



Industrial Data Xchange

Operational Excellence Unlocked

IDX TECHNICAL SPECIFICATIONS

Technical Specifications and Standards Index

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1. Introduction

Technology continues to develop rapidly, requiring industries to adapt and maintain standards that support consistency, compatibility and effective collaboration across industrial environments.

Industry standards establish recognised requirements, guidelines and practices for specific technologies, systems and processes. They provide a common framework that helps businesses apply consistent methods and maintain appropriate levels of quality, safety and reliability.

Industrial Data Xchange (IDX) develops technical specification documents that provide practical guidance for establishing safe, secure and reliable control network infrastructures within industrial environments.

2. Purpose and Use

This document provides a central reference for technical specifications developed by IDX and relevant industry standards applicable to industrial control network environments. It is intended to assist readers in identifying relevant documents and standards for use where applicable.

Standards may be revised, replaced or withdrawn over time. The latest applicable edition of each standard should be consulted before use.

3. Structure of this Index

For ease of reference, the documents included in this index are divided into three categories:

IDX Technical Specifications

Documents developed by IDX based on technical knowledge, industry experience and practical application within industrial environments.

South African National Standards

Standards applicable within South Africa that provide recognised requirements and guidance for industrial and technical applications.

International Standards and Specifications

Standards, specifications and guidelines developed by recognised international standards organisations and industry bodies, including IEC, ISO, IEEE and other relevant organisations.

4. IDX Technical Specifications

IDX technical specifications provide practical guidance based on IDX's technical knowledge, industry experience and established engineering practices. They support consistency in the design, installation and implementation of industrial control network infrastructure.

The following IDX technical specification documents are currently available:

Document Number	Document Name	Intended Use
IDXT0001	Cover Image for Technical Specifications Documents	Internal – IDX Staff Only
IDXT0002	Guidelines for Preparing Company Documents	Internal – IDX Staff Only
IDXT0003	Company Document Template	Internal – IDX Staff Only
IDXT0004	Technical Specifications and Standards Index	Internal and External
IDXT0005	Greenfield and Brownfield Considerations	Internal and External
IDXT0006	Control Network Diagnostics	Internal and External
IDXT0007	Control Network Permanent Monitoring	Internal and External

IDXT0008	Control Network Reliability	Internal and External
IDXT0009	EMC, Bonding and Earthing	Internal and External
IDXT0101	IDX PROFIBUS Standard	Internal and External
IDXT0102	PROFIBUS Fault Finding Procedures	Internal and External
IDXT0103	PROFIBUS Audit Procedure and Checklist	Internal and External
IDXT0104	PROFIBUS Network Diagnostics	Internal and External
IDXT0105	PROFIBUS Permanent Monitoring	Internal and External
IDXT0201	IDX PROFINET Standard	Internal and External
IDXT0202	PROFINET Fault Finding Procedures	Internal and External
IDXT0203	PROFINET Audit Checklist and Procedures	Internal and External
IDXT0204	PROFINET Network Diagnostics	Internal and External
IDXT0205	PROFINET Permanent Monitoring	Internal and External
IDXT0310	Modbus Integration Guidelines	Internal and External
IDXT0410	Wireless Integration Guidelines	Internal and External
IDXT1101	SIEMENS PROFIBUS Standard Repeater Termination Guide	Internal and External
IDXT1102	SIEMENS PROFIBUS Diagnostic Repeater Termination Guide	Internal and External

5. South African National Standards

South African National Standards (SANS), published through the South African Bureau of Standards (SABS), provide national requirements and guidance applicable within South Africa. Many SANS standards adopt or align with international IEC and ISO standards.

Standard	Description
SANS 10142-1	The wiring of premises – Low-voltage installations
Applicable SANS/IEC 60079 series	Explosive atmospheres
Applicable SANS/IEC 61000 series	Electromagnetic compatibility
Applicable SANS/IEC 61508 series	Functional safety
Applicable SANS/IEC 62305 series	Protection against lightning

6. International Standards and Specifications

The following international standards, specifications and guidelines are relevant to industrial automation, communication networks, control systems and associated technologies. These documents provide recognised requirements and guidance for the design, implementation, operation and maintenance of industrial systems.

6.1. IEC Standards

The International Electrotechnical Commission (IEC) develops international standards for electrical, electronic and related technologies. IEC standards are widely applied within industrial automation, communication networks, electrical installations, functional safety, cybersecurity and electromagnetic compatibility.

Standard	Description
IEC 60079 series	Explosive atmospheres
IEC 60204-1	Safety of machinery – Electrical equipment of machines
IEC 60364 series	Low-voltage electrical installations
IEC 60364-5-54	Earthing arrangements and protective conductors

IEC 60870 series	Telecontrol equipment and systems
IEC 61000 series	Electromagnetic compatibility (EMC)
IEC 61000-4 series	EMC testing and measurement techniques
IEC 61000-6-2	EMC – Immunity standard for industrial environments
IEC 61000-6-4	EMC – Emission standard for industrial environments
IEC 61158 series	Industrial communication networks – Fieldbus specifications
IEC 61158-5-10	Application layer service definition – Type 10 elements
IEC 61158-6-10	Application layer protocol specification – Type 10 elements
IEC 61508 series	Functional safety of electrical/electronic/programmable electronic safety-related systems
IEC 61784-1	Industrial networks – Fieldbus profiles
IEC 61784-2	Additional real-time Ethernet profiles
IEC 61784-3 series	Functional safety fieldbuses
IEC 61784-5 series	Installation profiles for fieldbuses
IEC 61918	Installation of communication networks in industrial premises
IEC 61967 series	Measurement of electromagnetic emissions from integrated circuits
IEC 62305 series	Protection against lightning
IEC 62443 series	Security for industrial automation and control systems
IEC 62682	Management of alarm systems for the process industries
IEC 62769 series	Field Device Integration (FDI)
IEC 62769-103-1	FDI – Profiles – PROFIBUS

6.2. ISO and ISO/IEC Standards

The International Organisation for Standardisation (ISO) develops international standards across a broad range of industries and technologies. ISO also develops standards jointly with IEC in areas such as information technology, information security and network infrastructure.

Standard	Description
ISO/IEC 11801 series	Information technology – Generic cabling for customer premises
ISO/IEC 11801-3	Generic cabling for industrial premises
ISO/IEC 14763-2	Implementation and operation of customer premises cabling – Planning and installation
ISO/IEC 27000 series	Information security, cybersecurity and privacy protection
ISO/IEC 27001	Information security management systems – Requirements
ISO/IEC 27002	Information security controls
ISO/IEC 7498-1	Open Systems Interconnection – Basic Reference Model
ISO 13766-1	Earth-moving and building construction machinery – EMC – General requirements
ISO 13766-2	Earth-moving and building construction machinery – EMC – Additional requirements for functional safety
ISO 55000 series	Asset management
ISO 55001	Asset management systems – Requirements

6.3. IEEE Standards

The Institute of Electrical and Electronics Engineers Standards Association (IEEE SA) develops standards covering networking, communications, computing and electrical technologies. IEEE standards are particularly relevant to Ethernet-based industrial networks and IIoT infrastructure.

Standard	Description
IEEE 802	Local and metropolitan area networks – Overview and architecture
IEEE 802.1 series	LAN/MAN architecture, bridging, network management and related technologies

IEEE 802.1Q	Bridges and bridged networks, including VLANs
IEEE 802.1X	Port-based network access control
IEEE 802.1 TSN standards	Time-Sensitive Networking
IEEE 802.3	Ethernet
IEEE 802.3af	Power over Ethernet (PoE)
IEEE 802.3at	Power over Ethernet Plus (PoE+)
IEEE 802.3bt	Higher-power Power over Ethernet
IEEE 802.11 series	Wireless LAN / Wi-Fi

6.4. IEC/IEEE Standards

Some standards are developed jointly by IEC and IEEE. A particularly relevant example for industrial automation is Time-Sensitive Networking.

Standard	Description
IEC/IEEE 60802	Time-Sensitive Networking profile for industrial automation

6.5. ISA Standards

The International Society of Automation (ISA) develops standards and recommended practices for industrial automation and control. Several ISA standards are also developed or adopted jointly with IEC.

Standard	Description
ISA-5.1	Instrumentation and control – Symbols and identification
ISA-18.2 / IEC 62682	Management of alarm systems for the process industries
ISA-88 / IEC 61512 series	Batch control
ISA-95 / IEC 62264 series	Enterprise-control system integration
ISA/IEC 62443 series	Security for industrial automation and control systems
ISA-101 series	Human Machine Interfaces for process automation systems

7. Conclusion

This index provides a central reference for IDX technical specifications and applicable national and international standards relevant to industrial automation, communication networks and associated technologies.

As standards and technologies continue to develop, this index should be reviewed and updated periodically to ensure that the information remains current and relevant. The latest applicable edition of each standard should always be consulted before use.

About Industrial Data Xchange:

Industrial Data Xchange (IDX) provides industrial ICT products, services, solutions and training that connect plant infrastructure and transform complex data into actionable insights, supporting smarter decisions and operational excellence.

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