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This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference; and,
(2) this device must accept any interference received, including interference that may cause undesired operation. The device must be located 20cm or more from persons.

The Federal Communications Commission warns that changes or modifications of the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Unit emits low power microwave radar signals through the front. Do not cover with any labels or block for proper operation. Keep unit powered off when not in use.

No user serviceable parts inside. Warranty void if opened.

Note: specifications may change without notice.

Note: Not liable for typographical errors or omissions.

The certification of equipment means only that the equipment has met the requirements of the RSS 102 and RSS 210 specifications. License applications, where applicable to use certified equipment, are acted on accordingly by Industry Canada issuing office and will depend on the existing radio environment, service and location of operation. The certificate is issued on condition that the holder complies and will continue to comply with the requirements and procedures issued by Industry Canada. The equipment for which the certificate is issued shall not be manufactured, imported, distributed, leased, offered for sale or sold unless the equipment complies with the applicable technical specifications and procedures issued by Industry Canada.

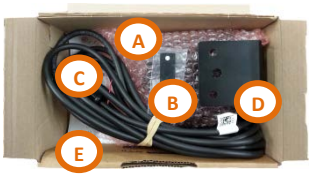
La certification du matériel signifie seulement que le matériel a satisfait aux exigences des normes RSS 102 et RSS 210. Les demandes de licence nécessaires pour l'utilisation du matériel certifié sont traitées en conséquence par le bureau de délivrance d'Industrie Canada et dépendent des conditions radio ambiantes, du service et de l'emplacement d'exploitation. Le certificat est délivré à la condition que le titulaire satisfasse et continue de satisfaire aux exigences et aux procédures d'Industrie Canada. Le matériel à l'égard duquel le certificat est délivré ne doit pas être fabriqué, importé, distribué, loué, mis en vente ou vendu à moins d'être conforme aux procédures et aux spécifications techniques applicables publiées par Industrie Canada.

2 INTRODUCTION

The TMA is a microwave sensor for intersection management, traffic data collection and speed warning applications. The output consists of 2 relays and an optional serial interface. The relay can be triggered on movement, speed and/or direction.

3 THEORY OF OPERATION

1. Unpack the unit and check the following items are in the box:

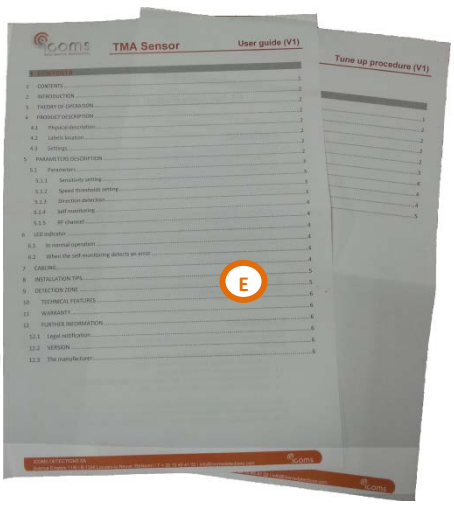


   a. Radar with rear side connector
   b. Sticker for front face closure
   c. Cable with connector
   d. Mounting bracket
   e. User's guide and tune up procedure

2. Set the encoders according to your choice for the different parameters (see "Tune up procedure").
3. Place the sticker (B) on the front face.
4. Assemble the unit (A) with the bracket (D)
5. Place the radar on the field and align it to the traffic (see title 8, INSTALLATION TIPS, p. 6).
6. Connect the cable (C) rding to title 7CABLING, p. 5.
7. Power the radar.
8. The LEDs will come on when a vehicle is detected and encounters the conditions of the chosen parameters.

4 PRODUCT DESCRIPTION

4.1 DELIVERY



4.2 LABELS LOCATION

4.2.1 Identification label

4.2.2 Serial number

Please don't remove the labels!

4.3 SETTINGS

You can set different parameters through 2 encoders allowing 16 positions each (see Tune Up procedure for further information).

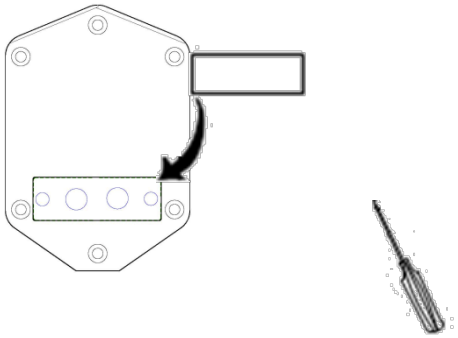


Figure 1: front face

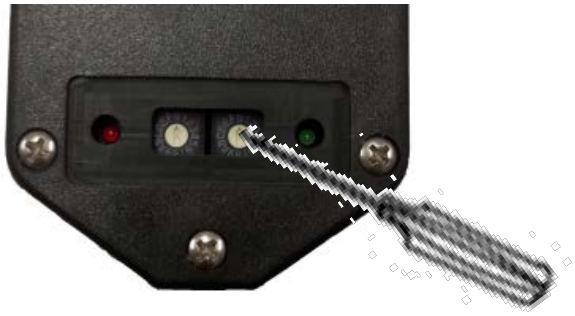
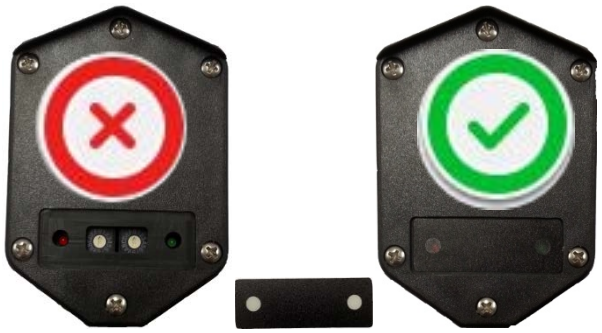


Figure 2 : encoders&LEDs

Once you have set the requested radar parameters, **place the sticker on the frontface to guarantee its water tightness**.
ATTENTION: manufacturer's warranty does not cover radar without sticker!



5 PARAMETERS DESCRIPTION

5.1 PARAMETERS

5.1.1 Sensitivity setting

The factory setting fulfills the needs of most of the installations. If the position or the size of the detection area is not satisfactory, change first the position of the radar (tilt angle and/or height of installation).

5.1.2 Speed thresholds setting

Two relays are available. For each relay, you can choose a speed range for the actuation, defined by a minimum and a maximum speed threshold.

5.1.3 Direction detection

You can toggle between approaching, receding and two directions detection.

5.1.4 Self monitoring

The self-monitoring monitors the following parts of the hardware:

- Micro-wavedevice (VCO)
- Mixers
- Analogic format channel
- Analogic/digital converter
- Micro-processor oscillator
- Code running

When a failure is detected, the relays are permanently actuated and the LEDs flashing shows an error code (see further, title 6.2, p. 5).
The radar is reset after 1 hour.

5.1.5 RF channel

This parameter allows to shift the radar's frequency. If two units face each other, they must be put on different channels, so they cannot trigger each other.

6 LED indicator

6.1 In normal operation

- The red LED shows the state of the relay 2.
- The green LED shows the state of the relay 1.

6.2 When the self-monitoring detects an error

The two leds blink quickly (2 or 4 quick flashes followed by a 1 sec break, according to the detected error.

7 CABLING

CAUTION :positive security/fail safe relays - contacts given for powered radar.

12 VDC				
PIN nr	**Color**	**Power+2 relays* (NO/NC)**	**Power + 1 relay (NO/NC) + RS232***	**Power + 2 relays (NO) + RS232***
1	RED	Power + (DC)		
2	BLUE	N/A	N/A	COM relay 2*
3	BLACK	Power - (DCGND)		
4	BROWN	NC relay 2*	GND RS232*	GND RS232*
5	WHITE	COM relay 1	COM relay	COM relay 1
6	GREY	NO relay 1	NO relay	NO relay 1
7	YELLOW	NC relay 1	NC relay	NO relay 2*
8	GREEN	COM relay 2*	RX radar (RS232)*	RX radar (RS232)*
9	PINK	NO relay 2*	TX radar (RS232)*	TX radar (RS232)*

* : RS-232 and relay 2 are and optional features

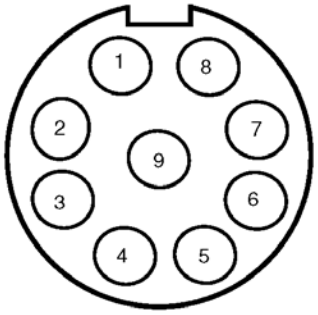


Figure 3 : connector Weipu SP1712/P9

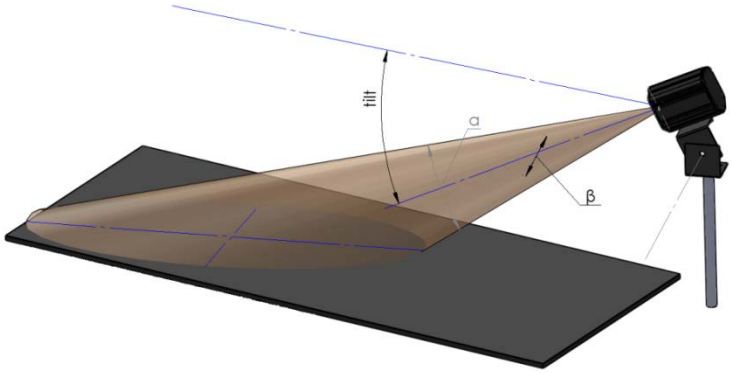
USER'S OUTPUTS
Resistive load: 110 VAC 0.3A - 24 VDC 0.3A
Inductive load: 110 VAC 0.2A - 24 VDC 0.3A

REMARK
Please disconnect the radar from power before maintenance intervention.

The housing shape is designed to make the radar placement easier, as well on the horizontal plan as on the vertical one. Once the radar has been screwed on its bracket, use the line of sight to point the middle of the detection area (see *Figure 4*).

Figure 4: line of sight

The smaller the tilt angle, the longer the radar range, but also the longer the blind zone (the zone without detection just underneath the radar) :



- α = vertical antenna opening angle (α = 45°)
- β = horizontal antenna opening angle (β = 38°)
- tilt = inclination angle with respect to the horizontal

Figure 5 : angles

According to the tune up, the position has to be adapted (see Tune Up procedure for further information).

8 DETECTION ZONE

We have calculated some detections patterns surfaces, based on common installation parameters. Please note that these values result from theoretic calculations and do not take in account environmental factors.

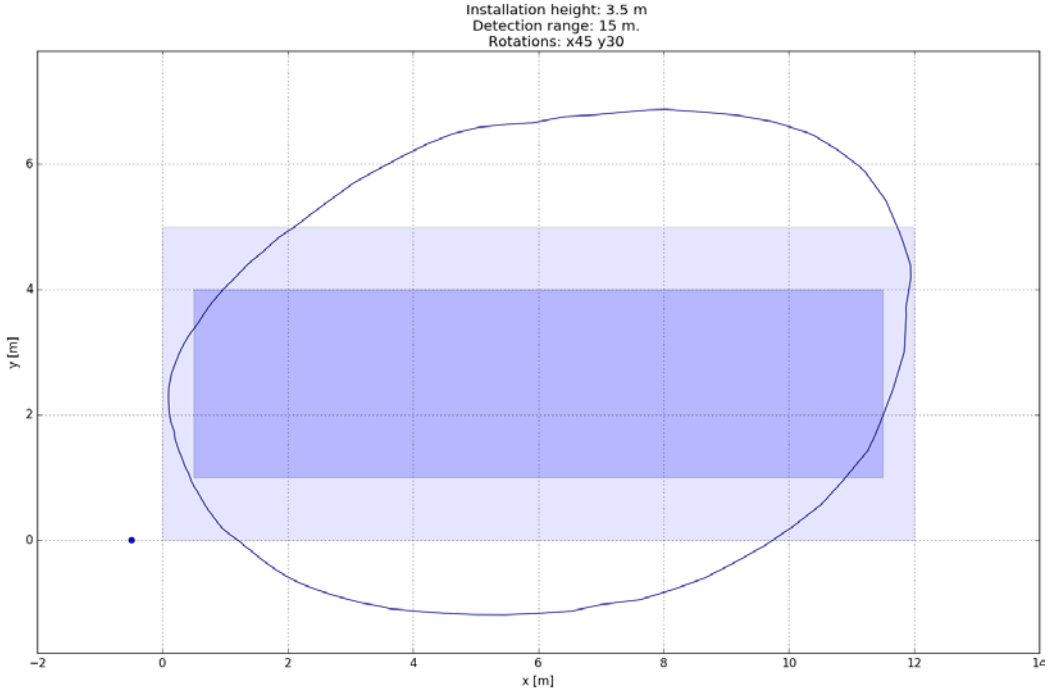


Figure 6 : dimensions of the lobe according to the installation parameters

9 TECHNICAL FEATURES

	TMA
Protection level	IP 65
Power supply	12 VDC
Power consumption	83 mA@12V (1 W)
User output	- Inverted relay contacts: ▪ Resistive load: 110 VAC 0.3 A – 24 VDC 0.3 A ▪ Inductive load: 110 VAC 0.2 A – 24 VDC 0.3 A LED on front face, turned on as long as one of the 2 relays is activated
Temperature range	-20° C to +60° C
Dimensions	L68 x H100 x P170 mm (connector included, cap in place)
Weight	450 gr
Wiring & connectors	Weipu connector

10WARRANTY

Icoms Detections warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for a period of two (2) years from the date of despatch from Icoms Detections premises, except for the batteries for which a warranty period of six (6) months applies.

If a product does not operate as warranted during the applicable warranty period, Icoms Detections shall, at its option, either repair the defective unit, either deliver to the buyer an equivalent product or part to replace the defective item. All products that are replaced become property of Icoms Detections.

The defective product must be returned to Icoms Detections within the applicable warranty period. The defective product must be shipped back to Icoms Detections pre-paid, insured and wrapped in the original or similar shipping package to ensure that it will not be damaged during transportation, and must be accompanied by appropriate paperwork (ask first for a **R**eturn **M**aterial **A**uthorisation number) detailing the nature of the defect experienced.

Icoms shall be under no liability in respect of any defect arising from normal wear and tear, wilful damage, negligence, damage due to inappropriate packaging, abnormal working conditions, failure to follow Icoms Detections instructions (whether oral or in writing), misuse, improper installation, alteration or repair without Icoms Detections approval.

11FURTHERINFORMATION

11.1 LEGAL NOTIFICATION

Hereby, Icoms Detections declares that this TMA rangeis in compliance with the requirements and other relevant provisions of

- Directive 2014/53/EC.
- FCC Part 15B Class A
- IC ICES-003 issue 6

ISED WARNING

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation,Science and Economic Development Canada’s licence-exempt RSS(s). Operation is subjectto the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may causeundesired operation of the device. The distance between user and products should be no less than 20cm.

AVERTISSEMENT ISED

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. Le fonctionnement est soumis aux deux conditions suivantes:
(1) Cet appareil ne doit pas causer d'interférences.
(2) Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil. La distance entre l'utilisateur et de produits ne devrait pas être inférieure à 20cm.

11.2 VERSION

Issue n°	Date	Author	Comment
V1	25/06/2018	CBA	First generic version
V1	21/12/2018	SCO	Added ISED Notice

11.3 THE MANUFACTURER:

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