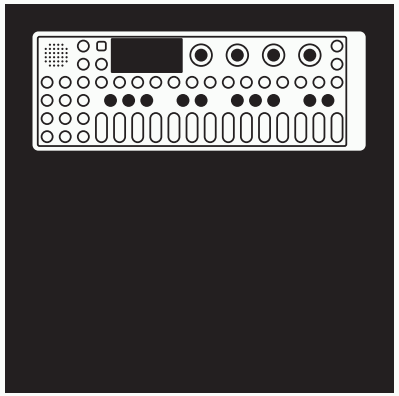
OP–1 field

portable synthesizer
user guide

OP–1 field



introduction

to begin, we'd like to say thank you for choosing OP–1 field, and also for contributing to the OP–1 legacy. we launched the original back in 2011, so what better way to honor the tool that made us than by giving it some tlc. by adapting to the latest technology, updating the design and evolving with the needs of our operators, OP–1 field is the natural continuation of its predecessor and the beginning of a new era.

thank you!

field system

field system began as an idea to create a series of products that function as part of a whole. with aluminum casings and nylon bag accessories; every item is designed with portability, compatibility and durability in mind. as usual, we aim to pack in as much technology into as little space as possible, getting the most out of every device. more than just an engineering challenge, field system is driven by a desire to rethink the way we approach music making.

care

before getting started, make sure to carefully read these instructions. see the section at the end on warnings and warranty for more information. OP–1 field is a highly technical and delicate product. make sure to learn how to properly operate, care for and store your device. take the time to register your unit here: teenage.engineering/register

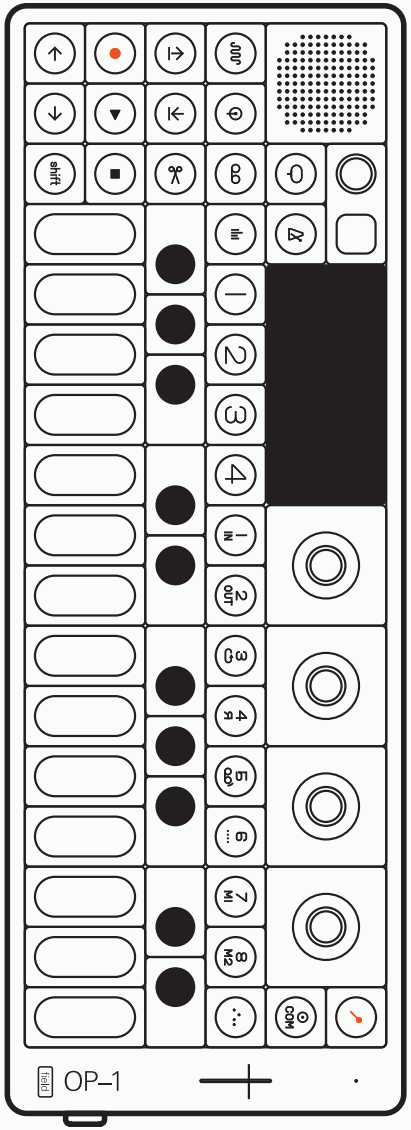
the latest version of this manual: teenage.engineering/guides/op-1

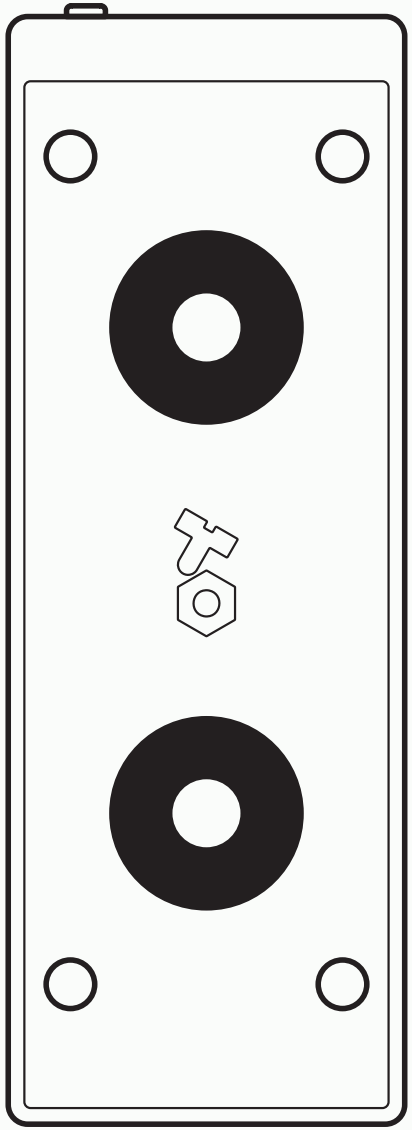
hardware

OP–1 field is a precision tool, made in natural anodized aluminum, with encoders in the color palette of blue, ochre, gray and orange to keep things playful. the low profile keyboard is durable and responsive so it's easy on the fingers. the display is a custom made color lcd, mounted directly onto the keyboard. the soft velcro rings on the bottom side mean the unit can be attached securely to a surface, case or stand. connectivity includes a usb type c port and line in and out sockets, as well as bluetooth le and fm radio.

OP–1 field highlights:

- ultra portable synthesizer
- usb-c audio interface
- host and device for audio and midi
- 4-track 32-bit stereo tape recorder
- multiple tapes
- stereo sampler
- stereo drum machine
- 7 sequencers
- 3 band equalizer
- 8 stereo effects
- built-in speaker
- fm radio receiver and transmitter
- accelerometer and gyroscope
- midi over bluetooth le
- 24 hour rechargeable battery

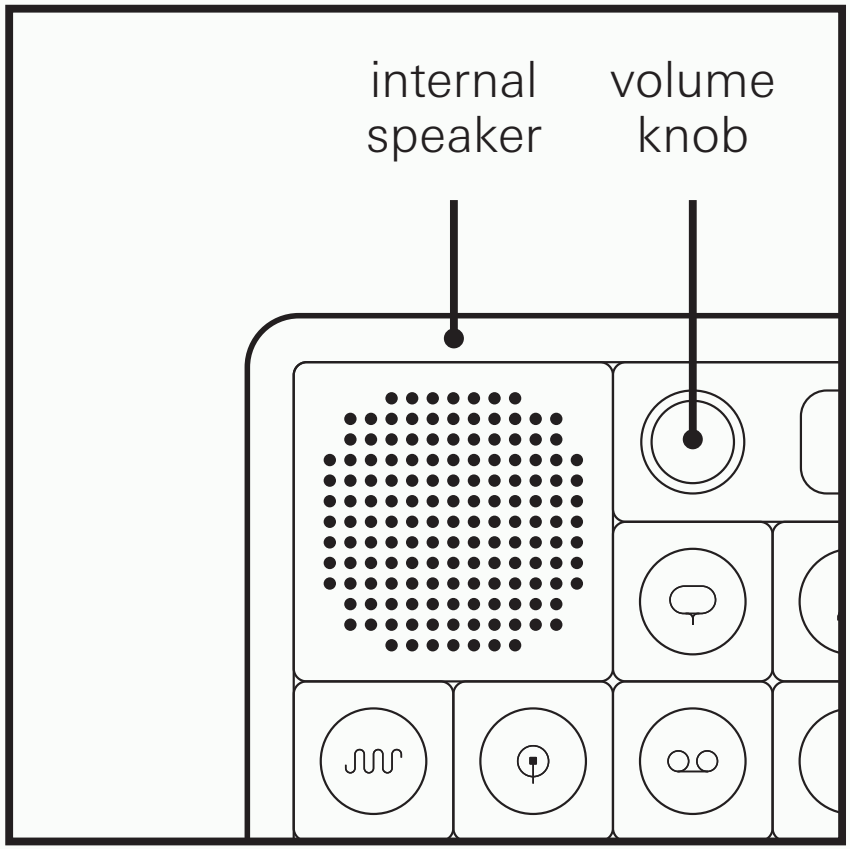

OP–1



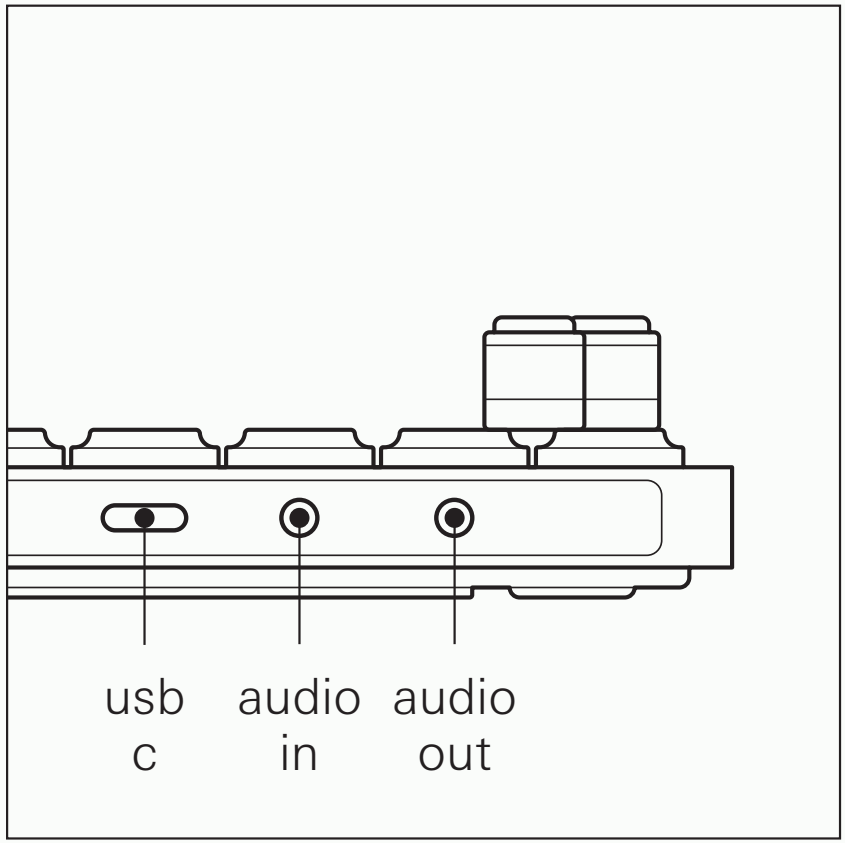
overview

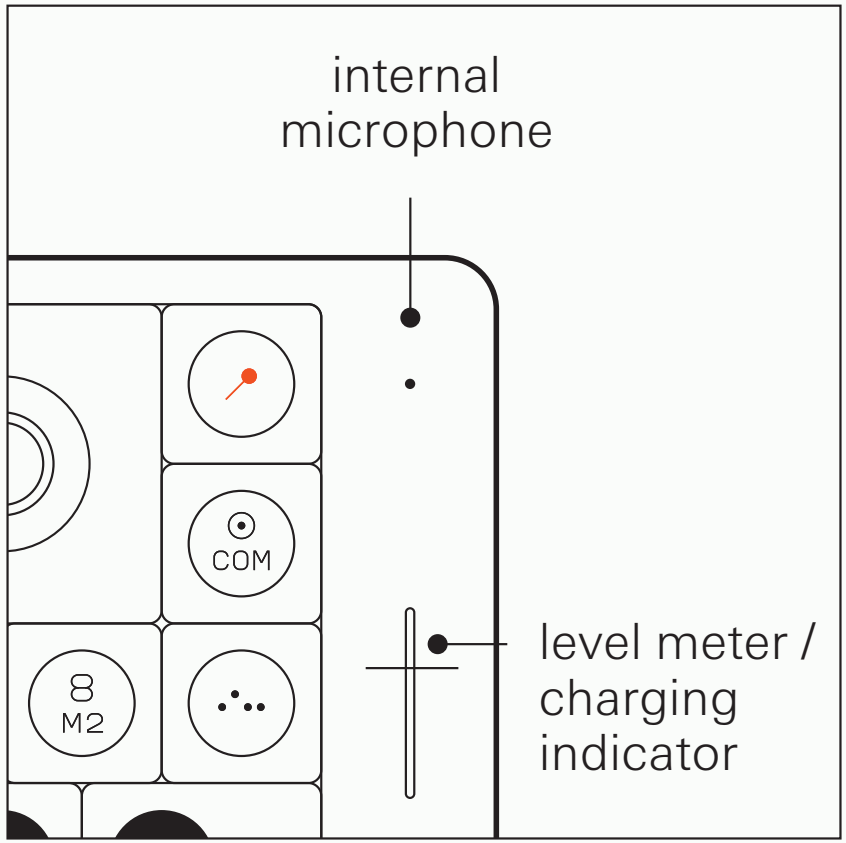
left side

the top left side holds the internal speaker and the main volume knob. on the right you can find a 3.5 mm audio output jack, used for connecting a pair of headphones, a mixer or your speakers. next, the 3.5 mm audio input jack is used when recording or processing any external line-level audio, such as another synthesizer. then, a usb-c port for audio / midi / charging and data, a charging led and the power switch. on the top right you can find the built-in microphone and the level meter.



right side

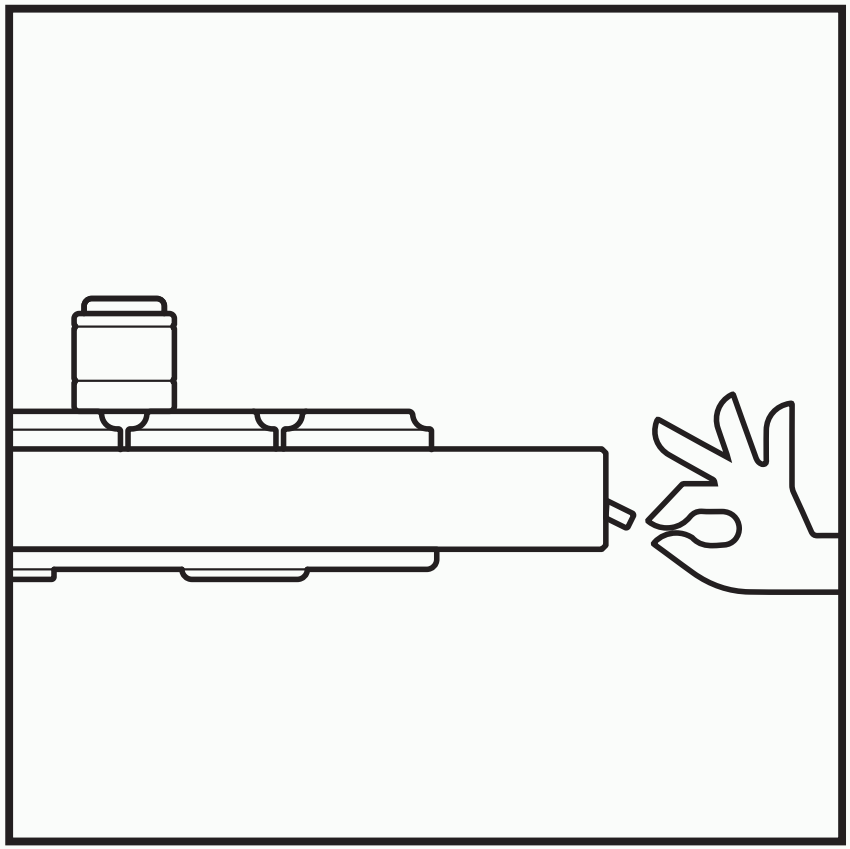

usb
c
audio
in
audio
out


internal
microphone
COM
8
M2
level meter /
charging
indicator

power on

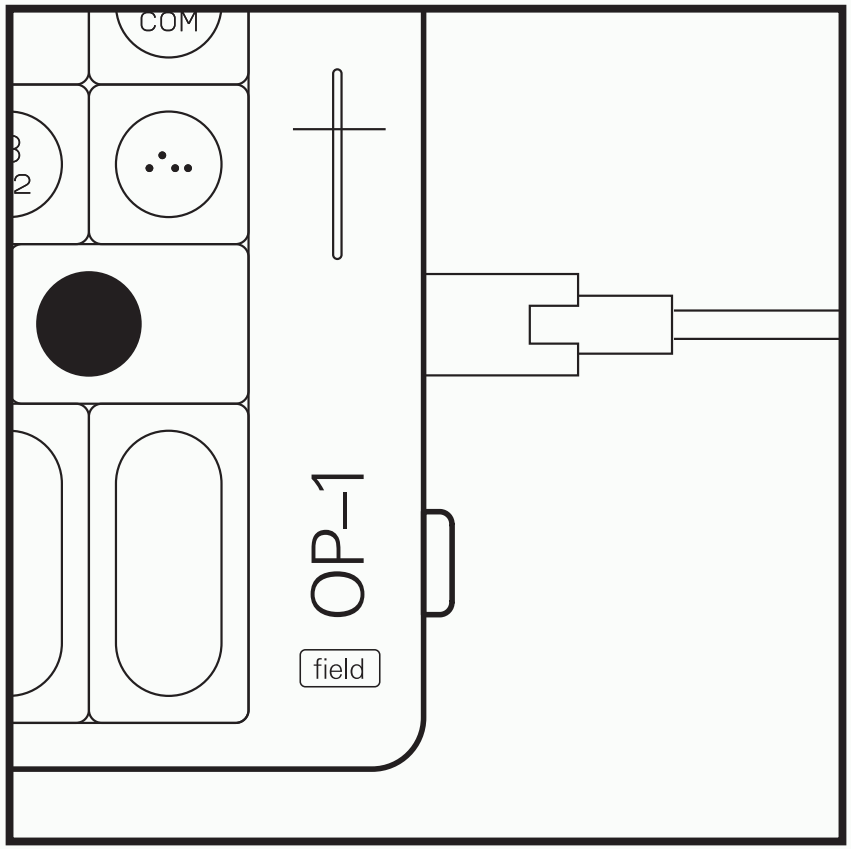
to power on your unit, flip the power switch located on the right side of the device to the up position. the display will show the logo and the currently installed firmware version and then arrive at the tape screen. to power off, flip the switch to the down position.

data is stored automatically, so you don’t have to worry about saving. the next time you power on your OP–1 field, everything will still be there, exactly as you left it.



charging

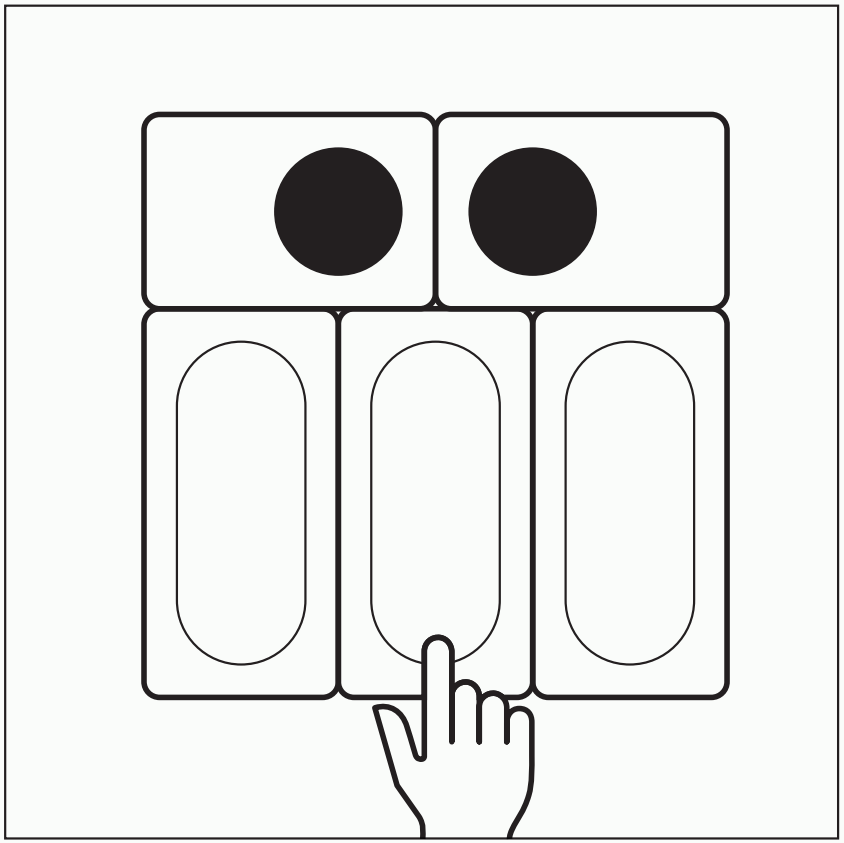
OP–1 field is charged through the usb-c port located on the right side of the unit. the first thing you should do is connect it to a computer or a usb charger. keep it connected until the battery is fully charged, indicated by the charging led on the right side and the level meter. to check battery level, hold the help key (speech bubble). the leds will light up to indicate the level. to keep the battery healthy, the unit should be charged at least every 6 months.



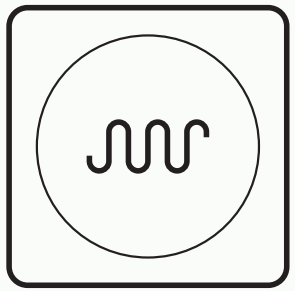
start

keyboard

the OP–1 workflow is based around playing, recording and layering sounds on tape. the four main modes: synth, drum, tape and mixer are where you'll spend the most time. press synth or drum to access the synth or drum modes and play notes on the keyboard to hear how they sound. once you've got what you want, hit record and record it to tape. keep layering and arranging as you like and press mixer to adjust track levels and eq of your mix. it's as simple as that to build your songs on OP–1 field.

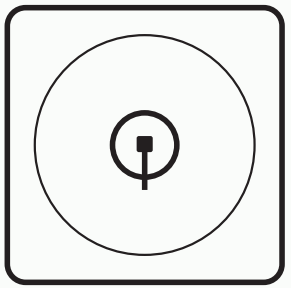


synth



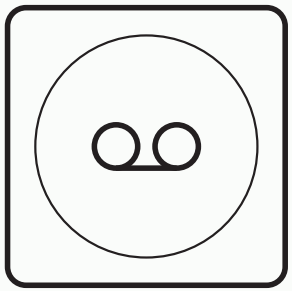
in synth mode you use the keys on the keyboard to play notes. OP–1 field has several original synth engines, each with its own character.

drum



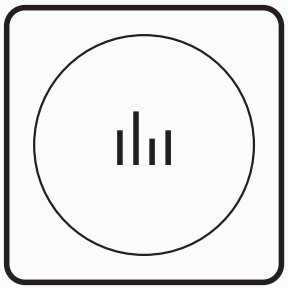
drum mode works similarly to synth mode, except the keys are used for playing drum and percussion sounds, laid out as drum kits.

tape



tape is the heart of OP–1, where you record and layer sounds. OP–1 field has four stereo tracks per tape and can hold multiple tapes.

mixer

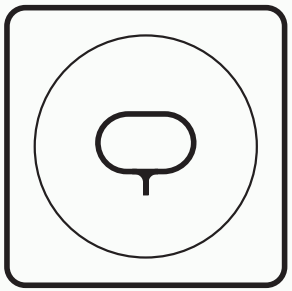


the mixer is where you control levels and panning for each of the four tracks, as well as the main eq, effects and drive.

shift

use shift with other keys or encoders for secondary functions, such as fine-tuning a parameter and for menu access.

help



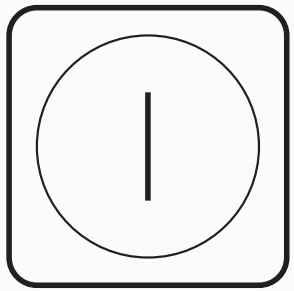
the help button will guide you throughout the interface. use it in combination with any other key to see more information on that topic.

user guide

when pressing help you'll see a quick help overlay, explaining the most basic relevant information per screen.

in addition to the help overlays, you can also press and hold shift and then press help to access the built-in user guide. here you'll find a quick start tutorial, as well as more detailed guide information. use the track keys T1-T4, as well as the encoders to navigate through the sections of the guide.

track keys T1-T4



press T1 while in synth or drum mode to show the ‘synthesis engine’. in tape and mixer you’ll access ‘track 1’ and the main ‘mixer’ screen.

T2 holds the ‘envelope’ in synth and drum modes, ‘track 2’ in tape and the main ‘equalizer’ while in mixer mode.

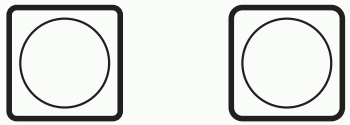
T3 is where you access ‘FX’ for both synth and drum modes. in tape, ‘track 3’ and ‘main FX’ can be found in mixer mode.

finally T4, which will show the ‘lfo’ screen in synth and drum modes and ‘track 4’ of tape, while ‘master out’ in mixer mode.

guide conventions

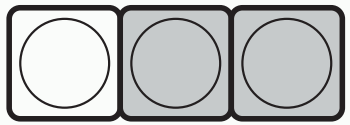
sometimes you will need to press keys in sequence, sometimes in combination. these illustrations and texts will help you to follow along in the guide.

to press a key, you tap it and then release. to hold a key, you press it and keep it pressed down. the encoders and most keys have different functions depending on the context, as described earlier.



press one key at the time.

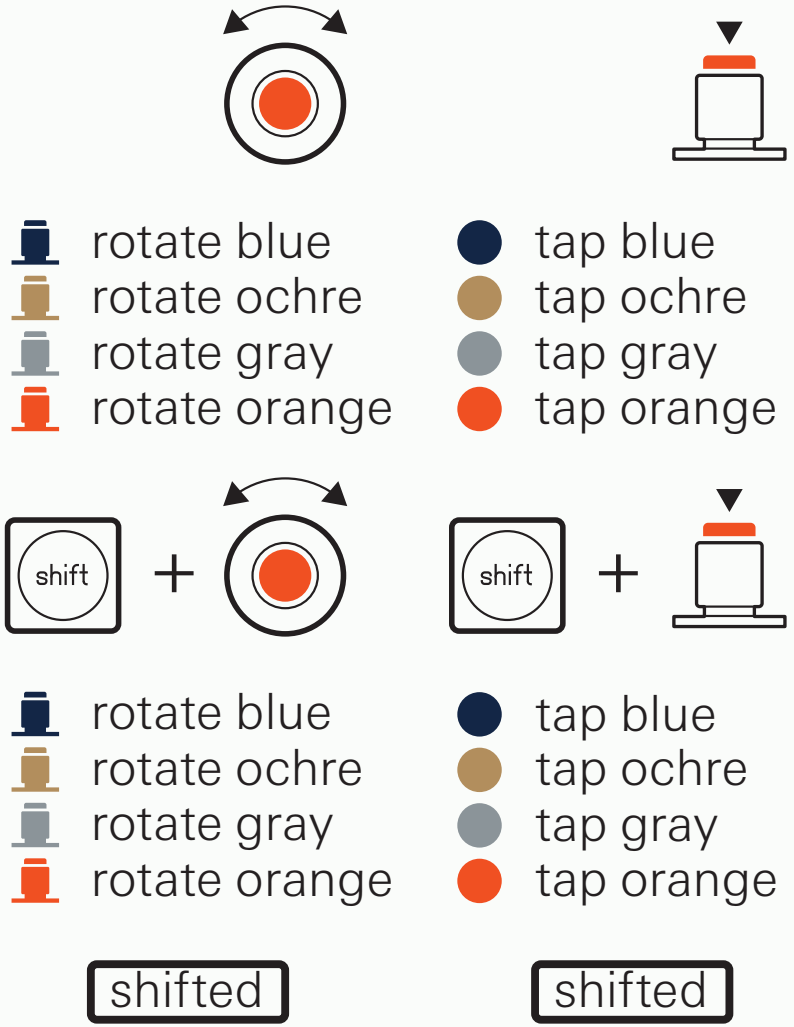
hold one key and press the second key.



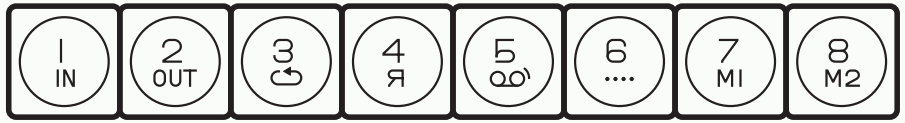
sometimes gray keys are shown for context but not active.

encoder commands

the four color coded encoders are related to the graphical interface on the display. by turning an encoder, you control the parameter with the corresponding color. an encoder can have multiple functions. using an encoder in combination with the shift key usually allows for fine tuning, and tapping an encoder usually means ‘confirm’, ‘return to default’ or access to even more extensive features. try it out and see what happens!



preset sounds



in synth and drum mode, the sound selection keys 1-8 are your eight instant access preset keys.

press any key from 1 to 8 while in synth or drum mode, to access the different sounds or drum kits stored to these preset slots. a preset consists of all four modules:

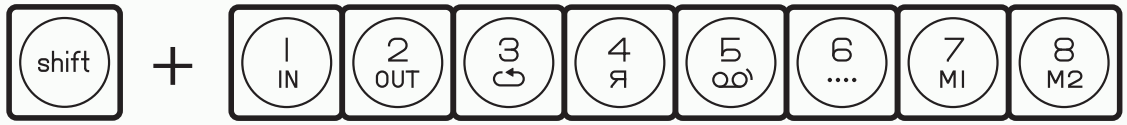
- T1 engine
- T2 envelope
- T3 FX
- T4 lfo

to load a different preset to any of these slots, press shift + any key from 1 to 8. this will reveal a list of all available engines, as well as the presets per engine. select a preset by turning the blue encoder for engine type and ochre encoder for preset choices.

note: the difference between changing just an engine (shift + T1) and a preset (shift + 1-8) is that the later changes all four module settings T1-T4.

changing presets

engine
preset



7

CLUSTER
DIGITAL
DIMENSION
DNA
DR WAVE
DSYNTH
FM
PHASE
PULSE

BACK BASS
BEEP ME
CHRONX
DSYNTHETHIC
EVOLVES
HAUNTED
JAMMED
LEGACY
PIANOLAN

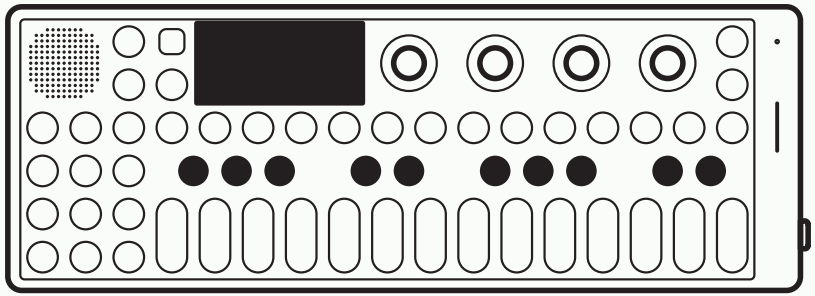
synth mode

OP–1 field has several original synthesis engines, each with its own characteristics. to enter synthesizer mode, or synth mode, press the synth key - the key with the wave symbol on it. when in synth mode, the synth engine's visual representation module is located under T1, which is the first screen that will be shown when you change or select a sound. a sound preset consists of four modules (T1–T4) and the synthesis engine is the first one (T1).

to change the synth engine press shift + T1. this opens a synthesis browser screen, with a list of possible synthesis engine choices. rotate the blue encoder to scroll through the list.

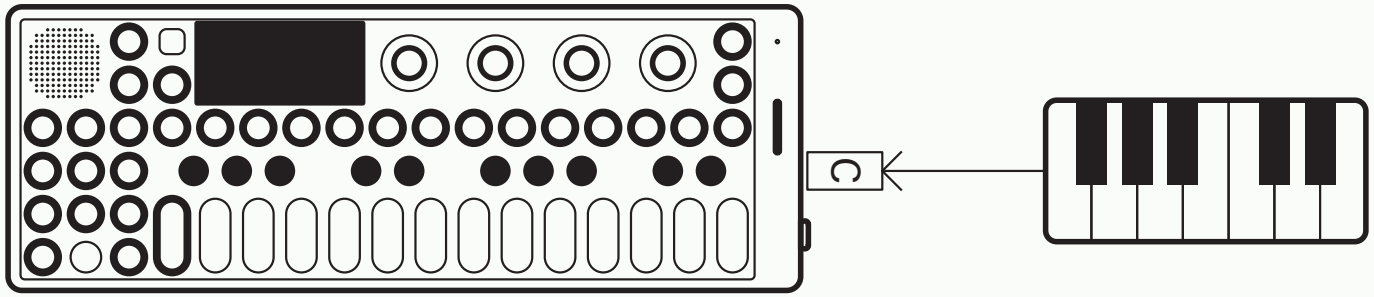
press T1 or tap the blue encoder to confirm your choice.

what follows is an overview of all the synth engines and parameters, adjustable using the encoders.



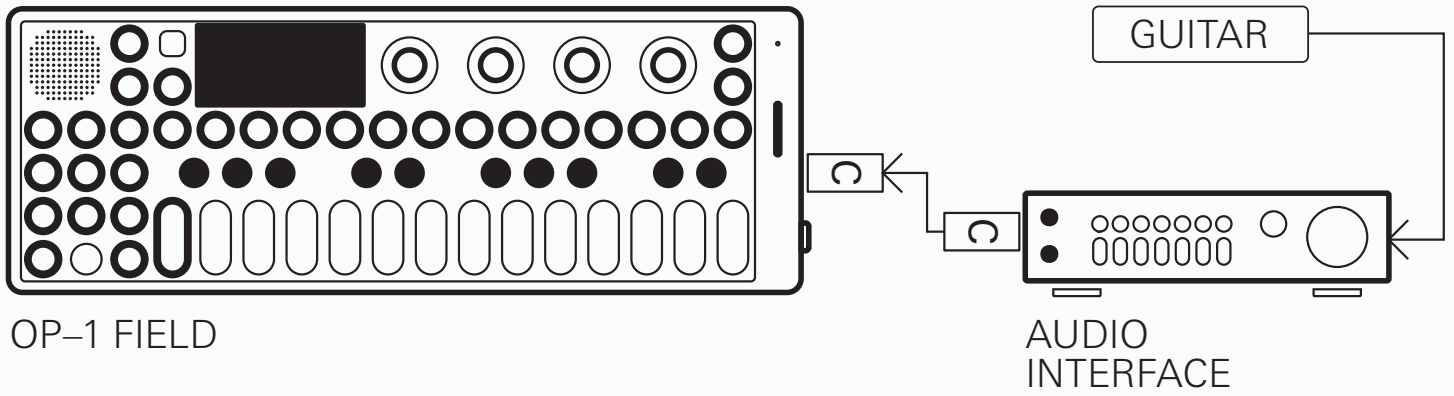
OP–1 FIELD

BLE MIDI
CONTROLLER



OP–1 FIELD

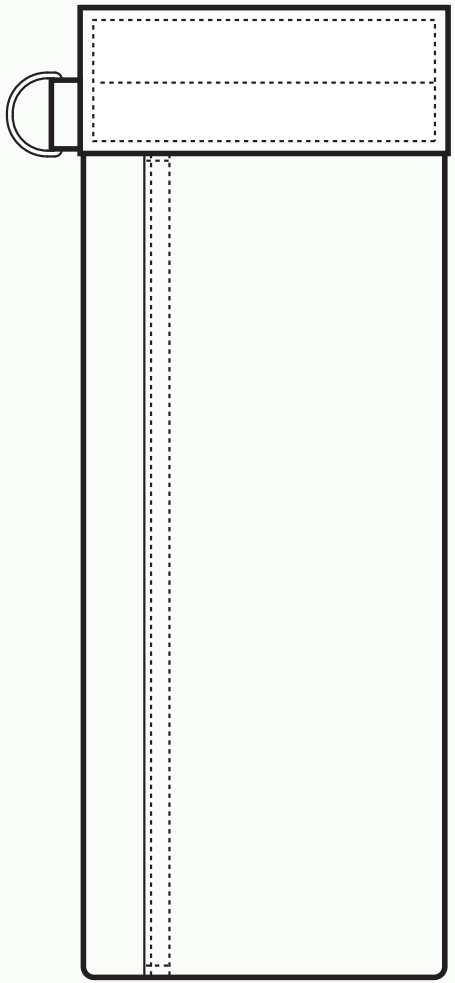
MIDI
KEYBOARD

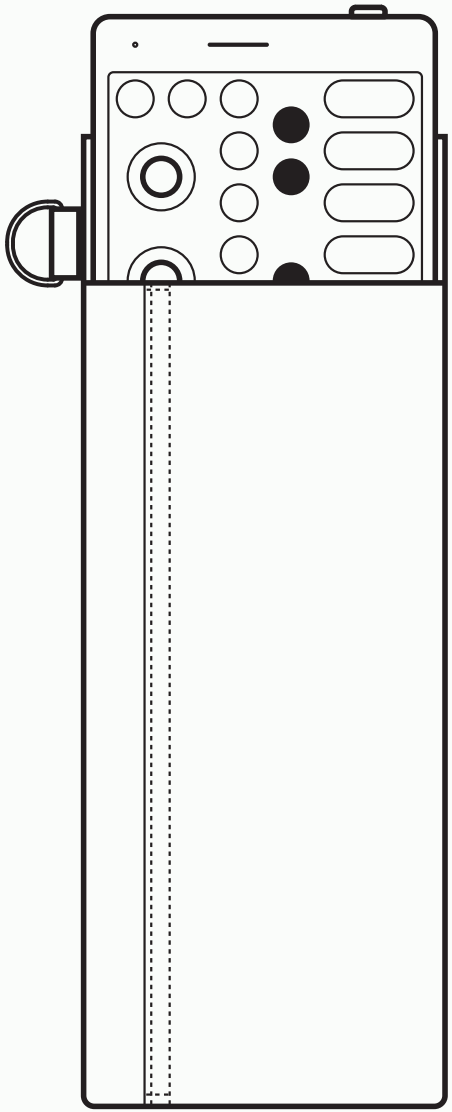

GUITAR
OP–1 FIELD
AUDIO
INTERFACE

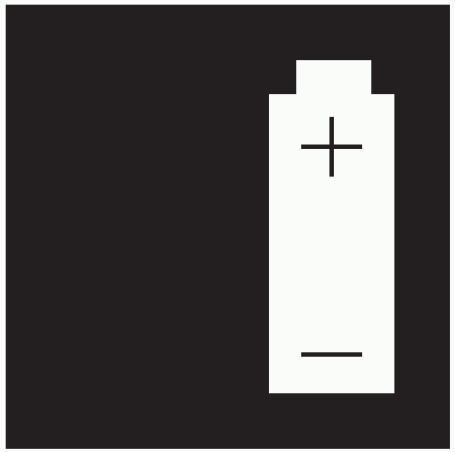
accessories

to prepare you for your journey into the field, we've created a collection of custom accessories, crafted from durable fabrics and designed with versatility and durability in mind.

each piece has multiple uses and ways of wear, using adjustable straps and attachments. now you'll be fully equipped to get the most out of your OP–1 field, as well as other field devices.







technical specifications

- 3.5 mm stereo input jack
- 3.5 mm stereo output jack with headset microphone support
- usb audio / midi host & device
- bluetooth low energy radio
- rechargeable battery
- 24 h battery life
- color display

FREQUENCY BAND / Power:
BLE: 2402 - 2480 MHZ / <10dBm
FM transmitter: 87.5-108MHz / -49.56dBm
FM Receiver: 87.5-108MHz

electrical characteristics

audio input:

impedance: 13 kOhm
analog gain: 0 - 31 dB
max level: 8 dBu, 2 Vrms
SNR: 98 dBA (typical)

audio output:

max level: 8 dBu, 2 Vrms
SNR: 124 dBA (typical)

handling

to keep the battery healthy, the unit should be charged at least every 6 months. if not used for a long time, it may not charge again.

ambient working temperature:
10°-35°C (50°-95°F)

ambient storage temperature:
0°-30°C (32°-86°F)

clean the shell of the unit with a lightly damp cloth. let dry before usage.

te boot

te boot is the bootloader in OP–1 field. it loads and runs the firmware and is used for firmware updates and factory reset.

to access te boot:

- turn OP–1 field off.
- disconnect from usb.
- hold com while switching power on to enter te boot.

firmware update

to update the OP–1 field firmware:

- access te boot.
- connect OP–1 field via usb-c to a computer.
- press 1. the device will show up as a mass storage disk.
- put the new firmware file on the disk and safely eject it.
- wait for the update to finish and follow the on-screen instructions.

the latest firmware version:
teenage.engineering/downloads

factory reset

to perform a factory reset:

- access te boot.
- press 7.
- press the orange knob to confirm.
  note: all user data will be removed.
- restart OP–1 field and wait for the
  factory reset to finish.

factory reset allows you to erase all user settings and content, as well as recreate the original file structure and restore the unit to factory default.

warnings and warranty

TEENAGE ENGINEERING OP–1 FIELD
MODEL NO: TE002AS002

RISK OF EXPLOSION OR FIRE IF THE BATTERY IS REPLACED BY INCORRECT TYPE. ONLY A BATTERY SUPPLIED BY TEENAGE ENGINEERING INSTALLED BY QUALIFIED PERSONNEL SHOULD BE USED. TO PREVENT POSSIBLE HEARING DAMAGE, DO NOT LISTEN AT HIGH SOUND LEVELS FOR LONG PERIODS.

FOR WARRANTY, SAFETY INSTRUCTIONS AND FULL REGULATORY INFORMATION, VISIT:
TEENAGE.ENGINEERING/GUIDES/OP-1.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES AND ISED CANADA’S LICENCEEXEMPT RSS(S). 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.

MODIFICATIONS NOT EXPRESSLY APPROVED BY TEENAGE ENGINEERING COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

FCC ID: Z23002A
IC: 9915A-002A

avertissements et garantie

TEENAGE ENGINEERING OP–1 FIELD
MODEL NO: TE002AS002

RISQUE D’EXPLOSION OU DE FEU SI LA BATTERIE EST REMPLACÉE PAR UN TYPE DE BATTERIE INCORRECT. SEULE UNE BATTERIE FOURNIE PAR TEENAGE ENGINEERING ET INSTALLÉE PAR UN PERSONNEL QUALIFIÉ DOIT ÊTRE UTILISÉE. AFIN D’ÉVITER TOUT DOMMAGE LIÉS À VOTRE AUDITION, IL EST RECOMMANDÉ DE NE PAS ÉCOUTER VOTRE MUSIQUE TROP FORT ET TROP LONGTEMPS.

POUR PLUS D'INFORMATIONS À PROPOS DE LA GARANTIE, LES INSTRUCTIONS DE SÉCURITÉS ET INFORMATIONS RÉGLEMENTAIRES, VISITEZ: TEENAGE.ENGINEERING/GUIDES/OP-1.

CET APPAREIL EST CONFORME À LA PARTIE 15 DES RÈGLES DE LA FCC ET LE PERMIS D'ISED CANADA NORMES RSS EXEMPTÉES. SON FONCTIONNEMENT EST SOUMIS AUX DEUX CONDITIONS SUIVANTES:

(1) CET APPAREIL NE DOIT PAS PROVOQUER D'INTERFÉRENCES PRÉJUDICIABLES, ET

(2) IL DOIT ACCEPTER TOUTE INTERFÉRENCE REÇUE, Y COMPRIS LES INTERFÉRENCES POUVANT ENTRAÎNER UN MAUVAIS FONCTIONNEMENT.

LES MODIFICATIONS NON EXPLICITEMENT APPROUVÉES PAR TEENAGE ENGINEERING PEUVENT CONDUIRE À ANNULER LES DROITS DE L'UTILISATEUR À UTILISER L'ÉQUIPEMENT.

FCC ID: Z23002A
IC: 9915A-002A

RF EXPOSURE COMPLIANCE

THIS EQUIPMENT COMPLIES WITH FCC/ISED RADIATION EXPOSURE LIMITS SET FORTH FOR AN UNCONTROLLED ENVIRONMENT. END USER MUST FOLLOW THE SPECIFIC OPERATING INSTRUCTIONS FOR SATISFYING RF EXPOSURE COMPLIANCE. THIS TRANSMITTER MUST NOT BE CO-LOCATED OR OPERATING IN CONJUNCTION WITH ANY OTHER ANTENNA OR TRANSMITTER.

THE PORTABLE DEVICE IS DESIGNED TO MEET THE REQUIREMENTS FOR EXPOSURE TO RADIO WAVES ESTABLISHED BY THE ISED. THESE REQUIREMENTS SET A SAR LIMIT OF 1.6 W/KG AVERAGED OVER ONE GRAM OF TISSUE. THE HIGHEST SAR VALUE REPORTED UNDER THIS STANDARD DURING PRODUCT CERTIFICATION FOR USE WHEN PROPERLY WORN ON THE BODY, WITH XXMM SEPARATION.

CONFORMITÉ D’EXPOSITION AUX RF

CET ÉQUIPEMENT EST CONFORME AUX LIMITES D’EXPOSITION AUX RAYONNEMENTS ISED ÉTABLIES POUR UN ENVIRONNEMENT NON CONTRÔLÉ. L’UTILISATEUR FINAL DOIT SUIVRE LES INSTRUCTIONS SPÉCIFIQUES POUR SATISFAIRE LES NORMES. CET ÉMETTEUR NE DOIT PAS ÊTRE CO-IMPLANTÉ OU FONCTIONNER EN CONJONCTION AVEC TOUTE AUTRE ANTENNE OU TRANSMETTEUR.

LE DISPOSITIF PORTATIF EST CONÇU POUR RÉPONDRE AUX EXIGENCES D’EXPOSITION AUX ONDES RADIO ÉTABLIE PAR LE DÉVELOPPEMENT ÉNERGÉTIQUE DURABLE. CES EXIGENCES UN SAR LIMITE DE 1,6 W/KG EN MOYENNE POUR UN GRAMME DE TISSU. LA VALEUR SAR LA PLUS ÉLEVÉE SIGNALÉE EN VERTU DE CETTE NORME LORS DE LA CERTIFICATION DE PRODUIT À UTILISER LORSQU’IL EST CORRECTEMENT PORTÉ SUR LE CORPS, AVEC UNE SÉPARATION DE XXMM.

L'ÉMETTEUR/RÉCEPTEUR EXEMPT DE LICENCE CONTENU DANS LE PRÉSENT APPAREIL EST CONFORME AUX CNR D'INNOVATION, SCIENCES ET DÉVELOPPEMENT ÉCONOMIQUE CANADA APPLICABLES AUX APPAREILS RADIO EXEMPTS DE LICENCE. L'EXPLOITATION EST AUTORISÉE AUX DEUX CONDITIONS SUIVANTES :

(1)L'APPAREIL NE DOIT PAS PRODUIRE DE BROUILLAGE;

(2)L'APPAREIL DOIT ACCEPTER TOUT BROUILLAGE RADIOÉLECTRIQUE SUBI, MÊME SI LE BROUILLAGE EST SUSCEPTIBLE D'EN COMPROMETTRE LE FONCTIONNEMENT.

CAUTION

DO NOT TRY TO CHARGE OR USE A UNIT WITH A SEEMINGLY DAMAGED BATTERY.

ONLY A BATTERY SUPPLIED BY TEENAGE ENGINEERING INSTALLED BY QUALIFIED PERSONNEL SHOULD BE USED.

DISPOSAL OF A BATTERY INTO FIRE OR A HOT OVEN, OR MECHANICALLY CRUSHING OR CUTTING OF A BATTERY, THAT CAN RESULT IN AN EXPLOSION.

LEAVING A BATTERY IN AN EXTREMELY HIGH TEMPERATURE SURROUNDING ENVIRONMENT THAT CAN RESULT IN AN EXPLOSION OR THE LEAKAGE OF FLAMMABLE LIQUID OR GAS.

TO PREVENT POSSIBLE HEARING DAMAGE, DO NOT LISTEN AT HIGH SOUND LEVELS FOR LONG PERIODS.

STORE SMALL PARTS OUT OF THE REACH OF CHILDREN AND INFANTS. IF ACCIDENTALLY SWALLOWED, CONTACT AN EMERGENCY MEDICINE DOCTOR IMMEDIATELY

EU / UK COMPLIANCE

HEREBY, TEENAGE ENGINEERING DECLARES THAT THE RADIO EQUIPMENT TYPE OP–1 FIELD IS IN COMPLIANCE WITH DIRECTIVE 2014/53/EU. THE FULL TEXT OF THE EU DECLARATION OF CONFORMITY IS AVAILABLE AT THE FOLLOWING INTERNET ADDRESS:
TEENAGE.ENGINEERING/GUIDES/OP-1

FREQUENCY BAND: 2400 - 2483.5 MHZ
MAXIMUM OUTPUT POWER: 10 DBM EIRP

RECYCLING

ELECTRICAL AND ELECTRONIC EQUIPMENT, PARTS AND BATTERIES MARKED WITH THIS CROSSED-OUT WHEELIE BIN SYMBOL MUST NOT BE DISPOSED OF WITH NORMAL HOUSEHOLD WASTAGE, IT MUST BE COLLECTED AND DISPOSED OF SEPARATELY TO PROTECT THE ENVIRONMENT.

THIS PRODUCT CONTAINS A BUILT IN LI ION BATTERY.

MADE FOR APPLE BADGE

USE OF THE MADE FOR APPLE BADGE MEANS THAT AN ACCESSORY HAS BEEN DESIGNED TO CONNECT SPECIFICALLY TO THE APPLE PRODUCT(S) IDENTIFIED IN THE BADGE AND HAS BEEN CERTIFIED BY THE DEVELOPER TO MEET APPLE PERFORMANCE STANDARDS. APPLE IS NOT RESPONSIBLE FOR THE OPERATION OF THIS DEVICE OR ITS COMPLIANCE WITH SAFETY AND REGULATORY STANDARDS.

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TEENAGE ENGINEERING AB
TEXTILGATAN 31
120 30 STOCKHOLM
SWEDEN / SUÈDE

designed and
engineered by
teenage
engineering