



Irtysh A68SV

– a Russian engine for embedded computing

Irtysh A68SV – an 8-core system-on-chip (SoC) with broad interface support and an integrated graphics accelerator.

Used in industrial devices:

- Programmable controllers and microprocessor devices of relay protection and automation
- On-board devices for automobile, railway, and marine vehicles
- Controlling motherboards and panels for machines, machine tools, and installations
- Edge devices implementing machine learning algorithms in field conditions
- Servers and operator workstations used in industrial environments
- Communication and information security equipment

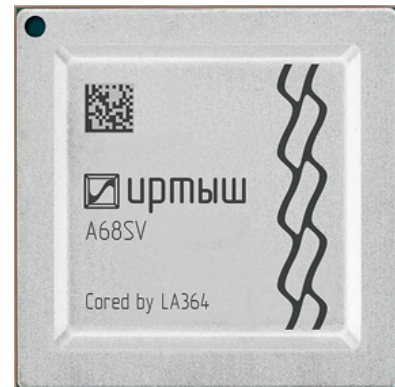
Applied for creating corporate and consumer devices:

- Laptops
- Thin clients
- Video terminals
- Self-service terminals

Capabilities of using Irtysh A68SV in your products

Creating a new generation of equipment control systems

- 8 cores expand possibilities for implementing non-disruptive changes to control algorithms and reliability measures of software components in control systems;
- Fast built-in interfaces for polling peripherals without auxiliary microcontrollers
- Ability to combine PLC functions with computer vision (CV), ML models for predictive analytics, or inference of small language models (tiny LM);
- Containerization for isolation and simplified delivery of applications to devices
- Creation of industrial gateways and communication modules
- 8 high-speed UART interfaces (up to 6 Mbit/s) and 4 CAN-FD interfaces for polling field devices
- 8 cores for distributing communication load and converting data to OPC UA, IEC 61850, or other modern



Main technical specifications of Irtysh A68SV

Characteristic	Value/description
CPU	8 cores LA364 (64-bit), up to 2.0 GHz+
Architecture	Triple-issue superscalar (3 instructions per tact)
Cache memory	L1: 64+64 KB; L2: 6 MB (total)
GPU	LG200 3D graphics (64 GFlops), AI acceleration 6 TOPS (8INT)
Display	3 video outputs: HDMI + eDP + DP
Video codecs	VVC/AV1/HEVC/VP9/AVS2.0/High10 H264/H.264/VP8/VC1 - 4K@30FPS MPEG-2 & MPEG-1/VP7/H.263/RV8/RV9/RV10 - 1080p@60FPS Hardware H.264 / H.265 (Enc/Dec)
Storage	eMMC, 2x SDIO, SATA 3.0
PCIe	2x PCIe 3.0 x4 (configurable), RapidIO
Network and USB	2x RGMII (Gigabit), 4x USB 3.1, 8x USB 2.0
Industrial networks	4x CAN-FD, 8x UART, 4x I2C, 2x SPI, 58x GPIO, RapidIO
Thermal management	~15 Bt (typical), supports DVFS
Operating temperature	-40°C ... +85°C

industrial data exchange standards

- Non-volatile memory for long-term local archiving
- 2 gigabit network interfaces with hardware TSN support for redundant/reserved real-time communications
- Operator panels, multimedia terminals and self-service devices
- 3 video outputs for multi-monitor devices
- Graphics core with 6 TOPS performance enables integration of advanced AI assistant functions
- UART, CAN, I2C and other interfaces for polling sensors and controlling integrated actuators
- 8 USB ports for connecting cameras, keyboards, manipulators, and other devices
- Industrial temperature range for use in outdoor devices
- Expandable non-volatile memory for «black-box» archives

Software support:

- Operating systems: Alt Linux, Debian, Yocto project, OpenEuler
- Infrastructure: Ceph, glusterfs, Qemu-KVM, Docker
- Programming languages: Java, JavaScript, C/C++ (gcc, clang), Go, Rust, Java (OpenJDK 8, 11, 17, 21), Python, Perl, Ruby, Lua
- DBMS: PostgreSQL, Mysql/Mariadb, Redis
- WEB: Apache, Nginx, PHP

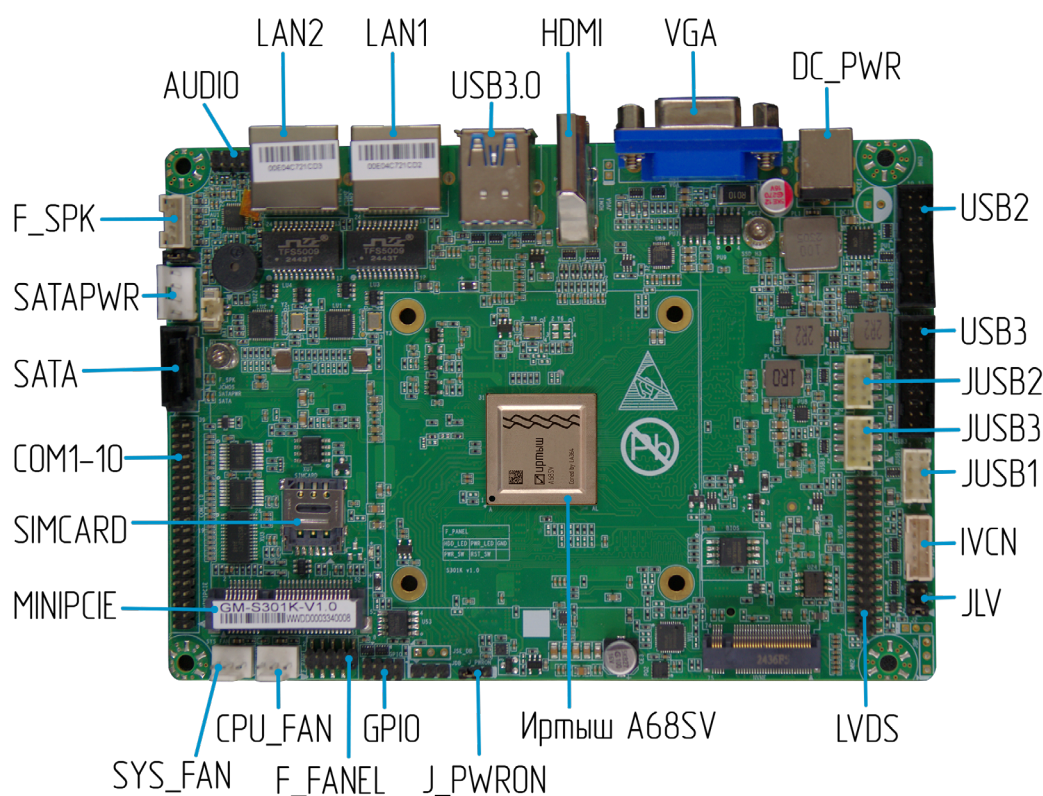
Collaboration between Tramplin Electronics and developers

For software developers:

- Providing developer kits (DevKit): device samples, distributions, SDKs and documentation;
- Assistance in porting software to Irtysh processors and the LoongArch architecture;
- Custom development services.

For modules and hardware platforms developers:

- Supply of Irtysh processors and SoCs
- Providing reference designs and samples
- Licensing of motherboard and computing module designs based on the LoongArch architecture
- Supply of additional electronic components compatible with the processors Irtysh (BOM)
- Support and consulting during development



Debug board for developers