few seconds. The buzzer on the Drive Unit PTU288-1 is activated while the 'Reset' key is pressed. After the restart process, the buzzer is activated if events, which are supposed to activate the buzzer, are pending. After applying the supply voltage, a restart is carried out automatically.

- ◆ **System fault**

Condition of the componentry after a fault, with which a further operation of the componentry does not seem to make sense (e.g., CRC fault, unsupported settings in the configuration, etc.), has been detected during one of the automatically executed self tests.

A restart (initiated by pressing the 'Reset' key or by briefly turning off the supply voltage) ceases this condition.

- ◆ **USB**

Abbreviation of the English term "Universal Serial Bus". USB is an interface standard, which has been developed to easily establish a connection between a computer and external devices, such as mouse, keyboard, printer, etc. Because of its easy handling, the USB is also used for data connections to other devices. As a prerequisite for the proper function of USB, the operating system Windows 2000 or Windows XP must be installed on the PC.

2 Assembly of the housing and installation of the componentries

The assembly of the LED Display Tableaus LAT288-1 or LAT288-1CE respectively, as well as the installation of the componentries of the product family PTU288-1 are described in this chapter.

The Remote Tableau Drive Unit PTU288-1 must be installed in a clean and dry room. The room temperature in the immediate vicinity of the drive unit must range between -20°C and $+60^{\circ}\text{C}$, and the relative humidity must not exceed 95% at 40°C .



Bear in mind that the life span of the electronic components may be reduced by high temperature and humidity. Therefore it is recommended to install the PTU288-1 and the additional componentries in an environment with a normal indoor climate (i.e., up to $+40^{\circ}\text{C}$), if it is possible.

Protect the equipment against splashing water and other mechanical, thermal and chemical influences.



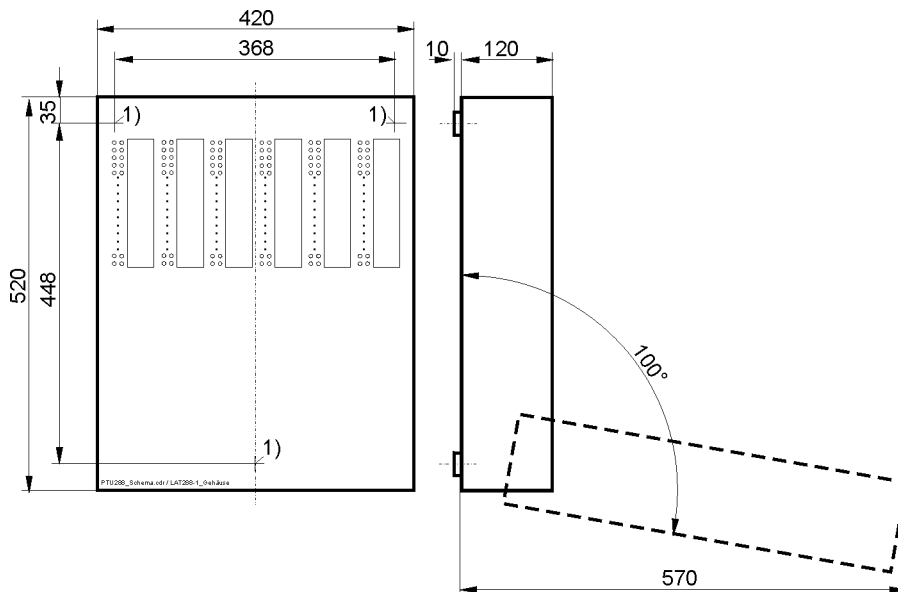
The cables which are connected to the Drive Unit PTU288-1 or to the LED Connection Modules LAM48-1 must not be led out of the shielding area of the housing, except for the INFO bus lines, the cables to the control inputs and the power supply lines.



All metal parts of the housing, such as doors, 19-inch pivoting frames, etc., must be securely connected to protective earth (e.g., via the equipotential busbar), so that the measures against electrical interference that are taken on the componentries, are effective.

2.1 Housing - dimensions, mounting

2.1.1 LED Display Tableau LAT288-1



¹⁾ Location of the mounting holes for 8mm dowels at the mounting surface

Fig. 4: LED Display Tableau LAT288-1 / dimensions, attachment
The dashed outline shows the swivel area of the case cover (approximate values).

The LED Display Tableau LAT288-1 is screwed on to the mounting surface at three points. Drill the necessary holes with a drill suitable for 8mm dowels, according to Fig. 4 above, and mount the wall piece of the LAT288-1 by means of the enclosed dowels and screws. Correct any unevenness in the mounting surface by means of washers.

2.1.2 LED Display Tableau LAT288-1CE

The LED Display Tableau LAT288-1CE is designed for installation into a 19-inch front (for example, into a 19-inch frame). The 4 mounting screws M6 and cage nuts that are required for the installation are included with the LAT288-1CE.

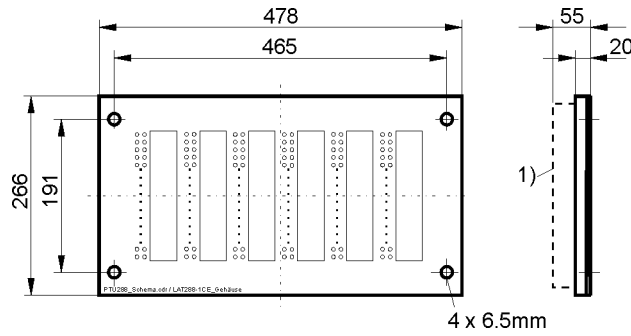


Fig. 5: *LED Display Tableau LAT288-ICE / dimensions, attachment*



Make sure that you do not damage the front foil while tightening the M6 mounting screws.

2.2 Componentries - dimensions, installation into LED display tableau

2.2.1 Remote Tableau Drive Unit PTU288-1

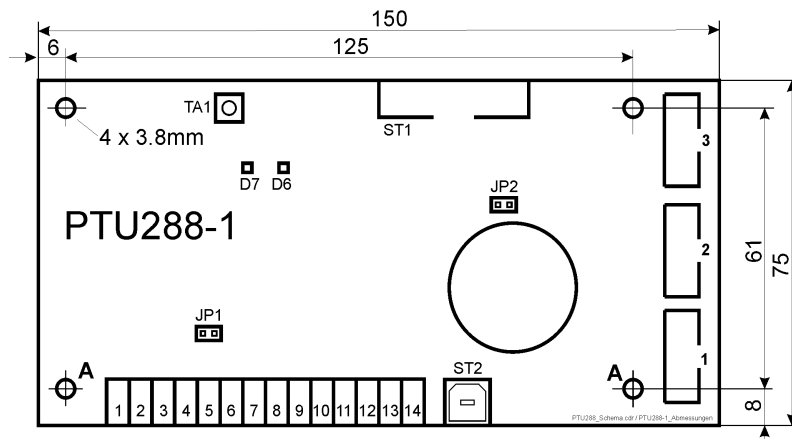


Fig. 6: *Componentry Remote Tableau Drive Unit PTU288-1 / dimensions*
At the two points marked with "A", the componentry must be mounted to a metal surface (which is connected to protective earth) by means of a metal distance bolt that is enclosed with the componentry. This measure is necessary for the correct function of the EMC protection circuits.

2.2.2 LED Connection Module LAM48-1

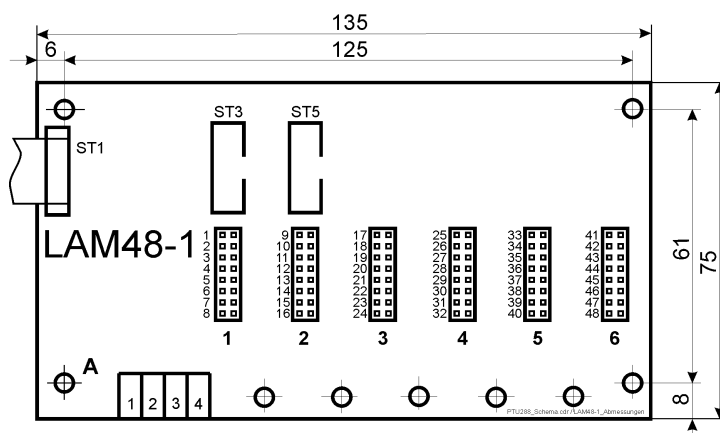


Fig. 7: *Componentry LED Connection Module LAM48-1 / dimensions*
At the one point marked with "A", the componentry must be mounted to a metal surface (which is connected to protective earth) by means of a metal distance bolt that is enclosed with the componentry. This measure is necessary for the correct function of the EMC protection circuits.

2.2.3 LED Display Field LAB48-x

Several versions of the LED Display Fields LAB48-x are available (the "-x" refers to the respective version). The only difference between these versions is the colour of the used light emitting diodes. For further details please refer to the respective product documentation.

The LED display field consists of two printed circuit boards which are connected to each other upon delivery. You have to separate the two printed circuit boards prior to installation. To do so, position the unit against a solid edge along the provided scored fracture line and break the unit over this edge. Make sure that the cable, which connects the two printed circuit boards with each other, and the components located on the printed circuit board are not damaged during this procedure.



Before and during the work being performed on the printed circuit boards, static charges from your body must be reliably discharged by touching an earthed piece of metal.

2.2.4 Installation of the componentries into an LED Display Tableau LAT288-1 or LAT288-1CE

The Drive Unit PTU288-1 as well as the LED Display Fields LAB48-x are mounted onto the inside of the cover of the LED Display Tableau LAT288-1 or onto the rear of the LAT288-1CE.

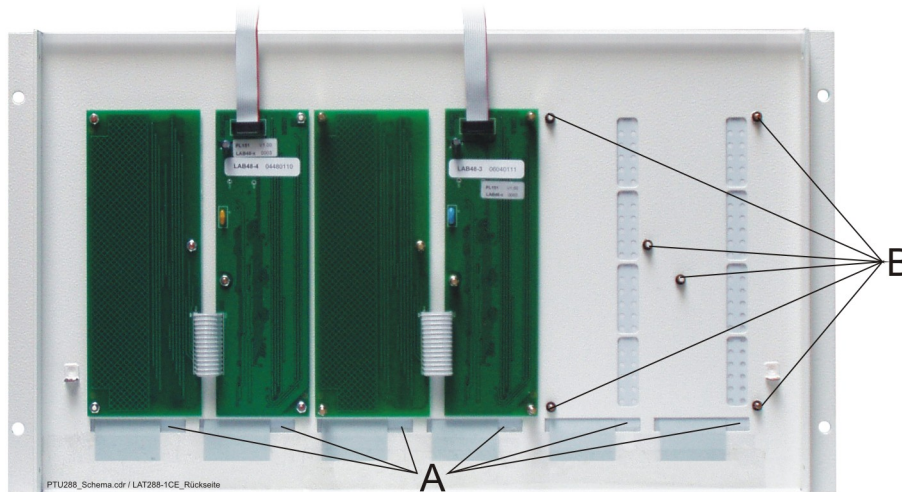


Fig. 8: Rear view of the LAT288-1CE with two installed LAB48-x's, without PTU mounting plate

A ... slots allowing to insert labelling strips

B ... plastic spacer tubes between front panel and printed circuit boards

- ◆ Remove the PTU mounting plate, which is mounted at the rear of the front panel, and the hexagon bolts, to which it is attached.
- ◆ Slide the plastic spacer tubes, which are enclosed with the componentry, onto the 6 threaded pins at the rear of the front panel to which you want to mount the two halves of the LAB48-x (see detail B of Fig. 8 above).
- ◆ Fit each of the printed circuit boards onto 3 of the threaded pins. Use the enclosed M3 nuts to fasten the two outer LAB48-x printed circuit board pairs to the hexagon bolts. Fasten the central LAB48-x printed circuit board pair by means of the available hexagon bolts.



On the LED display field a stripe of sponge rubber is wedged in between the left and the right row of light emitting diodes. This stripe prevents scattered light from shining through the adjacent light emitting diode. When you install the LED display field, make sure that this stripe stays in its position.

- ◆ Afterwards, screw the PTU mounting plate onto the hexagon bolts, with which the central printed circuit board pair is fastened (see Fig. 9 below), and screw the PTU288-1 componentry onto it.

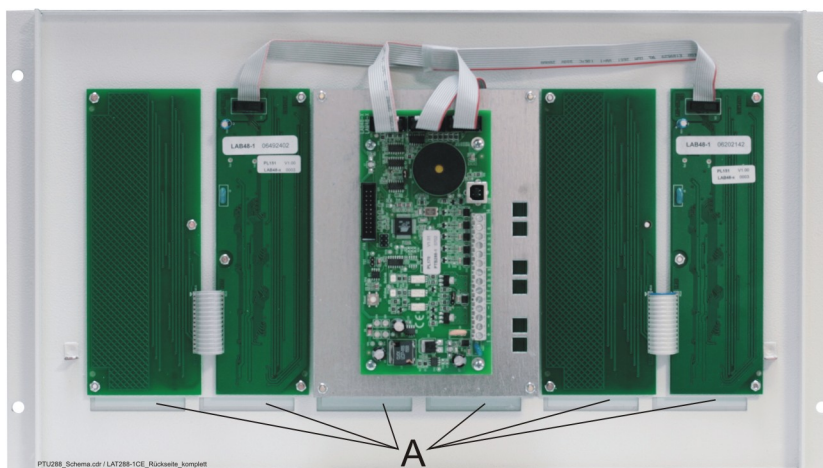


Fig. 9: Rear view of the LAT288-1CE with three installed LAB48-x's and with installed PTU288-1
A ... slots allowing to insert labelling strips

2.2.5 Labelling strips for the LED Display Fields LAB48-x

When the LED Display Tableaus LAT288-1 and LAT288-1CE are delivered, 6 labelling strips are enclosed with each package. Depending on the side with which the labelling strips are inserted, they serve two purposes:

- ◆ If no LED display field is used, insert the labelling strips with the evenly grey side in front. They cover both the transparent inscription field and the transparent light emitting diode windows.
- ◆ If the LED display field is used, insert the inscribed labelling strips with the grey / transparent side in front.

Inscribe the labelling strips by using suitable means and pay attention to the position of the inscription relative to the lateral reference marks (see Fig. 10 below). The inscription must be positioned to the right of the transparent part of the strip! Afterwards, insert the strip at the bottom, slide it behind the transparent field next to the light emitting diodes, secure the strip with adhesive tape and cut the excessive length with a pair of scissors.

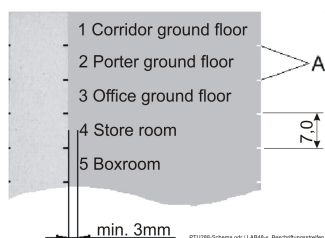


Fig. 10: Labelling strip for LED Display Field LAB48-x
The inscription must be positioned to the right of the transparent part of the strip! The reference marks (A) symbolise the lines, the inscription must be centred between two reference marks.
The distance between the reference marks is 7.0mm.

You can also insert a cardboard or paper strip (with a width of approx. 40mm) instead of the plastic strip and secure it with adhesive tape. Make sure that the strip does not cover up the light emitting diodes.



The light emitting diodes of an LAB48-x are arranged in a vertical grid of 7.0mm. Templates for such labelling strips, for use with some standard software packages, can be found on the CD with which the Parameter Setup Software PARSOFT-1 or PARSOFT-2 is delivered (file names: LEDBeschrift_BC216.wk4, LEDBeschrift_BC216.xls and LEDBeschrift_BC216.ods).



Never use sharp or pointed tools to remove an inserted strip. The surface of the front foil is very susceptible to scratches on the inside and such scratches are visible from the outside.

2.3 Installation of componentries and light emitting diodes in a synoptic tableau

Synoptic tableaus are customised in various dimensions and versions (e.g., with a housing made of profiles, with attached front plate and bottom plate). You have to install the Remote Tableau Drive Unit PTU288-1 and the LED Connection Modules LAM48-1 that are necessary for the actuation of the individual light emitting diodes, as well as - if required - Relay Modules RL58-1 or RL58-2 respectively, into these tableaus.



Connect all metal parts of the housing of the synoptic tableau with protective earth (e.g., via the equipotential busbar), so that the measures against electrical interference, which are taken on the componentries, are effective.

The componentries are preferably mounted on Module Carriers MPL17/3 with mounting holes in the LST standard grid.

In case of mounting on any other mounting surface, you have to prepare the necessary drillings yourself, according to Fig. 6 and Fig. 7 on page 11. Make sure that you mount the LED Connection Modules LAM48-1 close enough to the PTU288-1 componentry, so that the flat cables of the LAB48-1 can be connected to the PTU288-1, without causing mechanical stress.



At the point marked with "A" in Fig. 6 and Fig. 7, the componentry must be mounted to a metal surface (which is connected to protective earth) by means of a metal distance bolt that is enclosed with the componentry - only then are the componentries as well as the whole fire detection control panel sufficiently protected against EMV influences.



The flat cable of the LAM48-1 is approximately 280mm long. The cable must not be extended.

Furthermore, when you are customising the synoptic tableau, make sure that

- ◆ the USB connector on the PTU288-1 componentry remains accessible,
- ◆ there is sufficient space for connecting the lines,
- ◆ the sound emitted by the buzzer does not get absorbed and
- ◆ there is sufficient space for connecting the light emitting diodes to the LAM48-1's.

2.3.1 Mounting the individual light emitting diodes into the front panel of a special housing

The plastic LED clips of the assembled light emitting diodes are optimised for drilled holes with a diameter of 6.3 - 6.5mm and for front panels with a material thickness of 1.0 - 2.0mm.

At the front panel, put the plastic LED clips into each of the prepared drillings from the front and click the 5mm light emitting diodes into the plastic LED clips from behind.



The connection cord of the assembled light emitting diodes is approx. 2m long. You can extend this cord to virtually any length, but you must not lead the cord out of the shielding area of the housing.

3 Function, connection and settings of the componentries

3.1 General instructions

Position the cables in such a way that no damage to the cable insulation can occur on edges or otherwise, and secure the cables in the desired position (e.g., by means of cable straps, cable channels).

In the LED Display Tableaus LAT288-1 and LAT288-1CE the componentries are mounted into the case cover or behind the 19-inch front panel respectively. In order to avoid damaging the connection cables upon opening the housing, you have to provide the cabling of the componentries with adequate overlengths or loops which allow movement.

If shielded cables are used for the installation of the Drive Unit PTU288-1, the shielding wires must be connected with an earthed piece of metal on one side. The bare shielding wires must be insulated (e.g., by covering them with an insulating tube) so that they cannot cause any short circuits.



The Remote Tableau Drive Unit PTU288-1 and the componentries belonging to it are protected against electrical interference using elaborate means. As a result, under normal environmental conditions, shielded cables are not needed for their safe operation.

All installation and connection work may only be carried out when no voltage is supplied to the componentries.



Be careful with MOS components! In case of improper handling, the used MOS components can be destroyed by static charges. Before and during the work to be performed on the printed circuit boards, static charges from your body must be reliably discharged by touching an earthed piece of metal (e.g., the earthed housing).



In order to provide a clearer overview, the components of the EMC protection circuits of the inputs and outputs that are provided on the printed circuit boards are not shown in the following connection diagrams.

3.2 Remote Tableau Drive Unit PTU288-1

3.2.1 Structure of the Remote Tableau Drive Unit PTU288-1

Apart from the processor that is responsible for the signal processing of the PTU288-1, the printed circuit board of the Drive Unit PTU288-1 also comprises the INFO bus interface, the connectors for the LED Connection Modules LAM48-1 or LED Display Fields LAB48-x respectively, the control inputs, the USB interface for the parameterisation as well as the power supply terminals.

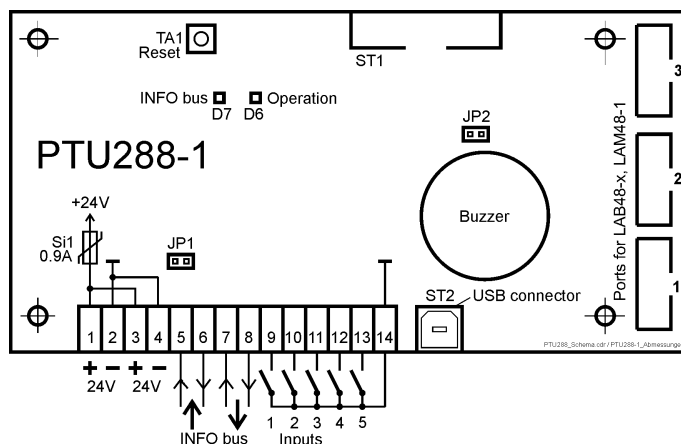


Fig. 11: Positions of the most important components on the Remote Tableau Drive Unit PTU288-1
The function of the elements is described on page 15 in Chapter 3.2.2 "Function and settings".

3.2.2 Function and settings

Connector ST1: Is only used for internal tests that are carried out in the factory, must not be connected.

Connector ST2: USB socket type "B" for connection of the cable to the PARSOFT PC.

Ports 1, 2, 3: Flat cable connectors for the connection of the LED Connection Modules LAM48-1 or LED Display Fields LAB48-x. The mixed connection of LED Connection Modules LAM48-1 and LED Display Fields LAB48-1 is also possible.

Buzzer: Signals the fault messaging condition or a technical message of the fire detection control panel as well as a fault of the Drive Unit PTU288-1 by means of a continuous signal. An intermittent signal indicates the alarm condition of the fire detection control panel. As soon as all corresponding messages of the fire detection control panel have been withdrawn or the fault of the drive unit has been removed, the buzzer is silenced automatically.

Except for an alarm message, the following applies to all other messages: The buzzer is automatically silenced after a signal duration of approximately 15 minutes, and subsequently the buzzer is briefly activated at regular intervals of 15 minutes, until these messages of the fire detection control panel are withdrawn or the fault of the drive unit is removed.

If the buzzer is silenced via a signalling switch that is connected to a control input of the Drive Unit PTU288-1, without the messages of the fire detection control panel having been withdrawn, the buzzer is also briefly activated at regular intervals of 15 minutes.



The possibility of silencing the buzzer signal by means of a signalling switch is described starting on page 31 in Chapter 5.5 "Parameterisation of the inputs".

LED D6 'Operation': The light emitting diode

- is illuminated in normal operation,
- flashes in the event of fault of the componentry or fault of the INFO bus or when no LAB48-x's are connected to the ports 1, 2 and/or 3 which have been parameterised for LED Display Fields LAB48-x, and
- is dark in case of a system fault (the system fault is described starting on page 9 in Chapter 1.6 "Special terms").

LED D7 'INFO bus': The light emitting diode indicates the current flow on the INFO bus. The light emitting diode normally flickers or shows a steady light, depending on the set baud rate (see from page 29 onwards in Chapter 5.4 "Global settings").

Button TA1 'Reset': By pressing this button the processor system of the componentry is restarted, similar to applying the supply voltage (see from page 9 onwards in Chapter 1.6 "Special terms").

Jumper JP1: Setting of the failure bridging for the de-energised condition or system fault of the Drive Unit PTU288-1.

If the attached short-circuit connector has connected the two contact pins of JP1, the INFO bus line is not interrupted, even in the de-energised condition or in case of a system fault of the componentry. Therefore, in spite of the failure of the Drive Unit PTU288-1, all other devices that are connected to the same INFO bus line can continue to communicate with the fire detection control panel, without disturbance.

If the two contact pins of JP1 are not connected with each other, the INFO bus line is interrupted in the de-energised condition or in case of a system fault of the componentry, and with that, all other devices that are connected to this INFO bus line become inoperable too.



The failure bridging may only be activated if the serial number of the INFO bus master device (i.e., NTB216-1, VAM216-1, SIM016-3 etc.) in the fire detection control panel or sectional control panel is equal to or higher than 06020000, or if the INFO bus master device has been upgraded and labelled "0602" in the factory. If the serial number is lower and there is no corresponding label on the componentry, the jumper JP1 must not be put on the componentry, because communication disturbances can occur on the INFO bus.

On Remote Tableau Drive Units PTU288-1, which are connected to LST Fire Detection Control Panels LBC32 or LBC1000, the failure bridging must not be activated.



The failure of one or more devices on the INFO bus is indicated on the fire detection control panel as fault. If the INFO bus line is interrupted, the devices which are not inoperable due to power failure or system fault, also indicate the fault.

Jumper JP2: If the contact pins of JP2 are connected with each other by means of a short-circuit connector, the buzzer is activated by the corresponding events. If the contact pins of JP2 are not connected with each other, the buzzer is permanently disabled.

3.2.3 Connection of the supply voltage

The Drive Unit PTU288-1 is usually supplied with 24V through the power unit of the fire detection control panel. If the output power of the power unit of the control panel is not sufficient, or if the voltage drop on the supply line is too high, the PTU288-1 can also be powered locally by an independent 24V power unit - pay attention to the values stated from page 39 onwards in Chapter 6 "Specifications" when you choose the external power unit.



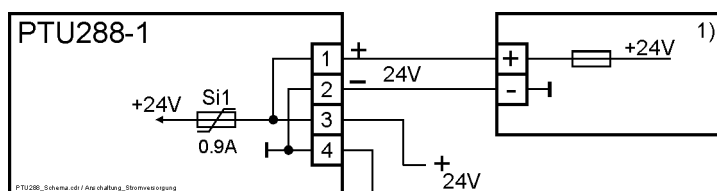
If you use an external 24V power unit in order to supply the Drive Unit PTU288-1, this power unit should under no circumstances be galvanically connected with the supply voltage of the fire detection control panel!



In case of failure of the supply voltage of the PTU288-1, the connected LED Connection Modules LAM48-1 and/or the LED Display Fields LAB48-x are not actuated any more, and with that, the outputs and light emitting diodes are not activated in the case of an event. Therefore, the power unit that is used as supply of the PTU288-1, should at least be equipped with a stand-by battery operating as emergency power supply.



Use a power unit that meets the requirements of the European Standard EN54-4.

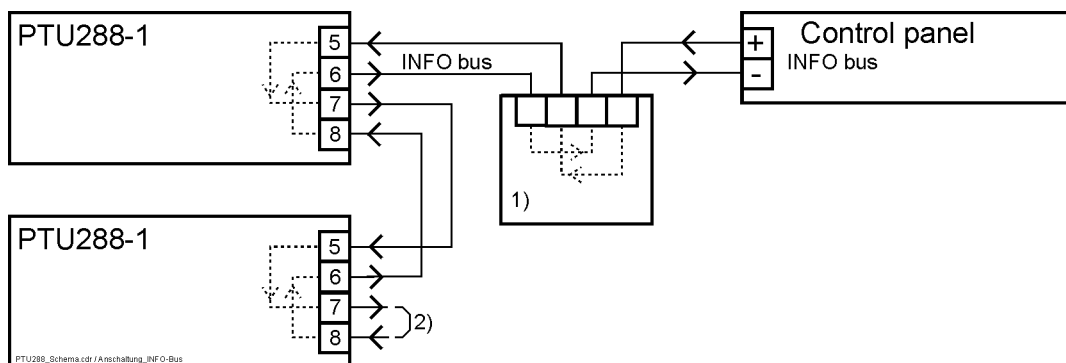


1) Power unit of the fire detection control panel or independent 24V power unit. Pay attention to the information in the text of this chapter.

Fig. 12: Connection of the 24V power supply to the Remote Tableau Drive Unit PTU288-1
The supply voltage, which is connected to terminals 1 and 2, is available at terminals 3 and 4 for supplying further componentries (e.g., LED Connection Modules LAM48-1) (also see Fig. 17 on page 20).
The fuse Si1 is self-healing.

3.2.4 Connection of the INFO bus lines

The events of the fire detection control panel are transmitted to the Drive Unit PTU288-1 via the INFO bus, and in the opposite direction the information pending at the control inputs is transmitted to the fire detection control panel.



1) Any INFO bus device, e.g., a Fire Brigade Control Unit FBF58-2

2) At the last INFO bus device on the INFO bus line, the two output terminals, which are not connected to a further device, must be connected with each other.

Fig. 13: Connection of the INFO bus lines to two Remote Tableau Drive Units PTU288-1
The internal connections drawn with dashed lines show the current paths inside the INFO bus devices, but without considering the components of these current paths.
The INFO bus line leading to the next INFO bus device is connected to the terminals 7 and 8. If the

PTU288-1 is the last device on the INFO bus line, you have to connect the terminals 7 and 8 with each other.



The respective chapter of the User Manual / Part B of your fire detection control panel describes where to connect the INFO bus line to the fire detection control panel.



You have to set the baud rate of all devices, which are connected to the INFO bus of the control panel or a sectional control panel, to the same value, and you have to set the addresses of the INFO bus devices in any order, ascending from "0" and without gaps. The setting of address and baud rate of the PTU288-1 is described from page 29 onwards in Chapter 5.4.1 "INFO bus device address and baud rate {Global settings}".

3.2.5 Connection of signalling switches to the control inputs

The Drive Unit PTU288-1 is provided with five inputs for the connection of signalling switches.



The purposes, for which these inputs can be parameterised, are described starting on page 31 in Chapter 5.5 "Parameterisation of the inputs".

These inputs are effectively protected against EMC effects, which is why the connected wires may also be placed outside of the housing of the PTU288-1 – applicable electrotechnical regulations must be observed.

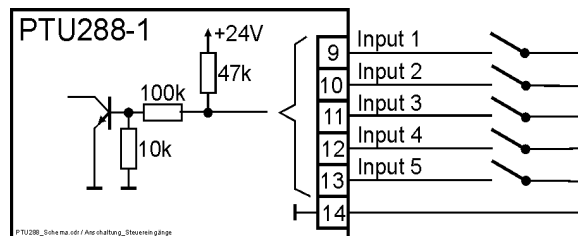


Fig. 14: Connection of the signalling switches to the control inputs of the Remote Tableau Drive Unit PTU288-1 (input 1 ... input 5)
The message is triggered by closing the respective signalling switch, i.e., by applying ground (-) for a duration of at least 200ms.

The voltage values that are permissible for the actuation are indicated in the Specifications on page 39 in Chapter 6.2 "Remote Tableau Drive Unit PTU288-1".

3.2.6 Connections on the Remote Tableau Drive Unit PTU288-1

The USB cable from the parameterisation PC is connected to connector ST2 of the Drive Unit PTU288-1. The LED Connection Modules LAM48-1 and/or the LED Display Fields LAB48-x are connected to the ports 1, 2 and 3. For further information see the respective chapters.



You can also connect a mixture of LED Connection Modules LAM48-1 and LED Display Fields LAB48-x to the ports 1, 2 and 3 of the Drive Unit PTU288-1.

3.3 LED Connection Module LAM48-1

3.3.1 Structure of the LED Connection Module LAM48-1

The LED Connection Module LAM48-1 is provided with the connector fields for 48 light emitting diodes, the connectors for the connection of two Relay Modules RL58-1 or RL58-2 respectively, the power supply terminals, as well as the cable for the connection with the Drive Unit PTU288-1.

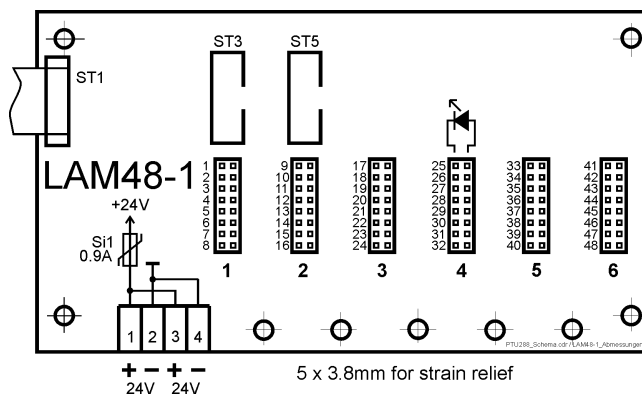


Fig. 15: Positions of the power supply terminals as well as the pin connectors and flat cable connectors of the LED Connection Module LAM48-1

ST1 ... connection cable to the Drive Unit PTU288-1

1, 2, 3, 4, 5, 6 ... pin connectors for the connection of light emitting diodes, the diode symbol indicates the polarity

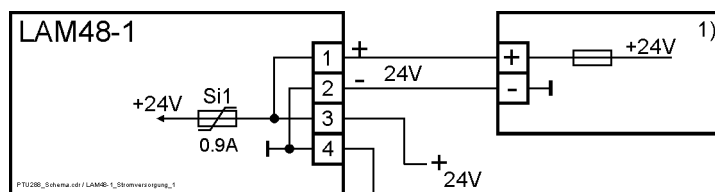
ST3, ST5 ... flat cable connectors for the direct connection of Relay Modules RL58-1, RL58-2



The printed circuit board is provided with 5 drillings which allow the attachment of strain reliefs for the light emitting diode cables. Pull a suitable cable tie (2.4mm wide) through two adjacent drillings and fasten the cables with it.

3.3.2 Connection of the supply voltage

The LED Connection Module LAM48-1 is usually supplied with 24V through the same power source which also supplies the Drive Unit PTU288-1 (in general, this is the fire detection control panel). If the available power is not sufficient, you can also supply the LED Connection Modules LAM48-1 through a 24V power unit that is independent of the fire detection control panel and/or the supply of the Drive Unit PTU288-1. Also pay attention to the information starting on page 17 in Chapter 3.2.3 "Connection of the supply voltage".



1) Power unit of the fire detection control panel, supply output of the Drive Unit PTU288-1 or independent 24V power unit. Pay attention to the information in the text of this chapter.

Fig. 16: Connection of the 24V power supply to the LED Connection Module LAM48-1

The supply voltage, which is connected to terminals 1 and 2, is available at terminals 3 and 4 for supplying further componentries (e.g., further LED Connection Modules LAM48-1, also see Fig. 17 on page 20).

The fuse Si1 is self-healing.



When dimensioning the power supply, bear in mind that one LED Connection Module LAM48-1 with 48 light emitting diodes connected to it can draw a current of up to approx. 80mA (when all light emitting diodes are actuated)! If the LAM48-1 also actuates Relay Modules RL58-1 or RL58-2, you even have to expect considerably higher currents, see the corresponding Specifications of the Relay Modules.



You can also use a separate 24V power source for each of the three possible LED connection modules.



If you use an independent 24V power unit to supply the LED Connection Modules LAM48-1, you must not connect this power unit galvanically with the supply voltage of the fire detection control panel!

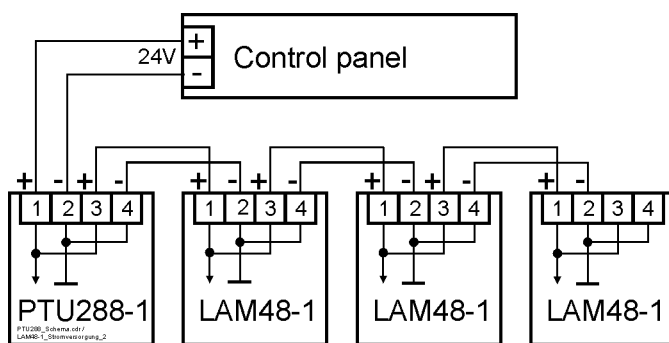


Fig. 17: Cascading the power supply of the fire detection control panel (or of an independent power unit) to the Drive Unit PTU288-1 and to three LED Connection Modules LAM48-1



When dimensioning the power supply, also pay attention to the information starting on page 17 in Chapter 3.2.3 "Connection of the supply voltage".

3.3.3 Connection to the Remote Tableau Drive Unit PTU288-1

An LED Connection Module LAM48-1 is connected to the Drive Unit PTU288-1 by connecting the flat cable of the LED connection module to one of the ports 1, 2 or 3 (see Fig. 11 on page 15) of the drive unit.

3.3.4 Connection to the open-collector outputs of the LED Connection Module LAM48-1

Eight open-collector outputs (abbreviated: OC outputs) are accessible via each of the six pin connectors on the LED Connection Module LAM48-1. These pin connectors, which are labelled "1", "2", "3", "4", "5" and "6" on the printed circuit board, constitute the connector field for 48 light emitting diodes, see Fig. 15 on page 19. The outputs are numbered all the way through from 1 to 48. The light emitting diodes are connected directly to these pin connectors by means of 2-pin connectors in the 2.54mm grid.

The pins of the pin connectors are arranged in pairs. The left pin (which is marked with the number) is connected with the respective OC output, all pins on the right are connected to the internal +5V voltage of the componentry.



Each OC output of the LED Connection Module LAM48-1 is provided with an internal series resistor, which limits the current flowing through the light emitting diode if it is activated. Therefore, appropriate LEDs can be directly connected to the LED Connection Module LAM48-1.

In addition, the OC outputs No. 1 to 16 are also accessible via the two flat cable connectors ST3 and ST5 (see Fig. 15 on page 19), to which Relay Modules RL58-1 or RL58-2 can be connected (see from page 21 onwards in Chapter 3.3.4.2 "Connection of Relay Modules to the LED Connection Module LAM48-1").



The OC outputs of the LED Connection Module LAM48-1 are not prepared for the direct connection of relay coils. Do not connect any other loads but those described in Fig. 18 to Fig. 21 to the OC outputs. In any case, pay attention to the maximum permissible current and voltage data of the OC outputs, as described in Specifications on page 39 in Chapter 6.3 "LED Connection Module LAM48-1".

3.3.4.1 Connection of light emitting diodes to the pin connectors of the LED Connection Module LAM48-1

You have to connect the respective light emitting diode to the pair of pins belonging to the desired light emitting diode number at the pin connector. For that, use either

- ♦ the 2-wire cords assembled by LST, with a 2-pin connector in the 2.54mm grid crimped on to the cord, and with a super bright 5mm light emitting diode that is soldered on to the cord (see from page 8 onwards in Chapter 1.5 "Scope of delivery")
- ♦ or - if you want to use light emitting diodes of your choice - the 2-wire cords assembled by LST, with a 2-pin connector in the 2.54mm grid crimped on to the cord, and with open ends (see from page 8 onwards in Chapter 1.5 "Scope of delivery"), which you yourself have to connect with a suitable light emitting diode.



If you use your own light emitting diodes, you must choose light emitting diodes which are sufficiently bright at the available current of approximately 6mA.

Attach the 2-pin connector of the cable to the pin connector in such a way that the cathode of the light emitting diode (black wire) is connected to the left pin (which is marked with the number) and the anode of the light emitting diode (red wire) is connected to the right pin of the pin connector.

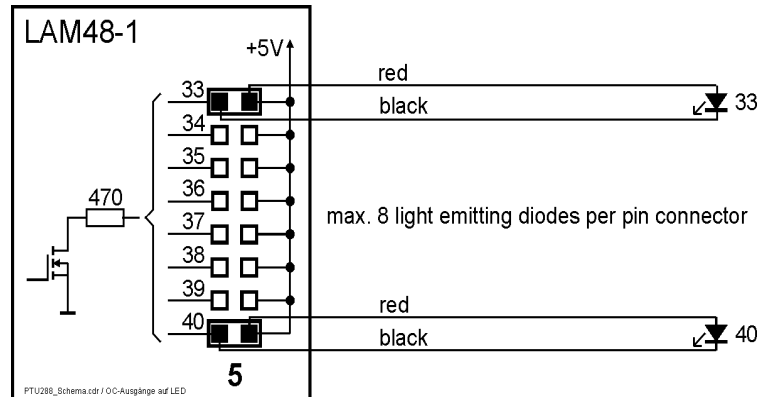


Fig. 18: Connection of light emitting diodes to the OC outputs of the LED Connection Module LAM48-1 which are accessible via the pin connectors
The connection of the light emitting diodes No. 33 and No. 40 to pin connector 5, where the OC outputs 33 ... 40 are accessible, is shown as an example.



If you attach the connector of a light emitting diode with its polarity reversed, the light emitting diode does not light when the OC output is activated. In general, the polarity reversal does not damage the light emitting diode - unplug the connector and attach it again with the correct polarity.

The OC output circuit of the LED Connection Module LAM48-1 is designed for the direct connection of a light emitting diode without external series resistor. In case of activation, a current of up to approx. 6mA flows through the light emitting diode.



If you connect two light emitting diodes in series or in parallel to one of these outputs, in case of activation both light emitting diodes will only show a weak light or none at all.



If several light emitting diodes have to be activated by the same event, connect each of these light emitting diodes to a separate output and parameterise these outputs for the same event.



The OC outputs of the LED Connection Module LAM48-1 are not permitted for the actuation of devices which are located outside of the remote tableau housing, into which the LED Connection Module LAM48-1 is installed!

3.3.4.2 Connection of Relay Modules to the LED Connection Module LAM48-1

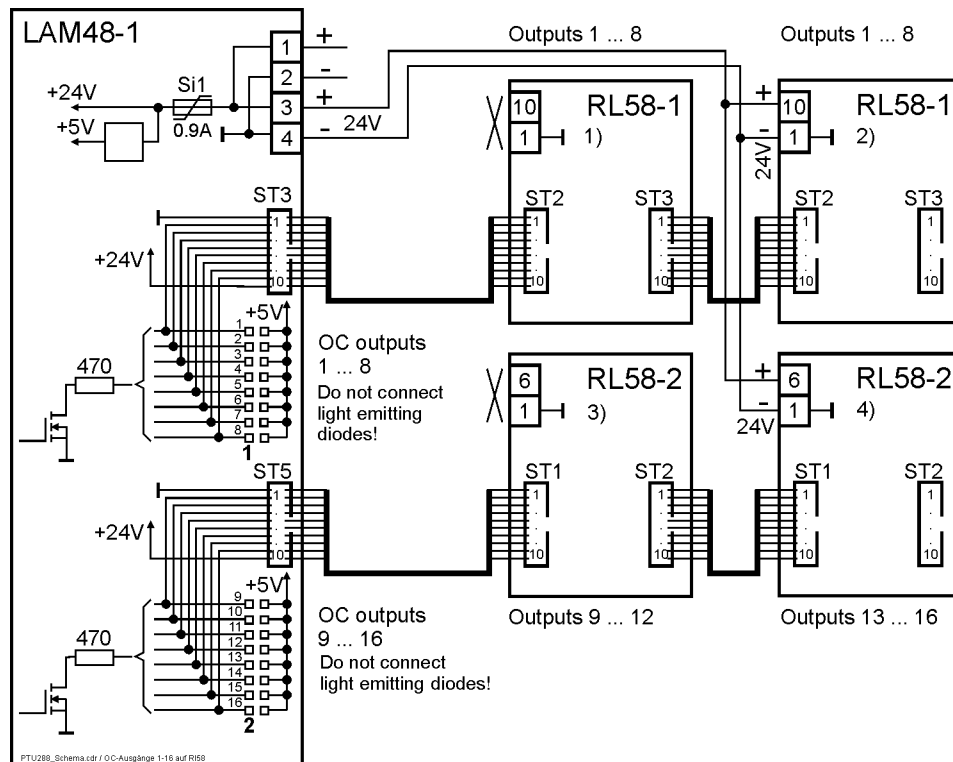
All OC outputs of the LED Connection Module LAM48-1 can also be used for the actuation of Relay Modules RL58-1 and RL58-2. In order to keep the connection as easy as possible, the OC outputs 1 ... 8 are also accessible via flat cable connector ST3 and the OC outputs 9 ... 16 are also accessible via flat cable connector ST5. These connectors are configured in such a way that Relay Modules RL58-1 or RL58-2 can be directly connected to them by means of the flat cables which are enclosed with the relay modules.

Flat cable connector	ST3										ST5									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
OC output no.	¹⁾	1	2	3	4	5	6	7	8	²⁾	¹⁾	9	10	11	12	13	14	15	16	²⁾
RL58-1 relay no.	x	1	2	3	4	5	6	7	8	x	x	1	2	3	4	5	6	7	8	x
RL58-2 relay no.	x	1	2	3	4	1	2	3	4	x	x	1	2	3	4	1	2	3	4	x

¹⁾ Ground (-) connection

²⁾ +24V connection

Table 1: Assignment of the pins of the flat cable connectors ST3 and ST5 to the OC outputs and to the connected Relay Modules RL58-1 and/or RL58-2



- 1) Via the flat cable, the Relay Module RL58-1 is supplied with the operating voltage and actuated by the OC outputs 1 ... 8. You must not connect anything to the terminals 1 and 10 of the RL58-1!
- 2) The Relay Module RL58-1 is also actuated by the OC outputs 1 ... 8, in parallel to the first Relay Module RL58-1. However, the operating voltage has to be supplied to the relay module by connecting the terminals 1 and 10 to the supply voltage of the LED connection module. This way, a maximum of 8 Relay Modules RL58-1 may be actuated in parallel.
- 3) Via the flat cable, the Relay Module RL58-2 is supplied with the operating voltage and actuated by the OC outputs 9 ... 12. You must not connect anything to the terminals 1 and 6 of the RL58-2!
- 4) The Relay Module RL58-2 is actuated by the OC outputs 13 ... 16, via the first Relay Module RL58-2. However, the operating voltage has to be supplied to the relay module by connecting the terminals 1 and 6 to the supply voltage of the LED connection module.

Fig. 19: Example of the connection of Relay Modules RL58-1 and RL58-2 to the OC outputs 1 ... 16 of the LED Connection Module LAM48-1, by means of flat cable connectors



If relay modules are connected to the flat cable connectors ST3 and/or ST5, you must not connect light emitting diodes to the contact pins of the pin connectors 1 and/or 2, which are connected in parallel.



See the directions in the documentation of the relay modules, regarding the cascading as well as the operating voltage range of the relay modules. The operating voltage of the relay modules is smaller than that specified for the LAM48-1.

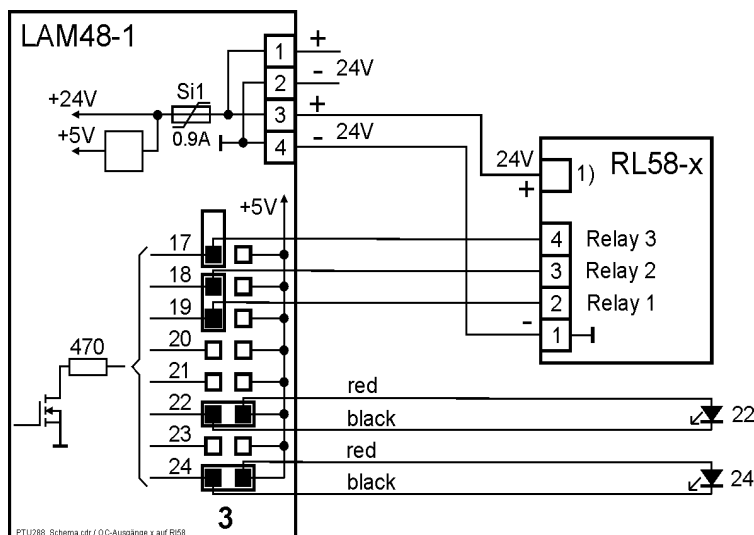
3.3.4.3 Combined connection of relay modules and light emitting diodes to an LED Connection Module LAM48-1

If you want to actuate only individual relays of a Relay Module RL58-1 or RL58-2 by using an LED Connection Module LAM48-1, you have to connect the chosen OC output with the corresponding actuation input of the relay module. The best way to do that is to use the 2-wire cord with a connector crimped on to it, LST Part No. 259013, which is intended for the connection of special light emitting diodes. Depending on whether you want to actuate one or two relays of the relay module, attach the 2-pin connector to one or two pins at the left row of the output pin connector. Connect the other end of the cord to the corresponding terminal of the relay module (see Fig. 20).

In this case, the Relay Modules RL58-1 and/or RL58-2 have to be connected to the 24V supply voltage of the LED Connection Module LAM48-1.



Pay attention to the operating voltage range of the relay modules, which is limited in comparison with the LAM48-1 (see technical documentation of the relay modules).



1) The relay module has to be powered by connecting it to the supply voltage of the LED Connection Module LAM48-1.

Fig. 20: Mixed connection of relay modules and light emitting diodes to a pin connector of the LED Connection Module LAM48-1

The relays 1, 2 and 3 of the Relay Module RL58-x are actuated by the OC outputs 17, 18 and 19 of the LED Connection Module LAM48-1. The OC outputs 20 ... 24 are free for the connection of light emitting diodes.



Never connect the OC output of the LED Connection Module LAM48-1 to a light emitting diode (according to Fig. 18) and to an input of the relay module at the same time.

3.3.4.4 Connection of LEDs with integrated series resistors to an LED Connection Module LAM48-1

Similar to the method of actuating individual inputs of Relay Modules RL58-1 or RL58-2 respectively, which is described in Chapter 3.3.4.3, you can also connect LEDs with integrated series resistor, which are designed for 24VDC, to the OC outputs of an LED Connection Module LAM48-1.

In this case, the LEDs with integrated series resistors have to be connected to the 24V supply voltage of the LED Connection Module LAM48-1.

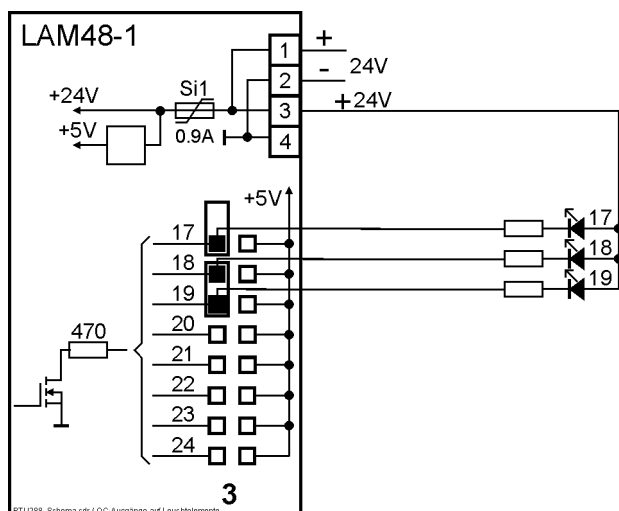


Fig. 21: Connection of LEDs with integrated series resistors to an LED Connection Module LAM48-1
The LEDs 17, 18 and 19, which have integrated series resistors, are connected to the OC outputs 17, 18 and 19 and to the 24V supply voltage of the LAM48-1.



Never connect the OC output of the LED Connection Module LAM48-1 to a light emitting diode (according to Fig. 18) and to an LED with integrated series resistor (according to Fig. 21) at the same time.



Bear in mind that each OC output of the LED Connection Module LAM48-1 may only be loaded with a maximum of 20mA, see the Specifications starting on page 39 in Chapter 6.3 "LED Connection Module LAM48-1". Furthermore, when calculating the current, also keep in mind that - as long as the mains voltage is available - the supply voltage from an LST fire detection control panel can be about as high as the final charge voltage of the stand-by battery, i.e., up to 28.5V.



When dimensioning the LED with integrated series resistor, you have to consider that the internal 470Ω current-limiting resistor of every OC output causes a corresponding voltage drop. The operating voltage of the LED with integrated series resistor is reduced by this value.

3.4 LED Display Field LAB48-x

Several LED display fields of the same type are summarised under the type designation LAB48-x. The only difference between these LED display fields is the colour of the used light emitting diodes. For further details refer to the respective LST product guides.

3.4.1 Structure of the LED Display Field LAB48-x

The LED Display Fields LAB48-x comprise 48 freely parameterisable LED pairs (for example, each LED pair of the LAB48-1 consists of a red (left) and a yellow (right) light emitting diode) for the display of the activation condition, fault condition or disablement condition of a system part. Up to three Display Boards LAB48-x can be actuated by one Drive Unit PTU288-1. The light emitting diodes are individually labelled by means of labelling strips, which are inserted behind the front foil (see from page 13 onwards in Chapter 2.2.5 "Labelling strips for the LED Display Fields LAB48-x").

3.4.2 Connection to the Remote Tableau Drive Unit PTU288-1

The LED Display Field LAB48-x is powered and actuated through the Drive Unit PTU288-1 via the flat cable of the LAB48-x. Therefore, in order to connect the LAB48-x, you only have to attach the flat cable connector of the componentry to

- ◆ port 1 (LED pair no. 1 ... 48), or
- ◆ port 2 (LED pair no. 49 ... 96) or
- ◆ port 3 (LED pair no. 97 ... 144)

of the Drive Unit PTU288-1 (see Fig. 11 on page 15).



You can also connect a mixture of LED Connection Modules LAM48-1 and LED Display Fields LAB48-x to the ports 1, 2 and 3 of the Drive Unit PTU288-1.



The standard-type flat cables of the LAB48-x are approximately 280mm long. Do not use an extension cable! The cable must not be placed outside of the housing, into which the Drive Unit PTU288-1 is installed.

4 Commissioning, maintenance, servicing

4.1 Prerequisites at the fire detection control panel

You have to parameterise the INFO bus interface of the fire detection control panel with the desired values for the baud rate and the number of connected INFO bus devices (for further information refer to the User Manuals of the respective control panel).



If the set number does not correspond with the actual number of devices which are connected to the INFO bus interface, after approximately 10 seconds the fire detection control panel displays a fault message of the interface.

In a similar way, faults of the baud rate setting are displayed too.

4.2 Commissioning of the Drive Unit PTU288-1 with the connected componentries

- ◆ Are all componentries screwed on securely?
- ◆ Are the enclosed metal distance bolts inserted and is the metal mounting surface connected with the equipotential busbar? Only then are the measures taken as protection against electrical influences sufficiently effective.
- ◆ Has the cabling of the componentries and light emitting diodes been carried out correctly?
- ◆ Are all short-circuit connectors connected correctly?

If you can answer the above questions with "Yes", switch on the 24V supply voltage of the PTU288-1 componentry and of the connected LAM48-1.



If at that time the INFO bus line is not connected yet or if the INFO bus is not fully operational (e.g., not connected to the fire detection control panel, wrong baud rate), approximately 10 seconds later the flashing 'Operation' LED of the PTU288-1 indicates the fault situation. Even so, you can continue the commissioning (e.g., carry out the parameterisation).

When the supply voltage is applied, the buzzer of the Drive Unit PTU288-1 briefly sounds.

If the drive unit has not stored any parameters yet, the light emitting diodes which are connected to the LAM48-1 and the light emitting diodes of the LAB48-x remain dark.



Only after the desired parameterisation has been stored, you can tell from the light emitting diode 'Operation', whether the connected LED Display Fields LAB48-x work together correctly with the Drive Unit PTU288-1. Faults are indicated by flashing of the light emitting diode 'Operation' (also see from page 15 onwards in Chapter 3.2.2 "Function and settings"). The correct function of the connected LED Connection Modules LAM48-1 can be checked by means of the lamp test function (see from page 31 onwards in Chapter 5.5 "Parameterisation of the inputs" and from page 38 onwards in Chapter 5.7 "Factory settings of the parameters").

4.3 Completion of the commissioning

You have to transmit the prepared parameters from the PARSOFT PC to the Drive Unit PTU288-1 (see from page 28 onwards in Chapter 5.2 "Sequence of the parameterisation"). For this purpose, the PTU288-1 has to be connected to the 24V supply and the componentry must be connected with the PC via the USB cable. The transmission of the parameters is started in the PARSOFT menu [PC --> PTU288] or with the function key <F7>.

After the parameters have been transmitted successfully, disconnect the USB cable and, in connection with the fire detection control panel, check for all elements which are connected to the outputs and inputs of the componentries (light emitting diodes, relays, buzzer, switches, etc.) whether they function according to your planning.

4.4 Maintenance

The Remote Tableau Drive Unit PTU288-1 as well as the LED Connection Modules LAM48-1 and LED Display Fields LAB48-1 belonging to it do not contain any components which are exposed to wear and tear or noteworthy aging. Therefore, maintenance is limited to checking whether all com-

ponents of the remote tableau (light emitting diodes, keys, buzzer, etc.) are functioning correctly - a work to be done during the maintenance of the fire detection system which has to be carried out periodically.

Do not use corrosive or abrasive cleaning agents for cleaning the surface of the LED Display Tableaus LAT288-1 or LAT288-1CE respectively; use only mild household cleaners! Under no circumstances should water or other fluids penetrate the interior of the case!

4.5 Firmware update

The firmware of the Remote Tableau Drive Unit PTU288-1 (PL170) is constantly developed further by LST in order to be able to fulfil new requirements which arise from the progress of the fire detection and extinguishing control technology as well as from modifications of standards and regulations. The Drive Unit PTU288-1 is upgraded to a new firmware version by loading the new firmware from a PC by means of PARSOFT-1 or PARSOFT-2 respectively.



A basic precondition for upgrading to a newer firmware version is that the existing hardware must be compatible with the new firmware version! In case of doubt, contact the supplier of the Drive Unit PTU288-1.

Please note that in the course of the continuous further development of the firmware, sometimes the structure of the parameter data is changed. Therefore, it is possible that the structure of the parameter data in your drive unit does not correspond any more with the requirements of a newer firmware version. If this is the case, you have to adapt the parameter data stored in the drive unit to the structure of the new firmware by means of PARSOFT-1 or -2 respectively.

The firmware update is performed in the following steps:

- ◆ Connect the USB interface of the PC with the USB interface of the PTU288-1 componentry.
- ◆ On the PC, start PARSOFT-1 or -2 respectively, and either load an existing parameter data file or pro forma create a new parameter data file (Menu [File] – [New system...]). The menu [Communication], which is needed for the loading process, will become accessible if this process is used.
- ◆ Via the dialog box in the menu [Communication] – [Firmware update...] (which you can also reach via function key <F6>) select the HEX file that is to be loaded (file extension ".mot") and confirm the choice you made.
- ◆ An information window opens (see Fig. 22 below), in which the further procedure for transmitting the new firmware version is described.

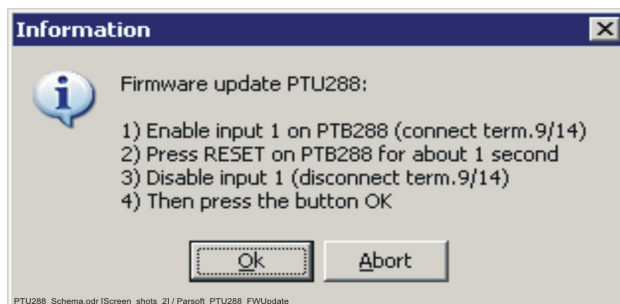


Fig. 22: Window {Information}, in which the procedure for starting the firmware update of the Drive Unit PTU288-1 is described

- ◆ The loading process, which takes approx. 1 minute, is started by pressing the Ok button in the {Information} window.
- ◆ At the end of the loading process a further dialog box appears, with which you confirm the loading process. After that, the Drive Unit PTU288-1 initiates a restart - the process of loading the new firmware version is completed.



If the existing parameter data in the Drive Unit PTU288-1 and the newly loaded firmware version are not compatible in their structure, the parameter data in the Drive Unit PTU288-1 will be automatically erased and will be rewritten with the initial values.



Before updating the firmware, it is recommended to read out and save the existing parameter data from the Drive Unit PTU288-1. This additional step will allow you to write the parameter data back into the Drive Unit PTU288-1, if necessary.



If the data connection between the PC and the Drive Unit PTU288-1 is interrupted during the firmware update, you have to restart the entire process.



By double-clicking on the desired ".mot" program file in a data file management program of your choice (Norton Commander, Explorer etc.), PARSOFT-1 will be automatically started and the firmware update will be called up. If PARSOFT-1 or -2 is already active, it will not be started again.

4.6 Fault events

The Drive Unit PTU288-1 automatically performs continuous checks of several internal functions, the data transfer on the INFO bus line as well as the function of the connected LED Display Fields LAB48-x. If faults are detected, they are indicated on the PTU288-1 componentry, by means of the light emitting diodes 'Operation' or 'INFO bus'.



In normal operation, the light emitting diode 'Operation' shows a steady light and the light emitting diode 'INFO bus' is illuminated or flickers (depending on the set baud rate).

The following table shows some typical fault events:

Fault display	Possible causes
Light emitting diode 'Operation' is dark	<ul style="list-style-type: none"> ◆ no supply voltage of the PTU288-1 ◆ failure of the processor system of the PTU288-1 (system fault)
Light emitting diode 'Operation' flashes	<ul style="list-style-type: none"> ◆ no correct data traffic via the INFO bus interface (line interruption, wrong baud rate set, device address has been assigned several times) ◆ connected componentries LAM48-1 or LAB48-x do not correspond with the parameterisation of the PTU288-1 componentry ◆ fault of the PTU288-1 componentry or of a connected LAB48-x componentry
Light emitting diode 'INFO bus' is dark (normally, the light emitting diode flickers or shows a steady light, depending on the set baud rate)	<ul style="list-style-type: none"> ◆ Line interruption of the INFO bus line ◆ INFO bus lines connected in the wrong way ◆ failure of the INFO bus master device (fire detection control panel) ◆ fault of the INFO bus interface on the PTU288-1 componentry
One light emitting diode does not light during 'lamp test'	<ul style="list-style-type: none"> ◆ in the case of the LAB48-x: componentry is defective ◆ in the case of the LAM48-1: light emitting diode is defective or not connected properly or the concerned OC output of the componentry is defective

Table 2: Overview of the indication of fault events



For further information regarding fault events see from page 9 onwards in Chapter 1.6 "Special terms" and from page 15 onwards in Chapter 3.2.2 "Function and settings".

5 Parameterisation

Here it is assumed that you have sufficient knowledge of the Parameter Setup Software PARSOFT-1 or PARSOFT-2 because you are an installer who has been trained by LST. Therefore, this chapter describes only those details which specifically concern the product family of the Drive Unit PTU288-1.



The parameter data for the Remote Tableau Drive Unit PTU288-1, which is created by PARSOFT-1 or -2, is saved in a parameter data file with the file name "filename.par", like it is done for the parameter data of fire detection control panels.

5.1 Preconditions for the parameterisation

The Drive Unit PTU288-1 is parameterised via a USB interface. From version V1.21 onwards, PARSOFT-1 and PARSOFT-2 support the USB interface of the PC and the parameterisation of the Drive Unit PTU288-1. If an older PARSOFT version has been installed on your PC, you have to replace this version by a new one.



PARSOFT can only support the USB interface properly if the PC uses the operating system Windows 2000 or Windows XP. A PC with an older Windows operating system (e.g., Windows 98) can not be used for parameterising the Drive Unit PTU288-1.

5.2 Sequence of the parameterisation

After delivery, the parameters of the Drive Unit PTU288-1 contain the factory settings (see from page 38 onwards in Chapter 5.7 "Factory settings of the parameters"). By means of PARSOFT-1 or PARSOFT-2 you can change these factory settings to the parameters which are necessary for the desired functions.

For that, call up the menu item [File] - [New system] in PARSOFT-1 or PARSOFT-2 respectively, and, within this window, use the left mouse button to select the Drive Unit PTU288-1. In the selection field, which now appears, select the desired firmware version and confirm your choice by double-clicking with the left mouse button on the "PTU288" symbol.

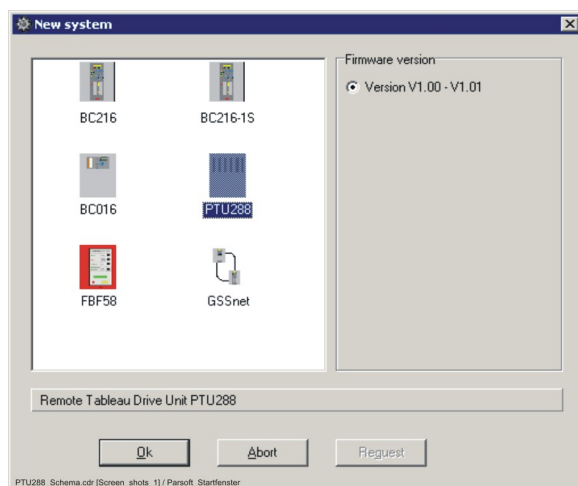


Fig. 23: Selection of the Remote Tableau Drive Unit PTU288-1 in PARSOFT-1 or PARSOFT-2 respectively

Now the known PARSOFT entry window with the {Configuration} window at the left top appears, with which you carry out the parameterisation, see from page 29 onwards in Chapter 5.3 "Structure of the parameters".

Save the created parameter data on your PC and take it with you when you commission the system, or write the parameters into the Drive Unit PTU288-1 while you are still in your office.



Even when the Drive Unit PTU288-1 is not powered, it maintains the parameters which have been transmitted to it, as long as you like.

At the system site you can change this prepared data in the PC, if necessary, and afterwards you can transmit it to the Drive Unit PTU288-1 (PARSOFT menu item [PC --> PTU288] or function key <F7>).



In order to allow your PARSOFT PC to communicate with the Drive Unit PTU288-1, the drive unit must at least be supplied with 24V (see from page 25 onwards in Chapter 4.2 "Commissioning of the Drive Unit PTU288-1 with the connected componentries").

If you want to change a parameterisation which has already been stored in the Drive Unit PTU288-1, load the current parameterisation of the PTU288-1 back to the PC, by means of PARSOFT menu item [PTU288 --> PC] or function key <F8>, change the parameterisation in the PC and transmit the changed data to the drive unit again, by means of PARSOFT menu item [PC --> PTU288] or function key <F7>.

5.3 Structure of the parameters

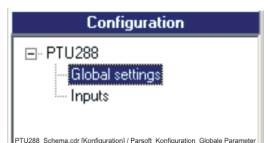
The parameters of the Drive Unit PTU288-1 are structured as follows:

- ◆ [Global settings] - Global parameters of the Drive Unit PTU288-1
 {Global settings}: They determine the INFO bus device address and the INFO bus baud rate.
 {Ports}: These parameters determine which componentries are connected to the ports.
- ◆ [Inputs] - Functions of the five inputs of the Drive Unit PTU288-1
- ◆ [Port 1], [Port 2], [Port 3] - Function of the connected componentry
 These parameters determine for each element (LED pair, light emitting diode or relay) that is connected to the componentry, which function it has to carry out. These entries only appear in the window {Configuration} if the respective port has already been defined in the window [Global settings] - [Ports].



The factory setting of the parameters is described starting on page 38 in Chapter 5.7 "Factory settings of the parameters".

5.4 Global settings



If you click on the entry [Global settings] in the window {Configuration}, the windows {Global settings} and {Ports}, which can be selected by means of tabs, appear.

5.4.1 INFO bus device address and baud rate {Global settings}

In the window {Global settings} you determine the INFO bus device address as well as the baud rate of the Drive Unit PTU288-1.

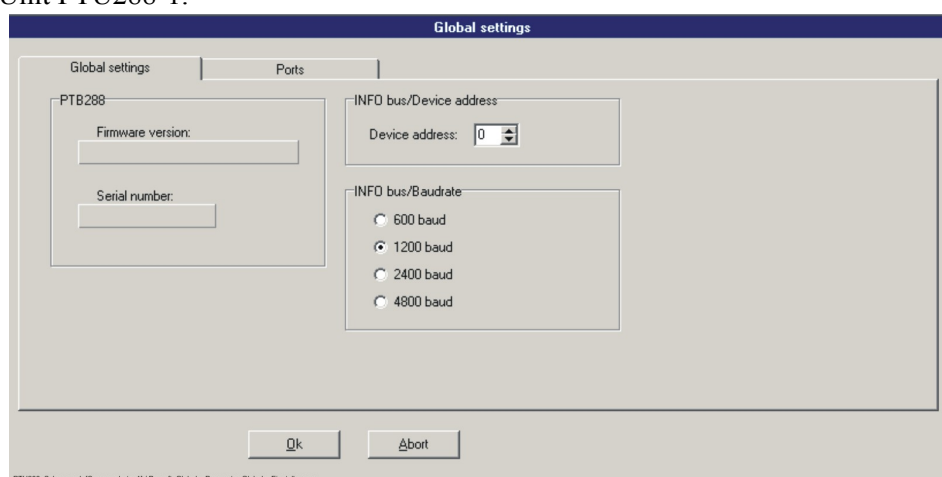


Fig. 24: Window {Global settings}

In this window you set the INFO bus device address of the Drive Unit PTU288-1 as well as the baud rate which is selected in the fire detection control panel.

You can set the device address to a value between 0 and a maximum of 7. The device addresses 6 and 7 are reserved for special applications. If the Remote Display Panel SG70-1 is connected to an LST Fire

Detection Control Panel Series BC216, Series BC016, LBC1000 or LBC32, you must not enter a device address higher than 5.



The addresses of the devices which are connected to an INFO bus line must start with 0 and must not show any gaps. The order, in which the devices are connected to the INFO bus, is not significant for the allocation of addresses.

The baud rate is predetermined by the fire detection control panel (or sectional control panel) to which the INFO bus line is connected. All devices which are connected to this INFO bus line must be set to this value. Permissible values: 600, 1200, 2400 and 4800 baud.

Every time the configuration is read out from the PTU288-1 componentry, the firmware version and the serial number of the PTU288-1 componentry as well as the firmware version of the LED Display Fields LAB48-x, which are connected to the ports 1 ... 3, are stored in the PARSOFT parameter data file and displayed in the respective windows.

5.4.2 Connected componentries {Ports}

In the window {Ports} you define which componentries are or will be connected to the ports Port 1, Port 2 and Port 3 of the Drive Unit PTU288-1.

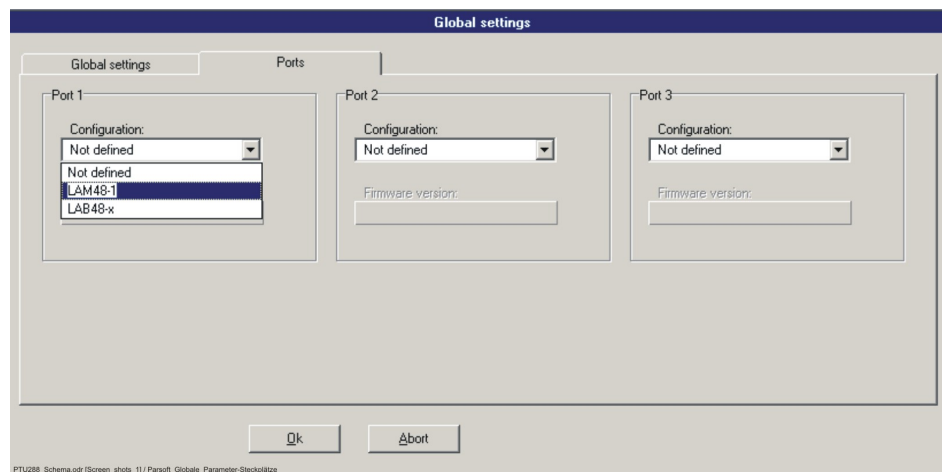


Fig. 25: Window {Ports}

In this window you define which componentries are intended for the ports.

Button 'Ok': The values are accepted - if applicable, after a security query.

Button 'Abort': The set values are discarded, the old values are not changed.

You can choose from among the following options:

- ◆ **Not defined**

This port is not served by the PTU288-1. If an LAM48-1 or an LAB48-x is connected to this port, there will not be any indication that the componentry is out of service.

- ◆ **LAM48-1**

An LED Connection Module LAM48-1 is intended for the port.

- ◆ **LAB48-x**

An LED Display Field LAB48-x ("-x" represents the version of colour combination of the used light emitting diodes) is intended for the port.

For each port which is defined in the global settings, an entry is automatically created in the window {Configuration}. If you click on this entry, a window opens in which you can determine the OC outputs of the LED Connection Module LAM48-1 or the LED pairs of the LED Display Field LAB48-x (see from page 32 onwards in Chapter 5.6 "Parameterisation of the outputs of an LED Connection Module LAM48-1 or the light emitting diode pairs of an LED Display Field LAB48-x").

Every time the configuration is read out from the PTU288-1 componentry, the firmware version of the LED Display Fields LAB48-x, which are connected to the ports 1 ... 3, is saved in the PARSOFT parameter data file and displayed in the respective windows.



The LED Connection Modules LAM48-1 are not equipped with a processor system, therefore no firmware version is displayed for these modules.



If an LAB48-x is connected to a port which has been parameterised for an LAM48-1 (and vice versa), after commissioning of the Drive Unit PTU288-1 this fault is indicated by the flashing light emitting diode 'Operation'. Misplacing the componentry will not damage it.

5.5 Parameterisation of the inputs



If you click on the entry [Inputs] in the window {Configuration}, the selection window {Input parameter setup} appears, in which you determine the input type (i.e., what the respective input is supposed to achieve) for each of the five control inputs of the Drive Unit PTU288-1.

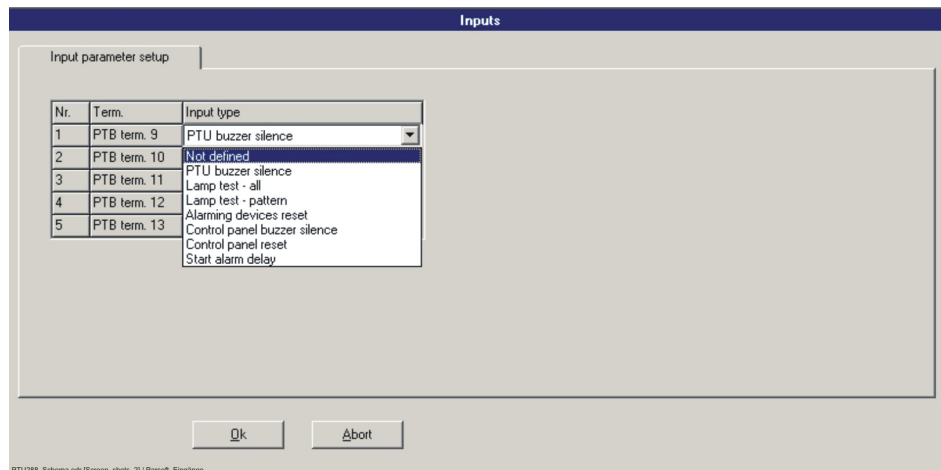


Fig. 26: Window {Input parameter setup}

In this window you determine the input type for each of the five inputs. The inputs are identified both by their number as well as by the terminal number on the componentry.

Button 'Ok': The set values are accepted.

Button 'Abort': The set values are discarded, the old values are not changed.

You can choose from among the following input types for each of the inputs 1, ..., 5:

- ◆ **Not defined**
The input is not served by the PTU288-1.
- ◆ **PTU buzzer silence**
The buzzer of the Drive Unit PTU288-1 is silenced. Every time an alarm, a fault message as well as a technical message of the fire detection control panel occurs, the buzzer is activated again and, if necessary, it must be silenced again. Also see the information starting on page 15 in Chapter 3.2.2 "Function and settings" in paragraph "Buzzer".
- ◆ **Lamp test - all**
All outputs of the LAM48-1 and/or LED pairs of the LAB48-x are activated as long as the input is activated.
- ◆ **Lamp test - pattern**
All outputs or LED pairs of the LAM48-1 or LAB48-x componentry which is connected to port 1 are activated for 10 seconds, then the outputs of the componentry which is connected to port 2 are activated for 10 seconds, and afterwards the outputs of the componentry which is connected to port 3 are activated for 10 seconds. If the input is still activated, the test procedure is repeated. The lamp test is stopped as soon as the input is not activated any more.
- ◆ **Alarming devices reset**
All activated alarming devices of the connected fire detection control panel are silenced or - if they have already been silenced - are activated again.
- ◆ **Control panel buzzer silence**
The buzzer of the connected fire detection control panel is silenced.
- ◆ **Control panel reset**
The fire detection control panel is reset (the same function as the key 'Panel reset' at the fire detection control panel).
- ◆ **Start alarm delay**
If no fire alarm exists, the delay operation of the transmitting device is alternately activated (day

operation) or disabled again (night operation) in the fire detection control panel.

If a fire alarm occurs during the activated delay operation (day operation), the alarm transmission to the fire brigade is delayed by the exploration time, via this input. If the Drive Unit PTU288-1 is connected to a sectional control panel of an LST Fire Detection Control Panel BCnet216, the input "Start alarm delay" has an effect on the transmitting device that is operated by the key 'Alarm delay/Explore' at the display and operating unit of this sectional control panel. For further information regarding the delay operation of the LST fire detection control panels, please refer to the respective User Manuals of the control panels.



The described function is executed when ground is applied to the input, i.e., when the contact is closed (see Fig. 14 on page 18).



The input signal must last for at least 200ms so that the respective function is executed. If a continuous signal is applied to an input, the function is only executed once.

5.6 Parameterisation of the outputs of an LED Connection Module LAM48-1 or the light emitting diode pairs of an LED Display Field LAB48-x

For each port which is defined as LAM48-1 or LAB48-x in the window {Global settings} - {Ports} (see from page 30 onwards in Chapter 5.4.2 "Connected componentries {Ports}"), an entry is automatically created in the window {Configuration}.

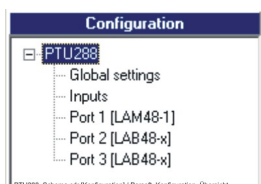


Fig. 27: Window {Configuration}

All ports for LED Connection Modules LAM48-1 or LED Display Fields LAB48-x, which have been defined in the window {Global settings} - {Ports}, are displayed. In this example, port 1 is defined as LAB48-1 and the ports 2 and 3 are defined as LAB48-x's.

If one of these port entries is selected, the corresponding window {LED parameter setup} with 48 lines is opened, i.e., for each output one input line is available (see Fig. 28). In this window you can carry out the desired settings for the outputs of this componentry.



In order to simplify the description, the following paragraphs use the term "output" both for the OC output of an LED Connection Module LAM48-1 as well as for the LED pair of an LED Display Field LAB48-x.

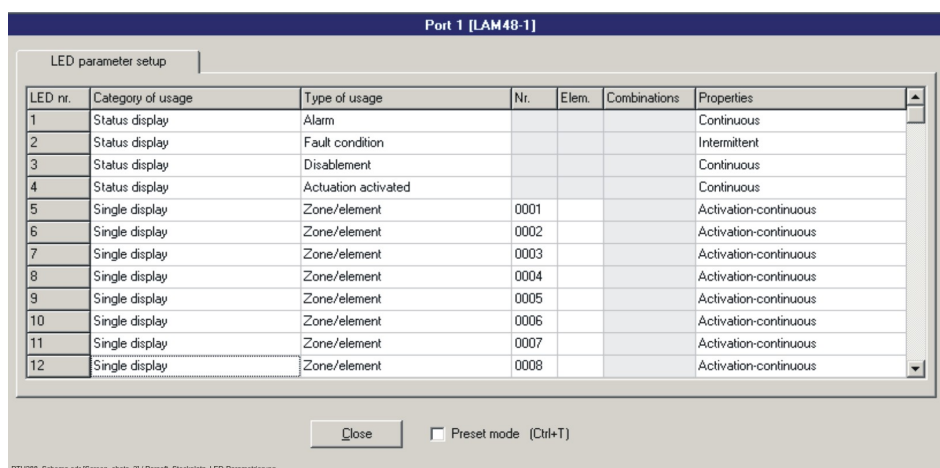


Fig. 28: Depiction of the parameterisation window {LED parameter setup}

The first column (in the case of the LAM48-1: "LED nr.", in the case of the LAB48-x: "LED pair") shows

- the number of the OC output of the LED Connection Module LAM48-1 or
- the number of the LED pair of the LED Display Field LAB48-x.

Button 'Close': The set values are accepted.

The preset mode is described starting on page 33 in Chapter 5.6.1 "Simplification of the parameter entry by means of preset mode".

Each of these componentries can control 48 outputs (LED nr. 1 ... 48 or LED pair 1 ... 48).

- ◆ In the case of the LED Connection Module LAM48-1, these are 48 individually actuated OC outputs, to which light emitting diodes of any colour, relay modules or similar devices can be connected. Each of these outputs can be individually parameterised.
- ◆ In the case of the LED Display Field LAB48-x, these are 96 light emitting diodes which are arranged in 48 pairs and whose colours are determined by the version "-x". You can parameterise these LED pairs for varied display tasks. In general, the left light emitting diode displays the condition "activated" and the right light emitting diode displays the conditions "fault/disabled".

The window {LED parameter setup} is provided with one line per output and the line number corresponds to the output number. In this line you first select the basic use of the output: In the column "Category of usage" you choose from among the following options:

- ◆ Not defined
- ◆ Single display
- ◆ Summary display
- ◆ Status display
- ◆ Flooding zone display
- ◆ Extinguishing system display

Afterwards, you enter the additional parameters for this output in the columns "Type of usage", "Nr.", "Elem." (=element nr.), "Combinations" and "Properties".



Depending on the chosen category of usage, some parameters may be limited or may not be available at all. In the windows, fields with grey backgrounds indicate that you can not enter any data there.



You can parameterise several outputs for the same event of the fire detection system. You can parameterise several events of the same category of usage onto a common output, see from page 35 onwards in Chapter 5.6.4.1 "Combinations". You can not summarise events of different categories of usage to a common output!



By pressing the button 'Close' in the window {LED parameter setup}, the set values are accepted. It is not possible to abort the parameterisation process without accepting the values.

5.6.1 Simplification of the parameter entry by means of preset mode

The parameterisation window {LED parameter setup} provides the opportunity to copy the settings of one output (with the exception of combinations), to paste them into another output and to automatically increase the number by 1 (if a number exists) at the same time. With that, you can parameterise similar displays with consecutive numbers (e.g., zone displays) very quickly. If only the number in the column "Nr." has been entered for the output (e.g., the number of a detector zone), this number is increased upon pasting. If the number in the column "Elem." (e.g., the detector number) has also been entered for the output, only this number is increased upon pasting.



In the case of consecutive outputs (LED nr.), the pasting with simultaneous increase in the number is achieved by means of the keys <↑> or <↓>, or by means of a mouse click on a field in the column "Category of usage". In the case of separate outputs with gaps between them, the pasting with simultaneous increase in the number is achieved only by means of a mouse click on the desired field in the column "Category of usage".

You activate the preset mode by

- ◆ selecting the column "Category of usage" of the output (LED nr. or LED pair) which you want to copy, by means of the mouse, and
- ◆ by subsequently activating the check box "Preset mode", either by using the mouse or by means of the key combination <Ctrl+T>. The header of the column "Category of usage" confirms the preset mode by changing its foreground colour to red.



The output parameters, which you want to transfer to other outputs by means of the preset mode, must be parameterised completely (with the exception of combinations). Entered combinations are not transferred by means of the preset mode.

You terminate the preset mode by means of a further mouse click on the check box "Preset mode" or by using the key combination <Ctrl+T> again. The preset mode is also terminated if you click on a field which is not located within the column "Category of usage".



You can start and terminate the preset mode as often as you wish.
You can not copy the values of the preset mode to entries of another port.

5.6.2 Category of usage "Not defined"

Category of usage	Type of usage	Nr.	Elem.	Combinations	Properties
Not defined					

Fig. 29: LED parameter setup / category of usage "not defined"

Such an output is not actuated by the Remote Tableau Drive Unit PTU288-1. All entry fields are locked for entries.

In the factory setting of the Drive Unit PTU288-1, all outputs are assigned to this category of usage. A left mouse click on the category of usage field opens a selection field, which provides the category of usage options.



If you put an output, which has already been assigned to another category of usage, back to the category "not defined", all parameters which have already been set for this output, are deleted.

5.6.3 Category of usage "Single display"

In this category of usage you determine for an output which part of the fire detection system should be displayed by this output. For that, first define the type of usage for the desired output (LED nr. or LED pair). You can choose from among the following options:

- ◆ **Zone/element or Actuation/element**
The output displays the situation of the element "Elem." of the zone or actuation "Nr.". If you have not entered an element number, the zone or actuation "Nr." is treated as a whole.
- ◆ **Alarming device or Transmitting device**
The output displays the situation of the respective part.

Afterwards, enter the number and - if necessary - the element number of the part which is to be displayed by this output.

By means of the concluding choice of the properties, you determine which information and how this information is to be displayed at the output of an LED Connection Module LAM48-1.

Category of usage	Type of usage	Nr.	Elem.	Combinations	Properties
Single display	Zone/element	0240	023		Activation-continuous
Single display	Actuation/element	0100	012		Activation-intermittent
Single display	Alarming device	001			Fault-continuous/disablement
Single display	Transmitting device	01			Fault-interm./disablement

Fig. 30: LED parameter setup / category of usage "Single display"
Types of usage and properties for an LED Connection Module LAM48-1 or an LED Display Field LAB48-x respectively
You can set one of the four shown types of usage for every output that is defined as "Single display". In the case of the LED Connection Module LAM48-1, you can additionally set one of the four shown properties.
The fields with grey backgrounds are locked for entries. In the case of the LED Display Field LAB48-x, the fields in the column "Properties" are also locked.

The possible properties achieve the following functions:

- ◆ **Activation-continuous**
The activation of the respective part is indicated by a continuous signal at the output.
- ◆ **Activation-intermittent**
The activation of the respective part is indicated by an intermittent signal (with a flashing rhythm) at the output.
- ◆ **Fault-continuous/disablement**
A fault or disablement of the respective part is indicated by a continuous signal at the output. This setting is used mainly for the actuation of relay modules.

◆ Fault-interm./disablement

A fault of the respective part is indicated by an intermittent signal (with a flashing rhythm) at the output. A disablement is indicated by a continuous signal at the output.

In the case of the LED Display Field LAB48-x, the properties are firmly assigned and can not be selected. Like on a fire detection control panel, the left LED of an LED pair indicates the activation of the respective part, and the right LED indicates the fault by means of a flashing signal and the disablement by means of a continuous signal.

5.6.4 Category of usage "Summary display"

In this category of usage you determine for an output which areas of the fire detection system should be jointly displayed by this output in OR combination.

For that, first define the type of usage for the desired output (LED nr. or LED pair), in the same way as described from page 34 onwards in Chapter 5.6.3 "Category of usage "Single display"".

Afterwards, click on the field in the column "Combinations" in order to open the window {Combinations}. In this window, enter the numbers and - if necessary - the element numbers of the parts, which are supposed to be displayed by this output. See from page 35 onwards in Chapter 5.6.4.1 "Combinations").

By means of the concluding choice of the properties, you determine which information and how this information is to be displayed at the output of an LED Connection Module LAM48-1. This is done in the same way as described from page 34 onwards in Chapter 5.6.3 "Category of usage "Single display"".

Category of usage	Type of usage	Nr.	Elem.	Combinations	Properties
Summary display	Zone/element			Details...	Activation-continuous
Summary display	Actuation/element			Details...	Activation-intermittent
Summary display	Alarming device			Details...	Fault-continuous/disablement
Summary display	Transmitting device			Details...	Fault-interm./disablement

Fig. 31: LED parameter setup / category of usage "Summary display"
Types of usage, combinations and properties for an LED Connection Module LAM48-1 or an LED Display Field LAB48-x respectively
In the window {Combinations}, which automatically opens if you click on the field in the column "Combinations", you determine which parts are OR-combined with each other (see from page 35 onwards in Chapter 5.6.4.1 "Combinations").
The fields with grey backgrounds are locked for entries. In the case of the LED Display Field LAB48-x, the fields in the column "Properties" are also locked.



You can only OR-combine parts which have the same type of usage, e.g., several zones are jointly displayed at one output.



In an OR combination with the property "Fault/disablement" the indication of the disablement (continuous signal) has a higher priority than the indication of the fault.

In the case of the LED Display Field LAB48-x, the properties are firmly assigned and can not be selected. The left LED of an LED pair indicates the activation of at least one of those parts which are summarised by means of the OR combination, the right LED indicates the fault by means of a flashing signal and the disablement by means of a continuous signal.

5.6.4.1 Combinations

By clicking on the field "Combinations" in the category of usage "Summary display", the window {Combinations} opens. In this window, enter the numbers of the OR-combined parts which have an effect on the respective output (LED nr.).



The windows {Combinations} are adapted to the respective type of usage. Essentially, they differ in the inscription and in the possibility of entering element numbers in the columns zone/element or actuation/element.

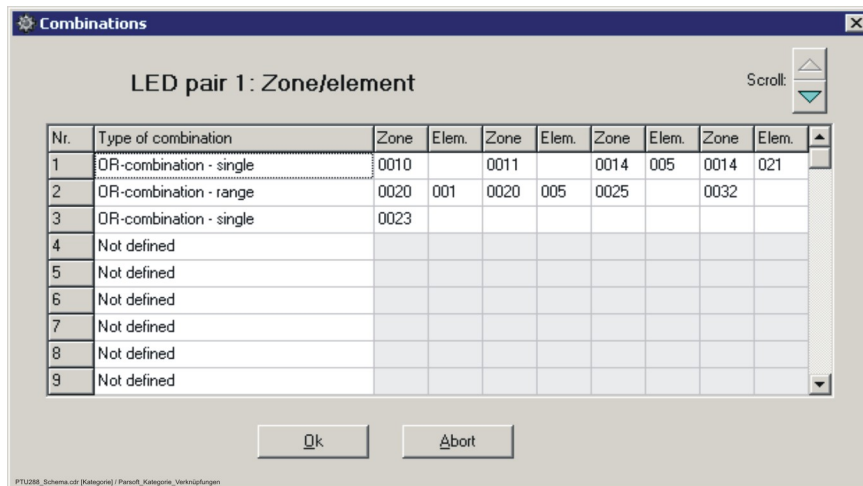


Fig. 32: Depiction of the parameterisation window {Combinations} for output number 1 (LED pair 1 of an LED Display Field LAB48-x), whose type of usage has been set to zone/element. In this example, the output "LED pair 1" is activated by all elements of the zones 10 or 11, or by the element 14/5, or by the element 14/21, or by the elements 1 through 5 of zone 20, or by all elements of the zones 25 through 32, or by all elements of zone 23. By means of the button 'Scroll' you can scroll through the already defined outputs (LED nr. or LED pair). Button 'Ok': The set values are accepted after a check for formal faults. Button 'Abort': The set values are discarded, the old values are not changed.

You can choose from among the following types of combination:

- ◆ **Not defined**

No combination has been defined. This is the factory setting with which the componentry is delivered.

- ◆ **OR-combination - single**

You have to individually name each part of the chosen type of usage, which is to be included in the OR combination, by listing its number and - if necessary - its element number. You can enter four parts in each line.

- ◆ **OR-combination - range**

You enter the lower and the upper limit of the range in two adjacent double columns (each with number and - if necessary - with element number). All parts which belong to the chosen type of usage, and whose identification numbers lie within this range (including the limits of the range), are included in the OR combination.

You can enter two ranges in each line.

If you enter only the zone number or actuation number for the type of usage zone/element or actuation/element, all elements of the zone or actuation are included in the OR combination.



The limits of a range must be structured in the same way, i.e., you must either enter the zone or actuation number and the element number for each limit of the range, or define both limits of the range only by entering their zone or actuation numbers.

By pressing the button 'Ok', the entered combination parameters are accepted. Before the values are actually accepted, basic checks of the values as well as their plausibility are performed (e.g., in the case of the OR range, the upper limit must be higher than the lower limit) and, if applicable, an error message is issued. At this time it is not checked whether the entered parameters (e.g., zone numbers) exist in the fire detection control panel!

You can enter four single combinations or two ranges in each of the 32 combination lines that are available per output (LED nr. or LED pair). Empty lines in the combination table are automatically erased when the table is saved. The total number of combinations is limited to 512 combination lines per Remote Tableau Drive Unit PTU288-1.



Keep in mind, that all entries in the 32 combination lines of an output are logically OR-combined with each other.



The automatic check of the data, that is executed prior to the data transfer, recognises an empty parameterisation window {Combinations} as fault. The parameters can not be loaded to the Drive Unit PTU288-1 before the faults have been removed.

5.6.5 Category of usage "Status display"

This category of usage allows to display the status of the connected fire detection control panel at outputs of the Drive Unit PTU288-1.

For that, first define the type of usage for the desired output (LED nr. or LED pair). You can choose from among the options which are shown in Fig. 33.



The types of usage correspond to the summary display (of the same name) at the fire detection control panel.

Category of usage	Type of usage	Nr.	Elem.	Combinations	Properties
Status display	Alarm				Continuous
Status display	Fault condition				Intermittent
Status display	Disablement				Continuous
Status display	Actuation activated				Continuous
Status display	Technical message				Continuous
Status display	Test condition				Continuous

Fig. 33: LED parameter setup / category of usage "Status display"
Types of usage and properties for an LED Connection Module LAM48-1 or an LED Display Field LAB48-x respectively
The fields with grey backgrounds are locked for entries. In the case of the LED Display Field LAB48-x, the "Properties" fields are also locked.

In the case of an LED Connection Module LAM48-1, the column "Properties" allows you to choose for every type of usage whether a continuous signal or an intermittent signal is to be used at the output.

In the case of an LED Display Field LAB48-x, the column "Properties" is locked for entries. The status displays

- ♦ "Alarm", "Actuation activated", "Technical message" and "Test condition" are indicated by the left light emitting diode of the LED pair, by means of a continuous signal,
- ♦ "Fault condition" (flashing signal) and "Disablement" (continuous signal) are indicated by the right light emitting diode of the LED pair.

5.6.6 Category of usage "Flooding zone display"

This category of usage allows to display the conditions and events of a flooding zone at the outputs of the Drive Unit PTU288-1.



By means of PARSOFT-1 or PARSOFT-2 basically all types of usage that are offered in the category of usage "Flooding zone display" can be parameterised for the outputs of the PTU288-1. In order to allow the Drive Unit PTU288-1 to display this information, the INFO bus must be controlled by an LST Extinguishing Control Panel Series LC216.

Category of usage	Type of usage	Nr.	Elem.	Combinations	Properties
Flooding zone display	Normal condition	001			
Flooding zone display	Status-LED	001			Activated/released
Flooding zone display	Status-LED	001			Fault/disablement
Not defined	Fault				
Not defined	Energy fault				
Not defined	Disabled				
Not defined	Spare tank mode				
Not defined	Normal condition				
Not defined	Flooded				
Not defined	Altered				
Not defined	Status-LED				

Fig. 34: LED parameter setup / category of usage "Flooding zone display"
Types of usage and properties for an LED Connection Module LAM48-1 or an LED Display Field LAB48-x respectively
The column "Properties" is only enabled for the type of usage "Status-LED" of an LAM48-1.

For the desired output (LED nr.) the type of usage can be selected from the offered list. The number of the flooding zone is entered in the column "Nr.".



In the case of flooding zone displays, the types of usage are so varied that listing and describing them would go far beyond the scope of this general description of the Remote Tableau Drive Unit PTU288-1. For the corresponding information, please refer to the User Manual of the Extinguishing Control Panel Series LC216.

The type of usage "Status-LED" summarises the messages "Flooding zone activated/released" or "Flooding zone fault/disabled". In the column "Properties" (which is only enabled for the type of usage "Status-LED") you can choose from among

- ◆ Activated/released and
- ◆ Fault/disablement.

5.6.7 Category of usage "Extinguishing system display"

This category of usage allows to display the conditions and events of an extinguishing system at the outputs of the Drive Unit PTU288-1. The possibilities and functions of the category of usage "Extinguishing system display" are identical with those described from page 37 onwards in Chapter 5.6.6 "Category of usage "Flooding zone display"". All of this information concerning the flooding zone is also valid in the same way for the extinguishing system.

The following table shows the signals of the two properties for the LED Connection Module LAM48-1 and the LED Display Field LAB48-x.

Property for the type of usage "Status-LED"		LAM48-1	LAB48-x	
			left LED	right LED
activated/released	activated:	flashing signal	flashing light	-
	released:	continuous signal	steady light	-
fault/disablement	fault:	flashing signal	-	flashing light
	disablement:	continuous signal	-	steady light

Table 3: Property of the outputs for the type of usage "Status-LED"



The type of usage "Status-LED" allows you to display the most important conditions of a flooding zone in a simple and clear way, by using only three outputs of an LED Connection Module LAM48-1:

- type of usage "Normal condition",
- type of usage "Status-LED" with property "Activated/released" as well as
- type of usage "Status-LED" with property "Fault/disablement".

5.7 Factory settings of the parameters

The Drive Unit PTU288-1 is delivered with the following preset parameters:

Parameter	Detail	Factory settings
Global settings:	INFO bus baud rate	1200 baud
	INFO bus device address	0
	port 1, 2, 3	LAM48-1
Inputs:	input 1	PTU buzzer silence
	input 2	lamp test - all
	input 3 ... input 5	not defined
Outputs:	LAM48-1, all LED outputs	not defined
	LAB48-x, all LEDs	not defined
	combinations	not defined

Table 4: Factory settings of the parameters



These factory settings allow you to create a remote tableau by connecting LAM48-1's to the ports 1...3, and to test the function of the light emitting diodes connected to them as well as the buzzer by means of a button connected to input 2, without having to parameterise the drive unit by using PAR-SOFT before, and without having to connect the PTU288-1 to a fire detection control panel.

Connection cord	2-wire, length approx. 2m
Cross section	0.14mm ²
Wire colours	red (anode), black (cathode)
Connection	female connector, 2-pin, 2.54mm grid spacing
LED-Ø	5mm
Light intensity at 6mA	3.5 ... 9mcd
Angle of light emission	50°
Drilled hole for LED clip Ø	6.3 ... 6.5mm
Material thickness of the front panel	max. 2mm

6.6 Cord 2 Wire for LED Connection

Connection cord	2-wire, length approx. 2m
Cross section	0.14mm ²
Wire colours	red, black
Connection	female connector, 2-pin, 2.54mm grid spacing

6.7 LED Display Tableau LAT288-1

Dimensions W × H × D	420 × 520 × 120 (mm)
Weight	approx. 7kg (without modules)
Colour	
Case	grey white, RAL 9002
Front	light grey, RAL 7035

6.8 LED Display Tableau LAT288-1CE

Dimensions W × H × D	478 × 266 × 55 (mm)
	(PTU288-1 and LAB48-x installed)
Weight	approx. 1.6kg (without modules)
Colour	
Case	grey white, RAL 9002
Front	light grey, RAL 7035