Contents

l	Intr	oductio	on to Building Automation	1
	1.1	What	is Building Automation?	1
		1.1.1	Building Automation in Private Residential Buildings	1
		1.1.2	Building Automation in Commercial Buildings	2
	1.2	The D	Difference Between Building Automation	
		and B	Suilding Control	3
		1.2.1	Systems in Building Automation	4
		1.2.2	Systems in Building Control	6
	1.3	The S	tructure of Building Automation and Control Networks	8
		1.3.1	The Hierarchical Structure of Building Automation	8
		1.3.2	The Hierarchical Structure in Building Control	10
	1.4	Energ	y Management Functions	12
		1.4.1	Pay Back Period	12
		1.4.2	Energy Management Functions at the Automation Level	13
		1.4.3	Energy Management Functions at the Management Level	16
	1.5	Comf	ort, Convenience, and Energy Management	
		Funct	ions in Room Automation	18
	1.6	Standa	ardized Bus Systems and Networks	
		in Bui	ilding Automation	19
		1.6.1	Bus System and Network Requirements	20
		1.6.2	Bus Systems and Networks: Areas of Use	21
		1.6.3	Current Standards	23
	Lite	rature		25
2	The	Basics	of Industrial Communication Technology	27
	2.1	Indust	trial Communication	27
		2.1.1	Field Bus Communication	27
		2.1.2	Communication Over Networks	28
	2.2	Digita	al Data Transfer: Important Terms and Definitions	29
		2.2.1		29
		2.2.2	Binary and Hexadecimal Numbers	31
		222	Digital Data Transmission Systems	30

digitalisiert durch

x Contents

4.6	_	Interoperability of LON Devices		
	LONW	Vorks Tools		
	4.6.1	Development Tools: LonBuilder and NodeBuilder		
	4.6.2	Network Integration Tools		
4.7	LonW	VORKS System Architecture		
• •	4.7.1	Building Automation System with LON		
	4.7.2	Connecting LON Networks to the Internet		
4.8	Exam	ples of Use		
	4.8.1	Lighting Control with LON		
	4.8.2	A Lighting Control System with a Panic		
		Button Using LON		
Liter	rature			
BACnet				
5.1	Introd	luction		
	5.1.1	Learning Objectives		
	5.1.2	BACnet Organizations		
	5.1.3	Areas of Use		
	5.1.4	Overview of the Basic Principles		
	5.1.5	The BACnet Communication Architecture		
5.2	Transı	mission Media, the Data Link Layer		
	and th	ne Physical Layer		
	5.2.1	Master-Slave/Token-Passing (MS/TP), EIA-485		
		and EIA-232		
	5.2.2	Point-to-Point		
	5.2.3	Ethernet		
	5.2.4	Arcnet		
	5.2.5	LonTalk		
5.3				
	5.3.1	Purpose		
	5.3.2	BACnet and Internet Protocols		
5.4	The A	pplication Layer		
	5.4.1	Objects		
	5.4.2	BACnet Services		
	5.4.3	BACnet Procedures		
5.5	BACn	net Devices and Interoperability		
	5.5.1	Interoperability Areas and Building Blocks		
	5.5.2	· · · · · · · · · · · · · · · · · · ·		
	5.5.3	Protocol Implementation Conformance,		
	••	Conformance Test and Certification of BACnet Devices		
	Gatew	vays to Other Systems		
5.6				