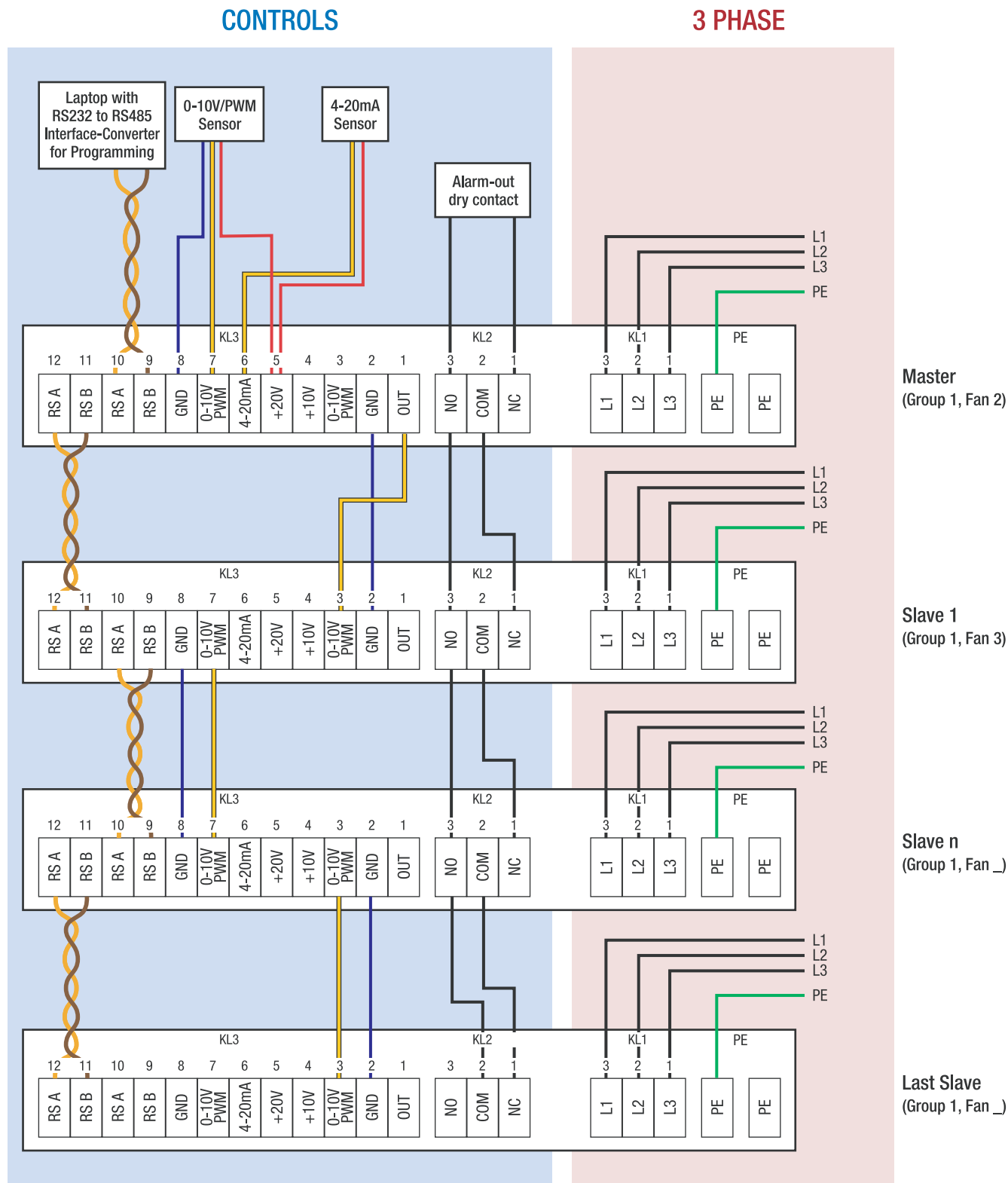


## Master-Slave Connection Sequence

0-10V/PWM External Sensor  
4-20mA External Sensor



The following KL3 terminals are paralleled: 3+7, 2+8, 9+11, 10+12.

### Alarm Circuit

Diagram depicts a “normally closed” circuit which opens on failure of any fan.  
NB. Contacts are held in position only when power is connected to motor.



### WARNING

Electricity is dangerous. Suitable electrical qualifications may be required to carry out the wiring.

Fans may start unexpectedly during this process. Ensure suitable safety precautions are in place before commencing.

### General overview

- Object is to control the speed of one or a group of fans in response to a signal supplied from an external sensor. (Typically pressure transducer or temperature sensor)
- In the case of a group of fans, one fan will operate as a Master the remainder will be Slaves.
- The inbuilt controller within the Master fan will be programmed to control the speed of the master and all slaves in response to the input signal from the external sensor.
- All fans are to operate in unison (There may be a slight difference from the Master to the Slaves).
- The external sensor is to supply the Master fan with a 0-10 Volt control voltage or PWM signal (Connected to terminals 2 & 3 or 7 & 8). Alternatively a 4 to 20mA signal can be connected to terminal 6 & 8.
- A control signal is sent from terminal 1 (“OUT”) of the Master fan to the first Slave from which it is paralleled to all fans (Via terminals 2 & 3 or 7 & 8). All Slave fans are programmed for “Open Loop Control” (Via the LISA ebmBus).
- Programming and monitoring is via the RS485 LISA ebmBus.
- Connection of RS485 LISA ebmBUS is via daisy chained twisted pair wires.

### Set mode of operation

- Mode of operation is set via ebmBus with PC/Laptop and RS232 to RS485 Interface-converter and LISA software.

### Procedure

- Switch off mains power supply.
- Isolate the Master fan from the control feed from the external sensor.
- Connect ebmBUS-wiring to the Master fan, check “A” and “B” polarity (This is critical). Only the Master fan must be wired to ebmBUS at this time. Later the ebmBUS will be connected step by step to all fans.
- Check mains supply, especially the earth.
- Switch on mains supply to the fans. (The LISA ebmBus cannot talk to the fans without power)
- Select “External Sensor Control” via LISA and laptop.

- Change the Master fan’s address to “Group1, Fan 2” via LISA and laptop (It is strongly recommended that no fan is addressed “Group 1 Fan 1”). This is to ensure that any future replacement fans, which are supplied factory set as “Group 1, Fan 1”, can be easily commissioned. It is not possible to talk, via the LISA program, if any fans that have the same address.

7.1 Set the operation mode to “Closed Loop Sensor Control”

- Connect RS485 ebmBUS and program the 1st Slave fan:
  - Connect ebmBUS wiring from master to 1st Slave fan, (Terminals 11 & 12) check “A” and “B” polarity (This is critical).
  - Set operation mode to ‘Open Loop PWM control’ via LISA and laptop.
  - Change fan’s address to “Group1, Fan 3” via LISA and laptop.
- Connect RS485 ebmBUS and program 2nd Slave fan:
  - Connect ebmBUS wiring from 1st Slave to 2nd Slave fan.
  - Set operation mode to ‘Open Loop PWM control’ via LISA and laptop.
  - Change fan’s address to “Group 1, Fan 4” via LISA and laptop.
- Connect RS485 ebmBUS and program 3rd Slave fan:
  - Connect RS485 ebmBUS and program 3rd Slave fan.
  - Set operation mode to ‘Open Loop PWM control’ via LISA and laptop.
  - Change fan’s address to “Group 1, Fan 5” via LISA and laptop.
- Connect any subsequent fans in the same vane, always ensuring a Fan No. is not duplicated.
- Connect external Sensor to the Master fan.
- Connect the 0-10volt control wiring from the Master to the Slaves as per the wiring diagram.
- Program target pressure / temperature value and PID control range of the Master fan via LISA and laptop. (See separate instructions)
- Test run the unit.

Commissioning of these fans requires previous training in the application and use of the ebm-papst LISA software program. Do not attempt to commission the fans without previous training.

A laptop computer suitably programmed to operate LISA via the RS232/RS485 ebmBus interface is required.

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