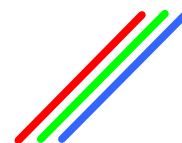


## Applications information

# Fittings with multiple dimmable ballasts Dynamic dimmable applications Fittings for color control



Color controls with dynamic dimming applications are more and more popular. We find more and more request for color changing applications.

However a continuous changing of lamp power effects the position of the COOL – and HOT spot of the lamp. By fast and repeated dimming in dynamic color applications, the lamps are not run in a stable way. Lamp manufacturers have got little experience with those kinds of applications and therefore are not able to supply any ballast specifications.

Dimming ballasts from TridonicAtco have always been used for these kinds of applications. Hence TridonicAtco was able to gather experience and communicate it with the lamp manufacturers.

All values shown in norms and specifications refer to static or slow dimming (e.g. daylight dimming). All figures quoted by the lamp and ballast manufacturers refer to a specific way of dimming, especially the lamp life. The existing specification is not to be understood as final. We are in the process of developing optimised limitation values for dynamic dimming applications.

To put specific applications into practice, we have put together following information. This should be a guideline for the luminaire manufacturers, to recognize critical values and to avoid them.

There are specific factors that have to be considered carefully. In dynamic dimming applications T8 lamps are better-suited than T5 lamps, because of mechanical and thermal characteristics of the lamp. T8 lamps are more resistant in regards to the ambient temperature. The amount of switch cycles is very important for the lamp life. It is better for a lamp to dim it down to a low level, than switch it OFF frequently. Otherwise you get a high number of switch cycles in a very short period of time.

The lamp life is influenced by various factors. Multiple ballasts in one luminaire can cause RFI. This can cause flickering, bumpy dimming or even switching off the electronic ballast. The reason for this is the interference between the individual lamp current circuits.

If a lamp is run with a lot of power, it interferes a little amount of its current into the 2<sup>nd</sup> very low dimmed lamp close to it. Then you can get a negative result.

The same happens if you have interference between a heating current circuit and the current circuit of the lamp close to it.

Between the lamp current circuits (lamps and cables) of multiple electronic ballasts you should have a min. distance of 12 cm.

If this is not possible you have to reduce the interference of the lamp current circuits by wiring the installation very carefully:

- Cables of the heating circuits have to be twisted together to be very close to each other. This is very important if you have dimming applications where electronic ballasts that are close to each other are dimmed at a low level.
- Wire the cables close to the lamps to minimise the lamp circuit area. The lamp circuit areas of two individual electronic ballasts should not overlap. This is very important in applications where you have two different dim levels.
- The distance between the lamp cables of two electronic ballasts should be at least a few cm.
- The “hot” ends should be as short as possible and be at one end of the fitting – the “cold” ends should be at the other end of the fitting. The mains supply and the control line should be wired from the “cold” ends side to the terminals.

- All mains and control lines can be run in parallel to each other. Keep a distance between the mains/control line and the lamp cables to avoid RFI.

Also please minimise the leakage current between the lamp electrodes and the luminaire housing. This is very important for applications with T5 lamps, because the diameter of the lamps is very small and the distance to the housing is very small. The distance between the lamp and the housing should be at least =8mm.

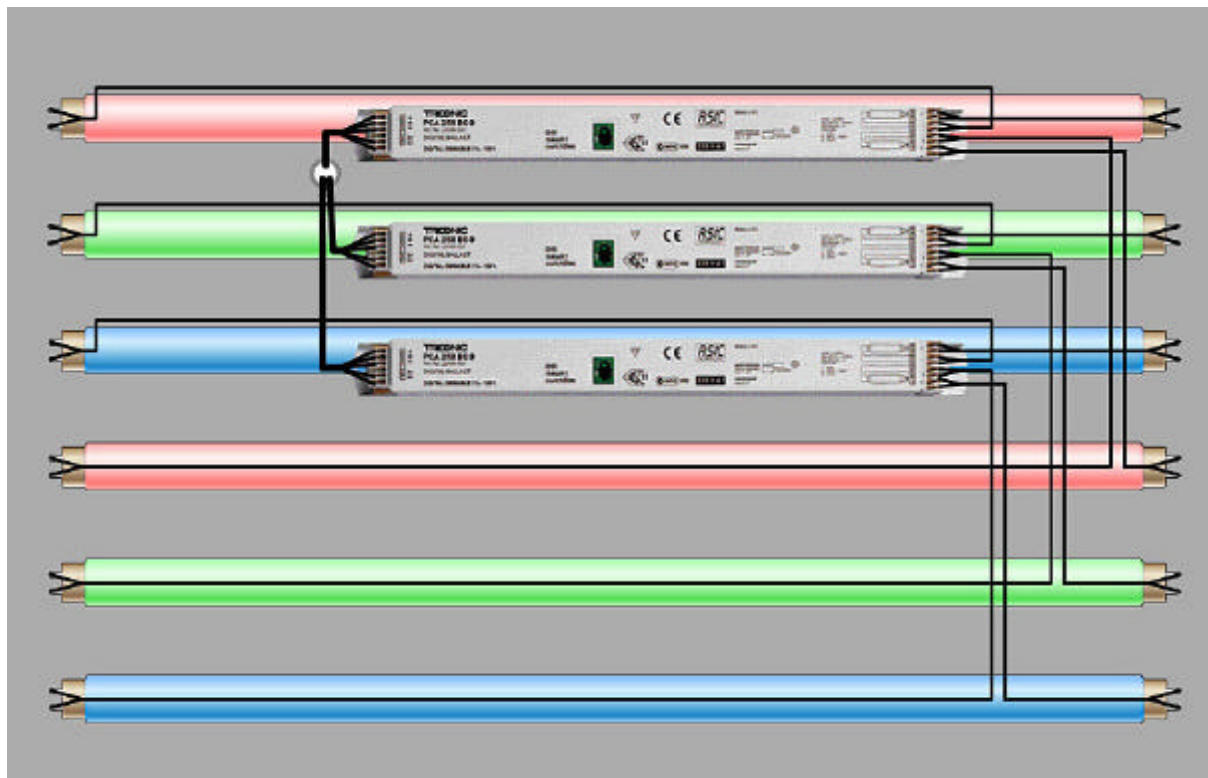
Exterior RGB applications are confronted with temperature fluctuations. The light current of a hot cathode fluorescent lamp depends on the ambient temperature. At low temperatures the luminous flux is not optimised. Dimming below 0°C (T8 lamps) and below 10°C (T5 lamps) is not allowed. In these applications it is crucial to determine the most suited lamp.

The more these recommendations can be implemented, the more stable the light output at low dimming levels and the wider the temperature range of the ballasts and the longer the lamp life.

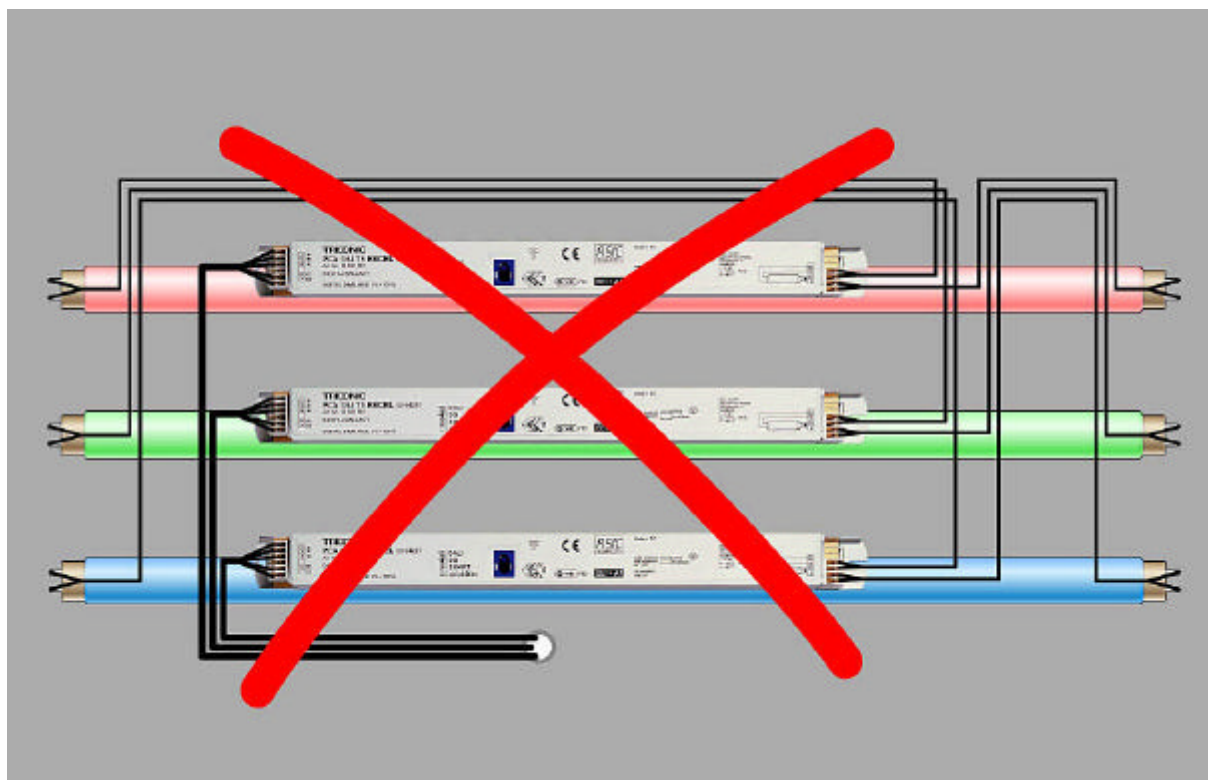
### **EXAMPLES:**



Three 1-lamp ballasts: The lamp cables are twisted and wired closely to the lamps. There are no overlapping lamp current circuits. The “hot” ends are on the right, the “cold” ends are on the left.

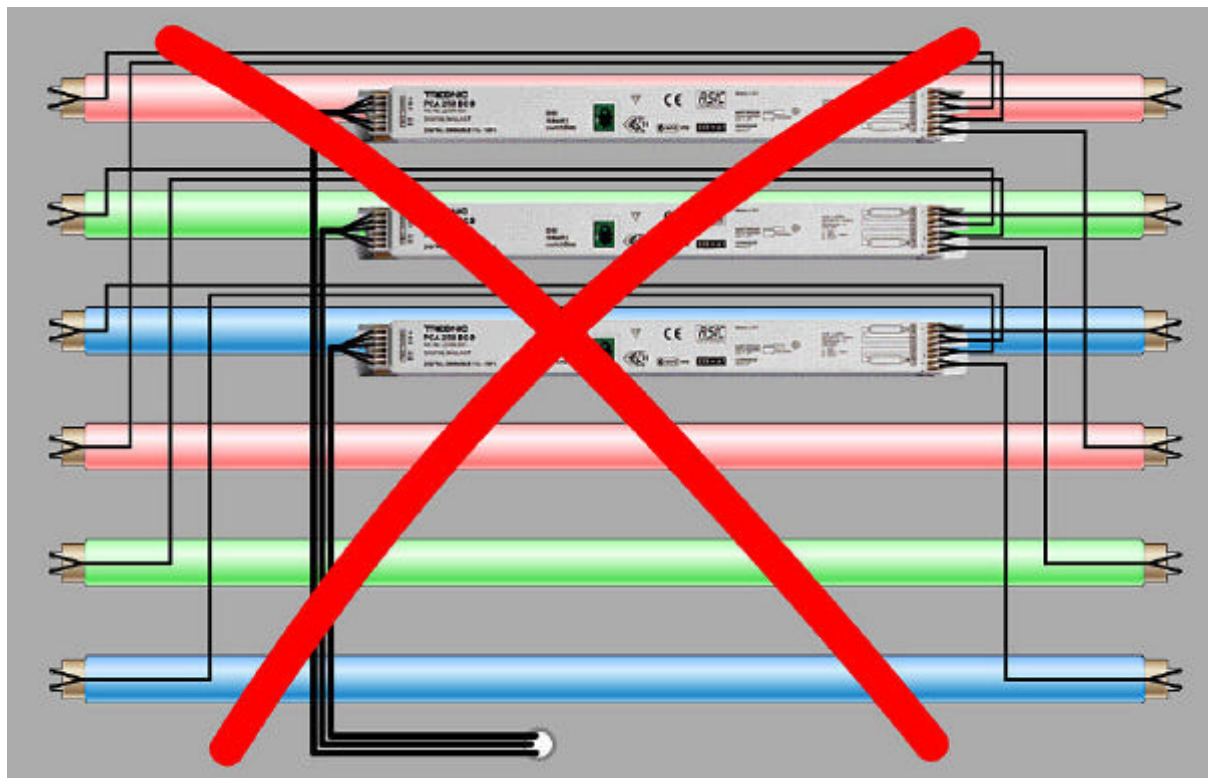


Three 2-lamp ballasts: The lamp cables are twisted and wired closely to the lamps. The overlapping of the three bottom lamp current circuits is minimised. The “hot” ends are on the right, the “cold” ends are on the left.



**WRONG:**

The lamp cables of all ballasts are wired close to each other. You can also see overlapping lamp current circuits.

**WRONG:**

The lamp current circuits of the bottom three lamps are overlapping.

## TRIDONIC.ATCO

Technical Application

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