



ENGELS - ELECTRIC AIR HEATERS

Information

A-1998

Information on Installation, Operation, Connection and Maintenance of Electric Air Heaters

Engelnorm® - Engelcanal® - Engelcompact® - Engelspecial - Engelvari-o®

General

Engels electric air heaters, are high-quality components for modern heating, air conditioning and ventilating systems. They have been manufactured according to the latest functional and qualitative requirements and provide optimal service. To ensure correct and safe operation, note the important information below.

Installation

Observe the relevant regulations when installing units and ducts.

Ensure in particular sufficient safeguards against contact and foreign bodies; otherwise direct installation in ducts, equipment, units, systems, etc. can proceed.

The installation position can be arbitrarily chosen, but the temperature monitor/limiter must always be located on top, so that in case of malfunction the convective temperature increase can be signalled as fast as possible. With adjustable TW/TB the cut-off temperature under normal operating conditions can be set to approx. 348 K. The adjustment is necessary before starting operation, as the units are delivered at the lowest setting.

As the heating grids are only manufacturable with protective system IP 00, a higher-level protective system according to DIN 40050 can only be achieved with professional installation. In case of sealed duct installation and corresponding unit installation (open only with tool), with sufficient distance from air outlet, the protective system is raised to at least IP 43. The connection terminal boxes used by us provide at least protective system IP 43; IP 65 is also available on request.

When installing, do not allow any bore shavings to fall into the units.

Low weight makes easy installation possible. Non-problematic installation is also possible in the vicinity of motors or filters, and in intermediate ceilings. Installation must proceed in such a way, however, that water does not enter into the heat exchanger; install therefore in front of radiators, humidifiers and washers, if possible, or at a sufficient distance from these components. With vertical air ducts, an additional safety temperature limiter must be installed above the electric air heater

Electrical connection

Electrical connection may only be made by an electrician. Here VDE 0100/DIN 57100 must be especially observed, along with the safety measures specified in our bulletin no. S 20 - Catalogue EL 2020.

Before connecting, check that the operating voltage specified on the nameplate corresponds to the available supply voltage. The frequency can always be 50 -60 Hz.

Connect according to the enclosed connection diagram. Other output levels are possible, but we cannot assume responsibility for any structural changes made.

When measuring the conductor cross-section, you may assume a purely ohmic load.

Detailed current load tables can be found on pp. 38 and 39 - catalogue EL 2020.

Operating Conditions

All data on low surface temperatures or low temperature versions presuppose that the operating state is correct and that normal operating conditions and the nominal air quantities obtain. The stipulated and sufficient fire protection measures must be maintained for the event of malfunction (e.g. absence of air flow):

Wiring of the air heater in conjunction with the fan motor. Installation of safety temperature limiters and temperature monitors, as well as an air flow monitor and its electrical locking. Routine cleaning and, if necessary, a pre-switched filter should also be provided for.

After-heating of the air heater does not occur, so that cut-off can be synchronized with the fan.

The medium that is to be heated must not contain any combustible or explosive gasses, as the units do not offer any explosion protection.

Otherwise observe the relevant regulations for operating and using electric air heaters, such as EVU, VDE/DIN, TÜV and IEC regulations.

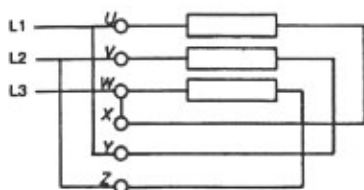
Maintenance - Functional Check

As the units do not contain any wearing parts or moving parts, experience has shown that maintenance in the conventional sense is not necessary.

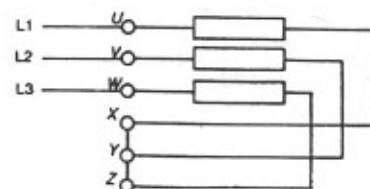
On initial connection and subsequent checking, the connection screws of the electrical connection should be re-tightened.

A functional check of the safety measures should be routinely made, but always at the available nominal air quantity.

Delta connection Δ at 220/230 V 3 - ph ~



Star connection Y at 380/400 V 3 - ph ~

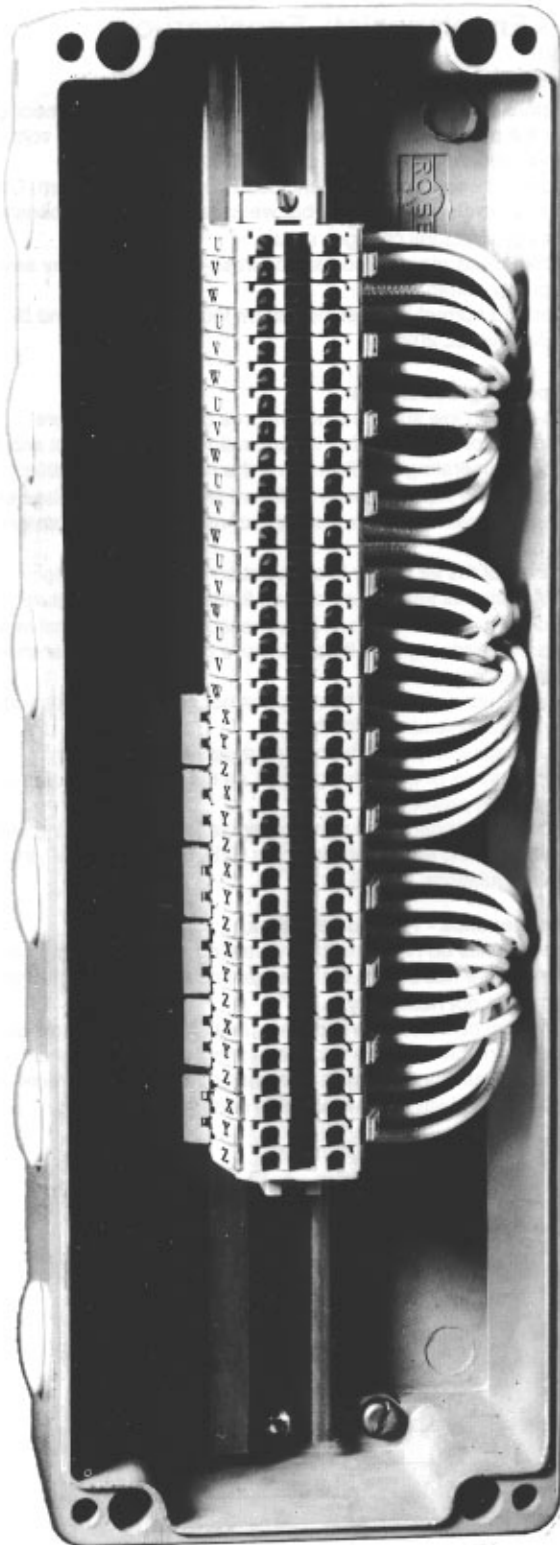




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Electrical Connection of Units



Aluminium terminal boxes

All Engels electric air heaters of the series Engelnorm[®], Engelvari-o[®] and Engelcanal[®] are equipped with aluminium terminal boxes as standard.

These terminal boxes are designed according to VDE 0110/part 2 in reference to the permissible air and creepage distances.

Material: aluminium cast AL Si 12
 Colour: grey, similar to RAL 7001
 Protective system: acc. to DIN 40050

Normal version with at least IP 43; IP 65 available on request.

Proper and safe connection can be made at the inside terminal strips. With larger output levels, protective conductor connection to VDE protective conductor terminals. The switch groups provided as listed can be easily changed at any time, as all leads are connectable to the terminals. Each unit is supplied with a corresponding electrical connection diagram.

Engelnorm Type	Terminal box dimensions mm	Phoenix terminals type / mm ²	Cable guides PG bores
E 0,5 - E1 L 1 - 3 ELR 0,5 / 1,5 ELP 1 - 1,5	98 x 64 x 34	G 5 / 6-pin / 4	2 x PG 11
E 2 L 4 - L 8 ELR 2 - 5	125 x 80 x 57	G 5 / 12-pin / 4	2 x PG 13,5
E 7,5 L 9 - L 11 ELP 3 / 9 ELR 6 - 9	175 x 80 x 57	G 5 / 18 - pin / 4	2 x PG 13,5 1 x PG 16
E 12 - E 16 EL 6 - EL 16 ELP 8, 12, 12 / 2	250 x 80 x 52	G 5 / 24 - pin / 4	5 x PG 16
L 12 - L 15 E 20 - L 16 ELP 16	220 x 120 x 80	UK 5 N / 18 - pin / 4 UK 5 N / 24 - pin / 4 or adjusted	3 x PG 16 1 x PG 21 1 x PG 29
EL 20 L 17 - L 18 ELP 10 - 36	360 x 120 x 80	UK 5 N / 30 - pin / 4 UK 5 N / 36 - pin / 4 or adjusted	4 x PG 16 2 x PG 21 1 x PG 29
L 19	560 x 160 x 90	UK 5 N / 48 - pin / 4 or adjusted	5 x PG 16 2 x PG 21 2 x PG 29
L 20	800 x 230 x 110	UK 5 N / 60 - pin / 4 or adjusted	6 x PG 16 2 x PG 21 2 x PG 29

The reorganization to metric bores M 16 - M 40 to all cable guides-bores caused by the end of 1999

Electrical circuit Basic circuit diagram

Circuit Ph - N at 220/230 V 1~

