globalmatix
CONNECT THE UNCONNECTED

4G CAN Telematics Gateway **xTCU**®

ADVANCED TELEMATICS FOR MIXED FLEET

ABOUT GLOBALMATIX

Globalmatix is a global telematics company comprised of industry experts with sales and development presence in the United States and Europe. We are a wholly owned subsidiary of Softing AG/Inc., a public company that has been serving automotive OEM's for 40 years with CAN development hardware and services.

Globalmatix designs and builds OEM grade, best-in-class vehicle telematics gateways, designed in Germany and built in Austria using all in-house development. Globalmatix is also a mobile telecom operator bringing global connectivity using state of the art eSIM technology and utilizing all Tier-1 partners. Globalmatix offers a highly secure IoT telematics platform allowing us to deliver the most comprehensive telematics data to the world's leading OEMs and Telematics Solutions Partners.

As a device manufacturer we specialize in designing purpose-built automotive grade solutions that provide OEM approved security along with the broadest worldwide 4G/LTE data coverage. We leverage a comprehensive design that was created around careful and deliberate access to automotive CANbus signals, by developing a patented design that utilizes a combination of hardware, firmware, network, and platform technologies to bring our customers the highest levels of safety and security while delivering the most comprehensive and precise automotive telematics information.

Globalmatix builds solutions that have been engineered to outlast our customer's fleet investments and brings more data, better data, along with the industrie's highest Security by Design all while maintaining your bottom line.
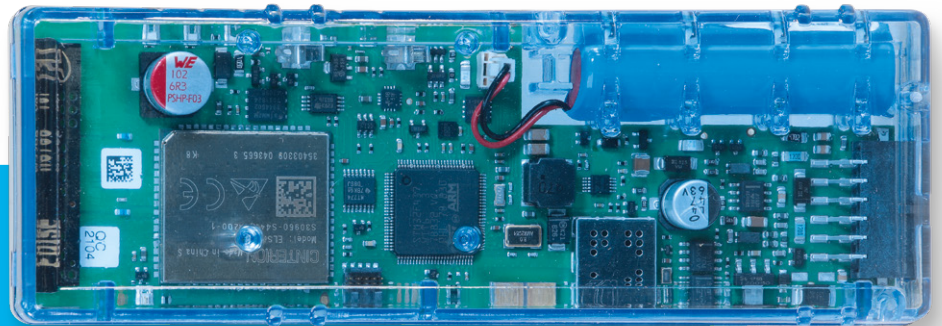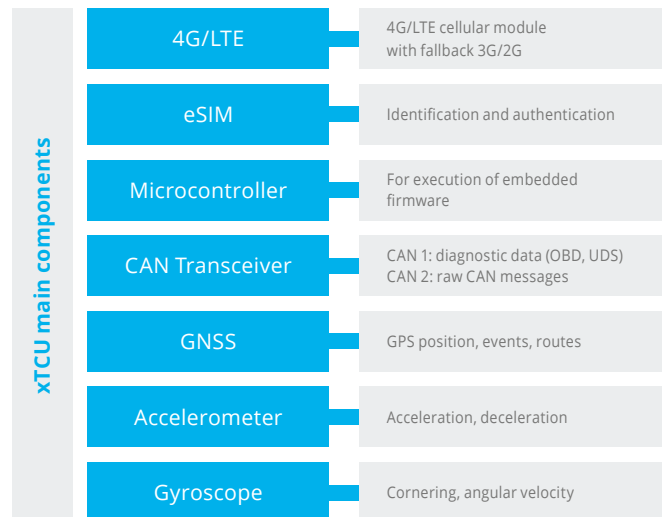
NEW

FROM GPS TELEMATICS TO VEHICLE DIAGNOSTICS

Vehicle data is the new oil. For faster and better business decisions, Telematics Solution Providers require high-resolution and high-quality vehicle data in the cloud. Globalmatix has developed a highly secured vehicle-to-cloud Platform as a Service in order to collect, upload and process multi-brand vehicle data. This is completed in virtual real-time for applications such as logistical vehicle tracking, mixed fleet management, driver behavior, vehicle diagnostic monitoring and management or diagnostic analytics. Advanced vehicle diagnostic data is paramount for more efficient vehicle management and enable Telematics Solution Providers to enter the next generation telematics service level.

The 4G/LTE CAN Telematics Gateway xTCU® of Globalmatix captures position, inertia driving behavior, geofencing, raw CAN signals and diagnostics data in standardized, event-driven and/or smart analytical values, ready for instant use by the applications of Telematics Solution Providers. The xTCU® is always securely connected, anywhere and anytime, and comes with an integrated, flat mobile data plan. It is available for the majority of commercial fleet vehicles.

The 4G/LTE CAN Telematics Gateway xTCU® hardware layout and design, embedded firmware and supply chain is developed in-house and fully controlled by Globalmatix. The xTCU® is designed, developed and manufactured in the EU according to the automotive grade IATF 16949. The outcome is the future-proof, innovative telematic gateway xTCU® made for precision, performance and security to meet today's and next generation connected Car2Cloud™ requirements of the telematics industry.

xTCU main components

Component	Description
4G/LTE	4G/LTE cellular module with fallback 3G/2G
eSIM	Identification and authentication
Microcontroller	For execution of embedded firmware
CAN Transceiver	CAN 1: diagnostic data (OBD, UDS) CAN 2: raw CAN messages
GNSS	GPS position, events, routes
Accelerometer	Acceleration, deceleration
Gyroscope	Cornering, angular velocity

THE MOST IMPORTANT
Reasons Why

There are multiple reasons why OEMs, Tier-1s and TSPs should partner with Globalmatix. We bring you more data, better data and secure data to enable your today's telematic GPS services to the next level of monitoring live vehicle health and diagnostics. This will reduce your fleet customer's TCO by another significant cost step and add value to your proposition for longterm differentiation.

GERMAN ENGINEERING
Our solution is designed in Germany and built in Austria to rigorous automotive OEM standards for manufacturability, security and longevity.

DIFFERENTIATION
We bring a new, innovative, comprehensive, telematics device solution that provides our TSP's with differentiation against their competition using common legacy devices.

EXPERTISE
We are a company comprised of industry experts in the fields in vehicle telematics, connectivity services, and PaaS solutions. Bringing decades of experience to our customers with sales and development presence in EU and USA.

SECURITY BY DESIGN
Our xTCU comes with Security by Design from the vehicle to the chip to the cloud. It is probably the industry highest secured telematics gateway on the market. This is a must have when you connect a device to the CANbus of your customer.

MOBILE CONNECTIVITY
We are a mobile operator bringing global 4G/LTE connectivity by using state of the art eSIM technology and utilizing tier-1 partners. Each gateway comes with an integrated flat data plan for always being connected with the best local cellular networks.

SHORTENED PRE-PROGRAMMING CYCLE
All xTCU comes fully pre-programmed with high or ultra-high GPS resolution; there is no need to struggle with complicated embedded scripting or proprietary device management tools. Data from location, inertia, geofence and vehicle diagnostics are delivered through secure and easy to implement APIs via our development friendly Platform as a Service.

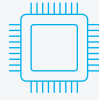### ADVANCED VEHICLE SIGNALS, GOING BEYOND OBD
We are the only one delivering advanced in-vehicle signals for diagnostics such as fuel consumption, mileage/odometer, next service interval, driver seat-belt, tire pressure, tachograph remote download, etc. and this for the commercial vehicles on European and US roads.

KEY FEATURES OF xTCU

4G/LTE Penta-Band cellular modem
High-speed 4G/LTE module for fast M2M/IoT applications. Penta LTE-band, with fallback dual-band 3G and dual-band 2G.

STM Micro Controller ARM Cortex-M4 32 Bit RISC
Dynamic power scaling 32 Bit RISC Micro Controller, storage 8 MB. For mixed, multi-brand fleet, advanced over-the-air updates, configurations and remote management.

72 channel GNSS receiver
High-precision 72-channel GNSS receiver (GPS, Galileo, GLONASS, BeiDou) -167dBm navigation sensitivity with security and integrity protection, TTFF (hot) at 1 sec.

3D digital Accelerometer
High-sensitivity 3-axis digital Accelerometer for instant acceleration monitoring of harsh acceleration and deceleration, accident event and driver behavior, auto-calibration.

Advanced API-Center in the Cloud
Advanced configuration of the xTCU® allows to program and control xTCU® by rich sets of APIs, remotely over-the-air (OTA).

Firmware and Configuration over-the-air (OTA)
Entire or incremental firmware updates and remote vehicle over-the-air (OTA) configuration for maintenance, new features, vehicle-specific and customer-specific parameters.

Platform as a Service
Availability of 99.5% (end-to-end), network surveillance 24h/7d/365.

Embedded SIM
High-security eSIM (format MFF2) with data encryption, multiple IMSI and multiple Profile UICC SIM technology, SIM Application Toolkit, OTA programmable, remote file/applet management. eSIM-based Security by Design for connected Car2Cloud™.

CAN transceiver for advanced vehicle diagnostics
Automotive fault protected, high-speed CAN transceiver 500 Kbit/sec, fail-safe, auto-sensing. Support of simultaneous diagnostic communication protocols, such as UDS, KWP 2000 and CAN (VW TP 2.0 or ISO TP). Support of mixed, multi-brand vehicle diagnostics for the majority of commercial fleet vehicles.

3-axis digital Gyroscope
High-precision 3-axis digital Gyroscope for instant rotational motion monitoring, harsh cornering (lane change left/right event), driver behavior, always on, auto-calibration.

Smart Geofencing
xTCU® embedded rectangular or circular objects as geographical fencing, up to 50 user-defined objects, uploaded and managed on xTCU® device level by geofencing events, drive-in/-out.

Flat telematic data plan
The subscription comes with a flat data plan for worldwide connectivity of the best local cellular networks. Networks are available through access to multiple MNOs in every country to ensure that the gateway is always connected.

General Data Protection Regulation (GDPR, DSGVO)
To fully comply with GDPR, API can shutting off generation or transmission of signals such as location, inertia or driver card ID (from J1939 FMS) at the level of the xTCU®.

BUNDLES WITH AVL FEATURES
A quality track & trace service is the foundation of your business. We have made this technical reliable for automatic vehicle location, it comes with a subscription of high or ultra-high resolution, driver behavior and internal geofencing. All you need to ensure that you are the best.

INSTALLATION
xTCU's installation is easy and tamper-safe. The gateway is best-in-class pre-configured, but can be configured and controlled by easy-of-use APIs according to your use cases over-the-air. We call this: install it - set it - forget it. The gateway has smart internal antennas and auto-calibration.

FAST AND EASY INTEGRATION
Connecting the xTCU to your platform is just a simple MQTT connection away. Once done, it is the secure channel to configure, collect and exchange such as GPS positions or in-vehicle data.

TECHNICAL SPECIFICATION

Physical Specification	
Dimension	L 146, W 50, H 19 mm
Weight	90 g
Material	Polycarbonate UL-94 V0
Protection	IP30 sealed

Electrical Specification	
Operation	12 VDC or 24 VDC (7-32 VDC)
Full	500 mA at 12 V
4G/standby/sleep	120/50/4 mA at 12 V

Environment Specification	
Operation	-30 °C to +85 °C
Storage	-40 °C to +85 °C
Humidity	MSL Level 1: 85% RH@30 °C

Internal Battery	
Capacity	Li-Ion 800 mAh
Operation	voltage 3.7 V

CPU Specification	
MCU Module	STM32F4 32bit RISC
Core	ARM Cortex-M4 with FPU
Operation	180 MHz, 225 DMIPS
Flash/RAM	2 MB/8MB

4G/LTE Mobile GSM Network	
4G/LTE Module	CAT-1, 10 Mbit/sec (downlink), 5 Mbit/sec (uplink), fallback 3G/2G
4G Penta-Band	1, 3, 8, 20, 28 (700/800/900/1800/2100 MHz)
3G Dual-Band	UMTS/HSPA+ Dual-Band 1, 8 (900/2100 MHz)
2G Dual-Band	GSM Dual-Band 900/1800 MHz, GPRS Class-12
Embedded SIM	MMF2 SIM applet, release 8 LTE
Approvals	CE, R&TTE, GCF, FCC, PTCRB, UC, UL
Antenna	internal, penta-band, high gain

Global Navigation Satellite System	
Coverage	GPS, Galileo, Glonass, BeiDou
Channels	72, concurrent GNSS: 3
Navigation	-167 dBm sensitivity
TTFF	hot 1s, cold 26s
Multi-GNSS	yes, AssistNow
Pre-configured	GPS event of 25° angle change, 120 sec time, current speed x 4
Antenna	internal, ceramic, high gain

Inertial forces	
Inertia module	3D Accelerometer and 3-axis Gyroscope
Auto-calibration	yes
Sensitivity	acceleration full scale range of ±2/±4/±8/±16g, angular rate range of ±125/±250/±500/±1000/±2000 dps

Geofencing	
Geofence event	rectangular or circular objects, up to 50 objects, stored and handled on the device events, drive-in/-out

CAN	
CAN module	High-speed CAN transceiver, ISO 11898 and SAE J1939
CAN Speed	up to 500 kBit/sec, auto-sensing
Protection	automotive fault protected, fail-safe
CAN transceiver	2

Diagnostic Communication	
Protocols	OBD, KWP 2000 and UDS on K-Line and CAN (VW TP 2.0 or ISO TP)

NFC	
NFC module	13.56 MHz, 64 kB EEPROM
Indicator	LED, buzzer
Antenna	internal, high gain

Security and functional Safety	
CAN lock	lock to read/write to/from CAN, while vehicle is moving
Car2Cloud™	session based, double authentication from car to chip and chip to cloud, eSIMbased security anchor, patent pending
FOTA	digital-signed and verified firmware updates of xTCU®
Config OTA	digital-signed and verified configuration/programming of xTCU®

Product Certifications	
Europe	E-Mark, CE, RED
America	FCC, PTCRB, CE
4G/LTE	3GPP compliance
Embedded SIM	ETSI 102671

Automotive Specifications	
Specifications	CAN (ISO 11898 and SAE J1939), K-Line (ISO 14230), TP 2.0 (SAE J2819), ISO TP (ISO 15765), CARB (ISO 9141-2), OBD (ISO 15031, SAE J1979), KWP 2000 (ISO 14230), UDS (ISO 14299), OBD Connector (SAE J1962)

IoT Transport Protocol	
Interconnection	Message Queuing Telemetry Transport (MQTT) protocol (ISO/IEC 20922) to connect platforms for data exchange

Installation	
Mounting	wall-mounting, adhesive or tie-wrap
Installation	under dashboard
Easy install	by OBD-cable on OBD to 12-pin Molex
Tamper-safe	by 12-wire cable behind OBD connector to 12-pin Molex

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