



扫一扫,有好礼

自动化与仪表®

Zidonghua yu Yibiao

月刊 1981年创刊

第36卷 第5期(总第278期)

2021年5月

主管单位:天津中环电子信息集团
有限公司

主办单位:天津工业自动化仪表
研究所有限公司
天津市自动化学会

编辑出版:《自动化与仪表》编辑部

主 编:张 昊

副 主 编:陈 兵

责任编辑:朱 琳 马丽亚

广告、发行联系:刘 凯 斯久莉

网站管理:李 迎

编辑部电话:(022)23015608

广告部电话:(022)23016582 23015623

传真:(022)23015614

地址:天津市河西区环湖中道9号

邮编:300060

电子邮箱:zdhyyb@vip.sina.com

网址:www.zdhyyb.com

www.zdhyb.com

自动化仪表网.com

自动化仪表网.中国

微信公众号:zdhywb

——公开发刊——

国际标准刊号:ISSN 1001-9944

国内统一刊号:CN 12-1148/TP

广告许可证:津市场监管西广登

【2020】16号

国内发行:中国邮政集团有限公司
天津市分公司

国内订阅:全国各地邮局

邮发代号:6-20

国外发行:中国国际图书贸易集团
有限公司(北京399信箱)

国外代号:MO4145

印 刷:天津中铁物资印业有限公司

国内定价:12.00元/期

出版日期:每月25日

目 次

专题研究与综述

基于NB-IoT的停电监测技术研究 熊德智,郑小平,温 和,等(1)
新一代智慧变电站冗余测控装置自动测试系统方案设计

..... 胡明会,王彩丽,梁建涛,等(6)
可远程控制的特高压输电线路液压紧线装置研究 董 斌(11)

控制系统与智能制造

基于AprilTag算法的在线恢复深度的无人机单目SLAM系统
..... 安晨亮,高喜天,冀 东(16)

核电站集散控制系统机柜故障分析与改进研究 王 新(22)
基于STM32的汽车智能灯光控制系统设计

..... 李德英,李延康,易 涛,等(27)
基于物联网的恒温恒湿箱的远程监控系统设计 吕俊蓉,王利恒(32)

基于PTC特性的薄膜电加热器温控方法 王颐壕,刘 壮,谢 龙,等(37)

人工智能与机器人

六足式幕墙清洗爬壁机器人设计与控制 谢晓轩,李自胜,留沧海,等(41)
基于改进RRT-Connect算法的焊接机器人避障路径规划 孙灵硕(47)

基于5G技术的无人机拍摄速率自动校准方法
..... 陈洪亮,纪姗姗,李志雷,等(53)

检测技术与数据处理

基于红外检测技术的电力系统变压器套管绝缘缺陷故障检测
..... 杨 东,陈瑞斌,仝海龙,等(57)

基于STM32的脉搏体温检测仪设计 王瑞琦,董高旭,周渴望(62)
高精度超声波测距方法的研究 刘 芬,罗前刚,张远征(66)

基于DBN和EEMD方法的精轧测温传感器故障诊断与分类
..... 李太全,孟红记,胡振伟(70)

仪表与自动化装置

基于人工智能的电能表运行误差监测数据拟合方法
..... 周 玉,邵雪松,马云龙,等(75)

基于PLC的挤出机仪表控制柜集中监控系统设计
..... 宋 建,方 嵩,骆继国(79)

旋流器内油滴聚并破碎与粒径分布的数值模拟
..... 吕凤霞,王 剑,袁惠新,等(84)

系统建模、仿真与分析

基于改进粒子群算法和AFDPF算法结合的光伏并网系统孤岛检测
..... 杨擎宇,薛太林,张昊杰,等(89)

基于Super-twisting算法的永磁同步电机自适应滑模速度控制
..... 汤 成,胡继胜(94)

创新与实践

油气管道类公司信息化规划思路 梁 晶(98)
成品油批次输送跟踪系统的设计与实现 左志恒,蔡其星,汪 涛,等(104)

期刊基本参数:CN 12-1148/TP * 1981 * m * A4 * 112 * zh * P * ¥12.00 * 10000 * 22 * 2021-5



扫一扫, 有好礼

AUTOMATION & INSTRUMENTATION

(Monthly since 1981)

Vol.36 No.5

(Sum 278)

Publishing date: 2021-5

CONTENTS

Thematic Studies and Reviews

- Research on Technology of Power Outage Monitoring Based on NB-IoT
..... XIONG De-zhi, ZHENG Xiao-ping, WEN He, et al(1)
- Design of Automatic Test System for Redundant Measurement and Control Device in New Generation Smart Substation HU Ming-hui, WANG Cai-li, LIANG Jian-tao, et al(6)
- Research on the Hydraulic Tightening Device of UHV Transmission Line with Remote Control DONG Bin(11)

Control System and Intelligent Manufacturing

- An UAV Monocular SLAM System with Online Recovery Depth Based on Apriltag Algorithm
..... AN Chen-liang, GAO Xi-tian, JI Dong(16)
- Analysis of Typical Abnormalities and Improvement Measures of DCS Cabinet in Nuclear Power Plant WANG Xin(22)
- Design of Automobile Intelligent Lighting Control System Based on STM32
..... LI De-ying, LI Yan-kang, YI Tao, et al(27)
- Design of Remote Monitoring System for Constant Temperature and Humidity Box Based on Internet of Things LV Jun-rong, WANG Li-heng(32)
- Research on Temperature Control of Thin Film Electric Heater Based on PTC Effect
..... WANG Yi-hao, LIU Zhuang, XIE Long, et al(37)

Artificial Intelligence and Robotics

- Design and Control of Hexapod Curtain Wall Cleaning and Climbing Robot
..... XIE Xiao-xuan, LI Zi-sheng, LIU Cang-hai, et al(41)
- Obstacle Avoidance Path Planning of Welding Robot Based on Improved RRT-Connect Algorithm SUN Ling-shuo(47)
- Automatic Calibration Method of UAV Shooting Rate Based on 5G Technology
..... CHEN Hong-liang, JI Shan-shan, LI Zhi-lei, et al(53)

Measurement and Data Processing

- Fault Detection of Insulation Defect of Transformer Bushing in Power System Based on Infrared Detection Technology YANG Dong, CHEN Rui-bin, TONG Hai-long, et al(57)
- Design of Pulse and Temperature Detector Based on MCU
..... WANG Rui-qi, DONG Gao-xu, ZHOU Ke-wang(62)
- Research on High Precision Ultrasonic Ranging Method
..... LIU Fen, LUO Qian-gang, ZHANG Yuan-zheng(66)
- Fault Diagnosis and Classification of Temperature Sensor for Finishing Rolling Based on DBN and EEMD LI Tai-quan, MENG Hong-ji, HU Zhen-wei(70)

Instrumentation and Automation Devices

- Artificial Intelligence-based Fitting Method for Watt-hour Meter Operation Error Monitoring Data ZHOU Yu, SHAO Xue-song, MA Yun-long, et al(75)
- Design of PLC-based Centralized Monitoring System for Extruder Instrumentation Control Cabinet SONG Jian, FANG Song, LUO Ji-guo(79)
- Numerical Simulation of Oil Droplets Coalescence and Breakage and Particle Size Distribution on Hydrocyclone LV Feng-xia, WANG Jian, YUAN Hui-xin, et al(84)

System Modeling, Simulation and Analysis

- Islanding Detection of Photovoltaic Grid Connected System Based on Improved Particle Swarm Optimization and AFDPF Algorithm
..... YANG Qing-yu, XUE Tai-lin, ZHANG Hao-jie, et al(89)
- Adaptive Sliding Mode Speed Control of Permanent Magnet Synchronous Motor Based on Super-twisting Algorithm TANG Cheng, HU Ji-sheng(94)

Innovation and Practice

- Development Trend of Oil and Gas Pipeline Informatization LIANG Jing(98)
- Design and Implementation of Product Oil Batch Transportation Tracking System
..... ZUO Zhi-heng, CAI Qi-xing, WANG Tao, et al(104)

Sponsored by:

Tianjin Institute for Process Automation
and Instrumentation Co., Ltd.
Tianjin Society of Automation

Edited by:

The Editorial Office of Automation &
Instrumentation

Chief editor:ZHANG Hao

Vice chief editor:CHEN Bing

Editor:ZHU Lin MA Li-ya

Ad-contactman:LIU Kai SI Jiu-li

Network administrator:LI Ying

Editorial department phone:

(86 22)23015608

Ad department phone:

(86 22)23016582 23015623

Fax: (86 22) 23015614

Address: 9 Huanhuzhongdao, Hexi District,
Tianjin, China

Post code:300060

E-mail: zdhyyb@vip.sina.com

http:// www.zdhyyb.com

www.zdhyb.com

WeChat official account: zdhybw

Distributed in China and abroad

Publishing number:

ISSN 1001-9944

CN 12-1148/TP

Ad-licence:

Business No. 1201034000061

Distributed in China by:

Tianjin Newspaper and Magazine
Publishing Bureau

Subscribing place:

All the post offices in China

Distributed abroad by:

China International Book Trade Co., Ltd.
(P.O.Box 399, Beijing, China)

Post distributing number:

domestic: 6-20 abroad: M04145

Printed by:

Tianjin Zhong-Tie Printing Co., Ltd.

Price: 12.00(US \$) (Foreign)

Publication date: 25th of each month