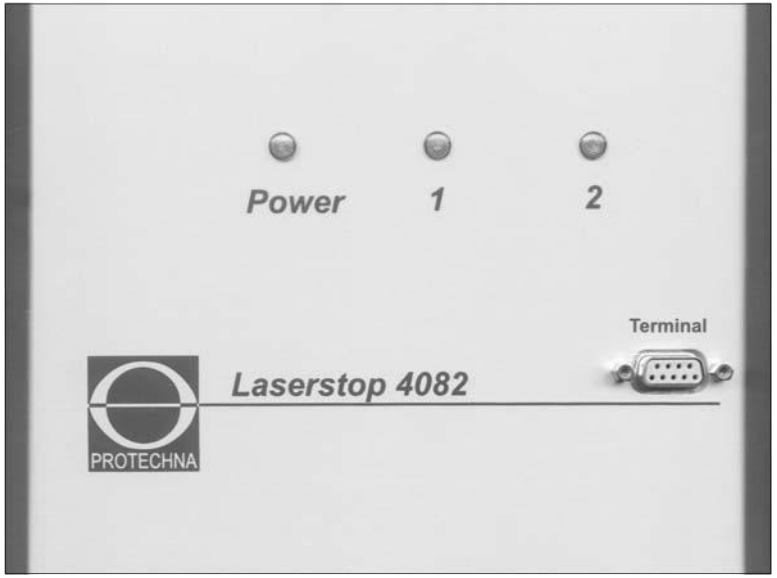
Art. Nr. 14231

# Working Instructions
# PROTECHNA End Break Detector
# LASERSTOP 4082
# for Weaving Machines

PROTECHNA HERBST GMBH & CO KG

QUALITÄTS-SICHERUNG FÜR TEXTILIEN



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## List of Contents

## Safety Advice

**Before placing the device into operation, please carefully read the following instructions for your own personal safety as well as the operational security of the equipment.**

Always follow all warnings and instructions which are shown as direct advice or mentioned, as well as any in this instruction book.

Before any  cleaning or to remove or replace an option, the device must always be disconnected from the power supply. For cleaning, no liquid cleaning agent or sprays are allowed, instead only a dry cloth must be used.

Always make sure  that the correct voltage rating is used to match the power supply.

Never use the equipment in areas where dangers are present, where water or other liquids could enter the device.

The mounting position for the device must always be stable, as strong vibration could cause the unit to fall and be badly damaged.

Never try to push any objects through any openings in the device, as the interior voltage could cause short circuits or electrical shocks.

Regardless of the fact that the laser light channels are not dangerous, direct eye contact with laser beams should be avoided.

With the exception of the detailed information in the instructions, you should never attempt to undertake any repair work yourself, otherwise you could place yourself in danger from contact with high voltage parts.

The electrical connection must only be carried out by suitably qualified technical personnel. Before electrical connection, you must make absolutely sure that there is no danger to come into contact with any parts that might carry live electricity.

## General User Information

The functions described in this instruction refer for the use of the system on weaving machines at the run-in of the warp and at the the weaving shed position. It is possible to connect only a maximum of two (2) laser light barriers to the control unit LASERSTOP 4082.

For further information please contact:

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- ► Before you first turn on the control unit, make certain that the correct required voltage rating for the device matches that of the power supply.
- ► Be careful to make sure that all plugs are securely screwed in. Plugs which are not screwed in can influence the surveillance device in a negative manner.
- ► Keep the optics of the laser channels clean. Refrain from causing fingerprints on the laser light channel optics. Clean only with the use of a dry lint free cloth.
- ► The operation of the control unit is only carried out with the following keys on the hand terminal:
  - Four arrow keys
  - DEL key
  - ENTER key
  - Function key F4 (=SHIFT key and function key F1 pressed simultaneously)
- ► When you plug the hand terminal into the control unit, it does not matter if the control unit is switched on or off. In every case the hand terminal will be initialised for a short moment after it has been plugged into the control unit.
- ► Make sure that during normal operation of the machine that no loose threads hang through the laser light beams. Loose threads could lead to false stops.

## General User Information

► When the surveillance device is switched to the test operation, the machine cannot be stopped by the control unit.

► When the surveillance device is switched to the test operation, then *no* fault signal will be displayed on the hand terminal.

► Please ensure that the individual laser channels are always plugged into the socket with the same channel number.
**Channel 1**
Transmitter into S1 / Receiver into E1
**Channel 2 (Standard)**
Transmitter into S2 / Receiver into E2
**Channel 2 (DUO-Split function)**
Transmitter into S2A and S2B /
Receiver into E2

► **Impulse giver (Setting PULS)**
The Impulse giver is connected to the rear of the control unit, into the socket **Takt** (impulse).

Position and duration of the fade-out duration are set at the control unit.

► **External fade-out (Setting DC)**
Instead of using the impulse giver, the synchronisation of the surveillance device can also be carried out via an external signal from the machine. The connecting cable must be plugged into the socket **Takt** (Impulse) in the rear of the control unit.

Position and duration of the fade-out area are set by the signal of from the machine.

Please note that the respective channels are faded out during the period when no signal is present.

► **External display lamp**
The external display signal lamp is plugged into the socket **Lampe** (lamp) at the rear of the control unit.

| Lamp | Description |
|---|---|
| lit | Machine stopped. The surveillance device did not stop the machine. |
| not lit | a) Control unit is switched off<br>b) Machine is in operation |
| blinks | a) Machine has been switched off by the surveillance device<br>b) Surveillance device is in test mode operation |

The surveillance is only active, when the machine is in operation. The necessary signal is lead into the control unit via the socket **Takt** (please see: Electrical connection).

## Control Unit 4082 - Front View

**Display Diode Power**

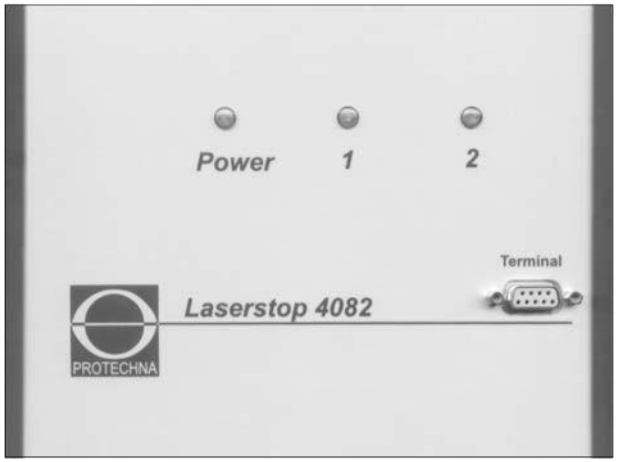
Diode lights green
Control unit is switched on

Diode flashes green
Start delay is active

Diode flashes yellow
Control unit is in test operation

Diode flashes red
a) flashes for approx. 2 seconds:
Stop relay is active

b) flashes permanently:
Fatal error has occurred (communication fault, data lost EEPROM)




**Socket Terminal**
Connection socket for the hand terminal 8024

**Display Diodes 1 und 2**

Colour coded multi-function display for each channel

Diode lights green
Connected laser light channel is in order

Field lights red
Connected laser light channel has stopped the machine

Diode flashes red
A fault has occurred at this channel

Diode is not lit
Channel is not active

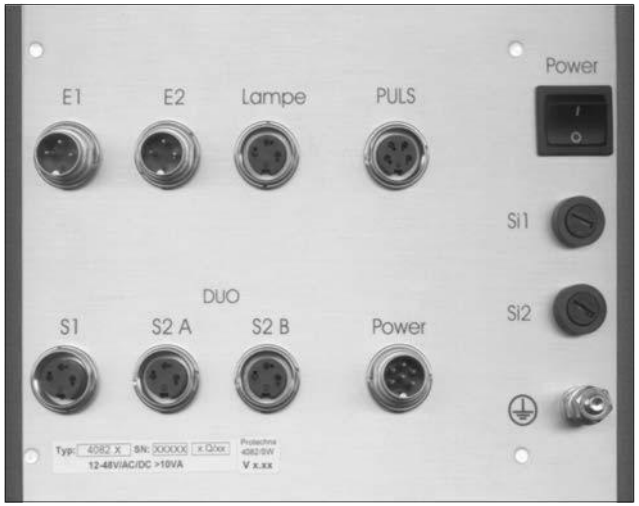
## Control Unit 4082 - Rear View

**Connections E1 and E2**
Receiver cables of the laser light channels

**Connections S1 / S2 A / S2 B**
Transmitter cables of the laser light channels
(S2 B is only used when channel 2 is operated with the DUO-Split function - see appendix)

**Connection Lampe (Lamp)**
External signal lamp

**Connection PULS (Impulse)**
External impulse giver respectively external signal of the machine




**Switch Power**
Power switch

**Fuse Si 1**
Power supply – 2 AT

**Fuse Si 2**
Stop contact – 4 AT

**Connection Power**
Power supply/control cable to the switch box of the machine

## Terminal 8024

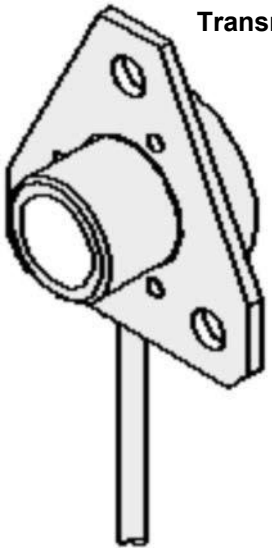

**The operation of the control unit is only carried out with the following keys**

- Move forward to the next display
- Move back to the previous display
- Cursor position up
- Cursor position down
- Increase the value (ENTER)
- Decrease the value (DELETE)
- (pressed simultaneously) Test operation on/off (SHIFT + F1/F4)

**all other keys do not have any function**

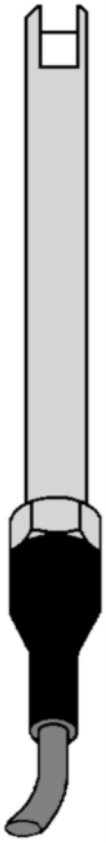
## Laser Light Channel

**Transmitter 480**

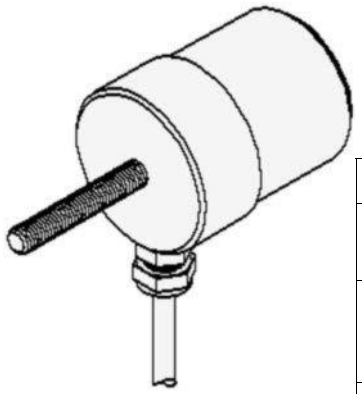


Each transmitter (laser) is provided with a mounting kit

**Transmitter 483**

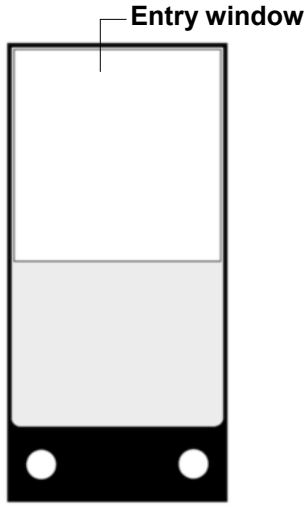


| Type | Use |
|---|---|
| 480 | For all applications without space restrictions (e.g. run-in of the warp) |
| 483 | For all applications with space restrictions (e.g. surveillance in the front shed) |

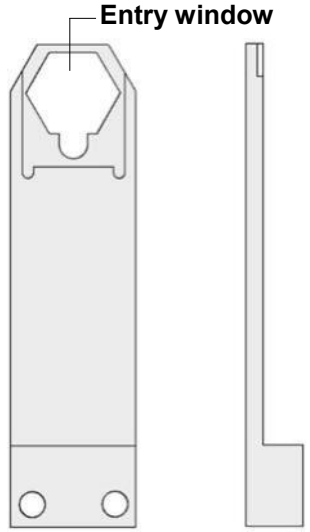


**Receiver**
Type 480: Standard receiver
Type 485: Receiver with enlarged optic

| Type | Use |
|---|---|
| 480 | For all applications without space restrictions (e.g. run-in of the warp) |
| 482/ 486 | Predominating for weaving shed surveillance with high space restrictions |
| 485 | For DUO-Splt function (see appendix) |




**Receiver 486**
Receiver - narrow style
(front view)




**Receiver 482**
Receiver - narrow style
(front and side view)

## Display 1

One of these displays are shown after switching on the control unit.

```
C1: ppp r.r e.e%
C2: ppp r.r e.e%

TEST    xxx Sec.
```

Channel 2: Mono function

```
C1: ppp r.r e.e%
C2A:ppp r.r e.e%
C2B:ppp r.r
TEST    xxx Sec.
```

Channel 2: DUO-Split function

The displays are defined as follows:

**C1 and C2**
Channel 1 and channel 2

**C1 and C2A/C2B**
Channel 1 and channel 2 (when channel 2 is operated with the DUO-Split function - see appendix)

**ppp**

Display of the receiving level of the laser light channels.

The display should read 100% +/-10%.

There are no input possibilities.

**r.r**

Display of the noise level whilst the machine is running

***and***

Display of the thread signal (during the passing of a thread through the light channel)

The displays are renewed approx. every 0,5 seconds.

There are no input possibilities.

**e.e%**

Display and alteration possibilities for the switching level (sensitivity).

An alteration of the pre-set value is only possible, when the cursor is on the respective position.

By using the arrow keys **UP** and **DOWN**, the cursor will be moved to the respective positions.

To change the pre-set value, please press the **ENTER** key to increase the value or the **DELETE** key to decrease the value.

The switching level (sensitivity) must be set to between the noise level and the thread signal values.

Example:

| | |
|---|---|
| Noise signal: | 1% |
| Thread signal: | 10% |
| Switching level: | 5,5% |

## Diaplay 1

**TEST**

To switch the surveillance device into the test operation mode, please press the **function key F4** and the **SHIFT** key simultaneously.

To indicate that the device is in test mode operation, the text **TEST** flashes on the terminal. As additional display the diode **Power** on the control unit flashes yellow.

In order to switch the device back into the normal operation, please press the **function key F4** and the **SHIFT** key simultaneously.

After switching off the control unit the test mode operation is cancelled as well.

When the surveillance device is switched to the test operation, the machine cannot be stopped by the control unit.

**xxx Sec.**

Display and input possibilitiy for the start delay in seconds.

The setting of a start delay is important since the laser light barrier for the detection in the weaving shed must not be active before the machine has reached its normal operating speed.

An alteration of the pre-set value is only possible, when the cursor is on the respective position.

By using the arrow keys **UP** and **DOWN**, the cursor will be moved to the respective positions.

To change the pre-set value, please press the **ENTER** key to increase the value or the **DELETE** key to decrease the value.

After starting the machine, the connected channels for the period of the start delay are not active.

**Notes**

## Display 2

Press the arrow key **RIGHT** to move forward to the next display or the arrow key **LEFT** to move back to the previous display.

```
Mode:          xxx
C1:           mmmm
C2:           mmmm
Pulser:       tttt
```

The displays are defined as follows:

**Mode: xxx**

The three-digit number represents an internal error code. At this position (xxx), there should normally be no display present.

The errors are stored in the EEPROM. The error code will be deleted, when the stop counter is re-set to zero.

**Mode: xxx**

List of the possible error codes:

| Code | Meaning |
|---|---|
| 1 | Level fault at Channel 1 |
| 2 | Internal communication fault at channel 1 |
| 4 | Level fault at Channel 2 |
| 8 | Internal communication fault at channel 2 |
| 16 | Processor fault |
| 32 | Power supply fault |
| 64 | Configuration memory fault |

At several simultaneous faults the codes are added up.

Example:
Level fault at channel 1 **and** level fault at channel 2: Display **5**

**C1: mmmm / C2: mmmm**

Please select one of the following operation modes for the connected laser light barriers (channels).

1. OFF
   Channel switched off
2. CONT
   Standard surveillance
3. DC
   Fade-out channel, operating mode external signal (shed surveillance)
4. PULS
   Fade-out channel, operating mode impulse giver (shed surveillance)

Only for channel 2:
5. DUO
   Channel 2 with DUO-Split function (see appendix)

To select the required channel, please press the arrow keys **UP** or **DOWN**.

To select the required operation mode, please press the **ENTER** key (CONT, DC, PULS,DUO).

To switch the selected channel off, please press the **DELETE** key (OFF).

## Display 2

**Pulser: tttt**

This setting is only available when **all activated** channels are set to the surveillance mode **CONT** or **DUO** (only Channel 2).

Should one channel be set to the surveillance mode **DC** or **PULSE**, then this setting is not needed and will accordingly not be displayed.

Display mode and input possibility for the type of connections which indicate the control unit whether the machine is in operation or stopped (also see: Electrical connection control unit).

**Pulser: tttt**

**PULS**

An impulse giver is connected to the control unit. When the machine is started, the control unit will recognise by the presence of the actual impulse signal, that the machine is in operation (Connection version B).

The synchronisation of the surveillance device with the machine, normally with the assistance of the impulse giver, can instead be carried out via an external drive (Connection version C)

**DC**

The control unit is connected via a re -set cable to a potention free contact. This contact must me closed during the normal operation of the machine (Connection version A).

**Pulser: tttt**

A change of the setting is only possible, when the cursor is positioned at the respective position.

The selection of the type of connection is carried out with the **ENTER** Key (PULS, DC).

## Display 3

Press the arrow key **RIGHT** to move forward to the next display or the arrow key **LEFT** to move back to the previous display.

```
C1:          zzzz
C2:          zzzz
Clear:        DEL
Version:     x.xx
```

The displays are defined as follows:

**C1: zzzz / C2: zzzz**

Display and re-set possibilities for the stop counter of cannel 1 (C1) and channel 2 (C2).

**Clear: DEL**

To re-set all the counters, the key **DELETE** must be pressed.

When you press the key **DELETE**, all counters (C1 and C2) are re-set to the zero position.

When you press the key **DELETE,** all fault-codes will also be cleared (see display 2).

**Version: x.xx**

Display of the software version of the programme in use.

In case of queries, it may be possible that the questions regarding your software version may need to determined.

There are no input possibilities.

## Display 4

Press the arrow key **RIGHT** to move forward to the next display or the arrow key **LEFT** to move back to the previous display.

```
Count C1A:    xxx
Count C1B:    yyy
Count C2A:    xxx
Count C2B:    yyy
```

Unintentional stoppages of the machine caused by threads hanging in the weaving shed only for a short moment will be prevented by means of the fault counter.

An input for the fault counter makes only sense when for the respective channel a fade out function (PULS, DC) has been switched on for the shed surveillance.

For channels, which are operated with the surveillance functions **CONT** or **DUO** (only channel 2) this setting is not necessary and is therefore ignored by the control unit.

The displays are defined as follows:

**Count C1A/C1B**
**Count C2A/C2B**

The displayed value (xxx) shows how often a recurring fault must be recognised before the machine will be stopped.

The setting range "xxx" lies between **1** (immediate stopping of the machine) and **50**, during a set number of shed movements "yyy".

| Example | | |
|---|---|---|
| xxx | yyy | Machine stops after |
| 3 | 6 | 3 faults during 6 shed movements |

**Count C1A/C1B**
**Count C2A/C2B**

An alteration of the pre-set value is only possible, when the cursor is on the respective position.

COUNT C1A/C1B:
Fault counter for channel 1

COUNT C2A/C2B:
Fault counter for channel 2

The selection of the input position is carried out with the arrow keys **UP** and **DOWN**.

To change the pre-set value, please press the **ENTER** key to increase the value or the **DELETE** key to decrease the value.

Please note that an increase of the value of the fault counter will extend the reaction time of the device.

## Display 5

**Before you carry out a setting in this display, you must have set the correct switching level (sensitivity) to correspond with the threads present at the machine (see display 1).**

Press the arrow key **RIGHT** to move forward to the next display or the arrow key **LEFT** to move back to the previous display.

```
Cx:<aaa>eee r.r%
     Start
   Graphic:
  Test Mode!
```

This setting is only available, when for at least one of the connected channels, the fade-out function **PULS** is switched on.

This setting is not available and will not be displayed when,

a) **all** activated channels have been set to the surveillance mode **CONT** or **DUO** (only channel 2).
b) the fade-out function **DC** for the shed surveillance is switched on.

**Cx:<aaa>eee r.r%**

Displays and input possibilities for the start and end positions for the fade-out area for channel 1 and 2 when the operation mode PULS is selected.

By using the arrow keys **UP** and **DOWN**, the cursor will be moved to the respective positions (<aaa or >eee).

The displays are defined as follows:

**Cx**
Channel display (C1 or C2)

**<aaa**
Degree setting for the beginning of the fade-out window

**>eee**
Degree setting for the ending of the fade-out window

**r.r%**
Noise level display

**Cx:<aaa>eee r.r%**

To change the pre-set value, please press the **ENTER** key to increase or the **DELETE** key to decrease the value (<aaa or >eee).

The settings can only be altered in 10 degree steps.

The surveillance time period should be set in the last third of the shed opening to allow clamping threads to clear.

The display "r.r" represents the noise level of the respective channel. This display should help you setting the start and stop position of the fade-out area. The displayed noise level should be as low as possible.

The impulse giver should be mounted in a way, that the impulse is present at the 0° position of the weaving machine. Through this the setting for the fade-out area is easier to carry out.

## Display 5

For additional help of the setting of the fade-out area's, a graphical portrayal of the shed movement during every revolution of the machine is provided.

This portrayal is only possible in **TEST MODE**. In order to switch the device into its test mode, please press the **function keys F4** and **SHIFT** simultaneously.

To indicate that the device is in its test operation, the display diode **POWER** will flash yellow at the control unit.

When the surveillance device is switched to its test operation mode, then it will not stop the machine.

When the machine is stationary, you should see the following display:

```
Cx:<aaa>eee r.r%

     Start
  Machine!
```

Please start the machine.

When the machine is running you will receive the following display (Example):

```
Cx:<aaa>eee r.r%
■■■■■■■■■■■■ 120
■■□□□□□>□<□□ 240
□■■■■■■■■■■■■ 360
```

The graphical portrayal is defined as follows:

**120**

Portrayal range 0° to 120°

**240**

Portrayal range 130° to 240°

**360**

Portrayal range 250° to 360°

**<**

Indicator for the beginning of the fade-out window

**>**

Indicator for the ending of the fade-out window

**■■■**

The dark portrayed areas indicate that threads are present in the surveillance range of the light barriers (shed closed or not yet completely open). These areas **must** be faded out.

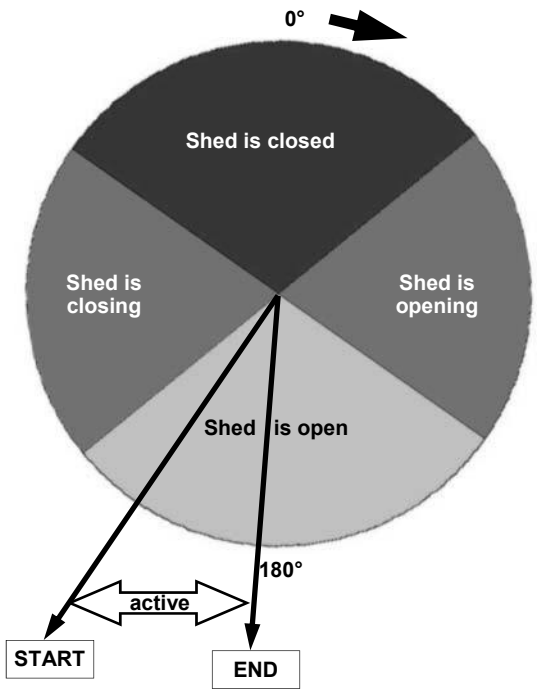
**□□□**

The light portrayed areas indicate that no threads are present in the surveillance range of the light barriers (shed open). In this areas, a shed surveillance can take place.

With the keys **ENTER** (increase value) and **DELETE** (decrease value), the actual value (<aaa or >eee ) is altered and the respective indicator (< or >) is moved.

## Display 5

### Example




The surveillance area (active area) for the shed surveillance is in this example between approx. 190° and 210°.

Therefore the following setting is necessary for the fade-out area (not active area):

<aaa (START): 210°
>eee (END): 190°

The values in the portrayed example are correct, when the connected impulse giver is mounted in the 0° position on the weaving machine.

When two channels for a surveillance of the shed are required, please press the arrow key **RIGHT**.

Repeat the setting for the fade-out area for the second channel as described earlier.

The values to be input can in certain circumstances differ to the values of the first channel. The settings depend on the behavior of the threads during the shed changes.

In order to switch the device back into the normal operation, please press the **function key F4** and the **SHIFT** key simultaneously.

After switching off the control unit the test mode operation is cancelled as well.

## Notes

## List of Components / General Information

### List of Components

A surveillance device LASERSTOP 4082 comprises of the following parts:

- A control unit LASERSTOP 4082
- A mounting angle for the control unit
- A hand terminal with connecting cable [2)]
- Up to two standard laser light barriers **or** one standard and one DUO-Split laser light barrier
- A set of mounting parts for each laser light barrier
- An external signal display lamp complete with connecting cable
- A power/control cable [1)]
- Extension cables for each laser light barrier [1) 3)]
- A reset cable or an impulse giver with connecting cable [4)]
- Assembly material, dependent on the machine type and requirements

[1)] The cable length depend upon each type of machine the surveillance device has been ordered for.

[2)] It is only necessary to take delivery of a hand terminal with the first unit. One Hand Terminal is sufficient for all LASERSTOP units to be used.

[3)] The extension cables are identical and can be used for either the transmitter or the receiver. These extension cables only differ in their lengths.

[4)] When the control of the control unit is carried out via an external signal from the machine, the reset cable is required. All other cases require the impulse giver with connecting cable.

### Assembly - Service

We strongly advise that at least the first installation of the PROTECHNA devices are carried out using one of our own service technicians. In this way, the customer can be sure of a competent assembly and setting of the device as well as instruction as to the correct use.

This assembly service is carried out at the lowest possible cost and is normally available everywhere. Overseas customers should make enquiries concerning assembly services with the respective PROTECHNA agent.

### Service

Service technicians are available an special request to check the PROTECHNA surveillance device LASERSTOP 4082 if required.

Generally, however, small problems can be rectified by a telephone call or a fax or e-mail, without the need for a visit by the technician.

## Assembly - Control Unit / Imulse Giver

### Assembly - General Advise

The assembly and commissioning of the PROTECHNA surveillance device LASERSTOP 4082 for weaving machines, normally takes place in the following sequence:

1) Mount control unit
2) Mount the impulse giver *)
3) Electrical connection
4) Mount laser light barrier(s)
5) Adjustment of the laser light barrier(s)
6) Setting the parameters
7) Checking the function when the machine is running

*) when required

### Assembly - Control Unit LASERSTOP 4082

The mounting position chosen for the control unit should always be absolutely stable, as any strong vibration or shaking could cause the unit to fall and cause a lot of damage to it.

The assembly of the control unit should be carried out in a position near to the switchbox of the machine. Please use the supplied mounting angle.

### Assembly - Impulse Giver

The assembly of the Impulse giver is carried out at a position on the machine where the revolutions of the machine are at a ratio of 1:1, so that with each revolution of the machine a short impulse can be detected.

The working range of the impulse giver lies between 0,1 mm and 1,6 mm.

The impulse giver should be mounted in a way, that the impulse is present at the 0° position of the weaving machine. Through this the setting for the fade-out area is easier to carry out.

External Fade-Out

In the case that you use an external signal from the machine instead of the impulse giver, then the reset cable must be plugged into the socket **Takt** (Impulse) in the rear of the control unit.

### Notes

## Assembly - Light Barrier

Regardless of the fact that the laser light barrier transmitter performance rating is not dangerous, direct eye contact with the laser light beam should be avoided.

When assembling the laser light barriers, please mark the extension cables for the light barriers, so that when plugging in these cables to the control unit they will not be mixed up. The extension cables are identical and can be used for either the transmitter or the receiver. The extension cables only differ in their length.

When assembling the unit please make sure that during the normal operation of the machine, that no loose or hanging threads interfere with the laser light beam. Loose threads could lead to false stops.

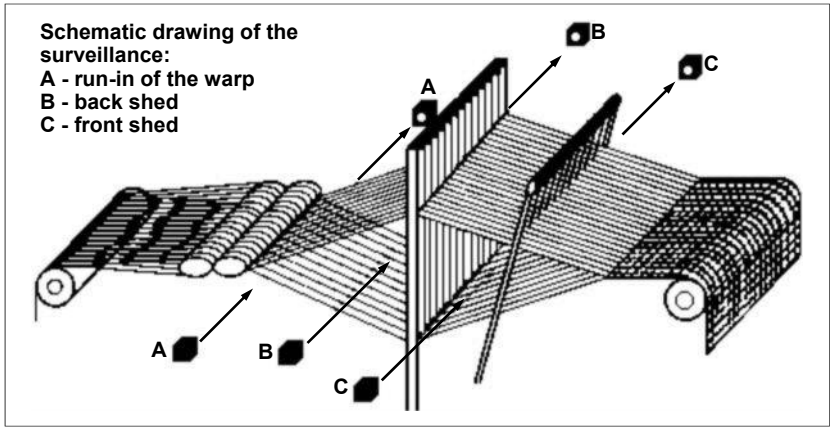
Transmitter and receiver are fitted at the run-in of the warp under the yarn sheet resp. at the centre of the open weaving shed.

When a broken end or ”nest” is detected, the laser light beam must be interrupted for a short time.

The side of the machine where the transmitter or the receiver are to be mounted, depends in the first place on the space available. Please, however, make sure that all the transmitters resp. receivers are mounted on the same side of the machine.

With most machine types, it may prove necessary, to first of all mount one of the fixing plates (delivered), to the machine side frame. The transmitter resp. the receiver are then subsequently attached to this plates.

Please note, that it is possible to connect only a maximum of two (2) laser light barriers to the control unit LASERSTOP 4082. The surveillance under the warp sheet can also be carried out with a DUO-Split laser light barrier (see appendix).



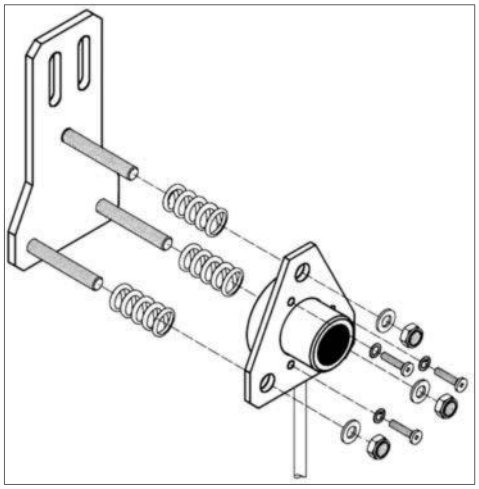
## Assembly - Light Barrier

**Transmitter 480**
**with adjustable assembly device**

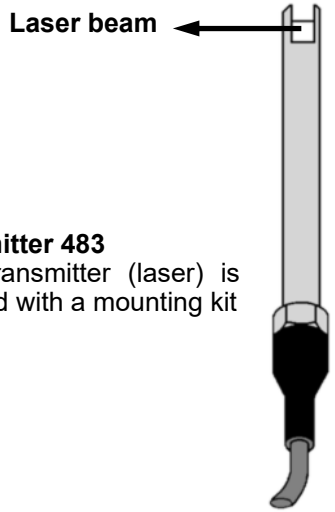
First of all the locating holes for the assembly device must be drilled in the mounting plate on the machine frame. Please use the fixing plate as a drilling template before you assemble together the transmitter.

Please make sure that the nuts remain accessible for the later adjustment of the transmitter.

Please tighten all the nuts, so that the springs are almost fully compressed together.



**Transmitter 483**




**Transmitter 483**
Each transmitter (laser) is provided with a mounting kit

**Notes**

## Assembly - Light Barrier

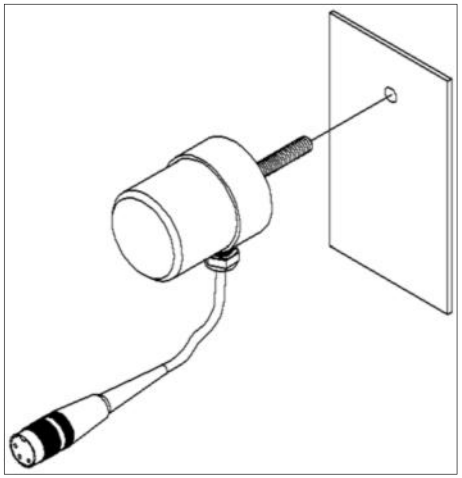
### Receiver 480/485

Please make sure when mounting the receiver that the deviance to the light beam from the transmitter does not vary more than +/-5%.

The receiver can now be firmly fixed, as it will not need moving again during any later adjustment of the laser light barriers.

First of all, the mounting hole for attaching the receiver to the holding plate, must be drilled in the machine side frame.

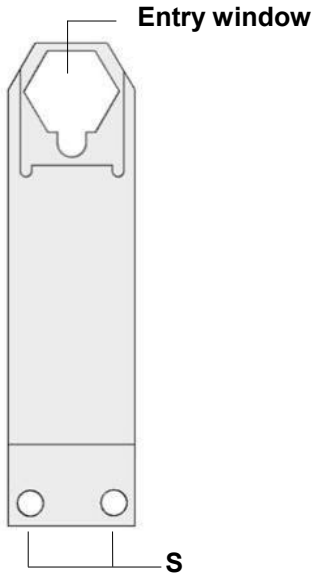
The receiver is fixed in place using the nuts supplied.



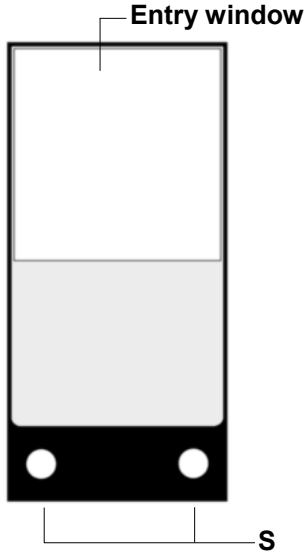
### Receiver 482/486

The receiver is fixed in place using the screws supplied.

(S = fastening holes)




Receiver 482




Receiver 486

## Adjustment - Laser Light Barrier

Regardless of the fact that that the laser light transmitter performance is not dangerous, direct eye contact with the laser light beam should be avoided.

Before adjusting any of the laser light barriers, the unit must be switched on electrically and all the respective cables must be plugged into the control unit. The channels for the connected light barriers must be active.

To adjust the laser light channel, the adjustment device supplied is needed. Place this adjustment device onto the receiver lens.

Now switch on the control unit. After completion of the initialising of the device, the transmitter (laser) should be illuminated.

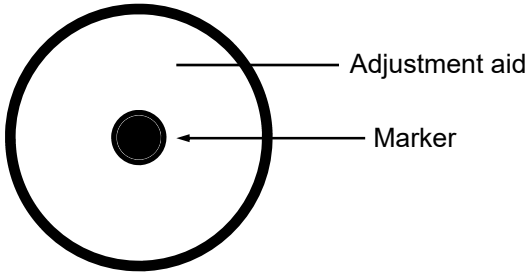
Now adjust the transmitter, so that the laser light beam is directed to the centre of the receiver optic. This point is indicated with a mark on the adjustment device.

Adjustment of the receiver is not needed.

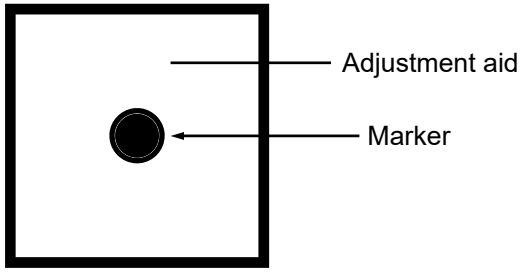
To adjust further light channels, please carry out the procedure as described above.

Adjustment DUO-Split laser light barrier: see appendix

**Adjustment aid for 480/485**




**Adjustment aid for 482/486**



## Fault Finding

**Laser (transmitter) not illuminated**
- Supply cable to transmitter not plugged in
- Supply cable to transmitter wrongly plugged in
- Channel not activated
- Laser defect

**Deviation of receiver level signal more than -10%**
- Supply cable to transmitter and/or receiver wrongly plugged in
- Light channel out of adjustment
- Light channel optics dirty
- Laser defect
- Receiver defect

**No receiving level signal**
- Supply cable to transmitter and/or receiver not plugged in
- Supply cable to transmitter and/or receiver wrongly plugged in
- Light barriers not adjusted
- Light barriers out of adjustment
- Light beam blocked
- Laser defect
- Receiver defect
- Fault in control unit

**Machine noise level higher than thread signal**
- Light barriers out of adjustment
- Optics are dirty
- Supply cable to transmitter and/or receiver wrongly plugged in
- Connecting plug to transmitter and/or receiver is loose
- Loose threads in the light beam
- Laser defect
- Receiver defect

**No thread signal**
- Channel is not activated
- Supply cable to transmitter and/or receiver not plugged in
- Supply cable to transmitter and/or receiver wrongly plugged in
- Laser defect
- Receiver defect

**Display diode 1 and/or 2 flash red**
- Supply cable to transmitter and/or receiver not plugged in
- Supply cable transformer and/or receiver wrongly plugged in
- Channel activated but no light barriers connected
- The light beam is interrupted (machine is standing)
- Light barrier not adjusted
- Light barrier out of adjustment
- Light beam blocked
- Laser defect
- Receiver defect

**Machine does not stop when a thread breaks**
- Device is in test operation
- Sensitivity level setting incorrect
- Channel not activated
- Supply cable to transmitter and/or receiver wrongly plugged in
- Thread has got caught and did not fall through the laser light barrier
- Impulse giver defect
- Fade-out area wrongly set
- Stopping contact wrongly connected
- Thread broke during the start delay phase
- Fault in the control unit

## Fault Finding

**False Stops**

- Foreign object in the surveillance area
- Loose threads
- Sensitivity setting is incorrect
- Supply cable to transmitter and/or receiver wrongly plugged in
- Connection plug from transmitter and / or receiver not screwed in tight
- Light channel out of adjustment
- Light barrier optics are dirty
- Electrical connection is not correct
- Impulse giver defect
- Fade-out not activated
- Fade-out area wrongly set
- Laser defect
- Receiver defect
- Fault in the control unit

**The terminal initialisation is displayed permanently**

- The connection to the hand terminal is interrupted.
- Program fault. In this case the control unit has to be changed.

**Display diode Power flashes red**

- Data loss! Check all the settings and if needed reset them. The machine remains isolated by the operating control unit until it can be checked.

**Display diode 1 and/or 2 do not lit**

- The respective channel is not activated
- Control unit fault

**Notes**

## Electrical Connection

**Before the electrical connection, you must make absolutely sure that there is no danger to come into contact with any parts that might carry live electricity. Please make absolutely certain, that the stated voltage rating for the device is maintained for the power requirements and the re-set voltage (see type plate).**

### Power Supply (Socket Power)

The control unit is connected using the wires 1 (white) and 2 (brown) to a voltage of between 12 V AC/DC and 48 V AC/DC.

In the case of DC the polarity can be disregarded.

The shielding of the cable must be connected to the earth of the switch box.

### Stop Contact (Socket Power)

The wires 3 (green), 4 (yellow) and 5 (grey) serve to provide a potention free relay contact which will be activated during a fault.

Wires 3 and 4: NO
Wires 4 and 5: NC

Please use the required set of contacts.

### Impulse Input (Socket TAKT)

The connection is dependent on the pre -set mode of the lasers light barriers and on the use of the external impulse giver or a signal from the machine.

A) all channels standard mode (Mode: CONT):

A voltage-free contact, which is closed during the normal operation of the machine (machine running), must be connected at the wires 3 (green) and 4 (yellow).

B) one of the channels with fade-out function (Mode: PULS):

Plug the connection cable of the external impulse giver into the socket **Takt** (Impulse). As soon as the machine is started, the control unit recognises by the impulses that the machine is in operation.

### Impulse Input (Socket TAKT)

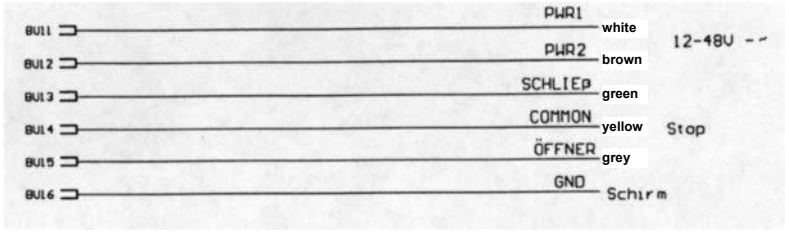
C) one of the channels with fade-out function (Mode: DC):

Instead of using the impulse giver, the synchronisation of the surveillance device can also be carried out via an external signal from the machine.

No voltage should be connected during the fade-out time period when using the wires 1 (white) and 3 (green ).

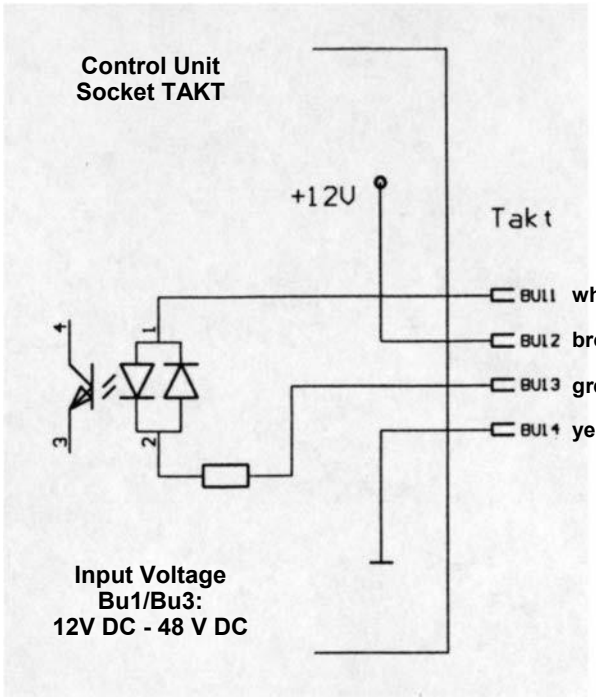
During the inching drive operation or when the machine is stopped, no voltage must be present at this contact.

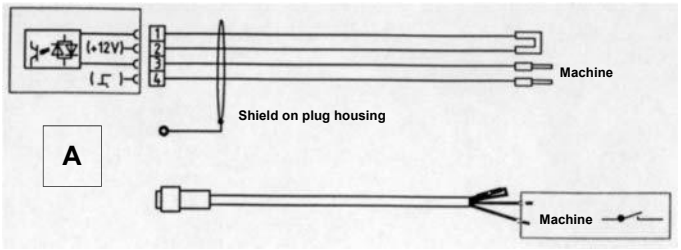
## Electrical Connection

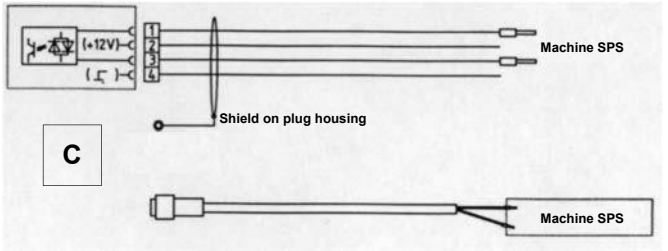


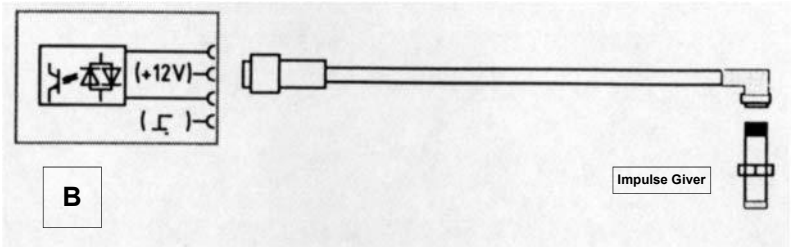

**Control Unit Socket PWR**

| DIN Socket 6 Pol | Socket 6 pin |
|---|---|
| Schließ | NO |
| Öffner | NC |
| Schirm | Shield |



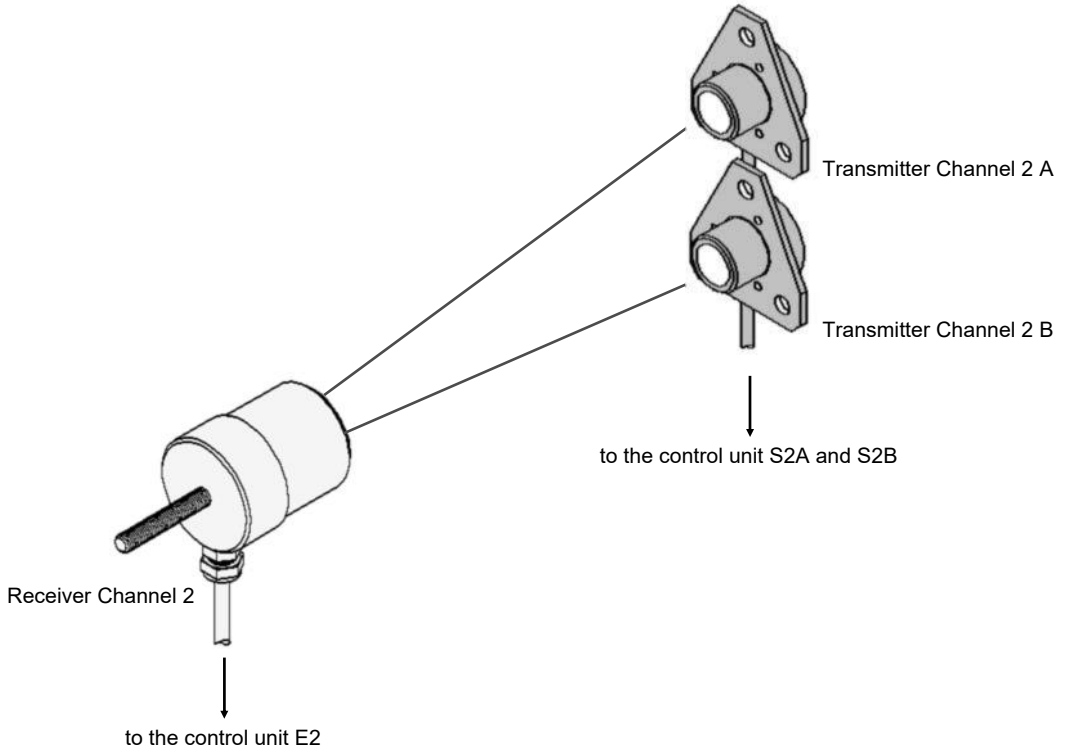
## DUO-Splt Function

**This function is only available for channel 2**

The DUO function of the laser light barriers is especially used for machines where a large amount of cotton fly or lint is present. A stoppage of the machine only takes place when a thread passes through two active laser light barriers mounted parallel to the yarn sheet, within a preset time (time slot).

The DUO Splitbox allows the connection of two transmitters (laser) for the second channel. Both of these transmitters are aimed at one receiver. The evaluation of the signal is carried out with the help of a special software.

All variants of receiver can be used. However, because both of the transmitter light beams must have a minimum spacing of **10 mm** to **15 mm** when they meet at the receiver, then on account of vibration reasons the receiver 485 with the enlarged lens is used as standard. The receiver 480 should only be used in the case of low vibration levels and short distance.



## Laser Classification

**Device Description:** Laser Light Barrier

**Type:** Lli 480

**Laser Type:** Semiconductor Laser 660 nm

With this device the Laser power output meets the

**Class 1**
**according to DIN EN 60825-1**

**VDE 0837**
Part 1

Maximum Laser power output 0,22 Milliwatt

Protechna GmbH, Ottobrunn, 20.01.1995
Development

Dipl. Ing. W. Bühler
Development Manager

Warranty Exclusion: When used for other purposes, structural changes and manipulation of the device.

## EC - Conformity Declaration

We hereby declare:

**Protechna Herbst GmbH & Co KG**
**Lilienthalstr. 9**
**85579 Neubiberg**
**Germany**

That the product to the following description insofar as its original design and construction and also the model now despatched by us, corresponds to the relevant safety and health requirements laid down by the EC Directives.

Any alteration of the product carried out without permission nullifies this declaration.

Description of the product: **Thread Break Detector**

Type: **Laserstop**

Model - No. **4082**

Relevant EC Directives:

EC - Directive relating to Electro-Magnetic Tolerance (89/336/EEC) followed by 93/31/EEC

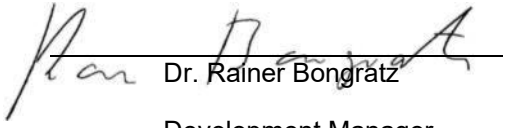
EC - Low Voltage Directive (73/23/EEC)

Applied co-ordinating standards, in particular:

| | |
|---|---|
| DIN EN 50 081 Part 2 | Electromagnetic Tolerance (EMV) technical base standard interference emission |
| DIN EN 50 082 Part 2 | Electromagnetic Tolerance (EMV) technical base standard inteference strength |
| DIN EN 60 204 | Electrical equipment on industrial machines |
| DIN EN 61 010 | Safety regulations for measuring, controlling, regulating and laboratory equipment |

Applied national standards and technical specifications, in particular:

DIN VDE 0100

Signature of manufacturer: 

Dr. Rainer Bongratz

Details of signatee: Development Manager

Date: 17.10.2000

## Notes