TATU
EU TEMPUS Project 2013-2016

Design of intelligent automation equipment in KNURE base of TATU project

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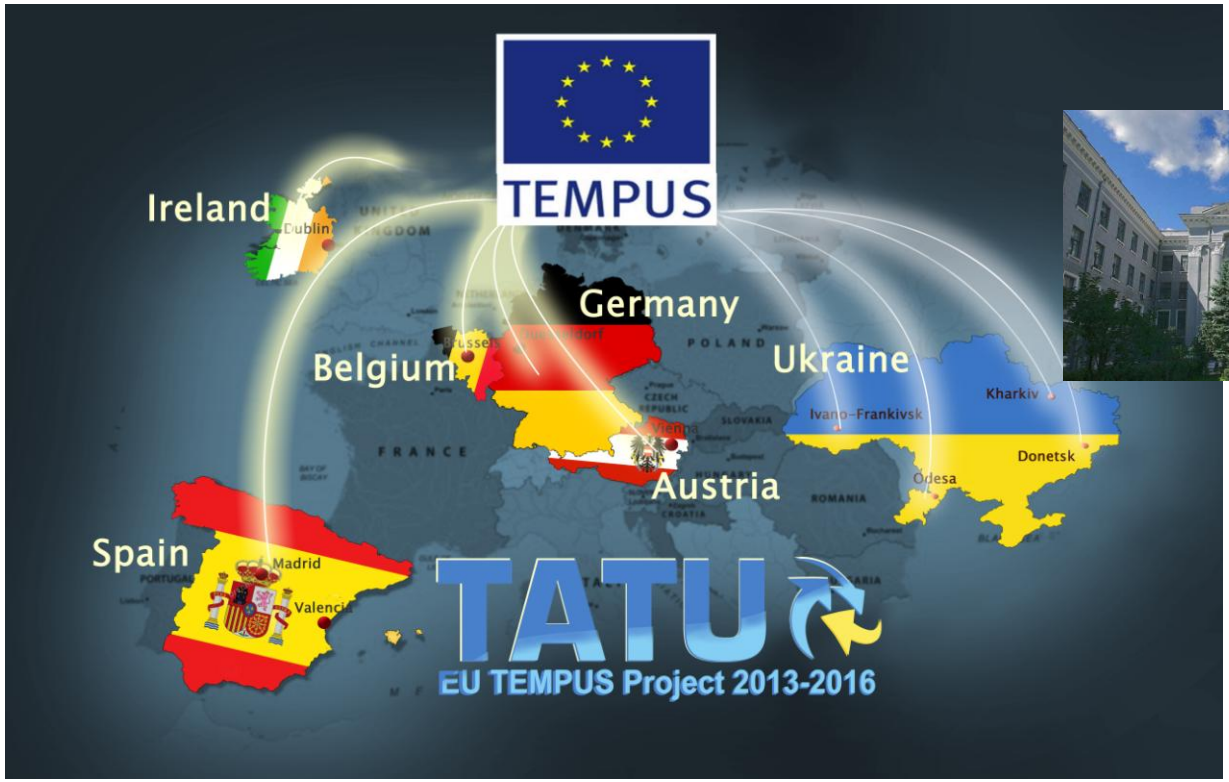
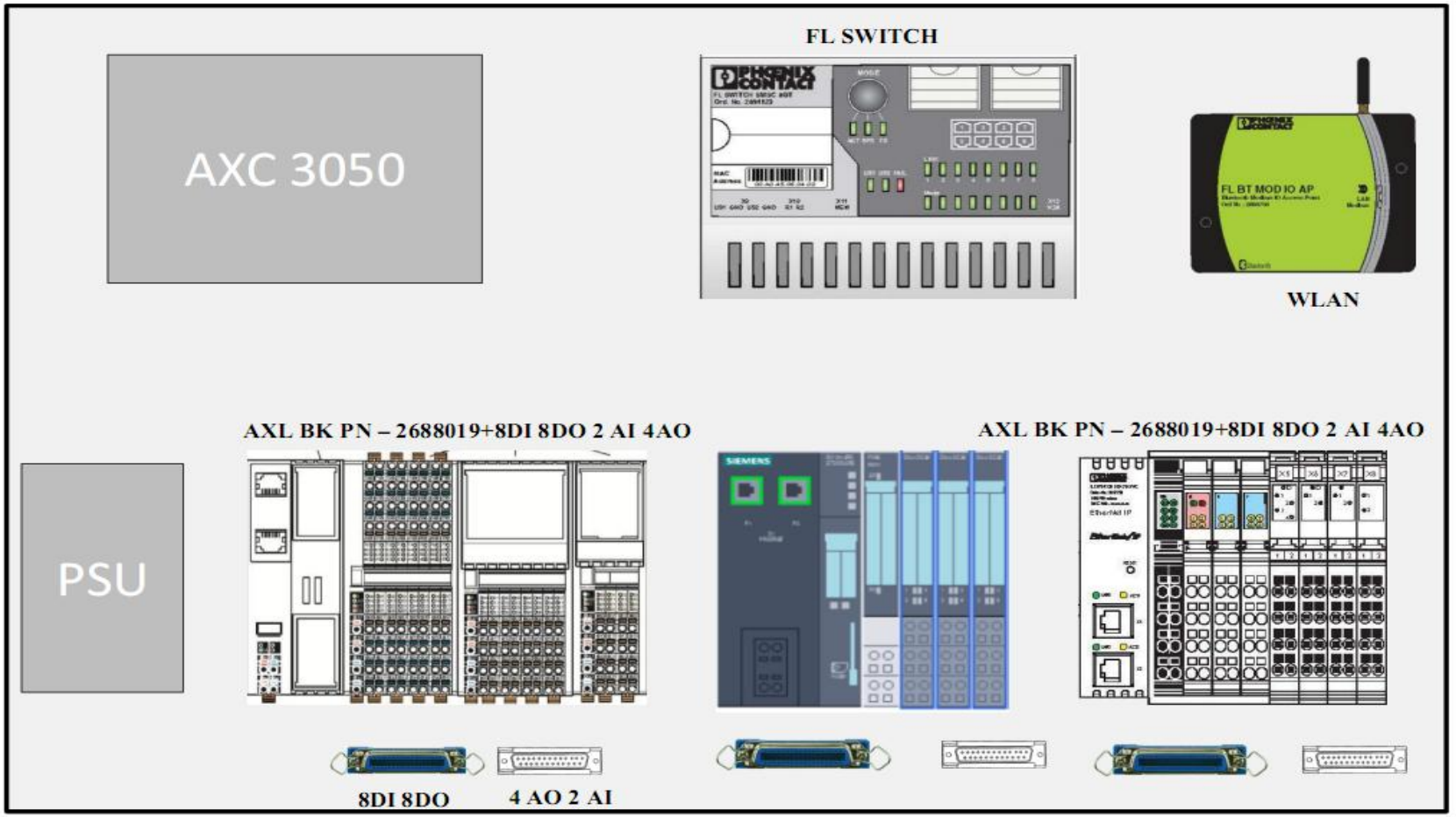
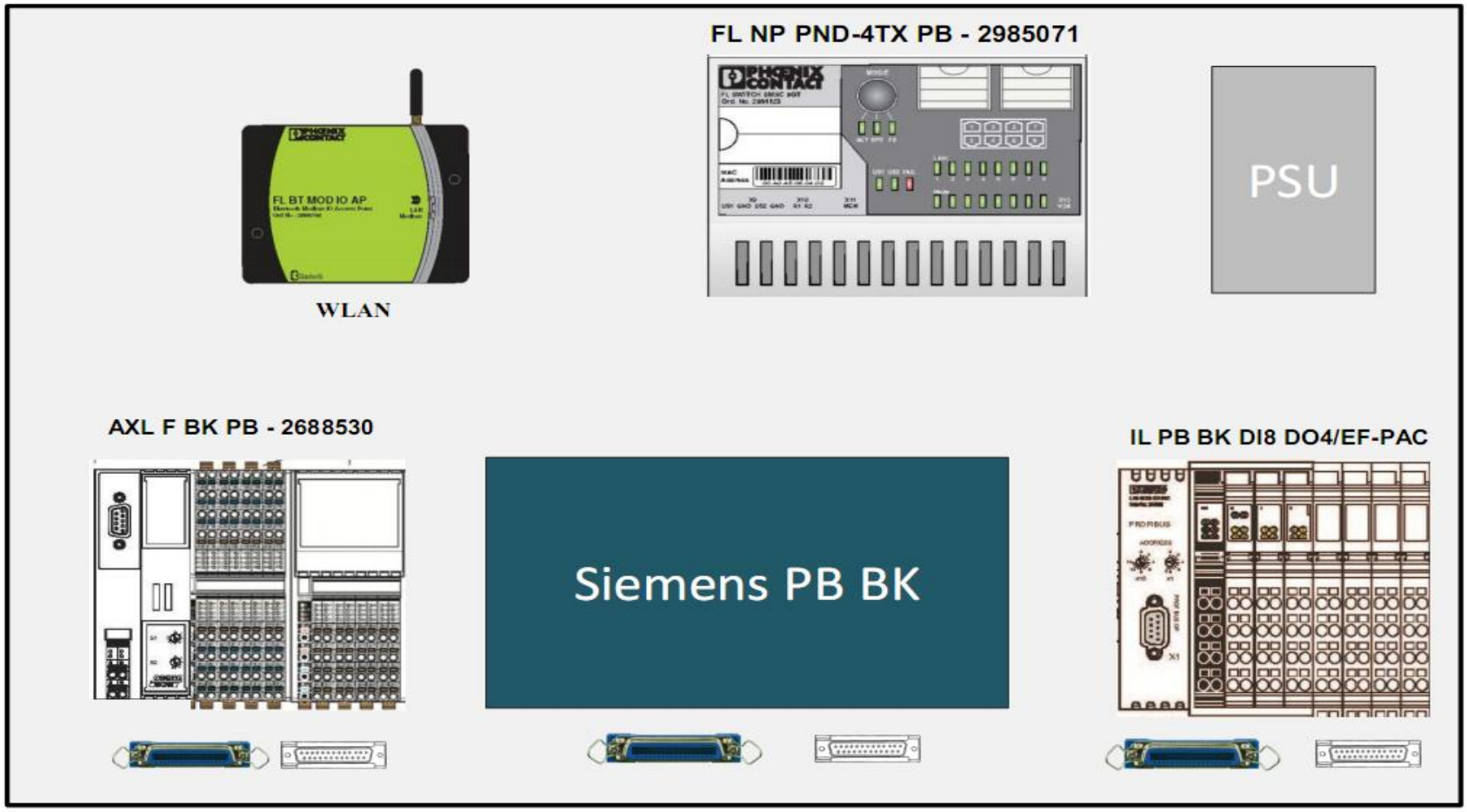


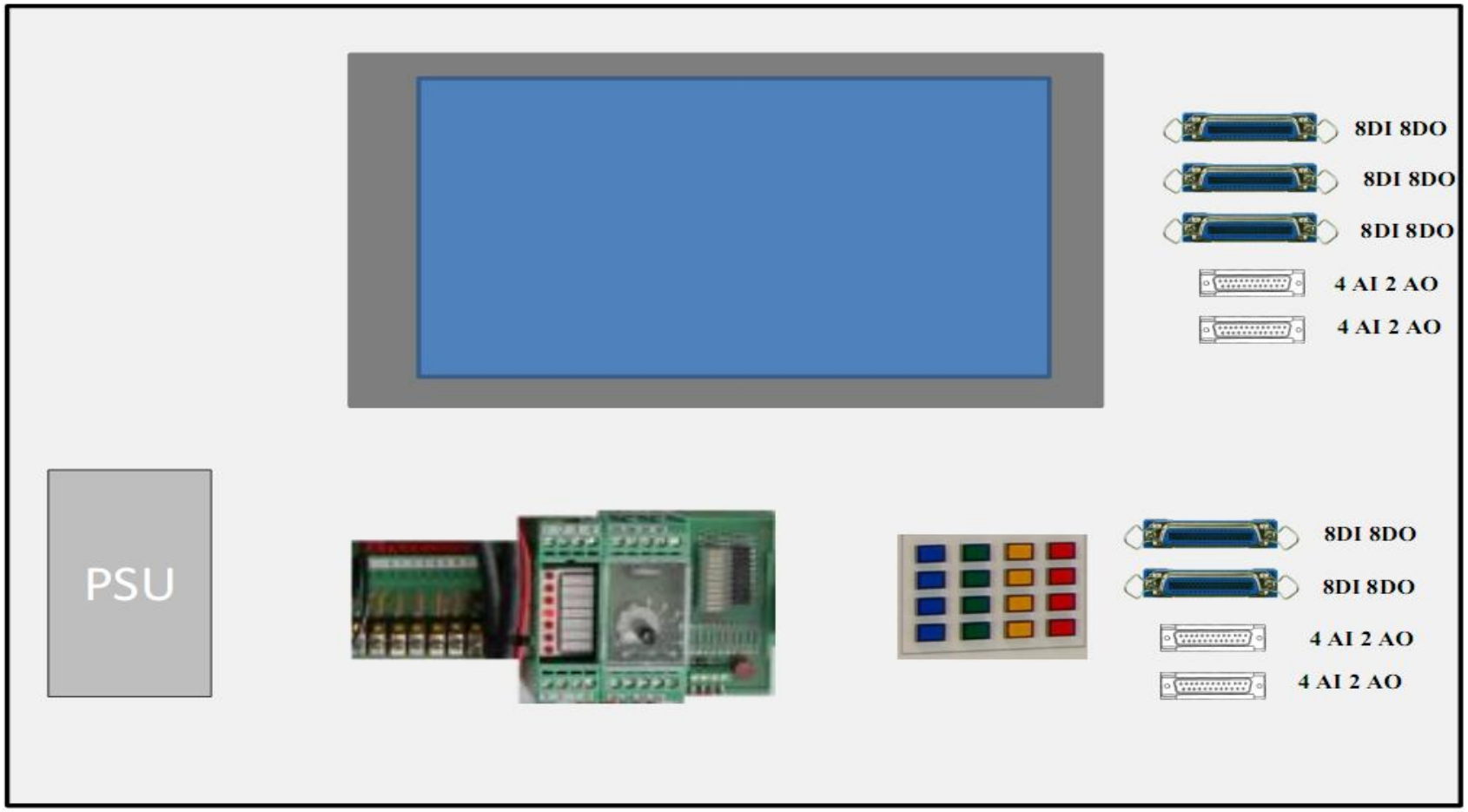
Part 1


AXC 3050
FL SWITCH
WLAN
PSU
AXL BK PN – 2688019+8DI 8DO 2 AI 4AO
AXL BK PN – 2688019+8DI 8DO 2 AI 4AO
8DI 8DO
4 AO 2 AI

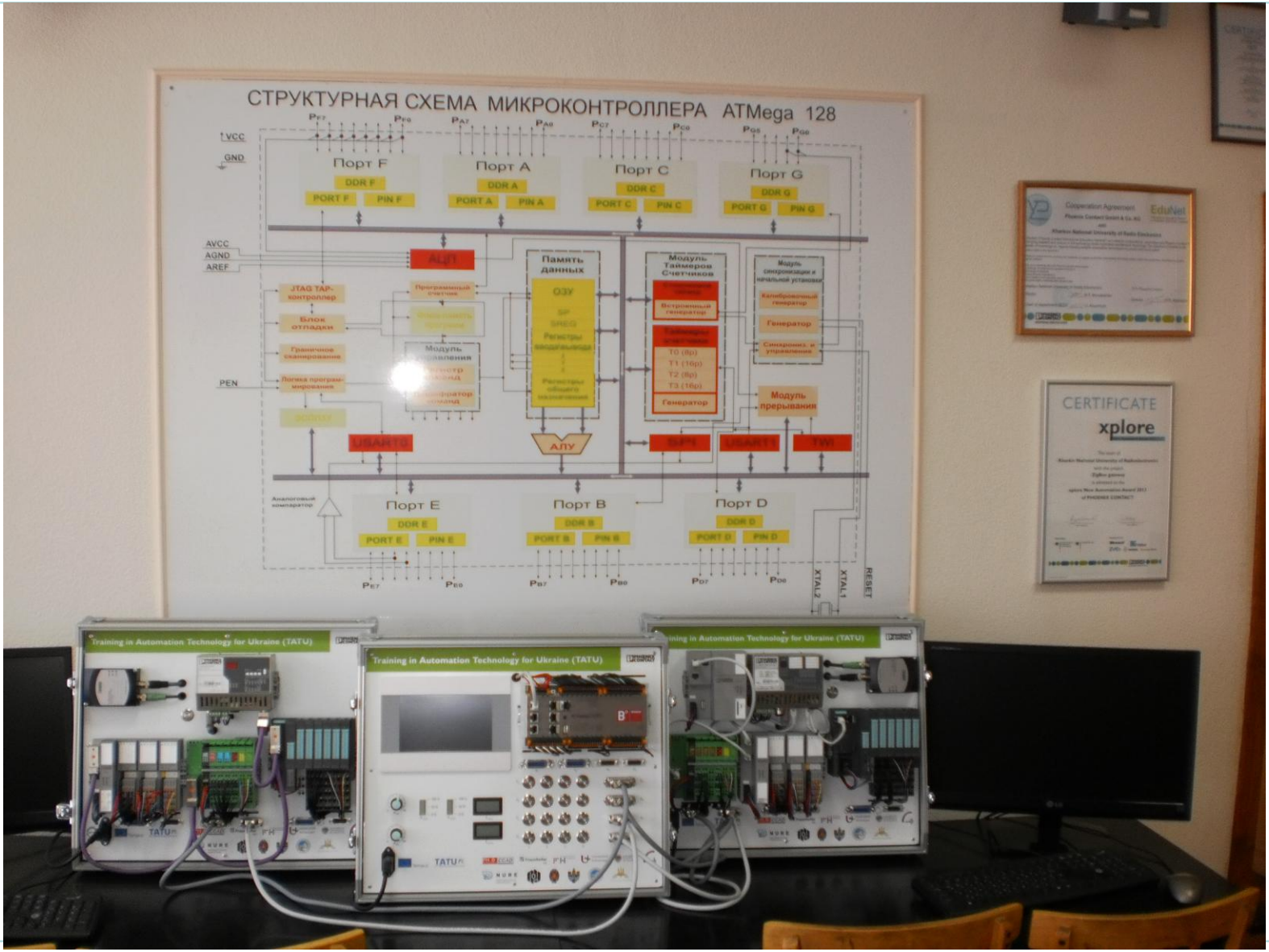
Part 2


FL NP PND-4TX PB - 2985071
PSU
WLAN
AXL F BK PB - 2688530
Siemens PB BK
IL PB BK DI8 DO4/EF-PAC

Part 3


8DI 8DO
8DI 8DO
8DI 8DO
4 AI 2 AO
4 AI 2 AO
PSU
8DI 8DO
8DI 8DO
4 AI 2 AO
4 AI 2 AO

TSL in KNURE


СТРУКТУРНАЯ СХЕМА МИКРОКОНТРОЛЛЕРА ATMega 128
Порт F
Порт A
Порт C
Порт G
Порт E
Порт B
Порт D
Память данных
ОЗУ
АЛУ
Модуль Таймеров Счетчиков
Модуль прерывания
USART0
USART1
TWI
JTAG TAP-контроллер
Блок отпадки
Генератор
CERTIFICATE
xplore
Training in Automation Technology for Ukraine (TATU)

Capabilities

- PC Worx
- CoDeSys
- PROFIBUS
- Profinet
- Wireless technology
- OPC
- Real-time systems

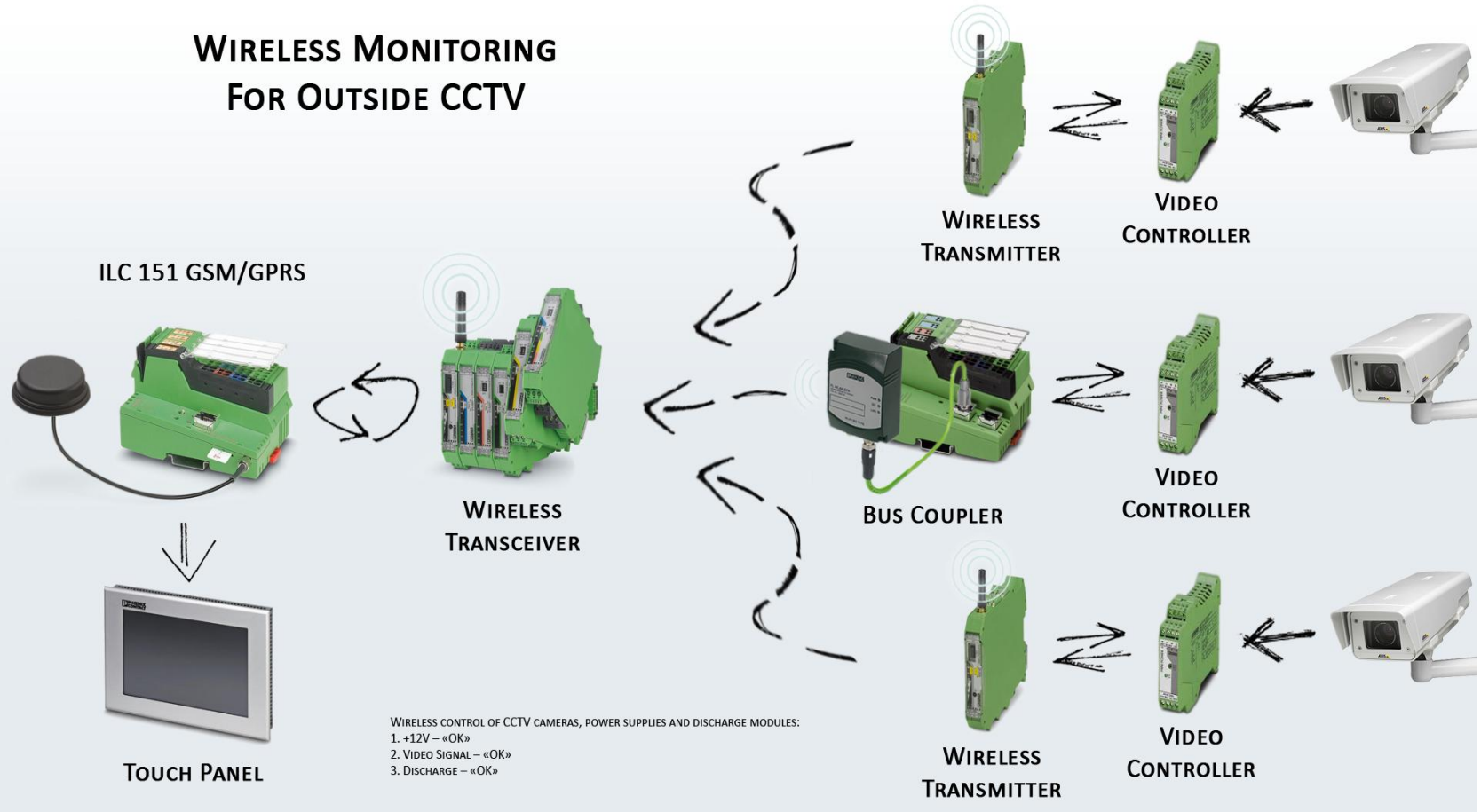
Expectations from the project and the prospect of the use of equipment

- Creating a center for industrial automation (403i) in the KNURE. DOED
- Bachelor Avionics Support
- Support Automation Engineering master's program
- Support for Embedded Systems master's program
- Using the support of the educational process department RES, DOEA, Technology and automation of production.

Expectations from the project and the prospect of the use of equipment

- Continuation of the project under the Erasmus program (KA-1)
- Cooperation with partner universities directly
- Dual Degree in Automation Engineering M.Sc.
- Dual Degree in Master's degree in Embedded Systems

Examples **Design of intelligent automation equipment**

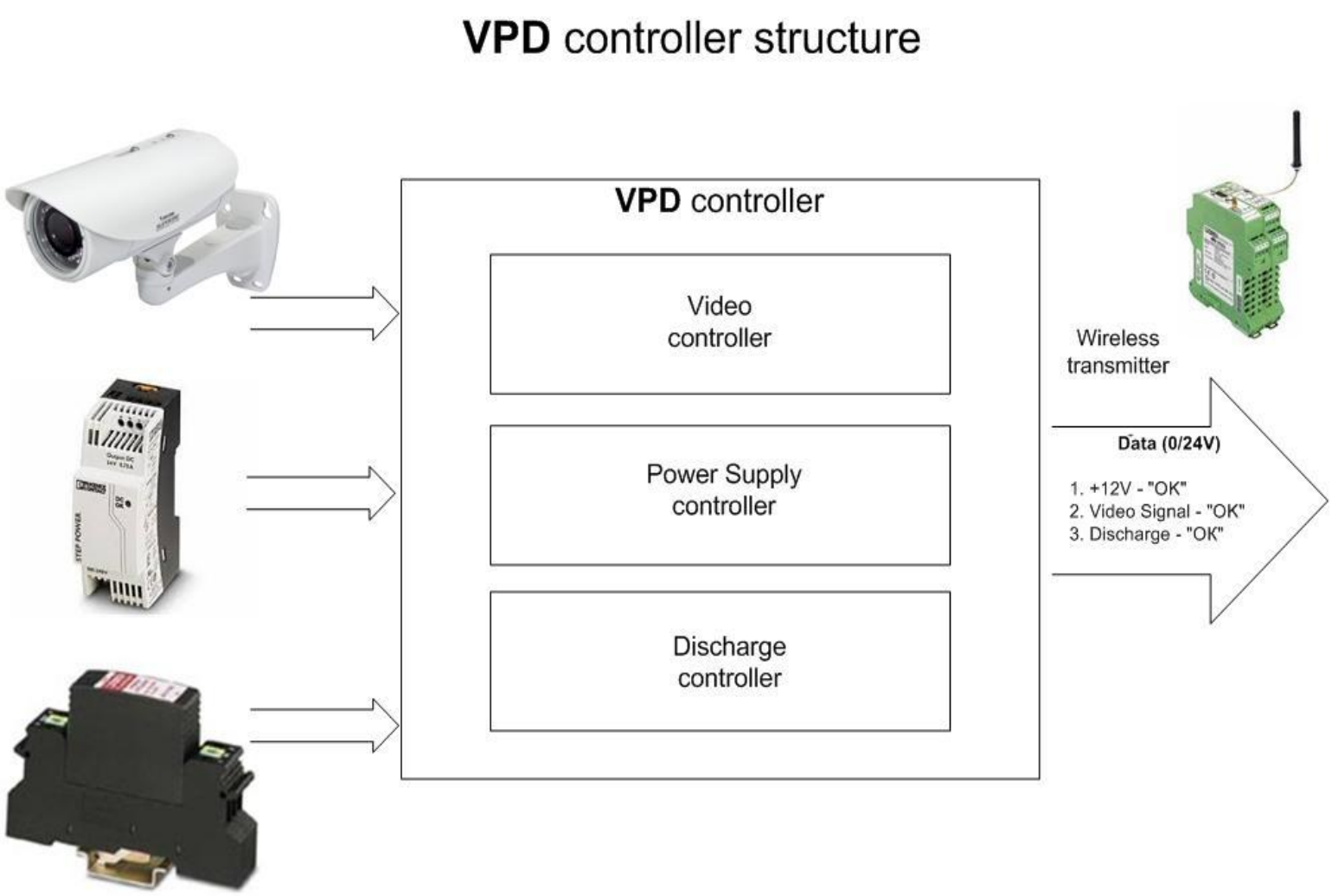


High-cost mounting procedure

The VPD or Video Power Discharge controller

- The controller performs monitoring over the CCTV camera, its power supply unit and the defense discharging module.
- The idea is to combine the three controllers into a single device provided with 24 volts output for making integration with any Phoenix Contact devices easier.
- Implementation of CCTV WIRELESS MONITORING will decrease the CCTV maintenance cost mainly because it eliminates dismantling of properly functioning equipment.

VPD


VPD controller structure
VPD controller
Video controller
Power Supply controller
Discharge controller
Wireless transmitter
Data (0/24V)
1. +12V - "OK"
2. Video Signal - "OK"
3. Discharge - "OK"

How it works?

- Low voltage equals to 10V or less;
- Normal voltage is between 10V and 13V;
- Overvoltage is more than 13V.

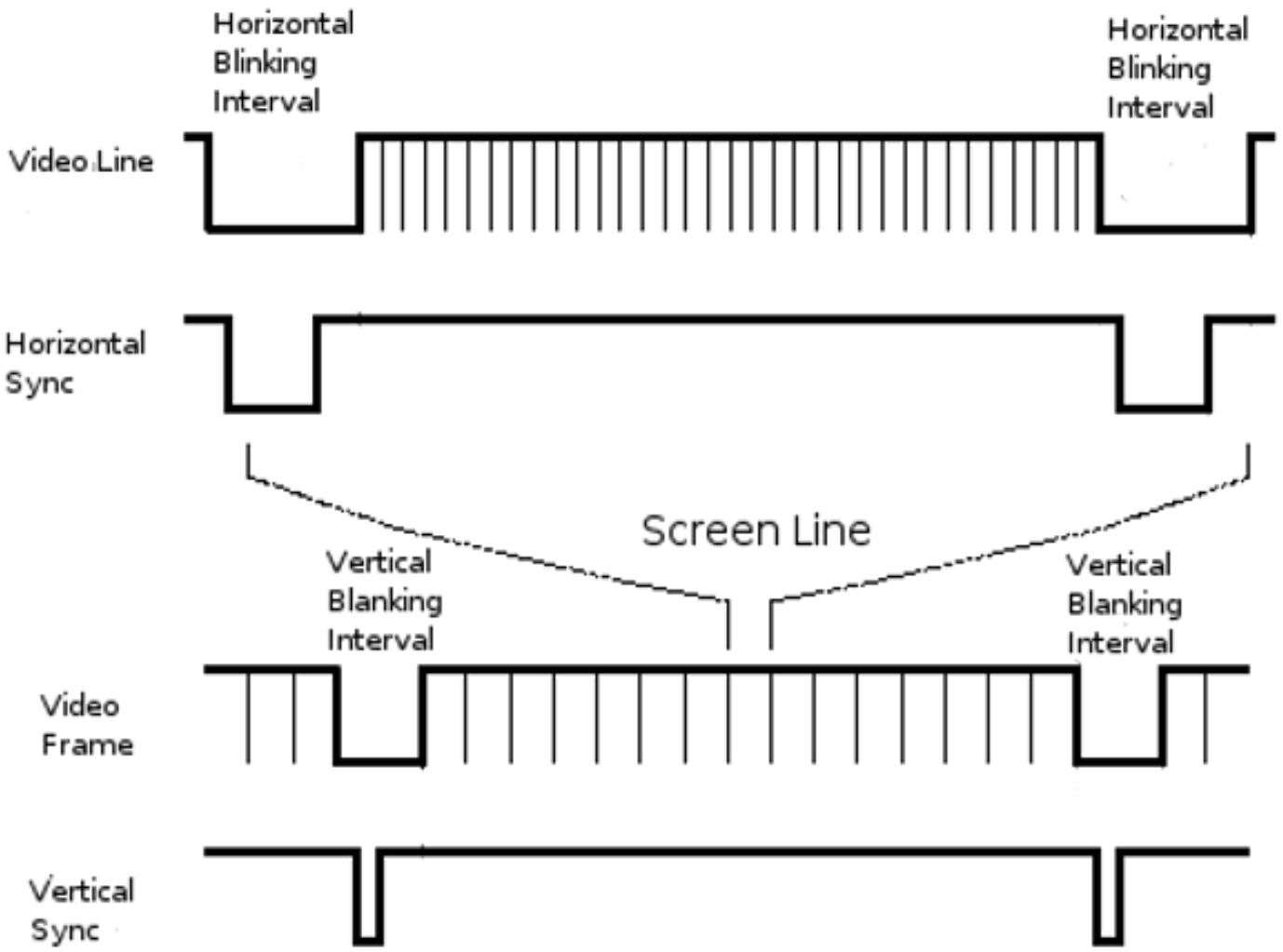
The technology used

- **Wireless networks:**
- - Wireless trusted;
- - Wi-Fi.
- **Industrial networks:**
- - ModBus TCP;
- – ModBus RTU..

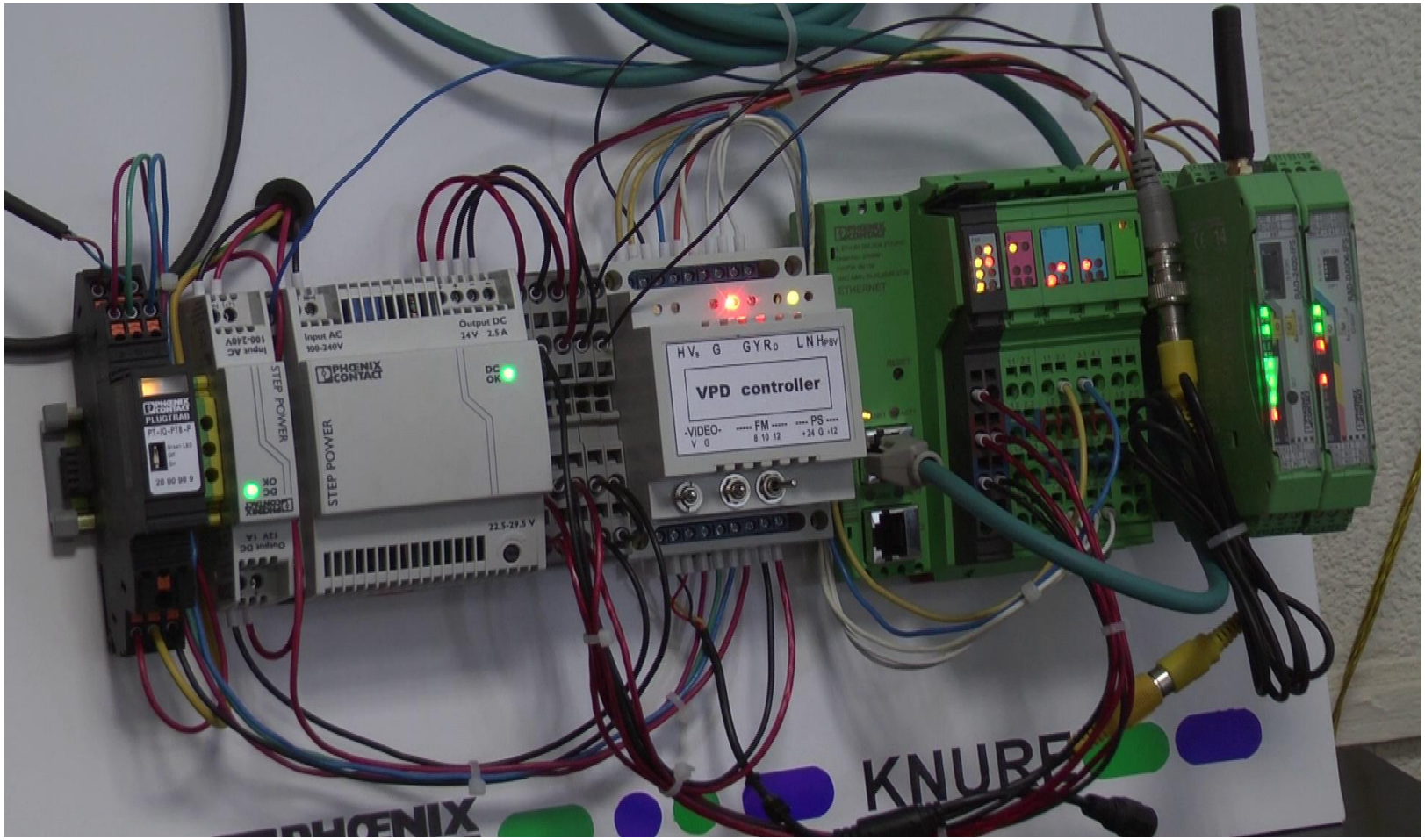
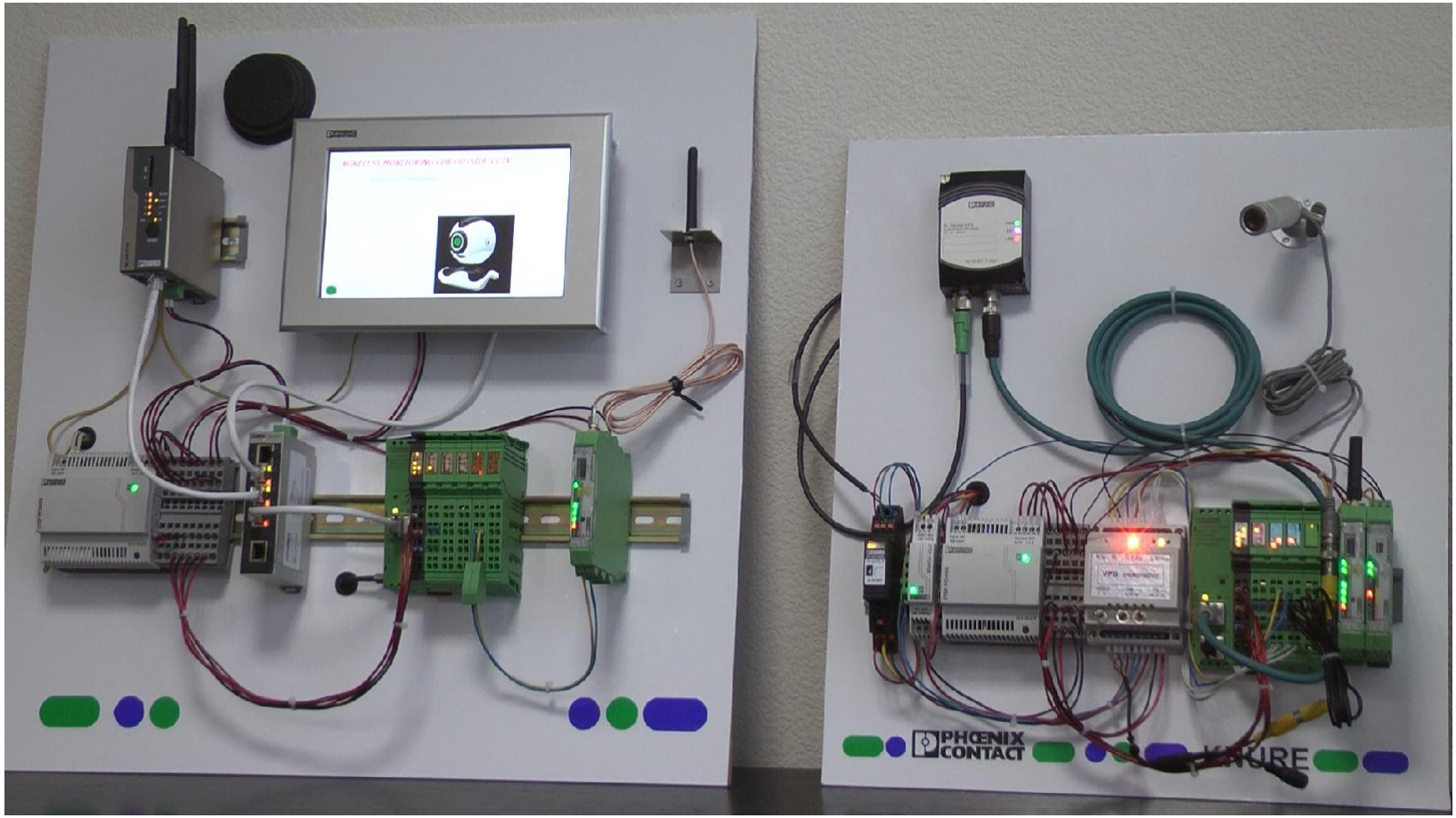
Electronic components used to make the VPD controller:

- - IC (International Rectifier., Texas Instruments, Power Integrations Inc., Infineon Technologies Ag (Siemens Semiconductors), TOSHIBA, Unitrode);
- - Bipolar transistors (International Rectifier., Texas Instruments, Fairchild Semiconductor Corp.,);
- - Field effect transistors (International Rectifier., Texas Instruments, Fairchild Semiconductor Corp.,);
- - Optocouplers (TOSHIBA);
- - Zener (Texas Instruments, TOSHIBA);
- - Diode (International Recti fi er., TI, UC, Intersil Corporation,);
- - Resistors (Lite-On Inc., Samsung);
- - Capacitors (Lite-On Inc., Samsung Electronics,);
- - LEDs (LiteON, Samsung Electronics, Cree);
- - Terminals (KEFA).

How it works


Horizontal
Blinking
Interval
Horizontal
Blinking
Interval
Video Line
Horizontal
Sync
Screen Line
Vertical
Blanking
Interval
Vertical
Blanking
Interval
Video
Frame
Vertical
Sync

Developed VPD –controller



The basic module for monitoring and remote control module camera with VPD – controller