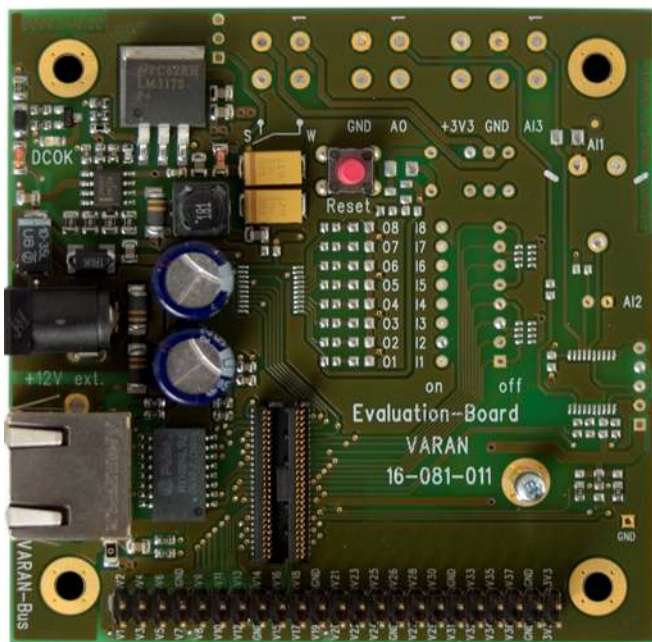


VARAN Demo Board Specifications

VEB 022

The VARAN VEB 022 demo board provides VARAN users and sensor/actuator manufacturers with simple hardware so that they can implement this bus system in their products quickly and easily.

The VEB 011 client board, required for the operation of the VEB 022, is simply connected to the demo board and the VARAN bus to RJ45 socket!



Caution!

When operating the demo board, the user must be grounded through an armband or something similar! Otherwise, the electronics can be destroyed by electrostatic discharge!

Technical Data

Electrical Requirements

Supply voltage	10 – 30V DC	
Voltage from external supply	+12V for internal supplies (optional)	
Supply from VARAN bus	+24V for internal supplies	
Current consumption on the VARAN bus (+24V supply)	Typically 90mA	Maximum 110mA
If the +24V supply is not set over the VARAN bus, an external +12V power supply must be connected to plug X2!		
Current consumption of the external supply (+12V supply)	Typically 150mA	Maximum 200mA
Status display	LED	
+3V3 for external applications (connectable by a strip)	Maximum 50mA	

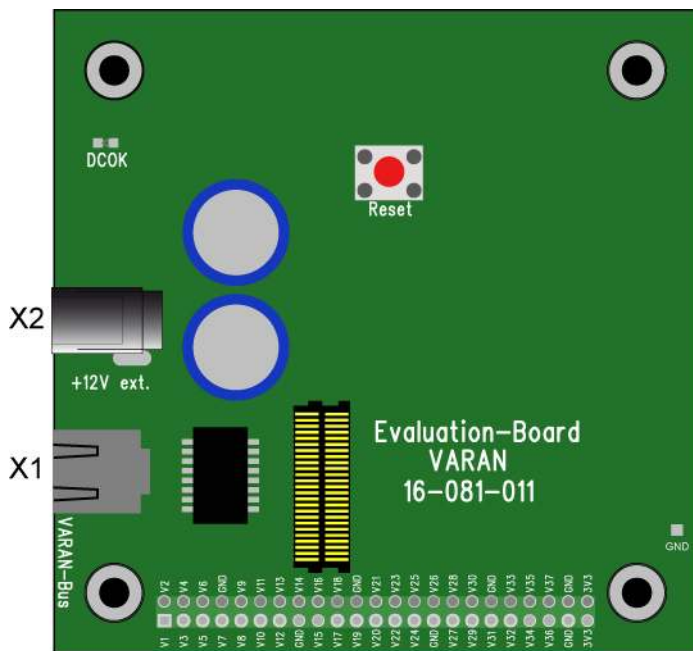
Miscellaneous

Article number	16-081-022
Hardware version	1.x
Preset Mode (Mode pins)	010 DPRAM-Mode
LASAL class	veb022
Applicable 12V DC power connector	Article number: 16-081-022-Z1

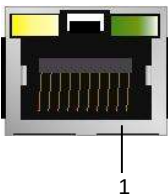
Mechanical Dimensions

Circuit board	85,0 x 85,0mm
Distance of mounting holes	69,0mm horizontal and vertical
Diameter of mounting holes	3,5mm

Connector Layout



X1: VARAN-Bus (RJ45) (maximum length: 100 m)



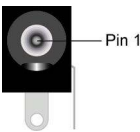
Pin	Function
1	TX+ / RX+
2	TX- / RX-
3	RX+ / TX+
4	+24V bus supply
5	+24V bus supply
6	RX- / TX-
7	GND
8	GND

LEDs	Funktion
Gelb	ACTIVE
Grün	LINK

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

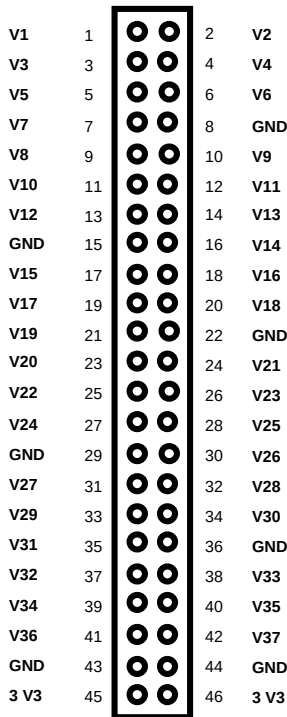
For more information over the VARAN bus, see the VARAN bus specifications!

X2: External +12V power supply



Pin	Function
1	+12V
2	GND

All configurable pins of the extension board are placed on a connector strip so that the customer/user has the option to connect test components!



Pin	Name	Function	Pin on Xilinx (VEB011)
1	V1	-	78
2	V2	D0	79
3	V3	-	83
4	V4	D1	85
5	V5	-	84
6	V6	D2	34
7	V7	-	86
8	GND	-	-
9	V8	D3	90
10	V9	-	36
11	V10	D4	92
12	V11	Mode 0 (In)	91
13	V12	D5	95
14	V13	Mode1 (In)	94
15	GND	-	-
16	V14	D6	53
17	V15	Mode2 (In)	98
18	V16	D7	70
19	V17	-	71
20	V18	Sync (Out)	68
21	V19	A0	67
22	GND	-	-
23	V20	A1	2
24	V21	A2	3
25	V22	A3	4
26	V23	A4	5
27	V24	CLK 25 MHz (Out)	66
28	V25	A5	9
29	GND	-	-
30	V26	Periphery Reset (Out)	65
31	V27	A6	10
32	V28	-	63
33	V29	A7	11
34	V30	R/W	62
35	V31	A8	12
36	GND	-	-
37	V32	-	61
38	V33	A9	15
39	V34	A10	16
40	V35	A11	17
41	V36	-	18
42	V37	CS	60
43	GND	-	-
44	GND	-	-
45	+3V3	-	-
46	+3V3	-	-

Mode Pins:

Mode pins are used to set the configuration of the client board!

Example:

Mode Pin 1 = logic 1	}	Demo board with DPRAM-Mode!
Mode Pin 2 = logic 0		
Mode Pin 3 = logic 0		

Address mapping

The exact address mapping can be found in the VEB 011/ 012 documentation.

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.

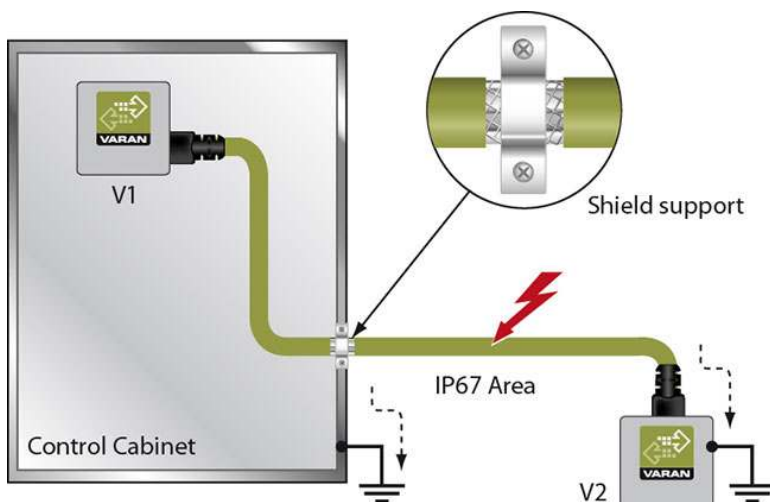
SIGMATEK recommends the use of **CAT5e** industrial Ethernet bus lines.

For the shielding variants, an S-FTP bus line is recommended, which is a symmetric, multi-wire 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!

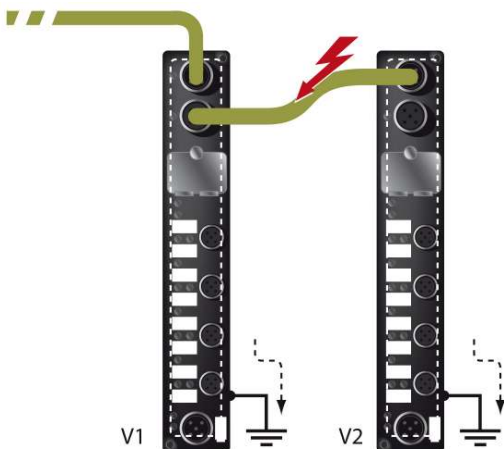
1. Wiring from the Control Cabinet to an External VARAN Component

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.



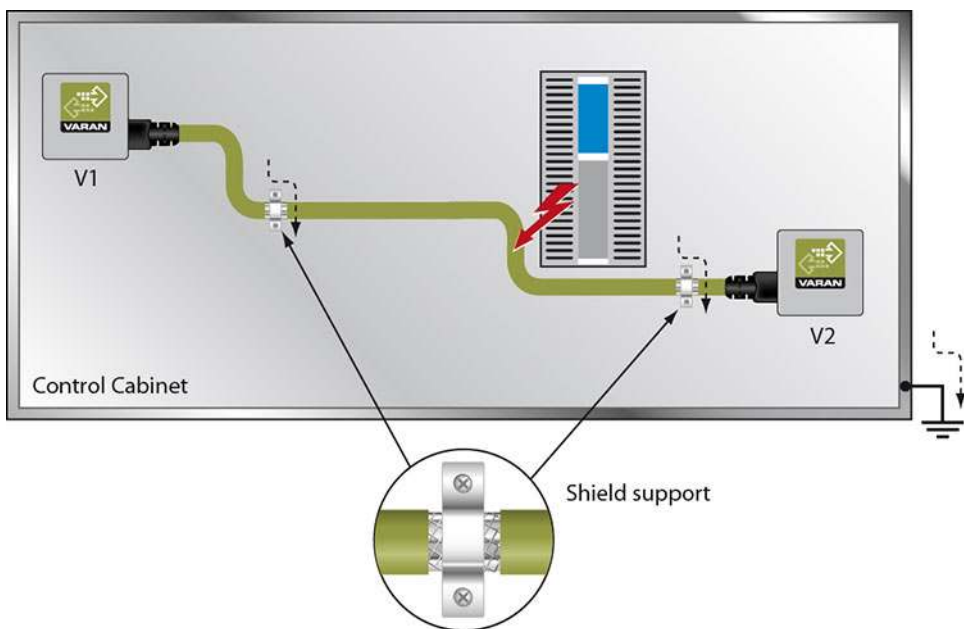
2. Wiring Outside of the Control Cabinet

If a VARAN bus cable must be placed outside of the control cabinet only, no additional shield connection is required. This requires that only IP67 modules and connectors be used. These components are very robust and noise resistant. The shielding for all sockets in IP67 modules are internally connected to common bus or electrically connected to the housing, whereby the deflection of voltage spikes does not flow through the electronics.



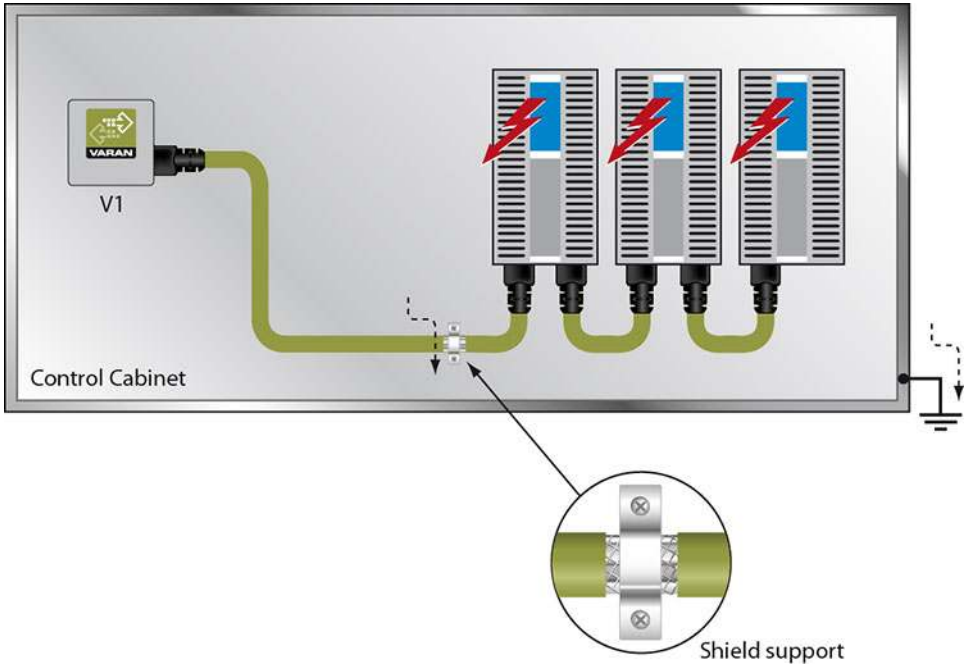
3. Shielding for Wiring Within the Control Cabinet

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.

