Fluorescent Dimming Guide

Four-wire, 0-10VDC control signal and two line voltage (Example: Osram Helios™)

Ballasts have Class 2 control wires (purple and gray) to connect low voltage control devices such as Equinox® dimming control products.

Advantages:
- Control zones are created by interconnecting the low voltage wires and are not affected by the line voltage circuiting of the fixtures.
- Simple low voltage control devices such as the ISD DPC dimming photocell are self-powered by the ballast.
- Small control devices can control a large number of ballasts since they are not supplying power to the loads.
- Choice of ballast suppliers.
- Lowest cost for 1% dimming.

Disadvantages:
- Requires additional controls.

Two-wire line voltage, 0-120 VAC or 0-277 VAC (Example: Advance Mark 10®)

Ballasts have only one hot and one neutral wire and are directly controllable by fluorescent wallbox dimmers or universal system dimmers.

Advantages:
- Requires no additional wires, the black and white input leads provide for power and dimming.
- Wide dimming range (100-1%).
- Lowest installed cost.

Disadvantages:
- Minimum input voltage must be assured, requires dimmers with low-end trim adjustments or factory preset low-end adjustment.

Three-wire line voltage, 0-120 VAC or 0-277 VAC (Example: Lutron Hi-Lume)

Ballasts are powered by a non-dimmed line voltage input and controlled via a second variable line voltage input.

Advantages:
- Line voltage control wiring
- Wide dimming range (100-1%).

Disadvantages:
- Requires a 2nd input power wire connection.
- Minimum input voltage must be assured, requires dimmers with low-end trim adjustments.
- Dimmers require a neutral.
- Highest relative cost to achieve 1% dimming.

**Four-wire digital addressable ballast (consult factory).*

	Advance Mark 7®	Lutron TVE	Universal SuperDim®/ Ballastar®	Osram/ Sylvania Helios™	Advance Mark 10®	Lutron Tu-Wire	Lutron ECO-10	Lutron Hi-Lume/ Compact SE	DALI (various manufacturers)
Control type	Four-wire	Four-wire	Four-wire	Four-wire	Two-wire line voltage	Two-wire line voltage	Three-wire line voltage	Three-wire line voltage	Digital, DALI protocol
Ballast nomenclature	RZT/VZT,IZT	TVE	DIM-D,DIM-10,V5	(PHO-)DIM	REZ/VEZ	2W	ECO	FDB/HL3	varies
Lithonia nomenclature	ADZT,ADZTH	TVE10	TUBV,TUDA, TUDD	OS5C,OSDIM,OS10C	ADEZ	2W5	ECO10	DMHL	ADALI,OSDALI,TRDALI[4]
The number of lamps that can be operated by each ballast is indicated below. Refer to ballast manufacturer for dimming range for each lamp type.									
F13 Quad Tube	1,2	--	1,2	--	--	--	--	--	1,2
F18 Quad Tube	1,2	--	1,2	--	1,2	2	--	1,2	1,2
F26 Quad Tube	1,2	--	1,2	--	1,2	1,2	--	1,2	1,2
F32 Quad Tube	--	--	--	--	--	--	--	--	--
F13 Triple Tube	1,2	--	--	--	--	--	--	--	1,2
F18 Triple Tube	1,2	--	--	--	1,2	2	--	1,2	1,2
F26 Triple Tube	1,2	--	1	--	1,2	1,2	--	1,2	1,2
F32 Triple Tube	1,2	--	1	--	1	1,2	--	1,2	1,2
F42 Triple Tube	1,2	--	1	--	1	--	--	1,2	1,2
F57 Triple Tube	1	--	--	--	1	--	--	--	1
F70 Triple Tube	1	--	--	--	1	--	--	--	1
F36 Biax T5	2	--	--	--	1,2	--	--	--	1.2
F39 Biax T5	--	--	--	--	--	--	1,2,3	1,2,3	--
F40 Biax T5	1,2	--	1,2	--	1,2	--	1,2,3	1,2,3	1,2
F50 Biax T5	1,2	--	--	--	--	--	1,2	1,2	--
F55 Biax T5	1	--	--	--	1,2	--	--	--	1,2
F14 T5	--	--	1,2	--	--	--	1,2	--	1,2
F21 T5	--	--	1,2	--	--	--	1,2	--	--
F28 T5	--	--	1,2	--	--	--	1,2	--	1,2
F35 T5	--	--	1	--	--	--	--	--	1,2
F24 T5 HO	--	--	--	--	--	--	1,2	1,2	--
F39 T5 HO	--	--	--	--	--	--	1,2	1,2	--
F54 T5 HO	1,2	--	1	1,2	1,2	--	1,2	1,2	1,2
F17 T8	1,2,3,4	1	1,2,4	1	--	2	1,2,3	1,2,3	1,2,3
F25 T8	1,2,3,4	1	1,2,4	1	1,2,3	1,2	1,2	1,2,3	1,2,3,4
F32 T8	1,2,3,4	1,2,3	1,2,3,4	1,2,3,4	1,2,3	1,2	1,2,3	1,2,3	1,2,3,4
F40 T8	--	--	--	--	--	--	--	1,2	--
Architectural dimming systems									
Synergy dimmer modules (pg 666-667)	SYPM 8F	SYPM 8F	SYPM 8F	SYPM 8F	SYPMB 6DB	SYPMB 6DB	SYPMB 6DB	SYPMB 6DB	SYPM DALI
Digital Equinox®[3] (pg 659-661)	SYRS EXT,DEQ LC	SYRS EXT,DEQ LC	SYRS EXT,DEQ LC	SYRS EXT,DEQ LC	N/A	N/A	N/A	N/A	N/A
MiniPac types (pg 676)	UF	UF	UF	UF	UX,UF	UX,UF	UF	UF	N/A
SQIDC (pg 675)	requires RDMBC	requires RDMBC	requires RDMBC	requires RDMBC	Yes	Yes	Yes	Yes	N/A
Wallbox dimmers									
ISD Series (pg 678-679)	ISD BC	ISD BC	ISD BC	ISD BC	ISD ADEZ	ISD ADEZ	ISD I with RDMF	ISD I with RDMF	N/A
DSD Series (pg 677)	N/A	N/A	N/A	N/A	DSD ADEZ	DSD ADEZ	N/A	N/A	N/A
Remote dimmer modules									
RDM (pg 676)	RDMBC	RDMBC	RDMBC	RDMBC	RDMF	RDMF	RDMF	RDMF	N/A

1 Lamp and ballast information shown on this table was compiled per ballast manufacturer literature available when the table was prepared. Refer to the ballast manufacturers' current literature for up-to-date information about their product lines.
2 Refer to the ballast manufacturers' information for specific low-end dimming for each lamp type.
3 Requires LPCS power control station (page 674).
4 Consult factory for specific lamp configurations available for different DALI ballast options.