

casDMX

INSTALLATION + COMMISSIONING GUIDE

Single-universe Casambi-enabled DMX-512 master
Hardware reference: casDMX

Project:
Type:
Contact:



PRODUCT ROLE casDMX translates Casambi controls into one non-isolated DMX-512 universe. The selected fixture profile determines which controls are presented and how many DMX channels are driven.

At a glance	Verified installation value
Power	12-24 VDC, Class 2; 30 mA no-load; 100 mA maximum full load
DMX output	One 3-wire, non-isolated DMX-512 universe
Controlled DMX channels	Up to 12, depending on the fixture profile selected, beginning at the configured DMX start address (default DMX address 1)
Environment	Indoor, open-type device; keep out of metal enclosures

1 Product overview

casDMX is a Bluetooth Low Energy, Casambi-enabled DMX-512 master for integrating DMX luminaires and drivers into a Casambi lighting network. It transmits one DMX universe. Depending on the fixture profile selected, casDMX controls up to 12 DMX channels beginning at the configured DMX Start Address. The factory default is DMX address 1.

Use casDMX for RGB, RGBW, tunable-white, dim-to-warm, individual-channel, and supported manufacturer-specific fixture personalities. It is a controller, not a DMX power supply or an LED driver.

DO NOT USE Do not connect casDMX to a constant-current LED output. Power it only from a 12-24 VDC Class 2 supply. Do not install it inside a metal box; the enclosure will substantially reduce Bluetooth mesh range.

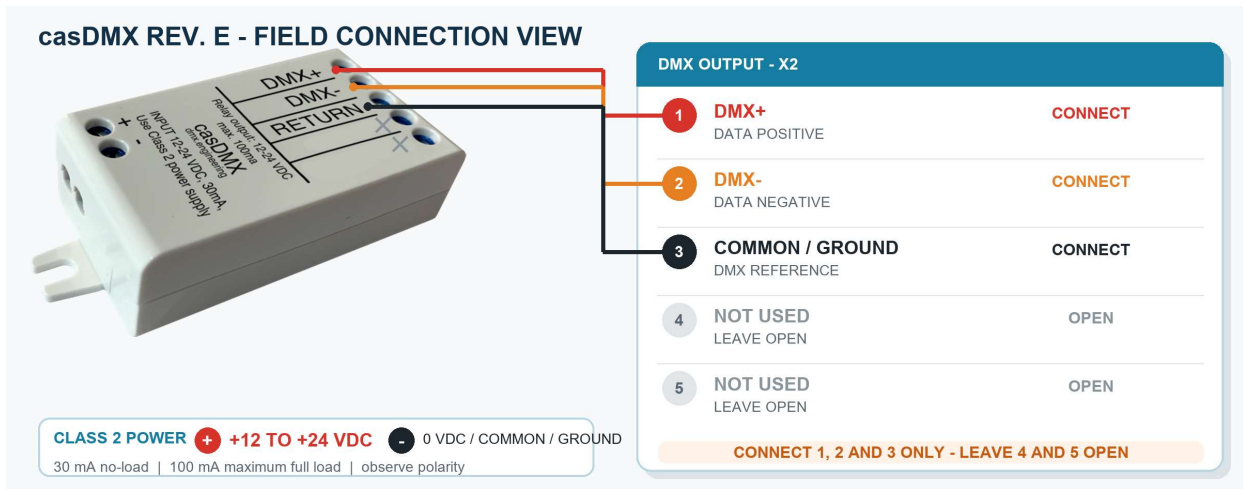
1.1 Technical data

Item	Rating / description
Supply	12-24 VDC Class 2, polarity sensitive
No-load current	30 mA
Maximum full-load current	100 mA
DMX output	Single universe, 3-wire, non-isolated DMX-512
Controlled DMX channels	Up to 12, depending on the fixture profile selected; vendor parameter sets the DMX Start Address (default DMX address 1)
Ambient temperature	-25 to +45 C (-13 to +113 F)
Maximum case temperature	+75 C (+167 F), Tc point on bottom
Storage temperature	-25 to +75 C (-13 to +167 F)
Relative humidity	0-80%, non-condensing
Overall size	72.6 x 30.0 x 18.0 mm (2.86 x 1.18 x 0.71 in), including mounting ears
Body length	56.0 mm (2.20 in)
Weight	23 g (0.8 oz)
Radio	Casambi CBM-003B or Fanstel BT840F production variant; 2.4 GHz BLE

1.2 Mechanical and placement

Mount with the terminal openings accessible and the product label visible. Maintain separation from line-voltage conductors as required by the enclosure and applicable electrical code. The product is an open-type device and must be protected from damage and contamination.

2 Terminals and installation

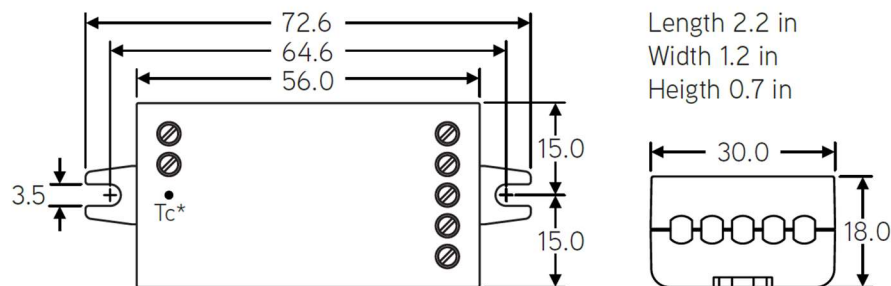


THREE DMX CONNECTIONS ONLY For normal casDMX installation, connect output positions 1 (DMX+), 2 (DMX-), and 3 (common/ground). Leave positions 4 and 5 unconnected.

2.1 Terminal mapping

Position	Signal	Field connection
Power +	+12 to +24 VDC	Class 2 supply positive
Power -	0 VDC / common / ground	Supply negative; system common, commonly called ground
X2-1	DMX+	DMX data positive
X2-2	DMX-	DMX data negative
X2-3	Common / ground	DMX reference/common, commonly called ground; must be connected
X2-4	Not used	No field connection; leave unconnected
X2-5	Not used	No field connection; leave unconnected

2.2 Mechanical dimensions



Dimensions are in mm.

* Tc point is on bottom side

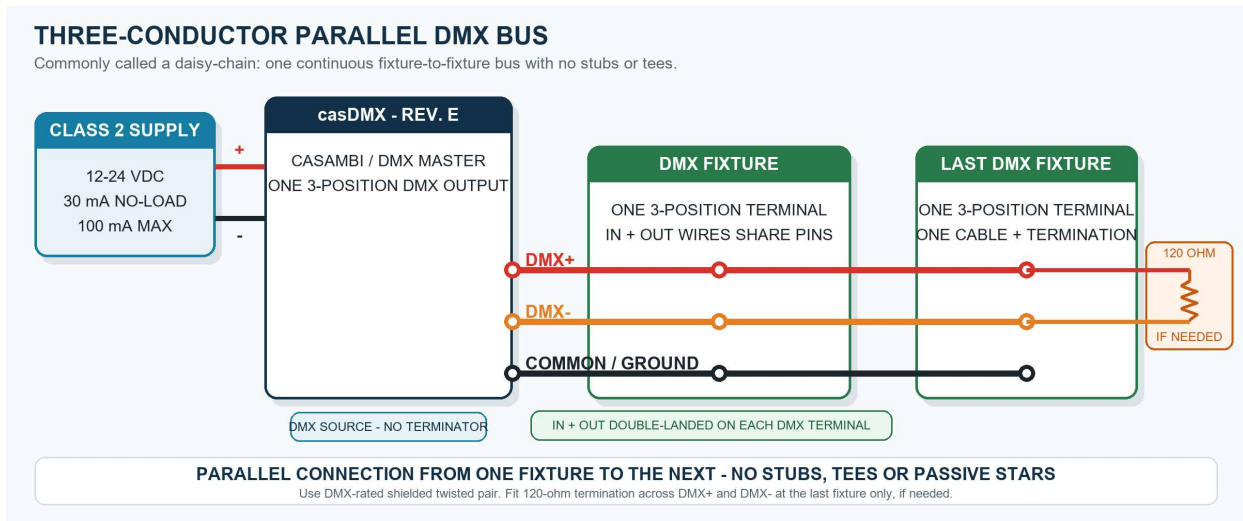
2.3 Installation procedure

1. **De-energize the circuit.** Verify that both the Class 2 supply and all connected fixture power sources are off.
2. **Mount the controller.** Use the mounting ears or place the unit in a listed nonmetallic enclosure suitable for the location. Keep the radio side clear of metal and dense wiring.
3. **Connect Class 2 power.** Observe polarity. Do not connect a constant-current LED driver output.
4. **Connect the DMX bus.** Land DMX+, DMX-, and common/ground. The common/ground conductor is required because the output is non-isolated.
5. **Continue the parallel bus.** Carry the same three conductors from one fixture to the next as one continuous parallel-connected wire bus. Do not create stubs, tees, or passive star branches. This arrangement is commonly described as a daisy-chain.
6. **Provide for far-end termination.** Do not add a field terminator at casDMX. At the last receiver only, enable the fixture's termination or fit 120 ohms across DMX+ and DMX- when the fixture manufacturer requires it or when the bus shows intermittent behavior.
7. **Inspect before power-up.** Check polarity, conductor strands, common/ground continuity, fixture DMX personality, and termination.

Installer pre-power checklist

Verification	Done
Supply is 12-24 VDC Class 2 and polarity is correct	[]
DMX+, DMX-, and common/ground are continuous end-to-end	[]
Fixture personality is recorded and its address matches casDMX	[]
DMX bus is a continuous parallel fixture-to-fixture connection with no stubs or tees; far-end termination status is recorded	[]
casDMX is outside metalwork and protected from damage	[]

3 DMX wiring and addressing



3.1 Bus requirements

- Use DMX-rated, low-capacitance twisted-pair cable. Connect the reference/common/ground conductor continuously throughout the system.
- Connect the three conductors in parallel from one fixture to the next, with no stubs or tees. This is commonly described as a daisy-chain, but electrically it is one continuous parallel-connected wire bus. Use an active DMX splitter when branches are required.
- At each intermediate fixture, land the incoming and outgoing conductors together on the same DMX+, DMX-, and common/ground terminal positions. This is one three-position connection with two wires under each terminal, not separate DMX IN and DMX OUT terminal blocks.
- Keep DMX cabling separated from line voltage and noisy switching conductors.
- casDMX is the DMX master. Do not install a field 120-ohm termination resistor at the casDMX output.
- Provide termination only at the far end of the line. Enable it when required by the last fixture or when flicker, twitching, random levels, or intermittent response suggests signal reflections.
- casDMX drives one complete DMX universe. Depending on the fixture profile selected, it controls up to 12 DMX channels beginning at the DMX Start Address vendor parameter. The default is DMX address 1.

ADDRESSING RULE Set the controlled fixture or DMX personality to the same value as the casDMX DMX Start Address vendor parameter. Record any value other than the default DMX address 1 on the closeout schedule.

3.2 Good DMX field wiring practice

- Use a DMX/EIA-485 data cable: shielded twisted pair with approximately 120-ohm characteristic impedance. Do not substitute microphone or ordinary audio cable.
- Keep DMX+ and DMX- on the same twisted pair. Carry common/ground continuously through the run and maintain the same polarity at every device.
- Route one continuous parallel-connected bus from casDMX through each receiver. Do not make passive T, Y, or star branches; use an optically isolated DMX splitter when branches are required.
- Keep splices and untwisted conductor length short. Use listed connectors or terminal blocks, secure the shield/common/ground, and prevent loose strands or shorts.
- Separate DMX wiring from line-voltage conductors, dimmer outputs, motors, relays, and switching power wiring. Cross power wiring at approximately 90 degrees when separation cannot be maintained.
- Keep each unsplit segment to 32 receiver loads or fewer and approximately 300 m (1,000 ft) or less. Use a splitter/repeater for additional loads, long runs, or branches.

FAR-END TERMINATION casDMX is the transmitting master and does not need a field 120-ohm terminator. If the last fixture is not self-terminating, enable its END/TERM switch or place one 120-ohm resistor across DMX+ and DMX- at the last receiver only. Add it when the fixture manufacturer requires it or when the bus is flaky. Do not terminate intermediate fixtures and do not add the resistor at casDMX.

3.3 If the fixtures flicker or behave randomly

1. **Check the topology.** Remove passive branches and confirm one continuous parallel-connected bus runs fixture-to-fixture to one final receiver, without stubs or tees.
2. **Check cable and polarity.** Verify DMX+, DMX-, and common/ground end-to-end; inspect for shorts, loose strands, damaged cable, and excessive untwisted length.
3. **Test with a short known-good cable.** Temporarily connect the affected fixture directly to casDMX. Normal operation points to a field-wiring problem.
4. **Measure the DMX signal at the fixture.** Use a professional field tester such as a Swisson XMT-series DMX tester or City Theatrical DMXcat Multi Function Test Tool to confirm that DMX is arriving, inspect channel values and timing, and generate a known-good DMX signal when isolating a wiring or fixture problem.
5. **Terminate the far end.** At the last receiver only, enable its termination or install 120 ohms across DMX+ and DMX-. Re-test dimming, color, and scenes.
6. **Split difficult runs.** Use an optically isolated DMX splitter when the run has branches, ground-reference problems, excessive length, or more than 32 receiver loads.

3.4 Pre-commissioning record

Record	Project entry
Location / tag	
Network / profile	
Fixture model / personality	
DMX channels / termination	_____ through _____ far-end termination: _____

Reference basis: ESTA Recommended Practice for DMX512; ETC DMX512 Info; CHAUVET Professional DMX Primer; Swisson XMT and City Theatrical DMXcat field-tester documentation.

4 Add casDMX to the Casambi app

The standard Casambi App is used for normal casDMX commissioning. Casambi Pro is a different workflow; do not create a Pro network unless the project documents specifically require it.



4.1 Before pairing

1. **Power casDMX and the DMX fixtures.** Confirm the controller appears in More > Nearby devices. Work within Bluetooth range.
2. **Confirm network type.** Use the network already specified for the project. A device can belong to only one Casambi network.
3. **Select the fixture profile first.** From Nearby devices, select the unpaired casDMX, choose Change profile, and choose the profile that matches the fixture DMX personality.

WHY PROFILE FIRST The profile defines the controls and DMX channel mapping. Changing it later can disturb scenes, names, and other commissioning work.

4.2 Pair to the network

4. **Open More > Nearby devices.** Locate the unpaired casDMX. Use Identify when available and confirm the intended physical unit.
5. **Select Add to a network.** Choose the project network. If prompted, enter the network credentials supplied by the commissioning authority.
6. **Name the luminaire.** Use the fixture schedule identifier and location, for example L2-17 | Lobby Cove.
7. **If needed, change Vendor Parameters.** Open the casDMX device properties and set DMX Start Address, DMX Frame Length, or DMX Copy Channel Count only when required by the fixture schedule or application. Keep casDMX powered for at least 3 seconds after a change so the setting is saved.
8. **Test live control.** From Luminaires, operate every control element through its full range and confirm the corresponding DMX function.
9. **Save commissioning records.** Record the network, profile, fixture personality, controlled DMX channel range, and any vendor parameters.

CHANGING A PAIRED PROFILE With Administrator or Manager rights, open the paired luminaire properties, select Model, then Change profile. After any profile change, verify every DMX channel and repair affected scenes or automations because the controls presented by the app may change.

5 Provisioning: what it means

For casDMX, provisioning is the controlled process of matching the Casambi fixture profile to the connected fixture's DMX personality, pairing the controller to the correct network, applying project naming and settings, then proving every channel. It is more than simply adding the device to the app.

5.1 Provisioning sequence

Stage	Required result
1. Fixture personality	Set the connected fixture to the intended DMX mode/personality and match its address to the casDMX DMX Start Address parameter (default DMX address 1).
2. casDMX profile	Select the profile that presents the correct controls and number of DMX channels.
3. Network	Pair to the specified Evolution project network.
4. Identity	Assign a schedule-based name and location.
5. Properties	Set startup state, minimum/maximum level, control behavior, and approved vendor parameters.
6. Functional test	Exercise each dim, color, CCT, or custom element and compare it to the fixture schedule.
7. System test	Test scenes, switches, sensors, schedules, and mesh coverage from representative locations.

5.2 Vendor parameters

casDMX vendor parameters are manufacturer-defined settings carried by the selected Casambi profile and applied by the PSoC firmware. They are separate from normal Casambi properties such as minimum level, maximum level, startup state, and manual-control timeout. Access them from the luminaire's device properties when the installed profile and user access level expose them.

Parameter	Range / default	Firmware behavior	Field rule
DMX Start Address ID 0	1-512 Default: DMX address 1	Sets the DMX channel where the selected fixture profile mapping begins. Earlier DMX channels are transmitted at zero.	Set the fixture to the same DMX address. Record any non-default value.
DMX Frame Length ID 1	16-512 DMX channels Default: 512	Sets the total number of DMX channels transmitted after the start code. The firmware enforces a 16-channel minimum.	Must include the highest controlled DMX channel. Normally leave at 512.
DMX Copy Channel Count ID 2	0-8 DMX channels Default: 0	0 disables copying. A value N repeats the first N Casambi-controlled DMX channels throughout the outgoing DMX frame.	Set to the number of DMX channels used by one downstream driver block.

5.3 DMX Copy Channel Count for linear fixtures

DMX Copy Channel Count is primarily used for linear fixtures containing multiple cascaded DMX drivers. Set it to the number of DMX channels used by one driver. casDMX repeats that channel block throughout the outgoing DMX frame. Each driver removes its own DMX data, then presents the remaining data to the next driver as a new DMX frame whose next driver's data begins again at DMX address 1. For example, a value of 3 repeats an RGB channel block for successive three-channel drivers. After changing any vendor parameter, keep casDMX powered for at least 3 seconds before cycling power so the deferred EEPROM write can complete.

6 Available casDMX fixture profiles

The following profile group was supplied for casDMX3_3F. Profile names and Casambi database IDs are recorded so the commissioning team can identify the intended entry. The fixture manufacturer's DMX personality remains the authority for exact channel definitions.

PROFILE SELECTION Match the fixture personality by function and DMX channel order, not merely by the number of channels. Profiles marked NoMix or Evolution can produce materially different behavior.

Profile	ID	Casambi controls	DMX use
12 Dim EVO	49613	Evolution: 12 independent dimmer controls	DMX channels 1-12, sequential
2 CCT	49614	Two-channel CCT control	Two profile-defined DMX channels
4-Dim	49615	Four independent dimmer controls	DMX channels 1-4, sequential
8-Dim	48322	Eight independent dimmer controls	DMX channels 1-8, sequential
CCT (Warm/Cool)	49617	Warm/cool tunable-white control	Two profile-defined DMX channels
DTW	49618	Dim-to-warm control	Two profile-defined DMX channels
Dim,RGB,TW	49631	Master dim, RGB color, and tunable white	Five profile-defined DMX channels
ETC Source 4	49619	ETC Source Four color control	Four profile-defined DMX channels
ETC_Fresnel	49620	ETC Fresnel color control; NoMix	Four profile-defined DMX channels
Elements	49623	Casambi Elements interface	Profile-defined mapping
RGB	49624	RGB color picker with master dimming	DMX channels 1-3: R, G, B
RGB-TW	49625	RGB plus tunable-white control	Four profile-defined DMX channels
RGB/White	49626	RGB color plus independent white	DMX channels 1-4: R, G, B, W
RGBW	49096	Standard RGBW color control	DMX channels 1-4: R, G, B, W
RGBW Sliders	49627	Four independent RGBW sliders	DMX channels 1-4, sequential
SWRD Kit Color	49628	Dim plus RGBW; NoMix	Five profile-defined DMX channels

6.1 Profile selection examples

Connected load / personality	Starting profile
Four independent single-channel dimmers	4-Dim
Four-channel RGBW fixture	RGBW or RGBW Sliders, depending desired app controls
Three-channel RGB fixture	RGB
Warm/cool two-channel white fixture	CCT (Warm/Cool) or the manufacturer-approved 2 CCT profile
Twelve independent DMX functions	12 Dim EVO; Evolution network required

7 Startup and acceptance testing

Check	Acceptance requirement
Power	casDMX remains powered and visible in Nearby devices.
Network	Unit is paired to the correct network and has a project-standard name.
Profile	Profile name/ID matches the fixture schedule and DMX personality.
Dimming	0%, minimum, mid-level, and 100% operate correctly.
Color/CCT	Each control moves the intended fixture channel without cross-coupling.
Scenes	All assigned scenes recall correct levels and colors.
DMX bus	No flicker, random output, or intermittent response at any receiver.
Mesh	Control succeeds from representative occupied locations.
Record	Profile, fixture personality, DMX channel range, and settings are entered on the closeout schedule.

7.1 Troubleshooting

Symptom	Likely cause	Corrective action
Not visible in Nearby devices	No/incorrect power; out of range; already paired; hidden device	Measure 12-24 VDC at input. Move phone closer. Check device/network status.
Visible but will not pair	Already paired; weak signal; wrong network access	Unpair only with authorization. Confirm network credentials and signal.
Pairs but no DMX response	Wrong polarity/common/ground; fixture address does not match DMX Start Address; wrong personality/profile	Verify DMX+, DMX-, common/ground, both address settings, personality, and selected profile.
Wrong colors or channels	Profile/fixture channel order mismatch	Compare the fixture DMX chart to the casDMX profile; select the correct profile and re-test.
Flicker or intermittent control	Cable/termination/topology issue; electrical noise	Check twisted-pair cable, continuous parallel bus, far-end termination, common/ground, and separation from power wiring. Verify the signal at the fixture with a DMX field tester.
Short radio range	Metal enclosure or obstruction; poor mesh spacing	Move casDMX outside metalwork or use a nonmetallic enclosure; test mesh coverage.
Profile change missing	No alternate profiles exposed or insufficient rights	Use Administrator/Manager access; contact DMX Engineering LLC if the expected profile is absent.

8 Closeout, replacement, and support

8.1 Closeout record

Field	Project record
Project / area	
Fixture type / tag	
casDMX name in app	
Casambi network	
Profile name / ID	
Fixture DMX personality	
Controlled DMX channel range	_____ through _____
Vendor parameters changed	None / attach record
Commissioned by / date	

8.2 Replacement

Use the Casambi Replace device function when replacing failed hardware with an identical casDMX and profile. Confirm the replacement is unpaired, powered, and within Bluetooth range. After replacement, repeat the complete channel and scene acceptance test.

8.3 Regulatory and installation notes

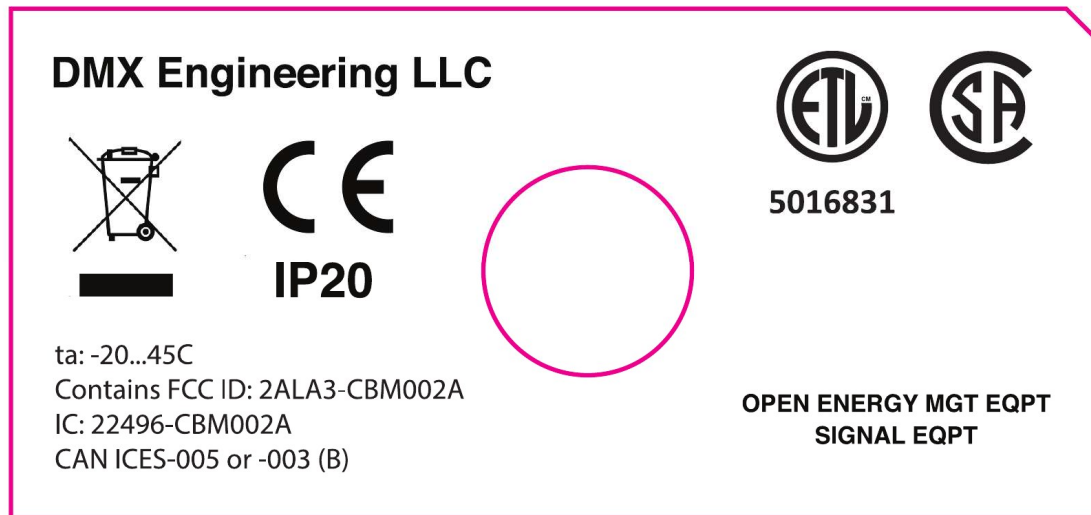
- Indoor use only. Install as an open-type Class 2 device in accordance with the National Electrical Code and local requirements.
- Operation is subject to the two FCC Part 15 conditions: the device may not cause harmful interference and must accept interference received, including interference that may cause undesired operation.
- Changes or modifications not expressly approved by DMX Engineering LLC may void the user's authority to operate the equipment.
- Use the current product label for applicable certification marks and radio identifiers; hardware may use a CBM-003B or Fanstel BT840F radio variant.

8.4 Technical support

DMX Engineering LLC
1908 N. 101st Place
Mesa, Arizona 85207
480-993-7972
sales@dmx.engineering
<https://dmx.engineering>

8.5 Product identification and certification label

The bottom product label is the authority for the marks and identifiers applied to the installed unit. Retain the ETL certification mark and control number 5016831, equipment-category wording, CE and IP20 markings, WEEE symbol, ambient rating, FCC ID, IC identifier, and Canadian interference statement exactly as shown on the approved artwork.



LABEL CONTROL Do not redraw, omit, reposition, or substitute certification marks or radio identifiers without engineering and compliance approval.