

## C-DIAS VARAN Control Module

## CIV 512

1 x VARAN-In

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

The C-DIAS CIV 512 module serves as the power supply and connection for decentralized C-DIAS module groups with a CPU over the VARAN bus.

A module group consists of a module carrier and the C-DIAS modules mounted on it. Depending on the module carrier, up to 8 modules can be mounted.

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



## Technical Data

### Performance data

Interfaces	<p>1 x VARAN-In (RJ45)  1 x VARAN-Out (Optional Ethernet (VtE)) (RJ45)  (maximum length: 100 m)</p>
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### Electrical requirements

Voltage supply	18 – 30 V DC	
Current consumption of power supply	The current consumption depends on the connected load (max. 1.7 A)	
C-DIAS bus supply	Through the CIV 512	
Current load on the C-DIAS bus (I/O/P module supply)	+5 V	+24 V
	Maximum 1.2 A	

The device shall be supplied from an isolating transformer having a secondary listed fuse rated either:

- a) max. 5 amps for voltages 0~20 V (0~28.3 Vp), or
- b) 100 VA/Vp for voltages of 20~30 V (28.3~42.4 Vp).

Le module doit être alimenté par un transformateur d'isolement avec un fusible sur la sortie de l'enroulement secondaire dont les spécifications sont:

- a) max. 5 A pour des tensions 0 ~ 20 V (0 ~ 28,3 Vp), ou
- b) 100 VA/Vp pour des tensions de 20 ~ 30 V (28,3 ~ 42,4 Vp).

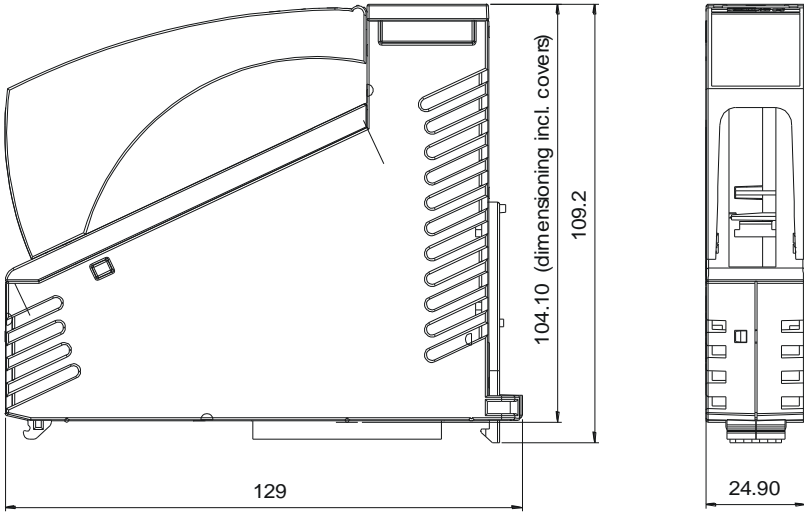
### Miscellaneous

Article number	<p>12-003-512  12-003-512-E</p>
Hardware version	2.x
Standard	UL (E247993)

**Environmental conditions**

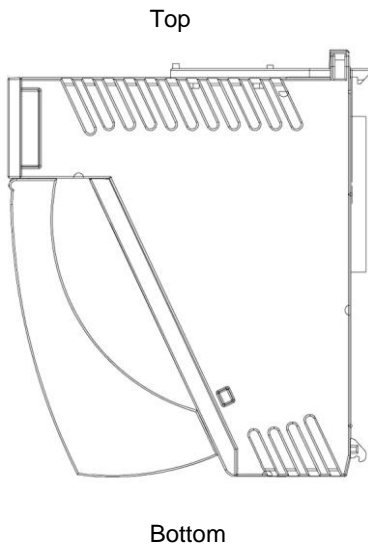
Storage temperature	-20 – +85 °C	
Operating temperature	0 – +60 °C (12-003-512) -20 – +60 °C (12-003-512-E)	
Humidity	0 – 95 %, uncondensed	
EMV stability	EN 61000-6-2 (Industry area)	
Shock resistance	EN 60068-2-27	150 m/s <sup>2</sup>
Protection	EN 60529	IP 20

### Mechanical dimensions



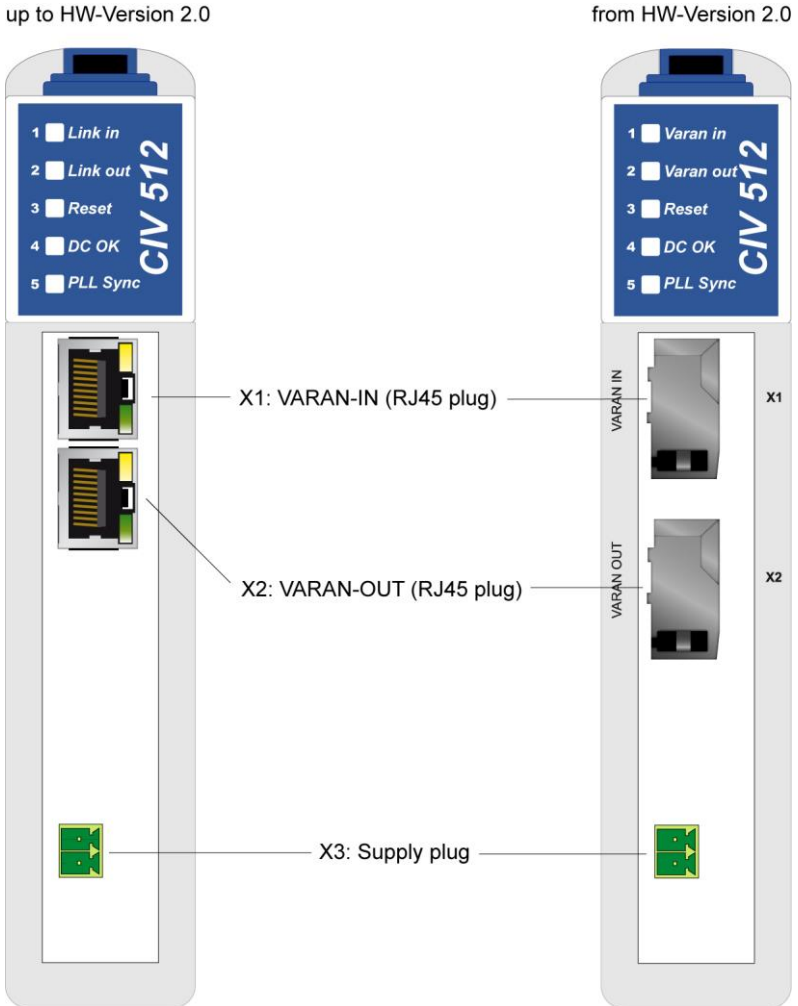
## Mounting position

To ensure optimal cooling of the module, the CIV 512 must be mounted as shown (standing). For an angled mounting position, forced convection (cooling fan) must be used.



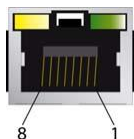
## Connections

On the front side of the control module, the following connections are located:



**X1: VARAN-In, X2: VARAN-Out (Optional Ethernet (VtE)) (RJ45)**

Up to HW Version 2.0

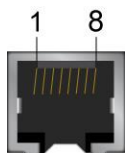


Pin	Function
1	TX / RX+
2	TX / RX-
3	RX / TX+
4 - 5	-
6	RX / TX-
7 - 8	-

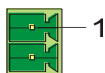
LEDs	Function
Yellow	ACTIVE
green	LINK

LED	Farbe	Beschreibung	
ACTIVE	Yellow	VARAN-In & VARAN-Out	Lights when data is received over the VARAN bus
Link	Green	VARAN-In	Lights when the connection between the two PHYs is established
			Blinks when the VARAN-In of the primary client does not have a link.
		VARAN-Out	Lights when the connection between the two PHYs is established
			Blinks when there is no connection between VARAN-In and the primary client.

Starting from Version 2.0



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

**X3: Supply plug**


Pin	Function
1	+24 V input
2	GND

## Status Displays

Up to hardware version 2.0



LED number	LED color	Definition	
1	Green	Link In	Lights when the connection between the two PHYs is established
			Blinks when the VARAN-In of the primary client does not have a link.
2	Green	Link Out	Lights when the connection between the two PHYs is established
			Blinks when there is no connection between VARAN-In and the primary client.
3	Red	Reset	Lights when the CIV 512 is in Reset.
4	Green	DC OK	Lights when the module is supplied with 24 V.
5	Green	PLL SYNC	Lights when the module is synchronized with the VARAN manager.

Starting from Version 2.0



LED number	LED color	Definition		
1	Green	VARAN-In	Link	Lights when the connection between the two PHYs is established
				Blinks when the VARAN-In of the primary client does not have a link.
	Yellow	VARAN-In	Active	Lights when data is exchanged over the VARAN bus
2	Green	VARAN-Out	Link	Lights when the connection between the two PHYs is established
				Blinks when there is no connection between VARAN-In and the primary client.
	Yellow	VARAN-Out	Active	Lights when data is exchanged over the VARAN bus
3	Red	Reset		Lights when the CIV 512 is in Reset.
4	Green	DC OK		Lights when the module is supplied with 24 V.
5	Green	PLL SYNC		Lights when the module is synchronized with the VARAN manager.



## Detailed Description

**More information on the VARAN bus can be found in the VARAN bus specifications!**

## Applicable Modules

Almost all C-DIAS modules are supported.

The following C-DIAS modules must be operated with a CPU directly:

- CSI 021 – CSI 025
- CGPS 011
- CBC 021

## Strain relief

Up to hardware version 2.0



Starting from Version 2.0



**The VARAN cable should be secured against vibrations with a distance of 20 cm from the connector (for example with a clamp)!**

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

## 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.

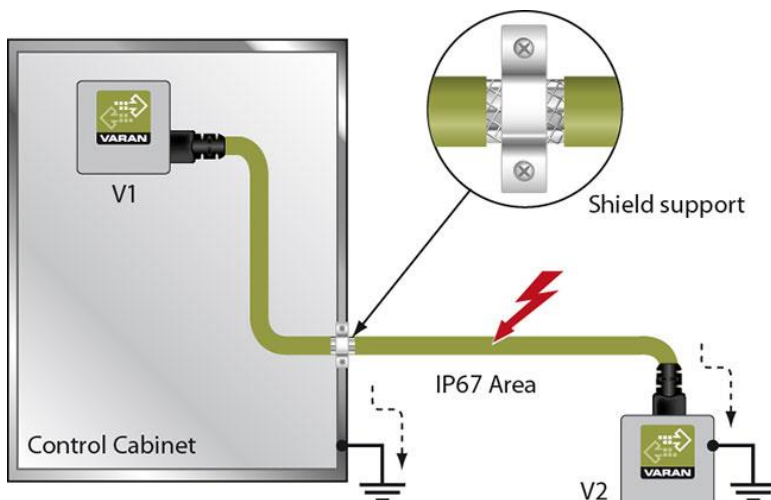
For the shielding variants, an S-FTP bus line is recommended, which is a symmetric, multi-wire cable with unshielded pairs. For the total shielding, a combination of foil and braiding is used; it is recommended that an unvarnished variant be used.

**The VARAN cable should be secured against vibrations with a distance of 20 cm from the connector!**

**Le câble VARAN doit être protégé contre les vibrations à moins de 20 cm du connecteur!**

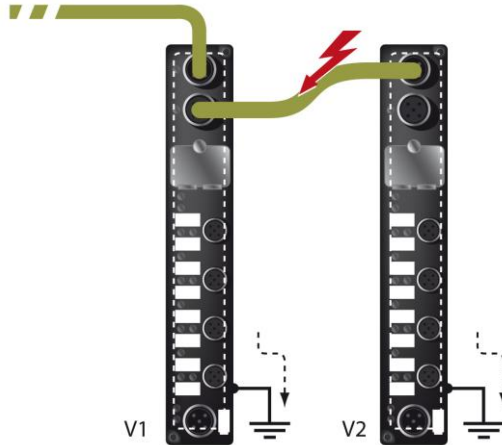
## 1. Wiring from the Control Cabinet to an External VARAN Component

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.



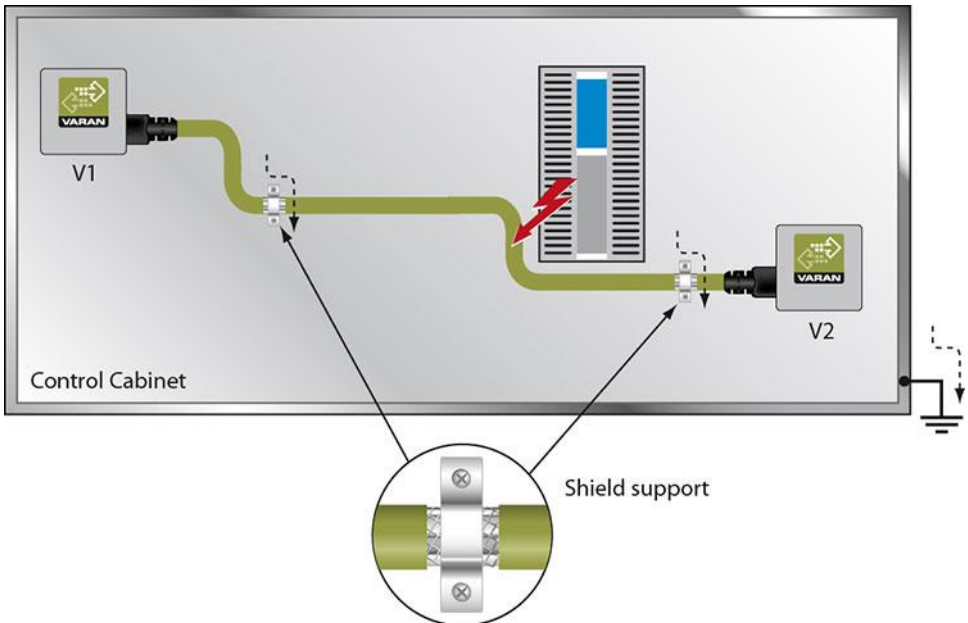
## 2. Wiring Outside of the Control Cabinet

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.



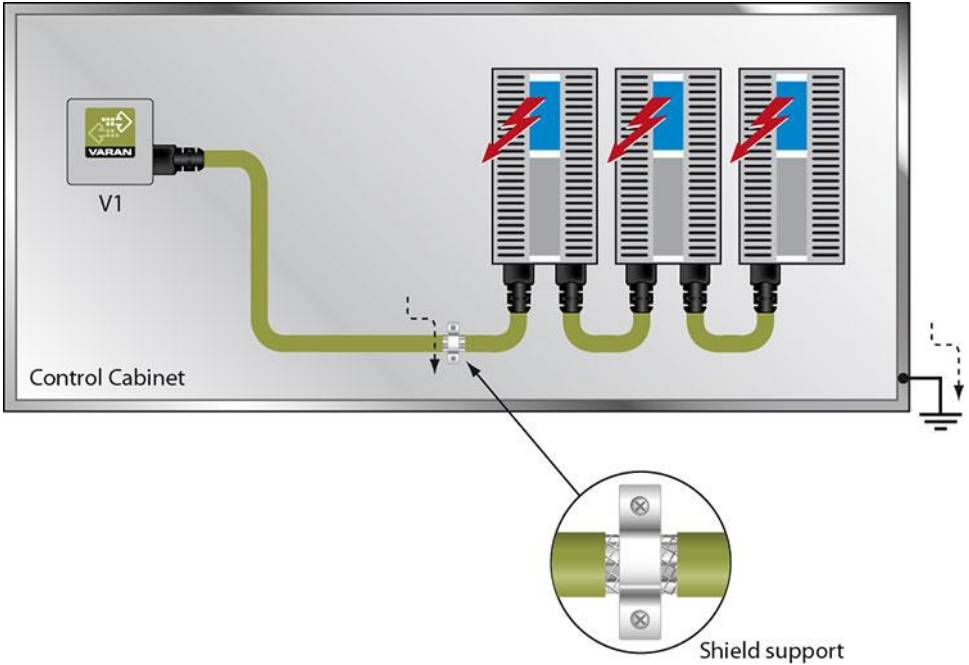
### 3. Shielding for Wiring Within the Control Cabinet

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.

