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EN 50131-2-4
EN 50130-4
EN 50130-5
CEB T031

qtech



QDT200H3

Indoor combined passive infrared and microwave detector with
anti-masking protection for intrusion alarm systems, security
grade 3

Installation and programming manual

inim

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1. Qtech detectors

The Qtech series of detectors to be applied in indoor installations.

By means of the amplification, filtering and digital analysis of the signals detected by their sensors, these devices are capable of detecting motion in the area they watch over with appropriately programmable sensitivity, immunity to false alarms and adequate protection against tamper.

The Qtech detector series also provides 'pet immune' versions dedicated to applications that must not generate alarms in the presence of animals of up to 25 kg.

1.1 Functioning of the QDT200H3 detector

On supplying power, the red LED starts blinking then, after closing the detector cover, the 4 LEDs light up in sequence and the detector goes into the self-calibration phase. Within 60 seconds the detector enters operational status and the LEDs turn off. During the self-calibration phase, the partition monitored by the detector must be in stand-by status, free from obstacles and people moving about.

If someone is moving in the space covered by the detector, the alarm signal will activate and the LEDs corresponding to the detectors that have sensed the movement will light up.

In this case the red LED lights up and the alarm contact opens for a minimum time of 1 to 3 seconds.

AND mode

Function that, if enabled, permits the detector to activate an alarm when the PIR and MW sensors detect movement at the same time.

Smart-OR mode

Function that, if enabled, generates the alarm signal even when only one of the two sensors detects continuous movement for at least 10 seconds.

The alarm output ('ALARM' terminals) activates when both sensors detect motion and also when the detector is masked.

The tamper output ('TAMPER' terminals) activates when the lid is opened or when the tilt sensor detects a change in its position.

Ambient temperature can affect infrared sensing ability and the possible presence of moving or vibrating objects can affect the MW sensor. The installer can adjust the sensitivity of the detectors through programming.

Changing the sensitivity of the sensors does not always reduce the range, but it does reduce the ability to detect small changes in heat/temperature.

Tamper protection

The detector is protected by anti-tamper systems:

- through the contact on the PCB for anti-opening
- via the contact on the back of the PCB for the anti-dislodgement
- through a sensor that detects changes in the tilt of the detector

Anti-masking

The anti-masking protection is achieved via the microwave module and IR sensors and is programmable.

If the detector is covered frontally with reflective or ferrous materials, the detector will generate a “masking” signal which will be restored only after the removal of the covering material in question.

In order to generate a masking alarm, the distance between the detector of the covering material depends on the material itself and can be between 0 and 30cm. Ferrous materials are detected at shorter distances than reflective materials.

The signalling occurs within approximately 30 seconds from when the covering of the detector begins and the activation time of the masking phase is influenced by the material itself. Reset occurs approximately 5 seconds after the removal of the covering material.

The signalling occurs by default through the activation of the “FAULT” output, modifiable via programming.

Self-test / Low voltage detection

The detector also has self-test and low-power detection functions, disabled by default.

If enabled, the detector will carry out a test on its own sensors (infrared and microwave) and, if these are not operating properly, a signal will be activated via the “FAULT” output.

If the low-voltage detection function is enabled, the detector will check the supply voltage and if a value below 9V is measured, a signal will be activated via the “FAULT” output.

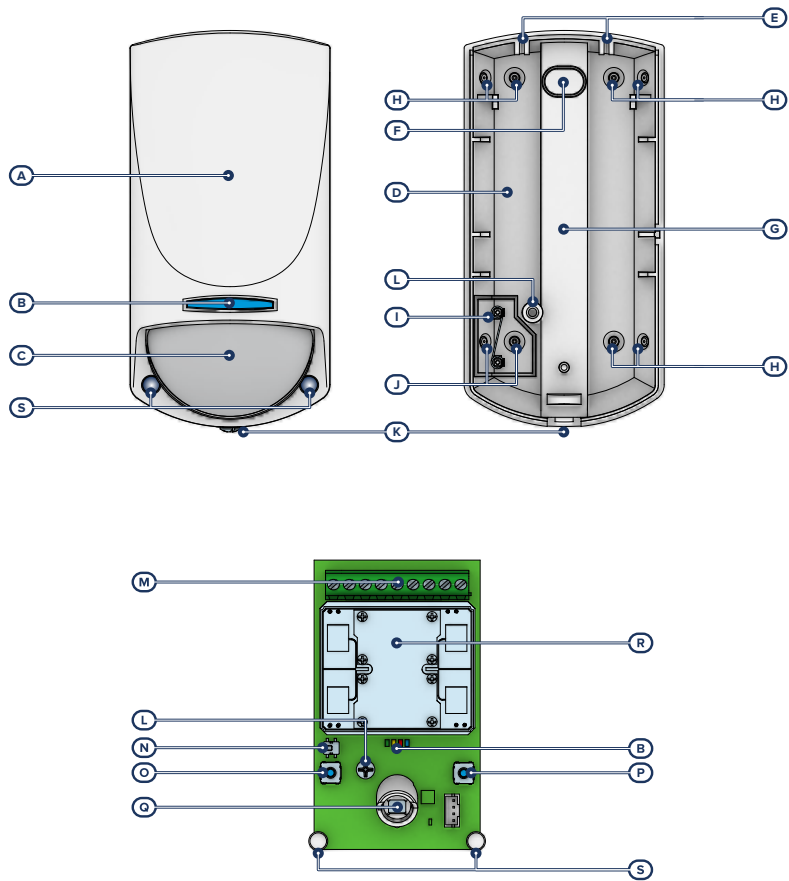
QDT200H3 models

Model	MW frequency
QDT200H3-A	10.525 GHz
QDT200H3-D	10.587 GHz

1.2 Main features

- Digital signal analysis
- Coverage 15m
- Detection angle 90°
- Pulse counter
- Temperature compensation
- White light immunity
- Signalling LED
- Signals from bypassable LEDs
- Remote control of LEDs
- Anti-opening protection
- Protected against break-off tamper
- Anti-masking protection
- Bypassable sensors
- Adjustable sensor sensitivity
- ‘AND’ and ‘Smart-OR’ functions for alarm trigger
- Self-test
- Low voltage detection

1.3 Description of parts



[A]	Cover	[M]	Terminal board
[B]	Signalling LED	[N]	Anti-opening tamper
[C]	Lens	[O]	Button P1
[D]	Base	[P]	Button P2
[E]	Cover retainer locations	[Q]	PIR sensor (infrared)
[F]	Cable entry	[R]	MW sensor (microwave)
[G]	Cable duct	[S]	Antimasking sensor

[H]	Mounting screw locations
[I]	Anti-dislodgement
[J]	Anti-dislodgement screw locations
[K]	Cover securing screws
[L]	PCB securing screws

1.3.1 Terminal board



+12V	1	Positive power supply
-12V	2	Negative power supply
ALARM	3 - 4	Alarm signal (N.C. during stand-by) It can also reference the signalling of masking, according to the <i>programming</i> .
TAMPER	5 - 6	Tamper signal output terminals (N.C. during stand-by) It can also reference the signalling of masking, according to the <i>programming</i> .
FAULT	7 - 8	Masking signal output terminals It can also reference the signalling of failed self-test/low voltage, according to the <i>programming</i> .
LEDs	9	Terminal which, if connected to GND, disables the signals of all the LEDs

1.3.2 LED signalings

Green LED	MW detection
Blue LED	On solid - Anti-masking detection fast blinking - Self-test failed slow blinking - Power supply voltage < 9V
Red LED	fast blinking - Tamper detection On solid - Alarm signal
Yellow LED	PIR detection

1.4 Technical specifications

Power supply voltage

Input voltage	range: from 10 to 16 V  nominal: 12.6 V 
Stand-by current draw	20mA
Maximum current draw	25mA
Detectors type	digital quad PIR, microwave module
Detection mode	Infrared emission + doppler effect

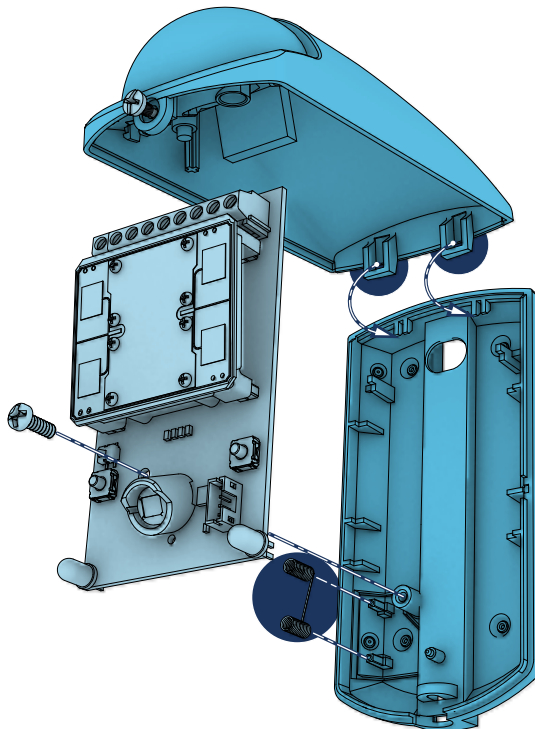
Type of microwave antenna	Plane antenna with FET-GaAs oscillator
Alarm pulses	from 1 to 2
Intrusion alarm output	N.C., 16V  , 100 mA max
Tamper output	N.C., 16V  , 100 mA max
Fault signalling output	N.C., 16V  , 100 mA max
Signal minimum duration	1 ÷ 3 seconds
Detection range (max)	15 m
Detection angle	90°
Security grade	3
Environmental class	2, if mounted by means of the XBK100 swivel
Installation method	II
Installation height	wall-mounting
Dimensions (HxWxD)	2.2m
Weight	120 x 60 x 48 mm
Microwave	100 g
Band frequency	QDT200H3-A: 10,520 - 10,530 GHz QDT200H3-D: 10,582 - 10,592 GHz
RF output power (max)	25mW e.i.r.p.
Environmental operating conditions	
Temperature	from -10 to +40 °C
Relative humidity	≤ 93 % without condensation



(EN IEC 62368-1)

Terminal type	+/- 12V	ES1 PS1
	ALARM	ES1 PS1
	TAMPER	ES1 PS1
	FAULT	ES1 PS1
	LED	ES1 PS1

2. Installation



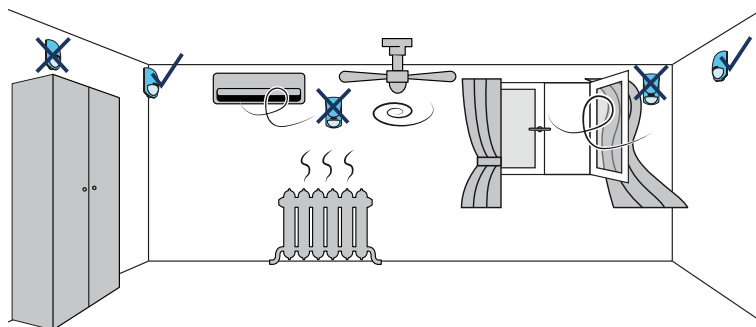
1. Choose a suitable mounting placement.
2. Loosen the front cover securing screw and open the cover by spreading the two surfaces apart from the side of the securing screw.
3. Open the holes for the securing screws, open the cable glands and insert the cables.
4. Hold the base to the chosen mounting placement and mark the screw holes position.
5. Using the screws, secure the base in position.
6. If necessary, remove the PCB from the base and fix the anti-dislodgement screw, taking care not to interfere with the spring for the contacts.
7. Complete the connections on the terminal board.
8. If necessary, carry out the programming using the buttons on the PCB.
9. Re-attach the cover to the base and replace the securing screw.

Note

The wall plugs and anti-dislodgement plugs are not supplied with the product. Use 5mm diameter wall plugs.

When using the optional XBK100 swivel, the function that allows detection of removal from the mounting surface (anti-dislodgement) is void and the degree of safety is reduced to 2.

2.1 Warnings



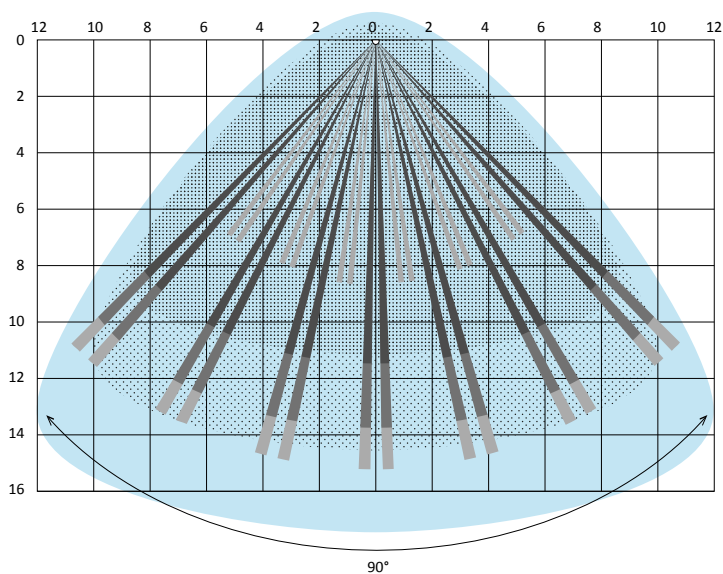
- The screw inserted in the anti-dislodgement housing is a component part of the anti-dislodgement device and therefore its use is essential for the correct functioning of the device.
- During the installation phases, pay the utmost attention in order to avoid drilling into water pipes, gas pipes, electrical ducts, etc.
- Avoid installing the detector in the vicinity of the following sources of interference: reflective surfaces, direct air flow, air-conditioning systems, windows, sources of steam, oil fumes, infrared sources, power lines, neon lamps and objects that can cause temperature changes such as stoves, refrigerators and ovens.
- Do not install the detector in locations where there is risk of rapid temperature changes.
- Do not install more than one detector in each room or two detectors in different rooms at a distance of less than 2 m from each other.
- Do not blind the field of detection of the sensor, even partially.
- The detector should be mounted with the alarm-LED strip above the lens and not vice versa.
- Do not touch the electronic components as this may damage the circuits and reduce the reliability of the detector. If necessary, clean the detector with a soft cloth only.
- This detector must be installed in compliance with the laws and standards in force.
- The device should be tested on a regular basis.

2.2 Coverage

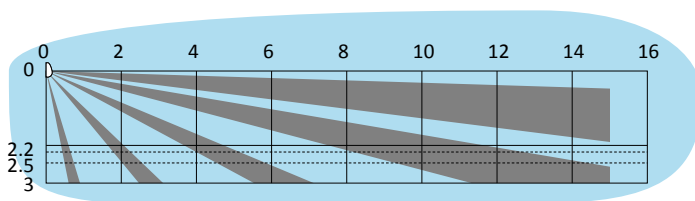
This paragraph shows the projections on a horizontal plane and on a vertical one of the range of the device sensors.

The measurements shown are in metres.

Top view



Side view



2.3 Balancing

The alarm signals, fault and tamper (on the line, forced opening or removal of the device) must be signaled to the control panel through the connections with the available terminals.

The alarm and line tamper signals can be communicated with the use of appropriate balancing, in order to be able to use a single control panel input (in the graphs below, indicated by "Tx").

The wiring and respective balancing method depend on the type of detector you are installing, and the level of protection you wish to achieve.

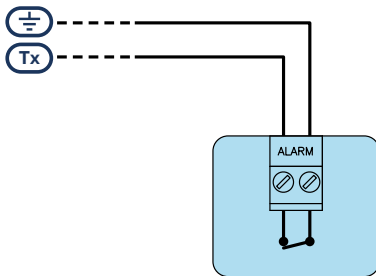
The detectors can be powered through:

- terminals [+AUX/12V] and [-/GND] on the control panel
- terminals [+AUX/12V] and [-/GND] on expansions
- terminal [+12V] and terminals [-/GND] on keypads
- from any 12V ancillary source on condition that its GND reference is in common with that of the control panel.

2.3.1 N.C./N.O.

In the case of N.C. (normally closed) balancing, it is possible to detect 2 distinct conditions on the zone:

- stand-by (0 Ohm)
- alarm (open circuit)



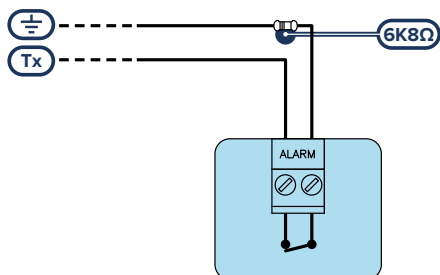
If you want the detector to signal tamper events, it is necessary to connect the 'Tamper' terminal to a '24h' zone on the control panel.

If you want to detect fault on the detector, it is necessary connect the terminal 'Fault' of the detector to a control panel zone.

2.3.2 Single balancing

Single zones can discriminate 3 conditions on the entire terminal:

- stand-by
- alarm
- tamper (short-circuit)



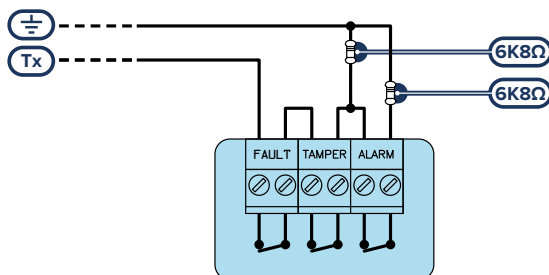
If you want the detector to signal tamper events, it is necessary to connect the 'Tamper' terminal to a '24h' zone on the control panel.

If you want to detect fault on the detector, it is necessary connect the terminal 'Fault' of the detector to a control panel zone.

2.3.3 Double balancing

Double balancing discriminates 4 distinct conditions on the zone terminal:

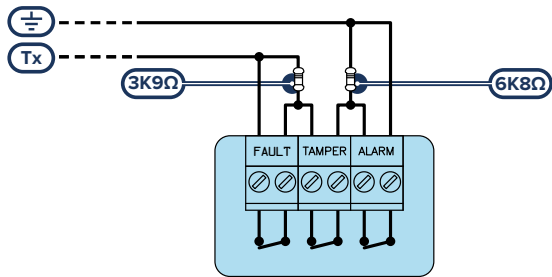
- stand-by
- alarm
- tamper (short-circuit)
- tamper (wire cutting)



2.3.4 Triple balancing

In the case of Triple balancing without an EOL resistor, it is possible to detect 5 distinct conditions for the entire terminal:

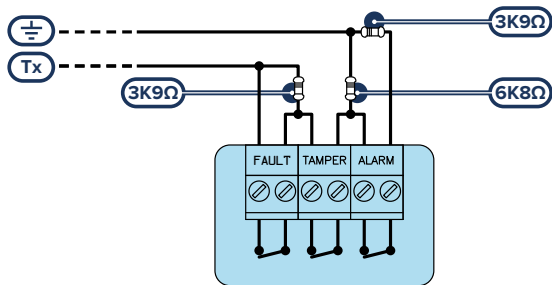
- stand-by on 'ALARM' and 'FAULT' zones
- alarm on 'ALARM' zone and stand-by on 'FAULT' zone
- alarm on 'FAULT' zone and stand-by on 'ALARM' zone
- alarm on both zones
- tamper (wire cutting)



2.3.5 Triple balancing with EOL

In the case of Triple balancing with an EOL resistor, 6 distinct conditions can be detected for the entire terminal:

- stand-by on 'ALARM' and 'FAULT' zones
- alarm on 'ALARM' zone and stand-by on 'FAULT' zone
- alarm on 'FAULT' zone and stand-by on 'ALARM' zone
- alarm on both zones
- tamper (wire cutting)
- tamper (short-circuit)



2.3.6 Restrictions or requirements in:

AT	CZ	EE	QDT200H3-A
FI	FR	SK	
UK			
AT	CZ	EE	QDT200H3-D
FI	FR	N/M	
SK			

List of restrictions or requirements:

Band frequency	Country	Implementation	Reason / remarks
10.5 - 10.6 GHz	AT	Not implemented	Fixed service
	CZ	Not implemented	
	EE	Not implemented	FWA
	FI	Restricted implementation	For new equipment: power limited to 25mW e.i.r.p., Duty Cycle 10%, internal use only. See 'Finnish Transport and Communications Agency Regulation 15'
	FR	Undergoing studies	
	SK	Not implemented	Fixed service
	N/M (QDT200H3-D only)	Restricted implementation	Restricted at 10.51 - 10.58 GHz
	UK (QDT200H3-A only)	Restricted implementation	Restricted at 10,575 - 10,600 GHz The band could be used for radar level gauges.

3. Programming

The operating parameters of the detectors and the adjustments of the sensitivity of the Qtech sensors can be programmed by means of the buttons and LEDs available on the PCB, through their own programming menu.

3.1 Programming from QDT200H3

To change operating parameters, the QDT200H3 detector has a programming menu indicated by the blinking on its LEDs. Within this menu, you can navigate using the 'P1' and 'P2' buttons.

The P1 button allows you to enter and exit the programming menu and to scroll through the menu options. The P2 button can be used to change the parameters relating to the selected option.

The 4 LEDs indicate:

- selection of the parameter, when they are ON solid
 - the value of the parameter, when they are flashing
1. Remove the cover.
 2. Power up the detector.
 3. Press and hold the P1 button for 5 seconds until all the LEDs start blinking. When the button is released, the menu will have the first option active.
 4. Use the P1 button to move to the different options on the menu (*see*). The LED combination (the LEDs which blink) identifies the option concerned.
 5. By pressing the P2 button it is possible to view the current setting of the parameter and with subsequent presses the parameter can be changed until the desired setting is obtained.
 6. It is possible to change the menu option by pressing the P1 button again until the desired parameter is reached.
 7. To exit programming without saving the changes, wait 30 seconds without pressing any button or disconnect the power supply.
To exit programming and confirm all changes, press and hold the P1 button for 5 seconds, until the LEDs blink quickly.
 8. Close the casing and complete the installation procedure.

Default

Reset of programming is achieved with the device powered up and by holding down buttons P1 and P2 simultaneously for 10 seconds.

This leads to the sequential lighting (one every 2 seconds) of all 4 LEDs. When all the LEDs are on, the buttons can be released and in this way reset all programming menus to factory data settings.

3.2 Programming menu

In the table below, the 'Menu' column indicates the combination of LEDs that identify the parameter and the 'Parameter' column indicates the function/parameter on the menu.

The 'Options' column shows the value of the programmable settings for each parameter

The boxes with a grey background indicate the values of the factory parameters/functions.

Menu (P1 button)					Options (P2 button)																	
Green	Yellow	Red	Blue	Option																		
				Microwave sensitivity																		
					Level 1				Level 2				Level 3									
				Infrared Sensitivity																		
					Level 1				Level 2				Level 3									
				Anti-mask sensitivity																	Disabled	
					Level 1				Level 2				Level 3									
				Shock sensitivity																	Disabled	
					Level 1				Level 2				Level 3									
				LEDs																		
					Enabled				Disabled													
				AND / Smart-OR Mode																		
					AND				Smart-OR													
				Alarm pulses																		
					1				2													
				Signal minimum duration																		
					3 seconds				1 second													
				Self-test / Low voltage on FAULT output																		
					Activate				Deactivate													
				Anti-masking on ALARM output																		
					Activate				Deactivate													
				Anti-masking on TAMPER output																		
					Activate				Deactivate													

	LED Off
	LED On solid
	Flashing LED
grey	Option at default

Note

For compliance with grade 3 of the standard, it is necessary to:

- *activate Self-test / Low voltage on FAULT output option*
 - *activate at least one of the Anti-masking on ALARM output or Anti-masking on TAMPER output options*
-

4. General information

4.1 About this manual

Manual code: DCMIINE0QDT200H3

Revision: 120

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4.2 Manufacturer's details

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Web: www.inim.biz

The persons authorized by the manufacturer to repair or replace the parts of this system have authorization to work only on devices marketed under the brand Inim Electronics.

4.3 Warranty

Inim Electronics S.r.l.. (Seller, Our, Us) warrants the original purchaser that this product shall be free from defects in materials and workmanship under normal use for a period of 24 months.

As Inim Electronics does not install this product directly, and due to the possibility that it may be used with other equipment not approved by Us; Inim Electronics does not warrant against loss of quality, degradation of performance of this product or actual damage that results from the use of products, parts or other replaceable items (such as consumables) that are neither made nor recommended by Inim Electronics. Seller obligation and liability under this warranty is expressly limited to repairing or replacing, at Seller's option, any product not meeting the specifications. In no event shall Inim Electronics be liable to the purchaser or any other person for any loss or damage whether direct or indirect or consequential or incidental, including without limitation, any damages for lost profits, stolen goods, or claims by any other party caused by defective products or otherwise arising from the incorrect or otherwise improper installation or use of this product.

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover damage arising from improper maintenance or negligence, damage caused by fire, flood, wind or lightning, vandalism, fair wear and tear.

Inim Electronics S.r.l. shall, at its option, repair or replace any defective products. Improper use, that is, use for purposes other than those mentioned in this manual will void the warranty. Contact Our authorized dealer, or visit our website for further information regarding this warranty.

4.4 Limited warranty

Inim Electronics S.r.l. shall not be liable to the purchaser or any other person for damage arising from improper storage, handling or use of this product.

Installation of this Product must be carried out by qualified persons appointed by Inim Electronics. Installation of this Product must be carried out in accordance with Our instructions in the product manual.

4.5 Simplified EU Declaration of Conformity

Hereby, Inim Electronics S.r.l. declares that the radio equipment type QDT200H3 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.inim.biz.

4.6 Documents for the users

Declarations of Performance, Declarations of Conformity and Certificates concerning to Inim Electronics S.r.l. products may be downloaded free of charge from the web address www.inim.biz, getting access to Extended Access and then selecting "Certifications" or requested to the e-mail address info@inim.biz or requested by ordinary mail to the address shown in this document.

Manuals may be downloaded free of charge from the web address www.inim.biz, getting access to the reserved area, after the login, and then to the section of each product.

4.7 Disposal of the product



Informative notice regarding the disposal of electrical and electronic equipment (applicable in countries with differentiated waste collection systems)

The crossed-out bin symbol on the equipment or on its packaging indicates that the product must be disposed of correctly at the end of its working life and should never be disposed of together with general household waste. The user, therefore, must take the equipment that has reached the end of its working life to the appropriate civic amenities site designated to the differentiated collection of electrical and electronic waste. As an alternative to the autonomous-management of electrical and electronic waste, you can hand over the equipment you wish to dispose of to a dealer when purchasing new equipment of the same type. You are also entitled to convey for disposal small electronic-waste products with dimensions of less than 25cm to the premises of electronic retail outlets with sales areas of at least 400m², free of charge and without any obligation to buy. Appropriate differentiated waste collection for the subsequent recycling of the discarded equipment, its treatment and its environmentally compatible disposal helps to avoid possible negative effects on the environment and on health and favours the re-use and/or recycling of the materials it is made of.



Evolving Security

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