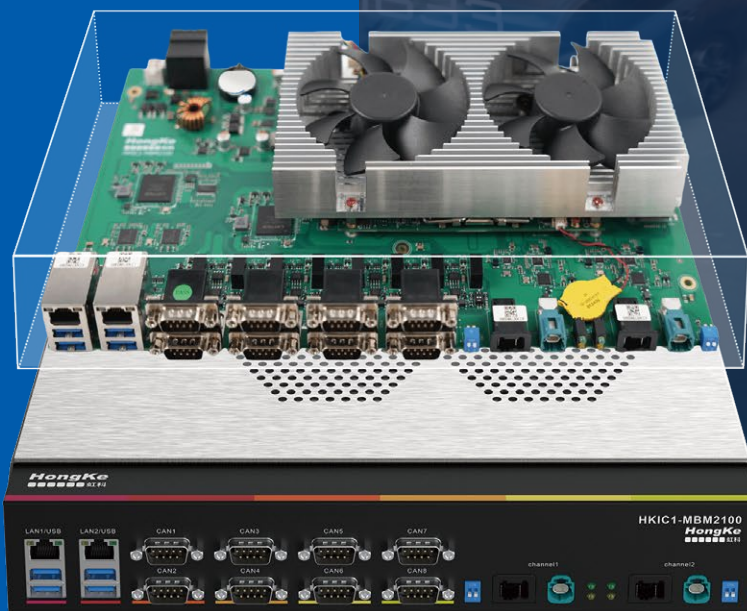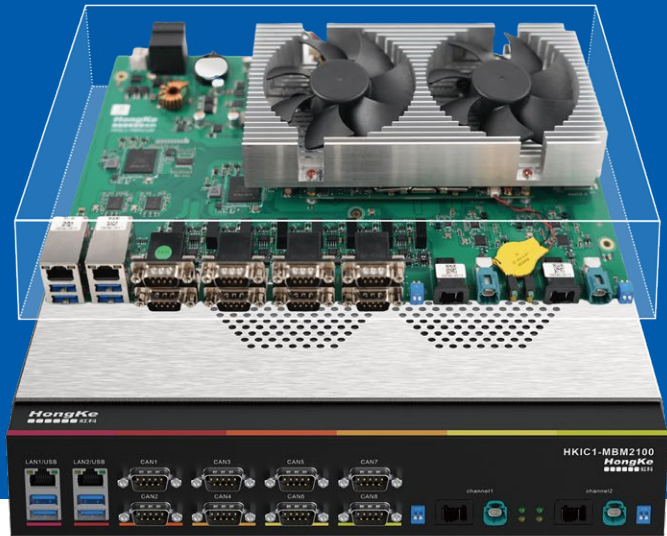# HongKe

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HongKe Vehicle Network Communication Testing System

Simplifying in-vehicle network communication testing

High-Performance In-Vehicle Network Test Workstation
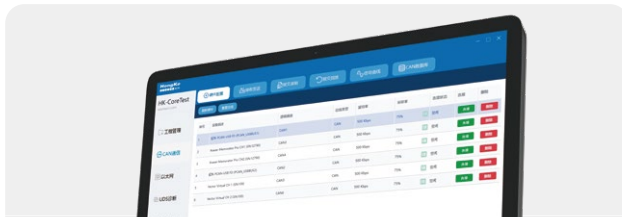—— 8×CAN(FD) + 2×1000BASE-T1

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HKIC1-MBM2100

HongKe Vehicle Network Communication Test Motherboard is a high-performance industrial computer motherboard specifically designed for vehicle network communication. It is used to monitor CAN(FD) and Automotive Ethernet networks, and can also send and save CAN(FD) and Ethernet messages, featuring powerful data processing and communication capabilities.Integrated with 8 CAN/CAN FD interfaces and 2 1000BASE-T1 interfaces, it can meet the testing, monitoring and data transmission needs in complex vehicle network environments, and is widely used in automotive R&D, intelligent transportation, vehicle testing and other fields.

Core Advantages

Integrated Test Platform

Multi-protocol Support:
Integrates 8 CAN/CAN FD (up to 12Mbps) + 2 Gigabit Automotive Ethernet(1000BASE-T1), covering mainstream in vehicle network protocols

Industrial-grade Hardware:
Equipped with Intel i7-12th generation processor (optional), 32GB memory (upgradeable), 1TB storage, meeting high-load data processing requirements

Dual-system Compatibility:
 Supports Windows/Linux systems, with free API interfaces (supporting C++, C#, Python, .NET, Java and other languages), seamlessly integrating into existing workflows

Support for Chinese-version Upper Computer:
Hardware comes with Chinese upper computer HK-CoreTest, and supports mainstream analysis software like HongKe PCAN View and PCAN-Explorer 6

Intelligent Configuration and Diagnosis

Flexible Terminal Resistor:
Independently control the terminal resistor (120Ω) of each CAN channel through the built-in DIP switch, adapting to different topologies

Master/Slave Mode Switching:
One-key configuration of 1000BASE-T1 master/slave mode via DIP switch, matching the Device Under Test (DUT)

Dual-color LED Status Light:
Real-time monitoring of link status (green light: master/slave mode; yellow light: normal data transmission/connection)

Professional Interface Design

CAN(FD) Interface:
- Complies with CAN 2.0A/B and FD standards, supporting 25kbps–1Mbps (arbitration field) and 25kbps–12Mbps (data field)
- Adopts TJA1044GT transceiver + FPGA controller to ensure signal stability

Automotive Ethernet Interface:
- Two 1000BASE-T1 channels, compatible with H–MTD/MATEnet connectors, supporting shielded grounding (10Ω+10nF)

Industrial-grade Reliability

Wide Temperature Operation:
Operating temperature of 0℃–60℃, adapting to harsh in vehicle environments

Safety Protection:
12V DC Power Supply (recommended startup current ≥ 5A), IP20 Protection Class

Compact Size:
300mm × 180mm (Motherboard), optional Chassis Housing (320×190×580mm)

Product Specifications

Processor	Intel Core i7-12th Generation（optional）
Memory	32GB（optional）
Storage	1T（optional）
Rear I/O	1 x HDMI
	2 x GbE(RJ45,)
	4 x USB3.0(5Gbps)
Communication I/O	8 x CAN(FD)（D–Sub, 9–pin）
	2 x 1000Base-T1（MATEnet & H–MTD）
OS Support	Windows & Linux
Housing Dimension	(L)300mm x (W)180mm（Bare Board))
	320×190×580mm（Housing）
Operating Temperature	0ºC ~ 60ºC
IP Protection Class	IP 20
Power Supply	12V DC
CAN(FD) Transceiver	TJA1044GT
CAN(FD) Controller	Implemented via FPGA
Base-T1 Transceiver	RTL8211FI-CG

CAN Interface Pinout

1	+5V(optional)
6	CAN_GND
2	CAN_Low
7	CAN_High
3	CAN_GND
4,5,8,9	None
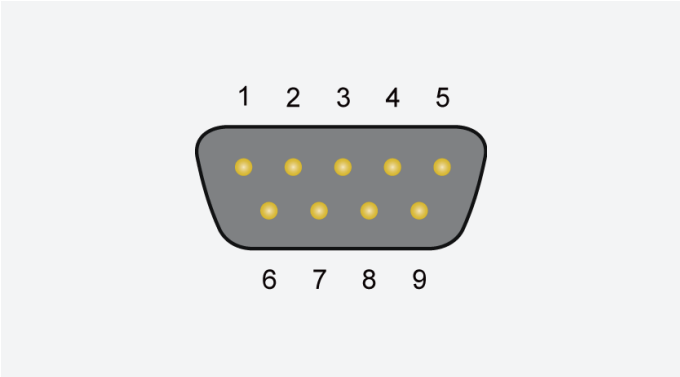
Application Cases

HongKe Vehicle Network Communication Test Motherboard can simulate vehicle network environments,verify communication protocols between Domain Controllers and other ECUs (Electronic Control Units),validate data transmission accuracy, and check data packet correctness, including data integrity and real-time performance;it can also simulate faults by replicating different fault scenarios,verify the response and processing capability of Domain Controllers,and test the stability and performance of Domain Controllers under high load;in addition,it can record data and events during the test process for subsequent analysis.

Domain Controller Test Application
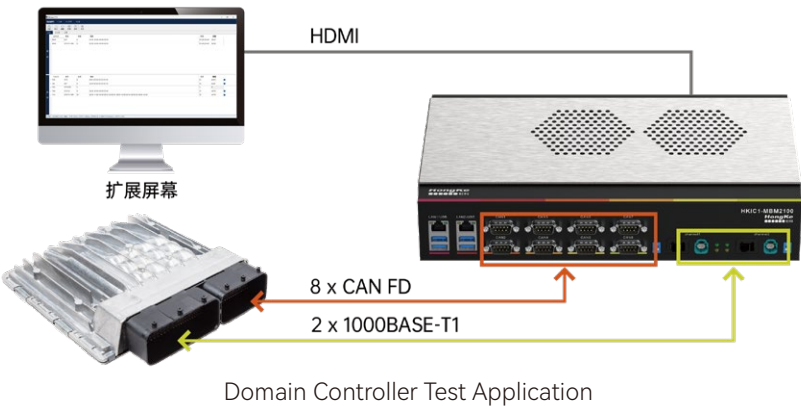
Ready to Use   Order Number: HKIC1-MBM2100

Standard Configuration
- Motherboard×1
- Development API (supports C++/C#/Python/ Java/.NET)
- PDF User Manual
- Power Interface + 12V Power Adapter ×1

Optional Accessories
- Automotive Ethernet Cable (HMTD/MATEnet)
- DB9 Splitter Board / CAN Twisted Pair Cable
- Radiator and Chassis Housing

Application Scenarios

In-depth Verification of Domain Controllers

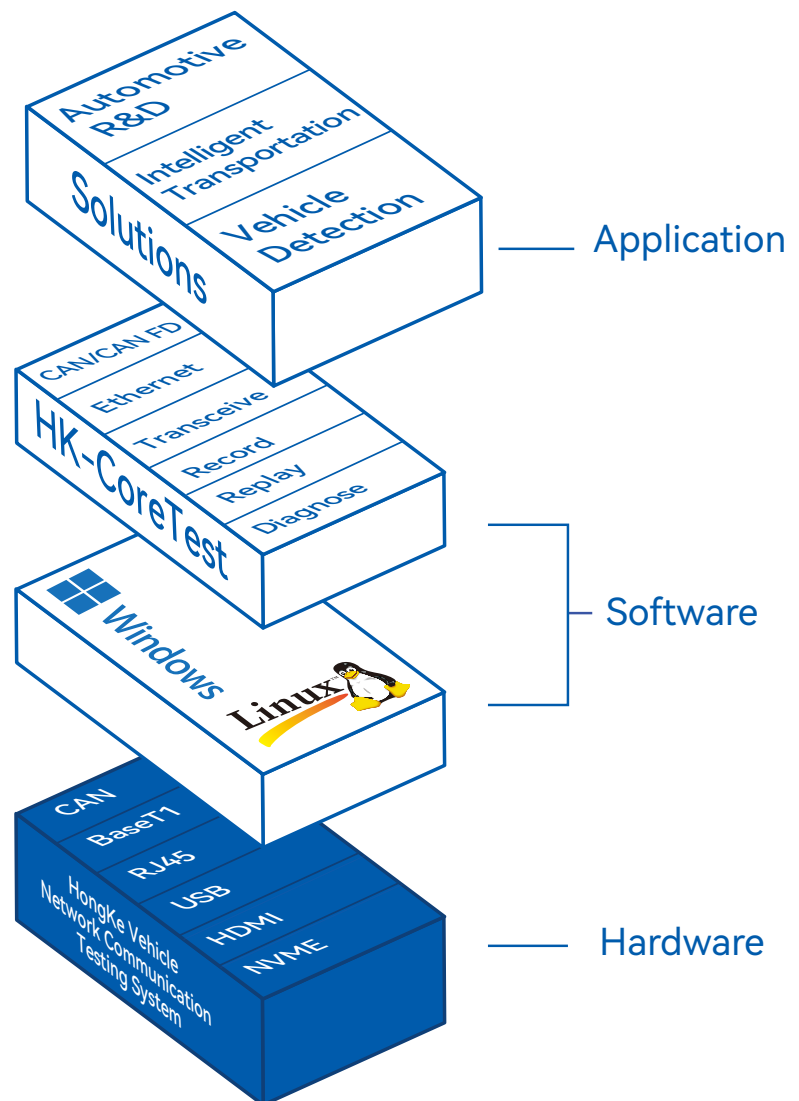Simulates multi–ECU communication environments, tests protocol compatibility and real–time performance

Fault Injection × Fault Tolerance Test

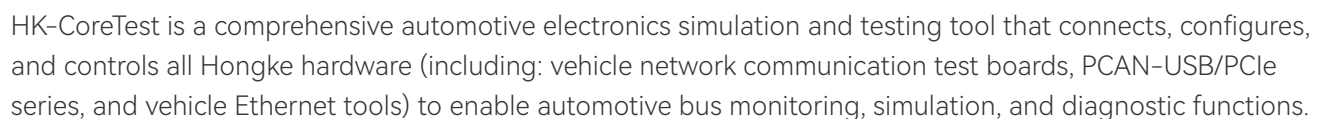Simulates bus errors, network delays, and high-load impacts to verify controller robustness

Full-process Data Recording

Completely captures test process messages, supporting post-event traceback and consistency analysis

Solutions: Automotive R&D, Intelligent Transportation, Vehicle Detection — **Application**

HK-CoreTest: CAN/CAN FD, Ethernet, Transceive, Record, Replay, Diagnose

Windows, Linux — **Software**

HongKe Vehicle Network Communication Testing System: CAN, BaseT1, RJ45, USB, HDMI, NVME — **Hardware**

Usage Precautions

- When installing or removing the motherboard, be sure to disconnect the power supply first to avoid motherboard damage caused by static electricity or misoperation.
- During use, ensure the working environment temperature is within the range of 0℃ – 60℃ to avoid the impact of high or low temperature on motherboard performance.
- When connecting external devices, pay attention to the interface correspondence to avoid interface damage caused by forced plugging/unplugging.
- Regularly check the motherboard's interfaces and cable connections to ensure stable system operation.

HK-CoreTest

HK-CoreTest is a comprehensive automotive electronics simulation and testing tool that connects, configures, and controls all Hongke hardware (including: vehicle network communication test boards, PCAN-USB/PCIe series, and vehicle Ethernet tools) to enable automotive bus monitoring, simulation, and diagnostic functions.

Basic Functions

- Supports CAN/CAN FD and Automotive Ethernet data processing
- Supports DBC and ARXML Databases
- Enables message transmission/monitoring/ playback
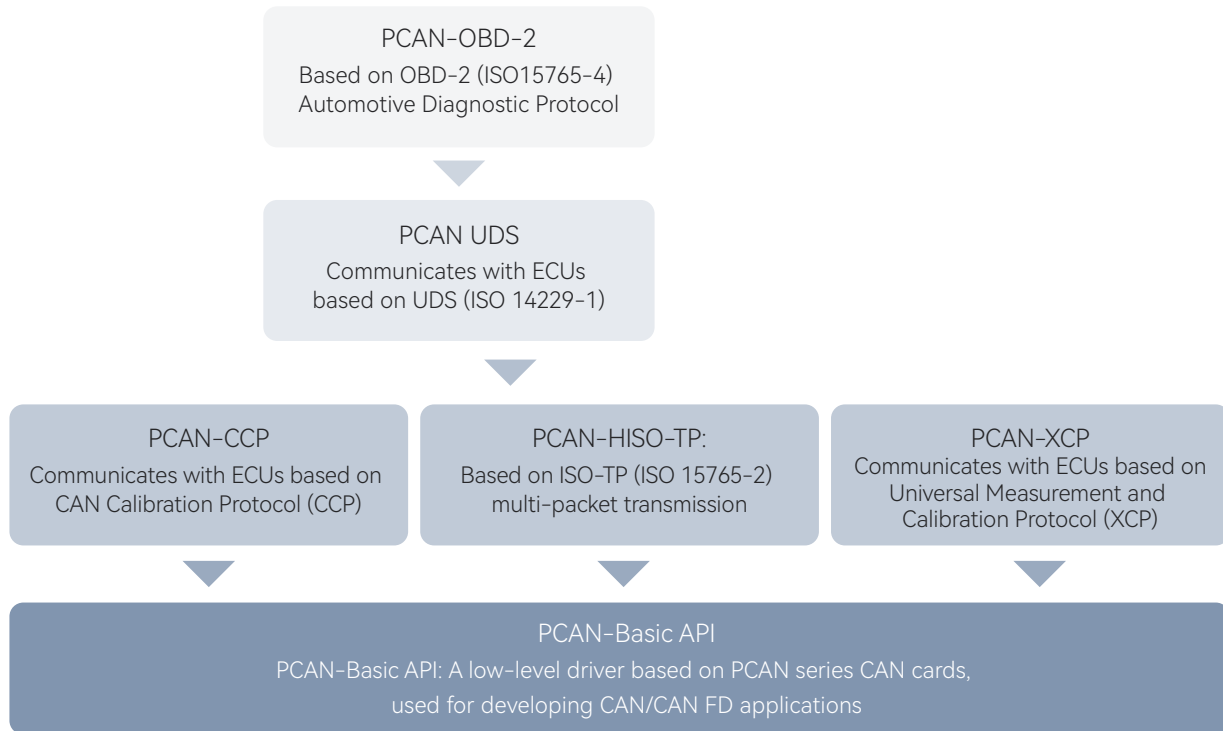- Bus statistics/recording

Advanced Functions

Supports configuration diagnosis and diagnostic services, UDS-based FBL flashing, and enables automated diagnosis.
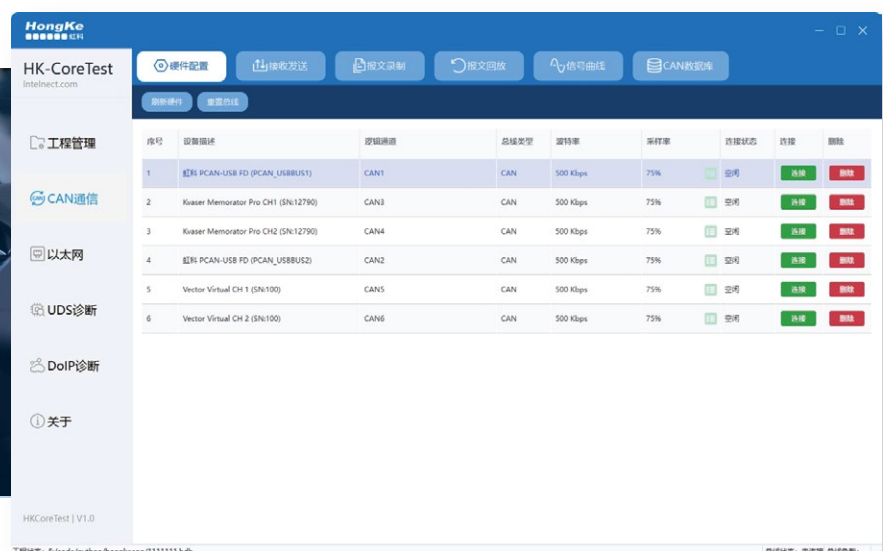
Compatible with PCAN series software (PCAN View, PCAN-Explorer 6, etc.) and API

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┌─────────────────────────────────────┐
│            PCAN-OBD-2                │
│     Based on OBD-2 (ISO15765-4)     │
│     Automotive Diagnostic Protocol  │
└─────────────────────────────────────┘
                  ▼
┌─────────────────────────────────────┐
│            PCAN UDS                  │
│        Communicates with ECUs       │
│       based on UDS (ISO 14229-1)    │
└─────────────────────────────────────┘
                  ▼
┌───────────────────┐ ┌───────────────────┐ ┌───────────────────┐
│    PCAN-CCP       │ │   PCAN-HISO-TP:   │ │    PCAN-XCP       │
│ Communicates with │ │ Based on ISO-TP   │ │ Communicates with │
│ ECUs based on     │ │ (ISO 15765-2)     │ │ ECUs based on     │
│ CAN Calibration   │ │ multi-packet      │ │ Universal         │
│ Protocol (CCP)    │ │ transmission      │ │ Measurement and   │
│                   │ │                   │ │ Calibration       │
│                   │ │                   │ │ Protocol (XCP)    │
└───────────────────┘ └───────────────────┘ └───────────────────┘
         ▼                     ▼                     ▼
┌─────────────────────────────────────────────────────────────────┐
│                      PCAN-Basic API                             │
│  PCAN-Basic API: A low-level driver based on PCAN series CAN    │
│  cards, used for developing CAN/CAN FD applications             │
└─────────────────────────────────────────────────────────────────┘
```

Windows System Environment:

✔ Supports PCAN-Basic for Windows: Includes actual device drivers and interface DLLs (Dynamic Link Libraries), provides API interfaces, supports C++, C#, C++/CLR, Delphi, VB.NET, Java and Python 3.x, and provides corresponding header files and routines

✔ Supports API implementation of ISO-TP standard (ISO 15765-2), UDS standard (ISO 14229-1), etc., supports C++, C#, C++/CLR, Delphi, VB.NET and Python 3.x, and provides corresponding header files and routines

Linux System Environment:

✔ Supports PCAN-Basic for Linux (32/64-bit), provides API interfaces, supports C++, C#, C++/CLR, Delphi, VB.NET, Java and Python 3.x, and provides corresponding header files and routines.

✔ Supports SocketCAN

HongKe

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