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FST ROCKON

Remote control and automation system for machinery and stationary equipment

Kemerovo
2025

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FST ROCKON

Remote control and automation system for machinery and stationary equipment

Description of the system FST ROCKON :

- Designed for remote control of industrial equipment in hazardous work areas where it is necessary to reduce or eliminate the presence of personnel.
- Possibility of automation of various equipment: **loaders, dump trucks, excavators, bulldozers, manipulators, cranes**, etc.
- The system components are of the RN (mining standard) construction and also comply with the requirements of the TR CU.
- Possibility to operate the system in harsh conditions of industrial processes.

The system advantages and parameters:

- Versatility (wide range of application for various types of machinery and equipment)
- Configuration variability (see slides 4,5,6)
- Not impeding normal operation
- Protection degree IP66
- Industrial design of components
- Temperature range from -40 °C to +50 °C

Application field:

- **Mining industry:** mines, ore mines, quarries, opencast mines etc.
- **Metallurgical industry:** smelting shops, hot slag handling areas, hot rolling shops, etc.
- **Construction industry:** construction sites for high-rise buildings, construction of facilities in difficult or dangerous conditions, etc.

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Advantages of FST ROCKON

Increased safety
- Exclusion of the operator from the danger zone (height, rockfall, exposure to dust, noise, temperature)
- Reduced likelihood of injuries and accidents
- Possibility of quick emergency shutdown or safe transition to manual mode

Reduced operating costs
- Reduction of shift change time → reduction of equipment downtime
- Reduction of need for personal labor protection (PPE, safety systems)
- Reduction of need for operator qualifications (requirements for work in hazardous areas)
- Prospect (development of functionality) — reduction of personnel (one operator for several machines)

Increased productivity
- The operator sees the work area from different angles, using cameras and sensors - the positioning time is reduced
- Possibility of organizing a centralized control point for several units of equipment
- Reduction of downtime due to external factors and weather conditions, since the operator works from a remote location

Integration into digital control system (future)
- Connection to MES/SCADA systems, automated logistics and KPI monitoring
- Analysis of equipment data (consumption, loads, movements, cycles) to optimize work
- Support for predictive maintenance based on the received data

Improved working conditions
- The operator works in comfortable and controlled conditions: the control point is located outside the hazardous work zone
- Reduced fatigue → fewer errors, higher accuracy

Flexibility and scalability
- Versatility of the solution, application on a wide range of mobile equipment or stationary equipment
- Ability to scale the solution across all production processes of the enterprise

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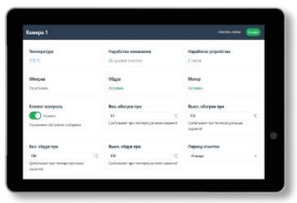
INFORMATION
About the cost and terms of delivery of products

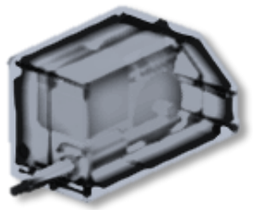
Portable operator control panel
Configuration: Own software
Product price – 5’500 USD
EXW Kemerovo, Russia
Production time – 10 weeks

Industrial on-board controller FST HUB
Configuration: Own software
Product price – 9’000 USD
EXW Kemerovo, Russia
Production time – 10 weeks

Protective housing FST Novus (with camera)
Configuration: Camera, Own software
Product price – 7’000 USD
EXW Kemerovo, Russia
Production time – 10 weeks

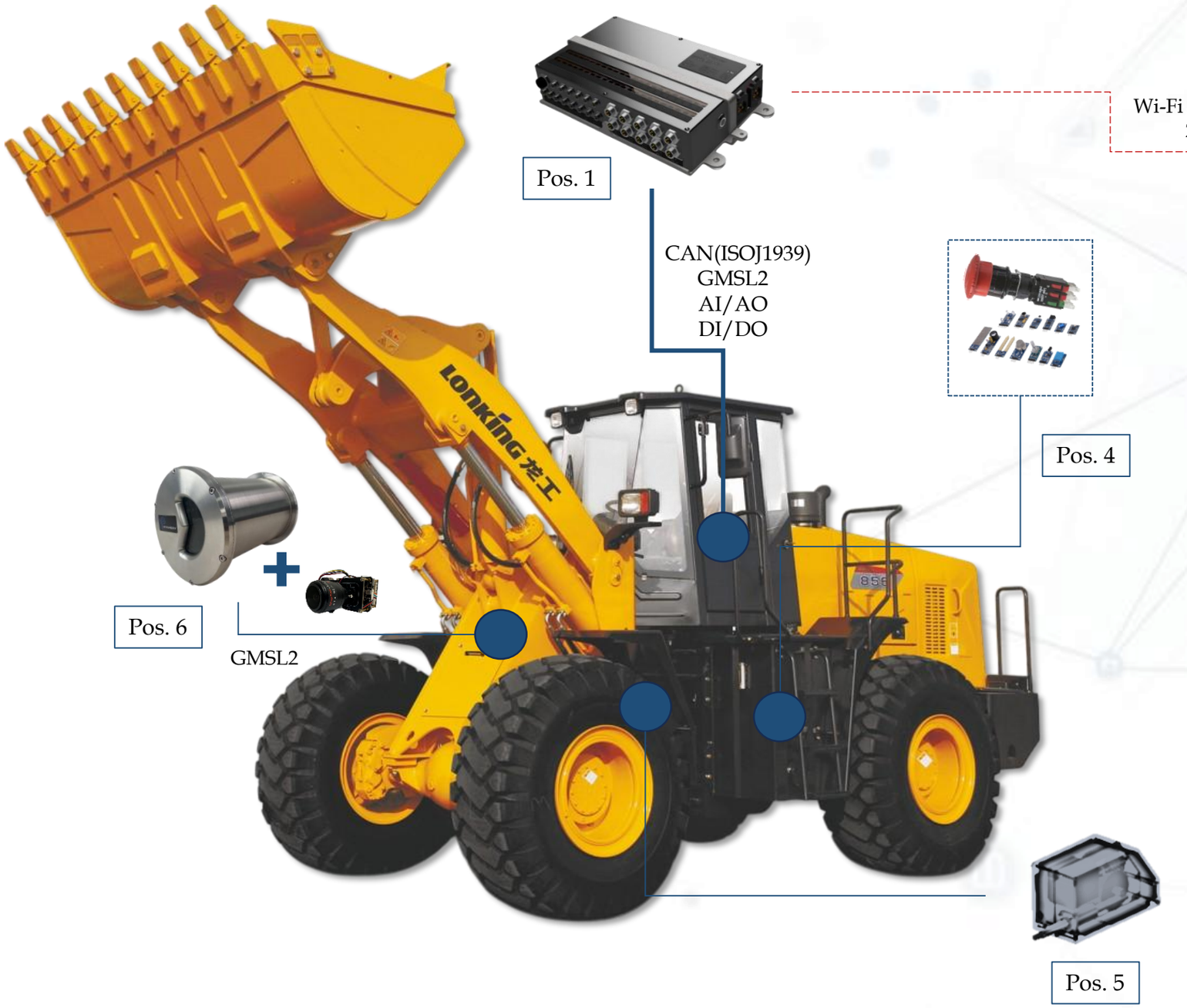


Industrial display (computer) for image reception
Configuration: Software Linux
Product price – 1’500 USD
EXW Kemerovo, Russia
Production time – 10 weeks



Direct interaction interface with equipment controls
Product price – 1’200 USD
EXW Kemerovo, Russia
Production time – 10 weeks

Architectural diagram of the system FST ROCKON
(Level 1 – direct visibility)
for a front loader (example)



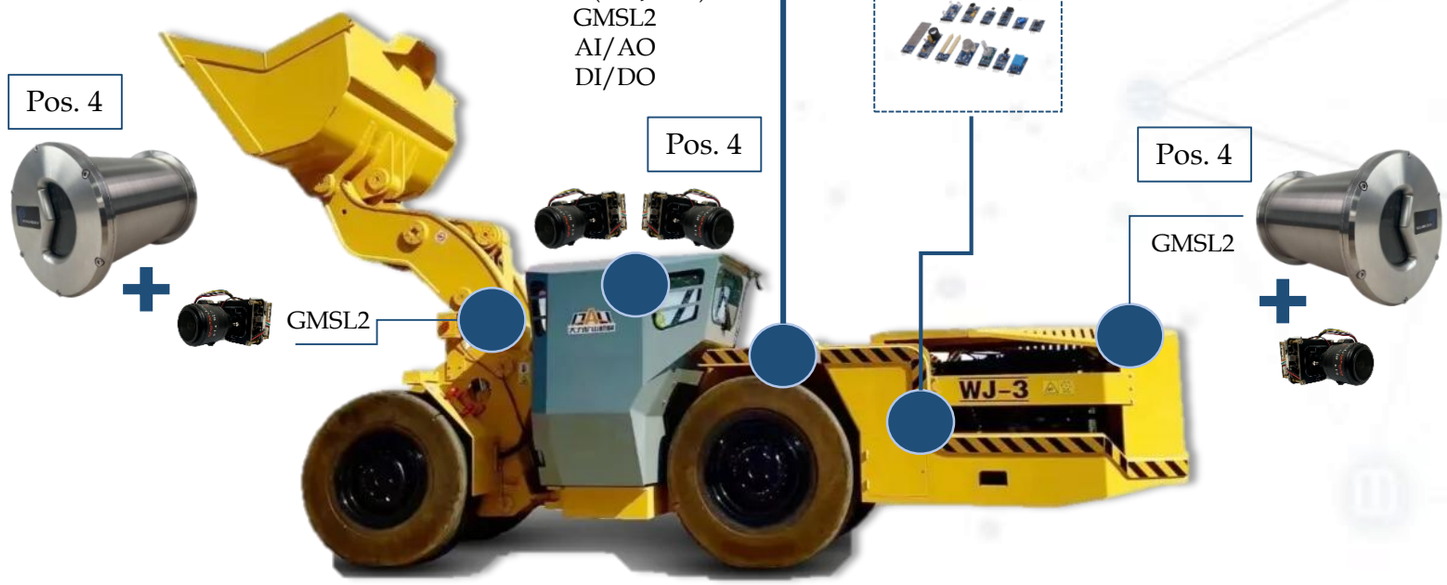
Specification of the equipment used	
Pos. 1	Industrial on-board controller **FST HUB** (*used to control machine components*)
Pos. 2	Portable operator control panel (*data and command exchange with FST HUB*)
Pos. 3	**OPTION:** Industrial display for transmitting video images from the video camera (Pos. 6)
Pos. 4	On-board set, including emergency stop system kit, feedback sensor kit, mounting kit
Pos. 5	Direct interaction interface with equipment controls (*servo drives, hydraulic valves*)
Pos. 6	**OPTION:** Video camera GMSL2 in protective housing **FST NOVUS** *with the active dry cleaning system*

Architectural diagram of the system FST ROCKON
(Level 2 – remote control)
for load haul dumper (example)

wi-fi 802.11b/g/n
2.4 GHz

1G Ethernet / FOC
2.5 Gbit/s and more

CAN(ISOJ1939)
GMSL2
AI/AO
DI/DO



Specification of the equipment used	
Pos. 1	Industrial on-board controller **FST HUB** *(used to control machine components)*
Поз. 2	On-board computer center, recorder (NRU-110V-F-AGX32G) or equivalent
Pos. 3	Wireless router, active antennas in protective housings
Pos. 4	Video cameras GMSL2 in protective housings **FST NOVUS (2 units) and FST NOVUS P (2 units)** *(propel cameras 2 units (front-rear) in housings with active dry cleaning system)*
Pos. 5	Stationary control panel stand, control unit simulator
Pos. 6	Control center: operator workstation, video recorder, router, UPS
Pos. 7	On-board set, including: Emergency stop system kit, feedback sensor kit, mounting kit

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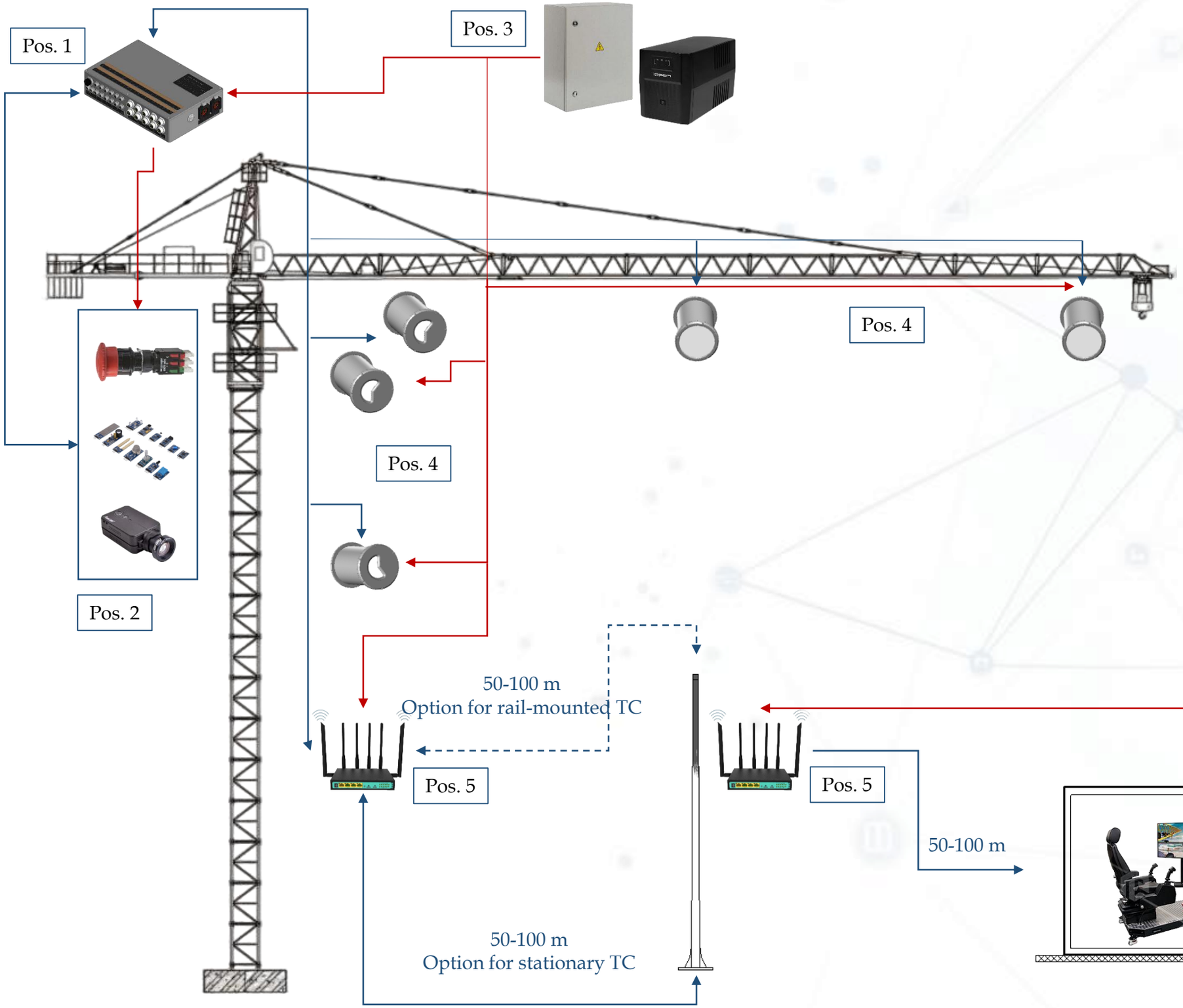
Architectural diagram of the remote control system FST ROCKON (Level 2) for tower crane (example)



Equipment specification	
Pos. 1	Industrial controller **FST HUB** (*used to control machine components*)
Pos. 2	On-board set, including: Emergency stop system kit, control sensors kit, video camera in the operator's cab
Pos. 3	Customer's switchgear, UPS
Pos. 4	Video cameras (5 units) in protective housings **FST NOVUS** and **FST NOVUS P**
Pos. 5	Router in protective boxes
Pos. 6	System control point, consisting of: control stand, automated workplace, video recorder

Network specification	
———	Ethernet
- - - - -	Wi-Fi (*option for rail-mounted tower crane)
———	Power supply network

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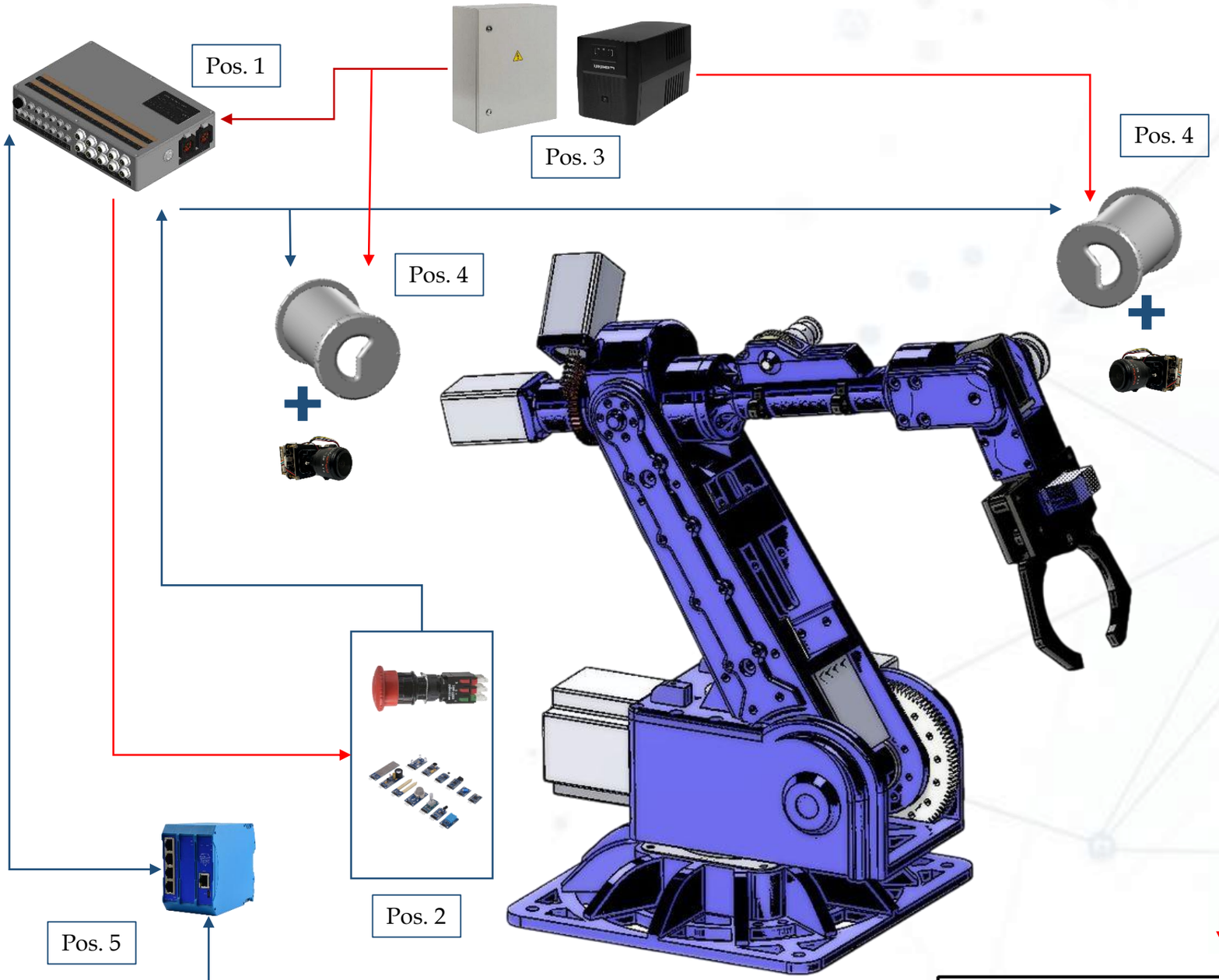
Architectural diagram of the remote control system FST ROCKON (Level 2) for industrial manipulator (example)



Equipment specification	
Pos. 1	Industrial controller **FST HUB** (*used to control machine components*)
Pos. 2	On-board set consisting of: Emergency stop system kit, control sensors kit
Pos. 3	Customer's switchgear, UPS
Pos. 4	High speed video cameras in protective housings **FST NOVUS** with the dry lens cleaning system
Pos. 5	Router in industrial design
Pos. 6	The system control point consisting of: control stand, automated workplace, router

Network specification	
———	Ethernet 1G
———	Power supply network