3.0 Operating the MIB* Barrier Gate

In automatic operation, the MIB* Barrier gate can be operated using following devices:

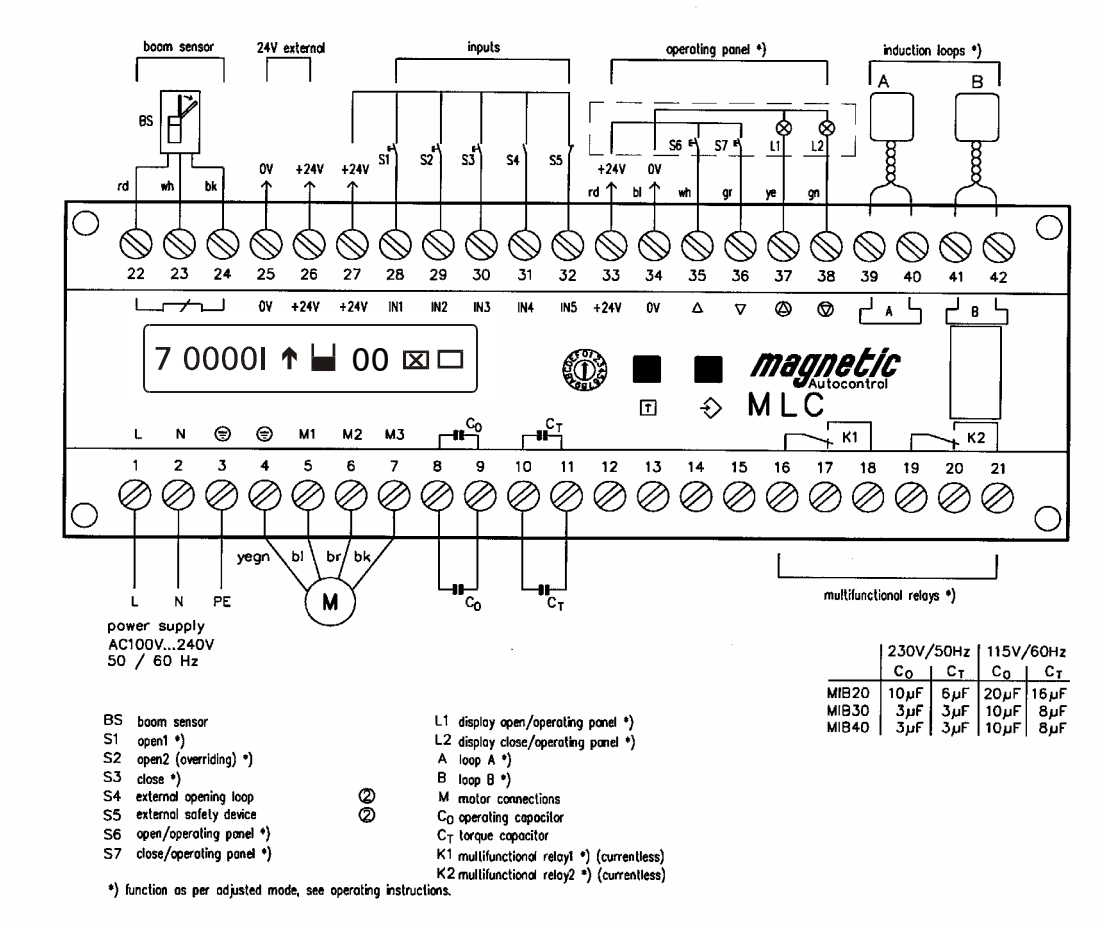
- Ticket Spitters
- Vehicle Detectors
- Card Readers
- Coin and Token acceptors
- Radio Controllers
- Switches, Push buttons, and other devices.

4.0 MLC Controller

Warning!
The following description is based on the standard parameter S 24008.
Other parameters sets are not described in this manual.

4.1 General

The MLC control unit (Magnetic Lane Controller) has been specially designed for use with MIB 20/30/40 barrier gates.
All standard configurations can be achieved with this new generation controller.
Via a potentiometer (boom position sensor), located at the motor drive shaft, the position of the barrier arm is continuously detected and the MLC controller evaluates the information.
This replaces the limit switch that is used in conventional barrier control systems. The combination of the potentiometer and the MLC unit guarantees the best possible control of the barrier boom movement.
The controller also has a 16-digit LCD display that shows the current settings and in/out - put stages at any time.
Software modifications are normally included at the factory but they can also be loaded very easily into the controller unit at some later date by connecting a software memory card via the interface connector.
The barrier is factory wired and supplied ready for immediate connection.



	230V/50Hz		115V/60Hz	
	C_O	C_T	C_O	C_T
MIB20	10µF	6µF	20µF	16µF
MIB30	3µF	3µF	10µF	8µF
MIB40	3µF	3µF	10µF	8µF

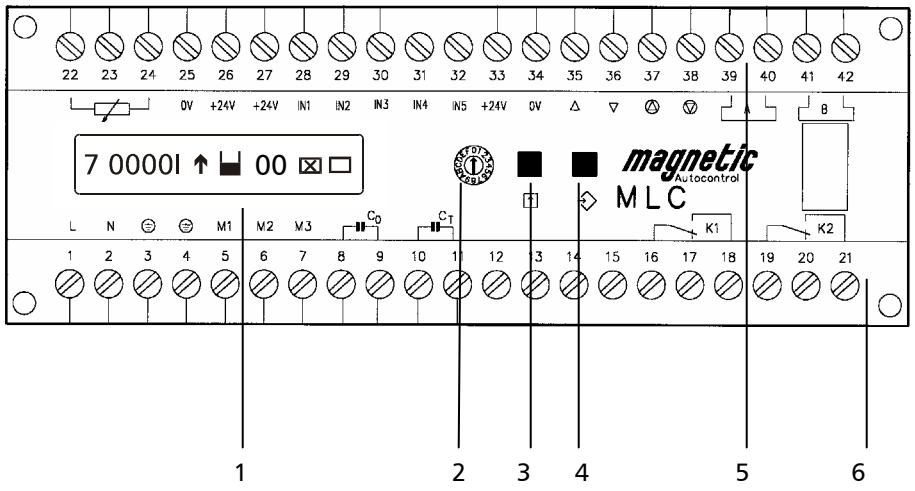
BS boom sensor
S1 open1 *)
S2 open2 (overriding) *)
S3 close *)
S4 external opening loop ②
S5 external safety device ②
S6 open/operating panel *)
S7 close/operating panel *)

L1 display open/operating panel *)
L2 display close/operating panel *)
A loop A *)
B loop B *)
M motor connections
C_O operating capacitor
C_T torque capacitor
K1 multifunctional relay1 *) (currentless)
K2 multifunctional relay2 *) (currentless)

*) function as per adjusted mode, see operating instructions.

4.1 MLC Controller Setup

Abb.S0227
MLC control panel



1 16- digit liquid crystal display (LCD) for indicating operational and programmed data
2. Rotary selector switch to select operating and setup modes
3. Black button open/scroll/save (operating mode/programming mode)
4. White button close/enter (operating mode/programming mode)
5. Terminal strip – control voltage side
6. Terminal strip – Motor and relay output

NOTE:
THE MLC* CONTROLLER HAS UNIVERSAL MAIN VOLTAGE INPUT (85-V-265V) BUT THE MOTOR DOESN'T. PLEASE CHECK THE SERAIL NUMBER LABEL FOR THE BARRIER FOR INPUT VOLTAGE.

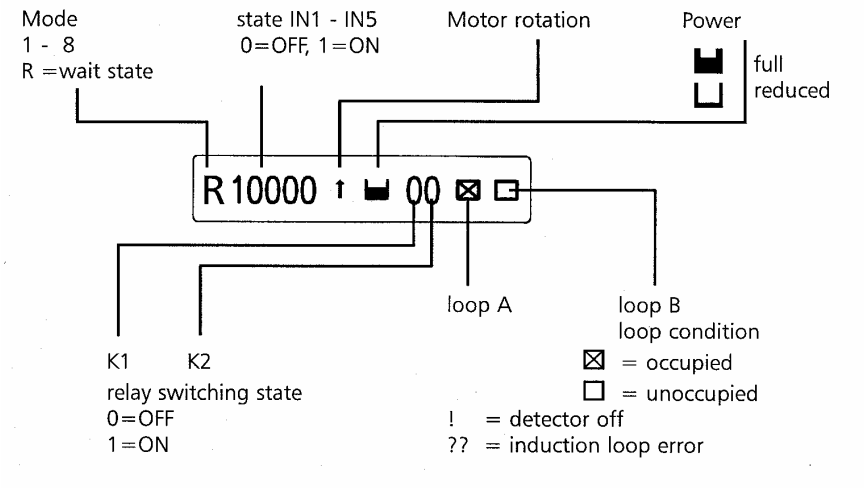
4.2 Display information

Normal operating mode, rotary switch set to '0'. Following information is displayed:

Note:

IN5 (external safety input) must be made (activated) in order for the barrier gate to operate. Standard factory setup is a jumper wire to activate this input and using the internal Loop A as safety device.

Abb.S0228
Display information



4.3 Programming and reading the operating data

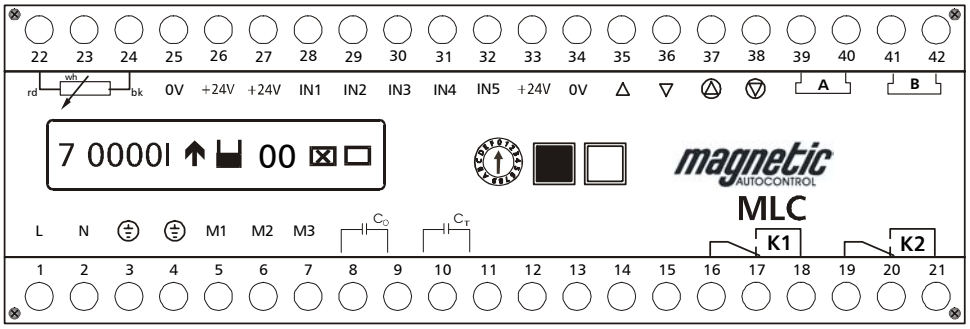


Abb. S0230

General operating data:

Rotary Switch Position 0: Barrier operating mode
Rotary Switch Position 1: program number ..... 1 - 8
Rotary Switch Position 2: torque time ..... 1 - 30 sec.
Rotary Switch Position 3: barrier-open period ..... 1 - 255 sec.
Rotary Switch Position 4: Sensitivity induction loop A ..... 0 - 9 (0=min., 9=max.)
Rotary Switch Position 5: Sensitivity induction loop B ..... 0 - 9 (0=min., 9=max.)
Position 6: detector mode A ..... 0 - 9 (see table for function description)
Position 7: detector mode B ..... 0 - 8 (see table for function description)
Position 8: frequency of induction loops A/B ..... 10,000 Hz - 90,000 Hz
Position 9: spare
Position A: spare
Position B: spare
Position C: spare
Position D: hardware error controller ..... hexadecimal error code
Position E: language ..... German, English, French, Spanish
Position F: factory settings ..... resets all operating data to default settings

4.3.1.1 Programming modes short description

(Selector switch position '1' see chapter 5.0 for detailed description):

Program number	Function:
1	Barrier controlled by a potential-free switch
2	Dead man function
3	Barrier controlled by pulses from a single push button
4	Barrier controlled by pulses from two separate push buttons
5	Automatic with barrier-hold open timer
6	Automatic with barrier-hold open timer, opening loop disabled when vehicle passes from opposite direction
7	Automatic without barrier-hold open timer
8	Automatic without barrier-hold open timer, opening loop disabled when vehicle passes from opposite direction

4.3.1.2 Short description of the general operating data:

Torque time: Pos.2	Period for which the barrier motor has full torque, when time expires controller switches to low power consumption.
Barrier-hold open timer Pos.3:	Time after which the barrier closes automatically if no vehicle has passed through the safety device.
Loop sensitivity Loop A Pos. 4 Loop B Pos. 5	Inductive loop Sensitivity level A = safety/closing loop, B = opening / presence loop
Detector mode Loop A Pos. 6 Loop B Pos. 7	Function of the loop detectors A/B and the relays K1/K2. See Section 6.5: 'Adjusting the induction loops'.
Detector frequency Pos. 8	Displays current frequency for loop A and loop B See Chapter 9.0 for more details.
K1 relay output Pos. B	This setting is only functioning when Mode Loop a = 0 (disabled). The position when Relay K1 should switch can be adjusted.
Hardware error Pos. D	Hexadecimal error code, only relevant for manufacturer's own error detection procedures
Language Pos. E	Language selection for LCD messages (German, English, French, Spanish)
Factory settings Pos. F	Resets the operating data to the original default settings. Caution! Use only in exceptional circumstances!

5.0 Programming Modes

1.0 To select a Programming mode turn the rotary switch in position 1.
Display Message:

program number X

X = Current Program mode number

2.0 To change to different Program Mode press and hold both, the black and the white button down. A cursor will appear below the number. Release both buttons.
3.0 When cursor appeared below the number use the black button to scroll through the available program modes.
4.0 When desired mode appeared on display press the white button.

Display Message:

Save Y=↑ N=↓ ?

5.0 In order to save your changes press the Black button

Display Message:

program number X

X = Selected Program mode number

6.0 To return to the normal operating mode turn rotary switch to Position 1

5.1 Available Program Modes and functions

Important note: The information provided here is based on the standard program S24008. Differences may exist to other standard programs or customized versions. These programs are documented and attached to this standard manual as addendum.
To find out what software is currently installed please read chapter 17.1. All external equipment that uses the MLC* controller inputs (e.g. push buttons, light barriers, limit switches) must be connected as potential free contacts. Contact Magnetic for advice before connecting any equipment that doesn't meet those requirements.

Note:
DO NOT CONNECT ANY DEVICE WHICH WOULD DELIVER ANY VOLTAGE OF ANY KIND TO THE INPUTS OF THE MLC* CONTROLLER.

Note:
External safety devices other then the internal loop A of the MLC* controller must be connected as normally closed contact to IN 5 (Terminal 32) and terminal 33 (+24VDC). If the internal loop A is used as safety device no additional wiring is necessary but a jumper wire between IN5 (terminal 32) and terminal 33 (+24VDC) is imperative. This jumper wire comes factory wired and loop A is active as safety device.

Following are the functional descriptions of the available Program Modes

5.1.1 Program 1 (Mode 1):

(Maintained contact)

A potential free switch controls the barrier.

Contact closed = barrier closed. Contact open = barrier open.

Internal Loop A (safety loop) will not close the gate. Loop B can only operated as presence loop.

Connections:

IN1 Terminal 27 and 28 = no function

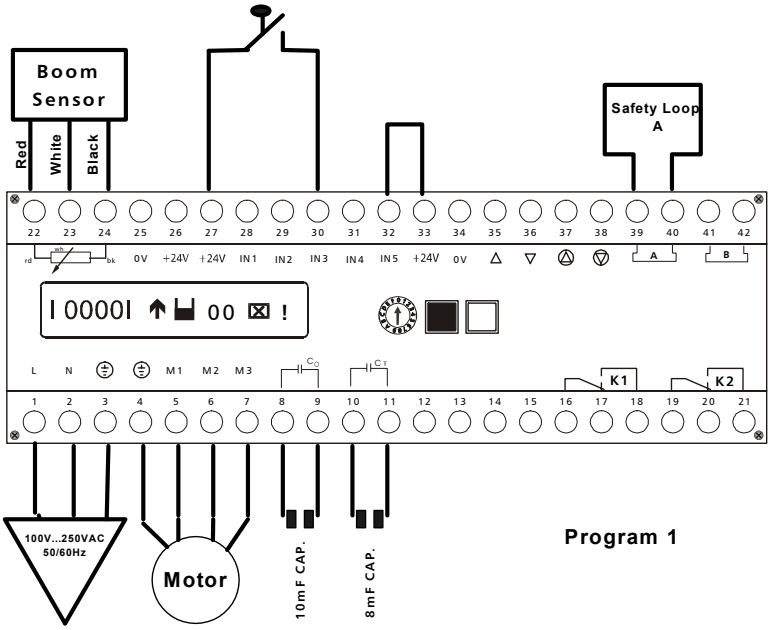
IN2 Terminal 27 and 29 = no function

IN3 Terminal 27 and 30 = Contact closed=gate closed, Contact open=gate open.

IN4 Terminal 27 and 31 = no function

IN5 Terminal 31 and 33 = External Safety device (Normally closed contact). The safety device will not close the gate. Loop B can only be operated as presence loop.

Wiring Diagram:



Program 1

Note:

This program mode is mostly used when only one switch is available and a guard, who is in the vicinity of the barrier, operates the gate.

When using other safety devices then the internal safety Loop A connect it to IN5 on terminal 32 and 33. The external safety device must use a NC contact and the existing jumper wire must be removed. When no external safety device is used, a jumper wire on IN 5 (wired ex factory) is necessary to operate the gate.

All inputs must be potential free (dry contacts) contacts.

5.1.2 Program 2 (Mode 2):

Dead-man (Pulse to open, maintain contact to close). The gate closing input must be activated (made) until the arm reaches the full down position.

Internal Loop A (safety loop) or the external safety device (IN5) will not close the gate. Loop B can only operated as presence loop.

Connections:

IN1 Terminal 27 and 28 = Momentary Signal (pulse) to open the gate.

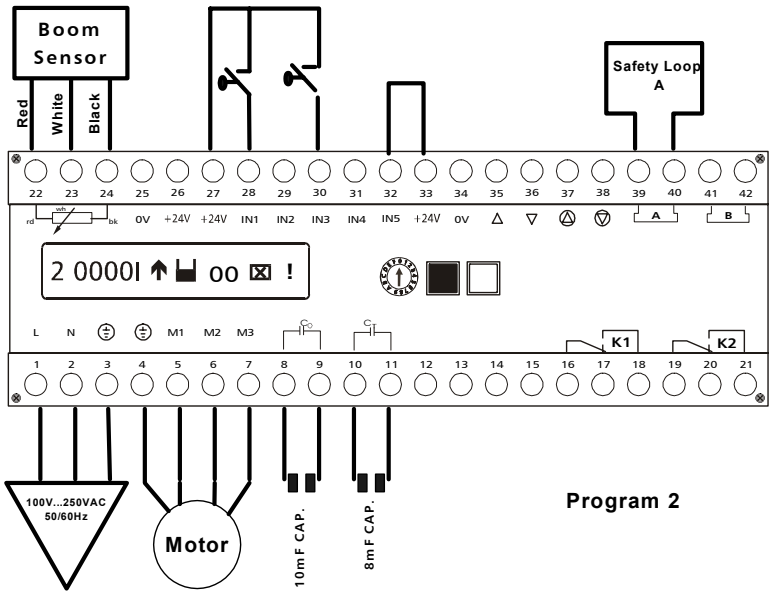
IN2 Terminal 27 and 29 = no function

IN3 Terminal 27 and 30 = Maintained Contact to close the gate

IN4 Terminal 27 and 31 = no function

IN5 Terminal 31 and 33 = External Safety device (Normally closed contact).

Wiring Diagram:



Program 2

Note:

This program mode is mostly used when a guard who is in the vicinity of the barrier guards the entrance or exit.

When using other safety devices then the internal safety Loop A connect it to IN5 on terminal 32 and 33. The external safety device must use a NC contact and the existing jumper wire must be removed. When no external safety device is used a jumper wire on IN 5 (wired ex factory) is necessary to operate the gate.

All inputs must be potential free (dry contacts) contacts.

5.1.3 Program 3 (Mode 3):

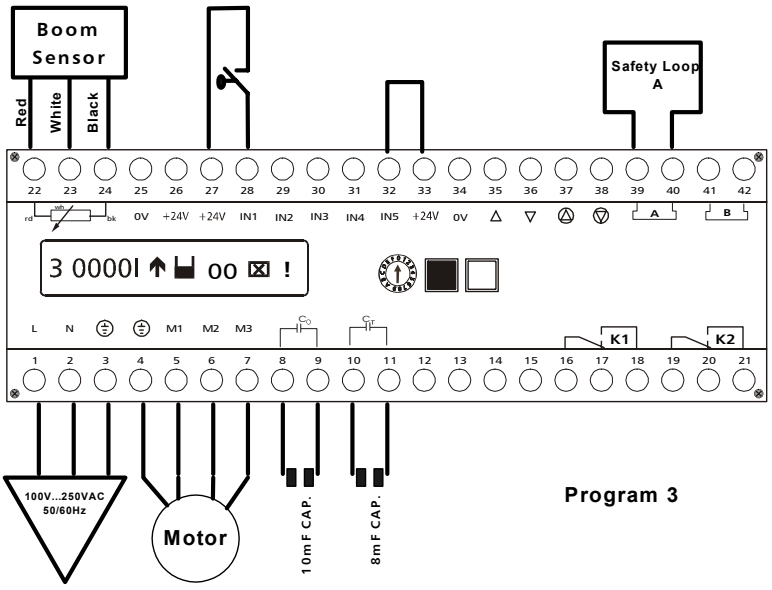
Pulse control
Each pulse (input) results in a change of travel direction (up/down) of the barrier arm.
1st pulse: barrier opens, 2nd pulse: barrier closes, 3rd pulse: barrier opens, ... etc.

Internal Loop A (safety loop) or the external safety device (IN5) will not close the gate. Loop B can only be operated as the presence loop.

Connections:

IN1 Terminal 27 and 28 = Momentary Signal 1st pulse: barrier opens, 2nd pulse: barrier closes, 3rd pulse: barrier opens, ... etc. IN2 Terminal 27 and 29 = no function
IN2 Terminal 27 and 29 = no function
IN3 Terminal 27 and 30 = no function
IN4 Terminal 27 and 31 = no function
IN5 Terminal 31 and 33 = External Safety device (Normally closed contact)

Wiring Diagram:



Program 3

Note:
This program mode is mostly used when a guard who is in the vicinity of the barrier guards the entrance or exit.
When using other safety devices then the internal safety Loop A connect it to IN5 on terminal 32 and 33. The external safety device must use a NC contact and the existing jumper wire must be removed. When no external safety device is used a jumper wire on IN 5 (wired ex factory) is necessary to operate the gate.
All inputs must be potential free (dry contacts) contacts.

5.1.4 Program 4 (Mode 4):

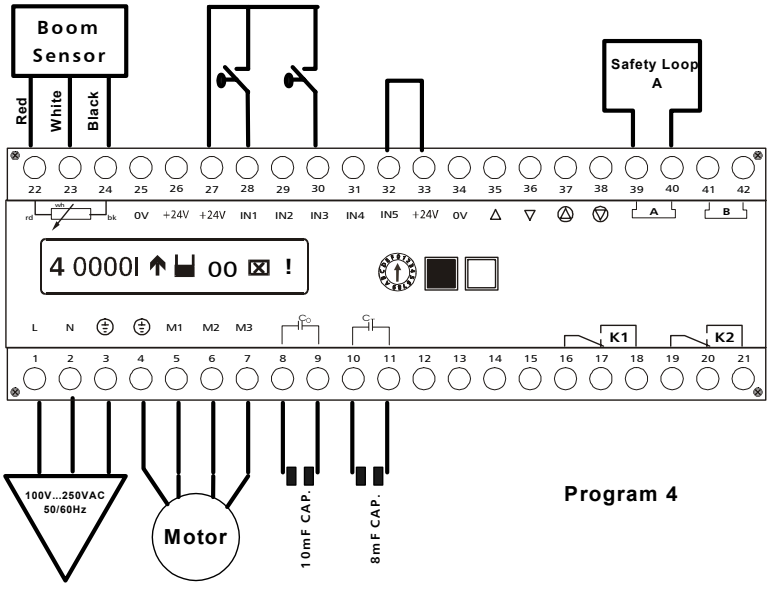
Pulses from two different normally open devices control the barrier position.

Internal Loop A (safety loop) or the external safety device (IN5) will not close the gate. Loop B can only operated as presence loop.

Connections:

IN1 Terminal 27 and 28 = Momentary Signal gate open
IN2 Terminal 27 and 29 = Override gate open (highest priority)
IN3 Terminal 27 and 30 = Momentary Signal gate close
IN4 Terminal 27 and 31 = no function
IN5 Terminal 31 and 33 = External Safety device (Normally closed contact)

Wiring Diagram:



Program 4

Note:
This program mode is used mostly on toll road applications where lane controllers control the gate and no automatic functioning is required.
When using other safety devices then the internal safety Loop A connect it to IN5 on terminal 32 and 33. The external safety device must use a NC contact and the existing jumper wire must be removed. When no external safety device is used a jumper wire on IN 5 (wired ex factory) is necessary to operate the gate.

Inputs on IN2 will override all existing closing inputs.

All inputs must be potential free (dry contacts) contacts..

5.1.5 Program 5 (Mode 5):

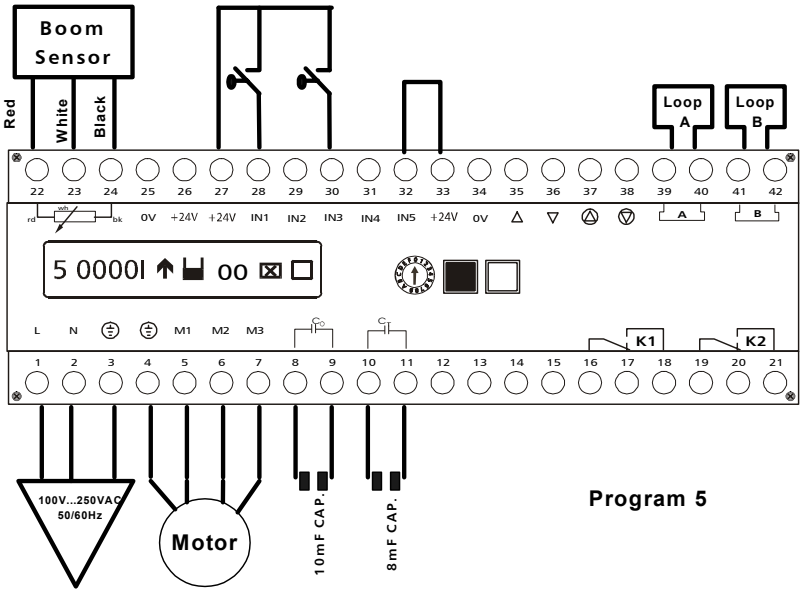
Automatic Mode.

The barrier is opened by a pulse and/or opening loop and closes automatically after an adjustable time, or immediately after the safety device (Loop A or external IN5) has been passed or a closing input on IN3 has been given.

Connections:

IN1 Terminal 27 and 28 = Momentary Signal gate open
IN2 Terminal 27 and 29 = Override gate open (highest priority)
IN3 Terminal 27 and 30 = Momentary Signal gate close
IN4 Terminal 27 and 31 = no function
IN5 Terminal 31 and 33 = External Safety and gate Closing device (Normally closed contact.

Wiring Diagram:



Program 5

Note:

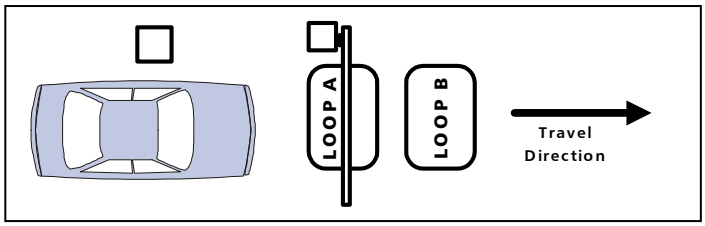
This program mode is used when automatic functioning of the gate is required. The gate receives an opening command and closes when the vehicle passes through the safety/closing loop after the adjustable hold-open time expires or when a closing input on IN3 was made.

When using other safety devices then the internal safety Loop A connect it to IN5 on terminal 32 and 33. The external safety device must use a NC contact and the existing jumper wire must be removed. When no external safety device is used a jumper wire on IN 5 (wired ex factory) is necessary to operate the gate.

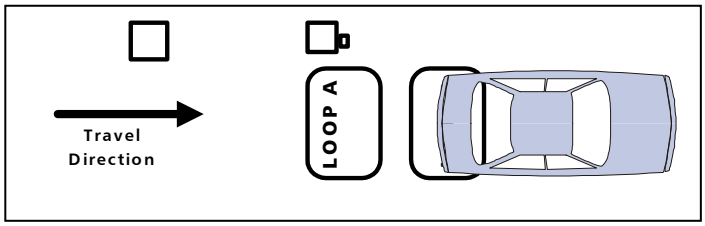
Inputs on IN2 will override all existing closing inputs.
All inputs must be potential free (dry contacts) contacts

If Loop A is activated and loop B configured as opening loop the gate closes after the vehicle passed **both** loops, **not** immediately after leaving the safety loop.
Logic: Loop A, AB,B, gate closes. See drawings below.

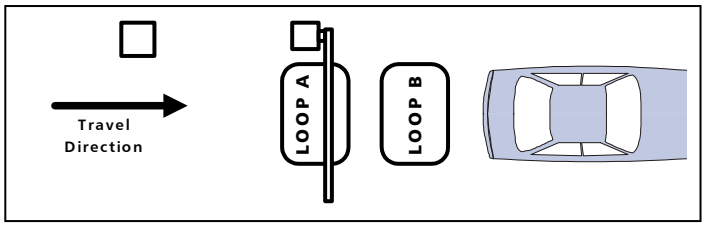
1.0 Gate closed, patron opens gate.



2.0 Gate opens and vehicle passes through Loop A, gate still in up Position.



3.0 Vehicle leaves Loop B and gate closes.



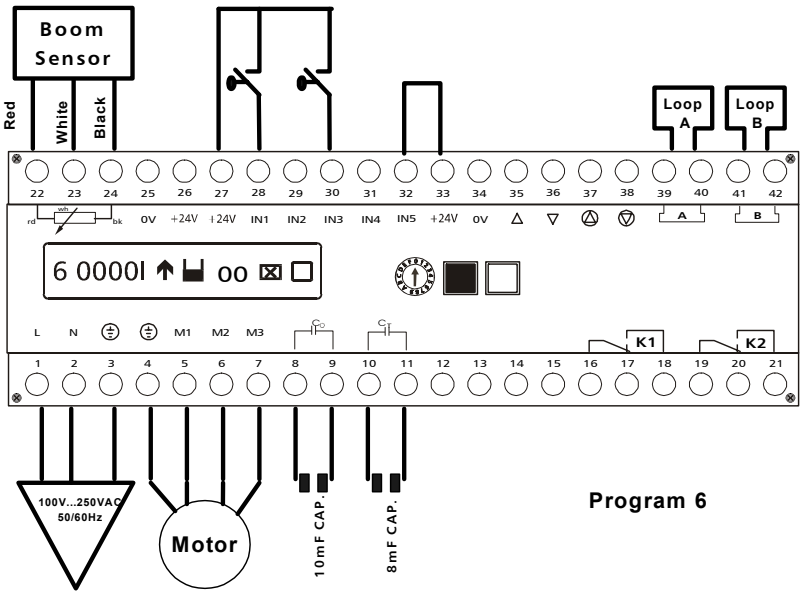
5.1.6 Program 6 (Mode 6):

This program works essentially the same way as Program 5 but has directional loop logic in addition to the Program 5 features. The difference is that in Program 5 the barrier closes automatically after a vehicle has completely passed over the safety and opening loops. In Program 6, the barrier closes immediately after the vehicle has crossed the safety loop. The opening loop has, at this time, no effect as long the safety-closing loop is triggered first.

Connections:

IN1 Terminal 27 and 28 = Momentary Signal gate open
IN2 Terminal 27 and 29 = Override gate open (highest priority)
IN3 Terminal 27 and 30 = Momentary Signal gate close
IN4 Terminal 27 and 31 = no function
IN5 Terminal 31 and 33 = External Safety and gate Closing device (Normally closed contact.)

Wiring Diagram:



Program 6

Note:

This program mode is used when automatic functioning of the gate is required. The gate receives an opening command and closes when the vehicle passes through the safety/closing loop after the adjustable hold-open time expires or when a closing input at IN3 was made.

When using other safety devices then the internal safety Loop A connect it to IN5 on terminal 32 and 33. The external safety device must use a NC contact and the existing

jumper wire must be removed. When no external safety device is used a jumper wire on IN 5 (wired ex factory) is necessary to operate the gate.

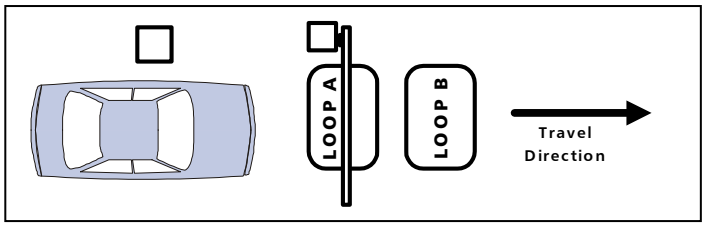
Inputs on IN2 will override all existing closing inputs.

All inputs must be potential free (dry contacts) contacts

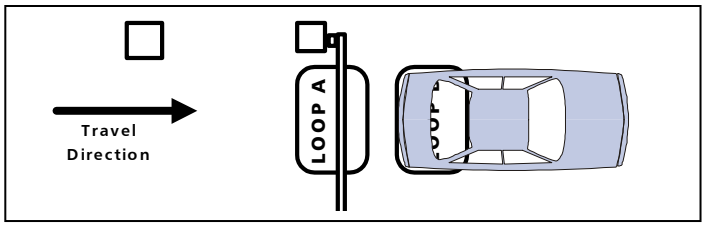
If Loop A is activated and loop B configured as opening loop the gate closes after the vehicle passed Loop A

Logic: Loop A, AB,B gate closes. See drawings below.

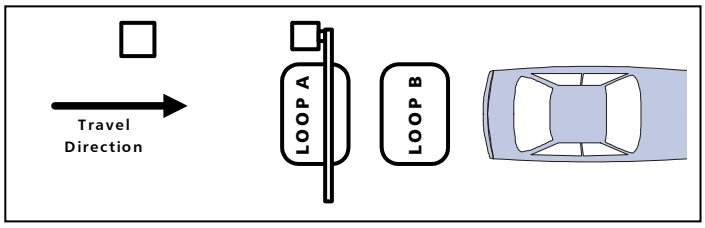
1.0 Gate closed, patron opens gate.



2.0 Gate opens and vehicle passes through Loop A, gate closes.



3.0 Vehicle leaves Loop B and gate remains closed.



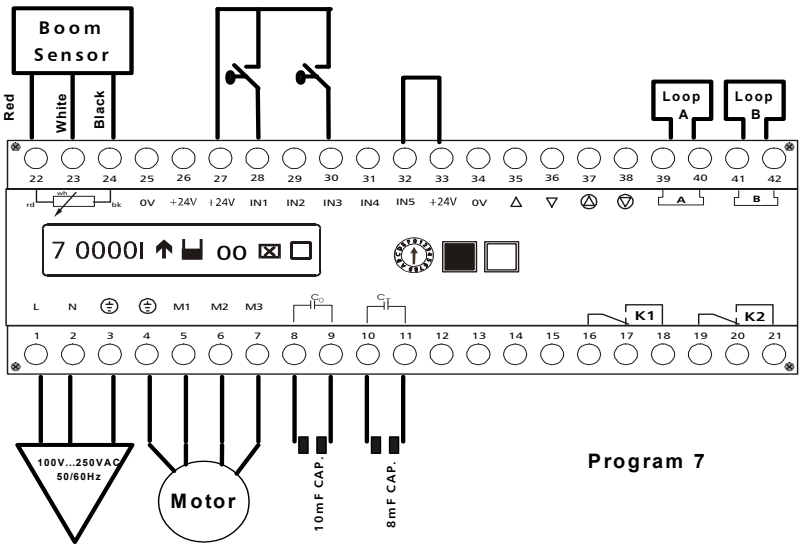
5.1.7 Program 7 (Mode 7):

Like mode 5 but without automatic time-out to close. The barrier remains open until a vehicle has activated the safety device and only closes after it has left the detection area or a closing command was given.

Connections:

IN1 Terminal 27 and 28 = Momentary Signal gate open
IN2 Terminal 27 and 29 = Override gate open (highest priority)
IN3 Terminal 27 and 30 = Momentary Signal gate close
IN4 Terminal 27 and 31 = no function
IN5 Terminal 31 and 33 = External Safety and gate Closing device (Normally closed contact.)

Wiring Diagram:



Program 7

Note:

This program mode is used when the gate is used in parking applications where the barrier is controlled by a entry or exit station and no hold-open timer is required. The gate will only close when a vehicle passed through the safety/closing loop or a closing pulse was given (for example: Back out timer).
When using other safety devices then the internal safety Loop A connect it to IN5 on terminal 32 and 33. The external safety device must use a NC contact and the existing jumper wire must be removed. When no external safety device is used a jumper wire on IN 5 (wired ex factory) is necessary to operate the gate.

Inputs on IN2 will override all existing closing inputs.
All inputs must be potential free (dry contacts) contacts

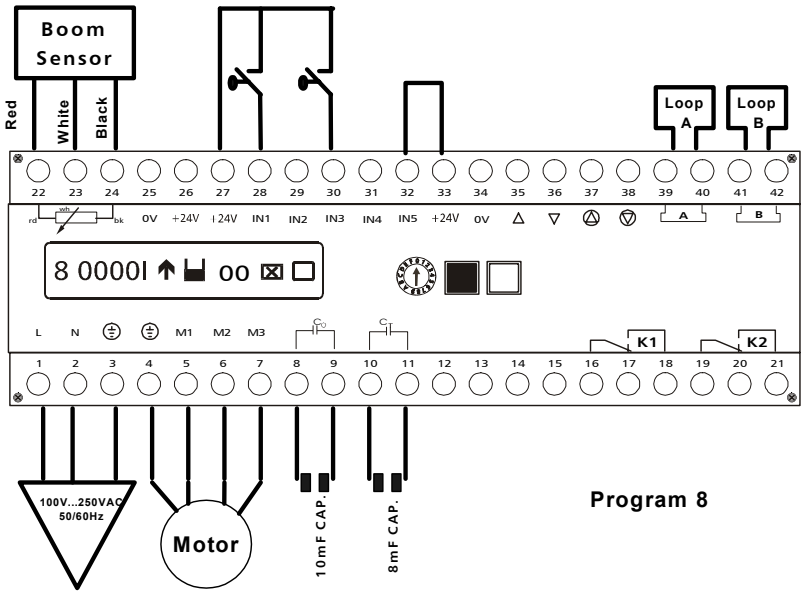
5.1.8 Program 8 (Mode 8):

Like mode 6 but without automatic time out to close. The barrier remains open until a vehicle has activated the safety device and only closes after it has left the detection area or a closing command was given.

Connections:

IN1 Terminal 27 and 28 = Momentary Signal gate open
IN2 Terminal 27 and 29 = Override gate open (highest priority)
IN3 Terminal 27 and 30 = Momentary Signal gate close
IN4 Terminal 27 and 31 = no function
IN5 Terminal 31 and 33 = External Safety and gate Closing device (Normally closed contact.)

Wiring Diagram:



Program 8

Note:
This program mode is used when automatic functioning of the gate is required. The gate receives an opening command and closes when the vehicle passes through the safety/closing loop after the adjustable hold-open time expires or when a closing input at IN3 was made.
When using other safety devices then the internal safety Loop A connect it to IN5 on terminal 32 and 33. The external safety device must use a NC contact and the existing jumper wire must be removed. When no external safety device is used a jumper wire on IN 5 (wired ex factory) is necessary to operate the gate.

Inputs on IN2 will override all existing closing inputs.
All inputs must be potential free (dry contacts) contacts