3.10 Cable Extension for ALMEMO® Sensors

Passive extension cables ZA9060VK, ZA9020VK (NiCr-Ni), up to 4 meters
Passive 8-pin extension cables with ALMEMO® connectors are available in lengths of 1, 2, and 4 meters (ZA 9060 VK1/2/4); these are suitable for all sensors (except thermocouples). For NiCr-Ni thermocouples special extension cables with an integrated compensation line are available (ZA 9020 VK1/2/4). The cable length between sensor connector and measuring instrument must not exceed four (4) meters; if this maximum length is exceeded, communications with the connector EEPROM may be adversely affected.

The total length of all passive extension cables connected to an ALMEMO measuring instrument must not exceed four (4) meters. If the total length exceeds this, the device's internal data bus may, depending on environmental conditions, be subject to interference.

If distances exceeding this really are necessary, then - instead of extension cables - longer sensor lines must be used. For this purpose the sensor connector must be detached, the sensor cable extended in the conventional way, and the connector then refitted to the end. This method cannot be used, however, with humidity sensors firstly because the frequency measuring signal restricts the line length between sensor and connector to approx. 5 meters and secondly because the measuring instrument needs the sensor's individual calibration values.

Intelligent extension cable ZA9060-VKC, lengths of 5 meters or more
The answer to this problem is intelligent extension cable ZA9060-VKC incorporating a microcontroller and suitable for distances up to 100 meters. This microcontroller transmits EEPROM data from the sensor connector slowly and interference-resistant in both directions and makes this data available for the measuring instrument. The sensors can thus be interchanged as and when necessary (e.g. calibrated sensors with correction values).

Before connecting / disconnecting sensors or extension cables, always ensure that the measuring instrument is switched off first !

These intelligent extension cables cannot be used for thermocouples or for sensors with a pulsed output or digital range (e.g. : turbines / rotating vanes FVA915, frequency / pulse / speed ZA9909AKx/FUA9192, AC / DC / NiCr-Ni measuring modules ZA99xx-AB, carbon dioxide sensor FYA600CO2H).

Sensors with special linearization (ZAxxxxSS) or multi-point calibration on V6 devices cannot at present be connected to the intelligent extension cable.

Active extension cable ZA9020VKP for NiCr-Ni thermocouple from 5 meters

If for some reason it is not possible to extend the sensor cable itself, an active extension cable ZA9020VKP (NiCr-Ni) can be used. This cable incorporates an ALMEMO connector with an integrated EEPROM for data storage; this connector is a copy of the sensor connector. A compensation line is used for the extension. The terminals inside the connectors are also made from thermo material. If correction values or other sensor-specific settings have been programmed in the sensor connector (e.g. comments, average values, etc.), these must also be programmed (being a copy) in the ALMEMO connector on the extension cable. The active extension cable is then sensor-specific.

Cabling

When cabling long sensor cables it must be ensured that the connecting lines are not positioned near solenoid valves, contactors or motors and that they are not cabled together with the leads for such devices. Lines should wherever possible be kept as short as possible and be of sufficient cross- section. Furthermore, electromagnetic influences can be reduced by twisting the lines or by cabling the lines in steel tubes. Electrostatic disturbances can be avoided by using shielded cables. The metal braiding is connected to terminal A of the measuring input. A connection to the ground protective conductor is not always advisable because the ground wire can in industrial environments also be subject to high interference voltage peaks.