Sudan University of Science &Technology

College of Post Graduate Studies

Faculty of Engineering &Technology

Department of Electronic Engineering

In collaborative with

CENTER OF ENGINEERING AND TECHNICAL STUDIES

(CETS)

MOBILE CONTROL OF THE PROGRAMMABLE LOGIC CONTROLLER (PLC)

التحكم في المتحكمات القابلة للبرمجة باستخدام الهاتف السيار

A Thesis Submitted in Partial Fulfillment of the Requirements for Degree of M.Sc in Telecommunication Engineering

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(وَيَسْأَلُونَكَ عَنْ الرُّوحِ قُلْ الرُّوحُ مِنْ أَمْرِ رَبِّي وَمَا أُوتِيتُمْ مِنْ الْعِلْمِ إِلا قَلِيلا([الإسراء: 85]

Dedication

To whom she is always sacrifice, guide me and lead me to be one as the successful women (my mother)

To my father who care me when I was children and still care me …

To my second father (my uncle: Abbas Abdein) who help me to complete this M.S.C

To my brothers, sisters and my whole family who taught me the meaning of love and sacrifice …

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ABSTRACT

As we know the PLC (programmable logic controller) become one of the most popular automation part in any industrial systems. The PLC has high accuracy and fast response plus high performance, so it is suitable for all industrial applications such as sensors signal, analogue input (thermal applications).

Recently interfacing between electronic and electric equipments could be possible by using technology and computer language. So PLC can be controlled remotely via Mobile Phone board using DTMF (Dual Tone Multiple Frequency) decoder.

تجـــــــــــــــــــــــــريد

كما نعلم أصبحتُ المُتحكِماتُ المَنطقية القابِلة للبرمجة (PLC) الجزء المهم فى كل انظمة التحكم الصناعية ؛ وذلك لما تمتازُ به مـن دقةً عالية وسرعةُ اسـتجابة بجـانب الأداء الممتـاز ممـا يجعلهـا مناسـبة تماما للتعامـل مـع الإشـارات السـريعة كإشـارات الحساسـات وكـذلك تطبيقات الإشارات التماثلية مثلا كالتحكم في الحرارة.

الان اصــبح الربــط والموائمــة بيــن الاجهــزة الاللكترونيــة والكهربائية ممكنا وذلك باستخدام التكنلوجيـا و الحاسـب الالـى وعليـه يمكن التحكم بالمتحكمات المنطقية القابلة للبرمجة عن بعد باسـتخدام الهاتف السيار وذلك عن طريـق اسـتخدام فـك شـفرة النغمـات ثنائيـة الترددات الموجودة في الهاتف السيار .

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LIST OF ABBREVIATION

A.C	Alternative Current
AOC	Advice of Charge
AT&T	American Telephone and Telegraph
BSC	Base Station Controller
BTS	Base Transverse Station
BCD	Binary Code Decimal
CPU	Central Processing Unit
CTU	up Counter
C V	Current Value

CC	Country Code
CGI	Cell Global Identification
CTUD	Down counter
D .C	Direct Current.
DECT	Digital Enhanced Cordless Telecommunication
DTMF	Dual Time Multiple Frequency
Db	Decibel
ETSI	European Telecommunication Standard
EIR	Equipment Identity Register
FBD	Function Block Diagram
FAC	Final Assemble code
FDMA	Frequency Division multiplexing access
HLR	Home Location Register
HZ	Hertz
HMI	Human Machine Interface
IMSI	International Mobile Subscriber Identity

IMEI	International Mobile Equipment Identity
ID	Identical Definition
I/O	Input /Output
GSM	Global Mobile System
LAI	Location Area Code
.	
LED	Light Emitting Diode
LCD	Liquid Crystal Display
LAC	Location Area Code
M-PLC	Mobile to Control PLC.
MS	Mobile Station
MCC	Mobile Country Code
MNC	Mobile Network Code
MSISDN	Mobile Subscriber Integrated Services Digital Network
NMC	Network Management Center
MF	Medium Frequency
NDC	National Destination Code

NCC	Network Colour Code
OMC	Operation and Monitoring Register
PLC	Programmable logic controller
PV	Preset Value
P2P	Peer TO Peer
PC	Personal Computer
STL	Statement List
SFCS	Sequential Function Charts
SMS	Short Message Service
SIM	Subscriber Identity Module
SN	Subscriber Number
SCADA	Supervisory Control AND Data Acquisition
SS7	Signaling System Number 7
TON	On-Relay Timer
TONR	Retentive ON Delay
TOF	off Delay Timer
TAC	Type Approval Code

TDMA	Time Division Multiplexing
TA	Time Advance
TOE	TCP OFF Load Engine
VLR	Visitor Location Register
VHS	Visio Home System

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