

**Manufacturer:**  
Westermo

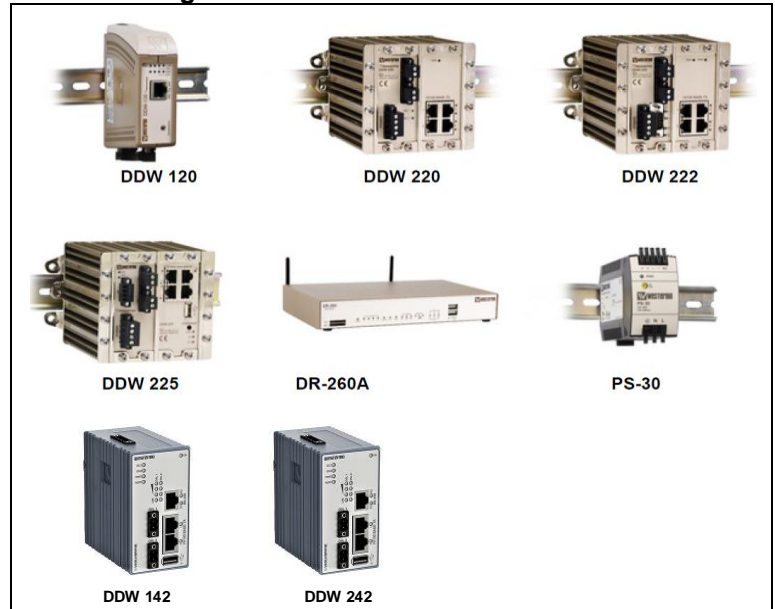
**Issue :** 10  
**Valid From :** 27/09/2024

## Ethernet Products Range and Associated Parts

### Product Description

- LAN extender (Ethernet over DSL)
- LAN extender (Ethernet over DSL) with RS232 or RS422/ 485
- ASDL/ ADSL2+ Router
- AC to DC Power Supply. Low current unit for the DDW series.

### Product Image



### Scope of Acceptance

#### Full Acceptance

Equipment shall be used within the conditions stated within item "User" in "Specific Conditions" section of this certificate.

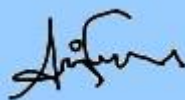
#### Changes made in Issue 10:

- In "Hardware (Maintenance Spares and Line Replaceable Units)" table, the comments for DDW-142 and DDW-242 have been updated to remove "point-to-point" restriction.

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

Reviewed by:

Authorised by:



Aamir Malik  
Product Acceptance Coordinator



Fraser Allan  
Network Technical Head 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)	A label shall be attached to the equipment and the packaging to indicate the equipment has been product approved by Network Rail. The label shall include; <ul style="list-style-type: none"> <li>a) 'Network Rail Approved'</li> <li>b) Network Rail's product approval certificate number. In this case it is 'PA05/04168'</li> <li>c) Art no (this is Westermo's hardware and build number).</li> </ul>
2)	Contact the Network Rail Product Acceptance Team via <a href="mailto:prodacc@networkrail.co.uk">prodacc@networkrail.co.uk</a> regarding any firmware and hardware changes. The emails shall include the certificate of acceptance number, the product involved and the changes.

### User

1)	Project shall make sure that the equipments are suitable to be used with the intended copper infrastructure and can support the intended application.
2)	Project shall make sure the equipments are used at locations which conform with their EMC compliances. If in doubt, project shall consult an EMC expert to understand likely impacts and risks and take the necessary steps to mitigate these.
3)	The project and maintainer shall check that the equipment has a label indicating that it has been product approved by Network Rail. Equipment without this label mean the equipment may be a variant which has not been approved by Network Rail.
4)	STP cable shall be used for electrical Ethernet connections. Overall STP cable length ≤ 100m.
5)	Where the equipment has a telecom earth connection, this connection shall be connected to the local telecom earth.
6)	<b>DR-250. This is End-of-Sale</b> The DR-250 is an ADSL2/2+ router and is only suitable to be used at location which is subjected to <b>light industrial/ residential EMC environment</b> (must be installed more than 10m from the centre of the nearest track). This item is end-of-sales. See DR-270A if a maintenance replacement is required.
7)	<b>DR-260A. This is End-of-Sale</b> The DR-250 is an ADSL2/2+ router and is only suitable to be used at location which is subjected to <b>light industrial/ residential EMC environment</b> (must be installed more than 10m from the centre of the nearest track). This item is end-of-sales. See DR-270A if a maintenance replacement is required.

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8)	<p><b>DR-270A. This is End-of-Sale</b> <b>There is no approved replacement.</b></p> <ul style="list-style-type: none"> <li>a) There is no approved replacement.</li> <li>b) The DR-270A is an ADSL2/2+ router. As a fault replacement for the DR-250 or DR-260A, the DR-270A is not a direct replacement and setting from a faulty DR-250/ DR-260A cannot be copied across to the DR-270A. The functions supported by the faulty unit for the application need to be understood and converted to configuration for the DR-270A. Alternatively refer to Westermo's "<b>Migration Configurations To a DR-270 and MR-270v</b>" document (<b>AN-0178-ENG Rev1</b>) for details of how configuration can be migrated into a DR-270A</li> <li>c) The dimensions of the DR-270A are different to that for DR-250 and DR-260A</li> <li>d) Use at location which is subjected to <b>light industrial/ residential EMC environment</b> (must be installed more than 10m from the centre of the nearest track). It shall not be used in location which is subjected to railway EMC environment.</li> </ul>
9)	<p><b>DDW 120, DDW 220, DDW 222, DDW 225, DDW 226, DDW 142, DDW 142-485 and DDW-242</b></p> <ul style="list-style-type: none"> <li>a) <b>The following are End-of-Sale:</b> <ul style="list-style-type: none"> <li>i) DDW 220, DDW 222, DDW 225 and DDW 226. These may be replaced with DDW 142 or DDW 242 but they only has two Ethernet ports and one V24 port. The configurations used on the End-of-Sales units need to be manually translated and configured on the DDW 142 or DDW 242.</li> </ul> </li> <li>b) DDW 120, 220, 222, 225, 226, 142 and 242 variants are LAN extenders (Ethernet over DSL) and are suitable to be used in location which is subjected to the <b>railway EMC environment</b>.</li> <li>c) DDW 120, 220, 222, 225, 226, 142 and 242 variants are loaded with their associated firmware. Where equipment is used to form networks, the firmware release used on the entire network shall be the same.</li> <li>d) DDW 120, 220, 222, 225, 226, 142 and 242 variants should only be used to support Ethernet applications which can tolerate the higher Frame Loss Percentage, Jitter and Latency over each SHDSL copper links.</li> <li>e) DDW 222, 226, 142 and 242 can provide RS232 pseudo wire over packet SHDSL link. The performance of the pseudo wire is around BER = <math>1.0 \times 10^{-6}</math>. Only application which can tolerate this level of BER shall be supported by the pseudo wire.</li> <li>f) DDW 142 (485) can provide RS422/ RS485 pseudo wire over packet SHDSL link.</li> <li>g) All the approved DDW range are compliant with NR/L2/TEL/30003 and may be used on lineside copper cable span beyond 1km in AC electrified areas.</li> <li>h) All the approved DDW range shall be powered by Network Rail approved DC supply</li> <li>i) It should be noted firmware release upgrade on the DDW series is service disruptive.</li> </ul>
10)	<p><b>PS-30 This is End-of-Sale</b> <b>Consider PULS ML 100.105 distributed by Westermo on PA05/05838. The unit is also referred to as Westermo PS- 100- 48.</b></p> <p>The PS-30 is a DIN mounted DC power supply. The PS-30 is only approved to be used in location which is subjected to <b>heavy industry EMC environment</b> (must be installed more than 3m from the centre of the nearest track). It shall not be used at location which is subjected to railway EMC environment.</p>

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## Product Configuration

### End-of-sale hardware (item listed here for repair only)

Part No.	Description	Firmware	Comments	Catalogue No.
3622-0010	DR-250	5081	ADSL2/ 2+ Router See "User" specific conditions for DR-270A in page 3.	087/038360
3622-0210	DR-260A	5131 5162	ADSL2/ 2+ Router See "User" specific conditions for DR-270A in page 3	087/038361
3622-0310	DR-270A	5202	ADSL2/ 2+ Router. No approved replacement candidate	087/038368
3642-0200	DDW-220	1.13	Point-to-point Ethernet over SHDSL with 4 ports Ethernet Switch and two SHDSL line interfaces for a linear daisy chain network. <b>See "User" specific conditions for DDW-220 in page 3 for possible replacement candidate.</b>	087/038363
3642-0220	DDW-222	1.13	Point-to-point Ethernet over SHDSL with 4 ports Ethernet Switch and two SHDSL line interfaces for a ring network. It also supports RS232 over the Ethernet over DSL link. <b>See "User" specific conditions for DDW-220 in page 3 for possible replacement candidate.</b>	087/038364
3642-0250	DDW-225	WeOS: 4.6.0, 4.9.0 4.13.1 4.24.0 4.32.4	Point-to-point Ethernet over SHDSL with 4 ports Ethernet Switch and two SHDSL line interfaces for a ring network. Can also support VLANs. <b>It is recommended that all DDW units in the same network are on the same firmware release. Where a faulty unit is replaced with another from the stores, its' WeOS should be upgraded/ downgrade to match that on the replaced unit.</b> See "User" specific conditions for DDW-225 in page 3 for possible replacement candidate.	087/038366

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Part No.	Description	Firmware	Comments	Catalogue No.
3642-0240	DDW-226	WeOS: 4.6.0, 4.9.0 4.24.0 4.32.4	Point-to-point Ethernet over SHDSL with 4 ports Ethernet Switch and two SHDSL line interfaces for a ring network. It also supports RS232 over the Ethernet over DSL link. Can also support VLANs.  (WeOS 4.13.1 cannot provide stable RS232 over Ethernet, hence not accepted for DDW 226).  <b>It is recommended that all DDW units in the same network are on the same firmware release. Where a faulty unit is replaced by another from the stores, its' WeOS should be upgraded/ downgraded to match that on the replaced unit.</b>  See "User" specific conditions for DDW-226 in page 3 for possible replacement candidate.	087/038365
3125-0001	PS-30	N/ A	DIN mounted DC supply. 24 VDC, 1.3A.  <b>See "User" specific conditions for PS-30 in page 4 for possible replacement candidate.</b>	087/038367

### Hardware (Maintenance Spares and Line Replaceable Units)

Part No.	Description	Firmware	Comments	Catalogue No.
3621-0110	DDW-120	N/ A	Point-to-point Ethernet extender over SHDSL	087/038362
3642-0300	DDW-142	WeOS: 4.24.0 4.32.4	Ethernet over SHDSL with 2 ports Ethernet Switch and two SHDSL line interfaces for a ring network. It also supports RS232 over the Ethernet over DSL link.	087/038369
3642-0310	DDW-142-485	WeOS: 4.24.0 4.32.4	Ethernet over SHDSL with 2 ports Ethernet Switch and two SHDSL line interfaces for a ring network. It also supports RS442/ 485 over the Ethernet over DSL link.	087/038370
3642-0320	DDW-242	WeOS: 4.32.4	Ethernet over SHDSL with 2 ports Layer 2 and 3 Ethernet Switch, and two SHDSL line interfaces for a ring network. It also supports RS232 over the Ethernet over DSL link.	087/038372
3642-0330	DDW-242-485	WeOS: 4.32.4	Ethernet over SHDSL with 2 ports Layer 2 and 3 Ethernet Switch, and two SHDSL line interfaces for a ring network. It also supports RS442/ 485 over the Ethernet over DSL link.	087/038373

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## Assessed Documentation

Reference	Title	Doc. Rev.	Date and Applies to Cert. issue No.	
DDW-xxx series	NR/L2/TEL/30003 Testing on Westermo DDW120		25/11/2009	T1
DDW-xxx series	NR/L2/TEL/30003 Testing on Westermo DDW222		25/11/2009	T1
DDW-xxx series	Ray Lock's email to Tak Lam. Subject: DDW series. Regarding the copper line interface for the DDE series.		06/01/2010	T1
DDW-xxx series	Network rail Acceptance response for DDW-120, DDW-220 and DDW-221 Reference PA05/04168. A Westermo document by Ray Lock		Undated	T1
DDW-xxx series	Environmental Test report DDW-220		08/04/2003	T1
DDW-xxx series	User guides for DDW-120, DDW-220 and DDW-221		Undated	T1
DR-250	DR-250 user guide.		Undated	T1
-- --	Email from Phil Mounter to Tak Lam on 20/01/10, RE: DR-250 Router-Details. PA05/04168.	-- --	20/10/2010	T1
-- --	Trial Report:: Westermo and RAD G.SHDSL.bis and ADSL/ADSL2+ modems (incorporating PA05/04168 and PA05/04166)	-- --	01/05/2011	1
-- --	Supporting Note For the Westermo DDW Series and DR250.doc	-- --	21/07/2011	1
-- --	Multiple Media Router ADSL DR-260 datasheet	-- --	Undated	1
-- --	Westermo Performance Test Report DDW-120 & DDW-222 Ethernet Extenders	-- --	27/08/2010	1
-- --	04168-1 – DDW225, 226 & PS-30 PSU Acceptance Requirements-2 (verified & commented).doc	-- --	06/06/2012	2
-- --	Email from Simon Rhodes to Tak Lam. Subject: Lynx & Wolverine WeOS Network Rail PADS		09/01/2013	3
089604	Release Notes WeOS 4.9.0		11/06/2012	3
TEL-T-0012-TL	Test Report- Westermo DDW 226 Bench Stability Testing: Inter firmware Compatibility Between 4.6.0 and 4.9.0, 4.6.0 and 4.11.0, 4.9.0 and 4.11.0	1	22/04/2013	4
Westermo WeOS Firmware Product Approval	Email from Simon Rhodes (project which trial firmware 4.9.0). Stated that during the trial period the DDW 225 with 4.9.0 firmware operated in a stable manner.	-- --	22/04/2013	4
	Email subject: PA05/04168 update of DR-260A firmware and new hardware DR-270A		11/11/2013	5
AN-0178-ENG	Migration Configurations To a DR-270 and MR-270v	1	-- --	5
6622-2241 29000589	DR-270 User Guide	A	-- --	5



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Reference	Title	Doc. Rev.	Date and Applies to Cert. issue No.	
-- --	Declaration of conformity for DR-270A series and DR-270B series	-- --	30/07/2013	5
-- --	DR-270 data sheet	-- --	-- --	5
Justification	PA05/ 04168 Up Lift to Issue 5 To Include DR-270A	-- --	03/01/2014	5
Email from Vince Collis	amendment to firmware version on PADS PA05/04168 and PA05/05350 to v4.13.0 firmware release	--	22/10/2013	6
089604	Release Notes WeOS 4.13.0	--	12/07/2013	6
089604	Release Notes WeOS 4.13.0	--	19/11/2013	6
TEL-T-0024	Test Plan, Westermo WeOS release 4.24.0 for inter firmware releases compatibility. DDW-225, DDW-226, Lynx L110, Lynx L210, Lynx L108 and Lynx L208	1	26/02/2019	7
-- --	PA recommendation form for PA05/07237	1	04/03/2021	8
TEL-T- 0033 - TL	Westermo WeOS release 4.32.4 for inter firmware releases compatibility. DDW-142, DDW-225, DDW-226, Lynx L110, Lynx L210, Lynx L108 and Lynx L208	2	04/05/23	9
Email from Vince Collis	File name "1- Upgrade & Downgrade steps.msg"	--	19/05/23	9
TEL-T- 0035 - TL	Test Report NR/L2/TEL/30003 Westermo SHDSL Ethernet Extender: DDW-142 and DDW-242, Hitachi VF Modem 500FSD10	1	03/08/23	9
-- --	DDW-x42 Hardware Equivalence Declaration	--	19/05/23	9
Email from Susan Taylor	File name "4_ DDW242 and DfR.msg"	--	06/06/23	9
NRT-TEMA-TES-0032	TUDA1 point to multi-points with SATP8, COGE5, CENT2, Nokia 1511BA and Nokia 1511MAX, and Westermo point-to-multi-points and DDW and Lynx families	1	23/04/24	10

### Certificate History

Issue	Date	Issue History
1	01/08/2011	First accepted for use.
2	25/06/2012	Re-issued to amend scope of acceptance, specific conditions and add new items.
3	14/01/2013	Up issued to include trial of DDW-225 with firmware 4.9.0.
4	23/04/2013	Included the firmware 4.9.0 and 4.11.0 for DDW 225 and DDW 226.
5	04/03/2014	Included DR-270A and firmware v5162 for DR-260A.
6	10/07/2014	Include firmware 4.13.1 for DDW 225. Removed firmware 4.11.0 for DDW 225 and DDW 226.
7	01/03/2019	Included WeOS release 4.24.0 and tidied up the comments regarding which release to use for new networks.
8	15/03/2021	Included DDW 142 and DDW 142-485. These two units were assessed under PA05/07237 as a temporary reference.

# Certificate of Acceptance

PA05/04168

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9	03/08/2023	Updated to include WeOS 4.32.4, included the End-of-sales statuses for the units, removed the copper span restriction for the DDW-142, and introduced DDW-242 and DDW-242 (485) units.
10	27/09/2024	Comments for DDW-142 and DDW-242 variants in "Hardware (Maintenance Spares and Line Replaceable Units) " updated to remove "Point-to-Point" restriction.

## Contact Details

### Manufacturer

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### Sponsor

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### Lead Reviewing Engineer

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## General Terms & Conditions

### 1) General

- 1) This certificate can only be amended by Network Rail Product Acceptance, the relevant Network Technical Head or nominated delegate. Any alterations made by a other persons 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) If this is a Trial Certificate which includes a Trial Monitoring Period or Trial Expiry date, evidence should be submitted to meet the included trial criteria before the date has passed for the Lead Reviewing Engineer to assess if the product can be given Full Acceptance. If this cannot be achieved, the Product Acceptance team should be contacted via [prodacc@networkrail.co.uk](mailto:prodacc@networkrail.co.uk) to seek guidance. If this is a Full Certificate and includes a review date, the Product Acceptance team should be contacted via [prodacc@networkrail.co.uk](mailto:prodacc@networkrail.co.uk) to seek guidance.

### 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 Network Rail Design for Reliability Standard (DFR) NR-L2-RSE-0005 and in any deed of warranty for the relevant certificate number.
- 2) Notify Network Rail Product Acceptance in writing (email [prodacc@networkrail.co.uk](mailto:prodacc@networkrail.co.uk)):
  - 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.
- 3) The Manufacturer shall provide Network Rail Product Acceptance or National Supply Chain (NSC) 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 Network Rail Product Acceptance.
- 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, where the specification and/or Product Acceptance Certificates specify quality assurance classifications 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 Product Acceptance.
- 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 Product Acceptance.
- 4) Inform Network Rail Product Acceptance 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.
- 8) Users are to be aware that Product Acceptance is not a substitute for design approval.

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#### 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 sponsoring applicant 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 RIS-8270-RST, 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 and Road) 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