Title	Demonstrate knowledge of distributed control systems		
Level	4	Credits	2

Purpose	People credited with this unit standard are able to demonstrate knowledge of: – distributed control systems; and – signal transmission used in distributed control systems.

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

Available grade	Achieved

Guidance Information

None.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of distributed control systems.

Performance criteria

1.1   Describe limitations of panel mounted discrete controllers.

       Range   lack of flexibility, wiring, panel space.

1.2   Describe advantages of distributed control systems.

       Range   flexibility, reduced cabling, multiple operator workstations, reduced hardware, data highway.

1.3   Describe and compare distributed control system interconnection methods.

       Range   loop, star, serial, multidrop, nodes, gateways.

1.4   Describe and compare cable types for connections.

       Range   twin axial, coaxial, fibre optic, unshielded twisted pair (UTP).

1.5   Describe, with the aid of diagrams, simple distributed control systems.

           Range   ring nodes, supervisory computer, distributed controllers, engineering workstation, personal computer.

Outcome 2

Demonstrate knowledge of signal transmission used in distributed control systems.

Performance criteria

2.1   Explain digital data transmission terminology.

           Range   parity, baud rate, software, hardware.

2.2   Describe and compare data transmission methods.

           Range   serial RS232, serial RS422, serial RS485, parallel, synchronous, asynchronous, Universal Serial Bus (USB).

2.3   Describe and compare distributed control system data transmission protocols.

           Range   carrier sense multiple access/collision detection (CSMA/CD), token passing.

2.4   Describe the differences between transmission control protocol (TCP) and TCP/internet protocol (IP).

2.5   Describe and compare data control systems (DCS) and a programmable logic controller (PLC).

2.6   Describe applications for each PLC and DCS and explain the integration between the two.

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Status information and last date for assessment for superseded versions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	31 October 1995	31 December 2013
Revision	2	30 October 1997	31 December 2013
Revision	3	3 April 2001	31 December 2013
Review	4	22 June 2001	31 December 2013
Review	5	19 May 2008	31 December 2019
Review	6	28 November 2013	31 December 2027
Rollover	7	28 June 2018	31 December 2027
Review	8	30 January 2025	31 December 2027

Consent and Moderation Requirements (CMR) reference	0003

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