

Manufacturer:
Westermo

Issue : 6
Valid From : 12/04/2016

Voice Frequency Modems

Product Description

2W and 4W voice frequency modems for RS232.

- TD36-485AV Standalone modem installed on DIN Rail.
- TR36B Rack modem to be installed within RV-07B sub rack.
- RV-078 19- sub rack for TR-368 and PS-20 HV.
- PS-20 HV AC power card for RV-07B sub rack.
- TD-23 LV

Product Image



Scope of Acceptance- Full.

Modems may be used trackside within 3m from the centre of the nearest track to provide RS232 asynchronous point-to-point voice frequency leased line modem link.

- TD36-485 AV can be powered by AC or 48 VDC.
- TR368 to be installed within RV-078 sub rack.
- TD-23 LV can be powered by AC or 48 VDC.

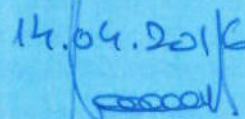
Network Rail Acceptance Panel (NRAP) hereby authorises the product above for use on railway infrastructure for which Network Rail is the Infrastructure Manager.

Reviewed by:



Steve Rennolds
Product Acceptance Specialist

Authorised by:



14.04.2016

Dan Mandoc
Professional Head of Telecoms

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Specific Conditions

The following Conditions are specific to the approved product/s contained within this Certificate. These conditions must be adhered to in addition to the Network Rail General Conditions contained within the "General Terms and Conditions" section. Failure to adhere to these conditions may result in the withdrawal or suspension of Acceptance of some, or all of the items contained within the accepted configuration.

Manufacturer

1)	Contact Network Rail Technology Introduction group via technologyintroduction@networkrail.co.uk regarding any firmware and hardware changes. The emails shall include the certificate of acceptance number, the product involve and the changes.
2)	All new.' firmware shall be assessed by Technology & Engineering, Asset Management Services as suitable before being used.
3)	A label shall be attached to the equipment showing the following information as the base information; <ul style="list-style-type: none"> - Network Rail Approved - Art no (This is Westermo's hardware and build number) - Firmware version (firmware loaded on the modem)
4)	Notify the Network Rail Technology Introduction group within 48 hours, of any deficiencies affecting the product quality, functionality and safety integrity of the product (including corrective action undertaken or proposed).

User

1)	Install in accordance with the equipment manufacturer's instructions and Network Rail supplementary instructions
2)	It is project's responsibility to make sure the equipment can support the intended functions and applications within the intended EMC environment. Equipment is EMC compliant to be installed trackside. In this case the modems are EMC certified to work within 3 m from the centre of the nearest track.
3)	The modems shall be configured for 2 wire or 4 wire leased line point-to-point working only.
4)	For TD 36 485 AV: <ul style="list-style-type: none"> - When the modem is set for 4 wire point to point leased line working, the modem's dip switch for leased line termination shall be set to terminate the receiver pair. - When modem is set for 2 wire point to point leased line working, the modem's dip switch for leased line termination shall be set to un-terminated. - The modems shall be configured with auto retrain disabled. - The modems shall be configured with Reliable mode ST/ N2 enabled. - The modem shall not be configured for dial up working or as PSTN backup for leased line if the intended application is an operational application. Dial up mode may be used for maintenance support application such a technician's dial up connection. - The modem shall not have its' firmware upgraded unless the appropriate manufacturers' label which details the firmware number and article number can be replaced as well to reflect the change

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5)	<p>For TR36B:</p> <ul style="list-style-type: none"> - modem needs to be installed within the RV-07B sub rack with at least one off PS-20 HV power card if the subrack is to be powered from an AC power supply. - The RV-07B can support a maximum of 16 off TR36B modems and two off PS-20 HV power cards - The RV-07B sub rack can be powered directly by 48 VDC via the power connection on the back. This may be used to power the sub rack by itself is the sub rack is only supporting one off TR36B. - If more than one off TR36B modem is installed within the RV-07B, the sub rack must be supported by option a or b below; <ul style="list-style-type: none"> a) Two off PS-20 HV power cards. These shall be fed from two diverse AC power circuits or supplies b) One off PS-20 HV power cards and a 48 VDC power source connected to the back of the sub rack.
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Product Configuration

Hardware (Maintenance Spares and Line Replaceable Units)

Part No.	Description	Catalogue No.
3618-0001 NR PA05/03344	TD-36 485 AV with 4101-08OC firmware and 3 pin power connector	087/039593
3618-0001 GETS	TD-36 485 AV with 4101-45CA firmware and 3 pin power connector. Please note: this part number should only be used with GETS signalling systems.	087/039594
3618-0001 NR PA05/03937	TD-36 485 AV with 4101-5401 firmware and 3 pin power connector Please Note: This is the de-facto part number for all new Westermo TD36-485 modem orders unless the project requires one of the two previous version of firmware for a specific reason.	087/039595
3614-0510 NR PA05/4309	TR36B modem with 4101-5501 firmware. Please Note: This is the de-facto part number for new TR-36B modem order. Project which needs a TR-36B loaded with 4100-46CA firmware for GETS related signalling systems shall refer to the Product Acceptance certificate for the GETS system. Westermo's article number for a TR36B modem loaded with the 4101-45CA firmware is 3614-0510GETS.	087/039415
3130-3010	RV-07B. A 19" subrack for TR-36B. For a maximum of 16 off TR-36B and 2 off PS-20 HV.	087/039416
3120-3101	PS-20 HV. A 100 - 240 VAC power card for the RV-07B.	087/039417
3600-2001	TD-23 LV, -40 to +70°C, 10-60 VDC, 10-30 VAC (No firmware)	087/039414

Certificate of Acceptance

PA05/03344

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Assessed Documentation

Reference	Title	Doc. Rev.	Date and Applies to Cert. issue No.	
6618-2201	TD-36 User Guide	-- --	07/07/2006	1
----	Stability test results of for the trial firmware from westermo	-- --	Undated	1
EE40-LPT-TL-REP-005002	West Coast Route Modernisation. Product Acceptance critical Review Report: Westermo TD36/485AV.	-- --	02/10/2008	1
----	MTBF Report TD-series from Westermo	-- --	07/11/2007	1
----	Westermo TD36 Firmware Testing Summary Report.doc	-- --	10/05/2009	2
----	Email from Ray Lock on the observation that at 9600 cable break simulation test the modem link do not re-establish with the 1 st line negotiation attempt.	-- --	07/05/2009	2
----	"Justification For Recommendation: Westermo -TR36B" document by Tak Lam, issue 1.	-- --	08/09/09	4
----	Data sheet for TR36B modem	-- --	-- --	4
----	Data sheet for RV-07B	-- --	-- --	4
----	TD-23 data sheet	-- --	-- --	6

Manuals and Training Materials

Reference	Title	Doc. Rev.	Date and Applies to Cert. issue No.	
6600-2002	TD-23 AC, TD-23 DC Installation Manual	D	-- --	6

Certificate History

Issue	Date	Issue History
1	20/11/2008	First accepted for use.
2	15/05/2009	Re-issued to: <ul style="list-style-type: none"> ▪ Amend user conditions. ▪ Amend Part Numbers and Descriptions and add new items to product configuration. These changes incorporate items from and supersede the need for PA05/ 03937 which has now been closed.
3	20/05/2009	Re-issued to amend Product name.
4	15/09/2009	Re-issued to include the contents of PA05/04309.
5	25/09/2009	Re-issued to amend the product configuration and scope.
6	12/04/2016	Update to include TD-23 LV modem which are used by SCADA projects.

Certificate of Acceptance

PA05/03344

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Contact Details

Manufacturer

Westermo

Phil Mounter
pmounter@westermo.co.uk

Sponsor

Network Rail

Steve Beck
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General Terms & Conditions

1) General

- 1) This certificate can only be amended by Network Rail Technology Introduction Group. Any alterations made by a different person will invalidate the entire certificate.
- 2) Failure to abide by the requirements in this Certificate of Acceptance may invalidate the certificate, thereby restricting the right to operate the product and / or limiting the future supply and deployment of the product on the infrastructure.
- 3) Upon the review date this certificate and the product it relates to is invalid and not accepted for use. Manufacturers are to make an application for a review prior to the review date.

2) Manufacturer

The Manufacturer shall:

- 1) Ensure that all products supplied comply with the standards defined in the Acceptance Requirements or otherwise documented as part of the assessment, including meeting the reliability requirements included in the Acceptance Requirements and in any deed of warranty for the relevant certificate number.
- 2) Notify Network Rail Technology Introduction Group via technologyintroduction@networkrail.co.uk with the Certificate of Acceptance number:
 - a. Within 48 hours, of any deficiencies affecting the quality, functionality or safety integrity of the product (including corrective action undertaken or proposed).
 - b. Of any intended change to the accepted product; changes include:
 - i. a change to the product configuration (to the actual product or its application);
 - ii. a variation to or addition of manufacturing locations or processes;
 - iii. a change in the name or ownership of the manufacturing company;
 - iv. any changes to the ability or intention to support with technical services, spares or repairs.
 - v. a change to the software or firmware associated with the accepted product hardware;
 - vi. a change of the accepted product hardware.
- 3) The Manufacturer shall provide Network Rail Technology Introduction Group at least 12 (twelve) months notice of its intention to discontinue supply or to provide such notice as is reasonable if such discontinuance is outside its control and will offer the opportunity of a Last Time Buy to Network Rail together with date for last order placement and supply of the parts affected. The introduction of proposed alternative products shall be communicated to the Network Rail Technology Introduction Group.
- 4) Provide further copies of operating and maintenance manuals to purchasers / users of the product as necessary (including certificates of conformance, calibration etc).
- 5) Provide further copies of training manuals and an appropriate level of training to purchasers or users of the product as necessary.
- 6) Where applicable, specialist technical support, repairs and servicing of the product shall be carried out by the Original Equipment Manufacturer (OEM) or authorised agent only.
- 7) Network Rail may request information from the manufacturer to prove product compliance with clauses 1 and 2 above and reserve the right to suspend and/or withdraw any application where information is not forthcoming within a reasonable timeframe.
- 8) In accordance with Network Rail's Quality Assurance Policy Statement 2011, where the specification and/or Product Acceptance Certificates specify quality assurance classifications (QA1 to QA5) for the products, the manufacturer shall comply with the specified level of quality assurance for each product and allow Network Rail access to carry out its quality assurance checks.
- 9) The manufacturer shall give Network Rail's representatives access at all reasonable times to its premises and allow them to inspect its quality systems and production methods and, if requested, to inspect, examine and test the products both during and after their manufacture and the materials being used in their manufacture.

3) Conditions of Use

Specifiers, installers, operators, maintainers, etc. using the product shall:

- 1) Comply with the certificate conditions. If a condition is not understood guidance must be sought from Network Rail Technology Introduction Group via technologyintroduction@networkrail.co.uk
- 2) Check that the application of use complies with the relevant certificate's scope of acceptance.
- 3) Report any defect if it is a design or manufacturing fault likely to affect performance and/or the safe operation of the railway in writing to Network Rail Technology Introduction Group.
- 4) Inform Network Rail Technology Introduction Group in writing of a change to the product configuration (or to the actual product or its application).
- 5) Operate, maintain and service the product in accordance with Network Rail standards and Operation and Maintenance manuals as appropriate.
- 6) Be appropriately trained and authorised for the installation, maintenance and use of the product.
- 7) Only send products for repair or reconditioning to the Original Equipment Manufacturer (OEM) or authorised agent.

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- 8) Users are to be aware that Product Acceptance is not a substitute for design approval.

4) Compliance

Railways and Other Guided Systems (ROGS) Regulations

- 1) Where the product is to be used in areas where Network Rail is not the Infrastructure Manager (e.g. leased stations), the sponsor shall additionally obtain formal consent from the Infrastructure Manager for the locality where the equipment is to be installed. This may include a requirement for additional safety verification. The decision of that Infrastructure Manager is binding, and cannot be overridden by Network Rail except by the escalation processes established in the ROGS regulations
- 2) As required in Railway Group Standard GE/RT8270, at each use of this product the project or group responsible for installation and commissioning shall be required to demonstrate compatibility with:
 - a. All rail vehicle types that have access rights over the area affected by the change
 - b. Infrastructure managed by others
 - c. Neighbours.

Railway Interoperability Regulations

- 3) For interoperable constituents of systems the project or group responsible for installation and commissioning shall be required to demonstrate compliance with the relevant Technical Specifications for Interoperability (TSI) where appropriate.
- 4) An authorisation from the national safety authority (i.e. the Railway Safety Directorate of the Office of Rail Regulation) is required before the equipment is to be used in revenue earning service.

5) Supply Chain Arrangements

- 1) Certificates of acceptance do not imply any particular quantity of supply nor any exclusivity of supply.
- 2) Products may be purchased by Network Rail or its agents, suppliers or contractors.
- 3) Manufacturers should note that it is not necessary to enter into any exclusive supply arrangements with resellers or other suppliers.

