

Quick start guide for GEN2.5 OnBoard Charger

PROJECT NAME

Standard GEN2.5 OnBoard Charger 3.5 kW

ABSTRACT / CONCLUSION

Quick start guide for GEN2.5 OBC 3.5 kW.

Part number: EV250035

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1. Connections

Connect the OnBord Charger with all connectors:

- High voltage AC connector
- High voltage DC connector
- Low voltage (signal) connector
- Cooling connectors

2. Wake up

2.1 Wake up with Control Pilot signal

Connect a CP signal of 12V high level for at least 500ms.

2.2 Wake up with CAN signal

Send message 0x171 with a cycle time of 20ms and at least 5 frames. The data sent by the message does not matter, you can use e.g. 00 00 00 00 00 00 00 00.

Message Name	Message Parameters						Triggering				Data Field								
	Identifier	Channel	Frame	DLC	BRS	Send	Key	Cycle Time [ms]	Burst	HighLoad	Gateway	0	1	2	3	4	5	6	7
> VSeA3_5KW_OBC::Wake_Up	VSeA3_5KW_OBC::171	CAN 1	Data	8	<input type="checkbox"/>	now	<input type="checkbox"/> Test <input type="checkbox"/> t <input checked="" type="checkbox"/>	20	<input type="checkbox"/>	<input type="checkbox"/> off <input type="checkbox"/>		0	0	0	0	0	0	0	0

After having connected a CP signal or sent message 0x171, the charger should respond and messages 0x319 and 0x349 should be visible in the CAN trace.

4.524423	CAN 1	319	OBC1_CCU_1_319	Rx	8	7D 00 C8 A5 00 40 04 0D
4.524667	CAN 1	349	OBC1_CCU_2_349	Rx	8	00 00 00 3F 00 0F 40 0D

3. CAN communication

3.1 Message 0x261

At last, send message 0x261 with a cycle time of 100ms. This message determines if the charger is in Sleep mode or Normal mode. As we want to operate the charger now, Normal mode is required.

- Normal mode: send 00 00 00 00 00 00 00 00
- Sleep mode: send 80 00 00 00 00 00 00 00

Message Name	Message Parameters						Triggering				Data Field								
	Identifier	Channel	Frame	DLC	BRS	Send	Key	Cycle Time [ms]	Burst	HighLoad	Gateway	0	1	2	3	4	5	6	7
> VSeA3_5KW_OBC::VCU_OBC_261	VSeA3_5KW_OBC::261	CAN 1	Data	8	<input type="checkbox"/>	now	<input type="checkbox"/> Test <input type="checkbox"/> t <input checked="" type="checkbox"/>	100	<input type="checkbox"/>	<input type="checkbox"/> off <input type="checkbox"/>		0	0	0	0	0	0	0	0

SB	Signal Name	Raw Value	Phys Value	Unit	Dec	Phys Step	Inc	Wave form generation
62	VCUPlugConnectLamp	<input type="checkbox"/> 0	OFF	-	-	1	+	None Define...
63	VCUOBCSleep	<input type="checkbox"/> 0	Normal	-	-	1	+	None Define...
61	VCUChrgStsLamp	<input type="checkbox"/> 0	Off	-	-	1	+	None Define...

3.2 Message 0x305

Now the values for charging need to be defined. Enter your requested values for power (*BCUOBCTMaxChrgPwrAvl*), voltage (*BCUChrgUReq*) and current (*BCUChrgIReq*) and make sure *BCUOBCHeatModeCtrl* is set to charging mode. More details regarding calculating the values can be found in the CAN protocol specification. Then send message 0x305 with a cycle time of 100ms.

Message Name	Message Parameters						Triggering						Data Field						
	Identifier	Channel	Frame	DLC	BRS	Send	Key	Cycle Time [ms]	Burst	HighLoad	Gateway	0	1	2	3	4	5	6	7
> VSeA3_SKW_OBC:BCU_OBC_305 ...	VSeA3_5KW_OBC:305	CAN 1	Data	8		now	<input type="checkbox"/> Test <input type="checkbox"/> t <input checked="" type="checkbox"/>	100	1	<input type="checkbox"/> off <input type="checkbox"/>		0	0	0	0	0	0	0	0

SB	Signal Name	Raw Value	Phys Value	Unit	Dec	Phys Step	Inc	Wave form generation	
27	BCUOBCMaxChrgPwrAvl	0	0	Kw	-	5.1000000000	+	None	Define...
26	BCUOBCHeatModeCtrl	<input type="checkbox"/> 0	charging mode	-	-	1	+	None	Define...
0	BCUCRCID305	0	0	-	-	13	+	None	Define...
48	BCUChrgUReq	0	0	V	-	327.700000000	+	None	Define...
37	BCUChrgIReq	0	0	A	-	10.2	+	None	Define...
8	BCU305CycCntr	0	0	-	-	1	+	None	Define...

3.3 Message 0x185

Finally, send message 0x185 with a cycle time of 10ms, which will enable (or disable) HV output.

- HV output enable: send 00 00 00 00 08 00 00 00
- HV output disable: send 00 00 00 00 00 00 00 00

Message Name	Message Parameters						Triggering						Data Field						
	Identifier	Channel	Frame	DLC	BRS	Send	Key	Cycle Time [ms]	Burst	HighLoad	Gateway	0	1	2	3	4	5	6	7
> VSeA3_SKW_OBC:BCU_OBC_185 ...	VSeA3_5KW_OBC:185	CAN 1	Data	8		now	<input type="checkbox"/> Test <input type="checkbox"/> t <input checked="" type="checkbox"/>	10	1	<input type="checkbox"/> off <input type="checkbox"/>		0	0	0	0	0	8	0	0

SB	Signal Name	Raw Value	Phys Value	Unit	Dec	Phys Step	Inc	Wave form generation	
19	BCUOBCOperModReq	1	HV output enable	-	-	1	+	None	Define...

3.4 Example

The standard software requires a permanent CP signal, which also wakes the charger up. In this case, there is no need to send the wake up message 0x171.

If you use other software versions (for example those for parallel operation), a CP signal is not required.

Then you can either send wake up message 0x171 or wake up with CP.

Further details about software versions are described in chapter 4.

Message overview

Message Name	Message Parameters						Triggering						Data Field						
	Identifier	Channel	Frame	DLC	BRS	Send	Key	Cycle Time [ms]	Burst	HighLoad	Gateway	0	1	2	3	4	5	6	7
> VSeA3_SKW_OBC:Wake_Up ...	VSeA3_5KW_OBC:171	CAN 1	Data	8		now	<input type="checkbox"/> Test <input type="checkbox"/> t <input checked="" type="checkbox"/>	20	1	<input type="checkbox"/> off <input type="checkbox"/>		0	0	0	0	0	0	0	0
VSeA3_SKW_OBC:VCU_OBC_261 ...	VSeA3_5KW_OBC:261	CAN 1	Data	8		now	<input type="checkbox"/> Test <input type="checkbox"/> t <input checked="" type="checkbox"/>	100	1	<input type="checkbox"/> off <input type="checkbox"/>		0	0	0	0	0	0	0	0
VSeA3_SKW_OBC:BCU_OBC_305 ...	VSeA3_5KW_OBC:305	CAN 1	Data	8		now	<input type="checkbox"/> Test <input type="checkbox"/> t <input checked="" type="checkbox"/>	100	1	<input type="checkbox"/> off <input type="checkbox"/>		9	C4	6	40	F0	0	0	0
VSeA3_SKW_OBC:BCU_OBC_185 ...	VSeA3_5KW_OBC:185	CAN 1	Data	8		now	<input type="checkbox"/> Test <input type="checkbox"/> t <input checked="" type="checkbox"/>	10	1	<input type="checkbox"/> off <input type="checkbox"/>		0	0	0	0	0	8	0	0

Details 0x261

SB	Signal Name	Raw Value	Phys Value	Unit	Dec	Phys Step	Inc	Wave form generation	
62	VCUPlugConnectLamp	<input type="checkbox"/> 0	OFF	-	-	1	+	None	Define...
63	VCUOBCSleep	<input type="checkbox"/> 0	Normal	-	-	1	+	None	Define...
61	VCUChrgStsLamp	<input type="checkbox"/> 0	Off	-	-	1	+	None	Define...

OBC will go to Normal mode.

Details 0x305

SB	Signal Name	Raw Value	Phys Value	Unit	Dec	Phys Step	Inc	Wave form generation	
27	BCUOBCMaxChrgPwrAvl	1E	3	Kw	-	5.1000000000	+	None	Define...
26	BCUOBCHeatModeCtrl	<input type="checkbox"/> 0	charging mode	-	-	1	+	None	Define...
0	BCUCRCID305	0	0	-	-	13	+	None	Define...
48	BCUChrgUReq	9C4	250	V	-	327.700000000	+	None	Define...
37	BCUChrgIReq	32	5	A	-	10.2	+	None	Define...
8	BCU305CycCntr	0	0	-	-	1	+	None	Define...

OBC will charge at 250V and 5A. Maximum allowed power is 3 kW.

Details 0x185

SB	Signal Name	Raw Value	Phys Value	Unit	Dec	Phys Step	Inc	Wave form generation	
19	BCUOBCOperModReq	1	HV output enable	-	-	1	+	None	Define...

OBC enables HV output and will start charging.

