![HERAS]

User Manual [UK]

Sliding gate: Odysseus + Delta

Motor: Type ET

Odysseus

Delta

Heras productie maatschappij B.V.   Gebr ET Odysseus
Delta_130607_UK
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Gebr ET Odysseus

13-6-2007

1 GENERAL

1.1 Manufacturer / supplier

Manufactured by: Heras Productie Maatschappij B.V.
Hekdam 1 , 5688 JE Oirschot   The Netherlands

Supply and assembly: Dealer name
street
place

1.2 Using this manual

This user manual describes how the cantilever sliding gate, hereinafter referred to as the 'gate', should be operated and what actions should be taken in the event of breakdown.
This document also deals with maintenance and safety aspects.

The contents of this document are intended for the operator of the gate and for the technician responsible for its installation.
The technician will use a separate manual for installation of the motor unit on the gate. This will include an assembly diagram for the motor unit in question and this will operate in conformity with the Dutch NEN 1010 standard.
For technical defects of whatever nature, a qualified dealer name technician must be consulted.
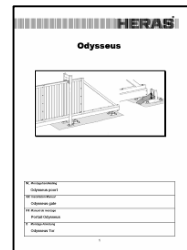
1.3 Definitions of User / Operator / Technician

User: Anyone using the gate
Operator: A user who is familiar with all safety aspects dealt with in this document. The operator is not permitted to carry out any installation work on the gate unless explicitly specified.
Technician: The technician is the person appointed by the dealer name (including a client's employee specifically appointed for this purpose by Heras) who is qualified to carry out technical work on the gate.

1.4 Service / Maintenance / Dealer

In the event of problems, defects or questions please contact:

Dealer name   **Telephone: <tel. dealer>**
Fax: <fax dealer>

Copies of this manual can be (re)ordered via the telephone or fax number listed above.

1.5 Conformity with European guidelines

Installation is carried out in conformity with the following EU Guidelines.
98/37   EC   Machinery Directive
73/23   EEC   Low voltage Directive
89/336/EEC   EMC Directive (electromagnetic compatibility)

The declaration of conformity can be found in appendix C.
The nameplate is affixed on the front or rear side of the gate.

2 Installation

End stoppers (slam support front and rear) must be used at the "open" and "closed" positions. The stopper for the closed position will also prevent the existing safety contact profiles from being actuated.

The foundations of gate and gate opener must be free from frost. The opener must be at least 30mm higher than the surrounding terrain and at least 100mm from the gate opening. Make sure sufficient cable or cable conduit is laid before the foundation is cast.

2.1 Mounting the rack

The plastic rack is delivered in lengths of approx. 500 mm. Connect these elements and insert them into the aluminium profile. The springs supplied will form the end of the rack on the left and on the right.

There is no warranty if the rack is used without these springs!

The toothrack holder needs to be fitted at both ends with springs and cover plates. Use the cover plates as a template, drill the holes (Ø 2,5mm and Ø 8mm) so that the toothrack holder is closed by the cover plates.

- Fit the first cover plate at one end with a spacer sleeve and affix the spring.
- Slide the toothracks into the toothrack holder, until the first toothrack reaches the spring with cover plate.
- Pull the last toothrack back slightly out of the section and shorten this so that the second spring fits in the holder.
- Now fit the second cover plate with spring and cover plate and spacer sleeve.

Caution: the springs should not be pressed too firmly!
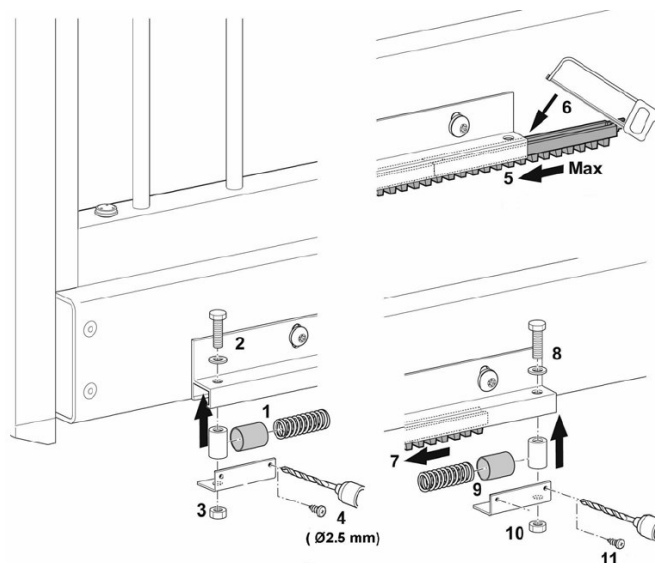
2.2   Installating the motor unit

- Loosen the 4 screws of the hood and remove the hood.
- Now you have access to all holes for cables and ground fixation.
- Place the opener (with 65 mm distance from the gate) with the back parallel to the gate and in the centre between the wheel carriages.
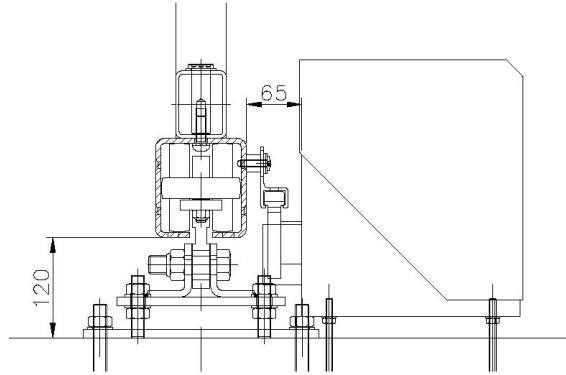
Principle Odysseus

- Mark the middle of the elongated holes on the foundation.
- Take the opener from the foundation and drill holes for 8-10mm Ø fixing screws.
  More details about the anchors can be found in the foundation drawing.
- Position the anchors and fit these with a nut and washer.
- Position the motor unit on the anchors.

For Delta gates, the motor unit is fixed to the support provided.
This support is attached to the portal by means of clamping brackets.
More details can be found in a separate manual "assembly manual for 10 motor unit ET"

2.3   Adjusting the motor unit

- Position the toothrack holder in such a way that this can be slid upwards/downwards.
- Position the gate leaf in a central position.
- Adjust the height of the motor unit so that the toothed wheel falls into place in the toothrack.
  Caution: The toothed wheel must have some play in the toothrack (approx. 1mm)!
  The motor should be connected
- Check that the motor unit runs parallel with the gate leaf and is level.
- Tighten the nuts on the motor unit.
- Check that the toothed wheel runs along the centre of the toothracks.
  Slide the gate open and closed and check that the tolerance is approx. 1mm in all places.
  If necessary, adjust the height of the motor unit/toothrack.
  Check again that the toothrack is correctly fitted and that all screws on the toothrack
holder and the motor unit are tightened.

Caution: the emergency release must be secured in each position.

3 Safety when using and during work in progress

3.1 Safety in general, view of opening

Despite all safety and precautionary measures, the following aspects must be taken into account when using the gate:
- The direct vicinity of the gate must remain within view.
- While the gate is in motion, it is strictly forbidden for any external object to come into contact with the gate so that it can become obstructed.
- Keep a safe distance when the gate is in motion. Warning signs have been put in various places for this purpose. (See Appendix B: Placing Warning signs).
- Keep the passage of the gate free of snow and ice.

For gates with a dead man override, often without safety precautions, it must be possible to oversee the opening and the entire movement of the gate.

NL) HOUDT VOLDOENDE AFSTAND BIJ IN BEWEGINGZIJNDE POORT
D) WENN TOR IN BEWEGUNG IST, AUSREICHENDEN ABSTAND HALTEN
GB) KEEP A SAFE DISTANCE WHEN THE GATE IS IN MOTION
F) RESTEZ SUFFISAMMENT À L'ÉCART DU PORTAIL LORSQU'IL SE TROUVE EN MOUVEMENT
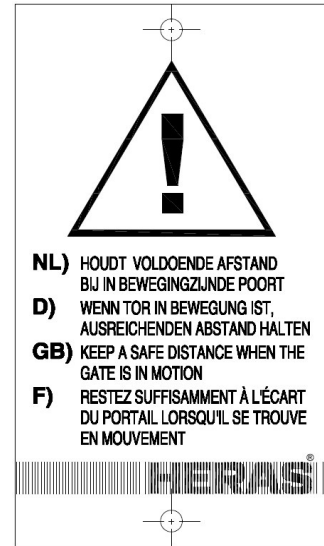
3.2 Safety during work in progress and when installing

Safety regulations
- Before using the gate for the first time, the user must read the user manual in full. The safety regulations in the manual must be observed at all times. Improper use can lead to unexpected hazards and is therefore forbidden.
- When the gate is being installed, the mains switch needs to be set to the "**OFF**" position and protected against unauthorised activation.
- If the gate needs to be operated manually, the isolation device in the motor unit must be set to the "**OFF**" position and secured (This can be done by allowing the toothed wheel of the motor unit to drop using a hexagonal ey) to prevent activation.
- Ensure that motor unit is always closed during use. The motor unit must only be opened by a technician with electro-technical qualifications.

For Heras gates the following applies: "Safety" takes precedence over "Control" and "Opening" takes precedence over "Closing".

3.3 Safety precautions on the gate

3.3.1 Personal safety and regular inspection

Depending on the configuration of the gate and the adjacent fencing, safety strips will be affixed at various points where there is a risk of entrapment. See Appendix A: Installation of personal protection device

The safety strips should be inspected visually regularly (once a month) to check that they are undamaged and work properly.

The procedure for inspection is as follows:
- All safety strips intended to prevent entrapment when *opening* the gate, are checked by pressing when opening. The gate will stop immediately and reverse direction. The LED *"SLA"* will light up.
- All safety strips intended to prevent entrapment when *closing* the gate, are checked by pressing when closing. The gate will stop immediately and reverse direction. The LED *"SLZ"* will light up.
- The safety strip on the gate is a passive strip (Odysseus). If the strip comes into contact with an object, at a certain level of resistance, the gate will immediately come to a standstill and reverse in direction.
- The gate should be regularly be checked to make sure it can move unimpeded. The area of movement and guider (lower beam) must be free of snow and ice, weeds or any other objects that might impede the movement of then gate.
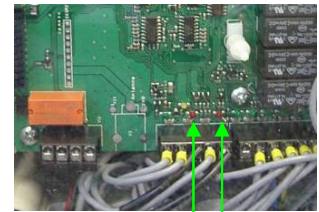
SLA   SLZ

If these do not work, the gate should be deactivated since safety cannot be guaranteed. You should contact the Service / Maintenance / Dealer.

3.3.2 **Emergency release**

The emergency release can be found on the sides of the motor unit. This stops the movement of the gate, on the one hand due to the fact that the toothed wheel comes free from the toothrack, on the other hand as a result of a switch which stops the motor unit. The gate can only be operated again when the emergency release has been switched off.

- Insert the hexagonal key SW6 into the hole marked X and turn the mechanism 180° to the left. The gear wheel is now located lower and the power supply of the controller is interrupted (display E7).

The height of the pinion axis is approx. 87mm (on delivery) and can be altered ±15mm if required. Make sure that the opener can still be disengaged after adjusting the height.
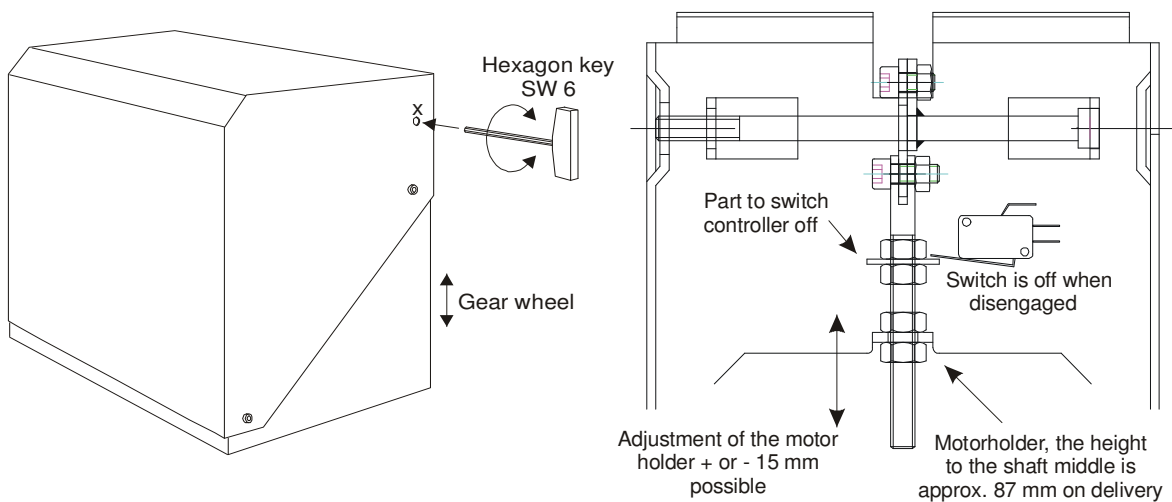
3.3.3 **Infrared / vehicle protection device in the gate opening (optional)**

This protection device prevents the gate closing when vehicles pass through the opening. If the device is activated when the gate closes, the motion of the gate will stop and it will open fully. It is possible to resume closure of the gate when the opening is clear; for *automatic closing* this will occur automatically after the pre-set time.

The aforementioned mechanism is required to be checked every month.

3.3.4 **General notes of safety**

These operating instructions must be available on site at all times. They should be read thoroughly by all persons who use, or service the appliances. Improper usage or servicing or ignoring the operating instructions can be a source of danger for persons, or result in material damage. If the meaning of any part of these instructions is not clear, then please contact your supplier before you use the appliance. This applies to all set-up procedures, fault finding, disposal of material, care and servicing of the appliance. The accident prevention regulations, applicable technical regulations (e.g. safety or electrical) and environmental protection regulations of the country in which the appliance is used also apply. All repairs on the appliances must be carried out by qualified persons. The supplier accepts no liability for damage which is caused by using the appliance for purposes other than those for which it is built. The supplier cannot identify every possible source of danger in advance. If the appliance is used other than in the recommended manner, the user must ascertain that no danger for himself or others will result from this use.
He should also ascertain that the intended use will have no detrimental effect on the appliance itself. The appliance should only be used when all safety equipment is available and in working order. All faults which might present a source of danger to the user or to third persons must be eliminated immediately. All Warning and Safety notices on the appliances must be clearly legible. All electrically operated peripheral devices which are connected to the appliance must have a CE Mark, which ensures that they conform to the relevant EEC regulations. Neither mechanical nor electrical alterations to the appliance, without the explicit agreement of the manufacturer, are permitted. All alterations or extensions to the appliance must be carried out using parts which the supplier has defined as suitable for such alterations, and be carried out by qualified personnel. Any contravention of these conditions revokes the manufacturer's guarantee and also the CE Mark and the user alone is responsible for the consequences. Our service department is available to answer all queries about these conditions and, of course, about our appliances. The operation of the system within CEN countries must also conform with all relevant European safety directives and standards.

4 Installing and operating the gate

4.1 Controller MO 46

Connection plan for controller MO 46

L1
N
PE

transformer

fuse

MO46

ASU2

socket for
timer module ASU2

socket for radio remote
control receiver

LS-Test

MOTOR

IMPULS

LERN

BTG

BT

SYNC

24V-motor
with pulser

SYNC / RELEASE

Multi	⊗ multi-functional relay 230Vac/max. 60W
Warn	⊗ warning light 230Vac/max. 60W
Rot	⊗ red traffic light 230Vac/max. 60W
Grün	⊗ green traffic light 230Vac/max. 60W

Vp

LS   SLA   SLZ   BT BG BA BZ   BS

SLA $_{8,2kO}$
SLZ $_{8,2kO}$
BT
BTG
BA
BZ
STOP

24V 0V   LS-transmitter 1
24V 0V   LS-transmitter 2-6

24V 0V   LS-receiver 1
24V 0V   LS-receiver 2-6

photo-cells

1k0   1k0

4.2 Internal wiring Odysseus sliding gate

contact profile evaluation
with 8,2kOhm resistor
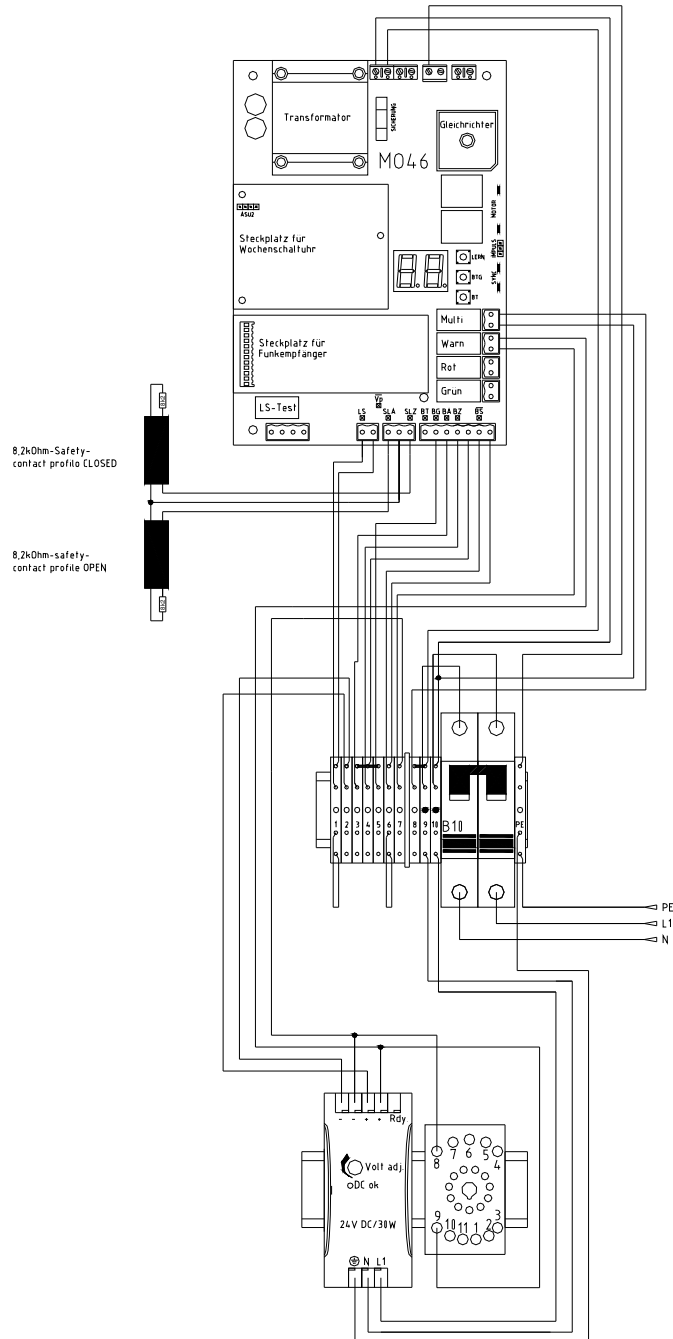
8,2kOhm-Safety-contact profile CLOSED

8,2kOhm-safety-contact profile OPEN

PE
L1
N

1o - 1u	LS
2u	0V
2o	24Vdc
3o - 3u	BA
4o - 4u	BZ
5o - 5u	BTG
6o - 6u	BTS
7o - 7u	Warning light (24Vdc)
8o - 8u	MULTI (230Vac)
9o - 9u	N
10o - 10u	L1

4.3 Internal wiring Delta sliding gate

Inductive contact profile
evaluation with
ASO-System
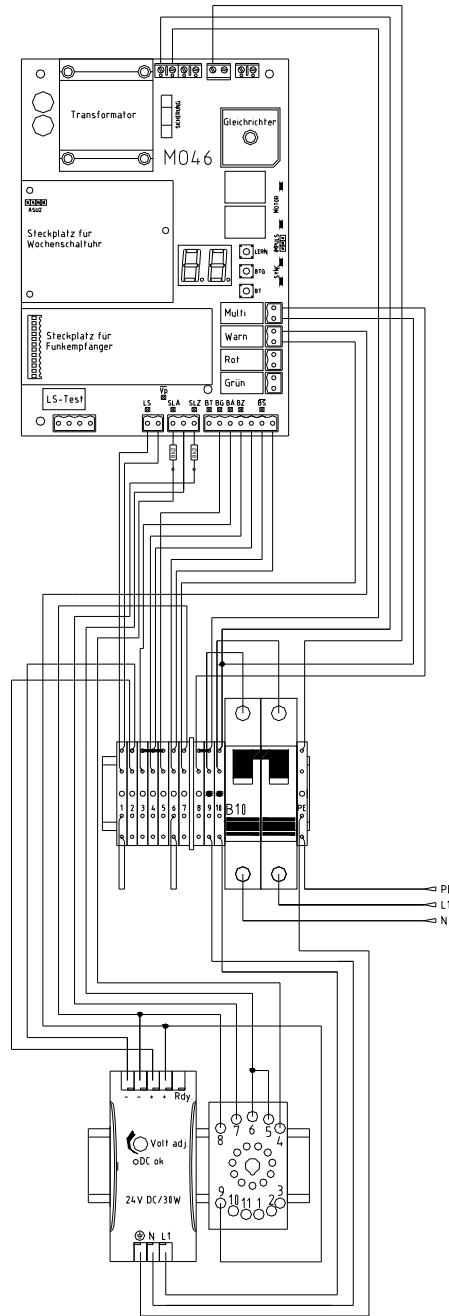
1o - 1u	LS
2u	0V
2o	24Vdc
3o - 3u	BA
4o - 4u	BZ
5o - 5u	BTG
6o - 6u	BTS
7o - 7u	Warning Light (24Vdc)
8o - 8u	MULTI (230Vac)
9o - 9u	N
10o - 10u	L1

4.4 Connections of the controller MO46

4.4.1 Controller input terminals

Input	Version	Connection	Function
BT	n.o. contact	1 pin screw-plug-terminal	Push button for complete opening
BTG	n.o. contact	1 pin screw-plug-terminal	Push button for partial opening
BA	n.o. contact	1 pin screw-plug-terminal	Push button OPEN
BZ	n.o. contact	1 pin screw-plug-terminal	Push button CLOSE
Ground	-	1 pin screw-plug-terminal	Mutual ground for BT, BTG, BA, BZ
BS	n.c. contact	2 pin screw-plug-terminal	Push button STOP. Redundant detection on the controller according to EN954-1 category 3
LS	Max. 6 photo-cells with n.c. contact and terminating resistor 1kΩ	2 pin screw-plug-terminal	Photo-cells according to EN954-1 category 2
SLA SLZ	Resistor detection: n.c. contact with 8,2kΩ resistor serial	2 pin screw-plug-terminal	Integrated detectors with testing function (according to EN954-1 category 2) for safety contact profile for gate OPEN (SLA) and CLOSE (SLZ)
Ground	-	1 pin screw-plug-terminal	Mutual ground for SLA and SLZ
IMP	Pulser	3 pin. connecting plug, not protected against misconnecting	Pulser
SYNC	Emergency release	2 blade terminals	Synchronising switch for emergency release
SU		Plug socket	Connection for timer ASU2
Funk		Plug socket for receiver EKX1OF or receiver with decoder	Integrated radio remote control decoder: BT, BTG, Multi
Mains L1,N,PE	-	3 pin screw terminal	Power supply for the controller 230Vac L1, N, PE
Trafo 24V		2 pin screw terminal	Connection for the secondary winding of the main transformer

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4.4.2 **Controller output terminals**

Output	Version	Specification
Motor	2 blade terminals	Connection for 24Vdc motor
WARN	2 pin screw-plug-terminal	Potential free contact for warning light. max. 230V / max. 60W
RED	2 pin screw-plug-terminal	Potential free contact for red traffic light, max. 230V / max. 60W
GREEN	2 pin screw-plug-terminal	Potential free contact for green traffic light, max. 230V / max. 60W
MULTI	2 pin screw-plug-terminal	Multi-functional relays, potential-free relay-contact, max. 230V / max. 60W
Uext	3 pin screw-plug-terminal	24Vdc and 12Vdc, mutual ground terminal, stabilised direct voltage, together max. 300mA, ground terminal is connected with controller ground
LS-TEST	1 pin screw-plug-terminal	24Vdc for photo-cell transmitter
PE	1 pin screw-terminal	Connection for earth PE
Trafo 230V	1 pin screw-terminal	Connection for the primary winding of the main transformer

4.4.3 **Buttons on the controller**

Mark	Function
BT	Same function as external button BT
BTG	Same function as external button BTG
LERN	Starting the learning mode
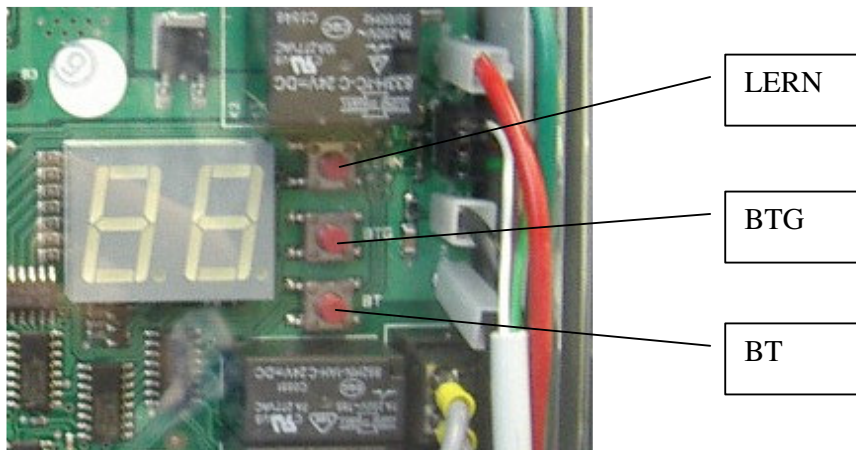
4.4.4 **Light display on the controller**

Mark	Colour	Function
Vp	Yellow	Lights when connected to main power
SLA	Red	Lights, when safety contact profile SLA active
SLZ	Red	Lights, when safety contact profile SLZ active
BT	Green	Lights, when the contact is closed
BTG	Green	Lights, when the contact is closed
BA	Green	Lights, when the contact is closed
BZ	Green	Lights, when the contact is closed
BS	Green	Lights, when the contact BS is closed
LS	Green	Lights, when LS is interrupted
Display	Red	2-digit 7-segment-display
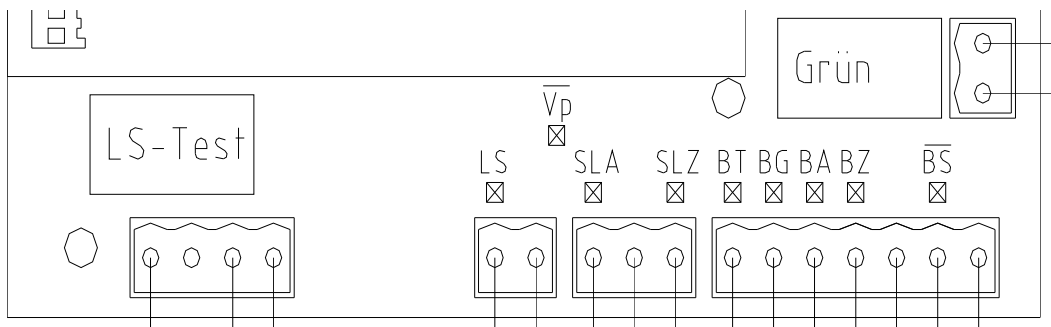
4.5 Operation

The drive works in sequential logic over serving tracer (**BT**) or radio controller.
1. actuation: the drive starts.
2. actuation: the drive stops.
3. actuation: the drive starts in opposite direction.
4. actuation: the drive stops.

4.6 Operational characteristics

4.6.1 **Electrical installation**

Again make sure that the rack is mounted correctly and that all screws of the rack and the drive are firmly tightened. Check the position of the rack during start-up, adjust the height of the drive if necessary.

The use of the emergency release must be guaranteed in every gate position.
If the gate closes to the left –as viewed from the gate opener, switch the red and the green motor connection wire on the controller.

4.6.2 Perfomance after main switch-on and emergency release

When the controller is switched on, the exact position of the gate is not immediately known. At first therefore, only the running direction **CLOSE** with speed stage 1 is permitted. The gate position is not known before the gate is closed completely and is switched off by force detection in the end position **CLOSED**. The controller now switches over to normal mode.

Remark: When, after power failure / emergency release, an obstacle is present in the gate; the controller identifies the obstacle as end position **CLOSED**. If the gate is now opened, then it will pass over the end position **OPEN**. So, an emergency end stopper is needed at the end position **OPEN**. It is now necessary to switch off and then on and another closing procedure has to be executed.

When automatic closure for complete and/or partial opening is selected, automatic closure follows after mains switch-on. With automatic closure for complete opening the stay-open time for complete opening is used, otherwise the stay-open time for partial opening. There is no automatic closure after emergency releasing.

4.6.3 Control sequence by BT and/or BTG in normal operation with self-retain

4.6.3.1 Serial switching by BT and the associated radio remote control channel

Without automatic closure for complete opening: The gate can be operated by **BT** in serial switching **OPEN**-**STOP**-**CLOSE**-**STOP**. In case the gate is in the partial opening position, **BT** is used for closing.
With automatic closure for complete opening: When the gate is not in the end position **OPEN**, then **BT** is used to open the gate. When the gate is in the end position **OPEN**, **BT** is used for closing.

4.6.3.2 Pedestrian opening by BT and the associated radio link

Without automatic closure for partial opening: Is the gate not in the selected partial opening position, use **BTG** to move it into the partial opening position. When the gate is moving use **BTG** for stopping.
Priority sequence: Opening up to the end position has priority over stopping through **BTG**. If the gate is in the partial opening position use **BTG** for closing.
With automatic closure for partial opening: If the gate is not in the selected partial opening position, use **BTG** to move it into the partial opening position. If the gate is in the partial opening position use **BTG** for closing.

4.6.4 Operation by BA, BZ and BS

BA has the function **OPEN**, **BZ** has the function **CLOSE** and **BS** has the function **STOP**. As long as **BS** is pressed, no gate movement is possible. The automatic closure is blocked by **BS**. When **BS** is released, a new operation command must be given. As long as **BA** is pressed, the gate cannot close.

4.6.5 **Priority sequence**

BA has priority over **BT**, **BTG** and **BZ**. When **BA** is pressed and the gate opens, it cannot be stopped using **BT** or **BTG** or closed using **BZ**. The opening into the end position **OPEN** has priority over partial opening. Stopping by **BTG** is not possible when opening into the end position **OPEN**.

4.6.6 **Automatic closure for complete opening**

Automatic closure for full opening can be selected in the learning sequence.
- If **LS** or **SLZ** or **BA** is active during the stay-open time, the stay-open time elapses but the gate remains open.
- If **BA** is pressed in the end position **OPEN**, then the stay-open time restarts.
- If channel 1 on the timer (ASU2) is activated, the stay-open time elapses but the gate remains open.
- The blocked automatic closure is released by a **BA**-command and the stay-open time restarts.
- The gate closes automatically when the stay-open time has elapsed provided the automatic closure is not blocked and no safety device or **BA**-command prevents the closing.
- The gate closes immediately when **BT** or **BZ** is pressed in the position **CLOSE**.
- When delayed closure is activated and a **CLOSE**-command is stored then the gate closes immediately after reaching the end position **OPEN**.
- When **BT** is pressed during automatic closure, stop and reversing in direction **OPEN** occur.

4.6.7 **Automatic closure for partial opening**

Automatic closure for partial opening can be selected in the learning sequence.
- When the gate is not in the partial opening position and the **BTG**-button is pressed, the gate is moved into the partial opening position.
- When the partial opening position is reached the selected stay-open time for the partial opening starts to elapse.
- If the gate is in the partial opening position use **BTG** for closing.
- If **LS** or **SLZ** is active during stay-open time, the stay-open time still elapses further. The gate closes when the time has elapsed and neither **LS** nor **SLZ** are active
- Automatic closure is blocked when **BS** is pressed.
- The gate opens completely when **BA** is pressed.
- The gate closes completely when **BZ** is pressed.
- If channel 1 of the timer is activated, the gate opens completely.
- After mains switch-on automatic closure is possible.

4.6.8   **Dead man's mode**

Dead man's mode can be selected in the learning sequence. The buttons **BA** and **BZ** give no maintained command during dead man's mode. The gate can be opened and closed manually using **BA** and **BZ**. The gate moves as long as the button is pressed and stops when the button is released.

- When **BS** is activated, no gate movement is possible.
- Photo-cells are monitored and cause **STOP**.
- SLA, **SLZ** and Force are monitored and cause **STOP** und reversing for a short distance.
- When **LS**, SLA or **SLZ** report or when their testing is negative, operation in emergency mode is possible.
- **BT** and **BTG** and the matching radio remote control have no function during dead man's mode.

4.6.9   **Emergency mode**

When **BT**, **BTG**, **BA** or **BZ** are pressed and the gate movement is prevented by a reporting or faulty **LS** or **SLA** or **SLZ**, then the controller changes into emergency mode. Here the warning light flashes for 10s. Then the gate can be moved by **BT**, **BTG**, **BA** or **BZ** in dead man's mode even thought the safety device reports.

- Failure of a safety device means, that the photo-cell test or the safety contact profile test failed or that either one reports an obstacle.
- The operating buttons have to be installed at a location from which the gate can be seen during operation.
- Emergency mode by internal radio remote control is not possible.
- Force detection, reaching of the end positions, impulse failure detection and **BS** are still monitored and cause **STOP**.
- **ATTENTION! External equipment which gives a constant signal and is connected to BA or BZ can trigger the emergency mode and move the gate when a safety device failed or is activated.**
- When the multi-functional relay is used for an additional radio remote control channel and this is connected to **BA** or **BZ**, the emergency mode can be triggered by radio remote control. In this case only stationary transmitters are allowed from which location the gate can be seen.

4.6.10   **Emergency mode with automatic closure for complete opening by BT**

When the gate is not open it will be opened by **BT**. When however a safety device for direction **OPEN** fails, then pre-warning before emergency mode is started and the gate is opened in emergency mode until push button **BT** is released. Closing by **BT** in emergency mode with selected automatic closure is only possible from end position **OPEN**!

4.6.11 **Emergency mode after power switch-on and after emergency release**

When the controller is switched on, initially the gate position is not known and only the running direction **CLOSE** is permitted. When a safety device for direction **CLOSE** failed then pre-warning before emergency mode is started and the gate is closed in emergency mode until **BT**, **BTG** or **BZ** is released. When the end position **CLOSED** is reached and the gate is stopped by force detection, then the controller changes into normal mode. Opening in emergency mode before reaching of end position **CLOSED** is not possible.

5 Safety functions

5.1 Force detection, obstacle detection and end position detection

During learning function via running distance for opening and closing the controller has determined and saved the force required. During operation the actual force is compared with the learned force. When the actual force is higher than the learned force by more than one selected force reserve, then stop by force detection occurs.

Force detection during opening	Force detection during closing
Stop and reversing for a short distance	With automatic closure in the OPEN position result is stop and opening. After two attempts to close by automatic closure or without automatic closure at the OPEN position or during dead man's mode, only stop and reversing for a short distance.

5.2 Force detection after mains switch-on and after emergency release

Since after mains switch-on the gate position is not known, the maximum value of the learned force during closing is used as value for force detection

5.3 Pulser control

When the pulser fails, the controller reaction is the same as with force detection. Additionally an error code is issued and the controller is blocked.

5.4 Synchronising to end position CLOSED

The force detection normally causes short reversal. However, within the synchronising area (short distance before end position **CLOSED**) the controller evaluates the force detection correctly not as an obstacle but as end stopper. Only **STOP** occurs but no short reversal follows. The internal position counter is being synchronised to the end position.

5.5 Running time limit

The end position **OPEN** is reached by impulse counting. A running time limit is not necessary. The controller always stops at the calculated position. In the end position **CLOSED** synchronisation occurs by force detection. In case of no force detection at the calculated position, automatic stopping after a running time reserve follows. The controller issues an error code and then it blocks.

## 5.6 Safety contact profile for gate OPEN (SLA) and for gate CLOSED (SLZ)

The controller has two integrated detectors with testing function according to EN954-1 category 2 for safety contact profiles, with resistor detection for safety at the closing edge in direction **OPEN** and **CLOSE**. During learning function of the controller, it recognises the type of safety contact profile connected. The status of the safety contact profiles is displayed by the red LEDs **SLA** and **SLZ**. During actuation of a safety contact profile the corresponding LED is lit.

- The safety contact profile **SLA** protects the running direction **OPEN**. When **SLA** reports only emergency mode is possible for opening.
- When **SLA** reports during opening, stop and short reversal occur.
- The safety contact profile **SLZ** protects the running direction **CLOSE**. When **SLZ** reports only emergency mode is possible for closing.
- When **SLZ** reports during opening, the following applies: With automatic closing **STOP** and opening occur. After two attempts to close by automatic closure or without automatic closure or during dead man's mode, only stop and reversing for a short distance occur.

5.7 Safety contact profiles with 8,2kΩ terminating resistor

Closing contacts with 8,2kΩ ±5% parallel resistor or opening contacts with 8.2kΩ ±5% serial resistor can be connected. If safety contact profiles are not used, the corresponding terminal has to be connected to ground by an 8.2kΩ ±5% resistor.
More than one safety contact profiles with 8.2kΩ terminating resistor can be switched in series as shown in the drawing below. The safety category remains the same.
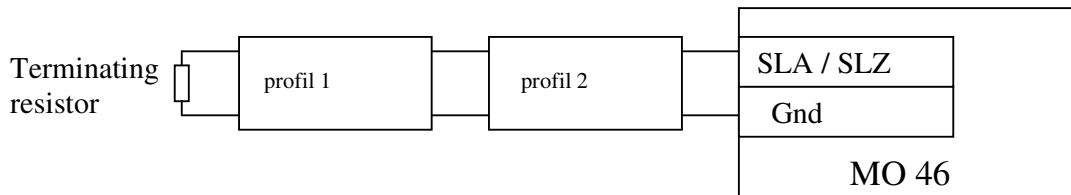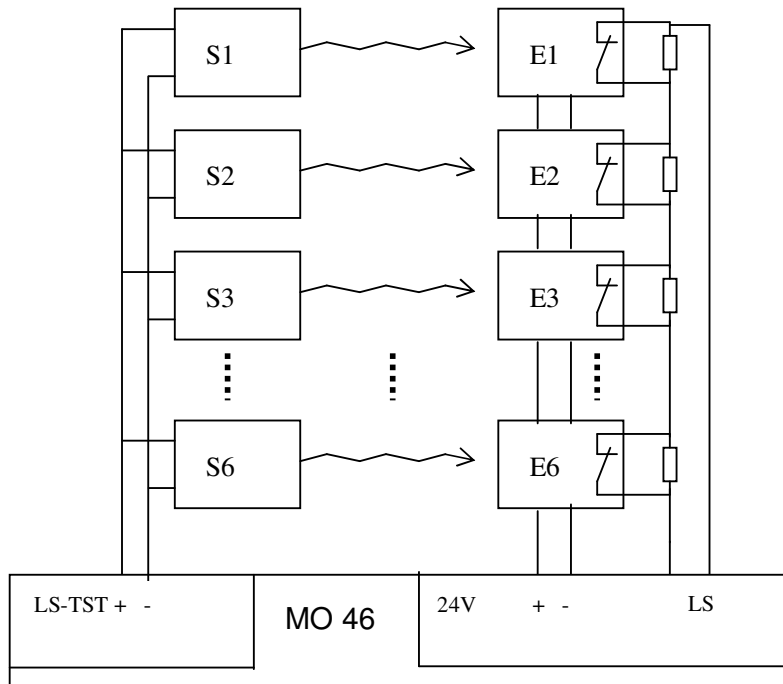

5.8 Photo-cells

A system of up to 6 photo-cells can be connected to the controller. The functions of the photo-cells depend on their selected mode (see learning sequence).

5.9 The photo-cell testing

Before each gate movement, for which the photo-cell is monitored, a photo-cell testing is performed. It consists of two parts. During the first part the transmitter of the photo-cell is switched off (S1 – S6) and it is waited for the receiver (E1 – E6) to report an obstacle within max. 2.5s. Then the second part starts. Here the transmitter is switched on and it is waited for the receiver to report no obstacle present. After this the gate starts moving.
If there is a failure during the first part, the photo-cell is faulty. Error code *E1* is displayed. In case of a failure during the second part, it is assumed that an obstacle is present within the photo-cell range and the gate will not move. No error code is issued.
Up to 6 photo-cells can be connected to the controller and can be tested. For this purpose the relay outputs of the receivers are switched in sequence. Parallel to the relay contacts of each receiver a resistor of **1kOhm ± 5% MUST** be connected.

Attention: During learning of the running distance the controller executes a photo-cell testing and learns if and how many photo-cells are connected. If the photo-cell testing during learning was successful, a photo-cell testing can also be executed later during normal operation. If the photo-cell testing during learning was not successful, no photo-cell testing will be executed later during normal operation.

Important: After learning the installing technician has to check every single photo-cell for functioning!

5.10 Timer mode

The timer ASU2 can be plugged onto the controller. The timer has two channels with the following functions: When channel one of the ASU2 is switched on this is equal to an OPEN-command. As long as channel 1 of the ASU2 is on, the gate cannot be closed. When channel 1 of the ASU2 switches off, this is equal to a **CLOSE** command.
When automatic closure is selected, the gate closes immediately when channel 1 of the ASU2 is switched off and does not wait for automatic closure.
The channel 2 of the ASU2 can be displayed on the multi-functional relay. The potential free relay may then be wired e.g. to any operation inputs.

5.11 Pre-warning, warning light and traffic light

The controller has potential free relay outputs for warning light, red and green traffic light (no one-way-control).
A pre-warning time of 4 seconds duration prior to opening and closing can be selected (see programming).

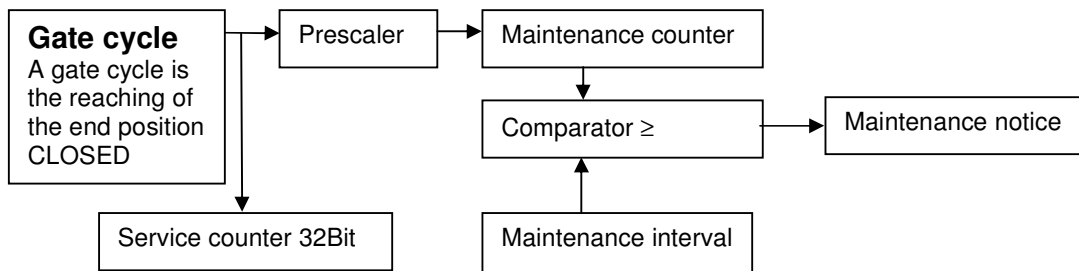| Gate status	Red light	Warning light	Green light
Gate closed	on	off	off
Gate opened	off	off	on
Pre-warning or gate moving	off	on	off
Gate stopped in intermediate position	off	off	off
Gate stopped in partial opening position	off	off	off

5.12 Radio remote control display

The decimal point at the single digit on the display is lit when one of the learned radio remote control codes is received.

5.13 Multi-functional relay

On the controller you find the relay MULTI, which may be used for different application purposes. During learning of the controller the relay is switched off (see programming).

5.14 Service counter, maintenance counter and maintenance interval

```
┌─────────────────┐        ┌──────────────┐     ┌──────────────────────┐
│ Gate cycle      │   ┌───▶│  Prescaler   │───▶ │ Maintenance counter  │
│ A gate cycle is │   │    └──────────────┘     └──────────────────────┘
│ the reaching of │───┤                                    │
│ the end position│   │                                    ▼
│ CLOSED          │   │         ┌──────────────┐     ┌──────────────────────┐
└─────────────────┘   │         │ Comparator ≥ │───▶ │ Maintenance notice   │
                      │         └──────────────┘     └──────────────────────┘
                      │    ┌──────────────────────┐        ▲
                      └───▶│ Service counter 32Bit │        │
                           └──────────────────────┘   ┌──────────────────────┐
                                                       │ Maintenance interval │
                                                       └──────────────────────┘
```

Each time the gate reaches the end position **CLOSED** and synchronises, the gate cycle is counted. The maintenance counter is compared to the selected maintenance interval. When the counter is higher than the interval a maintenance notice is issued. The prescaler for sliding gates is 1:1000.
The prescaler is set automatically during learning of the maintenance counter.
The maintenance notice can be displayed on the multi-functional relay.
Functions:
- Maintenance counter display and set to zero → see programming
- Maintenance interval display and setting → see programming
- Service counter display: Start the controller while the **LERN** button is pressed.
  After display of the program version the current service counter is shown as a sequence of 4 bytes in hexadecimal mode (highest value first) on the display.

Examples:
- 00 00 00 15 = 21 gate cycles
- 00 10 0b ac = 1,051,564 gate cycles

The setting range for the maintenance interval is 0 = no maintenance notice till 299.
On the 2-digit display the numbers 0 to 299 can be displayed by using one decimal point for 100 and two decimal points for 200.

Example:
- The maintenance counter shows **23.**: This is equal to 123. Thus the sliding gate has moved 123 x 1,000 = 123,000 cycles since the last maintenance.
- For the maintenance interval **0.3.** is displayed: This is equal to 203. The maintenance notice is issued when a sliding gate has moved 203 x 1,000 = 203,000 cycles.

In order to create the desired <u>maintenance notice</u>, the following has to be selected during learning sequence:
1. Operating mode sliding gate has to be selected (see learning sequence – **P1**).
2. The maintenance interval has to be set to the desired value (see learning sequence – **PD**).
3. The multi-functional relay has to be set to the mode **maintenance notice** (see learning sequence **PE – r6**).
4. The maintenance counter has to be set to zero (see learning sequence **PC**).

6 Initial start-up

The controller is connected as indicated in the section on **Electrical installation**. In the learning sequence the desired speed must be selected and the running distance learned.

6.1 Programming

For programming and to set operating parameters, use the two-digit 7-segment display and the buttons **BT**, **BTG** and **LERN**.

→ Learning sequence

During normal operation the display is off. The learning sequence is activated by pushing the button **LERN** for approx. 2-3s. The display shows **P1**. The sequence 1 is pre-set. With the button **BT** you can move on to the next sequence **P2, P3** etc.
With the button **BTG** you can move back to the last sequence. When the required sequence is displayed it has to be activated with the button **LERN**.

Sequence	Function
P1	Setting the mode: Slide gate / Reserve. Learning of safety contact profiles and photo-cells connected Learning of running distance and force.
P2	Adjusting of force reserves and speeds.
P3	Adjusting of dead man's function / impulse mode
P4	Adjusting of partial opening position
P5	Learning and deleting the radio remote control codes and deleting the radio remote control codes for BT, BTG and MULTI.
P6	Adjusting of automatic closure activating/deactivating and stay-open time for complete opening.
P7	Adjusting of automatic closure activating/deactivating and stay-open time for partial opening.
P8	Selecting of warning prior to opening and closing
P9	Selecting photo-cell function
PA	Activating / deactivating photo-cell testing
PB	Delayed closure activating / deactivating
PC	Maintenance counter displaying and deleting
PD	Selecting of maintenance interval
PE	Setting mode of multi-functional relay
PF	Return to original settings
PP	Saving of data and returning to regular mode

6.2 Sequence P1: Learning of running distances

When sequence **P1** has been activated, first the operating mode sliding gate has to be selected using button **BT**. Then confirm the selection with button **LERN**.
If the sequence is activated by mistake, use **BTG** to return to the main menu without changing any data.

Display	Effect / Function
||||	Operating mode: Slide gate
〇 ⁻	Operating mode: Reserve

ATTENTION! **The operating mode SLIDE GATE has to be selected (display ‖‖).**

ATTENTION! During learning the safety devices may act differently from the regular operation. Please ensure that there is no one in the danger area during learning.

After pushing the **LERN** button, **HA** is displayed. Now the gate can be moved in dead man's operation using button **BT** into the position, which during normal operation corresponds to end position **OPEN**, but not against the stopper GATE OPEN (**distance approx. 5cm**). After this push the button **LERN** to continue learning the distance and force. The display now shows **AU**. The controller performs a test of the safety contact profiles and photo-cells and learned the type of safety contact profiles and the quantity of photo-cells connected. Only if the photo-cell testing has been successful, can it be performed later during normal operation.
Now the gate closes in slow mode and shuts down at the end stopper **CLOSED** via force detection of the controller. The maximum breaking current for the motor in use is determined in the process. The running distance in impulses is also learned.

Remark: Since the gate hits the end stopper CLOSED harder than in normal operation, a correction value is deducted from the running time.

Now the gate opens and the force for opening is learned. Then the gate closes and the force for closing is learned. After this you return automatically to the learning sequence.

Remark: After learning of the running distance the force reserve is automatically adjusted.

6.3 Sequence P2: Adjusting of force reserves and speeds

When sequence **P2** is activated by button **LERN** an additional selection menu for force and speed opens. With button **BT** you may move to different points of the selection menu, with **BTG** you return to the previous sub-sequence.

Sub-sequence	Function
F1	Force reserve for opening
F2	Force reserve for closing
S1	Speed for opening
S2	Speed for closing
Next	Return to the main sequence

With the button **LERN** the selected point can be activated. The present value for force (F = force) or speed (S = speed) is displayed. Possible values are **01** (for minimum force reserve) up to **13** (for maximum force reserve) or **01** (for minimum speed stage) up to **08** (for maximum speed stage). With button **BT** the values may be increased, with the button **BTG** they can be decreased. Return to the learning sequence using button **LERN**.
Remark regarding the force reserve: The force detection of the controller has a maximum value which must not be exceeded. During learning of the running distance the controller determines the maximum motor current of the motor connected. This also must not be exceeded. The maximum force limit is the lowest value of force learned plus force reserve and the maximum force of the controller and the maximum force of the motor.
If the selected force reserve is so high that the maximum of the learned force value plus force reserve is higher than the maximum force of the controller or the maximum force of the motor, then the display shows a decimal point in addition to the force reserve stage. This indicates that the selected force reserve cannot be reached anymore and is in fact lower.

6.4 Sequence P3: Adjusting of dead man's function / impulse mode

When sequence **P3** is activated by button **LERN**, the present value displayed. The desired value can be selected using button **BT.** Return to the learning sequence using button **LERN.**

Display	Corresponds to:
To	The controller operates in dead man's function.
SH	The controller operates in impulse mode.

Remark: It is possible to select dead man's function and automatic closure together, or dead man's function and delayed closure etc., but automatic closure / delayed closure etc. are not active during dead man's function, even when they are selected.

6.5 Sequence P4: Adjusting of partial opening position

Sequence **P4** can only be activated, when the gate position is known. After switching on the power supply the gate must first be closed.

After activating sequence **P4**, "**HA**" is displayed. Now the gate can be moved in dead man's function using **BT**, first slowly then fast, towards the desired partial opening position. Then press the **LERN** button. The current position is saved for partial opening. After this you return automatically to the learning sequence **P5**.

6.6 Sequence P5: radio remote control for BT, BTG and MULTI

When sequence **P5** is activated with the button **LERN**, an additional selection menu is displayed for selecting the code. With button **BT** you may move to the next points of the selection menu, with **BTG** you return to the previous sub-sequence.

Sub-sequence	Function
C1	Radio remote control code for BT can be learned or deleted
C2	Radio remote control code for BTG can be learned or deleted
C3	Radio remote control code for MULTI can be learned or deleted
Next	Return to main sequence

Sub-sequence is activated with button **LERN**. The display shows:

Display	Corresponds to:
--	The selected radio remote control code is deleted and another can be learned.
oo	The selected radio remote control code is already stored and can be overwritten or deleted

To learn a code the transmitter has to be operated. The code will then be stored and you will return to the sub-sequence.

To erase the radio remote control code, press and hold the button **BT** and additionally push the button **LERN**. The radio remote control code is erased. Return to the sub sequence follows automatically. If only the button **LERN** is pushed, then return to the sub sequence follows immediately without erasing the code.

Remark: The stored codes must be different from each other.

6.7 Sequence P6: Automatic closure for complete opening

When sequence **P6** is activated by button **LERN**, the present value for stay-open time for complete opening is displayed or "**--**" , when automatic closure for complete opening is not active. The automatic closure can be activated using the button **BT** and the value can be increased. Using button **BTG** the value can be decreased and automatic closure can be deactivated.
The stay-open time can be selected from 01s to 299s. The decimal points of the display are each equal to 100s.

Display (example)	Corresponds to:
--	Automatic closure is deactivated.
23	Stay-open time 23 seconds. Automatic closure is activated.
23.	Stay-open time 123 seconds. Automatic closure is activated.
2.3.	Stay-open time 223 seconds. Automatic closure is activated.

After the desired time has been selected, push the **LERN** button to return to the learning sequence.

6.8 Sequence P7: Automatic closure for partial opening

When sequence **P7** is activated by button **LERN**, the present value for stay-open time for partial opening is displayed or "**--**", when automatic closure for partial opening is not active. The automatic closure can be activated using the button **BT** and the value can be increased. Using button **BTG** the value can be decreased and automatic closure can be deactivated.
The stay-open time can be selected from 01s to 299s. The decimal points of the display are each equal to 100s.

Display (example)	Corresponds to:
--	Automatic closure is deactivated.
23	Stay-open time 23 seconds. Automatic closure is activated.
23.	Stay-open time 123 seconds. Automatic closure is activated.
2.3.	Stay-open time 223 seconds. Automatic closure is activated.

After the desired time is selected push the **LERN** button to return to the learning sequence.

6.9 Sequence P8: Warning prior to opening and closing

When sequence **P8** is activated by button **LERN**, the present value for warning time is displayed. With the button **BT** the value can be selected.
Return to the learning sequence using button **LERN.**

Display	Warning time before opening	Warning time before closing
00	No warning time	No warning time
04	No warning time	4 seconds warning time
40	4 seconds warning time	No warning time
44	4 seconds warning time	4 seconds warning time

6.10 Sequence P9: Photo-cell function

When sequence **P9** is activated by button **LERN**, the present selection for the photo-cell function is displayed. With the buttons **BT** and **BTG** the desired function can be selected.
Return to the learning sequence using button **LERN**.

Display	Gate not moving	Gate opens	Gate closes
L1	Remains not moving	Stops, opens when free again	Stops, opens when free again
L2	Remains not moving	Stops, opens when free again	Stops, closes when free again
L3	Only opening allowed	No effect	Stops, opens when free again
L4	Only opening allowed	No effect	Stops, closes when free again
L5	Only opening allowed	No effect	Stops and opens immediately

6.11 Sequence PA: Photo-cell testing on/off

When sequence **PA** is activated by button **LERN**, the present selection for the photo-cell testing is displayed. With the button **BT** the mode can be selected. Return to the learning sequence using button **LERN**.

Display	Corresponds to:
oF	Photo-cell testing is deactivated.
on	Photo-cell testing is activated. This function is only possible when the photo-cells have passed the LS-Test during the learning sequence.

6.12 Sequence PB: Delayed closure / off

When sequence **PB** is activated by button **LERN**, the present selection is displayed. With the button **BT** the mode can be selected. Return to the learning sequence using button **LERN**.

Display	Corresponds to:
oF	A close command by BZ is executed immediately.
on	A close command by BZ is stored and will be executed when the end position OPEN or partial opening is reached.

Note: this function is not possible in dead man's mode.

6.13 Sequence PC: Maintenance counter indication and deletion

When sequence **PC** is activated by button **LERN**, the current maintenance counter reading is displayed. The maintenance counter reading is deleted by pressing the **BT** button and additionally the **LERN** button.
Then return to the learning sequence using button **LERN**. If only the **LERN** button is pushed, you return to the learning sequence without changing the maintenance counter reading.

The decimal points on the display are each equal to 100.

Display (example)	Cycles for a sliding gate Prescaler 1: 1000
23	23 x 1000 = 23.000 cycles
23.	123 x 1000 = 123.000 cycles
2.3.	223 x 1000 = 223.000 cycles

6.14 Sequence PD: Adjusting maintenance interval

When sequence **PD** is activated by button **LERN**, the maintenance interval is displayed or "**--**", when no maintenance notice will be given.
Using **BT** the monitoring can be switched on and the maintenance interval can be increased.
Using **BTG** the maintenance interval can be decreased and the monitoring can be switched off.

The decimal points on the display are each equal to 100.

Display (example)	Cycles for a sliding gate Prescaler 1: 1000
--	No maintenance notice
23	Maintenance notice when counter displays >= 23 thus after 23 x 1000 = 23.000 cycles
23.	Maintenance notice when counter displays >= 23. thus after 123 x 1000 = 123.000 cycles
2.3.	Maintenance notice when counter displays >= 2.3. thus after 23 x 1000 = 223.000 cycles

Attention: Adjusting the maintenance interval is also possible, when the multifunctional relay is set up to not release maintenance notice.

In order for the controller to generate the maintenance notice, the following has to be selected in the learning sequence:
1. The mode sliding gate has to be selected.
2. The maintenance interval has to be set to the desired value.
3. The multi-functional relay has to be set up to release maintenance notice.
4. The maintenance counter has to be reset to zero (if applicable).

6.15 Sequence PE: Mode for multi-functional relay

When sequence **PE** is activated by button **LERN**, the present selection is displayed. Using **BT** and **BTG** the required mode can be selected. Return to the learning sequence using button **LERN**.
During programming of the controller the relay is shut off.

Display	Function	Corresponds to:
r1	Remote control – push button mode	The relay is active as long as the controller receives the radio remote control code MULTI.
r2	Remote control– toggle mode	The relay alternates between active and de-active with each radio remote control code MULTI.
r3	Light pulse mode	The relay is active for 1 second, when BT, Funk BT, BTG, Funk BTG, BA or BZ are pushed.
r4	3-minute-light	The relay is active for 180 seconds, when BT, Funk BT, BTG, Funk BTG, BA or BZ are pushed.
r5	Timer channel 2	When channel2 of ASU2 is switched on the relay is active.
r6	Maintenance/ Errors	When maintenance is required the relay is activated. When certain error codes occur, for which maintenance or repair is required, the relay alternates between active and de-active in one-second-intervals.

6.16 Sequence PF: Return to original settings

When sequence **PF** is activated by button **LERN**, **rE** is displayed. To return to original settings, press and hold button **BT** and push button **LERN**. When only button **LERN** is pushed, you return to learning sequence without changing any values. After returning to original settings, the running distance has to be relearned.

7 Fault diagnosis by the controller

Error code on the display and on the multi-functional relay

An error is shown on the display as a code and also on the multi-functional relay (if applicable), when detected by the controller. The following errors are recognised and displayed.

Code on the display	Error code on the multi-functional relay	Error description
E1	Yes	Photo-cell testing failed
E2	Yes	Testing SLA failed
E3	Yes	Testing SLZ failed
E4	Yes	Running distance control stopped the gate. Check end stoppers and re-learn the running distance.
E5	Yes	The power supply Uext 12V exceeds the permitted limit. Too much power is withdrawn. The controller is blocked.
E6	Yes	The power supply Uext 2V exceeds the permitted limit. Too much power is withdrawn. The controller is blocked.
E7	Yes	The gate is released.
E8	Yes	Data on memory is faulty. The controller must be relearned. Select learning sequence and program the controller again.
E9	Yes	Possible cause: 1. The pulser is faulty. Check the wiring of the gate opener. 2. The motor is blocked. Check the installation.
EA	Yes	Return controller for repair. Possible cause: • Error in storing of data on controller memory. • Error found in the redundant detection of BS. • Error found in the power element. Either a motor relay or a semi-conductor or a measuring amplifier is faulty.

8.3 Measurements

[All measurements are quoted in mm]
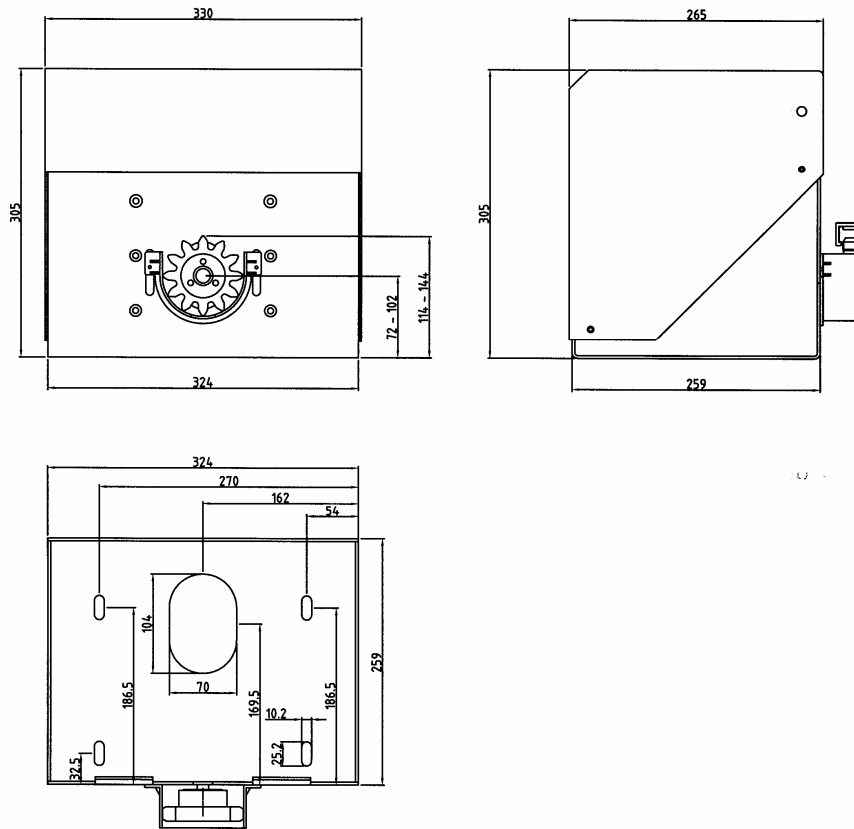
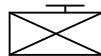# Appendix A: Installation of personal protection device

Below are the guidelines for the installation of the personal protection devices on the sliding gate.

The diagram shows the gate when viewed from above.
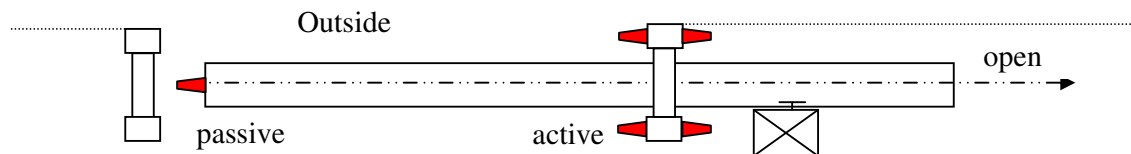
Explanation of symbols:
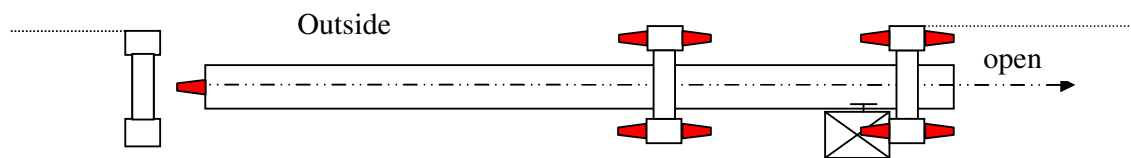
Personal protection strip   Motor unit

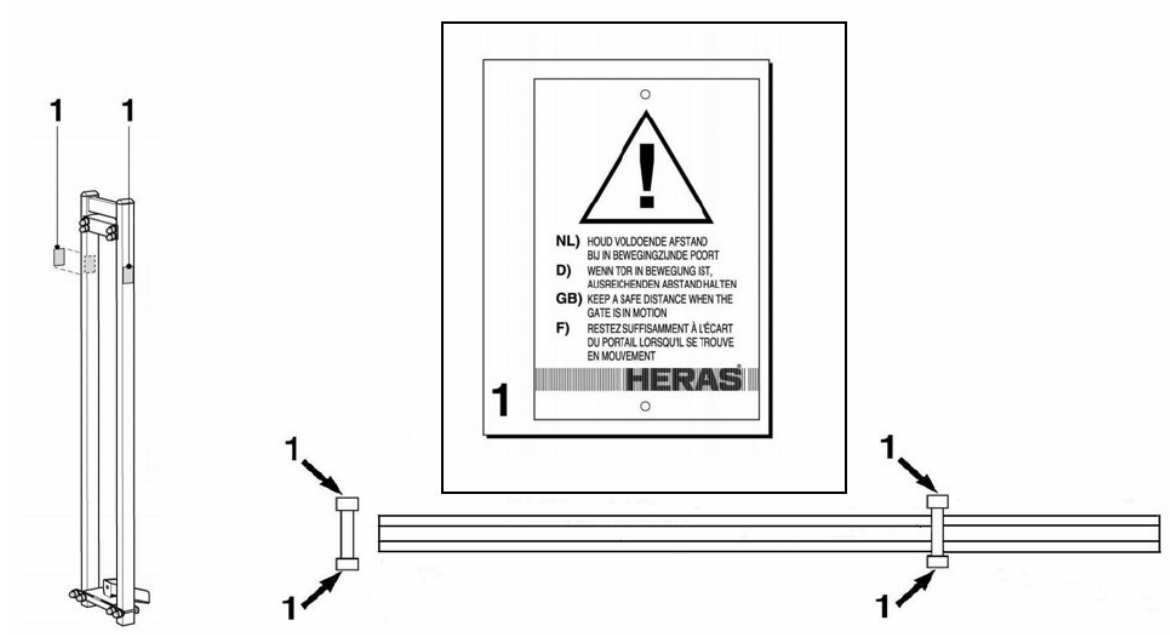.................................... Line of mesh/fencing

Odysseus gate with gateposts (4x active, 1x passive)

Outside

open

passive   active

Delta gate with gateposts (9x active)

Outside

open

Appendix B: Placing Warning signs

Appendix B: EC Declaration of conformity

Heras Fencing Systems B.V., Hekdam 1, 5688 JE Oirschot, hereby declares that the sliding gate hereinafter described, conforms to the requirements of the committee made on 14 June 1989 in respect of the standardization of the machine directives of the member states and the accompanying modification directives.

Type of sliding gate	Odysseus / Delta ET
installation	98/37 EG Machinery Directive
EU directives applicable	73/23 EEG Low Voltage Directive
	89/336/EEG EMC Directive (electro-magnetic compatibility)

Harmonised standards applicable

EN 12100-1 / EN 12100-2	EN 61508:2001
NEN-EN 1050: 1996	EN 60335-1:2002
EN 954-1: 1996	EN 12978:2003
EN 1760-2	EN 12604: 2000
EN 60204-1 1997	EN 12605: 2000
EN 61000-6-3 : 2001	NEN 6770
EN 61000-6-1 : 2001	NEN 6771
EN 12453: 2005	NEN 6772
EN 12445: 2005	NVN-ENV 1991 2-4
EN 12444: 2000	NVN-ENV 1993
EN 13241-1: 2003	

And further declares that it is forbidden for anyone to put into operation the complete installation (gate and motor unit) before the "machine" has been found and to be declared to be in conformity with the requirements of the machine directive 98/37/EC, and with national legislation pursuant to this directive.

Oirschot,21-02-2007

Hans Welting

Managing Director

Heras Fencing Systems B.V.

Notes

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