Superseded

Technical Specification

Transport and Main Roads Specifications
MRTS251 Traffic Counter/Classifier

July 2017

Queensland
Government

Feedback: Please send your feedback regarding this document to: tmr.techdocs@tmr.qld.gov.au

Contents

1   Introduction

This Technical Specification applies to the design, supply, installation, testing and commissioning, performance, documentation, training and maintenance requirements for traffic counter/classifier.

The traffic counter/classifier is used to automatically collect traffic volume counts, vehicle classification and speed data.

This Technical Specification shall be read in conjunction with MRTS01 *Introduction to Technical Specifications*, MRTS50 *Specific Quality System Requirements* and other Technical Specifications as appropriate.

This Technical Specification forms part of the Transport and Main Roads Specifications Manual.

2   Definition of terms

The terms defined in Clause 2 of MRTS01 *Introduction to Technical Specifications* and MRTS201 *General Equipment Requirements* apply to this Technical Specification.

Table 2 – Definition of terms

Term	Definition
ELV	Extra low voltage, not exceeding 50 V a.c. or 120 V ripple free d.c.
FTP	File transfer protocol
QTDF	Queensland Traffic Data Format

3   Reference documents

The requirements of the referenced documents listed in Table 3 of MRTS201 and Table 3 below apply to work under this Technical Specification. Where there are inconsistencies between this Technical Specification and referenced MRTS (including those referenced in MRTS201), the requirements specified in this Technical Specification shall take precedence.

Table 3 – Referenced documents

Reference	Title
AS 2013	Austroads, Guide to Traffic Management Part 3: Traffic Studies and Analysis
MRTS201	*General Equipment Requirements*
MRTS257	*Feeder Cable and Loop Cable for Vehicle Detector*
TMR's QTDF	Transport and Main Roads' data format

4   Quality system requirements

The quality system requirements defined in MRTS20 *Cutback Bitumen* apply to work under this Technical Specification.

5   Functional requirements

The traffic counter/classifier shall collect and record traffic volume count, vehicle classification and speed data.

The traffic counter/classifier shall accommodate vehicles and vehicle combinations with up to 25 axles and automatically determine vehicle classification for each vehicle by lane of travel and store accumulated counts by lane, date, time of day and classification.

The traffic counter/classifier shall be capable of continuous operation, 24 hours per day, seven days per week, in varying weather conditions and operate for all lanes at highway speeds on heavily trafficked roads carrying peak volumes of approximately 3000 vehicles per hour, per lane.

6   Equipment

6.1   General

The equipment requirements defined in MRTS201 apply to equipment provided under this Technical Specification. Additional requirements for equipment provided under this Technical Specification are described below.

6.2   Components

The traffic counter/classifier shall consist of the following components:

   a) all associated electronics to process sensor data and log vehicle information

   b) configuration and diagnostics software

   c) an enclosure or mounting structure, and

   d) power supply and associated infrastructure and accessories to make an operational system.

7   Operational requirements

7.1   General

The operational requirements defined in MRTS201 apply to work under this Technical Specification. Additional operational requirements for equipment provided under this Technical Specification are described below.

The traffic counter/classifier shall be capable of simultaneously recording and classifying vehicles from up to eight traffic lanes.

The traffic counter/classifier must continue to calculate and store data for all vehicles passing through the system during periods of access for purposes of programming, real-time view and downloading of data.

7.2   Environmental conditions

If the traffic counter/classifier is not fitted to an enclosure, it shall be housed in a rugged case with a lockable lid with an Ingress Protection rating of at least IP65.

7.3   Internal clock

The traffic counter/classifier shall be provided with an internal clock in accordance with MRTS201. The internal clock shall allow for automatic synchronisation with a remote Network Time Protocol (NTP) time server.

7.4   Recording interval

The traffic counter/classifier shall allow the user to pre-define recording intervals. The programmable time intervals shall be 15 minutes and 60 minutes.

7.5 Internal memory

The traffic counter/classifier shall have sufficient internal memory to store collected traffic data for a period of 14 days over all lanes of traffic carrying a peak hour volume of 3000 vehicles per hour, per lane.

The traffic counter/classifier shall store data in non-volatile memory.

7.6 Data format

Recorded data shall be supplied in the format prescribed in QTDF1.04. Time stamping of data shall be in Australia Eastern Standard Time (AEST).

7.7 Vehicle classification

The traffic counter/classifier shall be capable of vehicle classification according to axle arrangement. The Contractor/supplier/manufacturer shall incorporate software within the system for estimating the Austroads Vehicle Types described in the AS 2013 Guide to Traffic Management.

7.8 Data collection accuracy

The traffic counter/classifier shall detect, record and classify traffic data to within the accuracy tolerances shown in Table 7.8.

Table 7.8 – Accuracy

Function	Accuracy tolerance
Traffic volume accuracy	± 2%
Traffic classification accuracy	> 95%

8 Control system

The control system must be furnished as part of the traffic counter/classifier and must facilitate communications between a locally connected laptop computer and the data logger and a remote PC and the data logger. The control system must process downloaded data to generate the specific ASCII files. Although referred to herein as a single software program, communications functions and data processing functions may be provided as two separate programs as long as all functional requirements are met.

It shall be possible to perform all configurations and download tasks locally from a laptop computer running Microsoft Windows® 7 Professional to the industry standards current at the time of use. Any software provided by the Contractor shall be capable of operating on all such operating systems.

8.1 Communications

The communications portion of the control system must include the applications listed in Clauses 8.1.1 to 8.1.4 of this Technical Specification.

8.1.1 Real-time view

The real-time view application must support on-line monitoring of traffic. The display must depict the axle configuration of each vehicle passing through the site. The user must have the option of displaying a selected individual lane or all lanes.

8.1.2 System data configuration

The control system must support on-line modification to the data logger's software parameters.

8.1.3 Data transfer

The control system must support the downloading of files from the traffic counter/classifier.

Data processing: the control system must provide for the processing of downloaded files to comply with Transport and Main Roads' QTDF data format. Details of this data format can be obtained from the Principal.

9 Electrical

The traffic counter/classifier shall be powered by an ELV power supply.

10 Telecommunication requirements

10.1 General

The telecommunications requirements defined in MRTS201 apply to work provided under this Specification. Additional telecommunications requirements for equipment provided under this Specification are described below.

10.2 Ethernet

The traffic counter/classifier, when offered by the supplier as a networked device, shall implement industry-standard Ethernet (IEEE 802.3).

10.2.1 Physical Layer

The counter/classifier shall implement 10BASE-T and 100BASE-TX.

10.2.2 Connectors

The physical interconnections shall be RJ-45.

10.3 TCP/IP

The traffic counter/classifier, when offered by the supplier as a networked device, shall implement industry-standard TCP/IP.

IPv4 shall be implemented. IPv6 is desirable.

A list of implemented protocols shall be provided to the Principal.

Full protocol implementations are desirable. Deviations/omissions from the respective protocol standard(s) shall be brought to the attention of the Principal in writing.

10.3.1 FTP

The traffic counter/classifier shall implement industry-standard FTP protocol (RFC959 and RFC1123).

10.3.2 PING

The traffic counter/classifier shall implement industry-standard Internet Control Message Protocol (ICMP). ICMPv4 shall be implemented. ICMPv6 is desirable.

11 Installation requirements

The installation requirements defined in MRTS201 apply to work under this Technical Specification.

The installation of loop and loop feeder shall conform to MRTS257.

The installation of traffic counter/classifier equipment shall be as instructed by the manufacturers.

12 Testing and commissioning

The testing and commissioning requirements defined in MRTS201 apply to work under this Technical Specification.

13 Documentation

The documentation requirements defined in MRTS201 apply to work under this Technical Specification.

In addition, the operations manuals and the maintenance manuals must detail all traffic counter/classifier assets, including the data logger, sensor units and software. The manuals must include, as a minimum, the following items:

- Specifications

- Design characteristics

- General operation theory

- Function of all controls

- Signal responses and acceptable thresholds

- List of component parts with stock numbers

- Documentation for the control system

- Documentation for all protocols used for communications with the data logger, and

- Documentation for all data formats utilised by the data logger.

14 Training

The training requirements defined in MRTS201 apply to work under this Technical Specification.

15 Maintenance

The maintenance requirements defined in MRTS201 apply to work under this Technical Specification.

16 Handover

The handover requirements defined in MRTS201 apply to work under this Technical Specification.