

# OEM Development Kit

## QUICK START GUIDE

The OEM Development Kit (Dev Kit) provides a convenient way to access OEM6™, OEMV3G™ or OEMV™ input and output signals.

### BOX CONTENTS

In addition to this *Quick Start Guide*, the following is provided with your OEM6 Dev Kit:

- PCB assembly (NovAtel Part #01018801)
- Two 200mm MMCX R/A plug to MMCX R/A plug coaxial cables (Novatel Part #01018835)
- One 150mm MMCX R/A plug to MCX R/A plug coaxial cable (Novatel Part #01018836)
- Dev Kit power assembly cable (NovAtel Part #01018570)
- 6ft USB cable type A to mini B 5-pin (NovAtel Part #60723111)
- 6ft null modem cable (Novatel Part #01017658, may contain DEHP), DB-9 female/female, to connect to COM1, COM2 or COM3. Users will provide cables for COM1-RS422, AUX, CAN1 and CAN2 connection, as necessary.
- Five adhesive rubber feet (NovAtel Part #28325059)
- Eighteen 2mm pitch jumpers (NovAtel Part #21623400)
- Six M3x0.5x12mm Hex Stand-offs (NovAtel Part #28423180)
- Four M3x0.5x14mm Hex Stand-offs (NovAtel Part #28423060)
- Twelve M3x0.5x6m Philips Screws (NovAtel Part #28523028)

### ADDITIONAL EQUIPMENT REQUIRED

Depending on the application, some or all of the following will be required:

- OEM6, OEMV3G or OEMV series receiver
- A Microsoft Windows-based computing device with a RS-232 DB-9, USB port or 10/100BASE-T port
- A +4.5 to 24 V DC power supply, capable of at least 10W A quality GNSS antenna, such as those shown in *Table 13*.
- A 50 ohm coaxial cable with a male TNC connector at the Dev Kit end, for connecting to the ANT port
- If necessary, a 50 ohm coaxial cable with a male BNC connector at the Dev Kit end, for connecting to an EXT OSC port (see External Oscillator on page 2)
- An RJ-45 Ethernet cable

Figure 1 shows the location of the Dev Kit connectors and indicators.

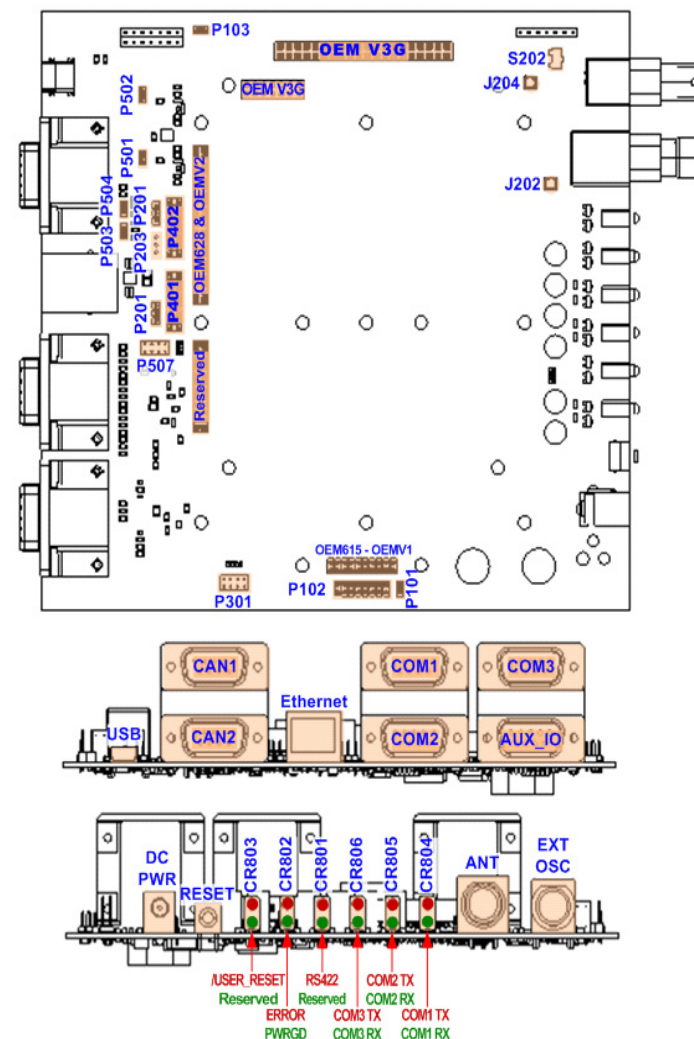


Figure 1: OEM6 Dev Kit Connector and Indicator Locations

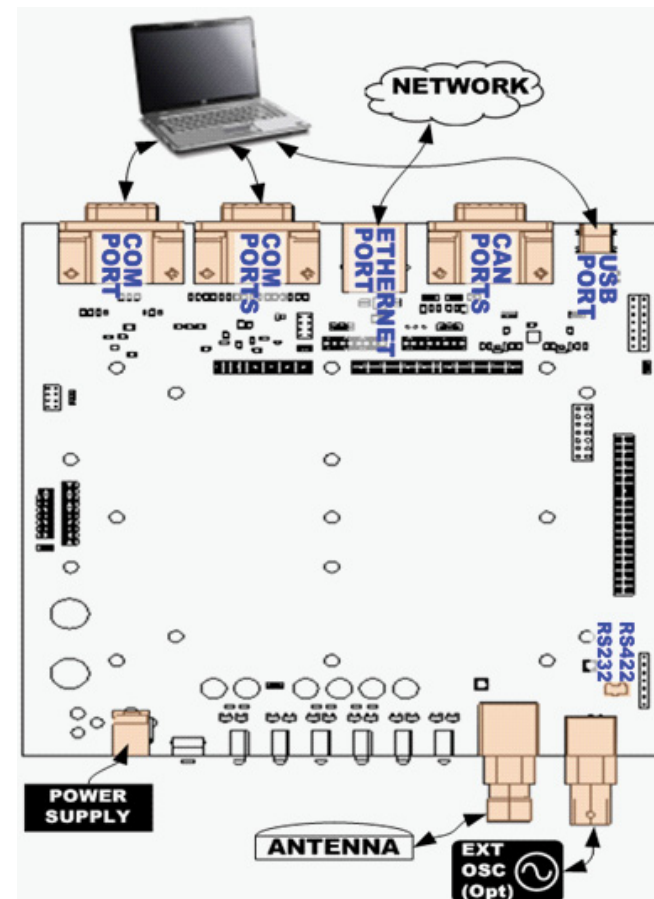


Figure 2: Connecting to the OEM6 Dev Kit

### USING THE OEM DEV KIT

**CAUTION:** Follow the ESD practices outlined in Appendix B of the *OEM6 Family Installation and Operation User Manual*.

1. If you have not done so already, install NovAtel PC utilities (Connect and Convert4) on your computing device. These utilities are available from Support | Firmware/Software and Manuals | Product Updates on the NovAtel Web site.
2. Affix the rubber feet (or standoffs) to the underside of the Dev Kit board, on the white landing pads, to avoid potential damage.
3. Jumper the board as necessary, as outlined in *Table 1* through *Table 7* and any CAUTION notes found below.
4. Place the Dev Kit on a flat surface so that it is supported, for example, by the rubber feet.
5. Install one of the supported OEM receivers on the Dev Kit board.
6. Set the power supply to 4.5 to 24 VDC, then turn off the power.
7. Connect the power cord to the Dev Kit and to the power supply, then turn on the power supply.
8. Connect the Dev Kit to other equipment (antenna, for example), as necessary, as illustrated in *Figure 2*. You can connect to other equipment with the power on.

Table 1: Receiver Card Type Jumper Positions

Receiver Card Type	P301	P1001
OEM615™/OEMV1™/OEMSTAR™	Pins 1-2	No Jumper
OEMV3G™	Pins 3-4	Jumper
OEM628™/OEMV2™	Pins 5-6	No Jumper
Reserved	Pins 7-8	No Jumper

Table 2: Ext. ANT/LNA Power Jumper Positions

Shorted Pins	P101	P103
1-2	OEM615/OEMV1/OEMSTAR Ant./LNA Int. Pwr. EN	OEMV3G™ Ant./LNA Int. Pwr. EN

**CAUTION:** Do not connect P101 or P102 if you have an external voltage on the Ant/LNA feed cable.

Table 3: CAN BUS Jumper Positions

Shorted Pins	P501	P502	P503	P504
1-2	CAN1 120Ω	CAN1 120Ω	Opt. CAN 3V3	Opt. CAN 3V3

**Table 4: OEM615™/OEMV1™/OEMSTAR™ IO Type Jumper Positions**

P102		P102	
Pins 1-2:EVENT1 (615/V1/STAR)	OR	Pins 3-4:COM3-TX(615/V1) <sup>1</sup>	
Pins 9-10:COM3-RX (615/V1) <sup>1</sup>	OR	Pins 11-12:USB-D+ (615/V1/STAR)	
Pins 5-6:EVENT2 (615/V1)	OR	Pins 7-8:CAN1-TX (615/V1)	
Pins 13-14:CAN1-RX (615/V1)	OR	Pins 15-16:VARF (615/V1/STAR)	

1.Enable COM3 INTERFACEMODE sotware command.

**Table 5: AUX IO Jumper Positions**

Receiver Card Type	EVENT1 EN P401	EVENT2 EN P401	PPSOUT EN P402	VARF EN P402
OEM615/OEMV1	Pins 1-2	Pins 9-10	Pins 1-2	Pins 9-10
OEMV3G	Pins 3-4	Pins 11-12	Pins 3-4	Pins 11-12
OEM628/OEMV2	Pins 5-6	Pins 13-14	Pins 5-6	Pins 13-14

**Table 6: COM1 Port Jumper Positions**

Receiver Card Type	P507 Pins 1-2	P507 Pins 3-4	P507 Pins 5-6	P507 Pins 7-8
OEM615/OEMV1	Jumper	Jumper	Jumper	Jumper
OEMV3G	No Jumper	No Jumper	No Jumper	No Jumper
OEM628/OEMV2	No Jumper	No Jumper	No Jumper	No Jumper

**Table 7: OEM628™ IO Type Jumper Positions**

Shorted Pins	P201	P202	P203
1-2	628EVENT2	OEMV3G RS422 ON POWER UP	I2C_SCL
2-3	628COM3(0) <sup>1</sup>	628COM3(1) <sup>1</sup>	I2C_SDA



**CAUTION:** Do not connect P503 or P504 if you have an external voltage on the CAN bus.

**Table 8: Dev Kit Connectors**

Connector	Description
COM1,COM2 & COM3 <sup>1</sup>	DB-9 male
AUX <sup>2</sup>	DB-9 female
CAN1 & CAN2	DB-9 male, providing support for CAN bus
USB	USB Mini AB
ETHERNET	RJ45, 10/100BASE-T
RS-232/RS-422 SW	Switch to configure COM1 as RS232 or RS422. Setting takes effect on power cycle.
PWR	Connector power cord to this connector
RST	Press button to perform soft reset on card
ANT	TNC female connector
EXT OSC	BNC female connector (applications involving a customer provided external oscillator).

2. Configure COM1, COM2 and COM3 baud rate with SERIALCONFIG command (300 to 921600 bps).

**Table 9: Dev Kit Status LEDs**

Indicator	RED Indicator	GREEN Indicator
CR801	RS422	Reserved
CR802	ERROR	PWRGD
CR803	/USER_RESET	Reserved
CR804	COM1 <sup>3</sup> Tx is active	COM1 <sup>3</sup> Rx is active
CR805	COM2 Tx is active	COM2 Rx is active
CR806	COM3 Tx is active	COM3 Rx is active

**Table 10: COM/AUX Connector Pint-Outs**

Pin	COM1	COM2	COM3	AUX
1	NC	NC	NC	EVENT1
2	RXD1	RXD2	RXD3	EVENT2
3	TXD1	TXD2	TXD3	Reserved
4	NC	NC	NC	PPSOUT
5	GND	GND	GND	USER_RESET
6	NC	NC	NC	GND
7	RTS1	RTS2	NC	VARF
8	CTS1	CTS2	NC	Reserved
9	NC	NC	NC	GND

**Table 11: CAN1/CAN2 Connector Pin-Outs**

Pin	CAN1	CAN2
1	NC	NC
2	CAN_L	CAN_L
3	GND	GND
4	NC	NC
5	GND	GND
6	GND	GND
7	CAN_H	CAN_H
8	NC	NC
9	OPTIONAL 3V3 (see Table 3)	OPTIONAL 3V3 (see Table 3)

3.COM1 only supports RS232 operating mode.

**Table 12: USB Connector Pin-Outs**

Pin	Description
1	Reserved
2	D-
3	D+
4	Reserved
5	GND

**EXTERNAL OSCILLATOR**

Some applications require greater precision than that possible with the OEM6™ VCTCXO, in which case you may need to connect the OEM6™ to an external high-stability oscillator, either 5MHz or 10MHz. For further information, refer to Chapter 3 Installation, OM-20000128 OEM6™ Family Installation and Operation User Manual.


## ANTENNA SELECTION

An active antenna is recommended to compensate for the cable loss between the antenna and receiver. The GNSS antenna you choose will depend on your particular application. NovAtel offers a wide range of antennas, as shown in *Table 13*:

**Table 13: NovAtel GNSS Antennas**

Models	Frequencies Supported	GPS	GLO-NASS	Galileo
ANT-35C1GA-TW-N ANT-26C1GA-TBW-N	L1 only	✓		
ANT-35C2GA-TW ANT-A72GA-TW-N ANT-C2GA-TW-N	L1 and L2	✓		
GPS-702L ANT-A72GLA4-TW-N ANT-A72GLA-TW-N	L1 and L2 plus L-band	✓		
GPS-701GGL ANT-A71-GLA4-TW	L1 plus L- band	✓	✓	
GPS-701-GG	L1 only	✓	✓	
GPS-702-GGL, ANT-A72GOLA-TW	L1 and L2 plus L-band	✓	✓	
GPS-702-GG	L1 and L2	✓	✓	
GPS-703-GGG	L1, L2, L5, E5a and E5b	✓	✓	✓

## REGULATORY NOTICE

 **WARNING!** The OEM Development Kit is an electronic subassembly intended for evaluation purposes only - it is not a finished end-user product.

As an electronic subassembly, it is not subject to the technical requirements for CE marking or for CFR47 FCC Part 15, subpart B. This equipment is intended for use in a laboratory test environment only. It generates, uses, and can radiate radio frequency energy and has not been tested for compliance with the limits of digital devices pursuant to subpart B of part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment in other environments may cause interference with radio communications, in which case the user at his own expense will be required to take whatever measures necessary to correct this interference.

NOVATEL SHALL NOT BE LIABLE FOR ANY LOSS, DAMAGE OR EXPENSE OF COMPANY ARISING DIRECTLY OR INDIRECTLY OUT OF THE COMPANY'S USE OF THE EQUIPMENT UNDER THIS AGREEMENT. IN NO EVENT SHALL NOVATEL BE LIABLE TO THE COMPANY FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR NATURE DUE TO ANY CAUSE.

**NOTE:** The OEM Dev Kit is not intended to be used as a reference design for implementation in end applications. Original component manufacturer design recommendations should be sought before incorporating any components used on the Dev Kit into an end application design.

## QUESTIONS OR COMMENTS

The Dev Kit BOM, schematics and assembly drawings are available on the Support page of the NovAtel Web site. If you have any questions or comments regarding your OEM Dev Kit, please contact NovAtel using one of these methods:

Email: [support@novatel.com](mailto:support@novatel.com)

Web: [www.novatel.com](http://www.novatel.com)

Phone: 1-800-NOVATEL (U.S. & Canada)  
403-295-4900 (International)

Fax: 403-295-4901

