VARAN-KEB-F5 INTERFACE VKI 022

This VARAN interface card is used for communication between the KEB-5 frequency converter and the VARAN control.

Communication is established over a DUAL-PORT RAM.

Technical Data

General

Interface connections: HSP5 (RS232 for frequency converter) HSP5 (diagnosis) 2 x VARAN-Bus (distributor-function)	 DSUB-plug 9-pin (incl. +24 V DC supply) RJ45 socket 8-pin 2 x RJ45 connector with LEDs (maximum length: 100 m)
Xilinx	XC3S250E CP132
4Mbit-Flash	M25P40

Electrical requirements

Supply voltage	+24 V DC (Provided by the frequency converter)	
Current consumption of voltage supply	Typically 65 mA	Maximum 100 mA

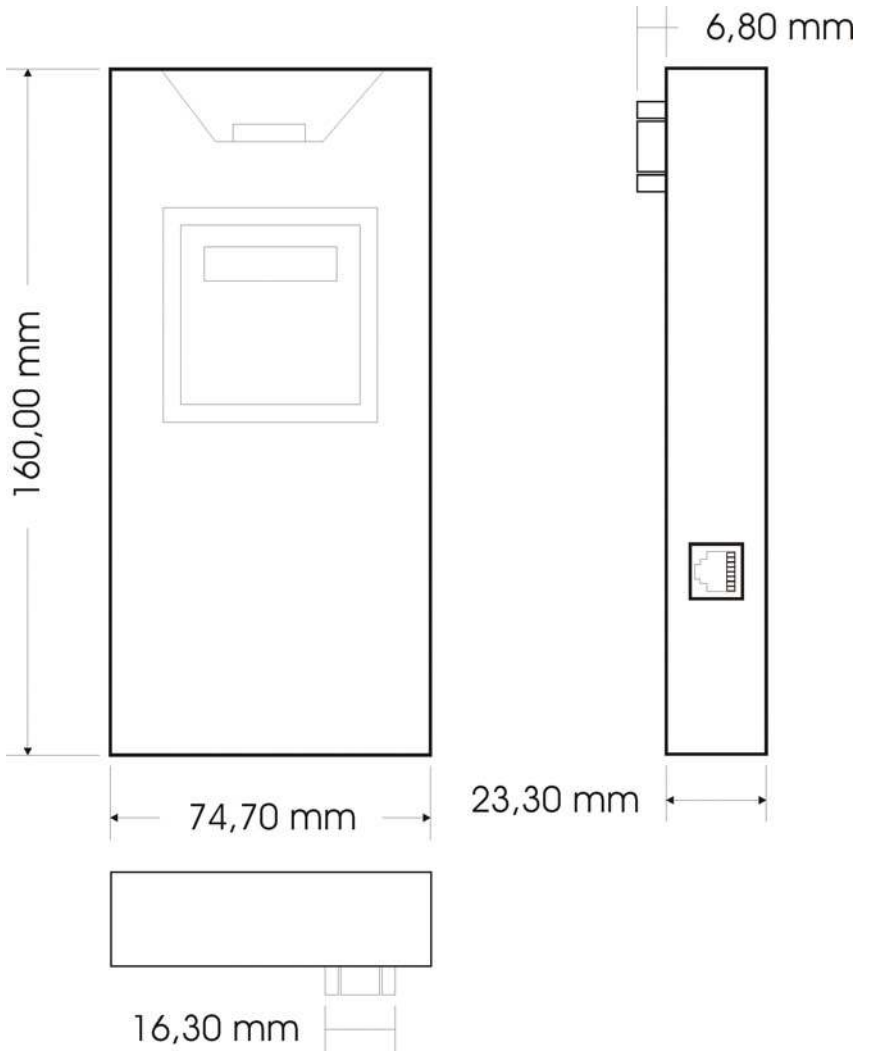
Miscellaneous

Article number	16-061-022
Hardware version	1.x
Standard	UL (E247993)

Environmental conditions

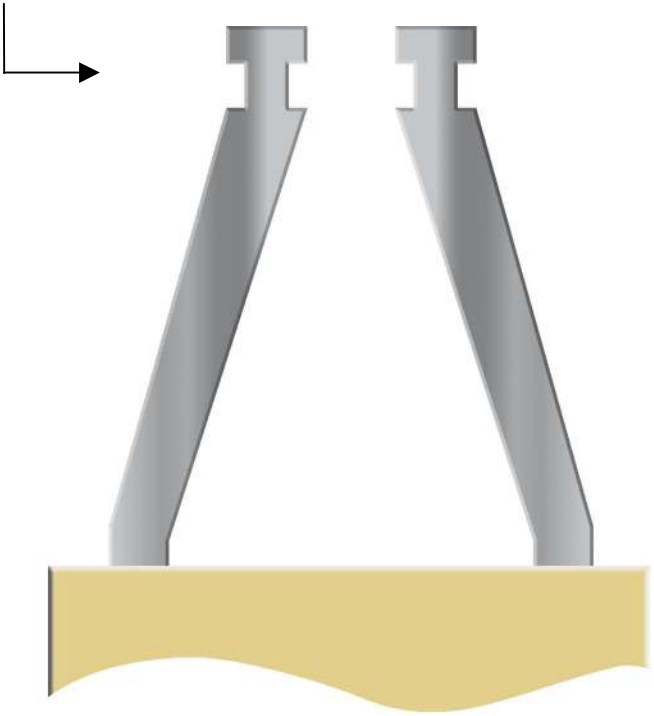
Storage temperature	-20 – +85 °C	
Operating temperature	0 – +60 °C	
Humidity	0 – 95 %, uncondensed	
EMV stability	per EN 61000-6-2 (Industrial area)	
Shock resistance	EN 60068-2-27	150 m/s²
Protection	EN 60529	IP 20

Mechanical Dimensions



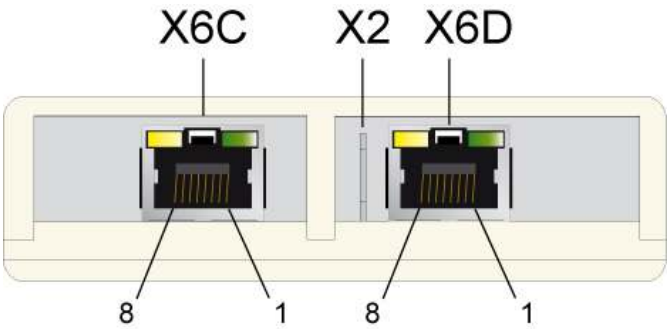
Stress Relief

Here, the VARAN bus cable is secured with a cable binder.

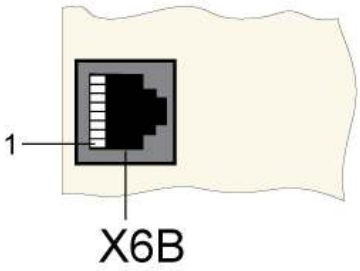


Connector Layout

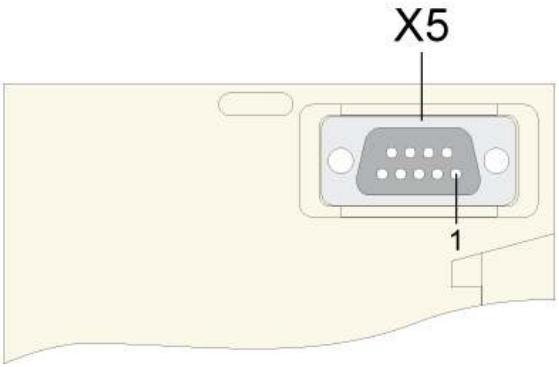
Lower front panel



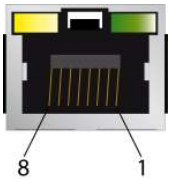
Left side



Under side



X6D VARAN-OUT 1

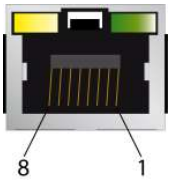


Pin	Assignment
1	TX/RX+
2	TX/RX-
3	RX/TX+
4 - 5	-
6	RX/TX-
7 - 8	-

LEDs	Function
Yellow	ACTIVE
Green	LINK

LED	Color	Description
ACTIVE	Yellow	Lighting when data is received through the VARAN bus.
LINK	Green	Lighting when the link between the two PHYs is established.

X6C VARAN-IN 2



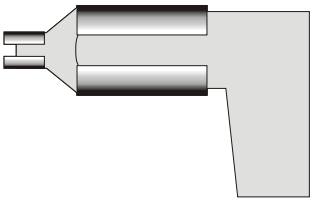
Pin	Assignment
1	TX/RX+
2	TX/RX-
3	RX/TX+
4 - 5	-
6	RX/TX-
7 - 8	-

LEDs	Function
Yellow	ACTIVE
Green	LINK

LED	Color	Description
ACTIVE	Yellow	Lighting when data is received through the VARAN bus.
LINK	Green	Lighting when the link between the two PHYs is established.

X2 Ground connection

A push-on contact must be connected to the 6.35 x 0.8 mm blade terminal for the ground connection of the control cabinet.

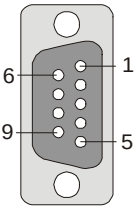


Caution must be taken to ensure the shielding from the VARAN bus cable is connected to ground on the KEB side.

On doit assurer la mise à terre du câble de bus Varan du côté de KEB.

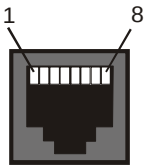
X5 HSP5 interface (RS232 frequency for the Frequency converter)

9-Pin DSUB plug



Pin	Function
1	GND
2	RX0
3	TX0
4	+24 V DC
5	GND
6	GND
7	EN_TX0
8	EN_RX0
9	+24 V DC

X6B HSP5 interface (Diagnosis)
(RJ45 8-pol.)

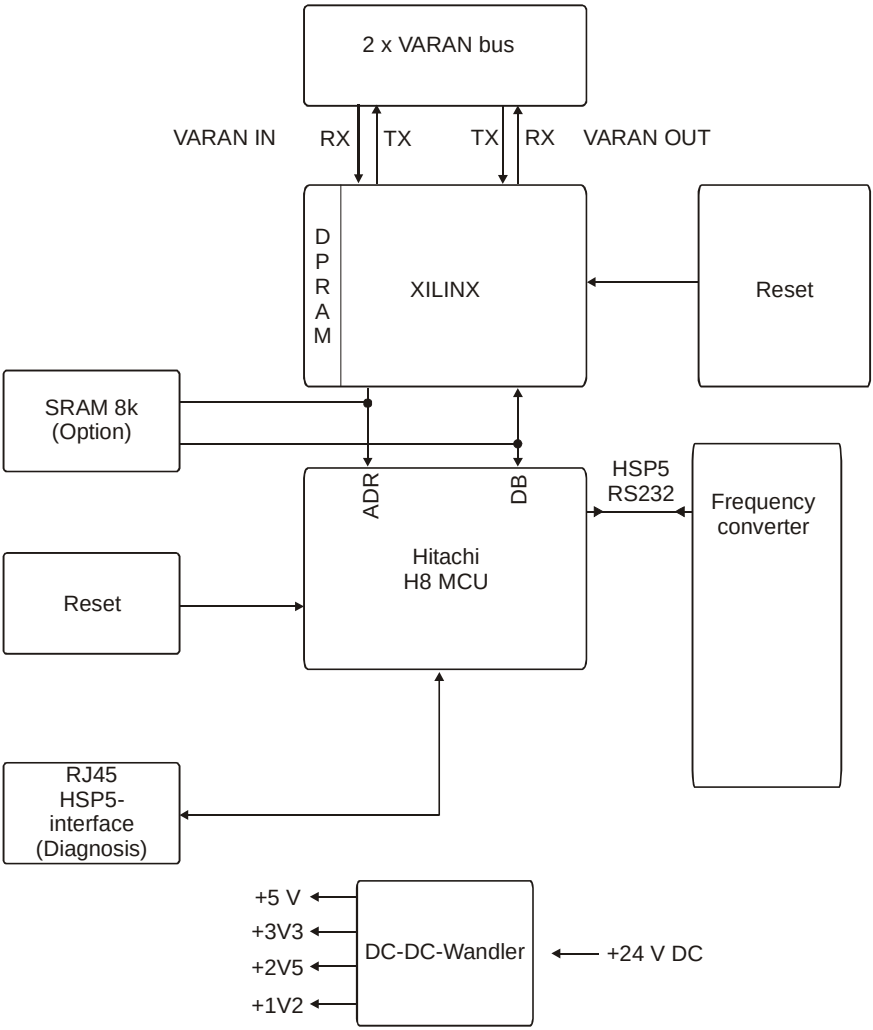


Pin	Function
1	GND
2	GND
3	TX1
4	EN_RX1
5	RX1
6	EN_TX1
7	Not connected
8	+5 V

Status Display

LED	Color	Signal name	Function
K1	Green	Synchronous parameter channel operation	Does not light: no synchronous mode operation Lights continuously: synchronous mode not available Lights briefly for each parameter channel operation in synchronous mode.
K2	Red	Converter operation LED	Does not light: converter off Lights continuously: converter on Blinking: converter error

Block Diagram



Addressing

For addressing, see VARAN bus specification.

VARAN Recommended Shielding

The VARAN real-time Ethernet bus system offers robust performance in harsh industrial environments. Through the use of IEEE 802.3 standard Ethernet physics, the potential between an Ethernet line and sending/receiving components is kept separate. The VARAN Manager resends messages to a bus participant immediately when an error occurs. It is principally recommended that the shielding guidelines below be followed.

For applications in which the bus line is run outside the control cabinet, correct shielding is required. This is especially important, if due to physical requirements, the bus lines must be placed next to sources of strong electromagnetic noise. It is recommended that whenever possible, to avoid wiring VARAN-Bus lines parallel to power cables.

SIGMATEK recommends the use of **CAT5e** industrial Ethernet bus lines.

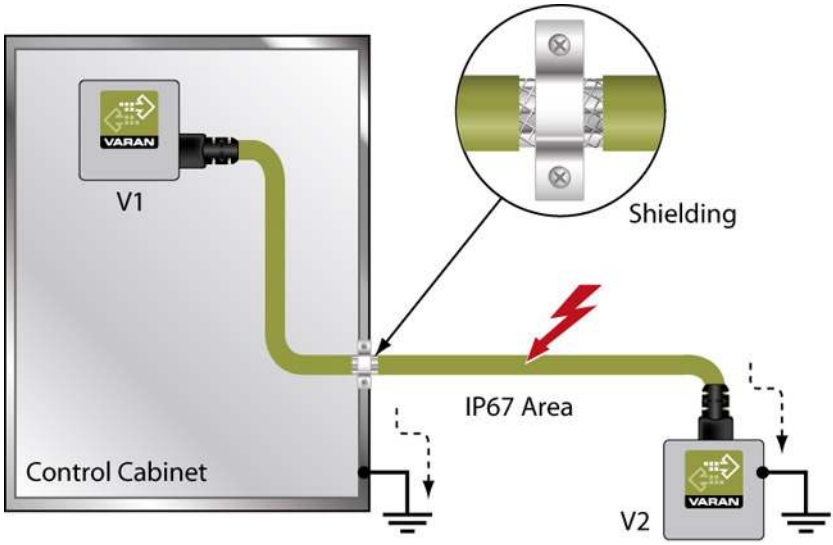
For the shielding variants, an S-FTP bus line is recommended, which is a symmetric, multiwire cable with unshielded pairs. For the total shielding, a combination of foil and braiding is used; it is recommended that an unvarnished variant be used.

The VARAN cable must be secured at a distance of 20 cm from the connector for protection against vibration!

Le câble VARAN doit être protégé contre les vibrations à moins de 20 cm du connecteur (par exemple à l'aide d'une pince)!

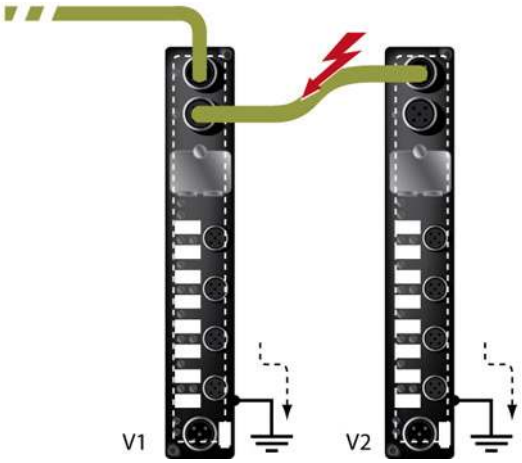
1. Wiring from the Control Cabinet to an External VARAN Component

If the Ethernet lines are connected from a VARAN component to a VARAN node outside the control cabinet, the shielding should be placed at the entry point to the control cabinet housing. All noise can then be deflected from the electronic components before reaching the module.



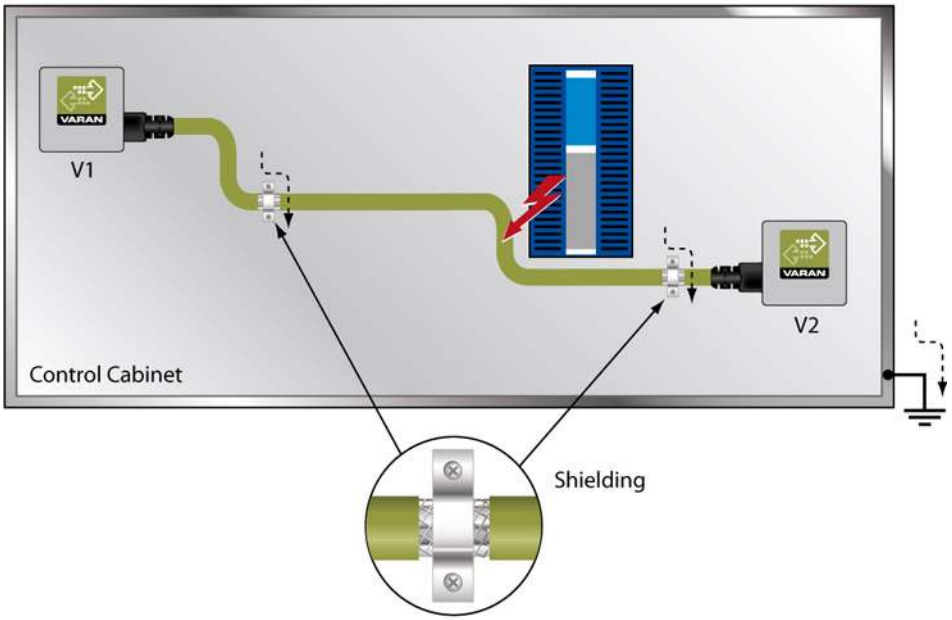
2. Wiring Outside of the Control Cabinet

If a VARAN bus line must be connected outside of the control cabinet only, no additional shielding is required. Outside the control cabinet, IP67 modules and connectors are used only. These components have an extremely robust and noise-resistant structure. The shielding for all sockets in IP67 modules are internally connected to a common bus or electrically connected to the housing, whereas the deflection of voltage spikes does not flow through the electronics.



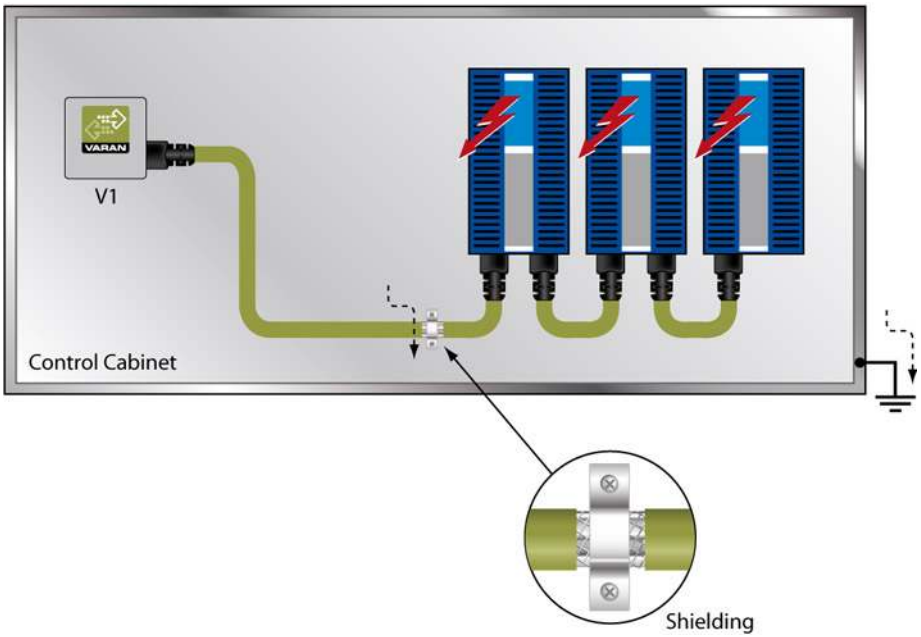
3. Shielding for Wiring Within the Control Cabinet

Sources of strong electromagnetic noise located within the control cabinet (drives, Transformers, etc.) can induce interference in a VARAN bus line. Spike voltages are deflected over the metallic housing of a RJ45 connector. Noise is conducted through the control cabinet housing without further action from the electronic components To eliminate sources of noise during data transfer, it is recommended that the shielding from all electronic components be connected within the control cabinet.



4. Connecting Noise-Generating Components

With the connection of power components that generate strong electromagnetic noise, it is also critical to ensure correct shielding. The shielding should be placed before a power component (or a group thereof).



5. Shielding Between Two Control Cabinets

If two control cabinets must be connected over a VARAN bus, it is recommended that the shielding be located at the entry points to both cabinets. Noise can thereby be kept from reaching the electronics within the control cabinet.