CC LINEAR

PRIMELINE NFC L-TW DALI

187048, 187049

Typical Applications
Built-in in linear luminaires for
• Office lighting
• Industrial lighting

NFC)))

DALI 2

PUSH

PrimeLine NFC L-TW DALI

■ **ADJUSTABLE OUTPUT CURRENT, CLO, DC LEVEL VIA NFC**

■ **DIMMABLE: DALI (ED. 2) AND PUSH KEY**

■ **VERY LOW RIPPLE CURRENT: < 1%**

■ **LONG SERVICE LIFE: UP TO 100,000 HRS.**

■ **PRODUCT GUARANTEE: 5 YEARS**

5 YEARS GUARANTEE

PrimeLine
NFC L-TW DALI

Product features
- Linear casing shape

Functions
- Programmable via NFC interface (contactless)
  – Selectable current output
  – Programmable CLO function
  – Adjustable DC level
  – Tuneable White function

Electrical features
- Mains voltage: 220–240 V ±10%
- Mains frequency: 50–60 Hz
- DC operation: 198–264 V, 0 Hz
- Push-in terminals: 0.2–1.5 mm²
- Power factor at full load: > 0.97
- Max. working voltage (U_{OUT}): 250 V
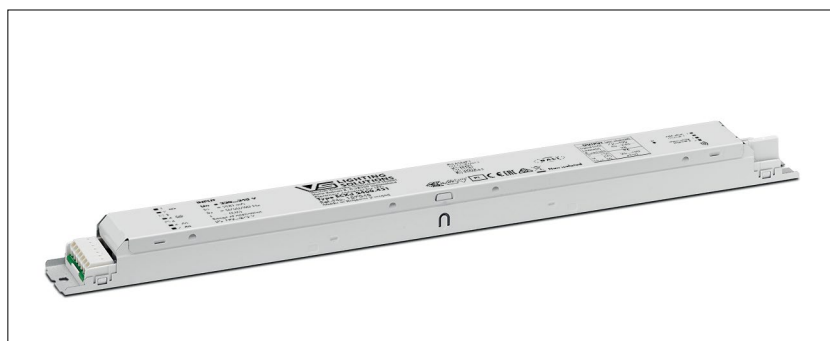- Secondary side switching of LED modules is not allowed.

Dimming
- Dimming range: 1 to 100%

Safety features
- Protection against transient main peaks up to 1 kV (between L and N) and up to 2 kV (between L/N and PE)
- Electronic short-circuit protection
- Overload protection
- Overtemperature protection
- Protection against "no load" operation
- Degree of protection: IP20
- Protection class I

Packaging units

Ref. No.	Packaging unit		
	Pieces per box	Boxes per pallet	Weight g
187048	20	105	235
187049	20	90	260

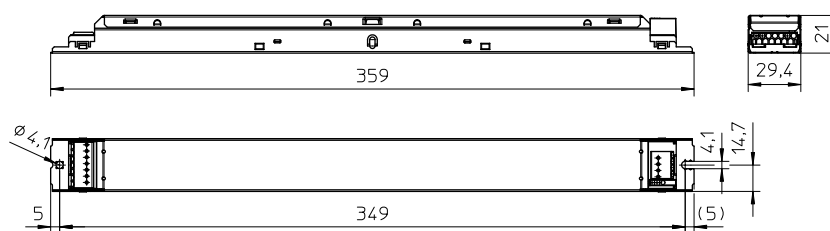| IP20 | 110 | OVERLOAD PROTECTION | | 0% NO LOAD OPERATION | PUSH | EL | 50 000 hours Min. Service Lifetime | Guarantee 5 years |

Applied standards
- EN 60598-2-22
- EN 61347-1
- EN 61347-2-13
- EN 61547
- EN 61000-3-2
- EN 61000-3-3
- EN 62384
- EN 62386
- EN 50172
- EN 55015

Dimensions
- Casing: M10.3
- Length: 360 mm
- Width: 30 mm
- Height: 21 mm

Dimming
Hybrid

Current adjustment

NFC

Product guarantee
- 5 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage (www.vossloh-schwabe.com). We will be happy to send you these conditions upon request.

Electrical characteristics

Max. output W	Type	Ref. No.	Voltage 50–60 Hz V	Mains current mA	Inrush current A / µs	Current output DC mA (± 5%)	Voltage output DC (V)	THD at full load % (230 V)	Efficiency at full load % (230 V)	Ripple 100 Hz %
35	ECXd 2400.431	**187048**	220–240	200	17 / 220	75–400*	45–240	< 10	90	< 1
75	ECXd 2700.432	**187049**	220–240	390	23 / 290	150–700**	50–240	< 10	91	< 1

*max. sum of output current 800 mA

**max. sum of output current 1200 mA

Maximum ratings

Exceeding the maximum ratings can lead to reduction of service life or destruction of the drivers.

Ref. No.	Ambient temperature range °C min.	°C max.	Operation humidity range % min.	% max.	Storage temperature range °C min.	°C max.	Storage humidity range % min.	% max.	Max. operation temperature at t_c point °C	Degree of protection
187048, 187049	−25	+50	5	60	−40	+85	5	95	+75	IP20

Expected service life time

at operation temperatures at t_c point

Operation current	Ref. No. 187048, 187049	
All	65 °C	75 °C
hrs.	100,000	50,000

Product labels

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LED Drivers – PrimeLine NFC L-TW DALI

Typ. performance graphs for 187048 / Type ECXd 2400.431

Working area

U_out[V] vs I_out[mA]

Efficiency

Eff [%] vs Pout [W]

Legend:
— 75 mA
--- 250 mA
-·- 400 mA

Power factor

PF vs Pout [W]

Total harmonic factor (THD)

THD [%] vs Pout [W]
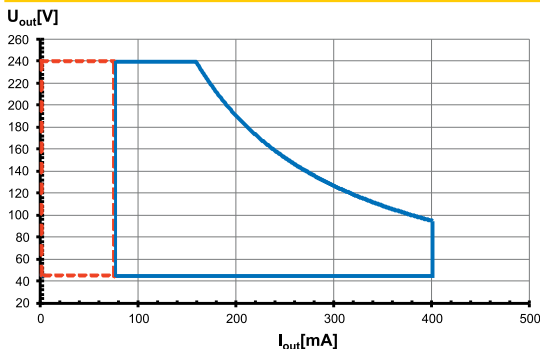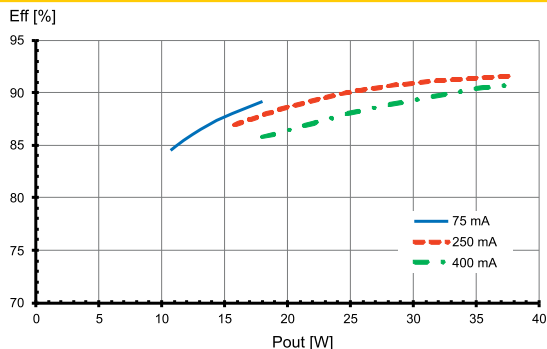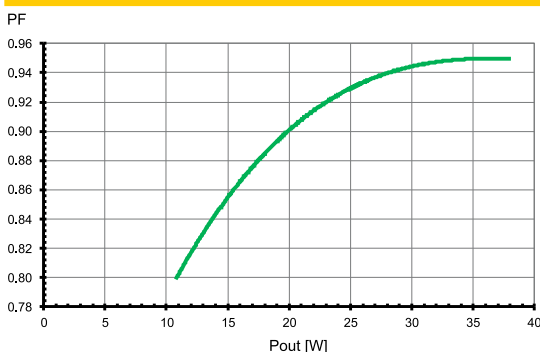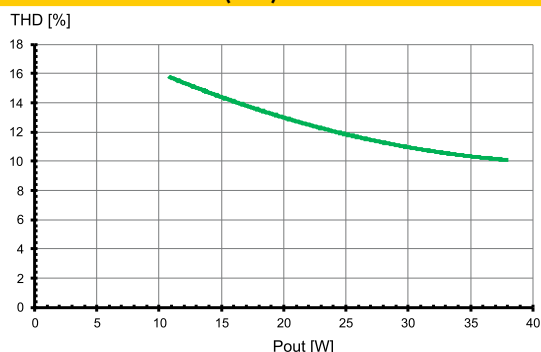
Typ. performance graphs for 187049 / Type ECXd 2700.432

Working area

U_out[V] vs I_out[mA]

Efficiency

Eff [%] vs Pout [W]

Legend:
— 150 mA
--- 425 mA
-·- 700 mA

Power factor

PF vs Pout [W]

Total harmonic factor (THD)

THD [%] vs Pout [W]
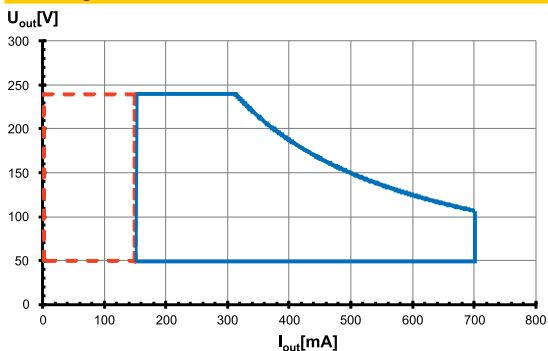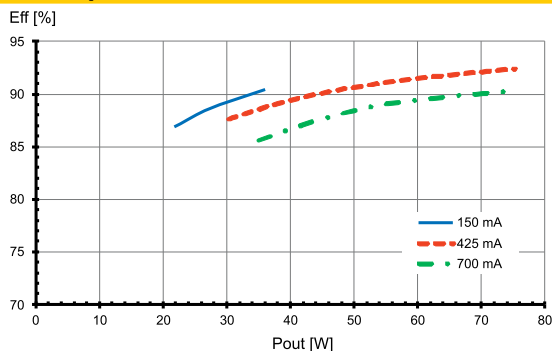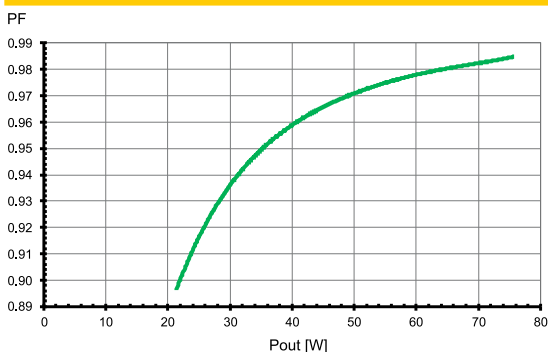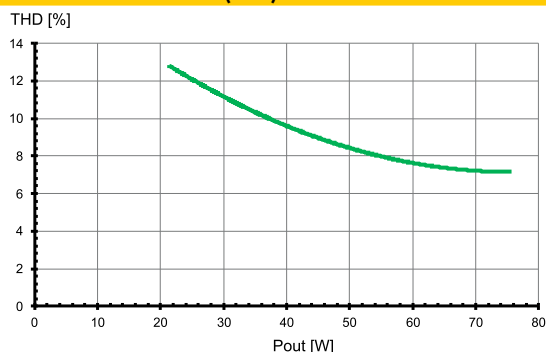
Safety functions

- Transient mains peaks protection:
  Values are in compliance with EN 61547 (interference immunity).
  Surges between L–N: up to 1 kV
  Surges between L/N–PE: up to 2 kV
- Short-circuit protection: The control gear is protected against permanent short-circuit with automatic restart function.
- Overload protection: The control gear only works in range of rated output power and voltage problemfree. Please check before switch-on mains power supply that the selected LED load is suitable (see Electrical Characteristics on data sheet).
- Overheating: The control gear has overheating protection acc. to EN 61347-1 C 5e.
  In case of overheating the control gear will reduce the output power.
- No load operation: The control gear is protected against no load operation (open load).
- If any of the above mentioned safety functions will be triggered, disconnect the control gear from the power supply then find and eliminate the cause of the problem.

PUSH function

- Just one key for dimming and ON/OFF
- Up to 20 drivers on one button (without indicator lamp) with max. 25 m total cable length.
- PUSH operating voltage ranges:
  - AC: 220–240 V ±10%
  - Failing to observe these working voltage range can lead to non-recognition of the signals; exceeding the maximum voltages can lead to the destruction of the data inputs.
- PUSH control signals (key activation):
  - **Short push** (80 ms < t < 500 ms): Is used to switch between ON/OFF lighting states. After the device is switched on, the last selected lighting level is restored and the next dimming direction will be upwards.
  - **Long push** (0.5 s): Is used to dim upwards or downwards; a long push will change the dimming direction. Thus, a long push will reverse the dimming direction until the upper or lower limit is reached. If the light was off, a long push will switch it on and the dimmer will start at the lowest light intensity.
  - **Operating modus**
    Modus 1: The switch-on value is the last dimming value before switching off.
    Modus 2: (standard operation) The switch-on value is the value saved by double-clicking.
    Save reference value: Double click (press briefly twice within 0.4 s) when the lamp is switched on (change to modus 2)
    Delete reference value: Double click when the lamp is switched off (change to modus 1)
  - **Synchronisation**: Any 1-key dimmer that does not feature a central control module (as each ballast will have its own controls) can develop asynchronous behaviour (e.g. children might play with the key). The system will then be out of sync, i.e. some lamps will be on, others off or the dimming direction will differ from lamp to lamp.
    The following procedure can be used for synchronization:
    1. Press long (> 0.5 s): all lights switch on
    2. Press short (< 0.5 s): all lights switch off
    3. Press long (> 0.5 s): all lights switch on and dim
    4. Double click: Save dim setting (optional)
    After the first three steps the system is synchronized again.

Parametrization via NFC

- DC and emergency lighting operation
  - The control gears are suitable for direct voltage operation (DC). Reliable DC operation is guaranteed if the specified working area of LED driver is maintained.
  - DC range: 198–276 V
  - Reducing to 176 V: With reduced service life time possible
  - Light level at DC operation (EOF$_i$): 15% (adjustable)
  - DC level range: 1–100% (programmable via NFC)
  - DC operation: acc. to EN 60598-2-22 the LED current reduction at high temperature is limited to 50% to nominal current.
- Constant lumen output (CLO)
  - In the most cases the CLO function is used to reduce system performance over the life of an LED system.
  - The luminous flux of LED modules decreases in a step-wise manner up to the end of the modules' service life. To guarantee constant luminous flux, the output of the control gear must be gradually increased over its service life.
  - Defining the CLO function its needed to program the start, provisional and end value, respectively the LED lifetime via the NFC programmer.
- Current adjustment (mA)
  - Factory setting: minimum current
  - Programmable output current via NFC

Output voltage (U$_{OUT}$)

According to EN 61347-1, U$_{OUT}$ indicates which voltage can occur at the output terminals directly or between the output terminals and the PE terminal of the LED driver. This value is given for non-insulated drivers. The used LED module must have an insulation voltage that is at least as high as the specified U$_{OUT}$ voltage of the driver.

Leakage current

Leakage currents are present in all electronic converters or luminaires with PE connection and must be observed especially when using non-insulated LED drivers.

The PCB surfaces of LED modules form a capacitance with grounded LED aluminum circuit boards, heat sinks or mounting plates. This leads to capacitive leakage currents between the connection poles of the LED (+ and –) and the PE terminal. These capacitances should be kept as small as possible, since they are responsible for a possible glowing or flickering of the LEDs in standby mode. In extreme cases, the maximum permissible leakage current of the luminaire according to EN 60598 paragraph 10.3 may be exceeded. The leakage current is also relevant when using RCD circuit breakers.

Dimming

- 1–100 % of the selected output current
- Dimming current tolerance: ±3% of the adjusted output current
- DALI: The DALI colour control functionality (part 209/Device Type 8) of this product has not been verified. This product has been registered (DALI version-1), and is permitted to show the DALI version-1 Trademarks, but is not permitted to show the DALI-2 Trademarks. Please note that this product will need to be tested and re-submitted before August 31st 2020 once the 209 tests are released.

Constant lumen output (CLO)

The decrease in the luminous flux of an LED module can be compensated over its entire lifetime via a preprogrammed current curve. This not only ensures stable lighting but also saves energy and increases the lifetime of the LEDs.

System architecture – NFC configuration

- You can program the NFC LED drivers contactless with the Feig Programmer.
- The LED driver is programmed via NFC in a de-energised state.
- The use of the NFC programmer is flexible in the production or already in the pre-assembly process. A complex commissioning is not required. The operation and parameterization is done in the simplest way. All operating parameters can be individually programmed and updated.
- The exact description of the programming can be found in the operation manual of the VS Tuner4Tronic software.

Feig Programmer, hand-held device
FEIGPRH101, FEIGCPR30

VS NFC LED drivers

Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advices must be observed; non-observance can result in the destruction of the LED drivers, fire and/or other hazards.

Mandatory regulations
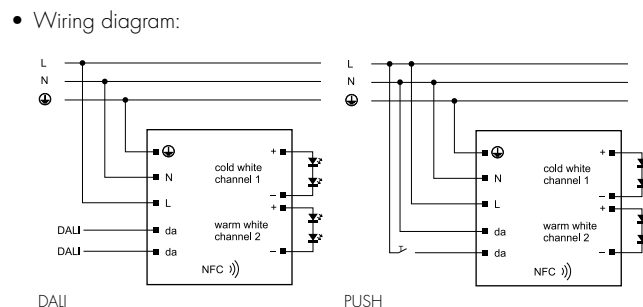- DIN VDE 0100
- EN 60598-1

Mechanical mounting
- Mounting position: Any position inside a luminaire is allowed. LED drivers are not allowed to use for independent applications.
- Mounting location: LED drivers are designed for integration into luminaires or comparable devices. Installation in outdoor luminaires: degree of protection for luminaire with water protection rate ≥ 4 (e.g. IP54 required).
- Degree of protection: IP20
- Clearance: Min. 0.10 m from walls. ceilings and insulation
- Surface: Solid and plane surface for optimum heat dissipation required.
- Heat transfer: If the driver is destined for installation in a luminaire. sufficient heat transfer must be ensured between the driver and the luminaire casing. LED drivers should be mounted with the greatest possible clearance to heat sources. During operation. the temperature measure at the driver's t_c point must not exceed the specified maximum value.
- Fastening: Using M4 screws in the designated holes
- Tightening torque: 0.2 Nm

Electrical installation
- Connection terminals: Push-in terminals for rigid or flexible conductors with a section of 0.5–1.5 mm² AWG20-16
- Stripped length: 8.5–9.5 mm
- Wiring: DALI or PUSH
  The mains conductor within the luminaire must be kept short (to reduce the induction of interference).
  Mains and lamp conductors must be kept separate and if possible should not be laid in parallel to one another.
- PUSH wiring: Several LED drivers can be connected to a single PUSH button. Furthermore, several buttons can also be operated with a single PUSH system as long as the phase assignments (e.g. L1) are identical.
  In installations with PUSH function, an asynchronous dimming behaviour can occur. To minimize the risk, VS recommends the max. limit number of 20 LED drivers with one or more PUSH buttons. The lead length from the push button (n) to the LED driver (n) should not exceed 25 m.
- Polarity: Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- Through-wiring: Is not allowed.
- Secondary load: The sum of forward voltages of LED loads has to be within the tolerances which are mentioned in the table "Electrical Characteristics" in this data sheet.
- Wiring diagram:

DALI   PUSH

CC-PrimeLine-NFC-L-TW-DALI_187048-187049_EN – 7/8 – 06/2024

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Selection of automatic cut-outs for VS LED drivers

- Dimensioning automatic cut-outs

  High transient currents occur when an LED driver is switched on because the capacitors have to load. Ignition of LED modules occurs almost simultaneously. This also causes a simultaneous high demand for power. These high currents when the system is switched on put a strain on the automatic conductor cut-outs. which must be selected and dimensioned to suit.

- Release reaction

  The release reaction of the automatic conductor cut-outs comply with VDE 0641. part 11. for B. C characteristics. The values shown in the following tables are for guidance purposes only and are subject to system-dependent change.

- No. of LED drivers

  The maximum number of VS LED drivers applies to cases where the devices are switched on simultaneously. Specifications apply to single-pole fuses. The number of permissible drivers must be reduced by 20% for multi-pole fuses. The considered circuit impedance equals 400 mΩ (approx. 20 m [2.5 mm²] of conductor from the power supply to the distributor and a further 15 m to the luminaire).

Type	Ref. No.	Automatic cut-out type and possible no. of VS drivers pcs.		
Automatic cut-out type B		B 10 A	B 13 A	B 16 A
ECXd 2400.431	**187048**	19	24	28
ECXd 2700.432	**187049**	13	16	19
Automatic cut-out type C		C 10 A	C 13 A	C 16 A
ECXd 2400.431	**187048**	34	44	54
ECXd 2700.432	**187049**	19	25	31

EU compliance information

Hereby, Vossloh-Schwabe Deutschland GmbH declares that the radio equipment type PrimeLine NFC L-TW DALI is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address: www.vossloh-schwabe.com.