Title	**Demonstrate and apply knowledge of data communications and logging for renewable energy systems**		
Level	**4**	**Credits**	**5**

Purpose	This unit standard is for people who work with renewable energy systems and covers the knowledge and skills required to setup and use data communications and logging systems for renewable energy systems. People credited with this unit standard are able to: – demonstrate knowledge of and set up and use data communication links between a computer and an electronic device in a renewable energy system; and – set up and operate a simple data-logging system.

Classification	Renewable Energy Systems > Renewable Energy Systems - Installation and Maintenance

Available grade	Achieved

Guidance information

1 This unit standard has been developed for learning and assessment off-job.

2 References
All Australian Standards (AS) may be found at https://www.standards.org.au/;
All Australian/New Zealand Standards (AS/NZS) may be found at http://www.standards.org.nz;
AS 4777.1:2005, *Grid connection of energy systems via inverters – Part 1: Installation requirements*;
AS 4777.2:2005, *Grid connection of energy systems via inverters – Part 2: Inverter requirements*;
AS 4777.3:2005, *Grid connection of energy systems via inverters – Part 3: Grid protections requirements*;
AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*;
AS/NZS 4509.1:2009, *Stand-alone power systems - Part 1: Safety and installation*;
AS/NZS 4509.2:2010, *Stand-alone power systems - Part 2: System design*;
and all subsequent amendments and replacements.

3 Definitions
a.c. – alternating current.
Current regulations and standards – in this unit standard this term is used to refer to the requirements of the above references.
d.c. – direct current.

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Enterprise policies and procedures – those practices and procedures that have been promulgated by the company or enterprise for use by their employees.
Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.

4 Range
- a All measurements are to be expressed in Système Internationale (SI) units, and where required, converted from Imperial units into SI units.
- b Candidates shall be supplied by the assessor with formulae involving more than three quantities.
- c Use of a calculator during assessment is permitted.
- d All activities must comply with any policies, procedures, and requirements of the organisations involved.
- e All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with legislation, enterprise policies and procedures, ethical code, current regulations and standards, industry practice; and where appropriate, manufacturer's instructions, specifications, and data sheets.

5 It is recommended that candidates have been assessed against Unit 27433, *Demonstrate knowledge of renewable energy concepts and technologies* prior to assessment to this unit standard.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of and set up and use data communication links between a computer and an electronic device in a renewable energy system.

Performance criteria

1.1 Describe common applications of data communications in renewable energy systems.

Range three common applications.

1.2 Describe the functions of types of cables and connectors used in data communications between electronic devices and computers used in renewable energy systems.

Range three types of cables and connectors.

1.3 Describe protocols used for serial data communications.

1.4 Identify communication ports on palmtop, laptop or desktop computers and describe their functions.

Range three communication ports.

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1.5 Connect a computer to a remote electronic device connected to a renewable energy system for access and control of the device.

Range connections – directly, via dial-up modems and telephone network. electronic devices may include but not limited to – charge controller, battery monitors, grid connected inverter, dc/ac instrumentation, temperature monitor, humidity monitor, pressure monitor, wind speed monitor, solar radiation monitor, water flow monitor.

1.6 Use a standard terminal programme or proprietary communications software to communicate with an electronic device.

1.7 Program and retrieve data from an interactive inverter via a computer and data communications link.

1.8 Process, display, and interpret logged data downloaded from an interactive inverter.

Outcome 2

Set up and operate a simple data-logging system.

Range may include but is not limited to – on-site, remote, monitoring, control, display, interpretation.

Performance criteria

2.1 Describe general features and operation of on-site and remote data logging system for monitoring and control of a renewable energy system.

Range three general features.

2.2 Set up and conduct a simple data logging project including logger programming, data downloading, data display, and interpretation of the results.

Planned review date	31 December 2024

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 July 2011	31 December 2020
Review	2	24 October 2019	N/A

Consent and Moderation Requirements (CMR) reference	0003

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

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Comments on this unit standard

Please contact The Skills Organisation at reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.

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