

Document: **User Manual**

Product: **GM OnStar Gen12**  
Telematics Connectivity Platform Module (TCP)

Model: **G12U400G1**

Date: **28. April 2023**

Public

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## 1 Scope of Document

The aim of this document is to provide a short overview on the Telematics Connectivity Platform Module (TCP) of model G12U400G1 and to describe the TCP.

## 2 General Product Information

### 2.1 Product type:

Telematics Connectivity Platform Module (TCP)

### 2.2 Manufacturer, Applicant:

Continental Automotive Systems, Inc.  
 21440 West Lake Cook Road  
 Deer Park, IL 60010  
 United States of America

### 2.3 Brand/Trademark:

Continental

### 2.4 Design Location:

Continental Automotive Systems, Inc.  
 21440 West Lake Cook Road  
 Deer Park, IL 60010  
 United States of America

### 2.5 Factory/Manufacturing Location:

Continental Automotive Maquila Mexico, S. de R.L. de C.V.  
 Carretera Panamericana Sur No, Ext. 114+354 No. Int. 9  
 Colonia: Parque Industrial Finsa Aguascalientes C.P. 20393

### 2.6 Country of origin:

Mexico

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### 3 SYSTEM OVERVIEW

#### 3.1 Short Description of the TCP

The product described herein is a Telematics Connectivity Platform Module (TCP) for the GM's GEN12 ONSTAR (Telematics and Connectivity Platform) program. It consists of integrated telematics transceivers for different wireless services, as well as several interfaces to the vehicle.

The TCP is fully assembled, but the cellular functionality is completely deactivated, no transmitting, no reception, no scanning, totally inactive. Only the GNSS functionality is active.

### 4 UDA Variants

TCP Variant	TCP Model number	NAD Model Number
TCP UDA*)	G12U400G1	FE4NA0110

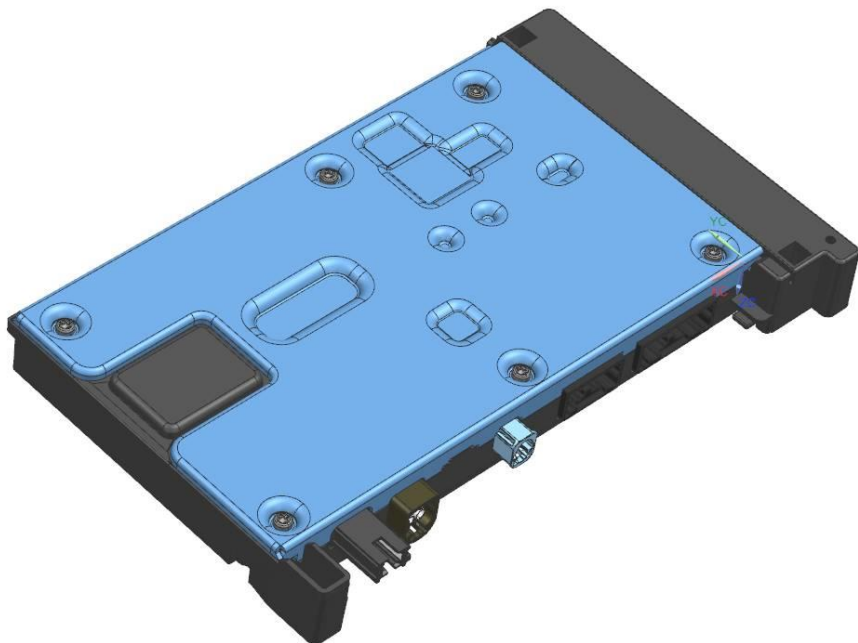
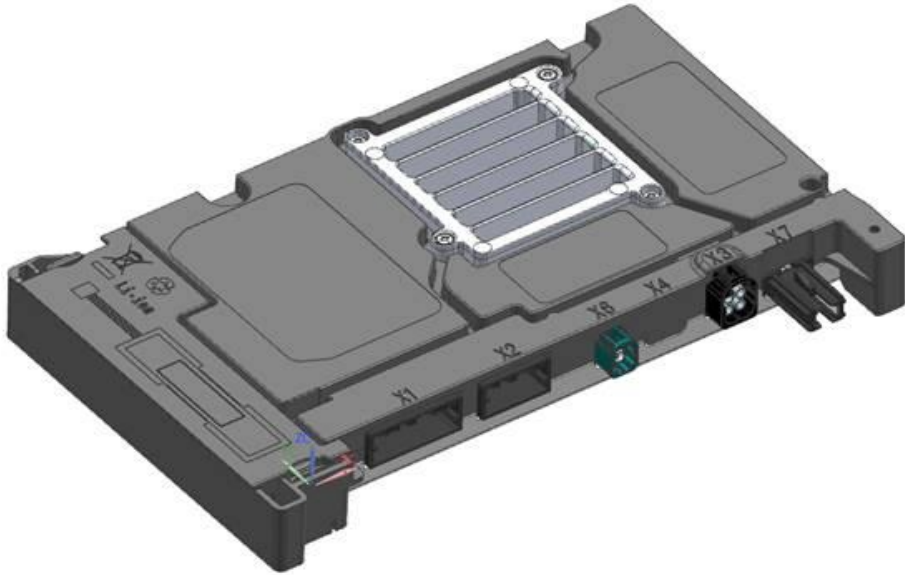
Cellular NAD Module Model name	Cellular NAD Module Brand Name
FE4NA0110	Continental

\*) UDA variant stands for GNSS only active variant with cellular functions deactivated.

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## 5 TCP Mechanical design

### 5.1 Pictures of the housing



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## 6 Description of the TCP module

### 6.1 Product features

The model main parts are:

- NAD with 3G/4G/LTE and GNSS (only GNSS supported)
- External and internal antennas (cellular functionality deactivated)
- Cellular (inactive)
- GNSS L1 (active)
- Glonass, Beidou, Galileo, GPS

External interfaces:

- Main power supply
- Primary LTE antennas (deactivated)
- GPS Input
- Three buttons keypad (not supported)
- LED control
- External microphone (MIC+/-) input/output (not supported)
- External backup speaker (SPK+/-) output (not supported)
- CAN
- Ethernet 1000BaseT1
- Debug interfaces (USB, UART)

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Ethernet:

Model number	Speed
G12U400G1	1 Gbit/s

## 6.2 Wireless services:

- Global Positioning and Navigation: GPS, GNSS, Beidou, Glonass,
- AGNSS not supported

## 6.3 TCP external Antennas (cellular functionality deactivated):

- Cell ANT1: 3G/LTE1 (outside vehicle), primary external
- Cell ANT2: LTE2 (Rx LTE only, outside vehicle), secondary external
- GNSS patch (outside vehicle)

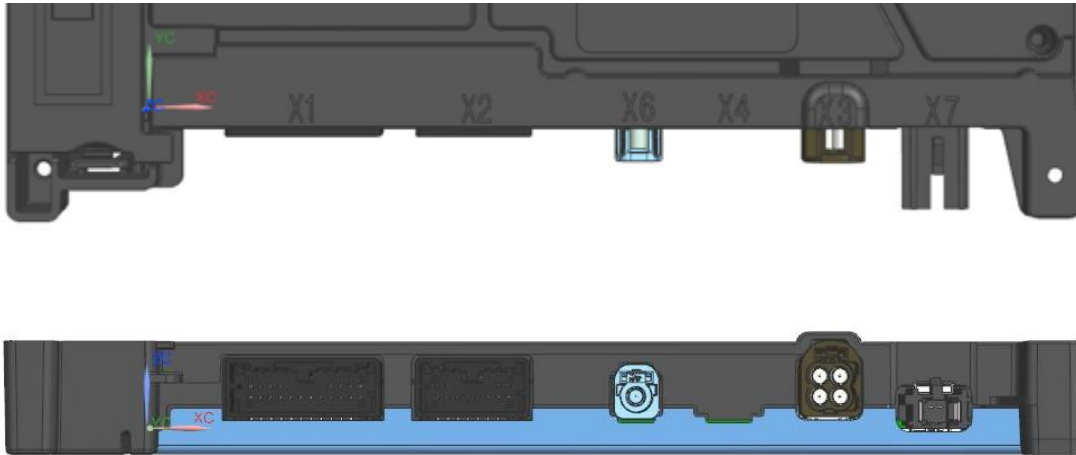
## 6.4 TCP internal Antennas (cellular functionality deactivated):

- Cell/Backup ANT3, internal ANT1: 3G/4G/LTE1 (inside vehicle), primary internal
- Cell/Backup ANT4, internal ANT2: 4G/LTE2 (Rx LTE only, inside vehicle), secondary internal

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## 6.5 Connectors:

The GM GEN12 TCP has 6 types (fully featured) of connectors (from left to right):



- X1: 20-Pin Main Signal Connector
- X2: 12-Pin Audio
- X6: Single RF: C-V2X-2
- X3: Quad RF (Cellular PRIMARY, DRX0/GNSS, C-V2X-1)
- X7: 1000BASET1

**This variant does not support cellular V2X (C-V2X). Therefore, it does not have the X6 connector and CV2X-1 signal populated.**

### 6.5.1 X1 20-Pin Main Connector Pin Out

Pin	Signal	Pin	Signal	Pin	Signal
1	VBATT	8	CAN_L (IN)	15	
2	VBATT	9	GND	16	
3	10V_REF	10	GND	17	
4	Keypad_IN	11		18	GND
5	Green_LED	12		19	CAN_H (OUT)
6	Red_LED	13		20	CAN_L (OUT)
7	CAN_H (IN)	14		*Continental Debug Signals	

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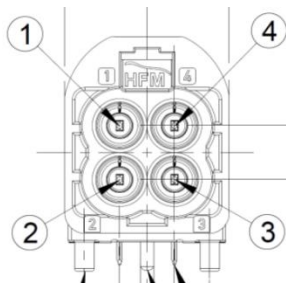


### 6.5.2 X2 12-Pin Audio Connector Pin Out

Pin	Signal		Pin	Signal
1	SPKR_P		7	MIC_OUT_N
2	SPKR_N		8	MIC_IN_P
3	Not Connected		9	MIC_IN_N
4	Not Connected		10	MIC Shield
5	GND		11	GND
6	MIC_OUT_P		12	GND

### 6.5.3 X3 Quad RF Connector

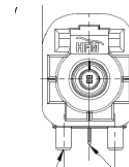
Pin	Signal
1	GNSS/DRX0
2	V2X_1
3	DRX0
4	Primary LTE



### 6.5.4 X6 Single RF Connector (Present only when V2X is supported)

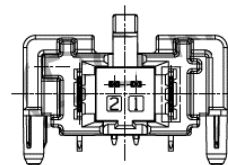
Not assembled:

Pin	Signal
1	V2X_2



### 6.5.5 X7 1000BASET1 Connector

Pin	Signal
1	1000BASET1+
2	1000BASET1-



## 7 Technical data

### 7.1 Operating temperature Range

-40°C to 90°C

### 7.2 Supply Voltage

Nominal.: 12 V dc

Supply Voltage Range: 6 V to 18 V dc

### 7.3 Supply current consumption

Typical standby current: 250mA (at 12 V)

Typical active current consumption: 350mA (at 12 V)

Maximum active current consumption: 600mA dc (at 12 V)

### 7.4 Power Consumption

Typical power consumption: 5.5W  
(GNSS active)

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## 8 Wireless services

### 8.1 GNSS receiver:

Model number	GNSS
G12U400G1	L1

Wireless service:	GNSS Receiver
Frequency bands / range:	<p>L1: GNSS L1 Frequency Band: Beidou-B1I, GalileoE1, GLONASS-G1, GPS-L1 and SBAS-L1</p> <p>SBAS supported: EGNOS/MSAS/QZSS/WAAS/GAGAN</p> <p>AGNSS not supported.</p>

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## 9 Owner Manual statements

### 9.1 Owner manual USA

Continental  
 Model: G12U400G1  
 Contains FCC ID: LHJ-FE4NA0210

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines.

[It is not required to keep a minimum distance between the TCP and human beings.](#)

#### FCC Class B digital device notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Continental Automotive Systems, Inc. has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

END OF DOCUMENT

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