University of Baghdad	
Department	Electronic and Communication Engineering
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Thesis Title	Design and Implementation of a Smart Distributed Metering System
Year	2014
Abstract	This work is concerned with designing and implementing a smart energy metering system that consists of two smart energy meters and a billing center. The designed smart energy meter is a single phase meter in which the amount of consumed energy is calculated using PIC18F45K22 (which is a Peripheral Interface Controller (PIC)) and utilizing ACS758 (which is a Hall-effect based liner current sensor Integrated Circuit (IC)). The amount of consumed energy is sent to the billing center (which is implemented by using a laptop) for issuing the bills. The billing center receives the consumption data and sends the switching commands by utilizing an external communication technology. After comparing various communication technologies, ZigBee is chosen for this work.Two smart energy meters are implemented to test various communication conditions, such as multi-hopping. The design of the two smart energy meters differ only in the ZigBee addresses in the network.The program for the PIC's in the smart meters is written with MikroC PRO V6.0.1, while the program for the laptop in the billing center is written with Visual BASIC 6.