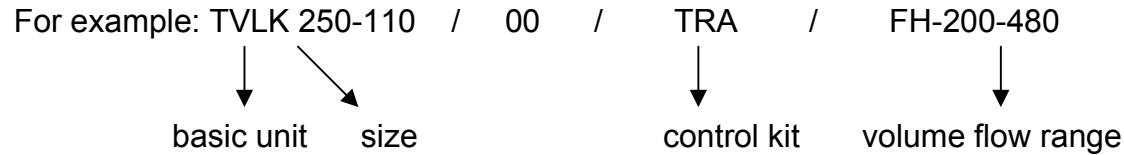


The built in VAV units consists of the basic unit (damper) and the mounted electronic controllers. The different built in VAV types consisting of basic units (damper) and mounted electronic controller kits are summarized in the following product codes:



The controller kit can be mounted on different VAV basic units. (e.g. TVR, TVRK, TVJ, TVLK, etc.) Which unit is necessary depends on the function type. The wiring depends only on the controller kit.

All electronic controller kits are based on the TCU-II circuit board. The particular function type is being realized by a specific factory programmed software type.

Controller kit	controller	actuator	function
TRA-FH	TCU II+FCC-E- transducer+operator terminal (incl. monitoring)	Gruner 277	Fume hood controller incl. monitoring (rapid actuator)
TRA-RS/RE	TCU II	Gruner 277	Room supply or exhaust controller (rapid actuator)
TRA-PS/PE	TCU II + diaphragm pressure transducer (MDT +/- 50 Pa)	Gruner 277	Room supply with room pressure cascade control

The enclosed technical documentation should support the electrical planner during project realization. The described procedure and the forms can be used to simplify and quicken project realization but they do not represent any regulation.

Additional notes:

The wiring plans have to be checked by the principal before starting assembling. The wiring schemes have been created by the documentations which have been given by the consultant.

TROX excludes any liability.

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The electrical installations must be implemented in compliance with the current valid local electrical regulations.

Wiring of analogues communication system: 2-10 V DC

Control signals will be transmitted as different analogue voltages. The signal default voltage range is 2-10 V DC. The usage of a voltage range from 0-10 V is possible by reconfiguration of the TCU-II controller within a special software package.

We strongly recommend the usage of shielded cables to avoid interferences on analogue signal wiring.

Wiring of power supply: 24 V AC

The Labcontrol system requires a power supply with 24 V AC \pm 10%. During installation a suitable dimensioning of the power supply wires has to be regarded. Especially wiring length and dimension as well as transition-resistors may generate a power loss. Furthermore the electrical load of the special control kit has to be considered.

Choice and dimensioning of cable types have to be done by local authorized electricians.

For calculation of cable dimensions, you will find the connected loads of different control components within the following list:

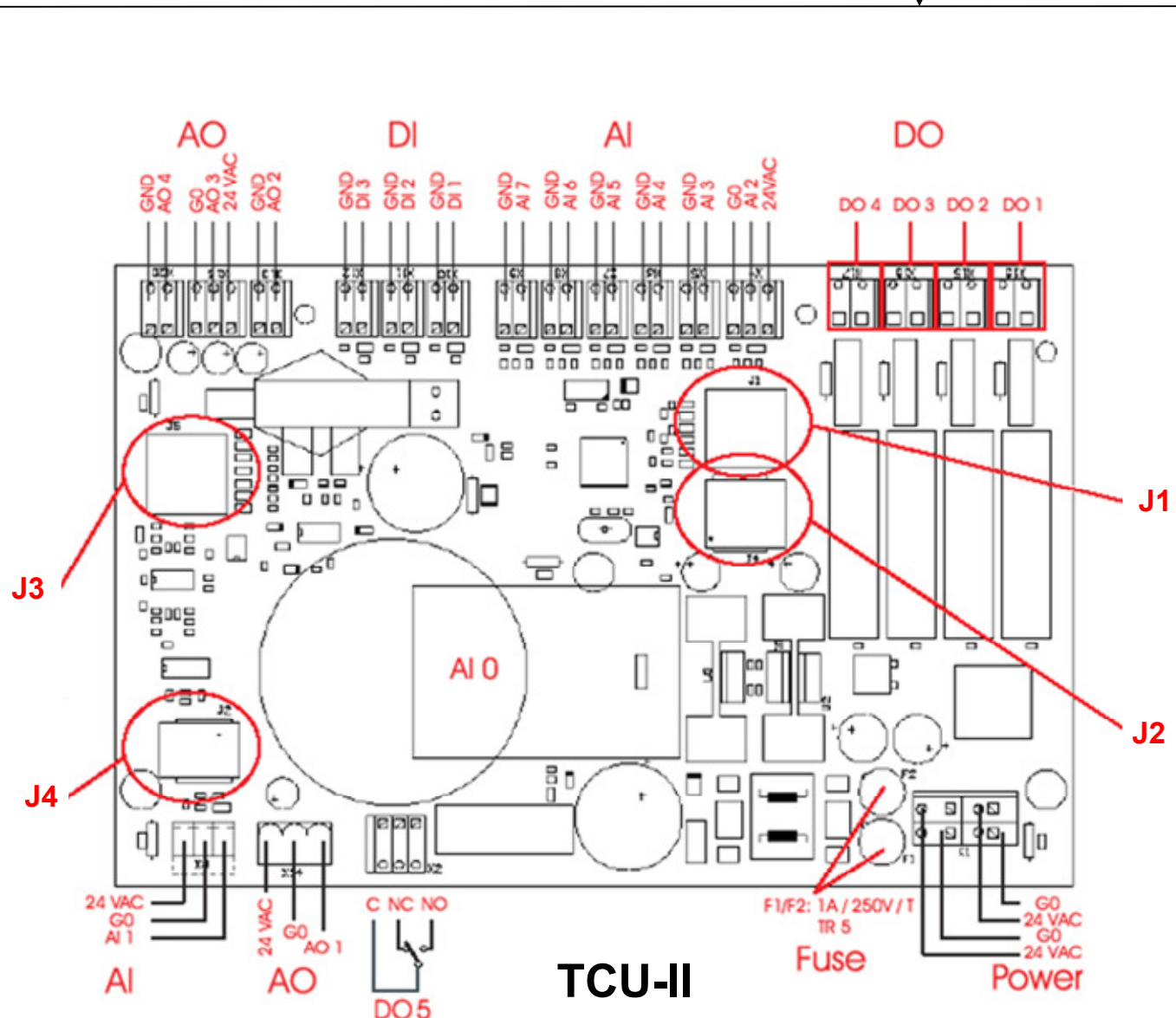
Connected load of different controller types:

Fume hood control with control kit TRA-FH	25	VA
Room supply control with control kit TRA-RS or TRA-PS ...	25	VA
Room exhaust control with control kit TRA-RE	25	VA
Belimocontroller VRP, VRD2, NMV-2	8	VA
Siemens GLB 181	6	VA
TVR Easy	6	VA

Cable color abbreviations:

sw = black ws = white bl = blue br = brown grü = green

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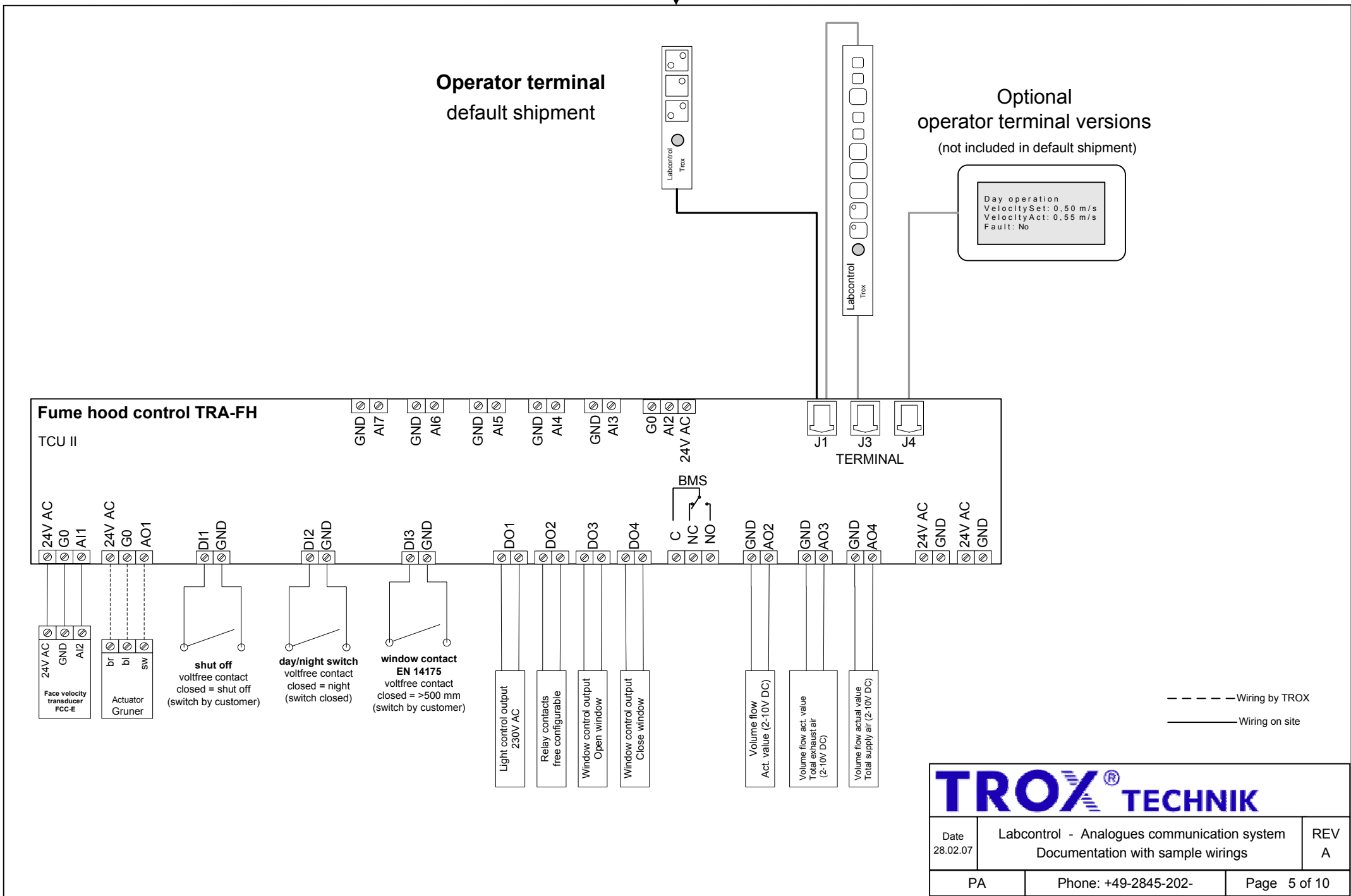
Connector / Assignment:

- DO (DO1-DO5) Digital outputs
free configurable relay contacts e.g. light or window control
- DI (DI1-DI3) Digital inputs
free configurable, voltfree contacts e.g. for the switching functions shut off, day/night switch over, window contact 500 mm
- AO (AO1-AO4) Analogue outputs (default 2-10V DC)
free configurable analogue outputs e.g. control of damper actuator as well as volume flow actual values
- AI (AI1-AI7) Analogue inputs (default 2-10V DC)
free configurable analogue inputs e.g. for the face velocity sensor at fume cupboards or pressure transducer at room controllers.
- C NO NC Relay contacts for alarm output to the Building Management System (BMS)
- J1 Fume cupboard operator terminal (default) or:
Optional extended operator terminal J1+J3
- J2 Only for firmware download (Service)
- J3 Optional extended operator terminal J1+J3
- J4 Optional LCD display unit
- POWER Power supply 24 V AC

TCU-II

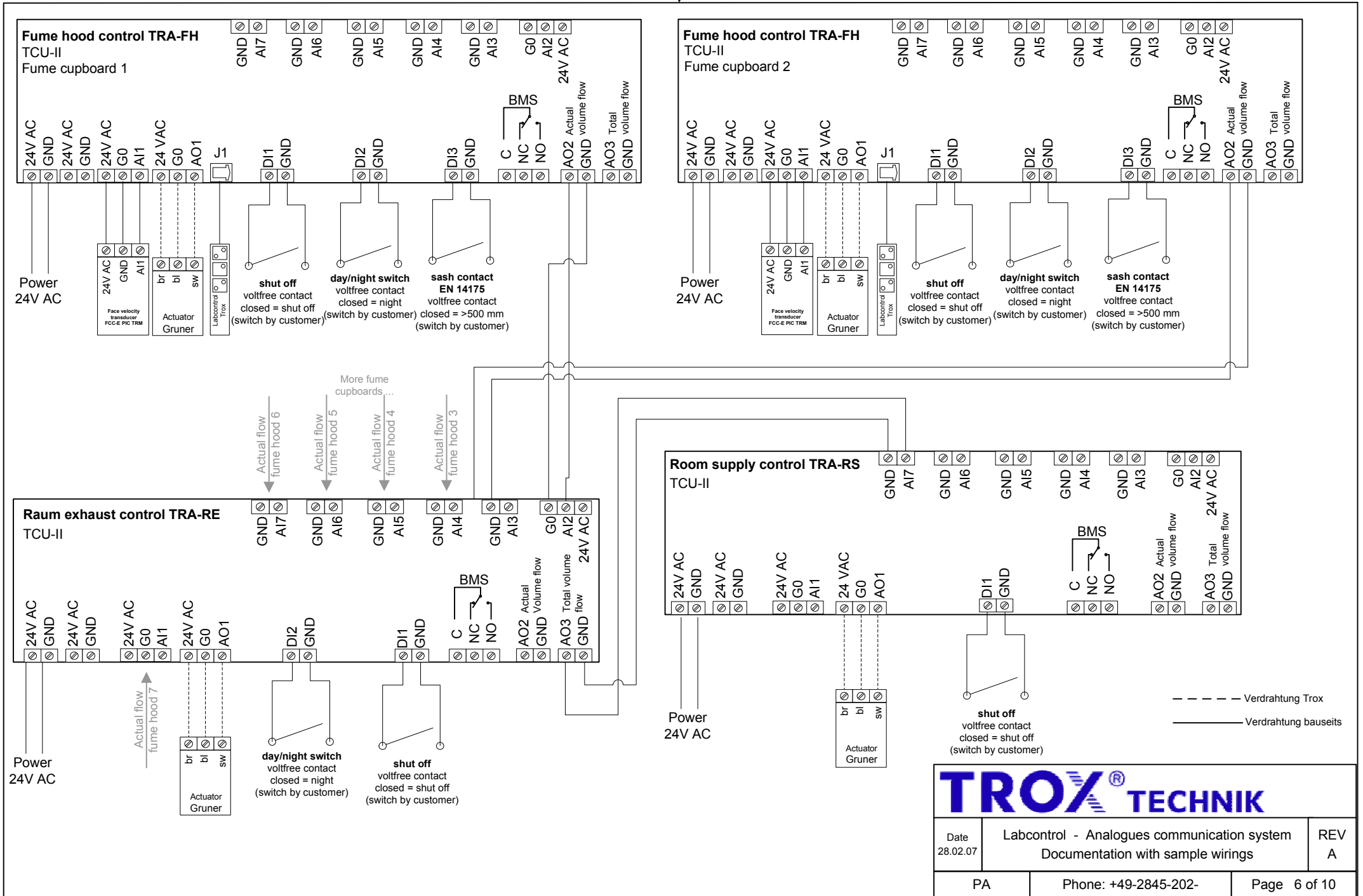


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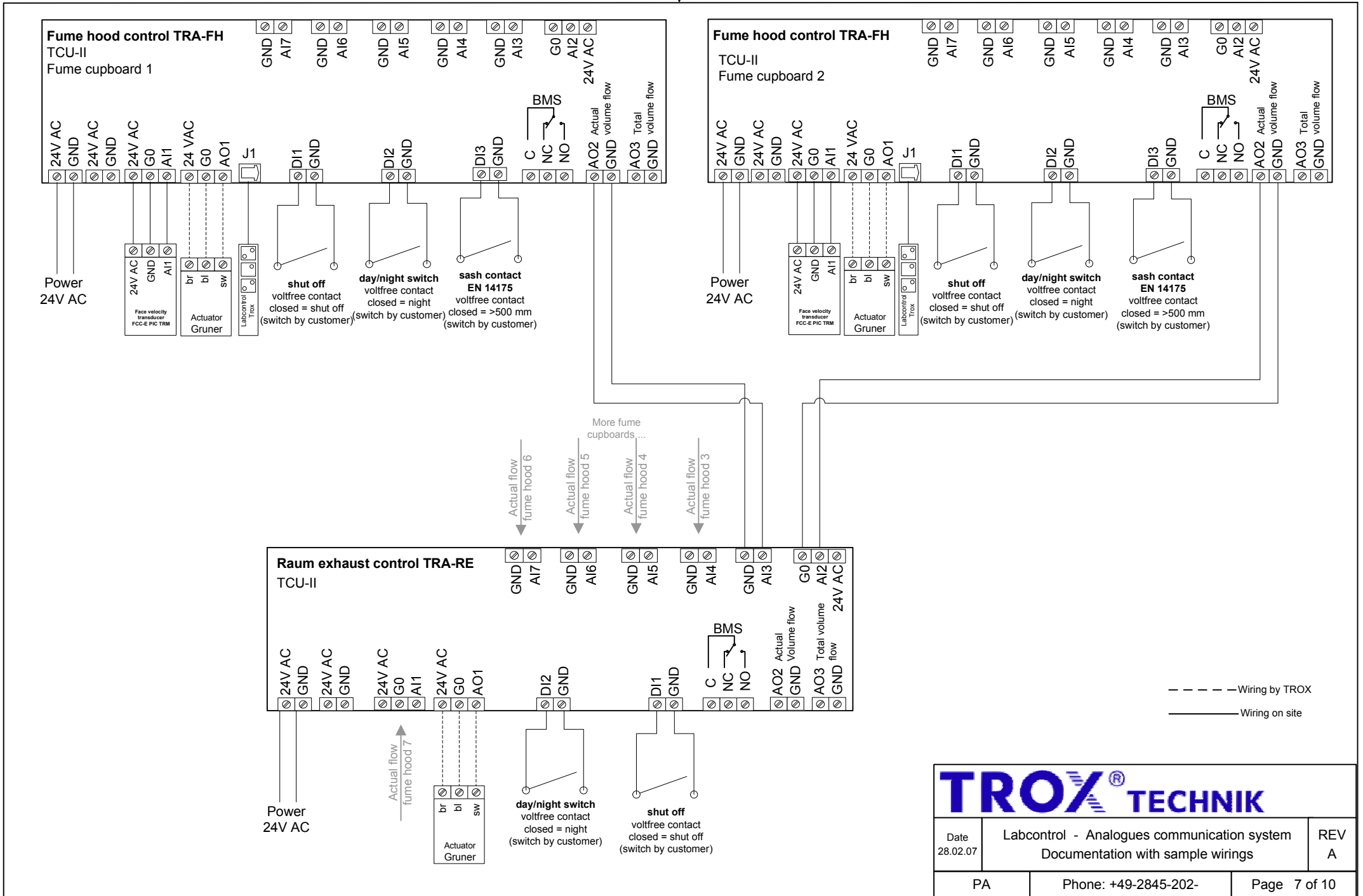
Labcontrol: Sample wiring

Fume cupboard control (2) with room supply + exhaust control



Labcontrol: Sample wiring

Fume cupboards (2) with room exhaust control

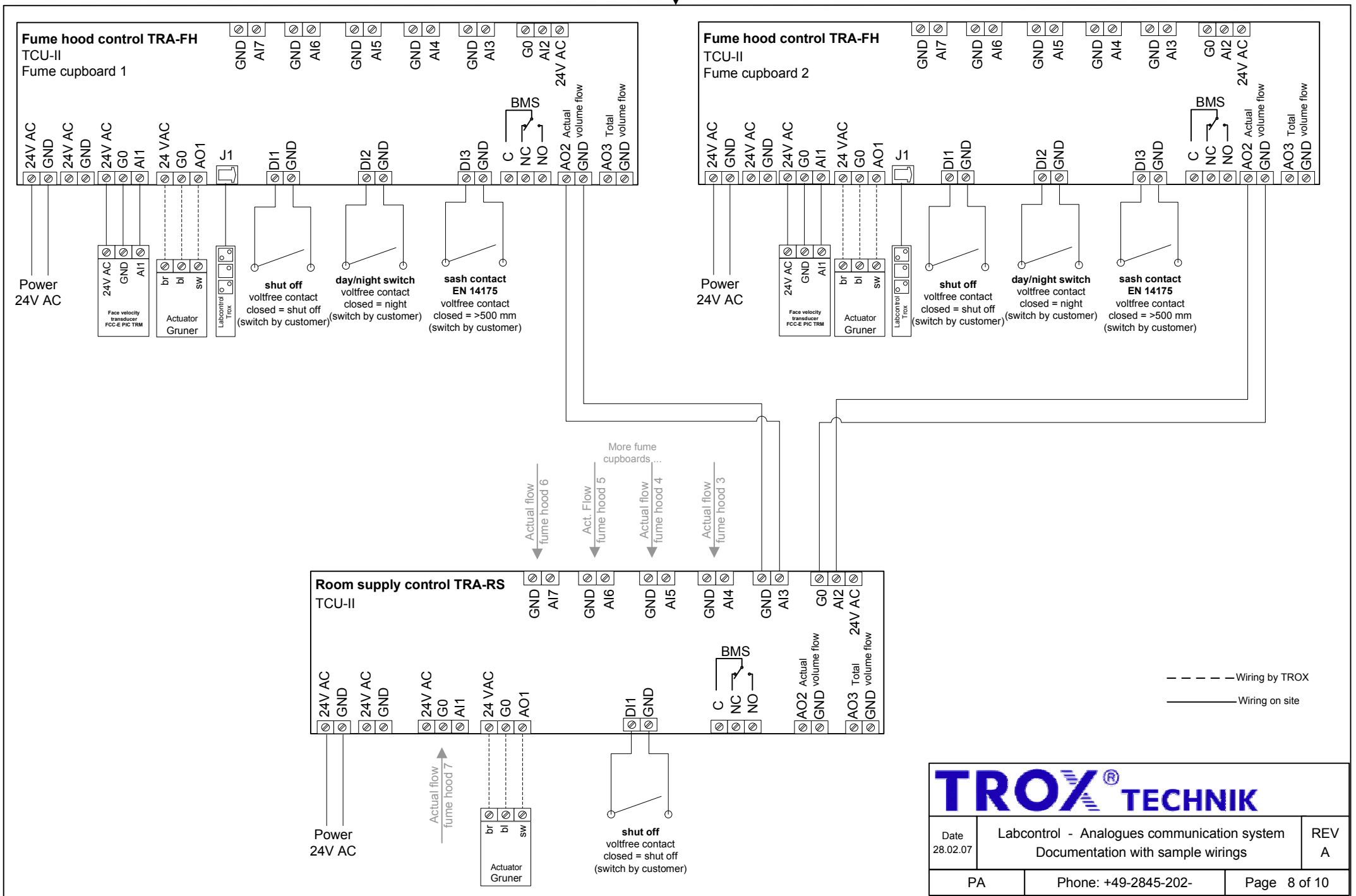


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Labcontrol: Sample wiring

Fume cupboards (2) with room supply control



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For an implementation of a pressure control with a volumeflow-pressure cascade controller TMA-PS / PE the following premises have to be fulfilled:

- The air pressure of every controlled room must be measured against a stable reference room with constant atmospheric pressure.
- Pay attention to sufficient dimension of the reference pipeline during usage of a ring-pipeline for the reference pressure.
- The density of pressure controlled rooms has to be as sufficient as to built up the desired room pressure.
- Pressure controlled rooms must allow an overstreaming potential. Only in this case here described control units may regulate the room pressure. The overstreaming potential should be minimum 10 % of total room air exhaust.
- Before commissioning the room pressure control all doors and gaskets have to be assembled, as well as wall holes must have been closed.

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Labcontrol: Sample wiring

Fume hoods with room supply/exhaust control plus pressure control on room supply

