traffic systems and signing

HIGHWAYS AGENCY

MCH 1953
Issue E
January 2011

NMCS Maintenance Instruction

Technology Performance Management Service (TPMS)

Bar Code Procedures

First published 2001
Printed and published by the Highways Agency

NOTE: This document is controlled using a formal Change Control System. However, it is not updated every time a Change Note is issued. To see the latest requirements covered by the scope of this document, please ask for further details about any issued Change Notes.

CONTENTS

1 INTRODUCTION

1.1 Purpose of Document

This specification defines the requirements for TPMS (Technology Performance Management Service) Bar Code Procedures. It is one in a series of Highways Agency (HA) specifications that define procedures, instructions and requirements related to the maintenance of Highways Agency Technology Systems. The complete series of specifications is known as the "Technology Maintenance Standard" (TMS).

The TMS is organised into a hierarchical structure and this, and the relationship between documents is defined in specification MCH 1952, "Maintenance Documentation Strategy".

Technology maintenance services are provided under a variety of contractual arrangements. In most areas, these services are provided by a Technology Maintaining Agent Contractor (TechMAC). In some areas the role is delivered by an Enhanced Managing Agent Contractor (EMAC).

For the purposes of definition, this specification uses the generic term "Technology Maintenance Service Provider" (TMSP) to denote the responsibilities for technology maintenance. The details therefore apply equally to all areas regardless of the contractual arrangement.

1.2 Contents of Document

The contents are primarily for use by Technology Systems Maintenance Contractors and HA Equipment Suppliers / Manufacturers involved in the application of TPMS Bar Code Labels. Section 2 gives general descriptive information on the type of label to be used and Section 3 describes the method of attachment and positioning.

1.3 Scope of Document

TPMS is an asset management tool designed to support the maintenance of Technology Systems. It contains a central register of inventory information, together with maintenance records, condition and fault information, for all HA Technology Systems, including electrical equipment and roadside infrastructure.

TPMS is currently used by all the HA's contractors responsible for technology maintenance and with motorway maintenance responsibilities. It has a number of facilities designed to support the needs of various TPMS users and other organisations with an interest in TPMS data.

1.4 Related Documents

In addition to this specification, further information can be found in MCH 1854, "TPMS Overview of System".

2 BAR CODE LABELS

2.1 General

The TPMS system uses Bar Code labels and Handheld Bar Code Reader devices (MC70 and MC75's) to identify all the assets that comprise Technology Systems. Every asset is allocated a unique Bar Code which is used to identify the asset, simplify the recording of routine maintenance activities and faults, and allow the movement of assets under maintenance to be tracked and monitored.

TPMS Bar Code Labels are fixed to assets either:

a) In the Factory: By the Equipment Supplier / Manufacturer in accordance with TR1100, "General Specification for Motorway Signs, Signalling and Communications Equipment".

b) In the Field: As arranged by the Scheme Manager as part of the installation and commissioning process for New Schemes in accordance with MCH 1349, "Operational and Maintenance Requirements for Technology Systems and Equipment" and MCH 1864, "TPMS Registering an Asset".

By the Technology Systems Maintenance Contractor as part of routine inspections in accordance with MCH 1865, "TPMS Asset Inspections and Maintenance Activities".

The HA supply as free-issue all Bar Code labels from Highways Agency Stores as requisitioned by Equipment Suppliers / Manufacturers, Scheme Managers and Technology Systems Maintenance Contractors.

Guidance on the location of the Bar Code labels and their form of fixing is provided in this specification. However, due to the diverse range of assets installed on the HA network, it is not possible to define the exact location or type of label for every asset and the contents must therefore be used as a guide for those assets not covered. In general labels need to be selected using the guidance and general principles outlined in this Section and Section 3. Labels must be:

a) Selected according to size and type of adhesive suitable for the asset category and surface finish material.

b) Positioned in an area that allows access for scanning with the handheld device and readily visible to the maintenance operative, for example adjacent to existing manufacturer or equipment identification labels.

Further guidance may be obtained from the TPMS Service Delivery Team (SDT) at:

helpdesk@hatpms.com

The Technology Systems Maintenance Contractor has overriding responsibility for ensuring all assets are correctly bar coded and recorded in the TPMS database.

2.2 Bar Code Label Types

The TPMS Bar Code Label is fixed to a wide range of assets. Different size labels are required depending on the environment and the likely distance from which the label will be scanned by the handheld device.

Furthermore, assets have many different surface finishes and these require different adhesives to ensure an adequate bond between the label and the surface to which it is to be attached. Each label is supplied with two different adhesives as follows:

a) Low Surface Energy (LSE) Adhesive: Used predominantly on painted surfaces and most plastics.

b) High Surface Energy (HSE) Adhesive: Used predominantly on hard surfaces, for example anodised aluminium, stainless steel surfaces and hard plastics.

In summary four types of Bar Code Label are required to meet all situations, the type of label used depends on the category, asset type and the material finish. TPMS categories and types are defined in the related specification, MCH 1852, "TPMS Definitions of Asset Category, Types and Variants".

The different TPMS Bar Code labels in use are as follows:

a) Label Type "A": This is a large size label suitable for use on external painted, galvanised and most plastic surfaces such as Cabinets, Structures, Telephones and larger devices such as Message Signs and Indicators.

b) Label Type "B": This uses the same adhesive as Type "A" but is smaller in size. It is generally used on painted, galvanised and most plastic surfaces such as CCTV Cameras and certain types of Outstation.

c) Label Type "C": This is identical in size to Type "B" but uses a different adhesive suitable for assets with a hard surface finish such as anodised aluminium, stainless steel and hard plastics (ABS-Acrylonitrile Butadiene Styrene). Examples of where it can be used are Outstations, Transponders and Responders.

d) Label Type "D": This is a tie-on label and is for use in situations where the use of a self-adhesive label would be inappropriate, for instance on longitudinal cables and cable assemblies.

The specification for Bar Code Labels is MCF 2402, "TPMS Bar Code Labels Technical Specification".

The different types of Bar Code Label are illustrated in Appendix A.

3 BAR CODE LABEL FIXING AND POSITION

3.1 Label Care

The adhesive backing on Bar Code labels cures after exposure to air, it is therefore essential that the backing paper is not removed other than immediately prior to fixing.

Bar Code Labels should be stored in a suitable dedicated box or container to prevent bending or damage and should not be kept loose, for example in tool boxes or tool cases etc.

3.2 Surface Preparation

To ensure good adhesion, it is necessary that the surface to which the label is to be applied is clean and dry. A solvent cleaner, Isopropanol (Isopropyl Alcohol) must be used to remove oil, grease and dirt from the surface of the asset prior to applying the Bar Code label.

Before fixing labels it is necessary to complete a risk assessment in respect of the current Health and Safety, Control of Substances Hazardous to Health (COSHH) Regulations. It is to be completed with reference to the relevant manufacturers' data sheets or specific Health and Safety Executive (HSE) guidance regarding these materials and substances.

Appendix B contains a Manufacturer's Data Sheet for Isopropanol (Isopropyl Alcohol).

This preparation is suitable for attaching labels to the majority of assets; however attaching labels to assets with anti-graffiti finishes may require the use of mechanical fixings, as described in HA Installation Drawings (MCX series).

3.3 Label Application - Aluminium Types "A", "B" and "C"

After surface preparation, Bar Code labels can be applied to the asset by removing the paper backing and fixing to the asset.

Bonding strength is improved with firm application of pressure and gentle heat. The following process is recommended:

a) Bar Code labels shall not be fixed when ambient temperatures fall below 10°C as the adhesive will remain firm and not bond correctly to the surface. Where possible the optimum application temperature (21°C to 38°C) should be achieved using a heater.

b) A seam roller or similar device shall be used to ensure that all the air is expelled from between the Bar Code label and the fixing surface.

3.4 Label Application - Polyester Type "D"

Other than the selection of Ultra Violet (UV) stable cable ties of appropriate size no special preparatory work is required for the application of this type of label.

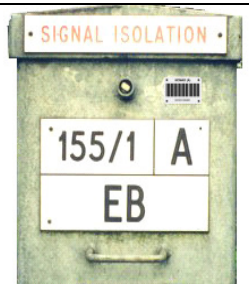
TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION				
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**
CABINETS General	Paint or Galvanised	A	Cabinets normally have a painted or galvanised finish and the Bar Code Label must be fitted above the Equipment Identification Label. Cabinets, which have had special treatment, such as an anti-graffiti finish, will require the label to be mechanical fixed.	 **Cabinet 609 P**  **Cabinet 600 MD**
CABINETS Fenceline and Parapet Mounted	Paint or Galvanised	A	For Cabinets located in the boundary fenceline, labels must be fitted above the Equipment Identification Label. In most cases this will be on the door of the cabinet.	 **Cabinet 609 EB (In Fenceline)**

TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION

Asset Type	Finish	Label Type	General Information	Position
TELEPHONE 354	Plastic or Steel	A or B Fixed at Factory	Telephone Type ERT 354 is supplied from the factory with four of five TPMS bar code labels attached. Whether the ERT has 4 or 5 bar code labels attached is dependent on the variant of ERT: a) NMCS and PSTN Type ERT`s have 4 components hence 4 bar code labels. b) GSM Type ERT`s have 5 components hence 5 bar code labels (The 5th component being the GSM Adaptor). In the majority of cases, only the Housing bar code label on the interior of the door is visible. For maintenance purposes, the Housing bar code is used for Standard Roadside telephone columns, Tunnel and Parapet Mounted telephones.	 **Pod**  **Beacon Module**  **GSM Adaptor**  **Barrier Box**  **Housing**

TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION					
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**	
STRUCTURE	Paint or Galvanised or Concrete	A	Structures have a variety of construction methods and external finishes such as painted, galvanised steel, aluminium and concrete. For Portal Gantry and Cantilever Gantry the label shall normally be positioned adjacent to the existing Equipment Identification Label. For Structures, Posts and Masts (Carriage Signal Posts and CCTV Masts), the label shall be positioned above the access door. **Note:** Structures constructed in concrete may require the use of mechanical fixing for the label, or where this is not practical an alternative position should be used for example, fixing to the access ladder or cable tray.	 **Portal Gantry**  **CCTV Mast**	 **Cantilever Gantry**  **Signal Post 75**

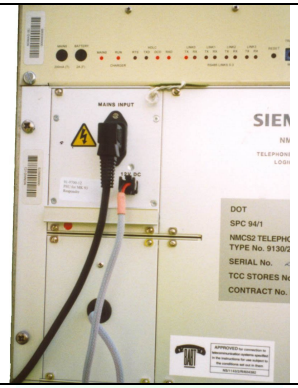
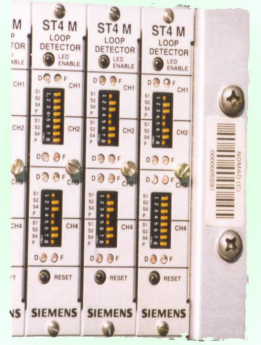
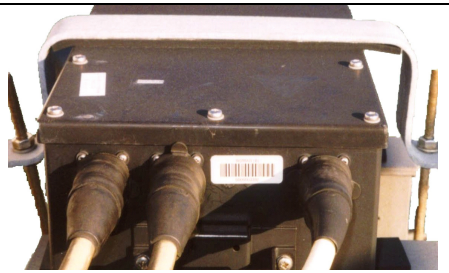
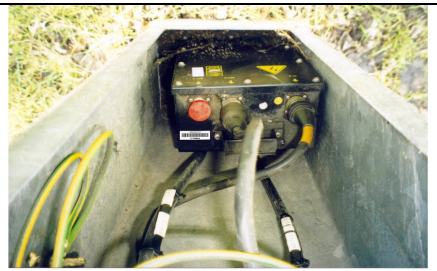
TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION				
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**
OUTSTATION Transponders, Responders, EMS Drivers etc.	Paint or Anodised	B or C	Outstations require special care when selecting the type of label to be used as they have a variety of construction methods and finishes, depending on the type and the manufacturer. For 19" Rack Mounted units fix to LEFT HAND side of 19" frame. Alternatively, if this position is obstructed, fix to RIGHT HAND side of frame. **Note:** Select Label Type "B" (Paint) or "C" (Anodised) depending on surface finish.	**Transponder (Above)** Painted Finish Type B Label **Telephone Responder (Below)** Anodised Aluminium Finish Type C Label  **MIDAS Outstation** Anodised Aluminium Finish Alternative position on RIGHT HAND side of frame 

TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION				
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**
OUTSTATION Signal Power Units	Paint	B	Side of the unit where the cable connectors are fitted. This ensures that the Bar Code Label remains with the main body of the asset should the cover be removed under maintenance.	 **SPU 3 Way (Gantry)**
				 **SPU 2 Way (Post)**
OUTSTATION Ambient Light Monitor	Paint	A Fixed at Factory	Door of Unit adjacent to manufacturer's identification plate.	 **ALM**

<table>
<tr><th colspan="5">TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION</th></tr>
<tr><th>Asset Type</th><th>Finish</th><th>Label Type</th><th>General Information</th><th colspan="2">Position</th></tr>
<tr><td rowspan="2">INSTATION
Servers,
Routers,
etc.</td><td rowspan="2">Paint
or
Anodised
Or
Plastic</td><td rowspan="2">B
or
C
Fixed
at
Factory</td><td rowspan="2">Instations require special care when selecting the type of label to be used as they have a variety of construction methods and finishes, depending on the type and the manufacturer. The majority of Instation equipment is supplied from the factory with TPMS bar code labels attached.

Note: Select Label Type "B" (Paint) or "C" (Anodised) depending on surface finish.</td><td> 

Server</td><td> 

Server</td></tr>
<tr><td> 

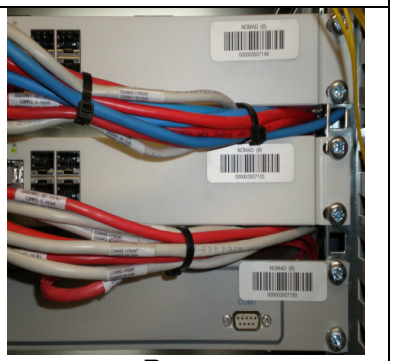
Router</td><td> 
Router</td></tr>
</table>

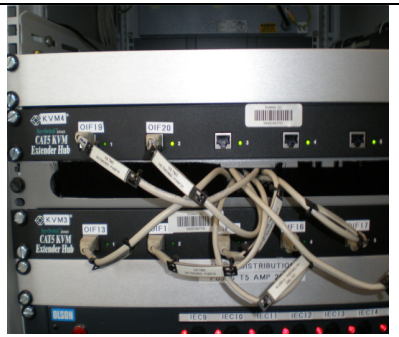
TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION					
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**	
INSTATION Local Communications Controller (LCC)	Paint or Anodised Or Plastic	B or C Fixed at Factory	Bar Code Label attached to the front of the Instation equipment for ease of accessibility within it`s cabinet location.	 **MIDAS LCC**	 **NMCS2 Standard LCC**
INSTATION Extender Hubs, Managed Switches, Etc.	Paint or Anodised Or Plastic	B or C Fixed at Factory	Bar Code Label attached to the front of the Instation equipment for ease of accessibility within it`s cabinet location.	 **KVM Extender Hub**	 **Super Stack Switch**

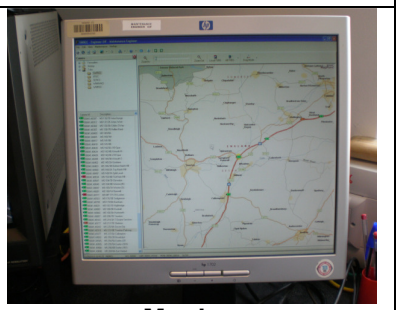
TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION				
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**
INSTATION Power Supply Units (PSU), Interface Units, etc.	Paint or Anodised Or Plastic	B or C Fixed at Factory	Bar Code Label attached to the front of the Instation equipment for ease of accessibility within its cabinet location.	 **PSU**  **Interface Unit**
INSTATION Operators Printers, Monitors, CCTV Controllers, etc.	Paint or Anodised Or Plastic	B or C Fixed at Factory	Bar Code Label attached to the front of the Instation equipment for ease of accessibility within its Control Room location.	 **Printers**  **Monitor**  **CCTV Controller**

TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION				
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**
SIGNAL Signal Indicators	Plastic	A	Rear of the Indicator adjacent to the connector.	 **Signal Indicators**
SIGNAL AMI (2004)	Paint	A Fixed at Factory	Rear of the equipment adjacent to the connectors.	 **AMI**

TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION				
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**
MESSAGE SIGN MS2 and EMS 2x12 (Older field fitted versions)	Paint	A	Adjacent to the manufacturer's identification label and maintenance access door.	 **MS2 and EMS**
MESSAGE SIGN EMS 2x12 (2004)	Paint	A Fixed at Factory	Rear of the Sign adjacent to the connectors.	 **EMS 2x12 (2004)**
MESSAGE SIGN MS3 2x16 and 3x18 (2004)	Paint	A Fixed at Factory	Rear of the Sign adjacent to the connectors.	 **MS3**

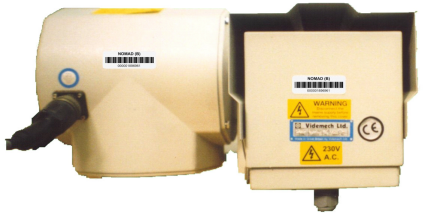
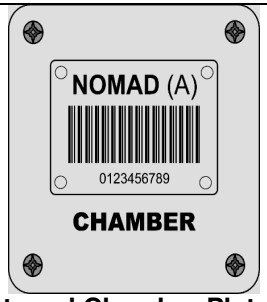
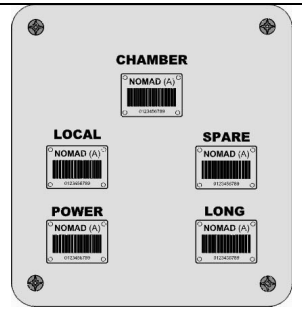
TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION				
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**
MESSAGE SIGN MS4	Paint	A Fixed at Factory	Rear of the Sign adjacent to the connectors.	 **MS4 (Preferred)**
			Alternative location on the access door.	 **(MS4 Alternative)**
TV CAMERA CCTV Camera	Paint	B	**Camera:** Label fixed to Camera Rear. **Pan and Tilt Unit:** Label fixed to Rear.	 **CCTV Camera and PTZ Head**

TABLE 3.1 - ASSET CATEGORY, LABEL TYPES AND POSITION				
Asset Type	**Finish**	**Label Type**	**General Information**	**Position**
LINK Longitudinal Cable	N/A	D	LINK assets include Longitudinal Cables and each cable must be fitted with two Bar Code Labels, one at each end. This allows the asset to be scanned and identified from either end of the link. Type “D” labels are fixed at each end of the cable using two UV stable cable ties. The label will be positioned so it is clearly visible and the orientation is with the text reading into the cable housing.	 **Cables and CJE**
LINK Ducts and Chambers	Steel Plates - Supplied by Installer	A	**Longitudinal Ducts:** Duct asset labels are fixed onto a plate and attached to the inside of the access chamber above the longitudinal ducts. For details of plates refer to HA Installation Drawings (MCX series). **Access Chamber:** Chamber asset labels are fixed onto a plate attached to the outside of the access chamber. For details of plates refer to HA Installation Drawings (MCX series).	 **External Chamber Plate & Label**  **Internal Duct Plate & Label**  **External Chamber Plate Position**

4 ABBREVIATIONS

COSHH	Control of Substances Hazardous to Health
EMAC	Enhanced Managing Agent Contractor
HA	Highways Agency
HSE	Health and Safety Executive
SDT	TPMS Service Delivery Team
TechMAC	Technology Maintaining Agent Contractor
TMS	Technology Maintenance Standards
TMSP	Technology Maintenance Service Provider
TPMS	Technology Performance and Management Service
UV	Ultra Violet

5 REFERENCES

MCF 2402	TPMS Bar Code Labels Technical Specification
MCH 1349	Operational and Maintenance Requirements for Technology Systems and Equipment
MCH 1852	TPMS Definitions of Asset Category, Types and Variants
MCH 1854	TPMS Overview of System
MCH 1864	TPMS Registering an Asset
MCH 1865	TPMS Asset Inspections and Maintenance Activities
MCH 1952	Maintenance Documentation Strategy
TR1100	General Specification for Motorway Signs, Signalling and Communications Equipment

Health and Safety Control of Substances Hazardous to Health (COSHH) Regulations 2002

6 HISTORY

Issue A	June 2001	First Issue
Issue B	September 2002	Introduction of Linked Assets and Label Type "D"
Issue C	December 2004	Updated to address new Category, Type and Variants
Issue D	September 2010	Modified to align with TPMS
Issue E	January 2011	Updated to address new 354 ERT Guidance

Signed: 

Print Name: H Burrows

For and on Behalf of the Highways Agency

This is a live document, the operation of which is periodically reviewed. User comments are invited so that these can be considered in future revisions.

Comments may be sent direct or using the "Document Review and Feedback Form" defined and given in MCH 1952, "Maintenance Documentation Strategy" to the following:

Highways Agency

Technology Operations and Maintenance Team

Temple Quay House

2 The Square

Temple Quay

Bristol

BS1 6HA

APPENDIX A

BAR CODE LABEL ILLUSTRATIONS

APPENDIX A - BAR CODE LABEL ILLUSTRATIONS

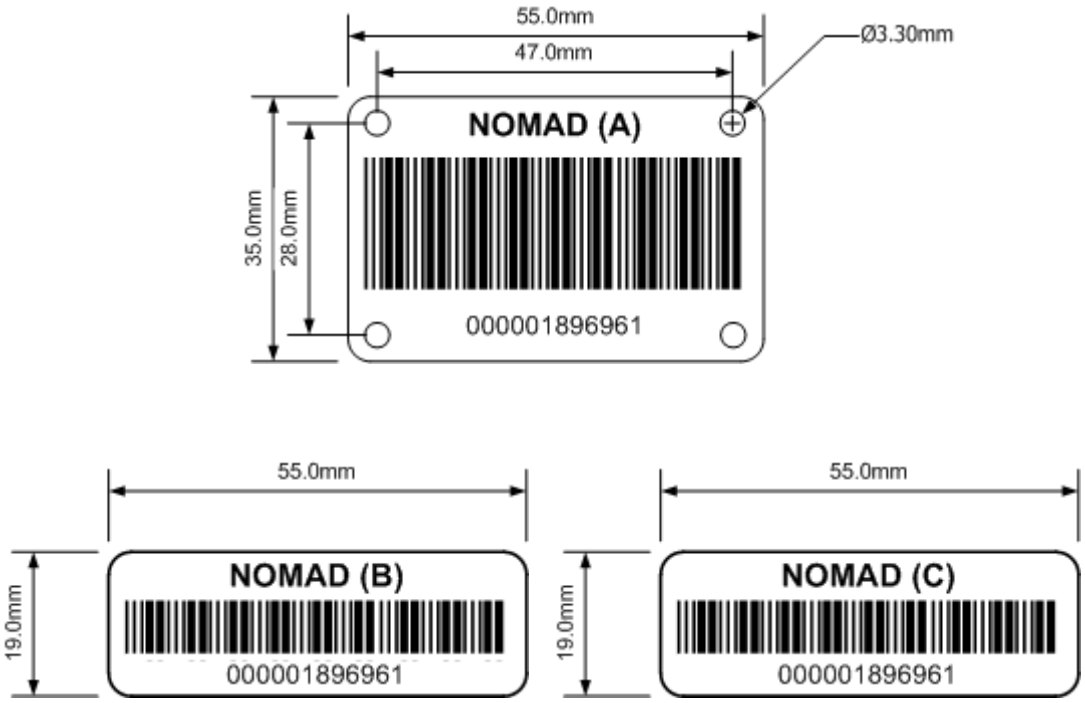


Figure A1: Aluminium Labels

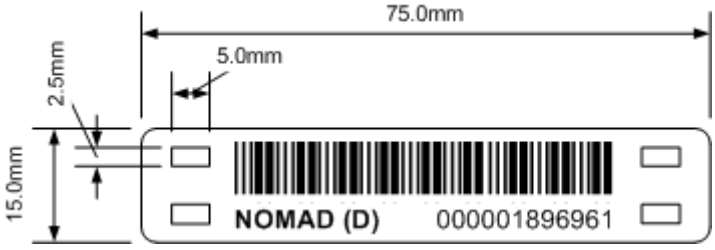


Figure A2: Polyester Label

Comprehensive details are defined in MCF 2402, "TPMS Bar Code Labels Technical Specification".

APPENDIX B

SOLVENT MANUFACTURER`S DATA SHEET

APPENDIX B - SOLVENT MANUFACTURER'S DATA SHEET

Revision Date: 07/02/2008

SAFETY DATA SHEET
ISOPROPYL ALCOHOL CLEANER

CP0010 v3.4 RS 227-4427, 448-180, 567-890

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY / UNDERTAKING

Product:	IPA SOLVENT CLEANER
Article Number:	227-4427, 448-180, 567-890
Application:	Cleaning solvent for electronic equipment and PCB`s
Supplier:	RS Components Ltd, Birchington Road, Corby, Northants, NN17 9RS.
Tel:	+44 (0)01536 402888 (8am to 8pm)
Fax No:	+44 (0)01536 401588
Email:	technical.help@rs-componenta.com

2. HAZARDS IDENTIFICATION

Highly flammable.

Vapours may cause drowsiness and dizziness.

Irritant effect on eyes.

CLASSIFICATION Xi;R36. F;R11. R67.

3.COMPOSITION / INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content	Classification
PROPAN-2-OL	200-661-7	67-63-0	60-100%	Xi;R36. F;R11. R67

The Full Text for all R-Phrases are Displayed in Section 16

COMPOSITION COMMENTS
Ingredients not listed are classified as non-hazardous or at a concentration below reportable levels

4. FIRST AID MEASURES

INHALATION
Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

INGESTION
DO NOT INDUCE VOMITING! Rinse mouth thoroughly. Get medical attention.

SKIN CONTACT
Promptly wash contaminated skin with soap or mild detergent and water. Promptly remove clothing if soaked through and wash as above. Get medical attention if irritation persists after washing.

EYE CONTACT
Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eyelids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA
Use: Alcohol resistant foam. Powder. Dry chemicals, sand, dolomite etc.

SPECIAL FIRE FIGHTING PROCEDURES
Move container from fire area if it can be done without risk. Use water to keep fire exposed containers cool and disperse vapours.

6. ACCIDENTAL RELEASE MEASURES

SPILL CLEAN UP METHOD
Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate. Wear necessary protective equipment. Absorb in vermiculite, dry sand or earth and place into containers.

7. HANDLING AND STORAGE

USAGE PRECAUTIONS
Keep away from heat, sparks and open flame. Avoid spilling, skin and eye contact.

STORAGE PRECAUTIONS
Flammable/combustible - Keep away from oxidisers, heat and flames. Store in tightly closed original container in a dry, cool and well-ventilated place. Keep in original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Name	Std	LT - ppm	LT - mg/m3	ST - ppm	ST - mg/m3
PROPAN-2-OL	WEL	400 ppm	999mg/m3	500 ppm	1250 mg/m3

INGREDIENT COMMENTS
WEL = Workplace Exposure Limits

PROTECTIVE EQUIPMENT

ENGINEERING MEASURES
All handling to take place in a well-ventilated area.

RESPIRATORY EQUIPMENT
No specific recommendation made, but respiratory protection must be used if the general level exceeds the Recommended Workplace Exposure Limit.

HAND PROTECTION
Use protective gloves. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

EYE PROTECTION
Wear approved, tight fitting safety glasses where splashing is probable.

OTHER PROTECTION
Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact.

HYGIENE MEASURES
DO NOT SMOKE IN WORK AREA! Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly with soap and water if skin becomes contaminated. When using do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Liquid
BOILING POINT (°C)	82 ^{0}C
VAPOUR DENSITY (air=1)	2.8
EVAPORATION RATE	2.93
FLASH POINT (°C)	12 OC (Open cup)
FLAMMABILITY LIMIT - LOWER (%)	2.50
FLAMMABILITY LIMIT - UPPER (%)	12.70
RELATIVE DENSITY	0.790 @20°C
VAPOUR PRESSURE	4.16 kPa @20°C
VISCOSITY	3.06 cSt @20°C
AUTO IGNITION TEMPERATURE (°C)	399

10. STABILITY AND REACTIVITY

STABILITY
Stable under normal temperature conditions.

CONDITIONS TO AVOID
Avoid heat, flames and other sources of ignition.

MATERIALS TO AVOID
Strong oxidising substances.

11. TOXICOLOGICAL INFORMATION

TOXIC DOSE 1 - LD 50	1 4700mg/kg (oral rat)
TOXIC CONC. - LC 50	46.5 mg/l/4h (inh-rat)

INHALATION
May cause irritation to the respiratory system.

INGESTION
May cause stomach pain or vomiting.

SKIN CONTACT
Prolonged contact may cause dryness of the skin. Acts as a defatting agent on the skin. May cause cracking of the skin and eczema.

EYE CONTACT
Irritating to eyes.

ROUTE OF ENTRY
Skin absorption. Ingestion. Skin and/or eye contact.

TARGET ORGANS
Central nervous system. Eyes. Respiratory system, lungs. Skin.

MEDICAL SYMPTOMS
Irritation of eyes and mucous membranes. Dilated pupils. Rhinitis (inflammation of the nasal mucous membranes). Upper respiratory irritation. General respiratory distress, unproductive cough. Skin irritation. Central nervous system depression. drowsiness, dizziness, disorientation, vertigo.

12. ECOLOGICAL INFORMATION

ECOTOXICITY
Not regarded as dangerous for the environment.

LC 50, 96 Hrs, FISH mg/l	9600
IC 50, 72 Hrs, ALGAE, mg/l	1800

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
Dispose of waste and residues in accordance with local authority requirements. Absorb in vermiculite or dry sand, dispose in licensed hazardous waste**.**

14. TRANSPORT INFORMATION

PROPER SHIPPING NAME	Isopropanol (Isopropyl alcohol)		
ADR CLASS	Class 3: Flammable liquids		
UK ROAD CLASS	3	**UK ROAD PACK GR.**	II
ADR CLASS NO.	3	**MFAG**	See Guide
ADR PACK GROUP	II	**ADR LABEL NO.**	3
UN NO. ROAD	1219	**RID PACK GROUP**	II
IMDG CLASS	**3**	**IMDG PACK GR.**	II
UN NO. AIR	1219	**AIR PACK GR.**	II

HAZARD NO. (ADR)	33	**UN NO.SEA**	1219
HAZCHEM CODE	2YE	**CEFIC TEC(R) NO.**	30GF1-I+II
RID CLASS NO.	3	**EMS**	F-E; S-D
IMDG PAGE NO.	3244	**AIR CLASS**	3
MARINE POLLUTANT	NO		

15. REGULATORY INFORMATION

LABELLING

F - Highly Flammable

Xi - Irritant

RISK PHRASES

R11	Highly flammable
R36	Irritating to eyes
R67	Vapours may cause drowsiness and dizziness

SAFETY PHRASES

S9	Keep container in a well-ventilated place
S16	Keep away from sources of ignition - No smoking
S25	Avoid contact with eyes
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S51	Use only in well-ventilated areas

UK REGULATORY REFERENCES

Chemicals (Hazard Information & Packaging) Regulations.

ENVIRONMENTAL LISTING

Rivers (Prevention of Pollution) Act 1961. Control of Pollution (Special Waste Regulations) Act 1980. Control of Pollution Act 1974.

EU DIRECTIVES

System of specific information relating to Dangerous Preparations. 2001/58/EC. Dangerous Substance Directive 67/548/EEC. Dangerous Preparations Directive 1999/45/EC.

APPROVED CODE OF PRACTICE

Classification and Labelling of Substances and Preparations Dangerous for Supply. Safety Data Sheets for Substances and Preparations.

GUIDANCE NOTES

Workplace Exposure Limits EH40.

16. OTHER INFORMATION

REVISION COMMENTS	Revised in accordance with CHIP3 and EU Directives 1999/45/EC and 2001/58/EC
REVISION DATE	February 2008
REV. NO./REPL.SDS GENERATED	0

RISK PHRASES IN FULL

R11	Highly flammable
R36	Irritating to eyes
R67	Vapours may cause drowsiness and dizziness

DISCLAIMER