P.BERGHAUS

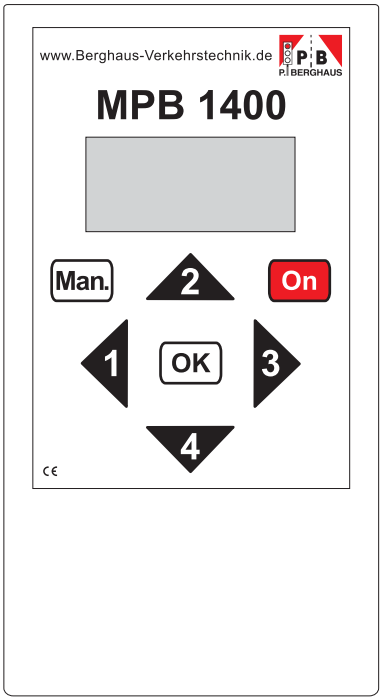
Operating Instructions

CE

Construction Site Traffic Signal System MPB 1400

GB

Hand box MPB 1400



The hand box is used for quick and easy programming of the signal system MPB 1400. The hand box queries the necessary inputs and guides you through the menu.

Your national language is already adjusted when the hand box is delivered.
If you should prefer another language, you can change this accordingly.

Adjusting the language
To do so, press buttons "1+2+4+ON" at the same time on the hand box which has been switched off, and hold them for 5 seconds until the hand box has introduced itself and the language selection menu appears. Now use buttons "1" or "3" to select the required language. Press "4" to confirm your choice. (Other languages are available on request).

Button functions

"ON"	switches the hand box on; press and hold for 2 sec. to switch the lighting on
"1"	moves to the left in the menu or decreases values
"3"	moves to the right in the menu or increases values
"2"	moves backwards in the menu
"4"	moves forwards in the menu or confirms inputs.
"Man"	activates the manual mode
"OK"	start button and special functions

The power supply for the hand box consists of a 9V block battery. Please purchase a new top quality alkali battery when the display shows "Battery old". The battery must be replaced at the latest when the display shows "Battery flat".

Signal system type MPB 1400

The quartz-controlled signal system type MPB 1400 can be used for controlling traffic in construction sites with alternating one-way traffic, at T-junctions or crossroads.
The length of the red and green phases can be adjusted differently right down to the last second for all signals – so versatile is this new system!

For initial commissioning, please proceed as follows:

1.) Provide the signal head with 12 VDC operating voltage by placing the batteries or N1 type power supply units in the battery casing. Pay attention to correct polarity! The signal heads switch on automatically (electronic on/off switch).

2.) The signals now show "flashing yellow".

3.) If the signals have been placed next to each other for commissioning, please make sure that they are spaced at intervals of approx. 3 metres. This ensures that the infrared signals of the hand box can be unequivocally allocated to each individual signal..

Data can be entered in the hand box at any point in time, even in a different space and time from the signals themselves. Please proceed as follows:

<u>Alternating one-way traffic:</u>

1.) Press "ON" to switch the hand box on.
Press "ON" again and hold for 2 seconds to switch the display back lighting on if required.

2.) The hand box introduces itself:

Berghaus MPB 1400	Quartz- system	English V.1.00c

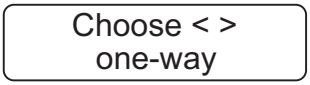
Then the display shows the menu point >Choose<.

Choose < > One-way

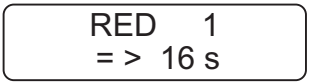
Press "1" and "3" to change values or make a selection (left/right). Use "2" and "4" to move through the menu. "2" takes you back and "4" moves you forward in the menu, and is used to confirm your inputs.

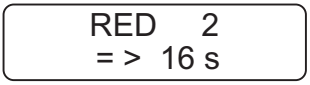
During initial commissioning, please use "2" to check the specific national settings for the red-and-yellow and yellow phases (e.g.: RdYe = 1 second, Yell = 4 seconds). These time settings are then saved as basic values for all future inputs. That means as a rule, you will not have to change these basic values any more. Press "4" several times to return to the menu point >Choose<.

3.) In the menu point >Choose<, use "1" or "3" to choose the required type of traffic control, e.g. "one-way" (function as bottleneck signal system in alternating one-way traffic).



4.) Press "4" to confirm your selection (e.g. "one-way"), thus moving to the next menu point. Stipulate the corresponding red phase (e.g. indicative values stated in the table on page 10 of these instructions, or sticker on the hand box) as >RED 1< using "1" and "3".
As a simple guide, you can calculate at least 12 seconds red phase for every 100 m construction site length, based on a clearance speed of 30 km/h. At gradients or on difficult ground, it is advisable to select different red phases >RED 1< and >RED 2<.





5.) Press "4" to go to menu point >RED 2<. Enter the required red phase as described above.

6.) Press "4" to confirm your selection and go to the next menu point >Green 1<.

Recommendation: for light traffic enter 15 to 20 seconds, for medium traffic 30 to 40 seconds and for heavy traffic 50 to 70 seconds for green 1 and green 2. It goes without saying that different green times can also be selected for every direction.

Adjust the required times using "1" and "3". Now proceed in the same way for >Green 2> and press "4" to confirm your inputs.

This already completes all the inputs necessary for alternating one-way traffic control!

The display now shows:

```
Start
1  >ok<
```

Please go to the signal which you want to program as signal 1. Hold the front of the hand box at a distance of approx. 1 metre face-to-face with the control housing under the green chamber. Now press "OK".

The LED display in the control flickers on reception. Signal 1 now starts the program, the signal head lights up and the hand box display shows:

```
Started?
yes >ok<
```

If signal 1 has started, press "OK" to confirm. Otherwise press "2" to go back one step in the menu. You can then start programming signal 1 again from the beginning. It may help to reduce the distance between the signal and your hand box when sending data, or improve the angle to the system if signal 1 does not start.

If you have pressed "OK" as confirmation, you now have up to 15 minutes time to program the second signal. The display therefore shows:

```
Start
2  >ok<
```

Now program the second signal as explained above. Please now check that the second signal has started up

```
Started ?
yes  >ok<
```

Press "OK" to confirm. You can now switch the hand box off, and use it to program other MPB 1400 signals located in other places.

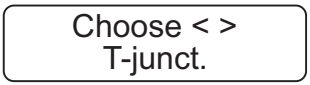
```
Box off?
>ok<
```

The signal system has now been successfully programmed with the data which you had entered previously in the hand box: alternating one-way traffic control has now started.

Please continue reading on the next page for programming the signal for traffic control at a T-junction or crossroads, with or without parallel signal heads.

T-junctions

1.) In the menu point >Choose<, use "1" or "3" to select the required type of traffic control, e.g. "T-junction" (function as signal system for traffic control at T-junctions).



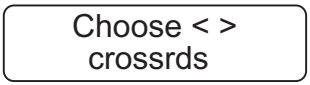
2.) Press "4" to confirm your selection (e.g. T-junction) and thus go to the next menu point. Use "1" and "3" to stipulate the corresponding red phases as >RED 1< to >RED 3<.

3.) Press "4" to confirm your selection and go to the next menu point >Green 1<. Use "1" and "3" to adjust the required green phases. Now proceed in the same way for >Green 2< and >Green 3<, pressing "4" to confirm your inputs.

This already completes all the inputs for traffic control at T-junctions: you can now program the signals accordingly, as described on page 5!

Crossroads

1.) In the menu point >Choose<, use "1" or "3" to select the required type of traffic control, e.g. "crossroads" (function as signal system for traffic control at crossroads).



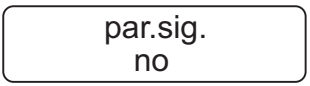
Now select the red and green phases as described above. This time, you have to enter four values in each case for red (1 – 4) and for green (1 – 4).

This already completes all the inputs for traffic control at crossroads: you can now program the signals accordingly, as described on page 4!

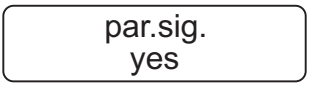
Parallel signal heads

If repeat signals are to be erected on the left-hand side of the carriageway, or if two synchronised signals are to be erected on the opposite side, you can use parallel signal heads for this purpose. Synchronised parallel signal heads can be programmed for traffic control as alternating one-way traffic, at T-junctions and also at crossroads.

To do so, after switching the hand box on, activate the submenu parallel signal heads "par.sig.". To do so, press "2" to go back in the menu until you see

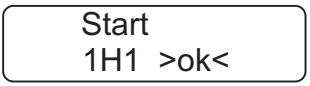


in the display. Press "3" to activate the inputs for parallel signal heads. ("1" would deactivate this choice again). The display shows



Press "4" to move on in the menu and now define the time phases necessary for the procedure as described above. You can then allocate the time inputs for each group to up to max. 9 synchronised parallel signals.

After entering the required number of parallel signal heads in the required groups, you can now program them according to your allocation and as described above. You will now see the corresponding menu for each signal head.



"1H1" stands for group 1 head 1. Press >OK< to start data transfer for every signal head. Please check the procedure as described above and confirm with the following:

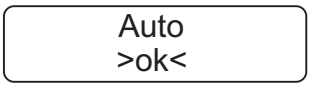
This already completes all the inputs for traffic control with parallel signal heads. Press >OK< to switch the hand box off.

Special operating modes

When the hand box is switched off, press "Man." and "On" at the same time to go to the special operating modes. When the box is switched on, please hold "Man." for at least 5 seconds.

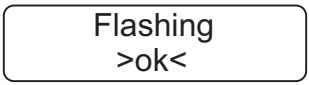
The display shows

Use "3" to scroll through the selection. "1" brings you back to the selection. To leave the manual mode,



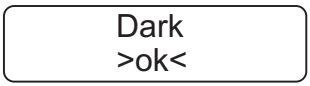
press "OK" at every signal head.

Flashing mode
Select



in the hand box. The selected signal head flashes yellow. Please repeat the input at the other signal head. To stop the flashing mode, switch back to Automatic as described above.

Lamps off / dark:
Select

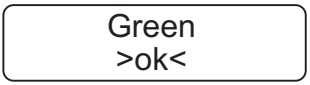


in the hand box. The selected signal head switches to dark (lamps off e.g. at night). All of the signal head lamps go off or stay dark. Please repeat the input at the other signal head. To stop the dark mode, switch back to Automatic as described above.

Continuous red:
Select

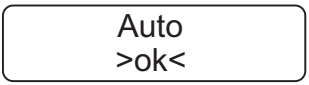
in the hand box. The selected signal head switches to continuous red (e.g. for moving a vehicle around in the construction site or when felling trees).
CAUTION! You must activate a defined status at both signal heads to avoid any misunderstandings in the construction site traffic! For example, if you switch signal 1 to "red", then you must set signal 2 either to "red" as well, or to "green". Please repeat the appropriate input at the other signal head. To stop the continuous red mode, switch back to Automatic as described above.

Continuous green:
Select

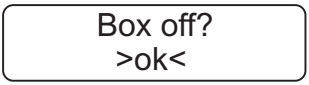


in the hand box. The selected signal head switches to continuous green (e.g. to release a traffic jam).
CAUTION! You must activate a defined status at both signal heads to avoid any misunderstandings in the construction site traffic! For example, if you switch signal 1 to "green", then you must set signal 2 to "red" beforehand. Please repeat the appropriate input at the other signal head. To stop the continuous green mode, switch back to Automatic as described above.

Automatic:
To leave the manual mode, press "OK" at every signal:



Now you can switch the hand box off. Use "2" or "4" to go to the menu point "Box off" and press "OK" to confirm. The hand box switches off.



GENERAL INFORMATION

Explanation of the LED display

The control housing of every traffic signal contains multi-coloured LEDs which provide the following information:

LED yellow – not on	=	Battery full
LED continuous yellow	=	Battery warning from approx. 10.5V
LED flashing yellow quickly	=	Battery flat (signal dark); Change battery within 5 minutes as otherwise the programmed data will be deleted.
LED flashing yellow slowly	=	Manual mode flashing yellow
LED continuous red	=	Manual mode continuous red
LED flashing red	=	Red defect (bulb); Please replace the bulb in the red chamber!
LED red/green (orange)	=	Manual mode dark (lamps off).

When traffic signals change from green to yellow, the green LED at the signal head programmed as signal 1 flashes once, twice at signal 2, three times at signal 3, etc. This shows you how the corresponding signal head has been programmed.

Battery change

When the battery has a voltage level of approx. 9V, the corresponding signal head switches the lamps off. Replace the "flat" battery with a fully charged 12V/170 Ah battery. (The battery/ies are accommodated in the battery casing at the bottom). The systems continue to work normally after changing the batteries. Changing the battery must not take longer than 5 minutes to avoid having to reprogram the signals!

Temporary interruption of operations

If the systems are temporarily decommissioned without deleting the program workflow, both signals have to be set to "dark" first. The batteries must not be disconnected. The program workflow continues internally, running on the connected power supply.

Longer interruption of operations

If the systems are decommissioned for longer periods of time, the batteries should be disconnected in both battery casings. The system switches off five minutes after the batteries have been disconnected: the LED flashing yellow quickly goes off. The systems will have to be programmed again for their next use.

Automatic photocell/night-time reduction

Signal heads type MPB 1400 are equipped with an automatic photocell/night-time reduction. This prolongs the battery change interval several times over.

User code

To stop other users from manipulating your MPB 1400 and to prevent any interference in the system while it is operating, you can stipulate your individual user code from 0 to 999. To create this code, after switching the hand box on, use "2" to go to the "User code" menu. Use "1" and "3" to select a personal number sequence. From now on, the signal code always has to be programmed with the same user code (or with the same adjusted hand box). To change the code, disconnect the batteries from the signal and wait for approx. 5 minutes until the LED flashing yellow quickly has gone off. The system will now accept any code. The delivery status is code 0, thus can be overwritten with any number sequence.

Table for adjusting the red phases (recommended)

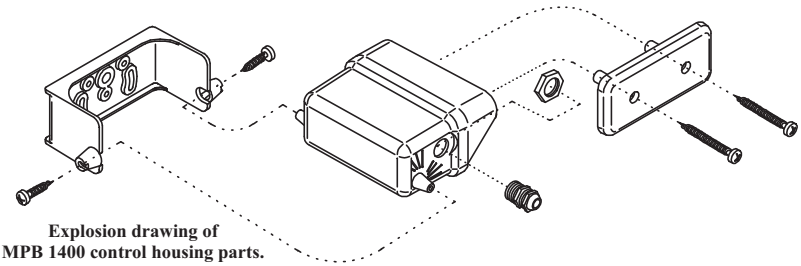
Red phases t_{red} [s] (including a safety phase of 4 seconds)

Construction site length [m]	Clearance speed [km/h]			
	18	30	40	50
50	14	10	9	8
100	24	16	13	12
150	34	22	18	15
200	44	28	22	19
250	54	34	27	22
300	64	40	31	26
350	74	46	36	30
400	84	52	40	33
450	94	58	44	37
500		64	49	40
600			58	48
700			67	55

t_{red}=construction site length [m] / clearance speed [km/h] * 3,6 (+ 4 s safety phase)

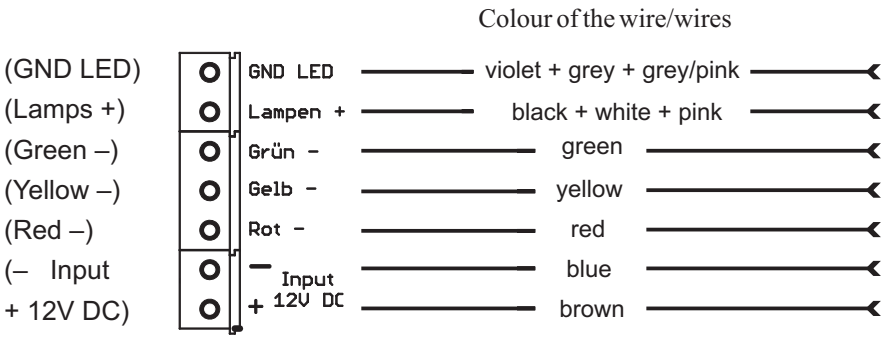
Replacing the control PCB

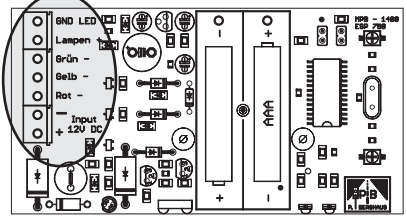
Open the control housing under the green chamber by unscrewing the two Phillips screws on the front just 2/3 of the way. Now carefully pull the front cover away by grasping the two screws.
When putting the front cover back on again later on, make sure that the seal in the control housing is correctly positioned. Before finally tightening the two Phillips screws again, please press the front cover at the four corners with your finger tips. In this way, you can make sure that the front cover seals properly onto the housing again.



Explosion drawing of MPB 1400 control housing parts.

To replace the control PCB, please separate from the operating voltage by disconnecting the batteries in the battery casing. Now disconnect the cable lead from the control PCB to the signal head by simply pulling the plug terminal upwards. This means that you do not have to unscrew the cables. Please pay attention to correct polarity when fitting the new control PCB.





The control PCB is fitted with buffer batteries (cannot be recharged) which maintain the program when changing the main battery.
For your own safety, replace these buffer batteries every twelve months, using top quality alkali micro batteries AAA.

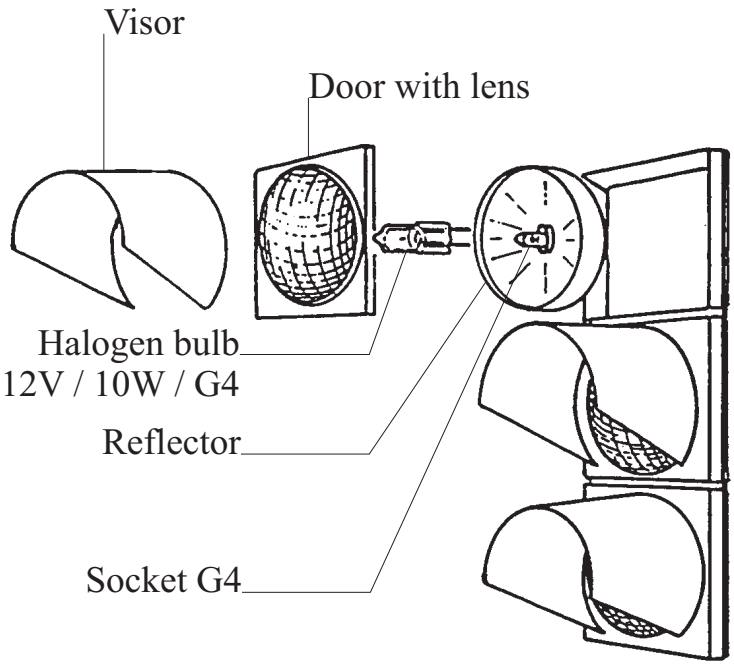
Replacing the halogen bulbs

The halogen bulbs can be replaced quickly without needing special tools: all you need is a medium-sized flat screwdriver.

Open the corresponding signal head chamber by using the flat screwdriver to press in the two snap clips on the right front side of the control door so as to hinge the door open. You are now looking at the back of the reflector: you can see four red ring eyelets holding the reflector around the outside. Now lift these holders off the reflector (without using a tool) and simply bend up all the ring eyelets. The reflector is released and you can now pull the bulb out to the front.

Replace the defect halogen bulb (12V / 10W / G4). Place the reflector in the signal head door and press the ring eyelets flush against the reflector again. Now close the signal head door until it engages in the two snap clips – that's all!

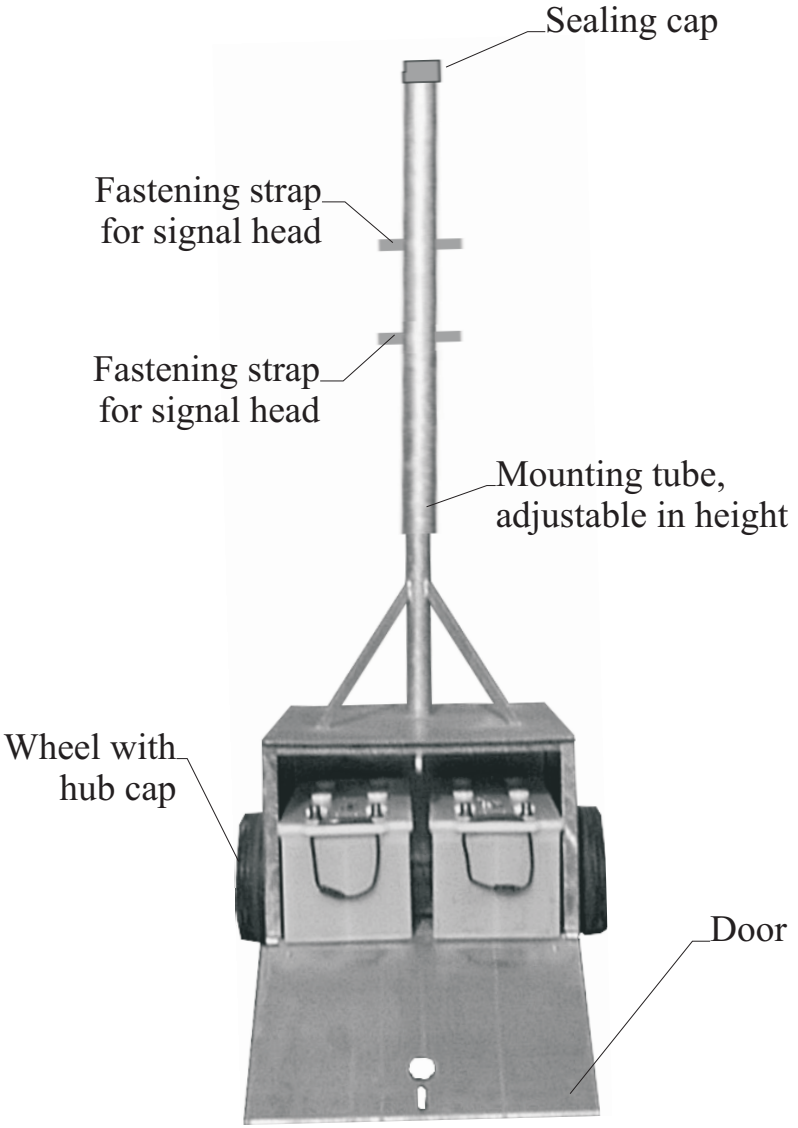
Signal head



Signal head, 3 parts,
with halogen lens
red – yellow – green

similar illustration

Aluminium traffic signal stand



similar illustration

Spare parts list:

Article: **Traffic signal system type MPB 1400**

Order.-No.:	Article
ESP 750	Control PCB for signal system MPB 1400
EP 6048	Control housing for MPB 1400 with seal, without holder
EP 6047	Holder for control housing MPB 1400
EP 6047 M	Rubber seal for control housing MPB 1400
PB 1450	Hand box (infrared remote control) for MPB 1400
ESP 760	PCB for hand box MPB 1400
PB 1451	Housing for hand box with key pad – without electronic module
PB 1408	Signal head type MPB 1400, front black, completely wired, connection lead hanging from the signal head for connection to existing control housing, without control, without mounting tube and without battery cable
EA 2010	Signal head rear panel type Austria, 210 mm, 1-part
EA 2012	Cover cap for signal head type Austria, for red and green chamber, complete
EA 2016 S	Signal head door type Austria, front black, 210 mm, without lens
EA 2017 S	Signal head door type Austria, front black, 210 mm, with red lens
EA 2018 S	Signal head door type Austria, front black, 210 mm, with yellow lens
EA 2019 S	Signal head door type Austria, front black, 210 mm, with green lens
EA 2020	Lens red, type Austria, 210 mm
EA 2021	Lens yellow, type Austria, 210 mm
EA 2022	Lens green, type Austria, 210 mm
EA 2030	Visor type Austria, 210 mm
EI 0024	Reflector, 210 mm, with halogen socket G4
EI 0023	Reflector, 210 mm, for halogen socket G4
EG 0084	Socket G4
EG 0041	Halogen lamp 12 V / 10 W / G4
EH 2100	LED signal module RED for MPB 1400 as replacement
EH 2110	LED signal module YELLOW for MPB 1400 as replacement
EH 2120	LED signal module GREEN for MPB 1400 as replacement
ES 3097	Socket plug, 3-pin, for LED module to cable harness
ES 3098	Plug, 3-pin, for LED module system
EK 0003	Battery cable black, 2x2.5 mm² for MPB 1400 with ring eyelet, without battery lugs
EI 0041 M	Battery terminal (+) red
EI 0042 M	Battery terminal (-) blue
A 49590	Battery protective casing made of aluminium for 1 battery
A 49600	Battery protective casing made of aluminium for 2 batteries
EE 0009	Linch pin for battery casing
EE 0006	Wheel, solid rubber
EE 0003	Cover cap for wheel
EE 0004 A	Aluminium mounting tube for MPB 1400
EE 0014	Cover cap for mounting tube
EE 0005	Wing screw M 10x30

Peter Berghaus GmbH
Verkehrstechnik • mobile Schutzwände

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EG – Konformitätserklärung

Für das folgende Erzeugnis:

Transportable Signalanlage Typ MPB 1400

wird hiermit bestätigt, daß es den Schutzanforderungen entspricht, die in der Richtlinie 89/336/EWG des Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit festgelegt sind, außerdem entspricht es den Vorschriften des Gesetzes über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 9. November 1992.

Diese Erklärung gilt für alle Exemplare, die nach den anhängenden Fertigungszeichnungen – die Bestandteil dieser Erklärung sind – hergestellt werden.

Zur Beurteilung des Erzeugnisses hinsichtlich der elektromagnetischen Verträglichkeit wurden folgende einschlägige harmonisierte europäische Normen herangezogen:

1. Fachgrundnorm Störfestigkeit EN 61000-6-1 für Wohnbereiche, Geschäfts- und Gewerbebereiche sowie Kleinbetriebe

2. Elektromagnetische Verträglichkeit (EMV Teil 6-3), Fachgrundnorm Störsendung EN 61000-6-3 für Wohnbereiche, Geschäfts- und Gewerbebereiche sowie Kleinbetriebe

3. Signalsicherung nach VDE 0832 und RiLSA

4. Funkgeräte: ETSI EN 300 220-1, -2 / V.2.1.1. (2006-04)
   ETSI EN 301 489-1, -3 / V.1.4.1. (2002-08)

Kürten
(Ort)

25.03.2011
(Datum)

Peter Berghaus GmbH
Verkehrstechnik • mobile Schutzwände
Herrenhöhe 6 · 51515 Kürten
Tel. 0 22 07 / 96 77-0 · Fax 96 77 80
(Unterschrift)

Warranty for defects

We offer a

24 month guarantee

for the signal systems produced by our company.

The guarantee covers all material and workmanship faults caused by faulty manufacture during this period of time.

Please send systems and parts of systems for replacement to our factory, postage/freight prepaid. We only replace parts showing faults in the material or workmanship. There are no claims to rescission or abatement, unless we are not able to rectify the damage.

No further claims can be fulfilled, in particular claims for damages as a consequence of defects.

The necessary time and opportunity to proceed with guarantee repairs must be made available following previous agreement. The guarantee becomes null and void if the customer or third parties make changes or repairs without prior consent. The guarantee does not cover any wear or damage caused by negligent or incorrect handling.

If in exceptional cases at the customer's request warranty repairs are to be carried out on site, i.e. at the road works where the system causing the complaint has been installed, the service technician's travel expenses and journey times are not covered by the warranty and shall be invoiced separately to the client.

The place of jurisdiction for all claims arising from the business relationship is Bergisch Gladbach, Germany.

General transport instructions for mobile traffic signal systems

Please note!

Our construction site traffic signal systems must always be transported standing upright on open vehicles with the lens hood pointing in the opposite direction.

To prevent any water damage, all signal head chambers and the controller housing must always be closed properly and the controller housing should also be locked!

Failure to comply with these instructions automatically renders the warranty null and void!

P. BERGHAUS

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