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| **Title** | **Demonstrate and apply knowledge of electronic configurable instruments and loops used in industry** | | |
| **Level** | **4** | **Credits** | **3** |

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| **Purpose** | People credited with this unit standard are able to:<br>– demonstrate knowledge of electronic configurable instruments used in industry; and<br>– configure industrial instruments and demonstrate knowledge of the requirements for calibration and trim adjustments. |

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| **Classification** | Industrial Measurement and Control > Industrial Measurement and Control - Theory |

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| **Available grade** | Achieved |

**Guidance Information**

1 Definitions
*HART* – highway addressable remote transducer protocol.
*RTD* – resistance temperature detector.

2 This unit standard can include manufacturer specific protocols and a range of microprocessor-based configurable instruments.

## Outcomes and performance criteria

**Outcome 1**

Demonstrate knowledge of electronic configurable instruments used in industry.

**Performance criteria**

1.1 Describe, with the aid of a sketch, electronic configurable systems.

Range may include but is not limited to – field device, hand-held communicator, modem and computer.

1.2 Describe communication protocols utilised in electronic configurable instruments.

Range may include but is not limited to – HART, foundation field bus, other manufacturers' standards.

1.3 Identify advantages and disadvantages of electronic configurable instruments and compare to standard analogue 4-20 mA.

Range remote communications, high accuracy, maintenance documentation, diagnostics, remote re-ranging.

1.4 Describe the effects of calibration, configuration, characterising, and re-ranging on electronic configurable instruments.

**Outcome 2**

Configure industrial instruments and demonstrate knowledge of the requirements for calibration and trim adjustments.

Range may include but is not limited to – transmitters, interface modules, controllers; evidence of one is required.

**Performance criteria**

2.1 Use an electronic configurable transmitter interface unit to configure the engineering units and range settings for the transmitter.

2.2 Select test equipment to match the accuracy and range of device to be tested.

Range may include but is not limited to – deadweight, digital pressure calibrator, comparator, thermocouple or RTD calibrator, flow tube simulator, dedicated programming interface.

2.3 Explain the requirements for re-calibration of electronic configurable instruments.

Range may include but is not limited to – calibration source, accuracy, performance, timing, manufacturers' instructions.

2.4 Identify types and causes of typical errors found in electronic configurable instruments.

Range may include but is not limited to – alignment of instrument, calibration standard accuracy.

2.5 Explain field zero (trim adjustment) procedures.

Range may include but is not limited to – mounting position of the transmitter, offset zero adjustment, alignment of the engineering units and measured unit scale.

2.6 Document configuration and test results in accordance with industry requirements.

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| **Replacement information** | This unit standard replaced unit standard 2650 and unit standard 2652. |

**This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.**

**Status information and last date for assessment for superseded versions**

| Process | Version | Date | Last Date for Assessment |
|---|---|---|---|
| Registration | 1 | 19 May 2008 | 31 December 2019 |
| Review | 2 | 28 November 2013 | 31 December 2027 |
| Rollover | 3 | 28 June 2018 | 31 December 2027 |
| Review | 4 | 30 January 2025 | 31 December 2027 |

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|---|---|
| **Consent and Moderation Requirements (CMR) reference** | 0003 |

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