System Description

Advant Controller 31

Intelligent Decentralized Automation System

Notes for Project Planning

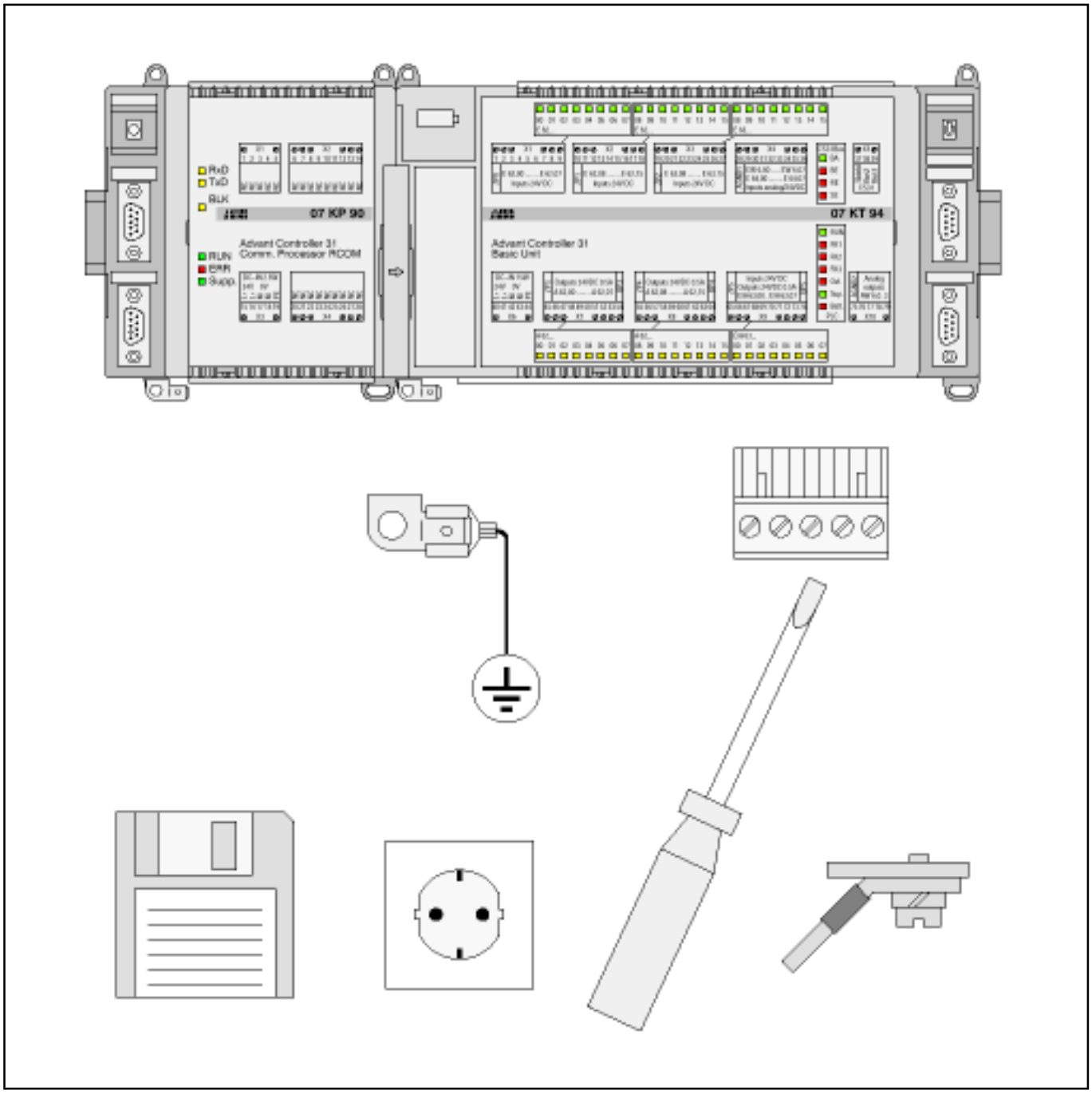

ABB Schalt- und Steuerungstechnik

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1 General instructions for EMC-compatible installation

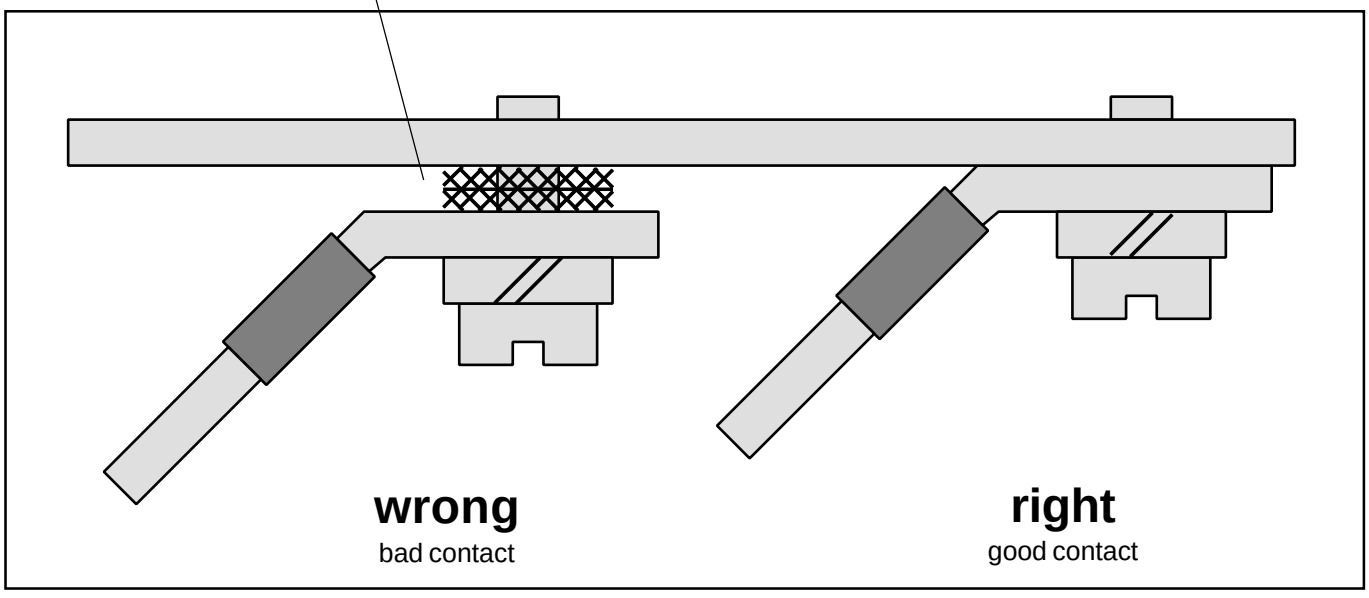
Electric and electronical devices have to work correctly on site. This is also valid when electro-magnetic influences affect them in defined and/or expected strength. The devices themselves must not emit electro-magnetic noises.

Advant Controller components are developed and constructed so that they have a very high noise immunity. When the wiring and earthing instructions under "System data and system configuration" in volume 2 are met, an error-free operation is given.

However, there are applications where high electro-magnetic noises must be taken into due consideration already during the planning phase: e.g. when frequency converters, compressors, small-power pumps (high inductance) or medium-voltage switchgear are mounted nearby. An EMC-compatible earthing concept will also guarantee here an error-free operation.

There are three important principles to be especially considered:

- Keep all connections as short as possible (in particular the earthing conductors)
- Use large conductor cross sections (in particular for the earthing conductors)
- Create good and large-sized contacts (in particular for the earthing conductors)
  - vibration-resistant connections
  - clean metallic contact areas (remove paint, clean surfaces)
  - solid plug and screw-type connections
  - earth cable shields with clips on a well grounded metallic surface,
  - do not use sheath wires
  - do not use toothed lock washers under screwed connections



In special cases, the following hints may be useful:

- Use filters for power supply units, if they pass too high noises
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2 Check list for project planning and installation

This chapter contains a list of reminders to check whether all of the important items have been taken into consideration during planning and installation.

2.1 Planning reserves

- Reserve inputs digital/analog for expected extensions
- Reserve outputs digital/analog for expected extensions
- Reserve space in the cabinet for expected extensions

} Rule of thumb 10...20 % reserve

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2.2 Everything firmly attached

- AC31 module firmly plugged on the plug-in base (all screws fastened)
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2.3 Everything correctly set

- Operating modes correctly set on the modules (e.g. DIL switch)
- Correct input/output terminals on the modules used (e.g. voltage inputs or outputs on the analog modules
- Adresses correctly set
-

2.4 Laying cables

- Power cables (230/400 V) laid out separately from the control cables (24 V, analog signals), whenever possible with a distance of 20 cm or more
- Sufficient conductor cross sections
- Sufficient cable insulation / cable shielding
- Supply lines of the power supply connected to the central units with flanged couplers (e.g. 07 KT 93 with 07 KP 90)
  - The supply lines are first connected to the central unit (07 KT 93), and then looped to the coupler (07 KP 90), see the descriptions of the coupler.
-

2.5 PE connection

- Infeed of earthing potential to the PE bar with large conductor cross section
- Connection of the PE bar to the mounting steel plate
- Connection of the switchgear cabinet components to each other
- Connection of movable switchgear components to PE (doors)
- PE Faston connection of central units and couplers (see module descriptions)
- CS31 bus shield to PE
- Connections between analog cable shields and PE
- Reference potentials of the output voltages of the power supply units are interconnected and grounded
-

2.6 **CS31 System bus** (see also volume 2, system data, system design)

- Bus line is looped through from module to module
- no spur lines
- Bus length (max. 500 m, measure cable length before installation, when necessary)
- Bus terminating resistors (see system data)
- Bus terminals (BUS1 to BUS1, BUS2 to BUS2)
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2.7 Power supplies

- All mains voltages of the switchgear cabinet correctly fed in and fused
- All power supply units correctly fed in and fused
- Tolerances and load capacities of the power supply units sufficient
- Ripple of the power supply units low enough
- Reference potentials of the output voltages of the power supply units are interconnected and grounded
-
-

2.8 Connection of inductive loads to binary outputs

- Inductive DC loads wired with free-wheeling diodes
- Inductive AC loads wired with snubbers
-

2.9 Wiring of unused analog inputs (and outputs)

- Unused analog inputs wired according to module data sheets
  see also volume 2, chapter 5.2, Analog input modules

  - to avoid error message, inputs 4-20 mA supplied with at least 4 mA
  - voltage inputs 0-10 V and/or -10...+10 V connected to Analog GND
  - to avoid error message, Pt100 inputs wired with 120 Ω
  - to avoid error message, Pt1000 inputs wired with 1200 Ω
  - thermocouple inputs short-circuited

- Analog outputs not overloaded
- Unused analog voltage outputs left open. Unused current outputs can be short-circuited to Analog GND to e.g. avoid error messages
-
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2.10 Programming / commissioning

- Operating mode of the basic units (master, slave, stand-alone) correctly set (default setting is stand-alone)
- Software configuration for the modules correctly programmed
- Program End (PE) exists in the user program
- FBD/LD and/or extended instructions list translated
- Program sent to the basic unit
- Program saved in Flash EPROM
- Operating mode of the PLC enabled
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