

A large part of the costs incurred in automation systems today results from the cabling for the actuators and signaling units. On top of this, machines and systems are becoming more and more complex, which means that the cabling costs for the input and output stations are also steadily on the increase. In addition to cabling costs, the costs for planning, assembly, startup and documentation must be considered.

**The system concept of VARIOFACE system cabling reduces manufacturing costs through fast, faultless and uniform wiring of the input and output signals of a PLC.**

The system configuration comprises three components:

- VARIOFACE front adapter
- VARIOFACE system cable
- VARIOFACE termination board

VARIOFACE system cabling is available for controllers from:

- **ABB**
- **Allen Bradley**
- **Emerson**
- **Honeywell**
- **GE Fanuc**
- **Mitsubishi Electric**
- **OMRON**
- **Schneider Electric**
- **Siemens**
- **Yokogawa**
- **Phoenix Contact**

**VIP - VARIOFACE Professional**

New front adapters with encapsulated system cables for the Simatic S7 300 and the new compact termination boards make the system cabling even more rugged.

VARIOFACE Professional means:

New front adapters

- Optimized housing design
- Power supply using PCB terminal blocks
- Pluggable bridges for electrical isolation
- Directly connected system cable with encapsulated connectors

New termination boards

- Space-savings
- Vibration resistance up to 5 g
- Optional labeling
- New housing design

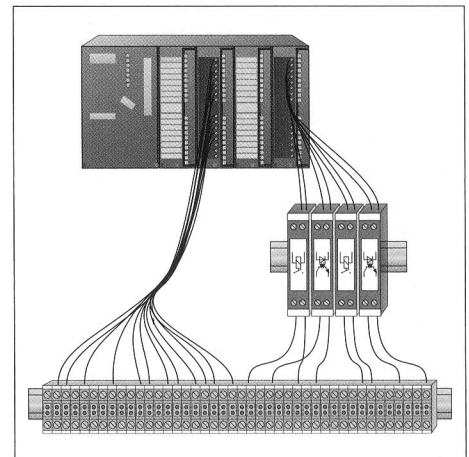


Image 1: Example of control cabinet wiring with individual signal lines

The conventional wiring of input and output cards of programmable logic controllers requires a lot of time.

Signals are transmitted from the control system to modular terminal blocks or coupling modules such as relays or optocouplers by means of single conductor wiring.

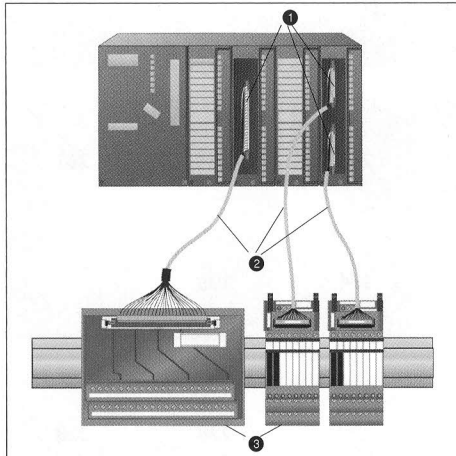


Image 2: Example of control cabinet wiring with front adapters ①, pre-assembled system cables ② and termination boards ③

This requires a complex wiring process. At the same time, errors in wiring are always possible with this connection method. Errors in wiring are often only noticed when the system is put into operation and they then cause additional costs.

Wiring with the system cabling considerably reduces the assembly time and guarantees protection against polarity reversal.

Front adapters with an integrated pin strip (IEC 60603-13) are plugged onto the PLC I/O cards. They replace connection methods such as screw or crimp connection.

The termination boards are simply snapped onto the DIN rail instead of modular terminal blocks or coupling modules. They too have a high-position pin strip on the control side.

The termination boards are connected to the front adapters using high-position and pre-assembled system cables.

Sensors and actuators from the field level are connected to the termination boards by means of screw or spring-cage connection, or knife disconnect terminal blocks. The termination boards are marked on the field side according to the application, so that the signals can be clearly assigned.

These termination boards are available in a wide range of designs depending on the application:

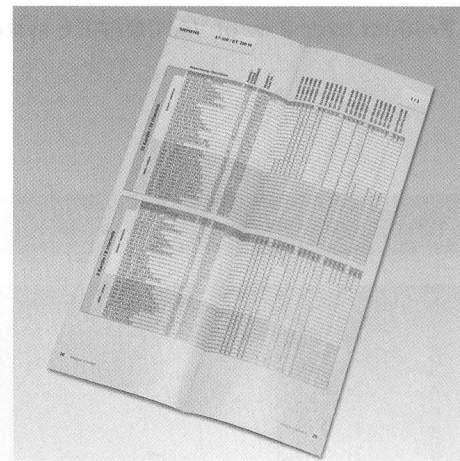
- Interface modules for 1:1 signal transfer with or without LED
- Initiator modules for the connection of PNP 3-conductor initiators
- Active output modules and interfaces equipped with relays or optocouplers for electrical isolation, signal amplification or level adaptation
- Input modules and interfaces for various voltage ranges, feed-through and jumper modules

The termination boards are connected to the PLC front adapter using the high-position system round cables. The individual wires of the system cable can be loaded with 1 A each.

The signals from 32-channel input and output cards (32 signals of 500 mA each) can be transmitted via a 50-pos. system cable. Four single bytes are transmitted separately using one 14-pos. system cable each. The signals from 8-channel I/O cards (8 signals of 500 mA each) are also transmitted using a 14-pos. system cable.

The supply voltage per byte is supplied through several free cores in the cable. This ensures that when 32 signals are transmitted through a 50-pos. cable, a total current of 2 A can flow.

If eight signals are transmitted through a 14-pos. cable, the total current is 3 A per byte. If more protection for the I/O cards is required, separate power terminals are available directly at the front adapter. The system components allow the distribution of the coupling level even within a confined space.



The pluggable, standardized connection method simplifies not only the construction of the control cabinet and the system startup through fast and faultless wiring, but also its planning and design.

The project planning cross-list, a quick reference to the VARIOFACE system components, is extremely useful when selecting the required components.

- VARIOFACE system cabling ensures:
- **Simple planning using the project planning cross-list**
  - **Cost reduction through time-saving wiring**
  - **Fault minimization through protection against polarity reversal and**
  - **Easy maintenance through modular system components**