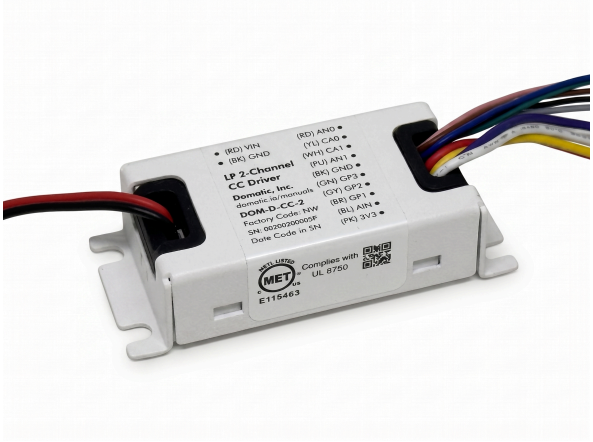
Compact CC LED/Sensor Driver

DOM-D-CC-2 | 2-Channel | 50W | Domatic Bus | Auxiliary I/O



The Compact CC LED/Sensor Driver is an ultra-compact, 2-channel constant-current LED driver built for space-constrained architectural lighting installations. At just 86 × 37 × 22 mm it delivers up to 50W of precisely controlled output with industry-leading 0.7 W/cm³ power density. Output current and logarithmic dimming are software-configurable via the Domatic PowerHub. An integrated auxiliary subsystem (3.3V output, 1× 0–10V analog input, 3× GPIO) supports sensor integration and fixture-level intelligence.

Key Features

- ✓ 50W rated output power with 2 independent constant-current channels
- ✓ Ultra-compact form factor: 86 × 37 × 22 mm — industry-leading 0.7 W/cm³ power density
- ✓ 56,000-step effective dimming resolution (PWM × CCR combined)
- ✓ Smooth logarithmic dimming to 0.1% brightness
- ✓ Software-configurable output current via the Domatic PowerHub
- ✓ Native Domatic Bus interface: power and data on a single 2-wire CL2 cable, up to 50 m
- ✓ Tunable white support (warm/cool channel control)
- ✓ Integrated auxiliary: 3.3V output + 3× GPIO + 0–10V analog input
- ✓ Real-time temperature and power monitoring reported to the PowerHub
- ✓ NEC Class 2
- ✓ Wet-rated for indoor and outdoor installations

Electrical Specifications

Input

Input Voltage	39 – 59 VDC
Nominal Input Voltage	48 VDC
Max Input Current	1.5 A
Max Input Power	60 W
Communication	Domatic Bus (IEEE 1901 HD-PLC)

Output

Output Type	Constant Current
Output Channels	2
Channel Topology	Common Anode / Common Cathode / Independent
Output Voltage Range	12 to (V_{IN} − 2) VDC
Current per Channel	0.1 – 0.7 A
Max Total Current	1.4 A
Max Output Power	50 W
Steady-State Ripple	≤ 4 – 10% at max load
Efficiency	94% at max load

Dimming Performance

PWM Switching Frequency	~3 kHz
PWM Resolution	7,000 steps
Constant Current Reduction (CCR)	8:1 range
Effective Dimming Resolution	56,000 steps (PWM × CCR)
Min Brightness	0.1%
Dimming Curve	Logarithmic (configurable via the PowerHub)
Tunable White	Supported (2-channel warm/cool)
Fade Time	Configurable per circuit via the PowerHub
Soft-on / Fade-to-Black	Yes
Color Control	8-bit ratio

Communication & Control

Network Protocol	IEEE 1901 HD-PLC, Domatic Device Protocol
Wiring	2-wire CL2 cable (power + data combined)
Max Distance from PowerHub	25 m on 18 AWG (0.82 mm²) · 50 m on 16 AWG (1.3 mm²)
Controller	Domatic PowerHub (required)
Monitoring	Temperature and power usage reported to the PowerHub in real time
Configuration	Output current, dimming curve, fade time, min/max limits — all software-configurable via the PowerHub

Auxiliary I/O

The DOM-D-CC-2 includes an integrated auxiliary subsystem for sensor integration and fixture-level control, enabling smart lighting applications beyond simple dimming.

Pin	*Function*	*Specification*
3V3	3.3V Output Voltage	Max 3.3 VDC, 165 mW / 50 mA
GPIO1 – GPIO3	General Purpose I/O	Logic level, max 3.3 VDC, 26 mW / 8 mA
AIN	Analog Input	0 – 10 VDC (12 VDC abs max), 30.2 kΩ impedance, 5 mW / 0.4 mA

Protection Features

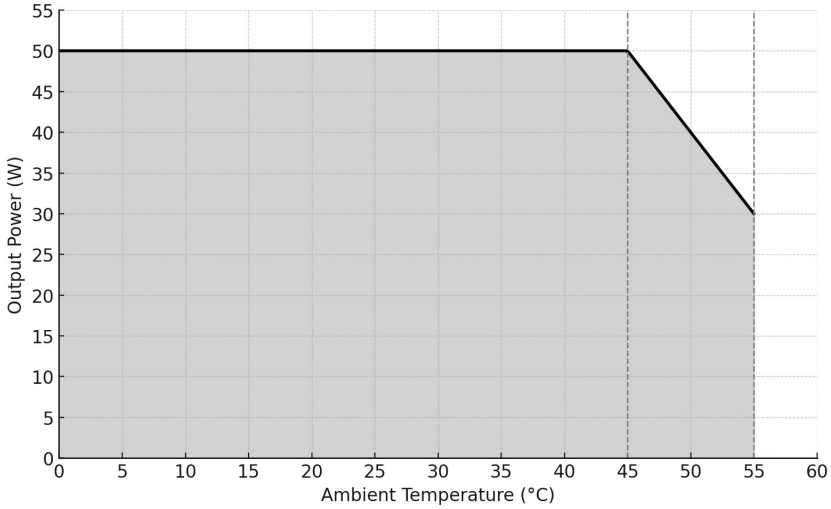
Overvoltage Protection	Yes
Overload Protection	Yes
Output Short-Circuit Protection	Yes
Over Temperature Protection	Yes
ESD Protection	Yes

Environmental Specifications

Operating Ambient Temp (T_a)	0 to 55 °C
Full Power Rating	50 W up to 45 °C T_a
Derated Power	30 W at 55 °C T_a
Max Case Temp (T_c)	75 °C

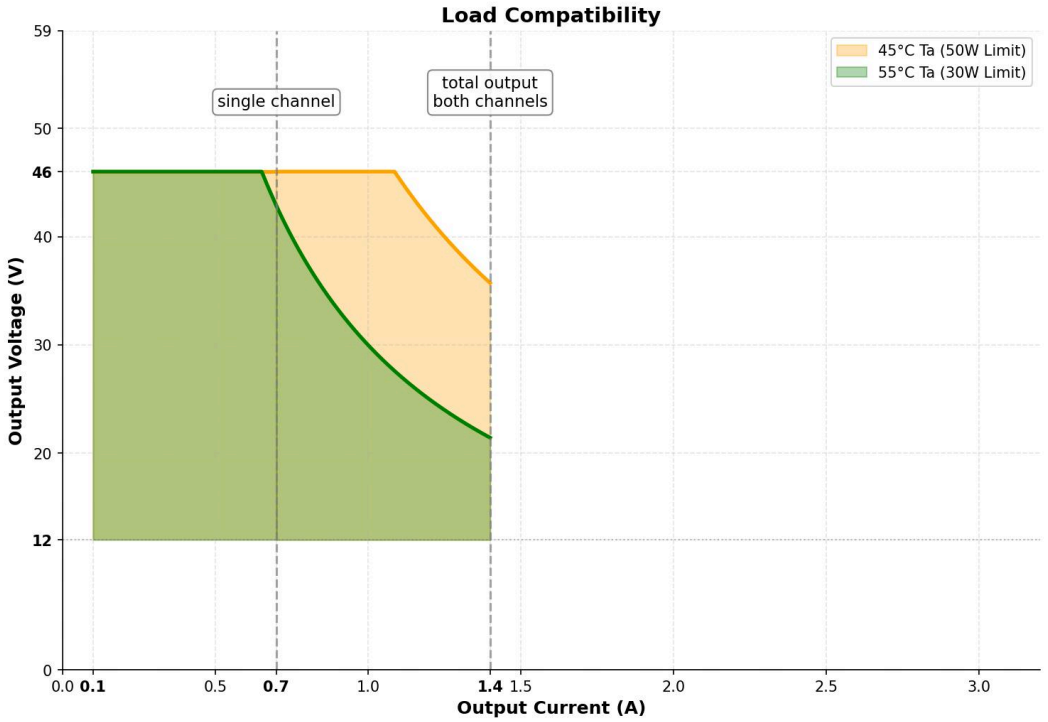
Note Derating chart is based on unloaded external I/O. Loading external I/O will impact derating by ~2 °C.

Power Derating



Load Compatibility

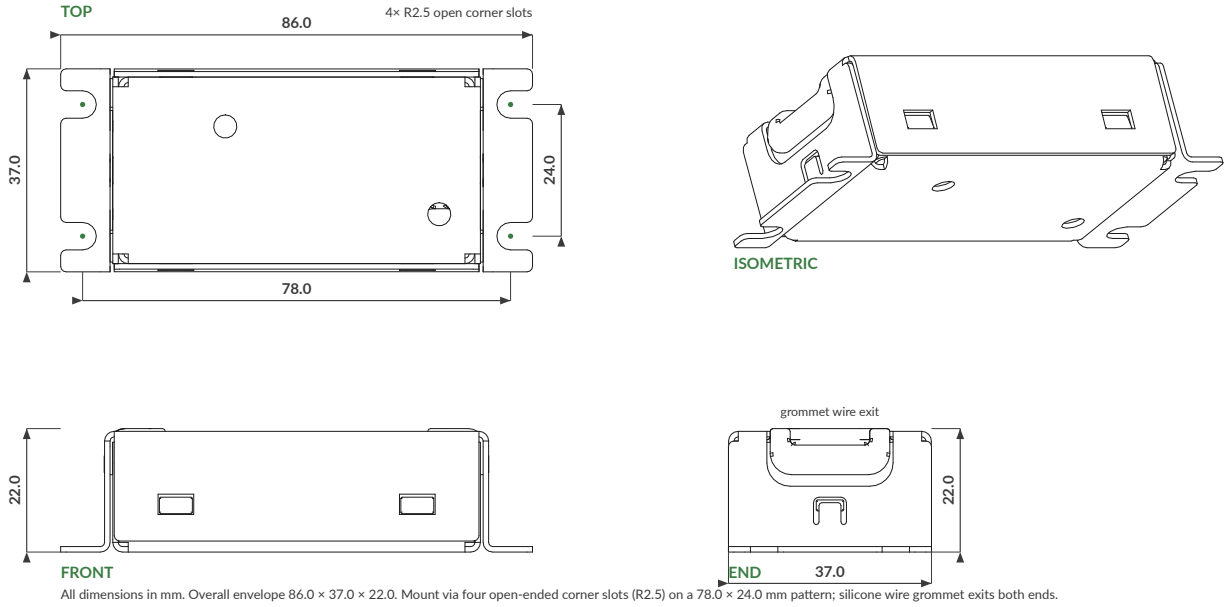
Parameter	*Single Channel*	*Both Channels (Total)*
Output Current Range	0.1 – 0.7 A	0.1 – 1.4 A
Output Voltage Range	12 to (V_{IN} – 2) VDC	12 to (V_{IN} – 2) VDC
Max Power (at ≤ 45 °C T_a)	32 W	50 W
Max Power (at 55 °C T_a)	30 W	30 W



Mechanical Specifications

Length	86 mm (3.39″)
Width	37 mm (1.46″)
Height	22 mm (0.87″)
Volume	70 cm^3
Power Density	0.7 W/cm^3 (at 45 °C)
Enclosure Material	Sheet metal, 1 mm thickness
Mounting	4 open-ended corner slots (R2.5) on a 78 × 24 mm pattern
Dimensioned Drawing	STEP-derived enclosure drawing below; all dimensions in mm

The enclosure is a two-piece sheet-metal shell with a silicone wire grommet at each end. Four formed feet — one at each corner — carry open-ended slots (R2.5) on a 78 × 24 mm pattern for fastening to a surface. The drawing below gives the overall envelope and mounting pattern.



All dimensions in mm. Overall envelope 86.0 × 37.0 × 22.0. Mount via four open-ended corner slots (R2.5) on a 78.0 × 24.0 mm pattern; silicone wire grommet exits both ends.

Wiring & Connectors

To achieve wet rating, all I/O is exposed as pigtail wires. The tables below describe each signal wire on the device.

Input Connector

Wire	*Function*	*Wire Spec*	*Description*
Red	VIN	18 AWG (0.82 mm²) UL1007	Positive power/data input
Black	GND	18 AWG (0.82 mm²) UL1007	DC negative return (0V reference, not earth ground)

Output Connector

Wire Color	*Pin Name*	*Wire Spec*	*Specification*
Red	AN0 (Anode Ch0, Common / Warm)	18 AWG (0.82 mm²) UL1007	Max 57 VDC or V_{IN} − 2 V, 50 W / 0.7 A
Yellow	CA0 (Cathode Ch0, Warm)	18 AWG (0.82 mm²) UL1007	Max 57 VDC or V_{IN} − 2 V, 50 W / 0.7 A
White	CA1 (Cathode Ch1, Cool)	18 AWG (0.82 mm²) UL1007	Max 57 VDC or V_{IN} − 2 V, 50 W / 0.7 A
Red/White or Purple	AN1 (Anode Ch1, Cool)	18 AWG (0.82 mm²) UL1007	Max 57 VDC or V_{IN} − 2 V, 50 W / 0.7 A
Black	GND	24 AWG (0.21 mm²) UL1007	DC negative return (0V reference)
Grey	GPIO3	24 AWG (0.21 mm²) UL1007	Logic I/O, 3.3 V max
Green	GPIO2	24 AWG (0.21 mm²) UL1007	Logic I/O, 3.3 V max
Brown	GPIO1	24 AWG (0.21 mm²) UL1007	Logic I/O, 3.3 V max
Blue	AIN (Analog Input)	24 AWG (0.21 mm²) UL1007	0 – 10 VDC, 30.2 kΩ
Pink	3V3 (Aux Output)	24 AWG (0.21 mm²) UL1007	3.3 VDC, 50 mA max

Standards & Compliance

Safety	UL 8750, Second Edition (rev. January 05, 2021)
Listing	Eurofins / MET Listed — Low Voltage Fixture Driver; UL File E115463; MET Report NRTLC 117522
Power Classification	NEC Class 2
Environment Rating	Wet-rated

System Requirements

The DOM-D-CC-2 requires a Domatic PowerHub as the bus controller. The PowerHub provides power (nominal 48 VDC, up to 100 W per port) and data connectivity over standard CL2 cable. Typical installations support a maximum cable distance of 50 m on 16 AWG (1.3 mm²); on 18 AWG (0.82 mm²) the maximum distance is 25 m. Longer runs can be supported with thicker cabling.

Ordering Information

Model Number	*Description*
DOM-D-CC-2	2-Channel Constant-Current LED Driver, 50 W, Domatic Bus, with Auxiliary I/O