

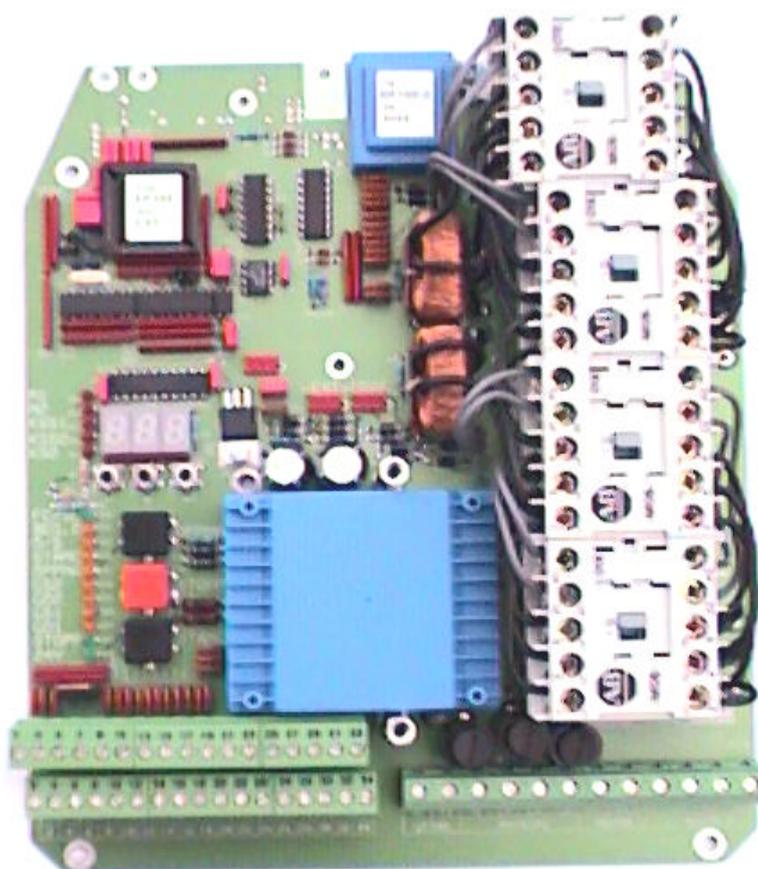
## **Automatic Control Panel, Type EP102**

*For electrically operated gates, barriers & doors*

*EP102-1 For control of one motor.    EP102-2 For control of two motors*

### **User Manual**

Version 1.03  
Edition 1



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## General Specification

### Use

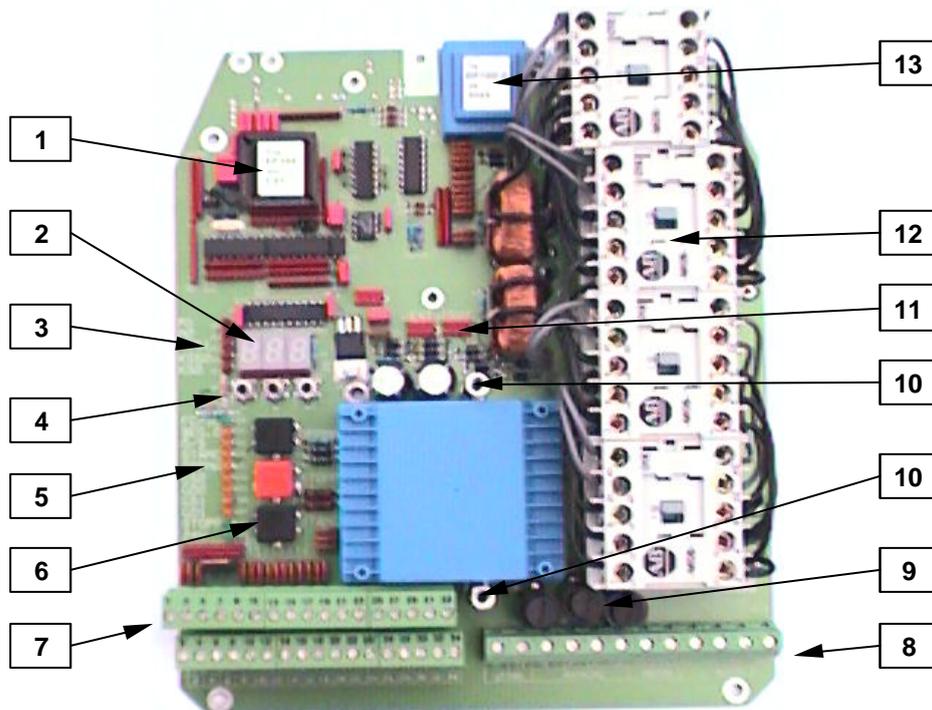
The EP102 control panel has been designed with great care to control the entry and exit of vehicles and personnel, through gates, shutters, doors and rising arm barriers. It provides a multi-purpose interface, evaluating signals from the Access control equipment, limit switches and safety equipment, to give the customer a vast range of programmable options, which are fully explained herein.

### Automatic control parameters

EP102 is DAAB's standard automatic control panel system. It contains all the equipment necessary to control up to two electric drive motors for one or two gates/barriers: contactors, motor protection devices, load safety sensor systems, safety buffer monitoring, alarm indicators, internal buttons for local test operation, display window and programming pad are built onto the circuit board. The basic control panel can be fitted with a range of accessories such as inductive vehicle detection loops, radio control, traffic lights and magnetic locks etc.

### Automatic control panel components

No.	Specification
1	Program chip with indication of installed program version.
2	Display window to indicate measured values and settings.
3	Alarm indicator diodes.
4	Push-buttons for setting control parameters.
5	Control display diodes.
6	Push-buttons for local gate operation, required for service and commissioning.
7	Low-voltage terminal strip for control signals.
8	Supply-voltage terminal strip for power supply and output to motors.
9	Fuses for motors and automatic controls.
10	Spacers for mounting optional supplementary accessory card.
11	Output for supplementary accessory card.
12	Contactors for starting, stopping and reversing electric motors.
13	Rating plate showing designation of model and serial number.



## Technical specification

<b>Dimensions (WxHxD)</b>	190x224x60 mm
<b>Weight</b>	Model type Ep102-2 =1.7 kg. Model type EP102-1=1.4 kg.
<b>Supply voltage</b>	EP102 is suitable for three-phase or single-phase operation.
Supply voltage, three phase	3x400VAC, 3x230VAC, ( $\pm 10\%$ ) Fuse max T10A.
Supply voltage, single phase	1x230VAC ( $\pm 10\%$ ) Fuse max T10A.
Frequency	50Hz
<b>Motor</b>	EP102-1 for single drive motor, EP102-2 for two drive motors.
Motor, three-phase operation	three-phase induction motor, 0.18-0.55kW.
Motor, single-phase operation	single-phase motor with operating condenser 0.18-0.25kW.
<b>Fuses</b>	Internal fuse =T4A, external fuse required = T10A.
<b>Power consumption</b>	Automatic controls max 22 VA + electric motors.
<b>Temperature range</b>	0 to 50°C
<b>Safety Buffers</b>	There are 3 analogue inputs for safety buffer monitoring.
Closing direction	2 inputs, KSS1 and KSS2, for safety buffers - close.
No. of close buffer/inputs	2 safety buffers may be connected to each KSS input terminal.
Opening direction	There is one KSÖ input for safety buffers - open.
No. of open buffer/inputs	4 safety buffers may be connected to the KSÖ input terminals.
Resistance	2k $\Omega$ with 1% tolerance and power resistance at least $\frac{1}{2}$ W.
<b>Safety circuit</b>	
Safety and test output	24V/max 0.5A for contactor operation, auto-test of inputs for safety buffers and limit position.
Stop circuit	Max current 300mA when contactors are closed. Voltage drop max 1.0V.
Max resistance	Max 3 $\Omega$ in stop circuit.
Cable length	Cable length: 0.75mm <sup>2</sup> =max 60m. 1.5mm <sup>2</sup> =max 120m.
Inputs	1 analogue input 0-50V meters voltage after stop circuit.
<b>Limit position</b>	Current per limit position max 125mA. Voltage drop max 0.5V.
Max resistance	4 $\Omega$ in circuit for limit position.
Cable length	Cable length: 0.75mm <sup>2</sup> =max 90m. 1.5mm <sup>2</sup> =max 180m.
Inputs	See digital inputs.
<b>Motor protection</b>	Internal motor protection circuit meters current on phase L1.
Range of measurement	0.5-4 A
<b>Load sensor</b>	Measures phase shift between voltage and current.
Range of measurement	cos $\phi$ = 0.05-0.90
<b>Digital inputs (9)</b>	For operation and control of gate.
Logic 0	0-8V
Logic 1	12-30V
Input current	5mA at 24V
<b>Supply to photocell</b>	24V max 50mA
<b>24V DC output</b>	24V DC for supply to external access control or signal devices etc.
Load	Max 300mA
<b>Communication</b>	RS-485

# Connection instructions

## Power Supply connection

For the EP102 control panel to be electrically safe, function correctly and comply with current regulations, it is important that it is assembled and connected correctly.

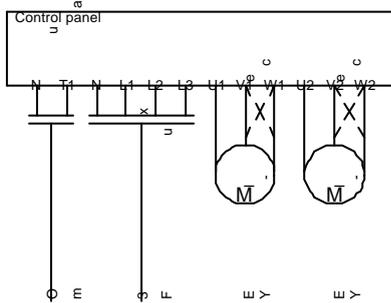
**NB: The circuit board must be earthed via the mounting plate.**

1. The circuit board must be mounted on a metal plate.
2. If the plate has been painted, see that the paint is scraped off around the fixing points so that a good contact is achieved.
3. The 4 No. M4x10 spacers included must be used..
4. An earth terminal strip must be available on the metal plate.
5. The earth terminal strip must be suitably connected to earth.

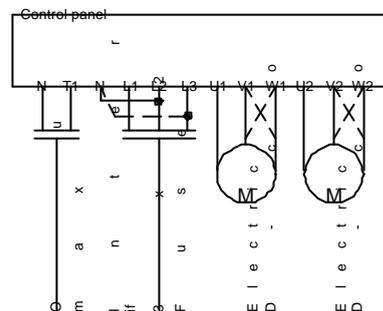
### Remember!

- The power supply should only be connect by a competent person.
- The power supply to the circuit board should have a maximum T10A fuse.
- The power supply should be connected via an isolator.
- Check that the supply and motor voltages are compatible.
- The largest motor size that can be connected is 0.55kW (3-phase).
- See commissioning for how to check that the motor is running in the right direction.

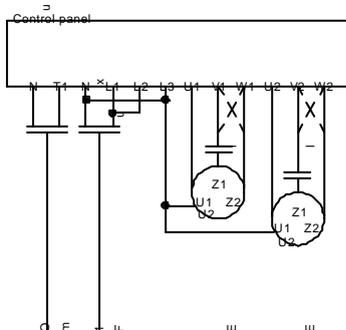
### Supply 3x400V with neutral



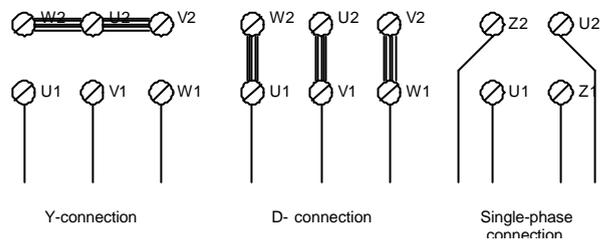
### Supply 3x230V without neutral



### Supply, single-phase 230V



### Connection of electric motor



Other voltages are available if requested.

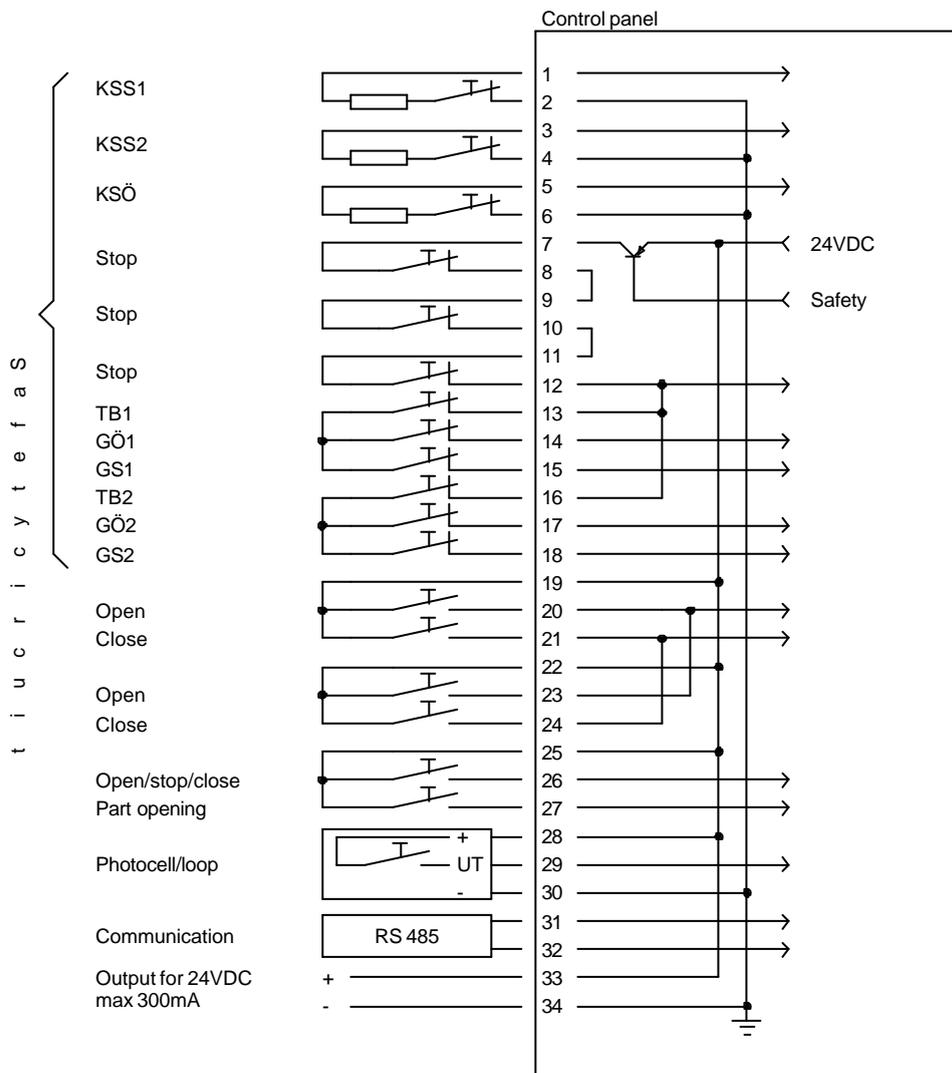
wrong

# Low voltage connection

## Remember!

- Connection should only be carried out by a competent person. It is important that any personal electrostatic charge is discharged prior to working on the panel.
- The panel must be isolated from the power supply prior to commencing work.
- Remember that the gate may become dangerous if incorrectly connected.
- Do not connect anything in the safety circuit, e.g. relays or lamps, that may interfere with the Safety circuit. If an intermediate relay must be used to obtain open and closed signals, DAAB Should be contacted for instructions. Safety buffers, stop and limit switches are considered part of the safety circuit.
- Safety buffer circuits must contain a 2.0KΩ resistor to ensure that if the circuit fails, it fails 'safe'.
- This control panel is designed for many applications therefore not all the input signals may be needed.
- Un-used "Stop" terminals to be linked, and photocell / loop terminals to be linked if not used. For explanation of the input signals see the next page.

To remain 'fail safe' Photocell/loop detectors, when powered must have normally closed contacts, and when actuated or failed they must revert to open circuit.



## List of Input Signals

### Safety buffer

Name	Term.	Function
KSS1	1,2	Closing safety buffer, stops gate when closing. Resistance measurement.
KSS2	3,4	Closing safety buffer, stops gate when closing. Resistance measurement.
KSÖ	5,6	Opening safety buffer, stops gate when opening. Resistance measurement.

### Stop, safety circuit

Name	Term.	Function
Safety Out	7	Output for safety circuit 24V/0.5A
Stop	7,8	Stops gate. Contact normally closed, wire link required if not used.
Stop	9,10	Stops gate. Contact normally closed, wire link required if not used.
Stop	11,12	Stops gate. Contact normally closed, wire link required if not used.

### Limit positions, safety circuit

Name	Term.	Function
TB1	13	Motor 1 thermoswitch, cuts out at high temperature.
GÖ1	14	Opening limit switch for motor 1. Breaks contact in fully open position.
GS1	15	Closing limit switch for motor 1. Breaks contact in fully closed position.
TB2	16	Motor 2 thermoswitch, cuts out at high motor temperature.
GÖ2	17	Opening limit switch for motor 2. Breaks contact in fully open position.
GS2	18	Closing limit switch for motor 2. Breaks contact in fully closed position.

### Control keys

Name	Term.	Function
+24VDC	19	24V DC output for access controls.
Open	20	Open gate on open signal 24V DC.
Close	21	Close gate on close signal 24V DC .
+24V DC	22	24V DC output for access controls.
Open	23	Open gate on open signal 24V DC.
Close	24	Close gate on close signal 24V DC.
+24V DC	25	24V DC output for access controls.
Open/stop/ close Prog. Input 1	26	Open/Stop/Close by pulse from single remote push button for gate leaf 1. OR Interlock / siphon, OR automatic closing disconnected.
Part opening Prog Input 2	27	Full or partial opening of gate leaf 1

### Photocell, safety loop

Name	Term.	Function
+24V DC	28	Output for photocell/Induction loop 24V/50mA.
FC/SL	29	Photocell/loop, stops gate when closing. Contact normally closed, when powered.
0V	30	Earth connection.

### Communication

Name	Term.	Function
RS485	31,32	Communication with a separate DAAB panel.

### 24V DC output

Name	Term.	Function
+24V DC	33	24V DC for supply to additional access controls
0V	34	Earth termination.

## Siphon or interlock between two gates or between a gate and a barrier

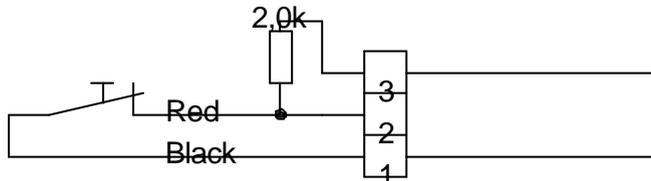
### Safety buffer connection

- Resistors must always be placed in safety circuits to enable the system to fail safe.
- The resistance value must be  $2k\Omega$  with 1% tolerance and power resistance at least  $\frac{1}{2}W$ .

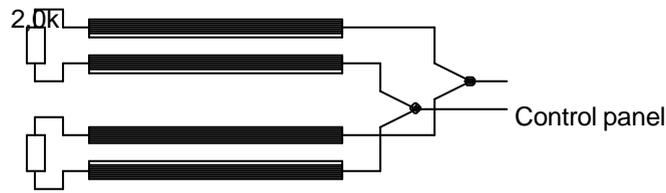
There is a built in safety buffer monitor on the board which functions with both mobile and static safety buffers. The EP102 monitors itself by an autotest, which takes place before each start and after every stop. An error message is received if there is a fault. A  $2.0K\Omega$  resistor must be installed in the safety buffer circuit. The principal of the safety system is that this resistance is measured and any variation from this standard signals an alarm.

When mechanical switching type buffers are used, resistors must be connected in series with buffer. If more than one DAAB type safety buffer is connected, these should be connected in parallel, and the number of buffers set in the control panel. If more than one resistance switching buffer is used, these can be connected in parallel, and the number of buffers set in the control panel. If resistance switching buffers are connected in series, use only one final resistor. See drawings below for details.

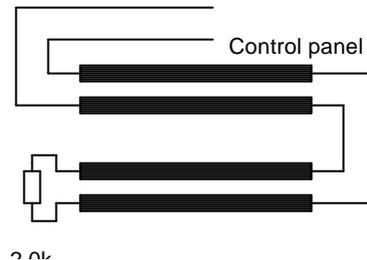
#### DAAB mechanical switching type safety buffer.



#### Solid state (resistance switching) safety buffer series connection.



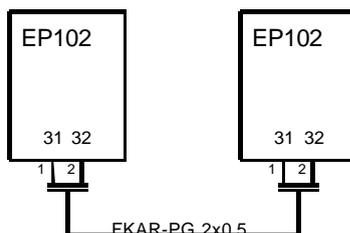
#### Solid state (resistance switching) safety buffer parallel connection.



### Connection between two DAAB panels

To ensure correct communication between two DAAB panels it is important to take note of the following:

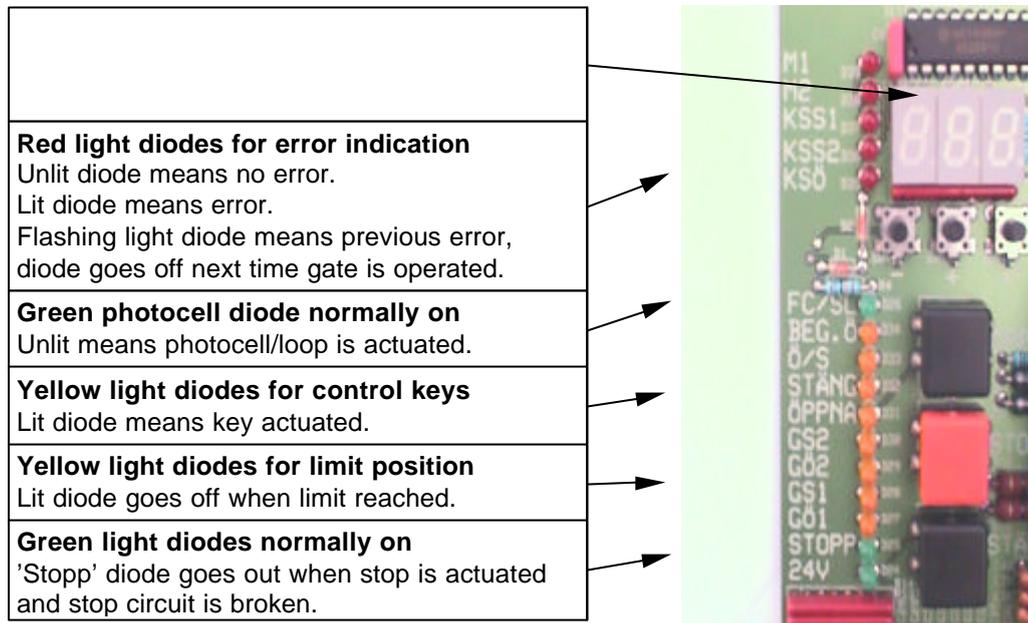
- Choose a twisted two-core screened cable.
- Cable size should not be less  $0,2mm^2$
- Choose a low capacitance cable with capacitance  $50-70 \mu F/m$ .
- Check the polarity.
- We recommend cable FKAR-PG, E 01 721 20.
- 





## Display Diodes

To make matters easier when commissioning and fault-finding, light diodes are provided to indicate faults and input signals.



### Red light diodes for error indication

Unlit diode means no error.  
Lit diode means error.  
Flashing light diode means previous error, diode goes off next time gate is operated.

### Green photocell diode normally on

Unlit means photocell/loop is actuated.

### Yellow light diodes for control keys

Lit diode means key actuated.

### Yellow light diodes for limit position

Lit diode goes off when limit reached.

### Green light diodes normally on

'Stopp' diode goes out when stop is actuated and stop circuit is broken.

Green light diodes normally on

Indication	Function	Normally
FC/SL	Indicates that photocell/loop circuit is live and unbroken.	On
24V DC	Indicates the presence of voltage.	On
STOPP	Indicates that stop circuit is live and unbroken.	On

Red light diodes for alarm

Indication	Function	Normally
M1	Indicates that the load sensor has tripped out for motor 1.	Off
M2	Indicates that the load sensor has tripped out for motor 2.	Off
KSS1	Indicates an error on safety buffer circuit 'closing 1'.	Off
KSS2	Indicates an error on safety buffer circuit 'closing 2'.	Off
KSO	Indicates an error on safety buffer circuit 'opening'	Off

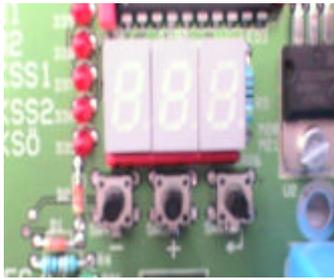
### Yellow light diodes indicating signals from limit positions

Indication	Function
GÖ1	Lit indicates that motor 1 can open more, off in open position
GS1	Lit indicates that motor 1 can close more, off in closed position
GÖ2	Lit indicates that motor 2 can open more, off in open position
GS2	Lit indicates that motor 2 can close more, off in closed position

### Yellow light diodes indicating control signals

Indication	Function
O/S	Indicates signal for open/stop/close remote button. Prog input 1
BEG.O	Indicates signal for partial opening. Prog input 2
STANG	Indicates signal for close.
ÖPPNA	Indicates signal for open.

## Reading and Setting values



CXX	Channel number.
EXX	Error message.
XXX	Read value
XXX flash	Write value.
-	Decrease channel or value
+	Increase channel or value.
↵	Toggle between channel number and value
↵	Save when entering value.

### Display/buttons Function

#### Description

All values are stored in accordance with a *channel list*, as with TV channels, where each TV channel corresponds to a particular programme. Here, each channel corresponds to a certain control parameter or a measured value. The display may either show a *value* of 1-3 digits, or a *channel number* of two digits - a **C** (Channel) will then be shown on the extreme left. This means **Channel number**.

Values may be both read and written; *the value flashes* when a *setting* is being changed.

If **E** (error) is displayed, followed by a number, this is an **Error message**. See error messages.

The ↵ key toggles between the value and the channel number. The value is saved in Write mode. In channel mode, the + channel number key scrolls forward in the channel list. In Write, the value increases.

In channel mode, the – channel number key scrolls backwards in the channel list. In Write, the value decreases.

#### Save mode

If display keys are not pressed for 1.5 minutes, save mode is tripped and displays *decrease in brightness*. As soon as a key is pressed, normal mode is resumed.

#### Read values

Follow the procedure below in order to read values:

1. Press the ↵ key so that that display shows **Channel number** (C at extreme left).
2. Look at the channel list to check the number of the value you want to read.
3. Step up or down with the + or – key to the correct channel number.
4. Press the ↵ key; the **Value** appears on the display..

#### Write values

Follow the procedure below in order to write a value:

1. Press the ↵ key so that the display shows **Channel number** (C at extreme left).
2. Look at the channel list to check the number of the value you want to change.
3. Step up or down with the + or – key to the correct channel number.
4. Press the ↵ key; the **Value** appears on the display.
5. Press the + key. The value begins to flash.
6. Step up or down with the + or – key until the value you want to write is shown.
7. Press the ↵ key: the value is saved.

#### Locked settings

Settings may be locked by service personnel, and cannot then be over written. In that case, channel C99 will be set to 01. Contact service personnel if values need to be written or changed.

#### Error messages

If 'E' appears on the extreme left, this is an error message. When a key is pressed, this message disappears and the display shows channel number.

#### Note all settings

Note all the settings written during commissioning in the channel list under value set (section on channel list for EP102). It is best to use a pencil so that values can be changed.

## Safety circuit

The safety circuit consists of a safety output, stop keys, limit switches and contactors. If the controls should reveal any error during autotest, there is an output in the control panel that cuts the voltage to the contactors. The stop keys are in series with the contactors and cut the voltage to these. There are limit switches in series to each contactor, which break the circuit when actuated.

## Safety buffer monitoring

There are light diodes to indicate when the safety system has been actuated (by coming on). If the safety system has been actuated previously, the light diode flashes. The light diode goes off the next time the gate is operated.

### Setting number of safety buffers (C40,C41,C42)

It is possible to set the number of safety buffers that are connected to the installation. This is normally set at the factory by DAAB. Check the setting as follows:

1. Press the  $\downarrow$  key so that the display shows the channel number (C to extreme left).
2. Step using the + key or the – key until C40 appears (number of buffers KSS1).
3. Press the  $\downarrow$  key. The number appears in the display.
4. Read off the value, which should normally be 1 if a buffer is connected to KSS1.
5. If the wrong number is set, change the value as in items 6-8.
6. Press the + key. The value starts to flash.
7. Step using the + key or the – key until the value you wish to set appears.
8. Press the  $\downarrow$  key. The value is saved.
9. Repeat from item 1 but select channel C41 instead (number of buffers, KSS2).

### Setting function of safety buffers (C47)

It is possible to choose between stop or stop/reverse function when the buffer is actuated. If the gate/door is equipped with safety buffers for both opening and closing you can choose between several combinations for best personal security depending on type of gate or door. See page 22.

## Magnetic lock (extra accessory)

When a magnetic lock is used, the magnet must be released, and the residual e.m.f. from the magnet must be able to dissipate before the gate begins to open. The opening of the gate can therefore be delayed, by an adjustable time of 0-1.0 sec. If the magnetic lock is of the overlap type, the delay time for one of the gate halves must be set.

### Opening time delay (C39)

Check the setting as follows:

1. Press the  $\downarrow$  key so that the display shows the channel number (C to extreme left).
2. Step using the + key or the – key until C39 appears (Open time delay).
3. Press the  $\downarrow$  key. The number appears in the display.
4. Read off the value, which for the DAAB magnetic lock should be 0.5 sec.
5. Correct delay not displayed? Set correct time as in items 6-8.
6. Press the + key. The value starts to flash.
7. Step using the + key or the – key until the value you wish to set appears.
8. Press the  $\downarrow$  key. The value is saved.

## Delay of one gate leaf, for overlap (Slam plate or Electro-magnetic lock)

If there are two gate leaves and one of them overlaps the other, one half can be delayed. Motor 2 is delayed by the time set when opening, and motor 1 when closing.

### Setting delay of one gate half (C38)

1. Press the  $\downarrow$  key so that the display shows the channel number (C to extreme left).
2. Step using the + key or the – key until C38 appears (motor 2 open time delay)
3. Press the  $\downarrow$  key. The number appears in the display.
4. Press the + key. The value starts to flash.
5. Step using the + key or the – key until the value you wish to set appears (normally 3 sec).
6. Press the  $\downarrow$  key. The value is saved.

## Direction of rotation

Check that the motors are running in the right direction by pressing the Close or Open push buttons on the control panel (function as deadman control until "latched" is selected). Transpose the phase connections of the motor if the direction of rotation does not match the command given. If the motor stops, and light diode M1 or M2 begins to flash, the load sensor has tripped out. The swing gate drive arm or barrier/sliding gate drive clutch may now be engaged

## Limit positions

Adjust the limit positions. Run the gate and check that the limit positions cut out in the right position. If the motor stops, and light diode M1 or M2 begins to flash, the load sensor has tripped out. The load sensor may need to be increased before the limit positions can be adjusted. See load sensor.

### Hints for gate use!

It is a good idea to use the load sensor to check that the limit position for closure is correctly adjusted. When the gate reaches closed position, its pressure against the closing post should be just right. When the two meet the load increases, and this can be read off. See load sensor.

## Load sensor

The load sensor must be properly set to function correctly. It functions by measuring the phase shift between voltage and current and calculating  $\cos \phi$  for the electric motor.  $\cos \phi$  at full load for electric motors is normally about 0.80. A higher value means a higher load. The red light diodes M1 for motor 1 and M2 for motor 2 indicate loads higher than the limit value set. On start it is normal for light diodes to flash, since there is a particularly high load at the moment of starting. The load sensor is therefore uncoupled for part of the starting period. This time can be adjusted and may vary, depending on the weight and size of the gate. If a value higher than 0.80 needs to be set there is presumably something wrong. Contact DAAB for advice. The type of supply feeding the control panel must be set if the load sensor is to function.

### (C34)Type of supply

1. Press the  $\downarrow$  key so that the display shows the channel number (C to extreme left).
2. Step using the + key or the – key until C34 appears (voltage supply type).
3. Press the  $\downarrow$  key. The number appears in the display.
4. Check that the right type has been set. 0=3x400V+N, 1=3x230V, 2=single-phase 230V
5. If the right type has not been set, change the value as in items 6-8.
6. Press the + key. The value starts to flash.
7. Step using the + key or the – key until the type being used appears.  
0=3x400V+N, 1=3x230V, 2=single-phase 230V.
8. Press the  $\downarrow$  key. The value is saved.

### Checking the phase sequence (applies only to 3x230V without neutral)

When the neutral is missing, the load sensor scans between two phases, and the phase sequence between them must be correct. This can be checked the next time the load sensor is read.

In the case of a disconnected motor under no load the value should be about 0.20. If the phase sequence is incorrect, about 0.95 is shown and the sensor trips out. In normal operation the value varies from 0.30 to 0.70 – if the phase sequence is incorrect, 0.99 is shown and the sensor trips out. If the value is incorrect, change the phase sequence (see power supply connection).

### Reading the current load (C07,C08)

1. Press the  $\downarrow$  key so that the display shows the channel number (C to extreme left).
2. Step using the + key or the – key until C07 appears (load, motor 1).
3. Press the  $\downarrow$  key. The value appears in the display.
4. Read off the maximum value when the gate is operated and the motor is running.
5. If there are two motors, repeat items 1-4 for motor 2 with C08 (load, motor 2).

### **Setting of limit for load sensor (C30,C31)**

1. Press the  $\downarrow$  key so that the display shows the channel number (C to extreme left).
2. Step using the + key or the – key until C30 appears (load limit, motor 1).
3. Press the  $\downarrow$  key. The value appears in the display.
4. Press the + key. The value starts to flash.
5. Step using the + key or the – key until the value you wish to set appears (normally a value about 0.10 units higher than the highest value read off).
6. Press the  $\downarrow$  key. The value is saved.
7. If there are two motors, repeat items 1-4 for motor 2 with C31 (load limit, motor 2).

### **NB:**

If there is a risk of gate judder or swaying, the control panel may register this as a load. Test this by reading the load and starting the gate from slightly different positions. There is an adjustable time delay that blocks the load sensor during start. If the gate has a long starting time or judders several times during starting, it may need to be raised.

The load may also rise when the gate reaches the nearly-closed position and compresses the rubber buffers. If necessary, re-adjust the limit switch cam position and arm length, so that the right pressure is obtained in closed position.

### **Motor protection (C44 & C45)**

Protection is set so that it trips out when the motor is drawing too much current. The built-in motor protector measures the current of phase L1. The motor is protected if any phase disappears and the motor draws too much current. If no current is obtained in phase L1, the gate is stopped and an error message appears. If the electric motor is seized it also draws a lot of current and the protector trips out. An error message appears when the motor protector has tripped out and the motor stops immediately. Motor protection must be reset on C44 (motor 1) and C45 (motor 2) when using 3x230 V or single phase.

Start settings: 3x230 V=1,8A. Single phase =2,0A.

### **Limited running time**

There is a running time limit device to protect the equipment against possible faults. This time should be set longer than the normal operating time if error protection is to function.

- In the case of deadman control, there is no limited running time, and time measurement may be carried out without the gate being stopped prematurely if the set running time is exceeded.

### **Measurement of running time (C11,C12)**

1. Step to C11(running time, motor 1).
2. Read and note the running time for motor 1. Reading should take place from fully closed to fully open or the other way round.
3. Step to the channel for motor 2.
4. If there are two motors, repeat for motor 2 (C12, running time, motor 2).

### **Setting limited running time (C32)**

1. Step to C32 for setting of limited running time.
2. Set 3 seconds longer than the longest measured time.

## Latched/deadman control

When using the deadman control, the push-button must be held down to open or close; the motor stops as soon as the pressure is released. This type of control is used when the person operating the gate has a full view of the gate or barrier and can release the button if something is wrong.

When a latched control is used, the push-button is pressed and the gate or barrier then automatically moves to the fully open or closed position. Latched control should be selected when automatic gate control is required. Latched control may be set in either direction.

- **EP102 is supplied ready for deadman control. Before latched control is set, the gate must be fitted with safety buffers and the load sensor adjusted. This function must be checked.**

### Selection of latched operation (C33)

1. Step to channel 33 (latched/ deadman control).
2. Set 3 if latched control is desired in both opening and closing movements, otherwise see channel list.

## Functional check of load sensor, safety buffer and photocell

Check that the load sensor has been correctly adjusted by braking the gate by hand so that it trips out. It should trip when the load is abnormal.

Check that the gate will stop and reverse when safety buffer or photocell is actuated.

## Closure with deadman control in the event of safety buffer or photocell error

If the safety buffer or photocell is out of order, the control panel reverts to deadman control for closing. The gate can be closed by the deadman control if the close button is held down. This function is optional and can be turned off. If not required, e.g. because a caretaker needs to be able to close the gate due to failure of safety systems.

### Turn off automatic reversion to deadman control (C46)

1. Step to C46 Deadman control when safety systems have failed. Set the value to 1.
2. Set the value to 0, and the gate will not close to any command while the safety system is faulty.

## Direction change priority

Priority can be set. The automatic controls are normally set to Open priority. Priority does not apply to Ö/S (Pulse command, Terminal 26).

### Open priority only (C63=1):

If the gate is about to close and the Open button is pressed, the gate is stopped and begins to open. If the gate is opening and Close is pressed, nothing happens.

### Close priority only (C63=2):

If the gate is about to close and the Open button is pressed, nothing happens. If the gate is opening and Close is pressed, the gate is stopped and begins to close.

### Open and close priority (C63=3):

If the gate is about to close and the Open button is pressed, the gate is stopped and begins to open. If the gate is opening and Close is pressed, the gate is stopped and begins to close.

### No priority (C63=0):

Whether the gate is closing or opening, it is not possible to interrupt it by pressing either the Open or Close buttons. Nothing happens as long as the gate is moving.

## Automatic closure

In order to avoid the gate remaining open, you can choose to make it close after a preset time, which ranges from 1 second to 9 min 59 sec. The time begins running when the gate stops moving. If the Open or Close push-buttons are pressed, the time is reset to zero and begins running again.

### Setting automatic closure (C50)

1. Step to C50 (automatic closure setting).
2. Set the desired time for automatic closure.

#### **NB: The gate will now close without warning.**

The gate must be fitted with a 'fail safe' safety buffer, photocell or vehicle detector if automatic closure is to be used. Otherwise it may begin closing even if there is something in its path. Additional warning are available by fitting a supplementary control card that can activate a warning light or audible device.

## Stop key, restart automatic closure

An adjustable stop function is provided. When stop has been pressed, it is normally desirable to block automatic closure so that it does not start immediately. Blocking times can be selected from 20 seconds to 9 minutes and 59 seconds, this is adjusted in C52. To disable automatic closure after stop has been actuated, 0 should be set in C53.

**NB.** If the gate should always close after a stop instruction 1 should be set in C53 to avoid the gate remaining open.

### Setting automatic closure after stop has been actuated (C52,C53)

1. Step to C53 (setting automatic closure after stop has been actuated).
2. Set the desired function. 0=no automatic closure after stop, 1=automatic closure blocked for time set.
3. Step to C52 and set time for blockage of automatic closure.

## Photocell/loop closure

With this function, automatic closure time begins to be counted from when a vehicle passes the loop. In order to activate the function, a time must be set in C51. The time set should be the time after which the gate will close if no vehicle passes. If the loop is successively actuated and then not actuated (i.e. a vehicle has passed) the gate closes after automatic closure time.

### Set photocell/loop closure (C51,C54)

1. Step to C51 (setting of "max. open time in loop closure").
2. Enter the desired time after which the gate should close if no vehicle passes.

Closure may take place immediately if the loop is not activated, or after the gate has fully opened.

1. Step to C54, ("type of loop closure").
2. Set the desired type of closure.
  - 1=vehicle passes, gate opens to fully open and closes after automatic closure time.
  - 0=vehicle passes, gate stops immediately and closes after automatic closure time.

## **Programmable input 1- Partial Opening Input.**

The gate can be opened for an adjustable period, e.g. to let through pedestrian traffic. The time is measured from the gate leaving the Close limit position for motor 1. With this function, the gate stops after it has been opening for the set time. Restricted opening input can be set to open gate leaf 1 only. The gate will then open one leaf for a set time. If required to open one half to the fully open position, the restricted opening time should be set to 0. A "Close" command always closes both leaves.

### **Set time for restricted opening (C60)**

1. Step to C60 (time setting).
2. Set the time for which the gate is to travel open.

### **Set opening of gate leaf 1 only (C61)**

1. Step to C61 (setting).
2. Set 0 if only gate leaf 1 is to open.
3. The gate opens after the time set on C60.

## **Programmable input 2 - Open / Stop / Close and further controls.**

This programmable input has several functions:

- 0=Turned off
- 1=Open/stop/close
- 2=Open only gate leaf 2
- 3=Interlock.
- 4=For future use
- 5=Automatic closing turned off
- 6=Open gate+automatic closing turned off

Detailed explanations follows below:

### **Open/stop/close (C62=1):**

If the door is moving and you give one signal to the input the door will stop, if you give one more signal it will change direction. After the door has been still for 5 sec or more the function is always open

### **Gate leaf 2 open function (C62=2):**

When the input is set for gate leaf 2 opening, the input signal always results in opening gate leaf 2.

### **Inter lock function (C62=3)**

EP102 sends an opening signal to another EP102, for inter lock opening. Communication cable is required.

### **Automatic closing turned off (C62=5)**

Turns off automatic closing as long as there is a signal on this input. Meanwhile you can open and close the gate with normal open and close signals.

Eg. 07.00 there is a signal on input 2 from a clock. When the gate is opened after 07.00 it will remain open during the day. When the signal disappears automatic closing is activated. When the signal is on it is possible to close the gate during lunch.

### **Open gate and automatic closing turned off (C62=6)**

The gate opens immediately when there is a signal on input 2. Otherwise same functions as C62=5.

## **Inter lock function**

Two or more EP102 panels can communicate with each other and send interlocks and start signals between the gates.

### **Attention**

- Commissioning and function tests for each gate shall be carried out according to section "Commissioning", before the parameters are set between the gates.
- Program version 1.03 or later is required for inter lock functions.
- The program has a memory for opening but not for closing.

### **Heat Lock.**

You can have a heat lock by letting only one door open at a time. A signal opens the first door, which closes automatically. When the first door is closed it opens the second door.

### **Draught exclusion in a building with two doors.**

Doors can be interlocked so that only one door can be opened at a time.

### **Entrance with barrier and gate operating together.**

Barriers open and close rapidly but have a low level of security. A gate has higher security but takes longer to open and close. By combining both these elements you can achieve high security along with speedy passing.

## Commissioning, inter lock function

### **Communication C95**

In order to have communication between two EP102 panels, C95 should be set to the appropriate values..

On the first panel **C95 is set to 1** and on the second **C95 is set to 2**.

The first panel starts sending values to the second panel, which answers by returning values. When C95=0 communication is off. As soon as another value than 0 is set communication starts.

If the communication does not work an error message is shown.

**E14**=Error in communication, second panel does not answer.

The error message is shown as long as the communication is broken and will continue to show until both panels are correctly set. Error message will also be shown if one of the EP 102 panels is without power.

### **Heat Lock, C64=1**

Only one door can be opened at a time, C64=1 is set on both EP 102 panels. Opening is possible only when the other door is closed. Both doors can shut independently of each other.

Eg.: To work automatically set C62=3. By sending a signal to the panel the first doors opens, closes and opens then the other door.

If the stop circuit is broken for more than 5 sec. the door is regarded as disabled and the other door can be opened independently. (Breaking the interlock during the summer).

*Description:* The first door is opened. When in the fully open position the stop button with lock is pressed. The second door can then be independently operated, although the first door is open.

To reset the heat lock function make sure that the second door is in closed position before releasing the stop button.

### **Blocking of open C64=2**

Can only be opened when the other door is open. The other door is than set to C64=3.

To set both EP 102 to C64=2 is not allowed since when both are closed it is not possible to open.

Eg: (C62=3 is set.) A barrier is set to C64=2 and a gate is set to C62=3. When sending a signal to prog. input 1 on the barrier the gate will open and when it is open it will send a signal back to the barrier which will open. If automatic closing is activated the barrier closes first and when it is closed it closes the gate.

### **Blocking of close C64=3**

Can only close if the other door is closed. To set both EP 102 to C64=3 is not allowed since when both doors are open it is not possible to close.

Ex: (C62=3 is set). A gate is set to C64=3 and a barrier is set to C64=2. When sending a signal to Prog. input 1 the gate will open and when it is open it will send a signal to the barrier which opens. If automatic closing is activated the barrier closes first and then the gate.

## Blocking functions explanation.

### Blocking between 2 doors (C64)

If blocking is set communication between the control panels must work. If not it is not possible manoeuvre the doors.

In the table the word "door" is used. This can of course be replaced with gate or barrier.

#### Set ups and combinations

Door A	Door B	Blocking function	Explanation
0	0	No blocking.	Blocking turned off.
1	0	The door with set up 1 can only be opened if the other door is closed.	Door A can be opened when B is closed. Door B can be opened independent of door A. Both doors can be closed independent of each other.
1	1	The door with set up 1 can only be opened if the other door is closed.	Heat lock to avoid draughts. Door A can only be opened when door B is closed Door B can only be opened when door A is closed. Only one door can be open at a time. Both doors can be closed independent of each other.
2	0	The door with set up 2 can only be opened if the other door is open.	Door A can be opened when door B is open. Door B can be opened independent of door A. Door B must be opened first. Both doors can be closed independent of each other.
2	1	The door with set up 2 can only be opened if the other door is open. The door with set up 1 can only be opened if the other door is closed.	Door A can be opened when door B is open. Door B can be opened when door A is closed. Door B must be opened first. Both doors can be closed independent of each other.
2	2	The door with set up 2 can only be opened if the other door is open.	<i>Not permitted combination.</i> When both doors are closed it is not possible to open.
3	0	The door with set up 3 can only close if the other door is closed.	Door A can be closed when door B is closed. Door B must be closed first. Both doors can be opened independent of each other.
3	1	The door with set up 3 can only close if the other door is closed. The door with set up 1 can only open if the other door is closed.	Door A can be closed when door B is closed. Door B can be opened when door A is closed. Door B must be closed first.
3	2	The door with set up 3 can only close if the other door is closed. The door with set up 2 can only open if the other door is open.	Door A can be closed when door B is closed. Door B can be opened when door A is opened. Door A must be opened first. Door B must be closed first.
3	3	The door with set up 3 can only close if the other door is closed..	<i>Not permitted combination.</i> When both doors are open it is not possible to close.

## Channel list for EP102

The channel list is the same for control type EP102-1 (1 motor) and control type EP102-2 (2 motors). Certain channels apply only to control type EP102-2. These are marked by an \* before the channel number.

### Measured value to be read

No.	Specification	Range
C00	Service channel, only for service personnel	000-999
C01	Program version	0.00-9.99
C02	Mains voltage, phase L1.(Accuracy of measurement +- 15%)	000-255 V
C03	Voltage after stop circuit	00.0-30.0 V
C04	Resistance, safety buffer close 1 (KSS1)	0.0-3.00 kΩ
C05	Resistance, safety buffer close 2 (KSS2)	0.0-3.00 kΩ
C06	Resistance, safety buffer open (KSÖ)	0.0-3.00 kΩ
C07	Load, motor 1	0.00-0.99 Cos φ
*C08	Load, motor 2	0.00-0.99 Cos φ
C09	Motor current, motor 1	0.0-5.0 A
*C10	Motor current, motor 2	0.0-5.0 A
C11	Running time, motor 1	00-99 Sec
*C12	Running time, motor 2	00-99 Sec
C13	Time motor 1 opened from closed position Used for limited opening	00.0-59.9 Sec
C14	Number of openings (Total no of openings =C14+C15)	000-999 times
C15	Number of openings x1000	000-999 times

### Commissioning: values to be entered when commissioning

No.	Specification	Value		
		Range	Start	Set
C30	Limit for load sensor, motor 1	0.05-0.90 Cos φ	0.40	
*C31	Limit for load sensor, motor 2	0.05-0.90 Cos φ	0.40	
C32	Limited running time	05-99 Sec	10	
C33	Latched / deadman control 0=Open and close, deadman control 1=Open latched, close deadman control 2=Open deadman control, close latched 3=Open and close, latched	0-3	0	
C34	Type of voltage feed. Used for the load sensor. 0=3x400V+N, 1=3x230V, 2=1x230V	0-2	0	

### Delay of gate half, magnetic lock

No.	Specification	Value	Start	Set
*C38	Time delay in opening motor 2 and closing motor 1. Used for magnetic lock or overlap of gate half	0.1-5.00 sec	0.1	
C39	Time delay in opening before motor 1 starts, used for magnetic lock so that magnet can get rid of remmanence.	0.00-0.99 sec	0.00	

### Number of safety buffers, load sensor function and motor protection

No.	Specification	Value	Start	Set
C40	Number of safety buffers connected to KSS1, 0=buffer off	0-2	1	
C41	Number of safety buffers connected to KSS2, 0=buffer off.	0-2	1	
C42	Number of safety buffers connected to KSÖ, 0=buffer off.	0-4	0	
C43	Load sensor may be changed only for service and fault-finding. 0=Off 1=KSS 2=KSÖ 3=KSS+KSÖ 4=Stop.	0-4	3	
C44	Limit for motor protector, motor 1	0.5-4.0 A	1.5	
*C45	Limit for motor protector, motor 2	0.5-4.0 A	1.5	
C46	Deadman closure when KSS or FS/SL out of order or actuated. 0=off, cannot be closed 1=can be closed.	0-1	1	
C47	Function of safety buffer 0=KSS stop. KSÖ stop. 1=KSS reverse. KSÖ stop. 2=KSS stop. KSÖ reverse. 3=KSS reverse. KSÖ reverse.	0-3	3	

### Automatic closure and FC/SL closure

No.	Specification	Value	Start	Set
C50	Time for automatic closure	0.00-9.59 min.sec	0.00	
C51	Max. open time in closure with FC/SL. Set time = closure with FC/SL 0 = no closure with FC/SL.	0.00-9.59 min.sec	0.00	
C52	Time for blocking of automatic closure, after actuation of stop key.	0.20-9.59 min.sec	5.00	
C53	0=No automatic closure after actuation of stop. 1=automatic closure after actuation of stop.	0-1	0	
C54	Closure with FC/SL. 0=close as soon as FC/SL is not actuated. 1=first open fully, then close.	0=immediately 1=fully open	1	

### Limited opening, opening of a gate half and lock opening

No.	Specification	Value	Start	Set
C60	Time for part opening. 0=full opening	00.0-99.9 sec	05.0	
C61	Programmable input 2. 0=open only M1 1=open M1+M2	0-1	1	
C62	Programmable input 2 0=Turned off 1=Open/stop/close 2=Open only gate half 2 3=Interlock. 4=For future use 5=Automatic closing turned off 6=Open gate+automatic closing turned off	0-6	1	
C63	Prioritised direction change. 0=none 1=open 2=close 3=open and close	0-4	1	
C64	Blocking of another door 0=no blocking 1=blocking of open until the other door is closed. 2=blocking of open until the other door is opened. 3=blocking of close until the other door is closed.	0-3	1	

**Displays for supplementary card DB307**

No.	Specification	Value	Start	Set
C70	<b>Supplementary card</b> 0=none 1=DB307 0=channel 71-82 not shown 1=channel 71-82 shown and can be set	0-1	0	

**Time delays**

No.	Description	Value	Start	Set
C90	Time for blocking of load sensor at start	0.01-0.99 sec	0.60	
C91	Time for motor protector	0.01-0.99 sec	0.30	
C92	Time delay, normal reversing, Open and FC	0.6-1.0 sec	0.8	
C93	Time delay, rapid reversing, Safety buffer and load sensor	0.3-1.0 sec	0.4	
C94	Time for reversing with KSÖ	1.0-5.0 sec	2.0	

**Communication, special**

No.	Specification	Value	Start	Set
C95	Network number for communication. 0=off	0-16	0	
C99	Service channel for service personnel only.	0-99	0	

## Service fault-finding

Check	Possible cause
<p><b>Is voltage present?</b> Green light diode for 24V on? <b>Yes</b> -</p>	<p><b>No</b> ® Power to unit? Are fuses intact? Short circuit 24V Control panel out of order</p>
<p><b>Error message</b> Error message in display window? <b>No</b> -</p>	<p><b>Yes</b> ® See error messages</p>
<p><b>Is stop circuit intact?</b> Green light diode for stop on? <b>Yes</b> -</p>	<p><b>No</b> ® Stop circuit broken Wicket door contact Control panel out of order</p>
<p><b>Alarm display?</b> Red light diode on or flashing? <b>No</b> -</p>	<p><b>Yes</b> ® See displays Load sensor Safety buffer</p>
<p><b>Limit switches functioning?</b> Limit position display on? <b>Yes</b> -</p>	<p><b>No</b> ® Motor thermocontact out of order Limit switch out of order or circuit interruption</p>
<p><b>Consistent input signal?</b> Operate display on? <b>No</b> -</p>	<p><b>Yes</b> ® Short circuit in access control equipment Signal from time switch</p>
<p><b>Internal push-buttons functioning?</b> Display lights when button actuated? <b>Yes</b> -</p>	<p><b>No</b> ® card out of order</p>

If all displays light as they should, no error messages are displayed and the automatic controls still fail to start, note the **item number** (on front page of manual). Contact DAAB for help.

## Error messages

**E01**=Motor protector motor 1 tripped out.

**E02**=Motor protector motor 2 tripped out.

Possible reasons:

Motor running sluggishly or seized, disengage to test.

Blown fuse

Phase error.

Break in cable to motor, or in motor winding.

Is correct limit for motor protector set? (C44,C45).

**E03**=Max. running time exceeded.

Is correct running time set?

Mechanical error, drive disengaged.

**E04**=Safety test (autotest).

Is safety circuit properly connected?

Can any extraneous voltage get into the circuit?

Requires voltage to be cut off for resetting.

**E05**=Illegal running.

Control panel registers that motor is on when it should be disengaged.

Someone has overridden the contactors.

Requires voltage to be cut off for resetting

**E06**=No current motor 1.

**E07**=No current motor 2.

Phase error.

Blown fuse.

Break in cable to electric motor.

**E08**=Voltage loss, brief dip, 24V.

**E09**=Program watchdog tripped out.

Powerful interference, e.g. thunderstorm.

**E10**=Clock monitoring error.

Error in control panel program clock.

**E11**=Repeated restarting of automatic controls.

Short circuit in safety circuit.

**E12**=Memory error.

Change program circuit.

**E13**=Incorrect program circuit programming.

Change circuit.

**E14**=Communication fault, external unit not answering.

Reset by pressing any button at the display

Correct polarity on the communications cable?

Break in communications cable?

Correct set up on EP 102?

**E15**=Voltage loss, brief dip, 230V.

## Notes

BEG.Ö	Stands for "begränsad öppning" - <b>Part opening</b>
FC	Stands for "fotocell" - <b>Photocell</b>
KSS	Stands for "klämskydd stängning" - <b>Safety buffer, close direction</b>
KSÖ	Stands for "klämskydd öppning" - <b>Safety buffer, open direction</b>
S	(in GS2 etc.) stands for "stänga" - <b>Close</b>
SL	Stands for "slinga" – <b>Inductive ground loop</b>
Ö	(in GÖ2 etc.) stands for "öppna" - <b>Open</b>
Ö/S	Stands for "Öppna/Stäng" - <b>Open/Close</b>

## Accessories

DAAB Portteknik have several accessories for different applications for gate- barrier- door manoeuvring.

Below is a selection and a short description. Please contact DAAB for further information.

Product	Function
Output card (Mounted on EP 102	To achieve movement indication, position indication, controlling traffic light, alarm output, the outputs are programmable.
Traffic light, warning light	Increased security when passing in and out. Out put card is needed..
Electro magnetic lock	Prevents the gate leaves being forced apart by intruders..
Locking clamp	A cheaper alternative than electro magnetic lock.
Inductive ground loop	To prevent a gate from closing while a vehicle is present.
Photocell	To prevent a door from closing while a vehicle or person is present.
Key Switch Override	For local gate control.
Radio.	Hand held or vehicle mounted transmitters. .
Key Pad/Card reader	Individual or combined units for cards and/or digital codes..
Programmable Clock	7 days or 365 days programmable. 1. Hold gate open during normal working hours. 2. Disable free exit induction loop 3. Hold gate closed

**Valid program version:** \_\_\_\_\_

Is markt on the circuit.

**Valid object no:** \_\_\_\_\_

Is markt on the inside of the housing and on the documentation.

The object no is needed when contacting DAAB for support.

**Notes:**

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