About Competency Australia

Competency Australia Pty Limited is committed to the provision of quality training and assessment outcomes to our clients. Competency Australia Pty Limited is a Registered Training Organisation (RTO Code 40647).

For more information, please visit our website http://CompetencyAustralia.edu.au or email us training@CompetencyAustralia.com.au

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Competency Australia

Vital Communication Design for Railways

CA1065 Training Course

Course Objectives:

This course is designed to give signal engineers the theoretical background and practical understanding they need to design robust and resilient vital communications systems.

Pre-Requisites

There are no formal pre-requisites for the course. Graduate level electrical engineering knowledge is assumed but concepts are explained from first principles.

About the Course

Vital communications design for railways is a three-day course.

This includes practical demonstrations, course workbook, final assessment, and a certificate upon successful completion. We run public courses or can arrange delivery in your workplace – contact us for more details.

About the Course...

The following topics are covered:

Serial data characteristics, message construction, integrity. Buffering, latency, packet loss, packet identification.

Serial data interface standards: RS-232, RS-485 and their current equivalents. How many wires do you need for each interface and what do they do? Isolation, ground references and signal return.

IP protocols - TCP and UDP. Addressing, packet delivery principles. Latency, Time to Live, round trip time, error detection and correction. Ports and sockets. Conversion from serial interfaces to IP.

Copper cable characteristics: including twisted pair, Cat 5 etc, shielding and grounding. What limits cable length. Copper link design.

Optical fibre characteristics: single mode, multimode, reflection, refraction, dispersion. Basic optical link design.

System design for resilience. Implementing serial data and IP systems. Addressing, protocol conversion. Typical data requirements.

Practical exercise designing, building and testing a system with optical fibre and IP connections. Fault finding and data log analysis.

Course Outcomes

On the successful completion of this course, you will have learnt how to design and document vital communication systems operating on copper and optical fibre media. You will understand serial communication interfaces, IP connections, basic optical system design, implementation and testing. Your confidence in working with these systems will be based on understanding the principles and hands-on exercises.

Who Should Attend?

Signal designers, design verifiers, installers and commissioning engineers.