

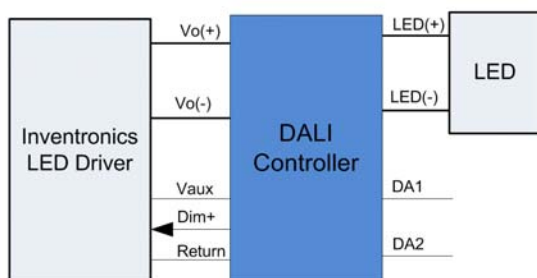
Features

- Convert DALI signal to 0-10V dimming signal
- Comply with DALI protocol
- DALI slave
- IP67
- On/Off control with internal switch

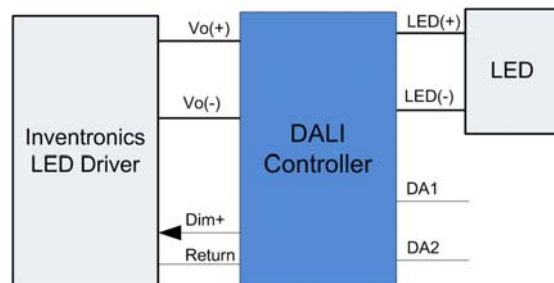


Description

The DALI controller can convert DALI command to control the LED lamp's current via LED driver's 0-10V interface, turn on or off LED lamp via internal switch. It complies with DALI protocol IEC62386-101,102,207. Typical application is shown as below:



Implementation 1: LED Driver with Vaux



Implementation 2: LED Driver without Vaux

Models

Suitable Output Voltage Range of LED Driver (No-load Voltage Included)	Max Input Current	Note	Model Number
0~80V	5A	Only for Two-Stage	WDS-ADFN0 ⁽¹⁾
25~80V		Only for Single-Stage	
80~250V	2A		WDS-ADFN1 ⁽¹⁾
250~500V	2A		WDS-ADFN2 ⁽¹⁾
0~80V	5A	Only for Two-Stage	WDS-ADFN3 ⁽²⁾
25~80V		Only for Single-Stage	
80~250V	2A		WDS-ADFN4 ⁽²⁾
250~500V	2A		WDS-ADFN5 ⁽²⁾

Notes: (1) Certificates have got FCC, CE, CB, TUV, CQC, DALI.

(2) Certificates have got FCC, cTUVus, CE, CB, TUV, CQC, DALI.

Interface Specifications

Parameter	Min.	Typ.	Max.	Notes
DA1,DA2 High Level	9.5V	16V	22.5V	
DA1,DA2 Low Level	-6.5V	0V	6.5V	
DA1,DA2 Current	0mA	-	2mA	

Note: All specifications are typical at 25 °C unless otherwise stated.

Auxiliary Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Vaux Voltage	10V	-	16V	
Vaux Current	-	-	20mA	

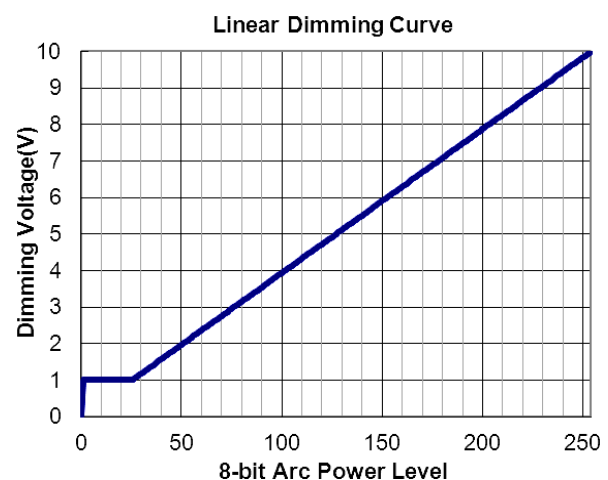
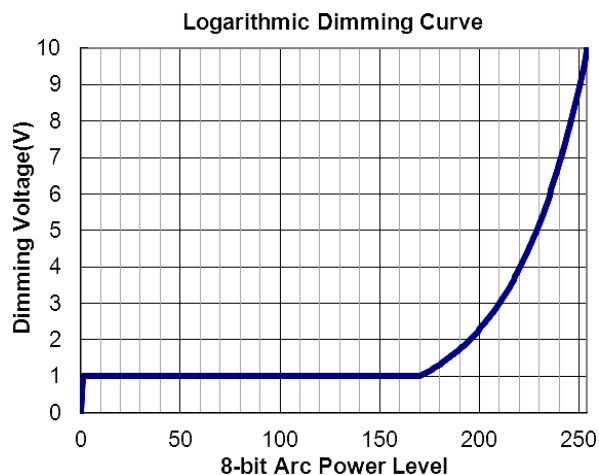
Dimming Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Dim+ Voltage Max	9.5V	-	10V	
Dim+ Voltage Min	-	-	1V	
Dim+ Sourcing Current	0mA	-	10mA	
Dim+ Sink Current	0mA	-	10mA	

Note: All specifications are typical at 25 °C unless otherwise stated.

Output Dimming Curve

This controller integrates two curves, one is logarithmic curve and another is linear curve. Customer can select one curve in application. The default setting in factory is logarithmic curve, Customer can change logarithmic curve to linear curve by sending DALI command 227 (207 part).



General Specifications

Parameter	Min.	Typ.	Max.	Notes
MTBF	-	300,000 Hours	-	Measured at 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Operating Case Temperature for Safety Tc_s	-40 °C	-	+90 °C	
Dimensions Inches (L × W × H) Millimeters (L × W × H)	2.89 × 1.77 × 1.38 74.0 × 45.0 × 35.0			3.74 × 1.77 × 1.38 95.0 × 45.0 × 35.0
Net Weight	-	240 g	-	

Note: All specifications are typical at 25 °C unless otherwise stated.

Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-40 °C	-	+60 °C	

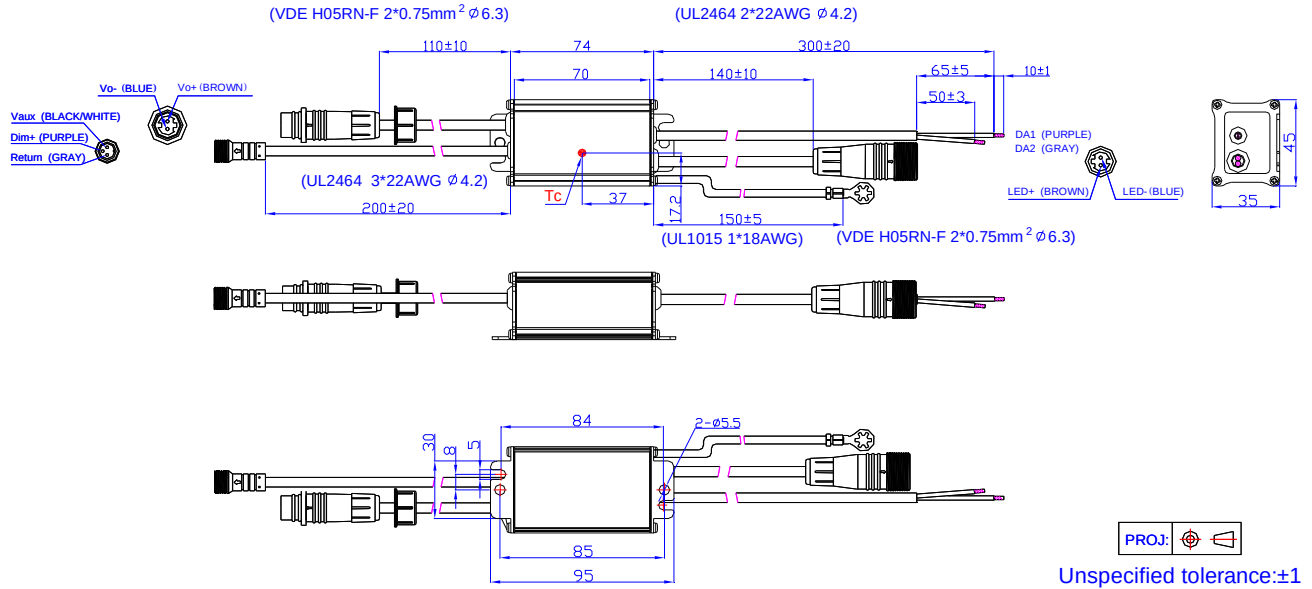
Safety & EMC Compliance

Safety Category	Standard
cTUVus	UL8750,CAN/CSA-C22.2 No. 250.13
CE	EN 61347-1, EN61347-2-11
EMI Standards	Notes
EN 55015 ⁽¹⁾	Conducted emission Test & Radiated emission Test
FCC Part 15 ⁽¹⁾	ANSI C63.4 Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired operation.
EMS Standards	Notes
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment
DALI Standards	Notes
DALI	IEC62386-101,102 & part of 207

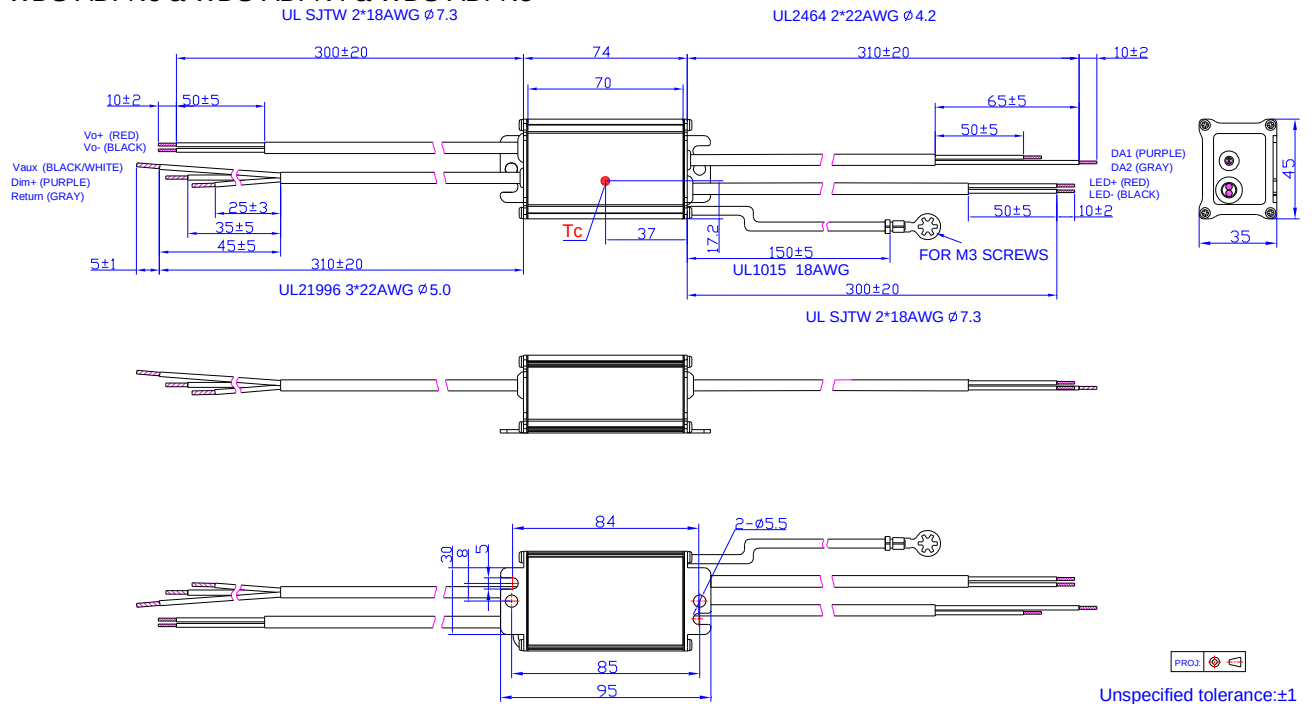
Note: (1)The WDS-ADFNx is considered as a component that will be operated in combination with final equipment. Since EMI performance will be affected by the complete installation, the final equipment manufacturers must requalify EMI Directive on the complete installation again.

Mechanical Outline

WDS-ADFN0 & WDS-ADFN1 & WDS-ADFN2



WDS-ADFN3 & WDS-ADFN4 & WDS-ADFN5



Application Note

This DALI Controller can only work with 0-10V Dimmable LED drivers. Below is the list.

LED series Can Match with DALI Controller	LED series Can NOT Match with DALI Controller
LUC-018SxxxDSP(350mA~700mA)	LUC-018SxxxDSP(1050mA)
LUC-024SxxxDSP	LUC-010SxxxDSM
LUC-024SxxxDSW	LUC-012SxxxDSM
EUC-026S045DS-0001	LUC-012SxxxDSP
EUC-026SxxxDS(350mA~1050mA)	EUC-026SxxxDS(1400mA~1750mA)
EHC-040S070DS	EUC-036SxxxDT(DV)
EUC-042SxxxDS-0001	EUC-025SxxxDS
LUC-042SxxxDSW(350mA~1750mA)	LUC-042SxxxDSW(2100mA)
LTC-040SxxxDSP(350mA~1750mA)	LTC-040SxxxDSP(2100mA)
LUC-042SxxxDTG(350mA~1750mA)	LUC-042SxxxDTG(2100mA)
LUC-042SxxxDSP	EUC-040SxxxDS
LUC-048SxxxDSP	EUC-035SxxxDT(DV)
EUC-042SxxxDS	EUC-050SxxxDT(DV)
EUC-075SxxxDD	EUC-052SxxxDT(DV)
EUC-075SxxxDT(DV)	LUC-042DxxxDS(DD)M
ESC-075SxxxDT	LUC-066TxxxDS(DD)M
EUC-085SxxxDT(DV)(350mA~1400mA)	LUC-072QxxxDS(DD)M
EUC-096SxxxDT(DV)(350mA~1750mA)	EUC-085SxxxDT(DV)(1750mA~2800mA)
EUC-100SxxxDT(DV)	EUC-096SxxxDT(DV)(2100mA~4000mA)
EUC-120SxxxDT(DV)	EUC-240HxxxDT(DV)
EUC-150SxxxDT(DV)	
EUC-150SxxxDDA	
EUC-150SxxxDT(DV)A	
ESC-150SxxxDT	
ETC-150SxxxDT	
EUC-200SxxxDT(DV)	

Command Code List

Type of Addresses:

64 short addresses: 0 – 63

16 group addresses: 0 – 15

broadcast

special commands

Y: short- or group address/broadcast:

A: significant address bit

S: selector bit:

Address Byte:

0AAA AAAS

100A AAAS

1111 111S

1010 0000 to 1111 1101

Y = "0": short address

Y = "1": group address or broadcast

S = "0": data byte = direct arc power level

S = "1": data byte = command

List of Supported Command Codes

Command Number	Command Code	Command Name
–	YAAA AAA0 XXXX XXXX	DIRECT ARC POWER CONTROL
0	YAAA AAA1 0000 0000	OFF
1	YAAA AAA1 0000 0001	UP
2	YAAA AAA1 0000 0010	DOWN
3	YAAA AAA1 0000 0011	STEP UP
4	YAAA AAA1 0000 0100	STEP DOWN
5	YAAA AAA1 0000 0101	RECALL MAX LEVEL
6	YAAA AAA1 0000 0110	RECALL MIN LEVEL
7	YAAA AAA1 0000 0111	STEP DOWN AND OFF
8	YAAA AAA1 0000 1000	ON AND STEP UP
9	YAAA AAA1 0000 1001	ENABLE DAPC SEQUENCE
10~11	YAAA AAA1 0000 101X	a
12~15	YAAA AAA1 0000 11XX	a
16~31	YAAA AAA1 0001 XXXX	GO TO SCENE
32	YAAA AAA1 0010 0000	RESET
33	YAAA AAA1 0010 0001	STORE ACTUAL LEVEL IN THE DTR
34~35	YAAA AAA1 0010 001X	a
36~39	YAAA AAA1 0010 01XX	a
40~41	YAAA AAA1 0010 100X	a
42	YAAA AAA1 0010 1010	STORE THE DTR AS MAX LEVEL
43	YAAA AAA1 0010 1011	STORE THE DTR AS MIN LEVEL
44	YAAA AAA1 0010 1100	STORE THE DTR AS SYSTEM FAILURE LEVEL
45	YAAA AAA1 0010 1101	STORE THE DTR AS POWER ON LEVEL
46	YAAA AAA1 0010 1110	STORE THE DTR AS FADE TIME
47	YAAA AAA1 0010 1111	STORE THE DTR AS FADE RATE
48~63	YAAA AAA1 0011 XXXX	a
64~79	YAAA AAA1 0100 XXXX	STORE THE DTR AS SCENE

● List of Supported Command Codes(Continued)

Command Number	Command Code	Command Name
80~95	YAAA AAA1 0101 XXXX	REMOVE FROM SCENE
96~111	YAAA AAA1 0110 XXXX	ADD TO GROUP
112~127	YAAA AAA1 0111 XXXX	REMOVE FROM GROUP
128	YAAA AAA1 1000 0000	STORE DTR AS SHORT ADDRESS
129	YAAA AAA1 1000 0001	ENABLE WRITE MEMORY
130~131	YAAA AAA1 1000 001X	a
132~135	YAAA AAA1 1000 01XX	a
136~143	YAAA AAA1 1000 1XXX	a
145	YAAA AAA1 1001 0001	QUERY CONTROL GEAR
148	YAAA AAA1 1001 0100	QUERY LIMIT ERROR
149	YAAA AAA1 1001 0101	QUERY RESET STATE
150	YAAA AAA1 1001 0110	QUERY MISSING SHORT ADDRESS
151	YAAA AAA1 1001 0111	QUERY VERSION NUMBER
152	YAAA AAA1 1001 1000	QUERY CONTENT DTR
153	YAAA AAA1 1001 1001	QUERY DEVICE TYPE
154	YAAA AAA1 1001 1010	QUERY PHYSICAL MINIMUM LEVEL
155	YAAA AAA1 1001 1011	QUERY POWER FAILURE
156	YAAA AAA1 1001 1100	QUERY CONTENT DTR1
157	YAAA AAA1 1001 1101	QUERY CONTENT DTR2
158~159	YAAA AAA1 1001 111X	a
161	YAAA AAA1 1010 0001	QUERY MAX LEVEL
162	YAAA AAA1 1010 0010	QUERY MIN LEVEL
163	YAAA AAA1 1010 0011	QUERY POWER ON LEVEL
164	YAAA AAA1 1010 0100	QUERY SYSTEM FAILURE LEVEL
165	YAAA AAA1 1010 0101	QUERY FADE TIME/FADE RATE
166~167	YAAA AAA1 1010 011X	a
168~175	YAAA AAA1 1010 1XXX	a
176~191	YAAA AAA1 1011 XXXX	QUERY SCENE LEVEL (SCENES 0-15)
192	YAAA AAA1 1100 0000	QUERY GROUPS 0-7
193	YAAA AAA1 1100 0001	QUERY GROUPS 8-15
194	YAAA AAA1 1100 0010	QUERY RANDOM ADDRESS (H)
195	YAAA AAA1 1100 0011	QUERY RANDOM ADDRESS (M)
196	YAAA AAA1 1100 0100	QUERY RANDOM ADDRESS (L)
197	YAAA AAA1 1100 0101	READ MEMORY LOCATION
198~199	YAAA AAA1 1100 011X	a
200~207	YAAA AAA1 1100 1XXX	a

● List of Supported Command Codes(Continued)

Command Number	Command Code	Command Name
208~215	YAAA AAA1 1101 0XXX	a
216~223	YAAA AAA1 1101 1XXX	a
227	YAAA AAA1 1110 0011	SELECT DIMMING CURVE
228	YAAA AAA1 1110 0100	STORE DTR AS FAST FADE TIME
229	YAAA AAA1 1110 0101	a
230 – 231	YAAA AAA1 1110 011X	a
232 – 235	YAAA AAA1 1110 10XX	a
236	YAAA AAA1 1110 1100	a
238	YAAA AAA1 1110 1110	QUERY DIMMING CURVE
253	YAAA AAA1 1111 1101	QUERY FAST FADE TIME
254	YAAA AAA1 1111 1110	QUERY MIN FAST FADE TIME
255	YAAA AAA1 1111 1111	QUERY EXTENDED VERSION NUMBER
256	1010 0001 0000 0000	TERMINATE
257	1010 0011 XXXX XXXX	DATA TRANSFER REGISTER (DTR)
258	1010 0101 XXXX XXXX	INITIALISE
259	1010 0111 0000 0000	RANDOMISE
260	1010 1001 0000 0000	COMPARE
261	1010 1011 0000 0000	WITHDRAW
262~263	1010 11X1 0000 0000	a
264	1011 0001 HHHH HHHH	SEARCHADDRH
265	1011 0011 MMMM	SEARCHADDRM
266	1011 0101 LLLL LLLL	SEARCHADDRL
267	1011 0111 0AAA AAA1	PROGRAM SHORT ADDRESS
268	1011 1001 0AAA AAA1	VERIFY SHORT ADDRESS
269	1011 1011 0000 0000	QUERY SHORT ADDRESS
271	1011 1111 XXXX XXXX	a
272	1100 0001 XXXX XXXX	ENABLE DEVICE TYPE X (X=6)
273	1100 0011 XXXX XXXX	DATA TRANSFER REGISTER 1 (DTR1)
274	1100 0101 XXXX XXXX	DATA TRANSFER REGISTER 2 (DTR2)
275	1100 0111 XXXX XXXX	WRITE MEMORY LOCATION
276~279	1100 1XX1 XXXX XXXX	a
280~287	1101 XXX1 XXXX XXXX	a
288~295	1110 XXX1 XXXX XXXX	a
296~299	1111 0XX1 XXXX XXXX	a
300~301	1111 10X1 XXXX XXXX	a
302	1111 1101 XXXX XXXX	a

● List of Supported Command Codes(Continued)

Command Number	Command Code	Command Name
303~318	101X XXX0 XXXX XXXX	a
319~334	110X XXX0 XXXX XXXX	a
335~342	1110 XXX0 XXXX XXXX	a
343~346	1111 0XX0 XXXX XXXX	a
347~348	1111 10X0 XXXX XXXX	a
349	1111 1100 XXXX XXXX	a

● List of Unsupported Command Codes

Command Number	Command Code	Command Name
144	YAAA AAA1 1001 0000	QUERY STATUS
146	YAAA AAA1 1001 0010	QUERY LAMP FAILURE
147	YAAA AAA1 1001 0011	QUERY LAMP POWER ON
160	YAAA AAA1 1010 0000	QUERY ACTUAL LEVEL
224	YAAA AAA1 1110 0000	REFERENCE SYSTEM POWER
225	YAAA AAA1 1110 0001	ENABLE CURRENT PROTECTOR
226	YAAA AAA1 1110 0010	DISABLE CURRENT PROTECTOR
237	YAAA AAA1 1110 1101	QUERY GEAR TYPE
239	YAAA AAA1 1110 1111	QUERY POSSIBLE OPERATING MODES
240	YAAA AAA1 1111 0000	QUERY FEATURES
241	YAAA AAA1 1111 0001	QUERY FAILURE STATUS
242	YAAA AAA1 1111 0010	QUERY SHORT CIRCUIT
243	YAAA AAA1 1111 0011	QUERY OPEN CIRCUIT
244	YAAA AAA1 1111 0100	QUERY LOAD DECREASE
245	YAAA AAA1 1111 0101	QUERY LOAD INCREASE
246	YAAA AAA1 1111 0110	QUERY CURRENT PROTECTOR ACTIVE
247	YAAA AAA1 1111 0111	QUERY THERMAL SHUT DOWN
248	YAAA AAA1 1111 1000	QUERY THERMAL OVERLOAD
249	YAAA AAA1 1111 1001	QUERY REFERENCE RUNNING
250	YAAA AAA1 1111 1010	QUERY REFERENCE MEASUREMENT FAILED
251	YAAA AAA1 1111 1011	QUERY CURRENT PROTECTOR ENABLED
252	YAAA AAA1 1111 1100	QUERY OPERATING MODE
270	1011 1101 0000 0000	PHYSICAL SELECTION

Note: a: Reserved for future needs. The control gear shall not react in any way.

RoHS Compliance

Our products comply with the European Directive 2011/65/EC, calling for the elimination of lead and other hazardous substances from electronic products.

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2013-09-13	A	Datasheets Release	/	/
2014-01-06	B	Command Code List	/	Added
2014-03-26	C	Model added :WDS-ADFN3 & WDS-ADFN4 & WDS-ADFN5	/	Added
2015-07-30	D	Format	/	Updated
		FCC, cTUVus, CE, CB, TUV, CQC, DALI	/	Added
2015-09-06	E	Application Note - LED series Can Match with DALI Controller	/	Updated
2016-10-21	F	Operating Case Temperature for Safety Tc_s	/	Added
2017-08-10	G	Output Dimming Curve	/	Updated
		Dimensions		
		Inches (L × W × H) Millimeters (L × W × H)	2.89 × 1.67 × 1.34 74.0 × 42.4 × 34.0	2.89 × 1.67 × 1.34 74.0 × 42.5 × 34.0
		Mechanical Outline	/	Updated
2018-01-26	H	Dimensions		
		Inches (L × W × H) Millimeters (L × W × H)	2.89 × 1.67 × 1.34 74.0 × 42.5 × 34.0	2.89 × 1.77 × 1.38 74.0 × 45.0 × 35.0
2018-03-23	I	The Note of EMI Standards	/	Corrected