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Application layer message functions

5.8 Data object library
6. Advanced considerations of distributed network protocol; 6.1 DNP3 sub-set definitions; 6.2 Interoperability between DNP3 devices; 6.3 Implementation rules and recommendations; 6.4 Conformance testing; 6.5 DNP3 polling and communications options; 6.6 Time synchronization; 6.7 DNP3 over TCP/IP and UDP/IP; 7. Preview of IEC 60870-5; 7.1 What is IEC 60870-5?; 7.2 Standards; 7.3 System topology; 7.4 Message structure; 7.5 Addressing; 7.6 Networked version; 7.7 Application data objects; 7.8 Interoperability; 8. Fundamentals of IEC 60870-5; 8.1 The IEC 60870-5 standard
8.2 Protocol architecture
8.3 Physical layer; 8.4 Data link layer; 8.5 Application layer; 8.6 Information elements; 8.7 Set of ASDUs; 9. Advanced considerations of IEC 60870-5; 9.1 Application functions; 9.2 Interoperability; 9.3 Other information sources; 9.4 Network operation; 10. Differences between DNP3 and IEC 60870; 10.1 Comparing DNP3 and IEC 60870; 10.2 Which one will win?; 11. Intelligent electronic devices (IEDs); 11.1 Definition; 11.2 Functions; 12. Ethernet and TCP/IP networks; 12.1 IEEE 802.3 CSMA/CD ('Ethernet'); 12.2 Physical layer; 12.3 Signaling methods
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12.5 Frame transmission; 12.6 Frame reception; 12.7 Collisions; 12.8 MAC frame format; 12.9 Difference between 802.3 and Ethernet; 12.10 Reducing collisions; 12.11 Ethernet design rules; 12.12 TCP/IP; 13. Fieldbus and SCADA communications systems; 13.1 Introduction; 13.2 Profibus; 13.3 Foundation fieldbus; 14. UCA protocol; 14.1 Introduction; 14.2 UCA development; 14.3 UCA technology; 14.4 Summary; 15. Applications of DNP3 and SCADA protocols; 15.1 Water industry application; 16. Future developments; back matter; Appendix A: Glossary; Appendix B: Implementers of DNP3
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Sommario/riassunto

SCADA (Supervisory Control and Data Acquisition) systems are at the heart of the modern industrial enterprise ranging from mining plants, water and electrical utility installations to oil and gas plants. In a market that is crowded with high-level monographs and reference guides, more practical information for professional engineers is required. This book covers the essentials of SCADA communication systems focussing on DNP3, the IEC 60870.5 standard and other new developments in this area. It commences with a brief review of the fundamentals of SCADA systems' hardware, software and the commun
