

新產品與應用技術介紹 KNX & Building Automation

March 2022

Mac Tu

MEAN WELL



▼ KNX Intro

▼ Product category
and Roadmap

▼ KNX Data Secure

▼ KNX-DALI Gateway:
DLC-02-KN

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Why Choose KNX Product?



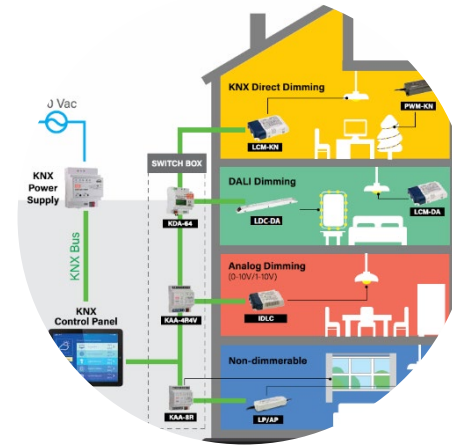
• International Standard

- The only home and building control standard running global certification schemes
- Open platform for any manufacturer to develop



• Reliability

- Product compliance checked at neutral third-party test laboratories.
- Standardized connector prevents misconnection
- Standardized cable to ensure transmission quality



• Endless flexibility
















- Support all systems in the building
- Easy to change existing setting
- Scene function to provide max. comfortability



• Software

- One PC software tool for Design, Configuration, Diagnostics
- Multi-language
- Easy management from various devices

KNX Product Overview

| | | | | | |
|------------------|--|------------------------------|------------------------|--|--|
| Bus Power Supply |  | KNX-40E-1280(D) 1280mA | KNX Actuator |  | 4ch Dimming actuator: KAA-4R4V-S  |
| |  | KNX-20E-640 640mA | |  | 8ch Universal actuator: KAA-8R-S  |
| Interface |  | KNX-USB Interface KSI-01U | LED Driver |  | CC Mode output with KNX dimming LCM-25/40/60KN series  |
| |  | Line Coupler KSC-01L | |  | CV PWM output with KNX dimming PWM-60/120/200KN series  |
| |  | KNX-IP Router KSR-01IP | KNX to DALI Gateway |  | DLC-02-KN  |

| | | | | |
|---|--|---|---|---|
|  Blind/Shutter Control |  Lighting Control |  Push Button Interface |  Constant Voltage Driving Mode |  PWM Style Output Mode |
|  Logic Function |  Heating Control |  Constant Current Driving Mode |  DC 0-10V Dimming Control | |

System Device

KNX Power

KNX-20E-640

640mA



KNX-40E-1280(D)

1280mA with diagnostic



Interface

KSI-01U

KNX-USB Interface



KSC-01L

Line Coupler



KSR-01IP

KNX-IP Router



KNX->DALI Gateway

DLC-02-KN



Actuator

KNX Actuator

KA A-4R4V-S

4ch Dimming actuator (secure version)



KA A-8R-S

8ch Universal actuator (secure version)



LED Driver

LCM-25/40/60KN

CC Mode output with KNX dimming



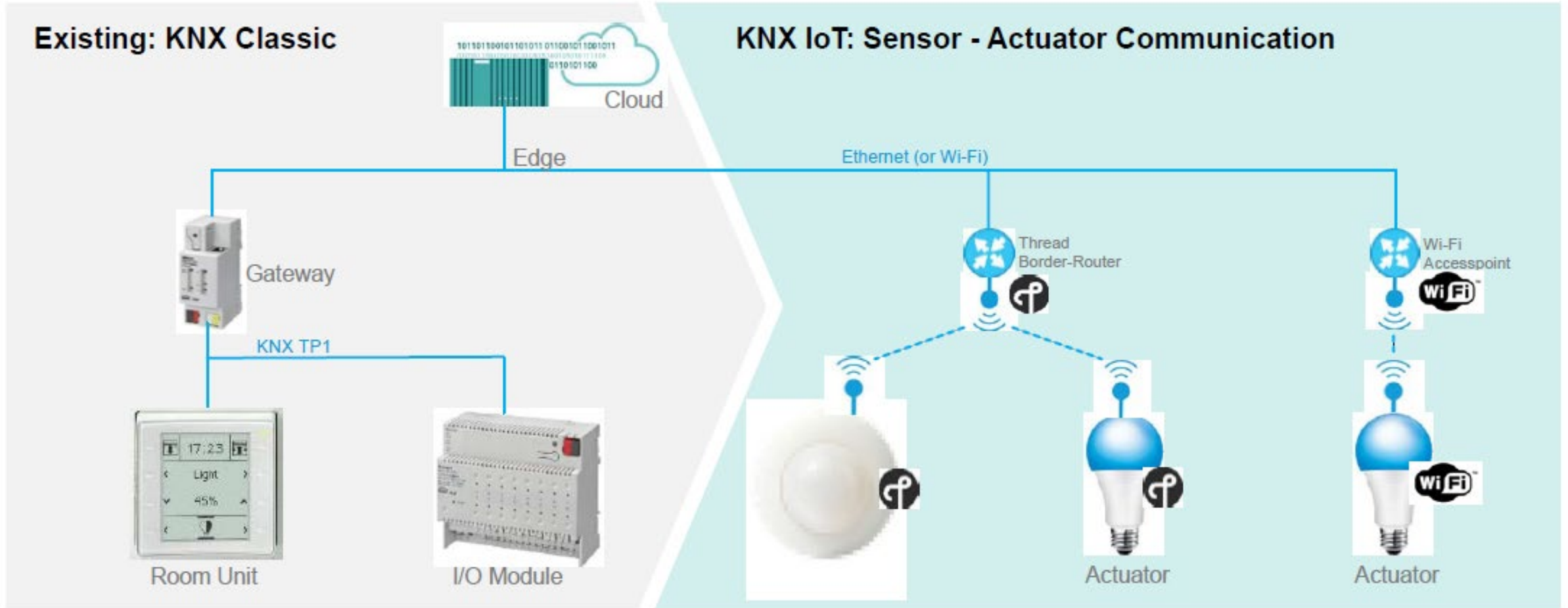
PWM-60/120/200KN

CV PWM output with KNX dimming
(secure version: PWM-200KN)



KNX IoT with Thread

THREAD | KNX IoT with Thread Network Topology



- Source : KNX Thread webinar

KNX Data Secure Models

- PWM-200KN
- KAA-8R-S
- KAA-4R4V-S



What is KNX Data Secure?

KNX Data Secure signs and encrypts the communication telegrams in the KNX bus network to avoid unauthorized access or manipulation.

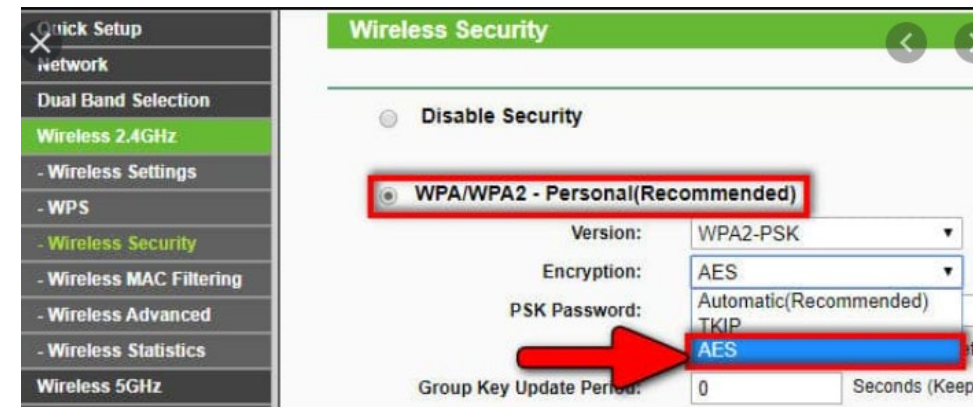
Therefore, KNX Secure products can prevent hacker attack scenarios, such as communication content (sniffing), repeated communication (replay attack) or tampering (man in the middle attack).

What is the security level used in KNX Data Secure?

Based on ISO 18033-3 standardized security algorithm, AES 128-bit encryption.

AES encryption is commonly used in Wi-Fi router router.

Additional information: Other communications of MW products such as DALI, PMBus, CANBus are not encrypted



What is Device Certificate

Device certificate is a 36-character string. The purpose is to enable Data Secure on ETS for the first time. Therefore, ETS will first read the device certificate and use the built-in camera of the laptop to read the **QR code: FDSK (Factory Device Setup Key)** and import to ETS

The device certificate is an easy-to-remove label placed on the front of the device. After installation, the label must be removed from the device and stored safely to prevent unauthorized personnel from obtaining it to avoid information security crisis



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AFRO04-HWZ3JO
K4YDZN-WTILLR
40BU7Y-3IVXYR



DLC-02-KN Key Features

- Comply with IEC 62386 DALI-2 ,Part 101/Part 103
- Support DALI DT8 device (TC, RGB, RGBW, XY-coordinate). Expect new firmware will be released in Q2
- Support Self-contained emergency (part 202).
- 2 independent DALI Bus. Up to 128 control gears. Input device must be KNX.
- 4 programmable relays, can be used as an electrical switch
- 16 sets of Effect. Each Effect cycle supports 32 steps.
- Built-in timer IC, commission schedule can be set through ETS
- Mean Well DLC software: for upgrade DLC-02-KN DALI firmware.



DT8 Color Control

- Color control type
TC, RGB, RGBW, XY-coordinate
- The function is included in
ECG / Group / Scene / Effect / Timer

Colour control type Colour Temperature

Colour value on DALI System Failure no action define colour value

Colour value 6000 K

Colour value on ECG Power On last colour value define colour value

Colour value 4000 K

Switch-on behavior Keep last object value Use defined value

Switch-on colour value 2700 K

Colour temperature object format 2-bytes Colour Temperature(DPT7.600) 1-byte Percentage(DPT5.001)

Sending colour value status at change

Colour changing fading time via dimming 4.0s

Colour temperature range setting by Scan or Reinstall function on DCA APP defined



Self-Contained Emergency

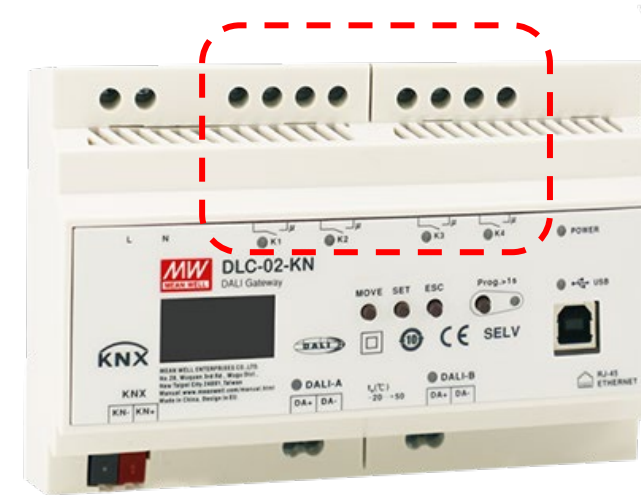
- Self-contained means that the luminaire contains the control gear and battery (or they are placed next to the luminaire)
- The control gear includes self-testing of the lamp, battery, drive circuit and charging circuit.
- Optional features include automatic periodic self-testing
- The main principle is to **turn on the lamp when the mains is off.**
- There are two types of tests that emergency control gear must implement: Function test and Duration test.



| ECG Device Type | Self Contained Battery Lamp(DT1) |
|--------------------------|----------------------------------|
| Value in emergency mode | 50 % |
| Prolong time on recovery | 0 Minutes |
| Function test interval | 2 Days |
| Duration test interval | 2 Weeks |
| Test execution time | 7 Days |

Relay Control

- Switch ON/OFF for Small Home appliances, Lighting without dimming...
- 5A/250Vac
- Total 4 relays can be controlled.
- Relay behavior can be parameterized when KNX Bus power on, or DLC-02-KN AC power on.



| | |
|---|--|
| Output mode | <input checked="" type="radio"/> normally opened <input type="radio"/> normally closed |
| On delay | 8 Seconds |
| Off delay | 5 Seconds |
| Central function | <input checked="" type="checkbox"/> |
| Send status | at change |
| Send status cyclic(0=not active) | 0 Seconds |
| Additional inverted status | <input type="checkbox"/> |
| Behavior at locking | on |
| Behavior at unlocking | off |
| Priority/Forced control | 1Bit priority ON |
| Release time for forced control(0=not active) | 1 Minutes |
| Behavior after forced control | off |
| Behavior after KNX Bus power up | off |
| Behavior after AC power on | previous status |

- Effect is a series of brightness values or color gradients.
- Shop, Bar, Restaurant, Hotel, Sauna, Entertainment...



Effect

- Total 16 Effect. Each effect has max 32 steps.
- Each step can have a delay with 0~65535s (18 Hours)
- ECG / Group / Broadcast / Scene
- Repeat steps cycle in 0-255 times (0 is endless).
- Additionally, a End step can be added at the end of last cycle.

1.1.1 DLC-02 KNX DALI Gateway > Effects > Effect 1

| Step | DALI | NO. | Colour type | Colour value | White value | Brightness value | Fade time | Delay |
|------|---------------|-----|-------------|--------------|-------------|------------------|-----------|-------|
| 1 | ECG (A) | 4 | Tc | 5000 K | | 40% | 4.0s | 90 s |
| 2 | scene (A) | 2 | | | | | 8.0s | 120 s |
| 3 | broadcast (A) | | Tc | 1000 K | | 2% | 5.7s | 20 s |
| 4 | group (B) | 6 | RGBW | #2FA727 | 150 | 53% | 4.0s | 50 s |
| 5 | ECG (B) | 33 | RGBW | #F10BBA | 33 | 5% | 2.8s | 148 s |
| 6 | ECG (B) | 2 | none | | | 2% | 4.0s | 77 s |
| 7 | scene (B) | 13 | | | | | 16.0s | 139 s |
| 8 | group (A) | 4 | RGB | #F3FF00 | | 24% | 11.3s | 60 s |
| 9 | no use | | | | | | 2.0s | 0 s |
| 10 | no use | | | | | | 2.0s | 0 s |
| 11 | no use | | | | | | 2.0s | 0 s |
| 12 | no use | | | | | | 2.0s | 0 s |

#F3FF00

R 243

G 255

B 0

H 62°

S 100%

V 100%

Timer

- For regular events, actions can be scheduled from Timer. (e.g. office, shop, warehouse...)
- 4 timer can be set. Each timer can set 6 operations on specific time.
- Max 4 objects can be linked for each operation.
- 6 different objects can be chosen.



| | |
|---------------|------------------------------|
| Object-1 Type | Colour Temperature(DPT7.600) |
| Object-2 Type | Scene Number(DPT17.001) |
| Object-3 Type | Switch(DPT1.1001) |
| Object-4 Type | Percentage(DPT5.001) |

Timer operation 1

Hours

Minutes

Monday

Thursday

Wednesday

Thursday

Friday

Saturday

Sunday

Sending Object-1 value

Colour temperature value K

- Switch(DPT1.1001)
- Percentage(DPT5.001)
- Colour Temperature(DPT7.600)
- RGB(DPT232.600)
- RGBW(DPT251.600)
- xy-coordinate(DPT242.600)
- Scene Number(DPT17.001)

Standby Switch Off

- If switch off a LED driver by DALI command, standby power consumption of the driver is <math><0.5W</math>
- With a large number of drivers in a building, this leads to a not inconsiderable energy requirement
- The “Standby Switch Off ” function saves energy by switching off the supply voltage of drivers when they are all in standby (DALI switch off).
- May use this function with KAA-8R-S or KAA-4R4V-S, to cut off input of LED driver.



Standby switch-off

Delay time to switch-off

300

Seconds

The delay time begins soon as all drivers are switched off

Delay time after switching back on

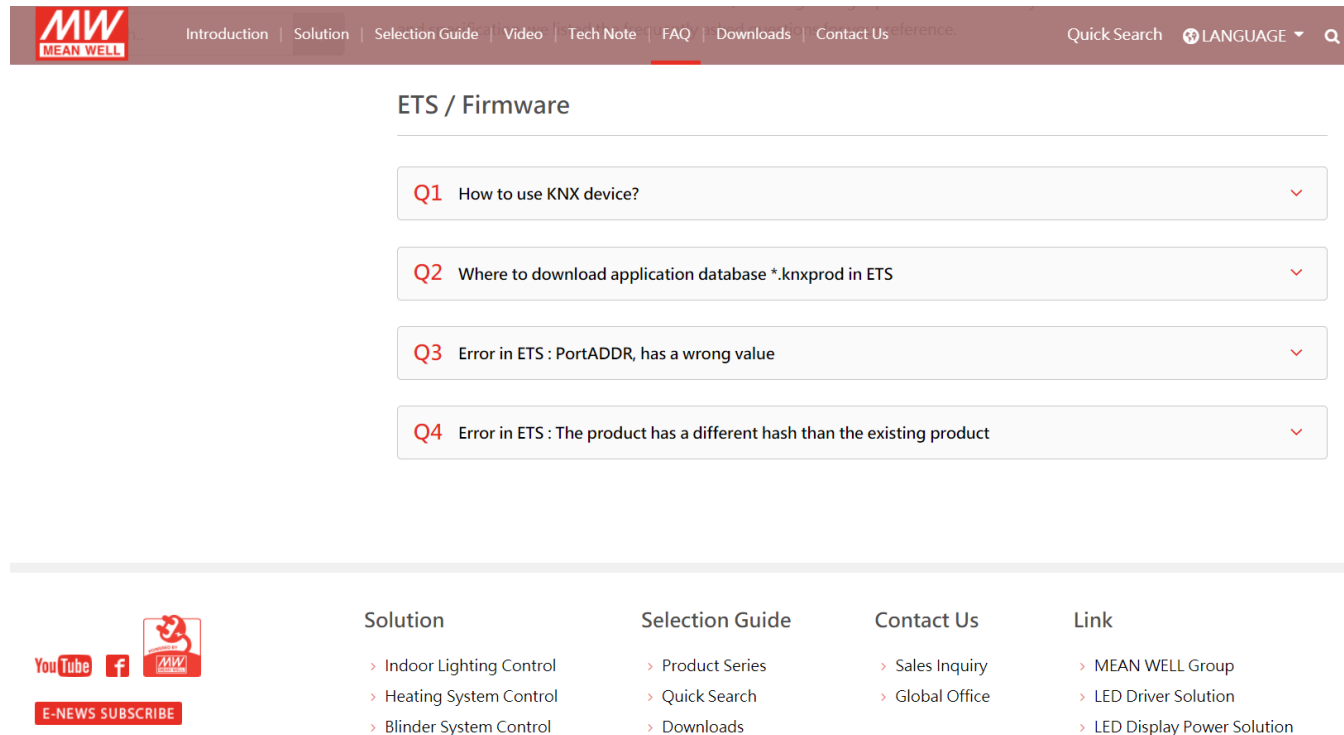
1

Seconds

Delay time between switching on driver power supply and first DALI command

KNX Mini Website

- <http://building.meanwell.com/>
- English/German/Chinese
- Providing FAQ, Technical article, Tutorial Videos, ETS application database...etc.



The screenshot shows the Mean Well website's navigation bar with the 'FAQ' link highlighted. Below the navigation bar, the 'ETS / Firmware' section is displayed, containing four FAQ items:

- Q1 How to use KNX device?
- Q2 Where to download application database *.knxprod in ETS
- Q3 Error in ETS : PortADDR, has a wrong value
- Q4 Error in ETS : The product has a different hash than the existing product

At the bottom of the page, there are four columns of links:

- Solution**
 - > Indoor Lighting Control
 - > Heating System Control
 - > Blinder System Control
- Selection Guide**
 - > Product Series
 - > Quick Search
 - > Downloads
- Contact Us**
 - > Sales Inquiry
 - > Global Office
- Link**
 - > MEAN WELL Group
 - > LED Driver Solution
 - > LED Display Power Solution

Additional elements include social media icons for YouTube, Facebook, and a QR code, along with an 'E-NEWS SUBSCRIBE' button.

Mean Well APP



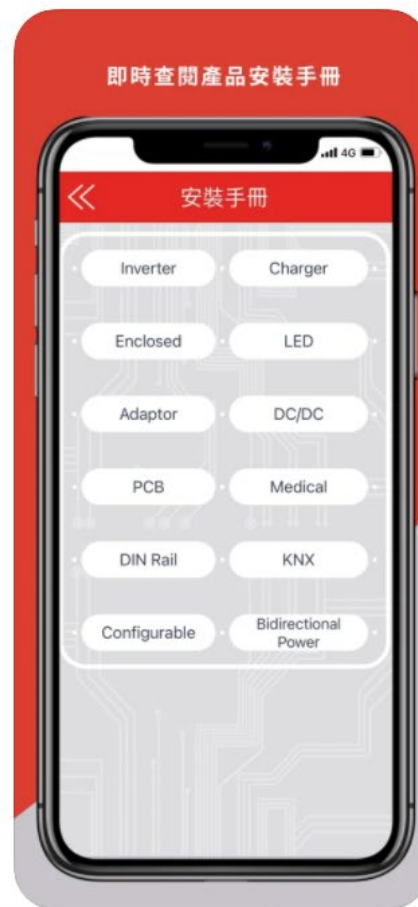
MEAN WELL 4+

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專為 iPhone 設計

★★★★★ 4.8 • 12 則評分

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