

DIAS Interface Module VARAN

DIV 511

- 1 x VARAN-In
- 1 x VARAN-Out (Optional Ethernet (VtE))

The DIAS DIV 511 interface module serves as the voltage supply and connection for a decentralized DIAS bus to a CPU over the VARAN bus.

The VARAN-Out port allows the construction of the VARAN bus in a line structure.

The VARAN-Out port has automatic Ethernet recognition. If the VARAN-Out is connected to an Ethernet participant, it is automatically changed to an Ethernet port.

Incoming Ethernet packets to Ethernet ports are, similar to using a HUB, distributed to all other in the VARAN bus system and the VARAN manager (and therewith the CPU) with VtE (VARAN transmits Ethernet).



Technical Data

Performance data

Interface connections	1 x VARAN-In (RJ45) (maximum length: 100 m) 1 x VARAN-Out (optional Ethernet (VtE)) (RJ45) (maximum length: 100 m) 1 x DIAS bus
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Electrical requirements

Supply voltage	18 – 30 V DC
Current consumption of voltage supply	The current consumption is dependent on the connected loads (max.0.5A)
Current consumption of power supply at +24 V DC (UL)	Maximum 0.92 A
Current capacity on C-DIAS bus (power supply for I/O modules).	Maximum 1.0 A

Only US and Canada:

This device was evaluated for UL508 as a limited voltage/current unit (LVLC). To meet the standard requirements, the device must be powered from an isolated transformer (24 V DC) with a UL-certified fuse (UL248) in the secondary circuit. The maximum rated current is 4 A. Alternatively, a class 2 power supply can be used.

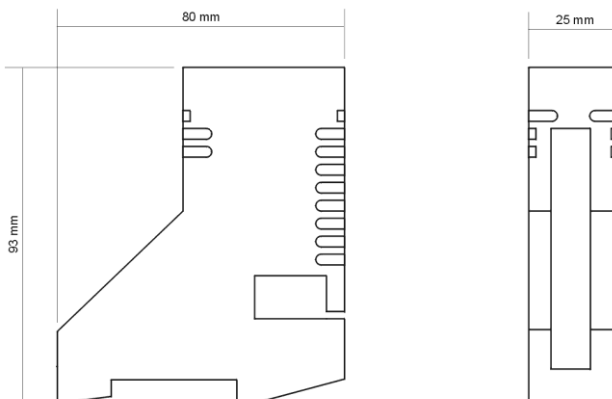
Miscellaneous

Article number	05-003-511
Hardware version	1.x
Standard	UL508 (E247993)

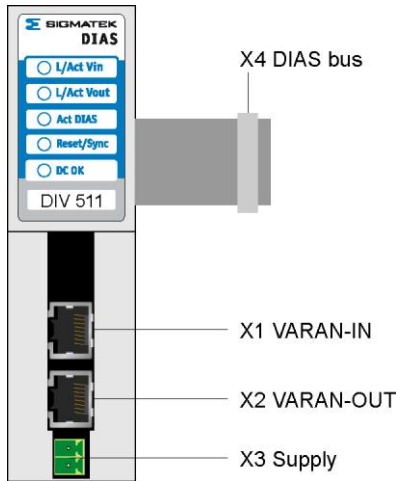
Environmental conditions

Storage temperature	-20 – +70 °C	
Operating temperature	0 – +50 °C	
Humidity	0 – 95 %, uncondensed	
EMV stability	According to EN 61000-6-2:2001 (industrial area)	
Shock resistance	EN 60068-2-27	150 m/s ²
Protection	EN 60529	IP 20
Protection Type (UL)	open type device	
Pollution degree	2	

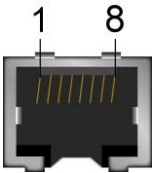
Mechanical Dimensions



Connector Layout

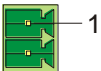


X1: VARAN-In , X2: VARAN-Out (Optional Ethernet (VtE))



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

X3: Power plug



Pin	Function
1	+24 V supply
2	GND

Applicable connectors
X1 – X2: 8-pin RJ45

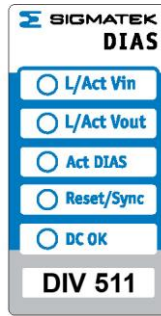
X3: 2-pin Phoenix pug with screw terminals MC1, 5/2-ST-3,5

2-pin Phoenix plug with spring terminals FK-MCP1, 5/2-ST-3,5

Connector	Type	Wire size	Max. screw torque
X1	RJ 45	-	-
X2	RJ 45	-	-
X3	MC1.5/2-ST-3.5	0.13 – 1.0 mm ² , 30 - 16 AWG (UL), 28 – 16 AWG (CSA)	0.22 – 0.25 Nm
X3	FK-MCP1.5/2-ST-3.5	0.14 – 1.5 mm ² , 28 – 16 AWG (UL/cUL)	Cage Clamp

Use copper conductors only!

Status Display



LED	LED color	Definition	Description
L/Act Vin	Green	Link	Lights when the connection between the two PHYs is established.
	Yellow	Active	Lights when data is sent or received over the VARAN-In receiver.
L/Act Vout	Green	Link	Lights when the connection between the two PHYs is established.
	Yellow	Active	Lights when data is sent or received over the VARAN-Out receiver.
Act DIAS	Yellow	Active	Lights when the DIAS bus is active.
Reset / Sync	Red	Reset	Lights when the DIV 511 is in Reset.
	Green	Sync	Lights when the DIV 511 is synchronized with the VARAN Manager.
DCOK	Green	DC OK	Lights when connected to the 24 V supply plug

Applicable Modules

The DIV 511 allows the connection of nearly all DIAS modules. Only DIAS modules that require the DIAS interrupt (e.g. communication modules) must be directly connected to the CPU.

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.

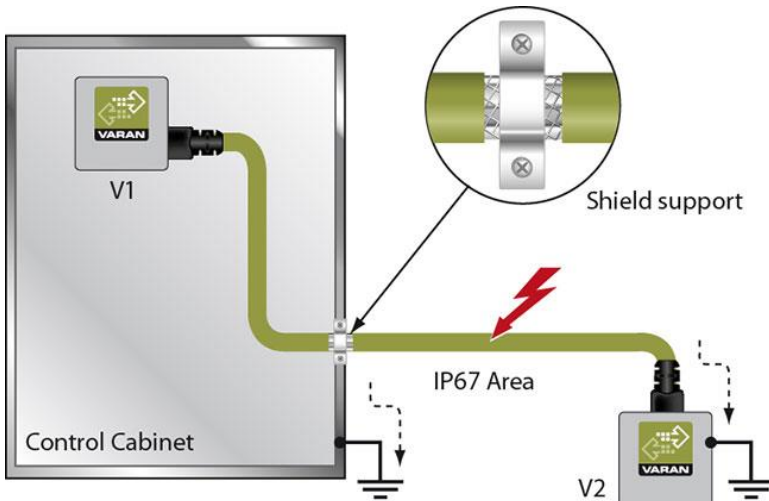
SIGMATEK recommends the use of **CAT5e** industrial Ethernet bus lines.

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!

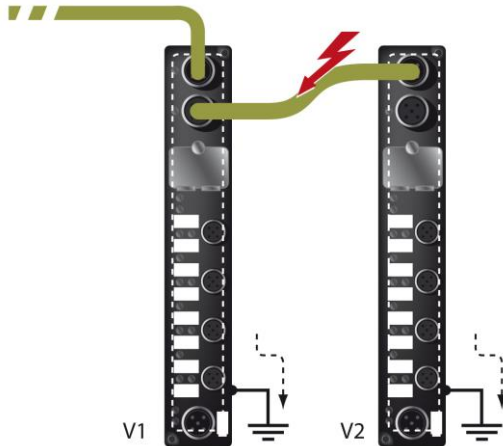
1. Wiring from the Control Cabinet to an External VARAN Component

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.



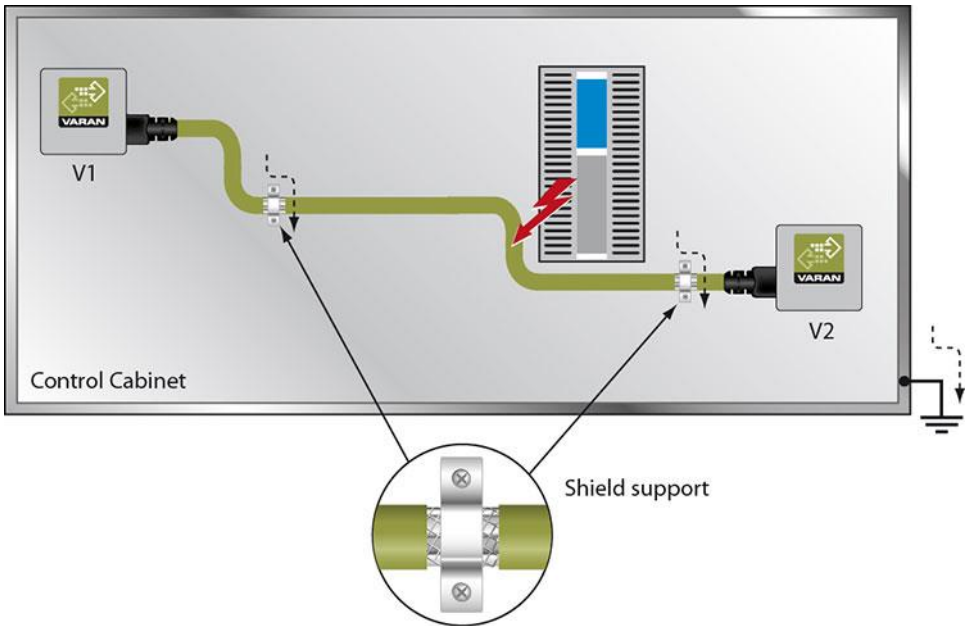
2. Wiring Outside of the Control Cabinet

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.



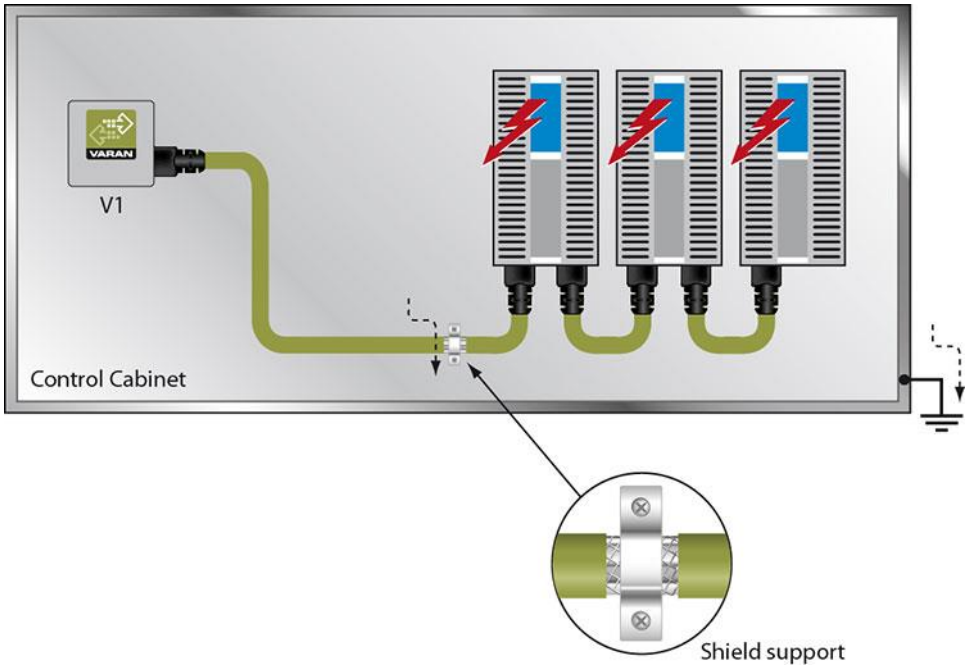
3. Shielding for Wiring Within the Control Cabinet

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.

