

IVN4

ONBOARD INTELLIGENT VEHICLE NETWORK



The Intelligent Vehicle Network – IVN4, is the vehicle logic unit that controls the complete Clever Devices ITS technology package on your vehicle. The brains of the vehicle, IVN4 is a rugged and powerful onboard computer specifically designed to manage your transportation applications, collecting and transmitting data, either in real-time or upon arrival in the depot.

FEATURES & BENEFITS

PURPOSE-BUILT INTELLIGENT PROCESSING POWER

IVN4 combines an Intel processor with a dedicated I/O coprocessor system to orchestrate the flow of information from its many interfaces in real time.

NETWORKING CAPABILITIES

IVN4 supports Ethernet, Wi-Fi and Cellular connectivity. Ethernet is used to connect IVN4 to other systems on the vehicle such as digital signage, fare boxes, routers, onboard DVR and security systems and passenger counters. Optional Wi-Fi capability enables the efficient transmittal of data from these systems when the vehicle returns to the depot. In scenarios where live data updates and real-time vehicle location is necessary, optional cellular capability sends data over a cellular network to a central processing point.

COMMUNICATION INTERFACES

Serial Ports

With 7 serial ports covering both RS232 and RS485 protocols, IVN4 can connect to your most important systems including your card readers, onboard signage, and fare boxes to enable you to collect and transmit data needed to manage your operations.

Heavy-Duty Vehicle Interfaces

Mainstays of modern industrial vehicles, J1708 and J1939 (CAN) communication buses offer a wealth of control and monitoring capabilities. IVN4 fully supports these standards for connecting to bus devices and monitoring critical drivetrain elements using Clever Devices' AVM.

Discrete Signals

IVN4 monitors signals for basic vehicle functions such as the stop request, wheelchair lift, and doors. This information is used to power various ITS applications and can be used to make important decisions about service ridership.

POSITIONING

IVN4 uses a built in multi-constellation navigation receiver and input from an internal gyroscope and the vehicle's odometer signal to maintain positioning even in challenging signal environments. Onboard software utilizes a Kalman filter to ensure accurate positioning of the vehicle at all times.

AUDIO CAPABILITIES

IVN4 has built in audio amplifiers with five (5) audio output channels driving the speakers on the vehicle for both interior and exterior announcements, including automated voice annunciation (AVA). To ensure appropriate volume control of all announcements, IVN4 is equipped with automatic volume control, auto-adjusting to the indoor and outdoor noise levels. Additionally, IVN4 provides operator handset support that enables the driver to easily communicate with dispatch, and a standard PA interface to allow for manual announcements.

IVN4 Specification Chart

ELECTRICAL

Voltage	24 V DC nominal, 18 – 48 V DC range
Power draw	24 W nominal
Electrical environment	SAE J1455 (load dump, inductive switching, mutual coupling)
Switched power supply	Via Run switch: 8 A capacity Via power hold parameter: 4 A capability

COMPUTING

CPU	Intel Atom 1.6 GHz
RAM	2 GB
Mass Storage	4, 8, or 32 GB industrial SSD, depending on configuration
Operating System	Windows 7 Embedded
Additional computing	Integrated I/O coprocessor

NETWORKING

Ethernet	4x 10/100 Ethernet ports w/internal switch
WiFi	Optional 802.11b/g/n
Cellular	Optional internal modem

CONNECTIVITY

Control Head	1x DVI to Transit Control Head (TCH)
USB	4x ports
Serial ports	3x RS232, 3x RS485, 1x switchable
J1708	2x
J1939 CAN	2x
Digital I/O	12x inputs, 4x outputs
Emergency Alarm	Monitored circuit input

POSITIONING

Receiver	32 channel
Constellations	GPS and GLONASS
Time to First Fix	35 seconds cold start, <1 second hot start
Dead Reckoning	Via odometer and internal gyroscope

AUDIO

Audio output	4x channels of 25W into 8 Ohm 1x channel of 10W into 8 Ohm
Automatic volume control	Included
Additional interfaces	PA microphone and volume adjust, Handset

MECHANICAL

Dimensions	3.9" H x 8.4 W x 8.5" D 99 mm H x 213 mm W x 216 mm D
Weight	7.0 lbs / 3.2 kg

ENVIRONMENTAL

Operating temperature	-30° – 60° C
Humidity	SAE J1455
Vibration	SAE J1455
Shock	SAE J1455
EMC	SAE J1113/J1455
Compliance	FCC Part 15 Class A