

C-IPC VM051 (C-IPC VARAN Manager 051)

Versatile Automation Random Access Network

with 2 VARAN Manager interfaces (8-pin RJ45)

With this expansion card, two VARAN-MANAGER interfaces can be added to the C-IPC. The special design allows the expansion card to be easily mounted and fixed.



The cover and mounting accessories are included with delivery of the card.

Technical Data

Performance data

Internal Memory	Serial EEPROM (identification) 4 Mbit serial Flash	
Interfaces	2 x VARAN (Manager) (maximum length: 100 m)	
Status display	Green: Link	Yellow: Active
Connection to C-IPC	Over SO-DIMM socket	

Electrical requirements

Internal supply voltage	Typically +3,3 V DC Provided by C-IPC over the SO-DIMM socket
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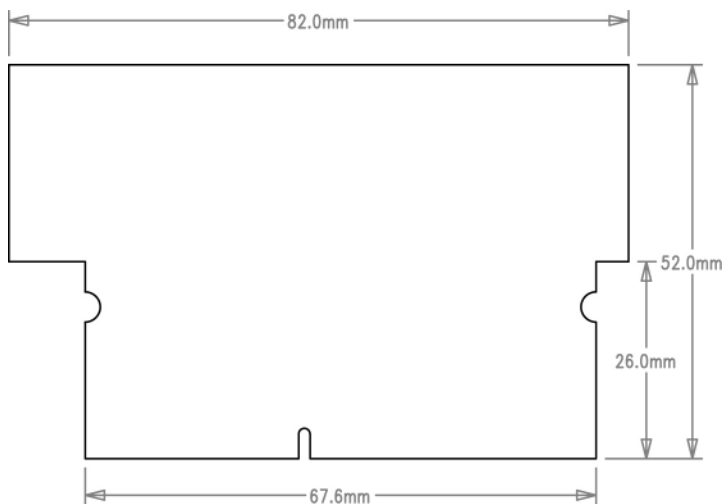
Miscellaneous

Article number	01-460-051
Hardware version	1.x

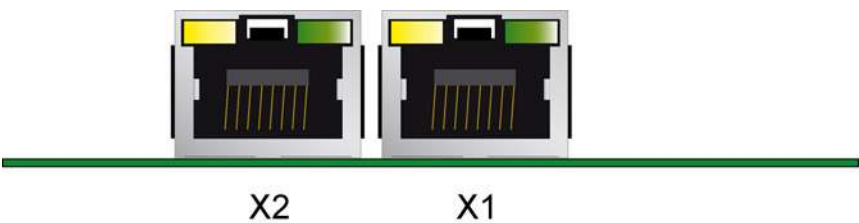
Environmental conditions

Storage temperature	-20 – +85 °C	
Operating temperature	+5 – +50 °C	
Humidity	0 – 95 %, uncondensed	
EMV stability	EN 61000-6-2 (Industry area)	
Shock resistance	EN 60068-2-27	150 m/s ²

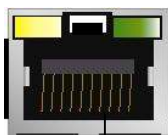
Mechanical Dimensions



Connector Layout



X1/X2: VARAN-Bus (8-pin RJ45)



Pin	Function
1	TX/RX+
2	TX/RX-
3	RX/TX+
4	not used
5	not used
6	RX/TX-
7	GND
8	GND

LED	Function
Yellow	Active
Green	Link

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

Addressing

Addressing: see VARAN bus Specifications.

Inserting/Removing the Expansion Card

When inserting the expansion card, the following process must be followed.

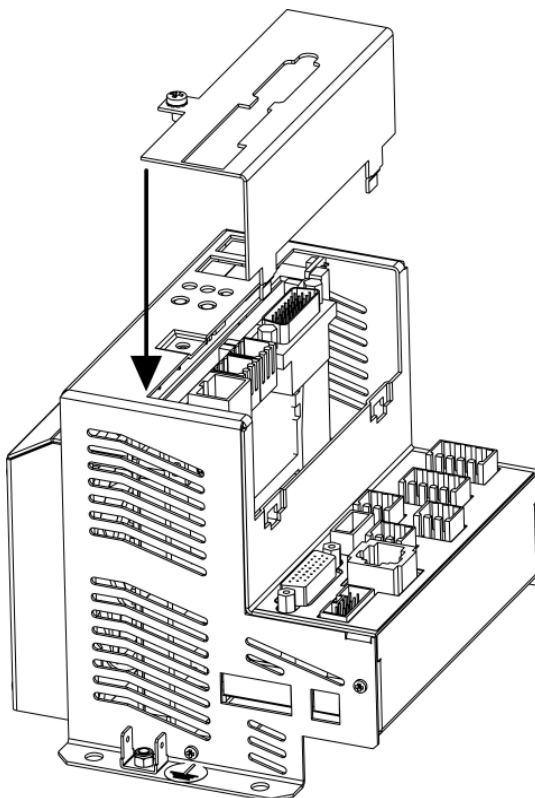
- The card must first be placed in the SO-DIMM socket **on an angle**.
- Next, press the card into the holders
- And then using the M2x4 bolts, screw the card to the C-IPC.

Removing the card is done in reverse order:

- Unscrew the card from the C-IPC
- Then it must be **pulled forward** to spring the holders
- Finally, the card can be taken out of the SO-DIMM socket

Mounting the Housing Cover

The cover is placed vertically on the C-IPC, the prongs inserted in the openings provided and then screwed down.



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.

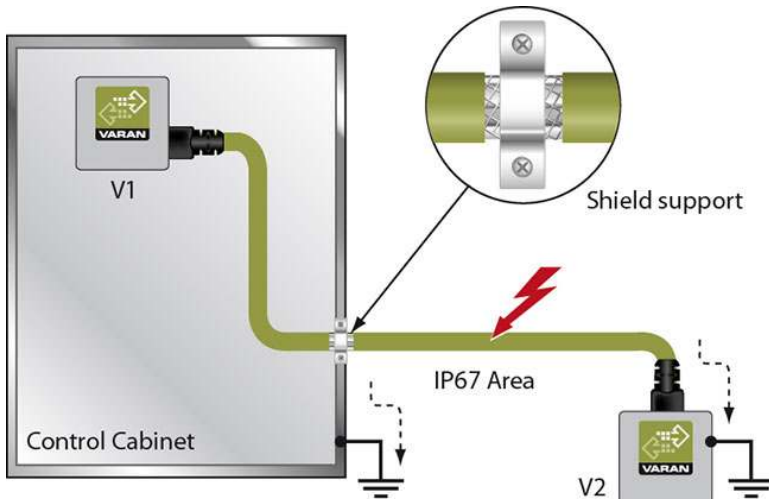
SIGMATEK recommends the use of **CAT5e** industrial Ethernet bus lines.

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!

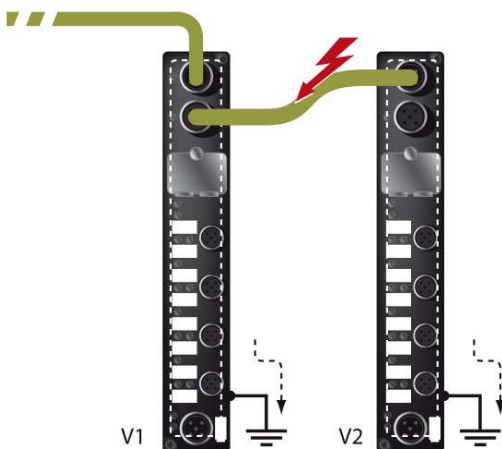
1. Wiring from the Control Cabinet to an External VARAN Component

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.



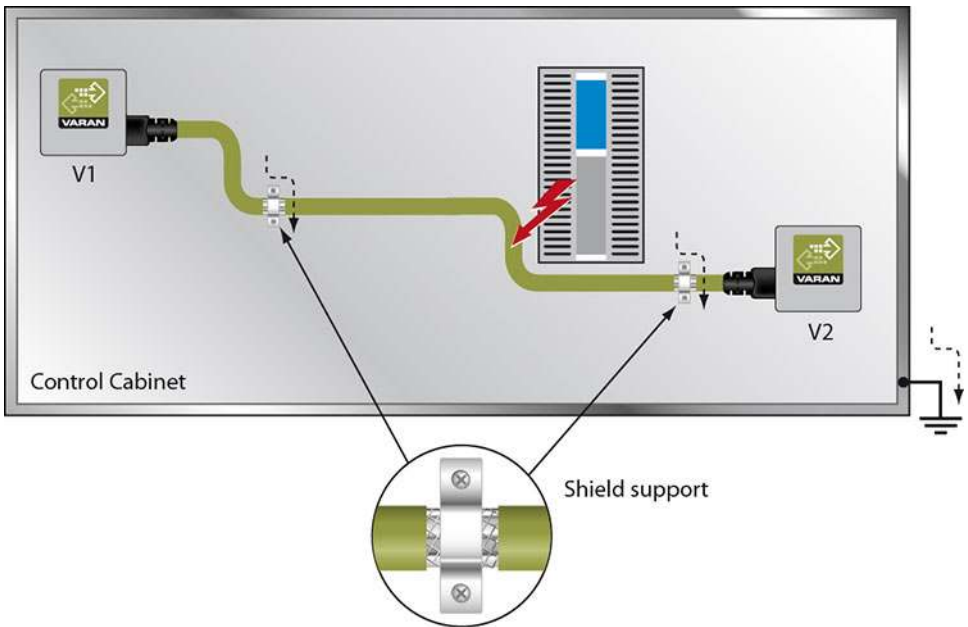
2. Wiring Outside of the Control Cabinet

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.



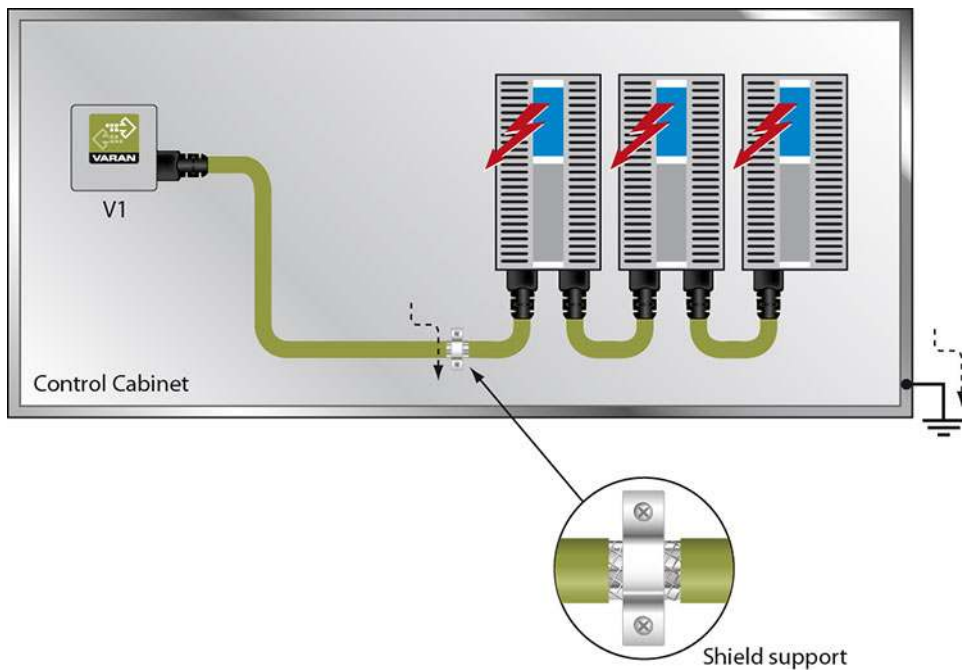
3. Shielding for Wiring Within the Control Cabinet

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.

