Security Technology
Dual Motion Detector EIM/KB and EIM/KC

Description of product
The EIM/K is a motion detector designed for indoor applications intended for connection to conventional detector circuits of the intrusion alarm panels for use up to VdS class C. The detector combines proven passive infrared technology with temperature-independent microwave technology. The combination of both functional principles results in a detector featuring high immunity to false alarms, even with unfavourable ambient conditions, and which still has high detection security.

The detector has 3 LEDs to indicate states, which are externally visible via light pipes. Furthermore, the detector features an alarm memory, an automatic self-test, a remote controlled walking test as well as anti-masking monitoring. The detector function is set by an engineer via DIP switches.

Technical data	
Voltage	12 V (9 V … 16 V DC)
Current EIM/KB	Quiescent: 9 mA Alarm without LED: 11 mA Alarm with LED: 17 mA
Current EIM/KC	Quiescent: 12 mA Alarm without LED: 14 mA Alarm with LED: 19 mA
Alarm, fault (Aux) & Tamper	Break contact (NC), Contact load capacity 24 V DC, 50 mA
Test input	Plus potential for LED activation and control of remote self-test. SW7=ON inverts the signal
S/U input	Plus potential for alarm storage on detector. SW 8=ON inverts the signal
Microwave range	50 % to 100 % range adjustable via potentiometer (full turn clockwise for 100 %)
Effective infrared range at mounting height of 2.3 m	Angle = 86 ° Range = 15 m Zones = 17 in 4 levels
Temperature range	-10 °C bis +55 °C, environmental class II
Weight	150 g
Dimensions	110 x 66 x 42
VdS approval	
EIM/KB EIM/KC	Class B No.: G110503 Class C No.: G110060

Installation location

The recommended mounting height is 2.3 m.
The detector can be mounted between 2.1 m and
2.5 m without adjustment, when mounted on a vertical surface.

It should only be mounted on permanent, vibration-free walls. Large objects situated before the
detector obstruct the detection range. The detector
should not be subject to direct sunlight, heat
sources and strong draughts (e.g. fans of airconditioning systems) to prevent false alarms.

To prevent false operation of the anti-mask monitoring, no objects should be placed within a 1 m radius zone extending in front and below the detector.
For example, do not mount the detector over a cupboard or door.

Preparation and Mounting

The screw must be loosened (do not unscrew fully)
to remove the cover. Then insert a flat screwdriver
into the slot underneath the screw and twist it.
When the detector is opened, the electronic circuit
board can be unlatched via the two catches at the
top of the circuit board. On the lower housing section, the selected cable entry points and mounting
apertures can be knocked out.

Please note that mounting hole no. 6 must be used
with the off the wall anti-tamper cup.

Introduce the cables, connect them and provide
strain relief using the enclosed cable ties.

Completion of Assembly

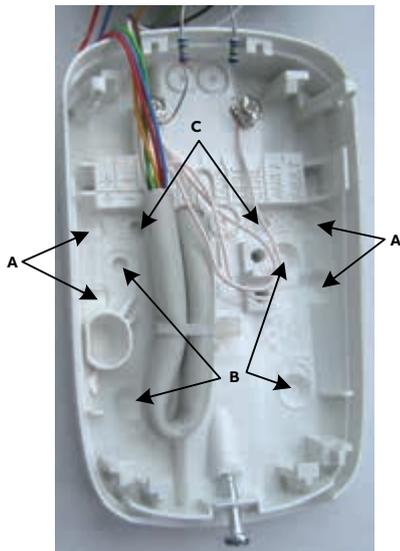The electronics are reinstalled after mounting the
lower section.

—
CAUTION
**During all work, the light-sensitive sensor may not
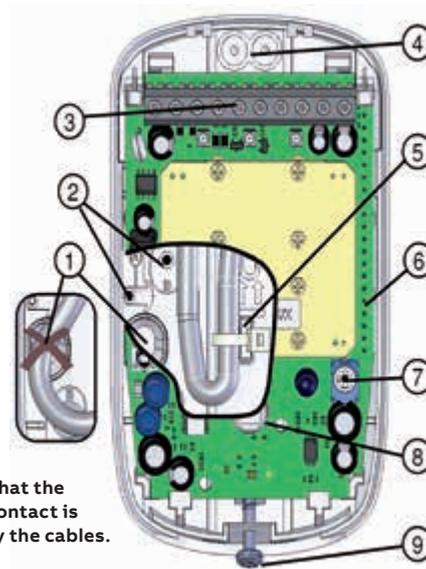be touched.**

To refit the cover engage the upper half into the two
catches and push both halves together (there will be
an audible click) and then tighten the screws.

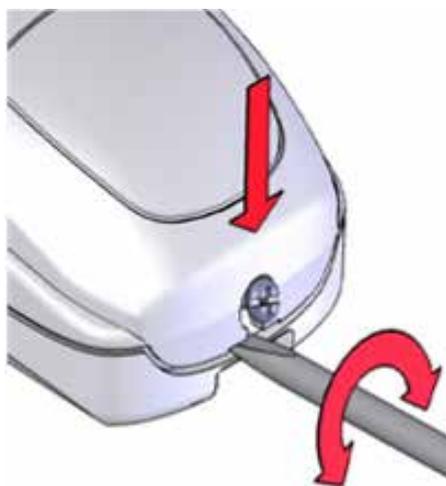Connection of the detetctor see figures next pages

Mounting

—
A = Knockout for corner mounting
B = Knockout for wall mounting
C = Knockout for mounting bracket

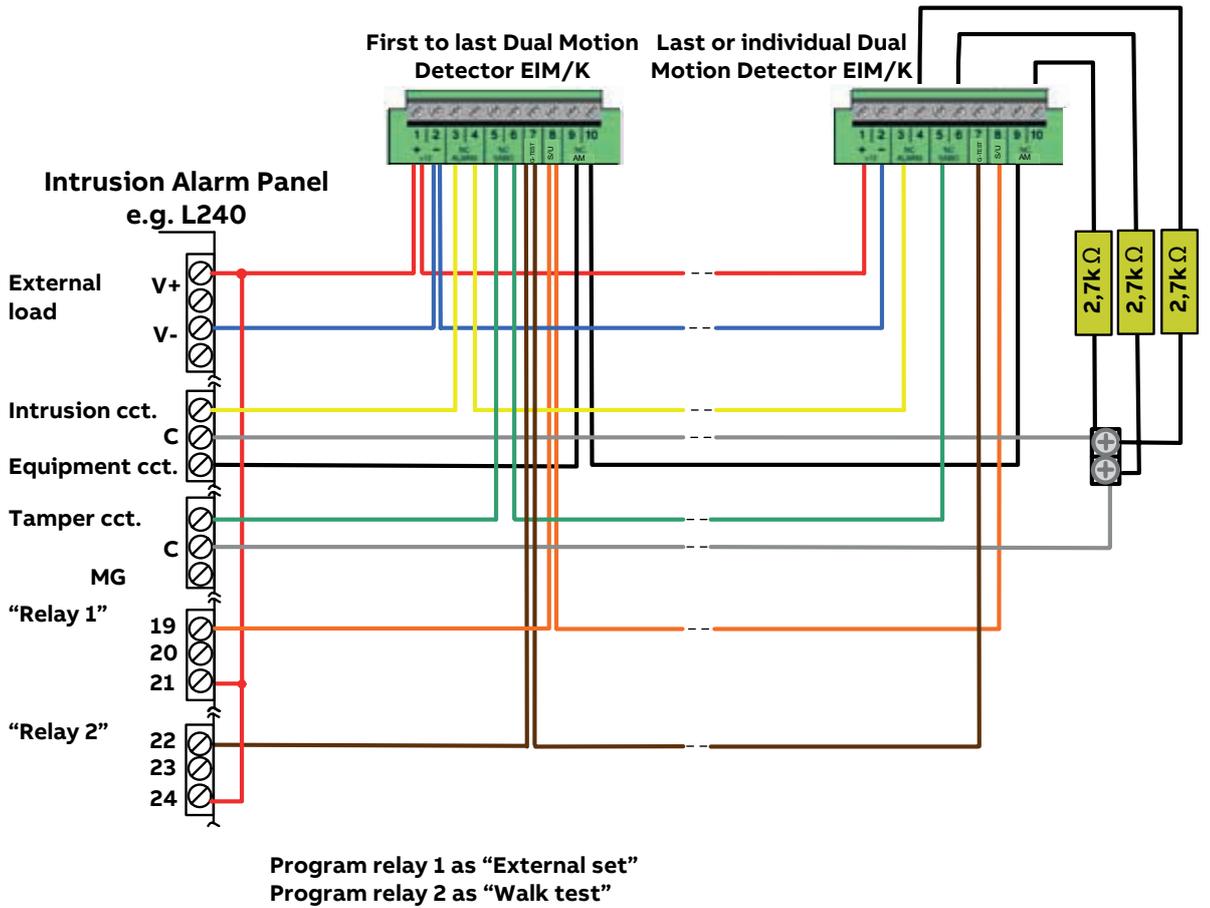**Please ensure that the cover tamper contact is not actuated by the cables.**

—
1 = Position ring for cover tamper contact
2 = Fixing screw positions for Off The Wall Tamper operation
3 = Terminal strip (see Fig. 2)
4 = Cable knockout
5 = Cable attachment point for strain relief (lower housing section)
6 = Termination resistor selection (board underside)
7 = Microwave range control
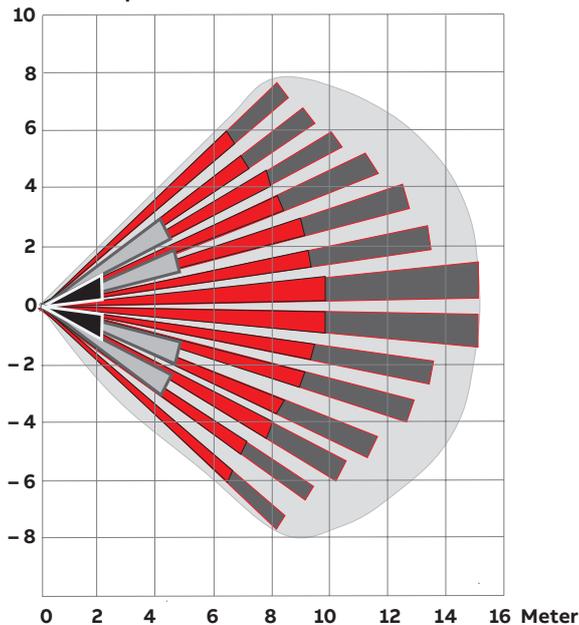8 = PIR detector (do not touch)
9 = Cover screw (unscrew – do not remove)

Panel	EIM/KB							EIM/KC		
	1 + +12	2 −	3 NC ALARM	4	5 NC SABO	6	7 G-TEST	8 S/U	9 NC AM	10
L108	V+	V-	MG^1	MG^1	35	36				
L240	V+	V-	MG^1	MG^1	MG^2	MG^2	22^3	13*	MG°	MG°
L840/MG4	1	2	MG^1	MG^1	MG^2	MG^2	13	15	MG°	MG°
MTS 4.12.1	11	12	MG^1	MG^1	MG^2	MG^2	10			

° Circuit – "Technology"
[1] Circuit – "Circuit for INTERNAL setting can be switched off (Cct 1-3)"
[2] Circuit – "Tamper"
[3] Switch V+ via relay 2 "Walk test" (24)
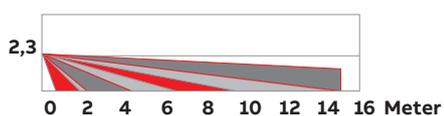* Switch V+ via relay 1 "Ext. set" (21)

Connection example

First to last Dual Motion Detector EIM/K

Last or individual Dual Motion Detector EIM/K

Intrusion Alarm Panel e.g. L240

External load
V+
V-

Intrusion cct.
C

Equipment cct.

Tamper cct.
C

MG

"Relay 1"
19
20
21

"Relay 2"
22
23
24

2,7k Ω 2,7k Ω 2,7k Ω

Program relay 1 as "External set"
Program relay 2 as "Walk test"

Volumetric plan view

10
8
6
4
2
0
−2
−4
−6
−8

0 2 4 6 8 10 12 14 16 Meter

Volumetric side view

2,3

0 2 4 6 8 10 12 14 16 Meter

Function setting
Default DIP switch setting

1 - Activate LED	OFF	1	ON
2 - Pulse count	OFF	2	ON
3 - Microwave ON/OFF at "Unset"	OFF	3	ON
4 - Anti-mask and fault output mapping	Fault	4	Fault and alarm
5 - Sensitivity anti-mask monitoring	Low sensitivity	5	High sensitivity
6 - IR range	15 meters	6	10 meters
7 - Polarity control "Test"	High potential	7	Low potential
8 - Polarity control "S/U" (memory)	High potential	8	Low potential

AUS   EIN
(OFF)   (ON)

DIP switch settings

	Description	Function at OFF	Function at ON
1	LED activation	During operation **(VdS)** (LED active dependent on control inputs)	For commissioning (LED always active)
2	Impulse counting	High sensitivity (one zone)	Reduced sensitivity (two zones) (VdS)
3	Microwave transmitter set to unset	Always active	Only active at set (dependent on S/U) (VdS)
4	AM/fault output mapping	– Fault conditions are signalled on the LED only – Triggering of the AM monitoring is signalled on the LED (if enabled) and the NC AM output	– Fault conditions are signalled on the LED (if enabled) and the NC AM output – Triggering of the AM monitoring is signalled on the LED (if enabled), the NC AM output and the NC Alarm output
5	AM (anti-masking) Sensitivity	Reduced sensitivity (VdS)	High sensitivity
6	PIR range	Maximum range (15 m) **(VdS)**	Reduced range (< 10 m)
7	Control "Walk test"	Set walk test input at high potential (12 V) = walk test	Set walk test input at low potential (0 V) = walk test
8	Control "S/U" (memory)	Input S/U with high potential (12 V) = alarm memory active	Input S/U with low potential (0 V) = alarm memory active

The possible LED displays are explained in the "LED settings" and "LED displays" chapter.

Walk test
Set SW1 ON or set G-Test input high (SW7 OFF) or low (SW7 ON) to enable the LEDs for walk testing. The red LED indicates the triggering of the detector's NC alarm output. The PIR detection range can be adjusted with SW6. The microwave range can be adjusted with the range control (no. 7).

After connection of terminal 7 in accordance with the description, the operator menu of the intrusion alarm panel can be used to implement an automatic walk test. Here it is necessary to ensure that the detector has triggered and that the trigger has lead to a activation of the corresponding detector circuit.

Remote self-test
With SW 4 set to ON, a self-test is generated when the control signal of the G-TEST input switches from High to Low. Thereafter, the alarm output indicates a successful self-test by brief triggering (red LED or detector circuit activation). An unsuccessful test leads to setting of the fault output (AM). This fault can only be reset by a renewed and successful selftest. Otherwise, the location or the ambient conditions of the detector must be changed.

Anti-masking monitoring (EIM/KB)
This feature can detect the action of attempting to blind the detector when the system is unset (e.g. during the day). SW3 must be OFF so the microwave is always active.

Microwave detection is used to determine if objects are placed on the front of the detector. Any anti-mask attempt is processed for up to 40s and then signalled on the NC AM and/or NC Alarm outputs depending on the setting on SW4. If the PIR detection is blinded then the yellow LED will flash at 3 Hz (if enabled). If the MW detection is blinded then the green LED will flash at 3 Hz (if enabled).

The microwave anti-mask system is fully operational 60 s after power up.

Anti-mask Monitoring (EIM/KC)
The detector recognises an attempt to blind the detector when the system is unset (e.g. during the day). Both active infrared, and microwave systems are used to detect if objects are placed on or very close (as defined by VdS requirements) to the front of the detector, or if it has been sprayed with paint etc. thereby allowing an intruder to enter the premises at a later date without being detected.

The anti-mask attempt is processed for up to 30s (SW5 ON) or 45s (Sw5 OFF) and then signalled on the NC AM and/or NC Alarm outputs depending on the setting on SW4. If the PIR detection is blinded then the yellow LED will flash at 3Hz (if enabled). If the MW detection is blinded then the green LED will flash at 3Hz (if enabled).

The Anti-Mask system will only operate/calibrate correctly when the cover is fitted.

Following installation a full Anti-Mask calibration should be carried out using one of the following methods:
• Remove and re-apply power to the unit or
• Change the position of Switch 4 and return it to the original position in 3 seconds.

Stay at least 2 metres from the unit for 2 minutes while the AM system is calibrating.

Reset Of Mask Condition
If an AM attempt has been signalled, remove any object from the front of the detector and carefully check that it has not been covered in paint, clear varnish etc. If the detector is not damaged then active a walk test and walk through the coverage area at least 2m from the detector. A successful unit alarm will reset the AM system after about 30 s.

Alarm memory
(DIP switch 1 = "OFF")
System set (see control input terminal 8 – in default setting High signal). Should an alarm occur on the respective detector, it will also be stored in the alarm log of the detector.

System unset (see control input terminal 8 – in default setting Low signal). The red LED lights when an alarm is stored. The memory reset is undertaken at the next setting of the system.

Approvals
The Motion Detector EIM/K is compliant to EN 50131 part 1.

CE

Declaration of conformity
ABB declares that the Dual Motion Detector EIM/K is certified and approved for use in AT; BE; CH; DK; DE; IE; LU; NL; PT. It is compliant with the fundamental demands of the EU Directive 2014/53/EU.

Intended purpose:	Intrusion detection within closed buildings.
Safety instructions:	The supply voltage must be protected by a separate fuse that is rated < 5 A.

LED settings
System set No LED displays.

LED displays	
⚪ 🔴 ⚪	Alarm trigger and undervoltage indications
🟢 ⚪ ⚪	Microwave (MW) indications
⚪ ⚪ 🟡	Infrared (PIR) indications

Indications after Power Up	
⚪ ⚪ 🔆	Active IR Anti-mask system calibration - one flash every 3 s (EIM/KC only)

All other indications are fully active after 60 s.

Indications of technical faults

Displayed when unit is UNSET unless SW4 is ON and SW1 is OFF and the walk test input is LOW (HIGH if SW7 ON)

⚪ ⚪ 🌼	Active IR Anti-mask system calibration fail - flickers quickly (EIM/KC only)
⚪ 🔆 ⚪	Undervoltage Fault - flashing at 1 Hz
🟢 ⚪ ⚪	Microwave (MW) fault - continuously lit
⚪ ⚪ 🟡	Infrared (PIR) fault - continuously lit

Indications when walk test enabled

⚪ 🔴 ⚪	Unit alarm triggered and NC Alarm Output is open - lit for 3 s
⚪ ⚪ 🔆	AM system has identified the PIR is masked - flashing at 3 Hz (EIM/KC only)
🔆 ⚪ ⚪	AM system has identified the MW is masked - flashing at 3 Hz

Indications from memory function

Displayed when unit is unset, SW1 OFF and walk test LOW (High if SW7 ON)

⚪ 🔴 ⚪	Alarm triggered while last set - continuously lit (not in walk test mode)

Bestellangaben					
Gerätetyp	**Produktname**	**Erzeugnis-Nr.**	**bbn 40 16779 EAN**	**Gew. 1 St. [kg]**	**Verp.-einh. [St.]**
EIM/KB	Dual Motion Detector, 15 m, VdS class B VdS No. G110503	2CDG230028R0011	75717 1	0,15	1
EIM/KC	Dual Motion Detector, 15 m, VdS class C VdS No. G110060	2CDG230029R0011	75718 8	0,15	1
MW	Mounting Bracket (V̶d̶S̶)	GHV9230039V0020	66580 6	0,03	1

ABB