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Best Practice when using multiple 24V LinkEx™ LED Temporary Luminaire LX-400 with transformers

A typical Wolf setup of LinkEx™ LED Temporary Luminaire LX-400s powered from a 400VA transformer fitted with 16A gG output fuse would be:

8 linkable lamps fitted with 5M of 2.5mm^2 cable and connected in 2 strings of 4 lamps; no longer than 20M (maximum cable length for reliable 16AgG fuse operation).

When linking multiple 24V LinkEx™ LED Temporary Luminaire LX-400s there are guidelines that must be followed to ensure that the lamps and supply equipment are used both optimally and in a safe manner.

- **Maximum Transformer Load**

  A Transformer is designed to supply a maximum load. If this is exceeded the transformer's circuit protection device (CPD), such as a fuse or MCB, may blow or the safety code may be invalidated e.g. T class or ambient. Any apparatus operated from the transformer should be checked to ensure that the maximum load of the transformer and associated plugs and sockets is not exceeded.

  The LinkEx™ LED Temporary Luminaire LX-400 has a circuit power of: 38W.
  Power factor correction better than 0.938.

  Power rating for 8 off 24V LinkEx™ LED Temp Luminaire LX-400s = 304W or 323VA (Watts/pf)

- **Selecting a Circuit Protection Device (CPD).**
  It is the job of a CPD is to ensure any fault occurring at any point in a circuit is interrupted within a time (t). This will ensure that a fault current does not cause the permitted limiting temperature of any conductor to be exceeded. Incorrect CPD operation may result in overheating damage to the transformer's internal wiring or external conductors, potentially resulting in an unsafe condition in the safe or hazardous area.

  A value for t can be found using the adiabatic equation given in wiring regulations, which utilises prospective fault currents and conductor material data. Using t and the CPD characteristic curves the appropriate sized CPD can be selected or a fitted CPD checked as suitable for the desired lighting arrangement.

  Circuit cable lengths and conductor diameters have an impact on prospective fault currents, as they alter link impedances. As standard, 2.5mm^2 cable is fitted to the LinkEx™ LED Temporary Luminaire LX-400s.

  It is the user's responsibility to ensure that any cable configuration used with a transformer will not compromise the CPDs protection of the unit.

- **Voltage drop.**
  ATEX certification of LinkEx™ LED Temporary Luminaire LX-400s includes assessment of product safety at the rated voltages of 19-28V dc/ac rms. Running the lamps outside of these rated voltages will invalidate the ATEX approval and the product warranty, may result in a dangerous condition and could cause the product to fail prematurely.

  The LinkEx™ LED Temporary Luminaire LX-400 is fitted with a Safe Operating Voltage Indicator (SOVI). The internal approval label highlights a coloured flashing indicator LED fitted to the LED driver. When the lamp is energised the LED will flash GREEN to indicate the supply voltage is within certification limits. The lamp should not be used if the indicator is flashing RED, a fast flashing RED LED indicates the supply voltage is too low, a slow flashing RED LED indicates the supply voltage is too high. Red indication may be due to an incorrect supply voltage or too many lamps being linked together. If connecting a large number of lamps check the indicator on all the lamps in the string.

  The voltage at the terminals of any lamp in a string of lamps is a function of a number of factors;

  1. The output voltage of the transformer will be affected by the input voltage to the transformer and how heavily loaded the transformer is. The Greater the load the more the output voltage will 'droop'.

  2. Any conductor in a current carrying circuit has an impedance and therefore a voltage drop associated with it. Cable lengths and conductor diameters will alter cable impedance. Longer cables and smaller conductor areas increase the voltage drop.

  3. The more lamps in the string the higher the total current and the greater the voltage drop across the preceding links.

  Apparatus with long cable lengths or strings of multiple lamps, must be checked to ensure the calculated voltage drop will not prevent the apparatus from operating within the specified voltage tolerance

  Further Guidance on lamp connection and extensions can be found on the Wolf website:- www.wolf-safety.co.uk.

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