

RADIX TACTILES

INDICATORS FOR THE VISUALLY IMPAIRED

PRODUCT
MANUAL



RADIX[®]

AGD[®]

PRODUCT SOLUTIONS FOR
INTELLIGENT TRAFFIC SYSTEMS

Table of Contents

INTRODUCTION MS-240	
Product & Technology	3
PRODUCT OVERVIEW MS-240	
Electrical Performance	4
TECHNICAL SPECIFICATIONS MS-240	
Product Dimensions	5
Product Specification	5
INTRODUCTION ITE220/221	
Product & Technology	6
PRODUCT OVERVIEW ITE220/221	
Electrical Performance	7
TECHNICAL SPECIFICATIONS ITE220/221	
Product Dimensions	8
Product Specification	8
INTRODUCTION CU/TU100	
Product & Technology	9
TECHNICAL SPECIFICATIONS CU/TU100	
Product Dimensions	10
Product Specification	10
INSTALLATION	
Tactile Installation (MS-240 & ITE220/221)	11-12
Tactile Installation (CU/TU100)	13-14
END OF LIFE - DISPOSAL INSTRUCTIONS (EOL)	
MS-240 Tactile	15
ITE220/221	16
CU/TU100	17
TYPE APPROVAL CERTIFICATION	
ITE220/221	18
MS-240	19
CU/TU100	19
IMPORTANT	
Safety information	20
DISCLAIMER	
20	
WARRANTY	
20	

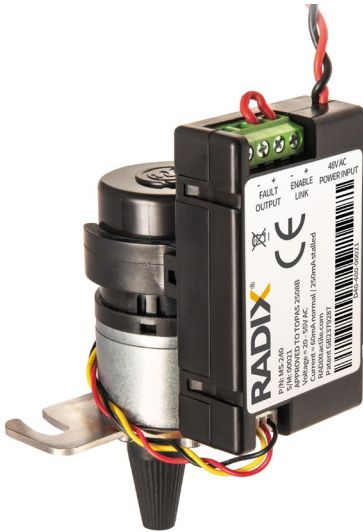
safer, greener, more efficient

Introduction MS-240

PRODUCT & TECHNOLOGY

RADIX TACTILES

INDICATORS FOR THE VISUALLY IMPAIRED



The new Radix tactile indicator solution for the visually impaired is specifically designed for use at pedestrian crossings at signalled traffic control installations.

Approved to TOPAS 2508, high unit reliability and robustness in an on-street environment are delivered with a long-life brushless motor equipped with an intelligent restart function.

Compact in design, this low power tactile indicator is easily pre-installed to both the AGD range of Nearside and Wait Indicators and other approved industry pedestrian signals for both permanent and temporary/portable signal control (12V version).

PART NUMBERS

- 48Vac MS-240 - 600 (Cone A)
MS-240 - 601 (Cone B)
- 12Vdc MS-240 - 100

KEY FEATURES

- Long life Brushless Motor
- Intelligent Restart Function
- Low Power
- 48V (ELV): 20 to 55Vac - Optionally 12V (temporary/portable): 10.8 to 13.2Vdc
- Universal Bracket
- Fits to approved nearside or temporary/portable signals
- Fully CE compliant
- Patent No. GB2379287

safer, greener, more efficient

Product Overview MS-240



CONFIGURATION - FAULT OUTPUT

The fault output is an open collector opto coupler output which operates according to the table below:

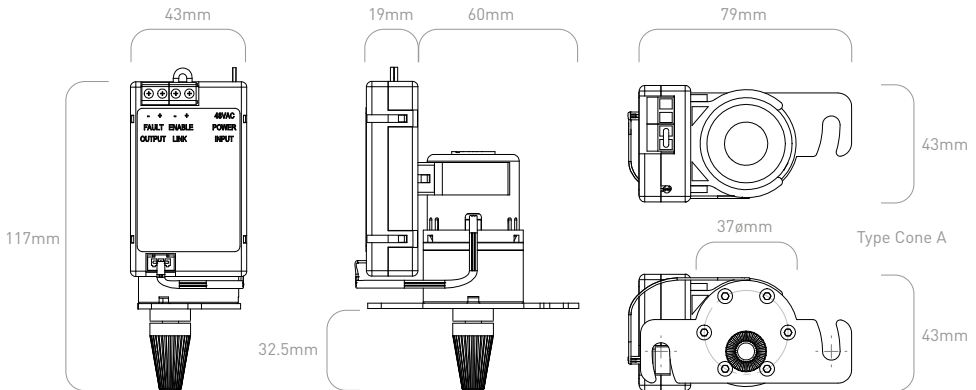
Supply Voltage Input State	Enable Input State	Fault Output State	Description
L	N/A	FL	Tactile not running. No issue (no power)
H	FL	FL	Tactile not running. No issue.
H	SH	SH	Tactile running. No issue
H	SH	FL	Tactile running. Possible states: <ul style="list-style-type: none">• Driver unable to start motor.• Motor not properly connected.• Motor has failed and is open-circuit.• Speed out of the rated range.• Motor has stalled.

KEY: FL = Floating / SH = Short Circuit

Technical Specifications MS-240

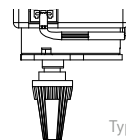
RADIX TACTILES
INDICATORS FOR THE VISUALLY IMPAIRED

PRODUCT DIMENSIONS



PRODUCT SPECIFICATION

Technology	Brushless motor	
Rotation Speed	60rpm +/- 5% (reverse torque $\leq 0.06\text{Nm}$)	
Stopping Torque	In the range 0.06 to 0.08Nm	
Unpowered Spin Torque	$\leq 0.04\text{Nm}$	
Supply Voltage	MS-240-600 / MS-240-601 20V to 55V ac	MS-240-100 10.8V to 13.2Vdc
Current	48Vac - 60mA normal operation - 250mA stalled (max)	12Vdc - 70mA normal operation - 250mA stalled (max)
Operating Temperature	-15°C to $+60^{\circ}\text{C}$	
Ingress Protection	IP52	
Interface Enable Input	Link to Enable	
Isolation Fault Output	60Vdc maximum at 50mA	
Dimensions	Height: 117mm, Depth: 79mm, Width: 43mm	



Type Cone B

An alternative cone shape is available as an option.

Introduction ITE220/221

PRODUCT & TECHNOLOGY

RADIX TACTILES
INDICATORS FOR THE VISUALLY IMPAIRED



The Radix tactile indicator solution for the visually impaired is specifically designed for use at pedestrian crossings at signalled traffic control installations.

Approved to TOPAS 2508, high unit reliability and robustness in an on-street environment are delivered with a durable electric motor.

Compact in design, this low power tactile indicator is easily pre-installed to both the AGD range of Nearside and Wait Indicators and other approved industry pedestrian signals for both permanent and temporary/portable signal control (12V version).

PART NUMBERS

- 48Vac ITE220
- 12Vdc ITE221

KEY FEATURES

- Durable Electric Motor
- Low Power
- 48V (ELV): 20 to 55Vac - Optionally 12V (temporary/portable): 10.5 to 15Vdc
- Universal Bracket
- Fits to approved nearside signals and wait indicators
- Fully CE compliant
- Patent No.s: GB.2379287

safer, greener, more efficient

Product Overview ITE220/221



CONFIGURATION - FAULT OUTPUT

The fault output is an open collector opto coupler output which operates according to the table below:

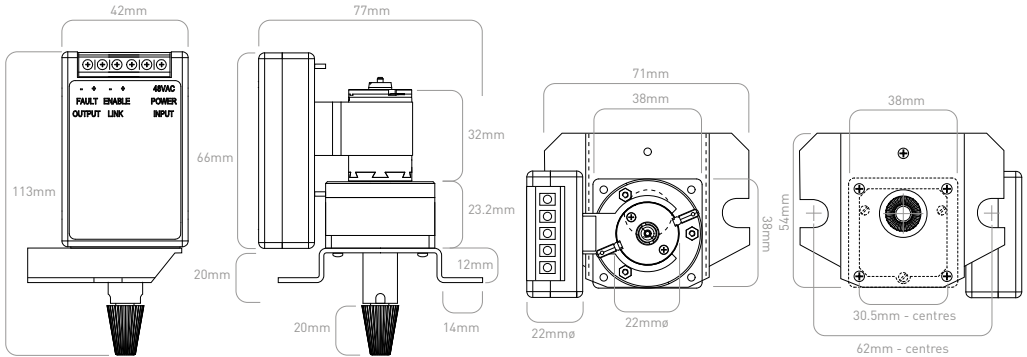
Supply Voltage Input State	Enable Input State	Fault Output State	Description
L	N/A	FL	Tactile not running. No issue (no power)
H	FL	FL	Tactile not running. No issue.
H	SH	SH	Tactile running. No issue
H	SH	FL	Tactile running. Possible states: <ul style="list-style-type: none">• Driver unable to start motor.• Motor not properly connected.• Motor has failed and is open-circuit.• Speed out of the rated range.• Motor has stalled.

KEY: FL = Floating / SH = Short Circuit

Technical Specifications ITE220/221

RADIX TACTILES
INDICATORS FOR THE VISUALLY IMPAIRED

PRODUCT DIMENSIONS



PRODUCT SPECIFICATION

Technology	Electric motor	
Rotation Speed	60rpm +/- 20% (reverse torque $\leq 0.06\text{Nm}$)	
Stopping Torque	In the range 0.06 to 0.08Nm	
Unpowered Spin Torque	$\leq 0.04\text{Nm}$	
Supply Voltage	ITE220 20V to 55Vac	ITE221 10.5 to 15Vdc
Current	48Vac - 55mA normal operation - 135mA stalled (max)	12Vdc - 26mA normal operation - 135mA stalled (max)
Operating Temperature	-15°C to $+60^{\circ}\text{C}$	
Ingress Protection	IP52	
Interface Enable Input	Link to Enable	
Isolation Fault Output	60Vdc maximum at 50mA	
Dimensions	Height: 113mm, Length: 58mm, Width: 43mm	
Patent No.s	Patent No.s: GB.2379287	

Introduction CU/TU100

PRODUCT & TECHNOLOGY

RADIX TACTILES
INDICATORS FOR THE VISUALLY IMPAIRED



The CU/TU100 Universal Tactile Crossing Indicator for the visually impaired is particularly useful where the standard audible indicator is not suitable, at sites such as junctions with pedestrian light signals or at staggered Pelican Crossings.

It is easy and quick to fit, either on site, or prior to installation. The Tactile Cone with its drive mechanism fits into any approved pedestrian push button box on a universal bracket. The Control Unit, normally housed in the red man signal head, draws its low power requirement from the switched green man power supply without affecting the lamp monitoring circuits. Where the “Flashing Green” period is not provided, an external link is fitted to enable operation.

The patented electronic control circuit requires very low power, operating over dimmed or undimmed voltage, with full safety interlocks against accidental operation, precisely controlling the speed and torque of the Tactile Cone.

PART NUMBERS

- 230Vac CU/TU100

KEY FEATURES

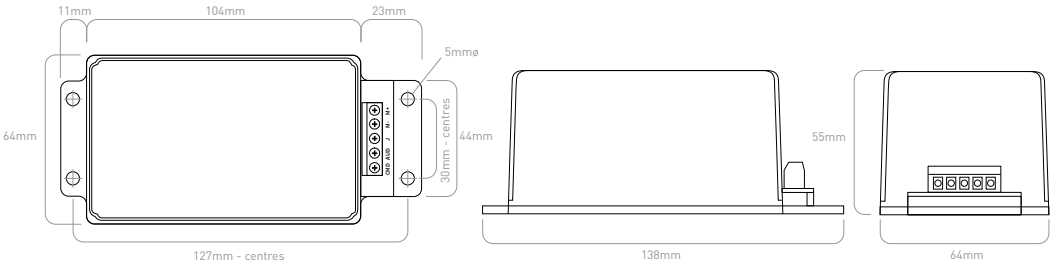
- Unambiguous ‘cross’ indication for the visually impaired
- Suitable for use at Pelican Crossings
- Very easy installation or retrofit
- Extra-low power consumption
- Proven, reliable technology
- TOPAS 2508 Approved
- RoHS Compliant

safer, greener, more efficient

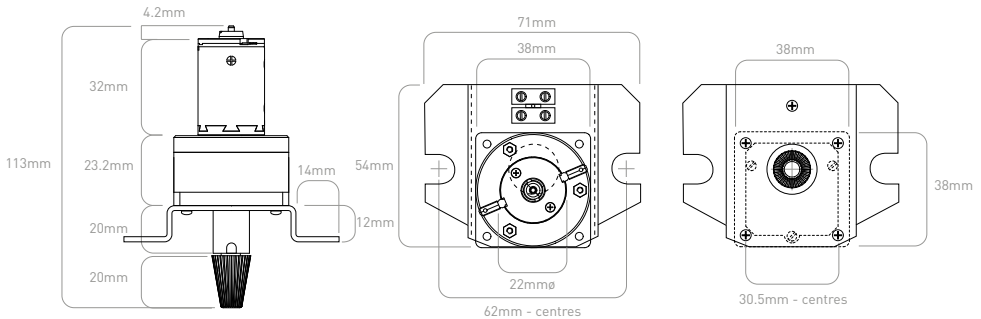
Technical Specifications CU/TU100

RADIX TACTILES
INDICATORS FOR THE VISUALLY IMPAIRED

PRODUCT DIMENSIONS CONTROL UNIT



PRODUCT DIMENSIONS TACTLE UNIT



PRODUCT SPECIFICATION

Technology	Electric motor
Rotation Speed	60rpm +/- 20% (reverse torque $\leq 0.06\text{Nm}$)
Stopping Torque	In the range 0.06 to 0.08Nm
Unpowered Spin Torque	$\leq 0.04\text{Nm}$
Supply Voltage	230V 50Hz (Operating range: 100V to 253Vac)
Current	35mA normal operation 60mA stalled (max)
Steady Green Man Input	9V to 30Vdc - 15mA (max)
Operating Temperature	-15°C to +60°C
Dimensions	Control Unit: Height: 55mm, Length: 138mm, Width: 64mm Tactile Unit: Diameter: 38mm, Length: 113mm incl cone

Installation

RADIX TACTILES

INDICATORS FOR THE VISUALLY IMPAIRED

TACTILE INSTALLATION (MS-240 & ITE220/221)

The following diagrams show installation into a AGD946 nearside signal but generally all installation is very similar.

NOTE: make absolutely certain that the power is off before commencing any wiring.

It is essential for the safety integrity of the crossing that the installer must ensure both the neutral and live connections of the Tactile Equipment are connected either:

I. Directly to the neutral and live connections of the Green Man Under no circumstances may other connections be made.

Or:

II. To the 48V Live and Neutral outputs of the Traffic Controller dedicated Tactile Drive Outputs if present.

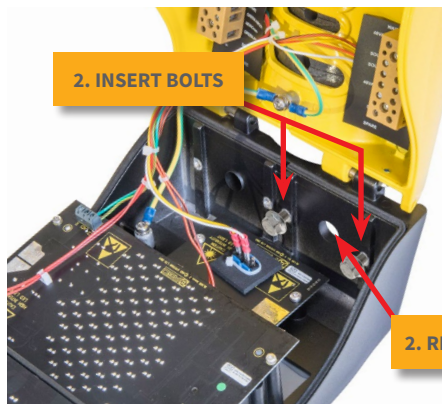
For controllers with a flashing green man period (e.g. Pelicans).

I. The Enable Input must be inhibited during the flashing green man period as well as in the event of road red lamp failure.

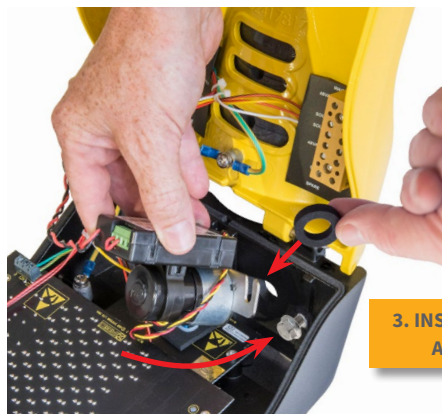
II. The controller output used for this purpose must be fully safety interlocked, isolated and close to enable cone rotation.

Each Tactile Control Unit is connected in parallel with a green man lamp drive and the current consumption for your model can be found under product specifications on pages: 5,8,10.

1 Ensure power to the near side signal is turned OFF prior to installing the tactile.



2 Push out the large blanking plugs in the base of signal and loosely insert the bolts in the positions shown.



3 Place 'O'Ring over cone then Insert the tactile at an angle and locate the mounting plate slots under the bolts heads.



4 Once located under the bolt heads twist the tactile so the mounting plate is square, then tighten bolts.

Continues overleaf.

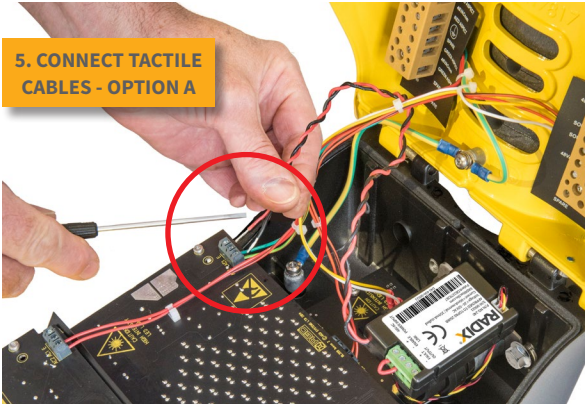
4. ROTATE TACTILE UNDER BOLTS

Installation

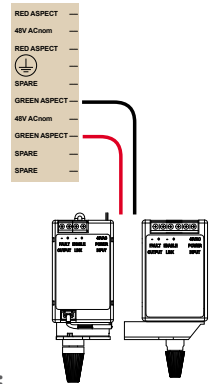
TACTILE INSTALLATION (CONTINUED)

RADIX TACTILES INDICATORS FOR THE VISUALLY IMPAIRED

5. CONNECT TACTILE CABLES - OPTION A



- 5 Connect the tactile cables (colours shown are for indication purposes only) the power can be taken from both positions as shown above.



IMPORTANT NOTE:

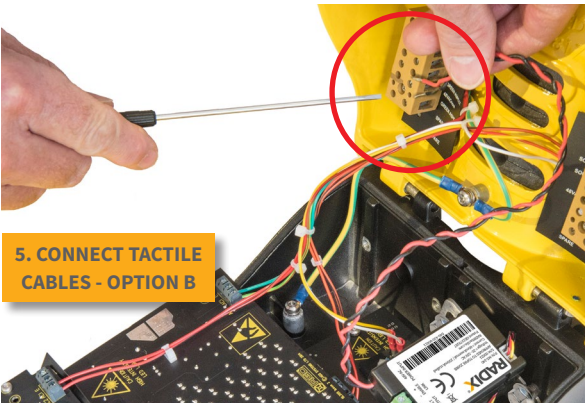
There is no isolation between the power input and the enable input. Ensure that your connection polarities are correct.

Connect the “**Enable +**” terminal to the appropriate side of the volt free contact in the controller. Connect the “**Enable -**” terminal to the other side of the volt free contact.

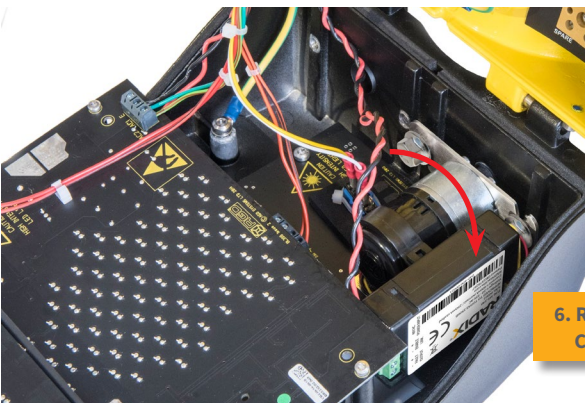
NB. If more than one Tactile is connected to the same volt free contact it is essential that they all use the same polarity, otherwise the enable function will not work and the Tactile Cone will rotate whenever power is applied to the green man aspect!

(b) For crossings where the Tactile Cone is intended to rotate whenever the green man is on: simply add a short wire between the “**Enable +**” and “**Enable -**” terminals. Units direct from AGD are supplied with a link between “**Enable +** and **Enable -**”

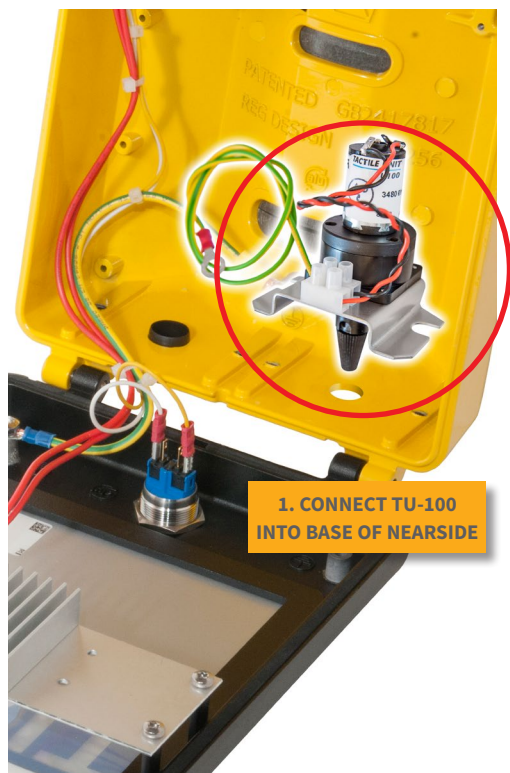
- 6 To complete rotate the tactile control box as shown and ensure all cables do not obstruct closing of housing.



5. CONNECT TACTILE CABLES - OPTION B



6. ROTATE TACTILE CONTROL BOX



- 1 Using the previous 2 pages as a general guide, first insert the TU100 (Tactile Unit) into the base of the Nearside unit.

Initially connect the earth cable, do not make any other connections at this stage, fit the CU100.

After the CU100 is fully fitted connect the two cores of 8.3 A to the Tactile Unit terminal block, "M+" to the terminal with the red wire and "M-" to the black.

NOTE: Tactile Units (motors) must not be connected in parallel under any circumstances.

The CU100 is classified as a double insulated product and therefore the supply cable is two cores (live/neutral). The installation of this equipment must conform to the latest edition of the IEE Wiring Regulations (BS7671). This product must be protected with an appropriate disconnect device as part of the installation.

Continues overleaf.



- 2 Ideally position the CU100 (Control Unit) within the Red Man signal head, position top right with good access to the terminal block. Check assembly can be closed without any obstructions.



To mount unit, use a template to carefully drill four 3mm pilot holes from the outside of the signal head in the appropriate position, these holes should then be opened up to 6.5mm. Mounted the CU100 using the four M6 x 10 screws and four fibre washers supplied.

Connect the green/yellow earth wire to a suitable earth bonding point.

Where possible, connect the blue and brown cores of the input lead in parallel with the Green Man drive at the pole cap terminal block by feeding this lead through the flexible conduit. The blue lead should be connected to the lamp common and the brown to the switched live which feeds the Green Man.

For controllers with a flashing green man period (eg Pelicans), add two new wires in parallel with the two audible device supply wires, feed them from the pole cap into the signal head and connect them to the “Audible” and “Common” terminals on the Control Unit, negative to “Common” and positive to “Audible”. NB: Ensure that there is no connection to the “Junction” terminal.

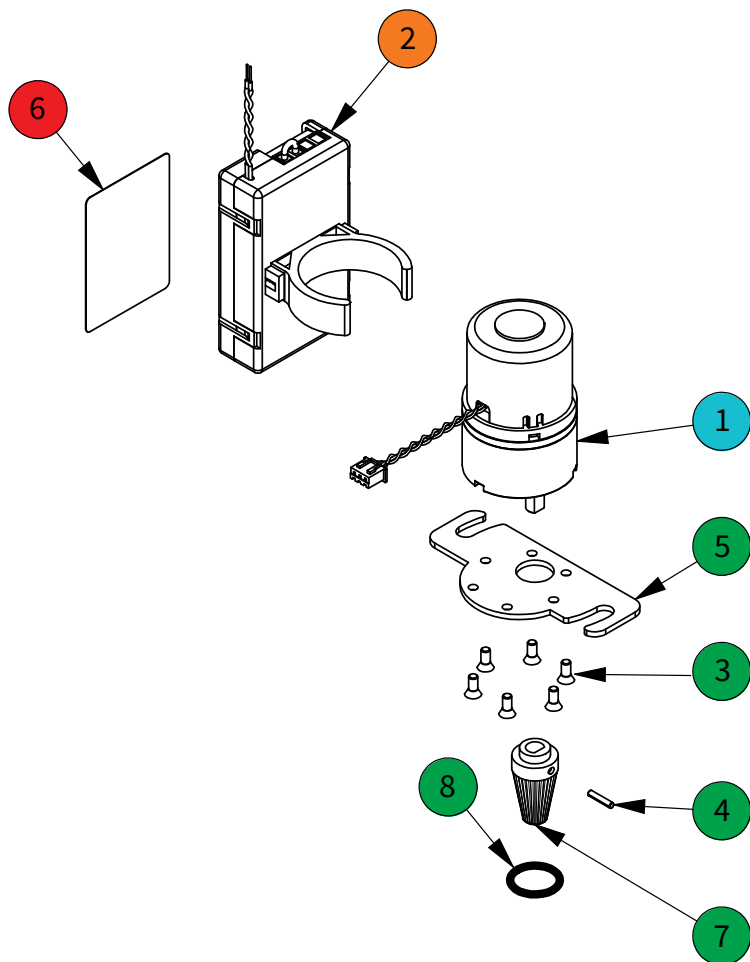
For controllers with no flashing green man period (eg normal junction controllers), add a short wire on the Tactile Control Unit terminal block between “Audible” and “Junction”.

If you have any doubt concerning electrical connections please seek further advice.

End Of Life – Disposal Instructions (EOL)

MS-240 TACTILE

RADIX TACTILES
INDICATORS FOR THE VISUALLY IMPAIRED



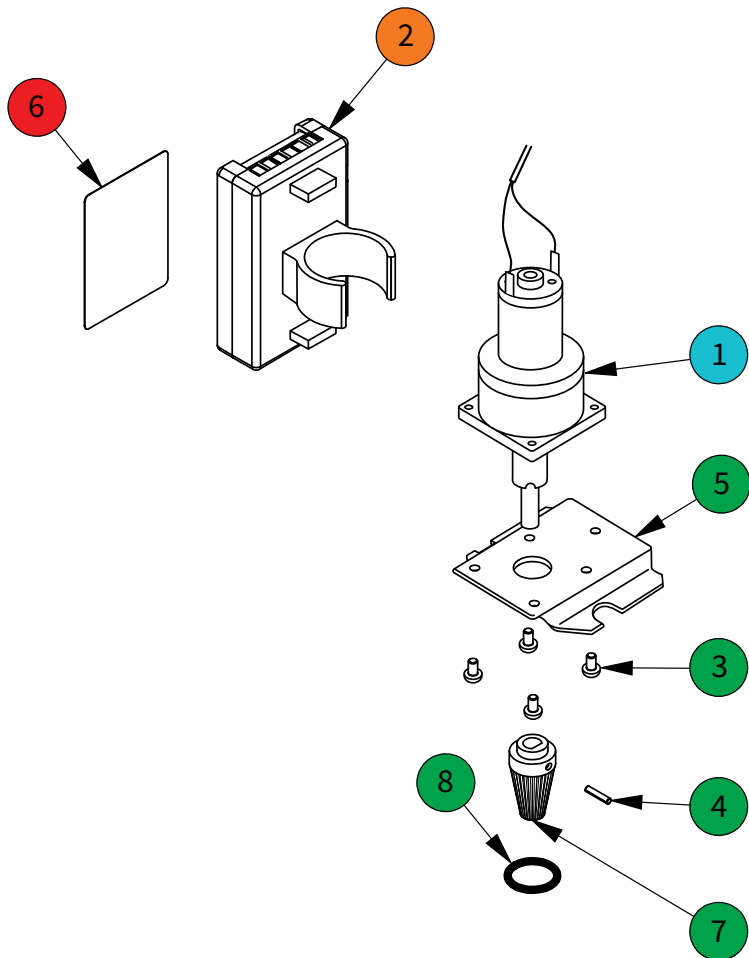
Item	Qty	Material
1	1	Gear Motor Brushless
2	1	Control Electronics
3	6	Screws
4	1	Spring Pin Split
5	1	Mounting Bracket
6	1	Label
7	1	Tactile Cone
8	1	Neoprene O Ring

- Reuse / Recycle
- Separate & Recycle
- Downcycle
- Hazardous Recovery
- Non-Recyclable

End Of Life – Disposal Instructions (EOL)

RADIX TACTILES
INDICATORS FOR THE VISUALLY IMPAIRED

ITE220/221 TACTILE



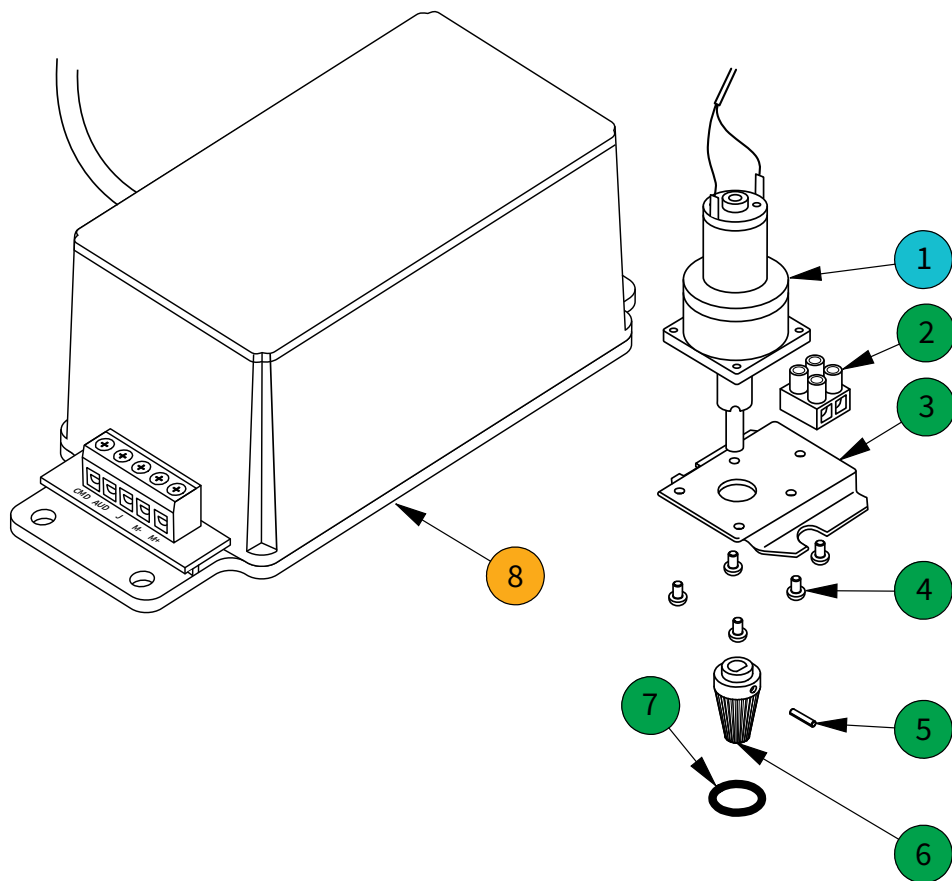
Item	Qty	Material
1	1	Gear Motor
2	1	Control Electronics
3	6	Screws
4	1	Spring Pin Split
5	1	Mounting Bracket
6	1	Label
7	1	Tactile Cone
8	1	Neoprene O Ring

- Reuse / Recycle
- Separate & Recycle
- Downcycle
- Hazardous Recovery
- Non-Recyclable

End Of Life – Disposal Instructions (EOL)

CU/TU100 CONTROL UNIT & TACTILE

RADIX TACTILES
INDICATORS FOR THE VISUALLY IMPAIRED



Item	Qty	Material
1	1	Gear Motor
2	1	ChocBloc
3	1	Mounting Bracket
4	5	Screws
5	1	Spring Pin Split
6	1	Tactile Cone
7	1	Neoprene O Ring
8	1	Sealed ABS Control Unit

- Reuse / Recycle
- Separate & Recycle
- Downcycle
- Hazardous Recovery
- Non - Recyclable

Type Approval Certification

Radilx Tactiles are marked with the CE mark.
This mark indicates compliance with LVD and
EMC Directives 2014/35/EC and 2014/30/EC



CERTIFICATE OF REGISTRATION

Company: Radix Traffic Limited

We confirm that the products listed below have been registered with TOPAS Limited under reference 2015/0026 and meet the requirements provided under TOPAS 0600 and the TOPAS Specifications applicable.

Product Name: Integrated Tactile Equipment

Product Reference: ITE220

TOPAS Specifications: TOPAS 2508A

Exceptions: None

A handwritten signature in black ink, appearing to read "B. Lyus".

B Lyus, Director

Signed.....
(on behalf of Traffic Open Products and Specifications Limited)

06/02/2015

Dated.....



CERTIFICATE OF REGISTRATION

Company: Radix Traffic Limited

We confirm that the products listed below have been registered with TOPAS Limited under reference 2015/0027 and meet the requirements provided under TOPAS 0600 and the TOPAS Specifications applicable.

Product Name: Integrated Tactile Equipment

Product Reference: ITE221

TOPAS Specifications: TOPAS 2508A

Exceptions: None

A handwritten signature in black ink, appearing to read "B. Lyus".

B Lyus, Director

Signed.....
(on behalf of Traffic Open Products and Specifications Limited)

06/02/2015

Dated.....

Website: www.topasgroup.org.uk
Email: enquiries@topasgroup.org.uk

Type Approval Certification



CERTIFICATE OF REGISTRATION

Company: AGD Systems Limited

We confirm that the products listed below have been registered with TOPAS Limited under reference 2019/0156 and meet the requirements provided under TOPAS 0600 and the TOPAS Specifications applicable.

Product Name: MS-240 Tactile Indicator

Product Reference: MS-240

TOPAS Specifications: TOPAS 2508B

Exceptions/Limitations: none

Director, Dr M E Pleydell

Signed.....
(on behalf of Traffic Open Products and Specifications Limited)

Dated.....
13/03/19

Website: www.topasgroup.org.uk
Email: enquiries@topasgroup.org.uk

TOPAS accepts no liability as to the compliance of this product other than as stated on the register of products at www.topasgroup.org.uk. Procurers are advised to confirm compliance of statutory regulations with the manufacturer.

Page 1 of 1

Registered at Companies House Cardiff Number : 9132907
Registered Office: The Apex, 2 Sheriffs Orchard, Coventry CV1 3PP

2019/0156

Important

RADIX TACTILES INDICATORS FOR THE VISUALLY IMPAIRED

SAFETY PRECAUTIONS

All work must be performed in accordance with company working practices, in-line with adequate risk assessments. Only skilled and instructed persons should carry out work with the product. Experience and safety procedures in the following areas may be relevant:

- Working with mains power
- Working with modern electronic/electrical equipment
- Working at height
- Working at the roadside or highways



1. The product must be correctly connected to the specified power supply. All connections must be made whilst the power supply is off or suitably isolated. Safety must always take precedence and power must only be applied when deemed safe to do so.
2. No user-maintainable parts are contained within the product. Removing or opening the outer casing is deemed dangerous and will void all warranties.
3. Under no circumstances should a product suspected of damage be powered on. Internal damage may be suggested by unusual behaviour, an unusual odour or damage to the outer casing. Please contact AGD for further advice.

Disclaimer

While we (AGD Systems) endeavour to keep the information in this manual correct at the time of print, we make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability or availability with respect to the information, products, services, or related graphics contained herein for any purpose.

Any reliance you place on such information is therefore strictly at your own risk. In no event will we be liable for any loss or damage including without limitation, indirect or consequential loss or damage, or any loss or damage whatsoever arising from loss of data or profits arising out of, or in connection with, the use of this manual.

WARRANTY

All AGD products are covered by a 12 month return to factory warranty. Products falling outside this period may be returned to AGD Systems for evaluation, repair, update or re-calibration, any of which may be chargeable.



AGD Systems Limited White Lion House, Gloucester Road, Cheltenham, GL51 0TF, UK

Tel: +44 (0) 1452 854212 **Email:** info@agd-systems.com **Web:** agd-systems.com

traffic.group