



**Buitengewoon
Beveiligd**

USER MANUAL

SLIDING GATES: DELTA, ORION, SHB

DRIVES : IT08 / ZT08

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Heras Fencing Systems B.V.
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5688 HW Oirschot,
the Netherlands

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1. GENERAL

1.1 Manufacturer / Supplier

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

Delivery and installation: Heras Fencing Systems B.V.
Hekdam 1, 5688 JE Oirschot
The Netherlands

1.2 How to use this manual

This User Manual describes how to operate the Delta, Orion and SHB sliding gates and how to act in case of a failure. The sliding gate is hereafter referred to as *gate*. The maintenance and safety aspects of the gate are also explained.

This Manual was written for those people who operate the gate and for the installer who commissions the gate. There is a separate manual for the fitter to install the drive on the gate. The installer uses an installation diagram for the drive in question and works according to NEN 1010. If any technical failures occur, you must consult a qualified Heras technician.



Fig. 1: Installation manual

1.3 Definitions of user / operator / technician

User: Anyone who is involved with the gate.

Operator: A user who is familiar with all safety aspects listed in this manual. The operator is not allowed to carry out any installation activities on the gate unless this is explicitly stated and allowed.

Technician: The technician is a Heras fitter (or a technician employed by the customer who has been explicitly given permission in writing by Heras) who is qualified to perform technical actions on the gate.

1.4 Service / Maintenance Department

In the event of problems, failures or questions you can contact:

	Tel.	
	Fax	

1.5 Conformity with European directives

The installation complies with the following EU Directives:

98/37	EC	Machine Directive
72/23	EEC	Low Voltage Directive
89/336/	EEC	EMC Directive (electromagnetic compatibility)

The EC Declaration of Conformity can be found in Appendix B. The CE mark has been applied to the drive unit cabinet. The rating plate is applied to the rear of the gate.



Fig. 2: Rating plate

2. Safety during use and work activities

2.1 General safety requirements, view of passage

In spite of all the safety features, when operating the gate it must be ensured that:

- the immediate vicinity can be monitored.
- there are no objects between under, or protruding through the gate which might block the gate.
- a safe distance is kept from the moving gate. Warning icons to this effect have been installed in various locations.
- the passage opening through which people walk is kept free from snow and ice.

On a gate with “dead man’s operation”, the entire movement and passage of the gate must be visible (often without safety facilities, see 3.4).



Fig. 3: Warning sign

2.2 Safety during work activities and commissioning

Safety instructions

- The operator must read the entire user manual before commissioning the gate. The instructions stated in the user manual must be observed and complied with. All other forms of use can cause unpredictable risks and are prohibited.
- When work is carried out on the drive unit cabinet, the power supply to the system must be switched off and it must be ensured that it cannot be switched on unexpectedly.
- To move the gate manually, first switch the automatic fuse in the drive unit cabinet to “off” and make sure it cannot be switched on again (e.g. by locking the cabinet).
- Always lock the drive unit cabinet during use. The drive unit cabinet may only be opened by a technician with electrotechnical training. The following applies to Heras gates: “Safety” comes before “Control”.

2.3 Safety facilities on the gate

2.3.1. Anti-crushing facilities and regular checks.

Depending on how the gate and the adjoining fence have been installed, there may be locations where there is a risk of people being crushed. Safety strips are installed in these locations. See Appendix A: Installing anti-crushing safety devices. Regularly (once a month) check these safety strips visually for damage and check their safe operation.

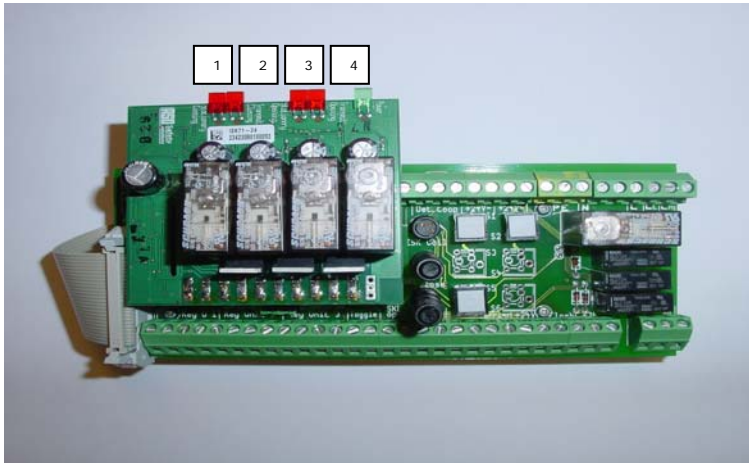


Fig. 4: Backplane

The safe operation of the safety strips is checked as follows:

- Check the *opening* movement: all safety strips installed to prevent people being crushed during the gate *opening* movement are pressed one by one. LED 3 (gate post safety for opening direction) will light up and the gate movement will stop immediately. Depending on the configuration set by Heras (see 5.1: parameter setting) the gate will then:
 1. perform a *closing* movement for approx. 2 seconds after which:
 - the gate leaf stops and, if the automatic closing function is not active, waits for a new control command.
 - the gate leaf stops and, if the automatic closing function is active, the gate leaf automatically starts its *closing* movement after the preset automatic closing time.
 2. perform its *closing* movement until the gate leaf has reached its closed position.
- Check the *closing* movement: all safety strips installed to prevent people being crushed during the gate *closing* movement are pressed one by one. LED 1 (gate post safety for closing direction) or LED 2 (head stile safety for closing direction) will light up and the gate movement will stop immediately. Depending on the configuration set by Heras (see 5.1: parameter setting) the gate will then:
 1. perform an *opening* movement for approx. 2 seconds after which:
 - the gate leaf stops and, if the automatic closing function is not active, waits for a new control command.
 - the gate leaf stops and, if the automatic closing function is active, the gate leaf starts its *closing* movement after the preset automatic closing time.
 2. perform an *opening* movement until the gate leaf has reached its open position. If the automatic closing function is not active the gate leaf will stop and wait for a new closing command after which the *closing* movement will be started. If the automatic closing function is active, the gate leaf will automatically start its *closing* movement after the preset automatic closing time.

2.3.2. Emergency stop

The gate has an *emergency stop system* enabling the gate movement to be stopped at all times. When the emergency stop has been activated, the gate must be put into use again. In that case, the following steps must be carried:

- Once the situation is safe again, the emergency stop button must first be reset.
- If the gate leaf is not in its fully opened position, an open command must be given. The gate leaf will then start moving in the *opening* direction at half speed, until it has reached its fully opened position. The gate is back in use now and it will:
 1. automatically start its *closing* movement after the preset automatic closing time if the automatic closing timer is active.
 2. wait for a new closing command and then start the *closing* movement if the automatic closing timer is not active.
- If the gate leaf is in its fully opened position after resetting the emergency stop, it will:
 1. automatically start its *closing* movement after the preset automatic closing time if the automatic closing timer is active.
 2. wait for a new closing command and then start the closing movement if the automatic closing timer is not active.

2.3.3. Vehicle safety in passage (optional)

This safety facility (infrared cells / detection loops) prevents the gate from closing when there are vehicles in the passage opening. If the vehicle safety is triggered, the gate movement will stop immediately after which, depending on the configuration set by Heras (see 5.2: jumper setting):

1. it will perform an *opening* movement for approx. 2 seconds after which:
 - the gate leaf stops and, if the automatic closing function is not active, waits for a new control command.
 - the gate leaf stops and, if the automatic closing function is active, starts its *closing* movement after the preset automatic closing time.
2. it will perform an *opening* movement until the gate leaf has reached its open position. If the automatic closing function is not active the gate leaf will stop and wait for a new closing command after which the *closing* movement will be started. If the automatic closing function is active, the gate leaf will automatically start its *closing* movement after the preset automatic closing time.

3. Commissioning and operating the gate

3.1 Control unit in drive unit cabinet

The gate drive control is adjusted to the options agreed with the user. The relevant options are laid down during delivery, see 5.1: Parameter setting and 5.2: Jumper setting.

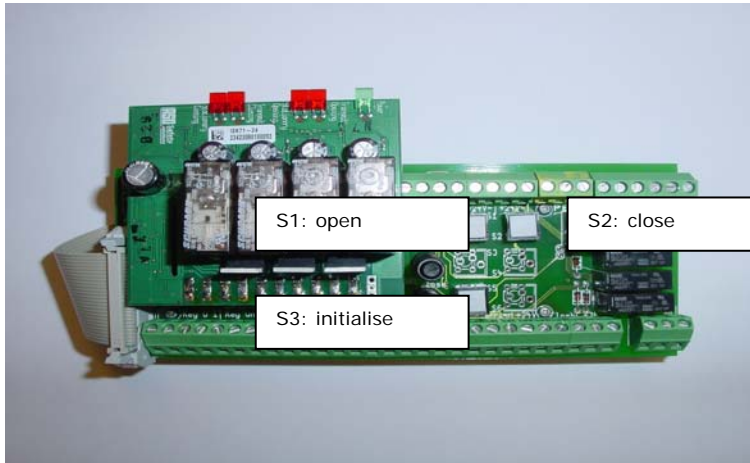


Fig. 5: Backplane

3.2 Commissioning the system, initialisation (technician)

The wiring diagram for the connections can be found in the drive unit cabinet. First read section 2.2: Safety during work activities and commissioning

1. Make sure that the drive unit cabinet is connected to 230 VAC and that the automatic fuse is **ON**.
2. Disengage the drive (see 3.7). First check that the proximity switch has been connected correctly.
3. Slide the gate into its fully opened position and check on the PLC that the left-hand LED **7** goes off. If not, the connections of the open and closed proximity switches on the backplane (terminals 37 to 42) must be switched. Then slide the gate into its fully closed position to make sure that LED **8** goes off. This is **very** important because if the LED does not go off the safety features/devices do not work properly!
4. Slide the gate leaf into a random position between the fully opened and fully closed positions and lock the drive (see 3.7).
5. Then start the initialisation procedure by pressing **S3** (see 3.1). The gate leaf will now run at a low speed to "learn" the open and closed positions. The gate will automatically stop in closed position. LED **8** will be off.
6. Now give an *open* command by pressing **S1** (see 3.1) and check which LED (right-hand LED **4** or right-hand LED **5**) lights up. Enter the proper LED indication for the opening and closing movements by marking the appropriate actions on the wiring diagram in the switch box.



Fig. 6: PLC

3.3 Pulse operation (operation by means of a short signal)

Depending on the parameters set by Heras (see 5.1) the sliding gate is operated by 'pulse' or 'dead man's' operation. If the relevant parameter has been set to 'pulse operation' and the safety facilities have been installed and connected correctly, the sliding gate can be opened or closed using the pushbuttons **S1/S2** on the backplane or using the controls provided for this purpose.

3.4 Dead man's operation (operation by means of a continuous signal)

Depending on the parameters set by Heras (see 5.1) the sliding gate is operated by 'pulse' or by 'dead man's' operation. If the parameter in question has been set to 'dead man's operation' (the gate moves only when the operation button is pressed), operation is only allowed to take place if there is a direct view of the passage (see 2.1). The gate moves for as long as the button in question is pressed.

3.5 Closing the gate leaf automatically (technician)

The automatic closing function of the sliding gate can be activated by interconnecting terminals 43 and 44 on the backplane. The time for the automatic closing function (time for the gate to wait after the open position has been reached and before the closing movement is started automatically) is set by Heras by means of a parameter (see 5.1). The automatic closing function only works when operating the gate in 'pulse' mode.

3.6 Trouble-shooting

If the gate fails to react to a control element being operated, you can proceed as follows:

1. Check whether the emergency stop has been activated.
2. Check that the anti-crushing safety device is not damaged or pressed; a red LED will be visible on the backplane then. See 2.3.1 'Anti-crushing facilities and regular checks'.
3. Re-start the system if necessary; set the automatic fuse to the "OFF" position and switch it on again after [1] minute. The gate can only be opened at safe speed.

If the failure recurs, contact the Service / Maintenance Department (1.4). The user is not allowed to carry out further activities on the gate system as this might lead to unsafe situations.

3.7 Manual operation in the event of a failure

You can manually disengage the drive wheel from the electric motor in the cabinet.

1. Open the drive unit cabinet (key)
2. Set the automatic fuse to "OFF".
3. Pull the disengagement lever forwards after which the gate can be opened and closed manually.
4. When locking the system again, you may have to move the gate a little to have the worm engage with the worm wheel.
5. Lock the drive unit cabinet after use.

Option: automatic disengagement

Versions with automatic disengagement after a power failure can be recognised by a coil which will automatically disengage the drive if a power failure occurs.

Deactivate it if necessary and push

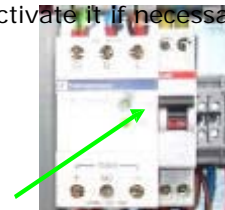


Fig. 7: Automatic fuse



Fig. 8: Disengagement lever



Fig. 9: Autom. disengagement

4 Gate application and technical details

4.1 Sliding gate description



Fig. 10: Delta type sliding gate



Fig. 11: Orion type sliding gate

The gate was designed to enable an area to be automatically closed off. These instructions deal with the electrically driven sliding gates listed in the table below.

Gate leaf	Delta	Orion	SHB
Length [m]	5.15 ... 12.5	7.00 ... 16.6	3.2 ... 5.1
Height [m]	1.00 ... 3.00	2.00 ... 2.50	1.5 ... 2.5
Max. weight [kg]	120 ... 340	220 ... 550	85 ... 180
Runners	PA6G210	PA6G210	PA6G210
Construction	Cantilever	Cantilever	On rails

4.2 Drive IT08 / ZT08 with anti-crushing safety feature

The electrically driven Delta and Orion sliding gates listed in the table below can be equipped with either type of drive from the table below, SHB sliding gates can only be equipped with drive type IT08:

Type of drive	IT08	ZT08
Motor	HR80	HR80
Supply voltage [VAC]	230	230
Motor power [W]	0.37	0.37
Max. torque [Nm]	80	80
Duty cycle [%]	60	70
IP value of drive unit cabinet	54	54
IP value of speed reducer	54	54
Control	PLC	PLC
Anti-crushing safety	GE 365	GE 499
Crawl speed [m/s]	0.13	0.25
Max. speed [m/s]	0.25	0.50

5 Parameter – jumper settings at delivery

5.1 Parameter setting

Various sliding gate drive control functions can be configured by parameters which can be set by Heras. The parameter settings made by Heras have been entered / ticked in the table below:

Parameter	Option 1		Option 2		Value
Automatic closing					... sec.
Operation	Pulse	<input type="checkbox"/>	Dead man	<input type="checkbox"/>	
Anti-crushing safety	Reverse for 2 sec.	<input type="checkbox"/>	Reverse 100%	<input type="checkbox"/>	
Prewarn	Active	<input type="checkbox"/>	Not active	<input type="checkbox"/>	

Automatic closing* : If all safety facilities monitoring the closing gate movement are at rest, the gate leaf in its fully opened position will start the closing movement after the automatic closing time setting has elapsed. The automatic closing function is only active if terminals 43 – 44 of the backplane have been bridged by a wire.
*: This function can only be activated in combination with 'Pulse' operation.

Operation : Pulse: operation by giving a short signal
Dead man: operation by giving a continuous signal

Anti-crushing safety : Reverse for 2 sec:
- anti-crushing safety device in opening direction: when the safety device is activated the gate movement stops and the direction of movement is reversed immediately. The gate will now close for approx. 2 seconds and stop. After the gate has stopped and all closing safeties are at rest, the gate will close automatically after the automatic closing timer setting has elapsed. If the automatic closing function is not active, the gate will have to be opened or closed by giving a new command.

- anti-crushing safety device in closing direction: when the safety device is activated the gate movement stops and the direction of movement is reversed immediately. The gate will now open for approx. 2 seconds and stop. After the gate has stopped and all closing safeties are at rest, the gate will close automatically after the automatic closing timer setting has elapsed. If the automatic closing function is not active, the gate will have to be opened or closed by giving a new command.

Reverse 100%:
- anti-crushing safety device in opening direction: when the safety device is activated the gate movement stops, the direction of movement is reversed immediately and the gate closes all the way. This means that a new opening pulse has to be given to open the gate again.

- anti-crushing safety device in closing direction: when the safety device is activated the gate movement stops, the direction of movement is reversed immediately and the gate opens all the way. If the automatic closing function is active, the gate will close automatically after a preset time after the open position has been reached, provided that all closing safeties are at rest. If the automatic closing function is not active, the gate will have to be closed by giving a new command.

Prewarn : Active: flash light active for 3 seconds before the gate leaf movement is started.

Not active: the flash light is active at the same time when the gate leaf movement is started.

5.2 Jumper setting

Heras can set jumpers to configure several sliding gate drive functions related to vehicle safety features (detection loops / infrared cells). The jumper settings made by Heras have been entered / ticked in the listing below:

Options	
Detections loops to reverse for 2 sec.*	<input type="checkbox"/>
Detection loops to reverse 100%:	<input type="checkbox"/>
Infrared cells to reverse for 2 sec.*	<input type="checkbox"/>
Infrared cells to reverse 100%	<input type="checkbox"/>

*: this function can only be activated if the anti-crushing safety parameter has been set to 'reverse for 2 sec.', see 5.1: Parameter settings.

Detection loops : Reverse for 2 sec.
 when one or more detection loops have been activated the movement stops and the direction of movement is reversed immediately. The gate will now open for approx. 2 seconds and stop. After the gate has stopped and all closing safeties are at rest the gate will close automatically after the automatic closing time setting has elapsed. If the automatic closing function is not active, the gate will have to be opened or closed by giving a new command.

Reverse 100%
 when one or more detection loops have been activated the gate movement stops, the direction of movement is reversed immediately and the gate opens all the way. If the automatic closing function is active and the open position has been reached, the gate will close automatically after the preset time (if all closing safeties are at rest). If the automatic closing function is not active, the gate will have to be closed by giving a new command.

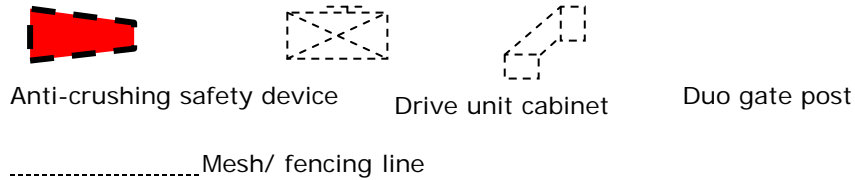
Infrared cell(s) : Reverse for 2 sec.
 when one or more infrared cells have been activated the gate movement stops and the direction of movement is reversed immediately. The gate will now open for approx. 2 seconds and stop. When the gate has stopped and if all closing safeties are at rest the gate will close automatically after the preset automatic closing time has elapsed. If the automatic closing function is not active, the gate will have to be opened or closed by giving a new command.

Reverse 100%
 when one or more infrared cells have been activated the gate movement stops, the direction of movement is reversed immediately and the gate opens all the way. If the automatic closing function is active and the fully open position has been reached, the gate will close automatically after the preset time (if all closing safeties are at rest). If the automatic closing function is not active, the gate will have to be closed by giving a new command.

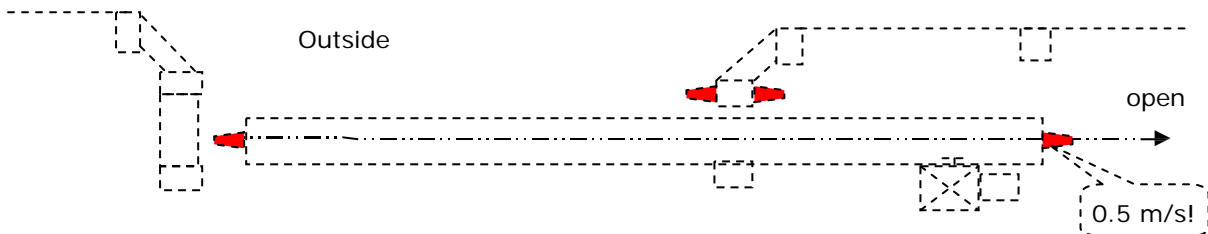
Appendix A: Installing anti-crushing safety devices

The guidelines for installing anti-crushing safety devices on sliding gates in various daily situations are listed below. A sketch of the top view of the sliding gate is provided. For a ZT08 drive with a drive speed of 0.5 m/s, an anti-crushing safety device must be installed on the rear post of the gate as standard.

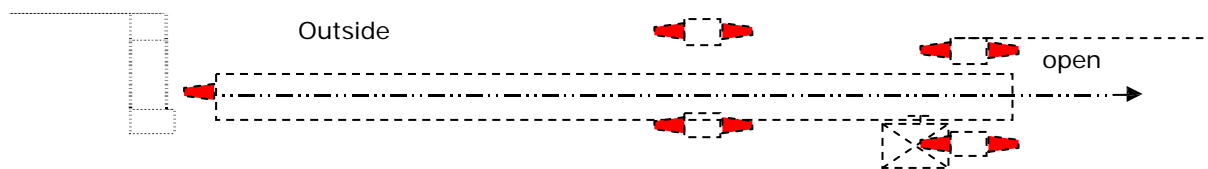
Explanation of symbols:



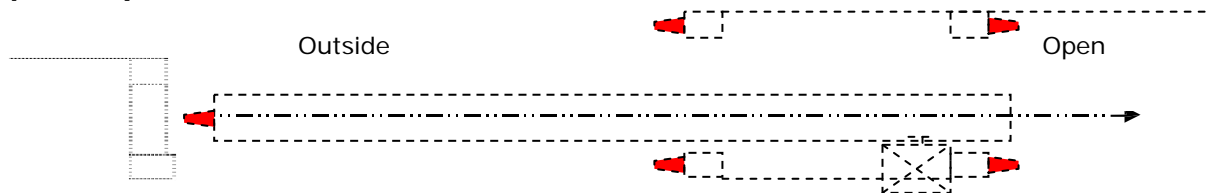
Delta gate with duo-gate posts (single upper wheel 3x)



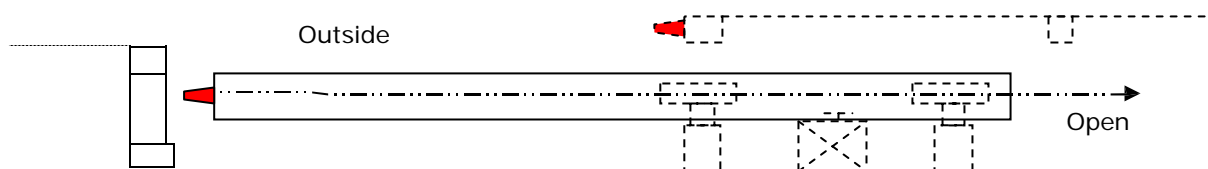
Delta gate with gate posts (9x)



Delta gate with gate posts (mesh between gate posts 5x)



Orion gate with wheeled posts (no top guide)



Appendix B: EC Declaration of Conformity

Heras Nederland B.V, Herder Pasmansdreef 1-4, Oirschot, the Netherlands, hereby declares that the system referred to below complies with the Commission requirements of 14 June 1989 for harmonisation by the member states in line with the Machine Directive and the corresponding amending directives.

Type of sliding gate system	Sliding gate	Drive(s)
	Delta	IT08 – ZT08
	Orion	IT08 – ZT08
	SHB	IT08
EU Directives applied	98/37 EC	Machine Directive
	73/23 EEC	Low Voltage Directive
	89/336/EEC	EMC Directive (electromagnetic compatibility)

The following harmonised standards have been applied:

EN 12100-1 / EN 12100-2
EN 1050: 1996
EN 954
EN 1760-2
EN 60204-1 1997
EN 50081-1
EN 50082-1
EN 12453: 2000
EN 12445: 2000
EN 13241-1: 2003
EN 12604: 2000
EN 12605: 2000

Heras Nederland B.V also declares that the entire system (gate with drive) must not be put into operation until the "machine" has been approved in accordance with the provisions of the Machine Directive 98/37/EC and subsequent amendments, adopted by national legislation.

Oirschot, August 2008

J. Welting
Managing Director
Heras Fencing Systems B.V.