

## Practical SCADA Systems for Industry

## **Contents**

Part	One
Part	( )ne

## SCADA for Monitoring Installations across a Wide Geographic Area

1.	Introduction to Wide Area SCADA Systems	1	1
•	Hardware Alternatives (RTU/PLC etc) Communication Concentrators Communication Alternatives Communication Architectures		
• 2. •	Communication Philosophies SCADA System Hardware Hardware components		19
3. •	Operation and selection issues SCADA System Software SCADA Software Functions Response Times		37
•	Redundancy Issues Specification and Configuration Issues Communication Protocols		49
5.	<ul> <li>RS-232/RS-485 Interface Standards</li> <li>MODBUS Protocol</li> <li>DNP 3.0 Protocol</li> <li>Serial Communications for SCADA Systems</li> </ul>		98
•	Alternatives Dimensioning Issues Configuration		
6. •	LAN/WAN Communication for SCADA Systems Alternatives Dimensioning Issues Configuration	1	121
	RTU Communications dimensioning Exercise Modbus RTU Communication. Configuration of DNP 3.0 Serial Links on RTU Configuration of DNP 3.0 LAN/WAN Links on RTU Configure SCADA Master Communications using Citect		137



Technology Training that Works

## Part Two

SCAD	A for Process Plant Installations	
1.	Introduction to Process Plant SCADA Systems	161
•	Hardware Alternatives (DCS/PLC/Fieldbus etc)	
•	Communication Alternatives	
2.	SCADA System Hardware	171
•	Hardware components	
•	Operation and selection issues	
3.	SCADA System Software	189
•	SCADA Software Functions	
•	Response Times	
•	Redundancy Issues	
•	Specification and Configuration Issues	
4.	Fieldbus Systems	201
•	Profibus	
•	Foundation Fieldbus	
5.	Industrial Ethernet	225
•	Fundamentals	
•	Connection devices	
•	Redundancy	
6.	TCP/IP	263
•	Configuration	
•	Troubleshooting utilities	
7.	Modbus TCP	283
•	Overview	
8.	Open Process Control (OPC)	291
•	Overview	
Practic	als	309
	Configure SCADA Master Communications to PLC using Citect	005
	Setup Ethernet network and configure TCP/IP	
	Ethernet troubleshooting utilities and Protocol Analysis	
4.	Setup and monitor Modbus TCP communication to bus coupler	
	Setup Kepware OPC Data Access Server and use OPC client to access data	
6.	Use Graphical OPC Client to create a SCADA display of plant data	



Technology Training that Works

Part	Three

SCADA System Common Issues	
1. Introduction	341
<ul> <li>2. SCADA Alarm Management</li> <li>Alarm layout and organisation</li> <li>Alarm priorities</li> <li>Alarm processing and reporting</li> </ul>	347
<ul> <li>3. Human Management Interface</li> <li>Ergonomic Factors</li> <li>HMI organisation</li> <li>HMI screen design</li> </ul>	e (HMI) 369
<ul><li>4. SCADA Network Security</li><li>Security issues</li><li>SCADA Firewall configuration</li></ul>	385
<ul><li>5. SCADA Historian</li><li>Archiving plant data</li><li>Data access</li></ul>	395
<ul> <li>6. Troubleshooting Issues</li> <li>Problem isolation</li> <li>Testing methodology</li> <li>Noise Issues</li> <li>Communications testing</li> </ul>	405
7. SCADA System Maintenance	423
<ul><li>8. SCADA System Specification</li><li>Definition of system requireme</li><li>Functional specification</li></ul>	
9. SCADA System Installation a	nd Commissioning 447
Practicals  1. Alarm Management Exercise 2. Configure Alarms on Citect SCAD 3. HMI screen design using Citect SC	ADA package
<ul><li>4. Accessing SCADA Historian data</li><li>5. Troubleshooting Exercise</li></ul>	using Excel