

1 ELECTRICAL DOCUMENTATION

1.1 GENERAL FUNCTION OF THE WINDOW

The self-monitoring microcontroller control the opening and closing of a window as well as optionally an insect roller blind. No limit switches are required for positioning. All movements of the drive are controlled electronically. A limit switch and several safety sensors are used to provide additional security. The major security sensors are observed also by a security relays.

To open or close the insect roller blind, you must press the open or close button as long as you want to move it / until it is opened or closed. There is a 2 second delay if you change the direction.

If you open and close the insect roller blind several times in a row, it will stop working for about 4 minutes to prevent itself from overheating. After that time it will work proper again automatically.

After a power failure, the window has to learn its upper and lower position again. You can press and hold the open or close button to start this process. The window will start moving at slow speed in direction "close". Press the button until it is completely closed and keep pushing it some additional seconds to make sure that the homing process has finished. Up from now the window should work again in regular mode.

1.2 MAINTENANCE / ERROR MANAGEMENT

The controller itself is a maintenance free system. Only proper instructed technicians are allowed to check the connectors in case of an error. Never open the controller case! If you open it, any warranty will be lost. Always switch of the power supply and also the 230V AC supply that is responsible for the related window.

At least the connector X.5 is connected to the 230V AC line! Never touch this area until you are sure that any power connections to the related window is switched off!

The window controller software contains an integrated error management which try to handle small, non-critical errors by itself. You can verify this with the ERROR / OPERATIONAL Signal output (X8.20 and X8.19). Before you start a detailed error search, you should switch the drive off and turn it on again after approx. 2 seconds. The drive performs a reference run once you push the open or close button. In most cases, the fault is thus eliminated and the drive is ready for operation again. If this is not the case, please proceed as described below.

The table below provides an overview of the most common faults and their remedies:

Error	Possible reason	Solution
Window open and close continuously	There must be a defect in the wiring itself or a button is damaged.	Switch off the system and check the cables and buttons
Window move only a short way and stop then immediately.	Sluggishness / blockage in mechanics.	Check the mechanics for damages / other issues that can result in sluggishness

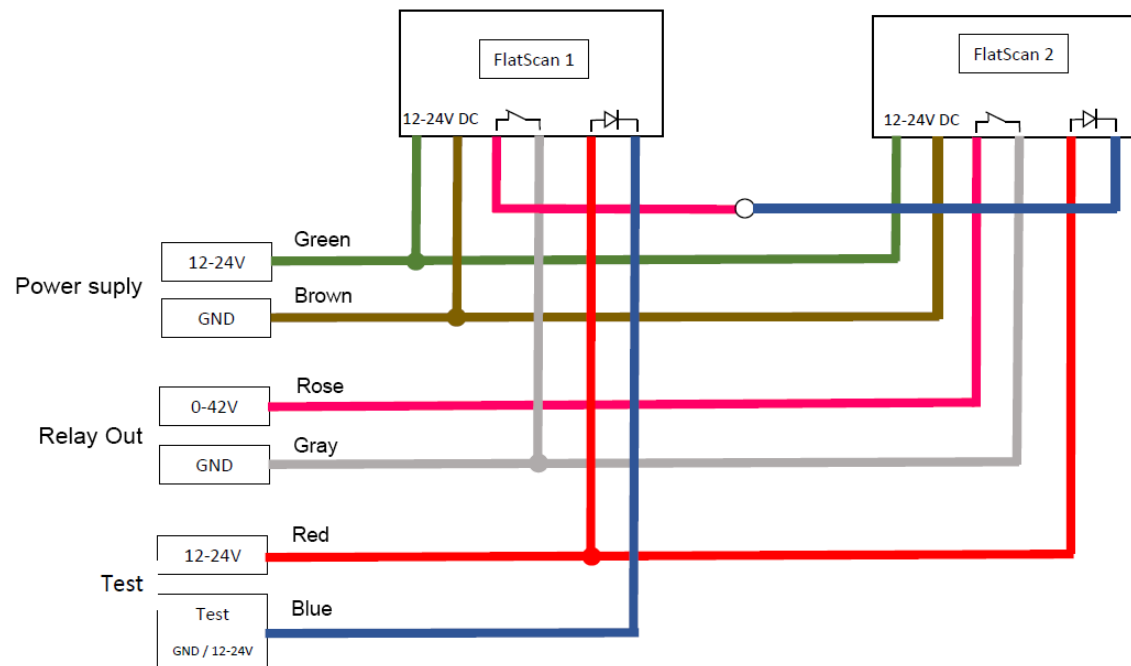
Error	Possible reason	Solution
Window do not open or close when you push the related button	One of the monitoring sensors is occupied (curtain, object, person ...) or one of the toothed belts is torn.	Check the entire detection area of the sensors for obstacles and free them. Check the LED's are lit red or green and do not flash, try again. In the case of a torn belt or broken belt sensor, the fault can only be acknowledged after the repair has been completed by switching the voltage off and on.

1.3 ERROR CODES

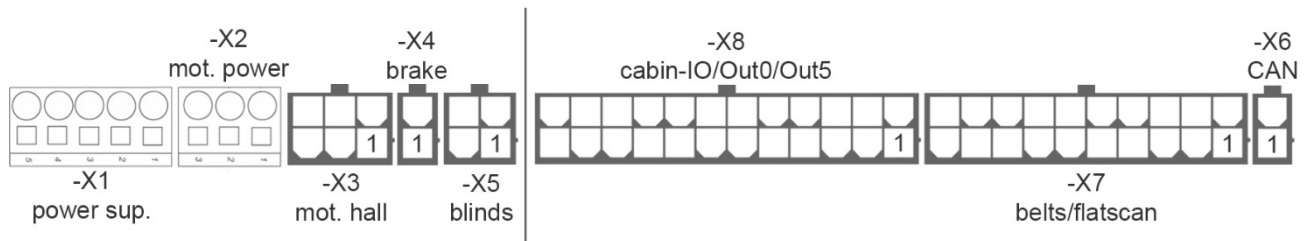
The following error codes are readable via the service plug. You need the specified software and the service adapter to read those errors, once they happen, and for deeper diagnostics. It is always possible to get additional support via TeamViewer if the connected computer has an internet connection.

Error Code	Error Description
1000	ERR_Low_FieldUnderVoltage (Voltage UP is to low)
1001	ERR_FieldOverVoltage (Voltage UP is to high)
1002	ERR_MainsUnderVoltage (Voltage UE is to low)
1003	ERR_MainsOverVoltage (Voltage UE is to high)
1021	ERR_HeatSinkOverTemperature (Controller is overheated)
1060	ERR_MotShortCircuit (shortcut in motor windings)
1061	ERR_MotOverCurrent (Motor use current which is over the max limit)
3010	ERR_Blockage (Motor was blocked unexpected)
4000	ERR_FollowingError (too much drift between command and real position)
7001	ERR_TimeDiagnose_Open (window needs to long to open)
7002	ERR_TimeDiagnose_Close (window needs to long to close)
7003	ERR_TimeDiagnose_Homing (window needs to long for homing)
7004	ERR_TimeDiagnose_HomingBlock (window is blocked in an unexpected way)
7005	ERR_TimeDiagnose_SecurityLevel (window needs to long for security feedback)
7011	ERR_BeltLeft (left belt sensor doesn't work / left belt is cracked)
7012	ERR_BeltRight (right belt sensor doesn't work / right belt is cracked)
7021	ERR_DiagnoseSensorLow (window sensor test failed at falling edge)
7022	ERR_DiagnoseSensorHigh (windows sensor test failed at rising edge)

1.4 SENSOR WIRING



1.5 TERMINAL ASSIGNMENT



X1		
1	+ 48V DC	40V DC from power supply (UP)
2	GND	
3	24V DC	24V DC from power supply (UE)
4	GND	
5	PE	PE

X2		
1	MA	Phase A
2	MB	Phase B
3	MC	Phase C

X3			X3		
1	H1	Hall Sensor 1	4	+5V DC	Powersupply, Hall Sensors
2	H2	Hall Sensor 2	5	GND	
3	H3	Hall Sensor 3	6	-	nc

X4		
1	+24V DC	Brake
2	GND	

X5			X5		
1	NO	230V AC rollo close	3	NO	230V AC rollo open
2	COM		4	COM	

X6			X6		
1	CAN H	CANopen	2	CAN L	CANopen

X7			X7		
1	GND	GND	11	GND	GND
2	+24V	Flatscan	12	In1	Relay Reopen NC
3	GND	Flatscan	13	In3	Relay Reopen
4	GND	Test GND	14	Out8	Test
5	+24V	Signal Reopen +24V	15	In3	Signal Reopen
6	+24V	Flatscan	16	GND	Flatscan
7	+24V	Belt Sensor right	17	GND	Belt Sensor right
8	+24V	Belt Sensor right	18	In5	Belt Sensor right
9	+24V	Belt Sensor left	19	GND	Belt Sensor left
10	+24V	Belt Sensor left	20	In7	Belt Sensor left

X8			X8		
1	+24V	Kabin Control	13	In6	Open Window
2	+24V	Kabin control	14	In4	Close Window
3	+24V	Kabin Control	15	In2	Open Rollo
4	+24V	Kabin Control	16	In0	Close Rollo
5	+24V	Kabin Control	17	AIIn0	Sensor alert
6	GND	Kabin Control	18	Out6	Window Lock
7	GND	Kabin Control	19	Out4	OPERATIONAL
8	GND	Kabin Control	20	Out3	ERROR
9	GND	Kabin Control	21	Out0	Window state
10	COM	not Used	22	COM	Floating W. State
11	NO	not Used	23	NO	Floating W. State
12	NC	not Used	24	NC	Floating W. State