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SAFETY INSTRUCTIONS

This manual contains notices which you should observe to ensure your own personal safety, as well as to protect the product and the connected equipment. These notices are highlighted in the manual by a warning symbol and are marked as follows according to the level of danger:

	<p>Only qualified personnel should be allowed to install and work on this equipment. Qualified persons are defined as persons who are authorized to commission, to ground and to tag circuits, equipment and systems in accordance with established safety practices and standards.</p>
	<p>Turn off the power supply before performing any wiring operations! Short circuits can be harmful, critical and can cause explosions and serious burns!</p>
	<p>Please read this manual carefully and observe all safety instructions!</p>

DESTINATED USE

The Vanguard Wiring Harness is intended exclusively for commissioning the Vanguard FI battery pack series.


DISCLAIMER

BARTH® assumes no liability for usage and functionality of wiring harnesses in case of disregarding this manual. The strict accordance of this manual is important since the installation methods, peripheral connections, usage and maintenance can not be controlled by BARTH®. Therefore BARTH® assumes no liability for any claim.

Product Features

- IP-67
- Automotive quality
- Large range of plug and play accessories
- Easy to tailor to your application
- Engineered and manufactured in Germany

1. Harness installation

	<p>The Vanguard wiring harness is intended exclusively for use with the Vanguard Lithium-ion batteries of the FI series. It must be installed in such a way that it is protected from the risk of fire, environmental influences and mechanical influences.</p>
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1.1 Overview



X1 Connector: Battery signal connector



1	LOW TRUE 1	COMM MODE REQUEST
2	HIGH TRUE 1	DISCHARGE MODE ENABLE
3	12 V AUX0	MAIN 12V OUTPUT
4	CAN0 HIGH	PRIMARY CANBUS (J1939)
5	CAN0 LOW	PRIMARY CANBUS (J1939)
6	GROUND	GROUND PIN
7	HIGH TRUE 2	CHARGE MODE ENABLE
8	12 V AUX1	SECONDARY 12V OUTPUT
9	5 V	5 V SUPPLY FOR PINS 2 AND 7
10	12 V AUX2	SECONDARY 12V OUTPUT
11	INTERLOCK SUPPLY	INTERLOCK LOOP IN APPLICATION HARNESS
12	LOW TRUE 2	12 V ALWAYS-ON ENABLE
13	INTERLOCK RETURN	INTERLOCK LOOP IN APPLICATION HARNESS
14	SIGNAL GROUND	SECONDARY GROUND
15	CAN1 HIGH	SECONDARY CAN BUS
16	CAN1 LOW	SECONDARY CAN BUS
17	RESERVED	(FOR FACTORY USE)
18	RESERVED	(FOR FACTORY USE)
19	12 V AUX3	SECONDARY 12V OUTPUT
20	RESERVED	(FOR FACTORY USE)

X2 Connector: Programming plug / E-Stop



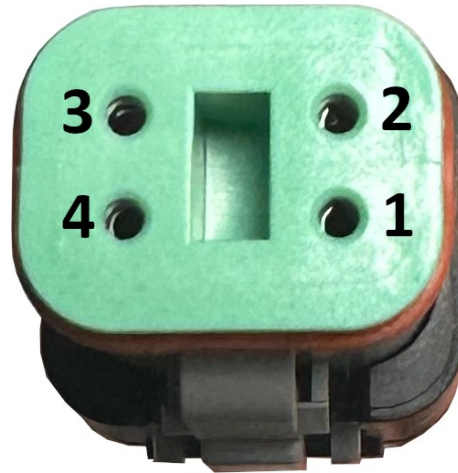
1	CAN1 LOW	SECONDARY CAN BUS
2	SIGNAL GROUND	SECONDARY GROUND
3	LOW TRUE 2	12 V ALWAYS-ON ENABLE
4	INTERLOCK RETURN	INTERLOCK LOOP IN APPLICATION HARNESS
5	INTERLOCK SUPPLY	INTERLOCK LOOP IN APPLICATION HARNESS
6	CAN1 HIGH	SECONDARY CAN BUS
7	CAN1 LOW	SECONDARY CAN BUS
8	GROUND	GROUND PIN

X3 Connector: Customer use



1	LOW TRUE 1	COMM MODE REQUEST
2	GROUND	GROUND PIN
3	12 V AUX0	MAIN 12V OUTPUT
4	CAN0 HIGH	PRIMARY CANBUS (J1939)
5	12 V AUX3	SECONDARY 12V OUTPUT
6	CAN0 LOW	PRIMARY CANBUS (J1939)
7	12 V AUX2	SECONDARY 12V OUTPUT
8	12 V AUX1	SECONDARY 12V OUTPUT
9	5 V	5 V SUPPLY FOR PINS 2 AND 7
10	HIGH TRUE 1	DISCHARGE MODE ENABLE
11	HIGH TRUE 2	CHARGE MODE ENABLE
12	12 V AUX0	MAIN 12V OUTPUT

X4-1:2 Connector: STG-800, DMA-15



1	12 V AUX0	MAIN 12V OUTPUT
2	GND	GROUND PIN
3	CAN0 HIGH	PRIMARY CANBUS (J1939)
4	CAN0 LOW	PRIMARY CANBUS (J1939)

X5 Connector:



1	GROUND	GROUND PIN
2	HIGH TRUE 1	DISCHARGE MODE ENABLE
3	5 V	5 V SUPPLY FOR PINS 2 AND 7

X6 Connector:



1	LOW TRUE 2	12 V ALWAYS-ON ENABLE
2	GROUND	GROUND PIN

X7 Connector:



1	CAN0 LOW	PRIMARY CANBUS (J1939)
2	CAN0 HIGH	PRIMARY CANBUS (J1939)
3	5 V	5 V SUPPLY FOR PINS 2 AND 7
4	HIGH TRUE 2	CHARGE MODE ENABLE
5	RESERVED	(FOR FACTORY USE)
6	RESERVED	(FOR FACTORY USE)

1.2 How to connect



Attention!

A Vanguard lithium battery can deliver short circuit currents over 1000 A. Serious injury or equipment damage may occur!

The following connection sequence must be observed (X1 has to be connected last).

- A. Connect desired extensions and components to this harness
- B. Connect the charging harness (sold separately) as per instruction of the charging harness
- C. Connect power harness (sold separately) as per instruction of the power harnesses
- D. Carefully check all connections and make sure that there are no short-circuits or exposed power connections
- E. Turn off the switch connected to X5
- F. Connect X1 to the battery
- G. Turn on the switch connected to X5

2. Appendix

2.1 Accessories

Please visit our [website](#) for information on available accessories.

2.2 Specification

2.2.1 Electrical

Rated voltage	72 V DC
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2.2.2 Environmental conditions

Operation temperature	-40 to +70 °C
Storage temperature	-40 to +70 °C
IP rating	IPx6K


2.2.3 Weight and dimensions

Weight	3160 g
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2.2.4 Ordering information

Ordering information	Art. No. 0125-0950
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2.3 Disposal



If you wish to finally dispose of the product, ask your local recycling centre or dealer for details about how to do this in accordance with the applicable disposal regulations.

2.4 Conformity declaration

For the following designated product it is hereby confirmed, that the construction in that technical design brought by us in traffic corresponds to the standards specified below. In the event of any alternation which has not been approved by us being made to any device as designated below, this statement shall thereby be made invalid.

Description	Vanguard wiring harness
Type / Art. No.	KB-950
RoHS Directive 2011/65EU & Amendment EU2017/2102	We hereby declare that our product is compliant to the RoHS Directive on restriction of the use of certain hazardous substances in electrical and electronic appliances.

BARTH® Elektronik GmbH
Lengerich, 03.07.2023



Dipl.-Ing. (FH) D. Barth, CEO