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Service Manual
TKFC-TM-C

KERN KFC-TM

Type TKFC-TM-C

Version 1.0
10/2023
GB



GB

KERN TKFC-TM-C

Version 1.0 – 10/2023

Servicemanual

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1 Basic Information

The device must be repaired only by trained specialist staff or personnel with professional formation (such as a repair-specialist accredited by law concerning verification). The service manual is obligatory for repair work. After repair, original conditions of the device must be restored. Only original spare parts should be used.

2 Introduction

This service manual covers the TKFC-TM-C scale series and is edited for the authorized servicing personnel.
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3 Feature overview

- Large LCD, 6-digit H=50mm, VA=89x30mm, with white backlight
- Stable, zero, battery level, gloss/net weight and Hi/OK/LO indications
- LED indication for tolerance weighing: Hi (red), OK (green), LO (red)
- Buzzer sound
- Weighing unit: kg, g, lb, %, pcs, FFA (kg, g only for verified scale)
- Single or dual range/interval configurable
- 7 buttons operated: On/Off, F1, F2, Change, Print, Zero, Tare
- Tare up to Max
- Pre-Tare function
- Percentage weighing function
- Check weighing function
- Piece counting function
- Display Hold function
- Print function with Sum Memory
- Application menu
- Setup menu
- Service menu to be activated by internal verification button
- Real time clock installed
- Alibi Memory optional
- Kern Communication Protocol (KCP)
- Kern Universal Port (KUP) interface, VGA-15 female connector
- Optional external RS-232 interface / Signal light through KUP
- Optional external USB device interface through KUP
- Optional external WiFi interface through KUP
- Optional external Bluetooth BLE interface through KUP
- Optional external Ethernet interface through KUP
- Optional external Analog Output interface through KUP
- Multi-Plug (EU/UK/US) Power adaptor, 5.9V 1A
- Optional rechargeable battery, Li-ion 3.7V 3700mAH

4 Service Menu

Hold [ON/OFF] + [TARE] button during power up self-test to enter the Service Menu.
Press ➔ button to select / confirm / shift right
Press ← button to go back / exit / shift left
Press ↓ button to scroll down / decrease digit value
Press ↑ button to scroll up / increase digit value

H 10	turn ON/OFF X10 mode (for verified=on only)
AdJuSt	adjustment
cAL	adjustment function (as in User Menu)
cALEHt	adjustment at predefined weight: ZEro, PuttLd, UA it…
cALEud	enter adjustment weight (SI unit only: g/kg), update predefined weight then perform adjustment
GrAAdJ	set gravity of adjustment location
GrAuSE	set gravity of use location
L inEAr	Linearization
2Po int	set initial zero and span with single weight
50	set weight for linearization (10%max<weight<110% max), default 100%max
3Po int	3 points
5Po int	5 points
ZEro	zero calibration, set new initial zero.
PArAMS	scale parameters
UEr iFd	legal verification: on / oFF
rAnGES	number of ranges: 1 / 2
2	select: 1 (single range), 2 (enter next level)
MuLrnG	select range type: MuLrnG / MuL int
un it	set base unit kg, g; lb for non-verified only
dEc i	number of decimal place: 0 ~ 5
MAH	capacity in base unit
065000	set capacity, display W1 if ranges=2
150000	set capacity, display W2 if ranges=2
d	division / readibility in base unit
2	set d (1, 2, 5, 10, 20, 50), display W1 if ranges=2
5	set d2 (1, 2, 5, 10, 20, 50), display W2 if ranges=2
E	e = 1d / e = 10d. (only possible for last digit = 1)
oUErLd	overload counter
MEM	view counter
oUrEr	erase overload count
MEMory	no/yes to disable memory if memory unavailable during use.
1St id	ID of starting memory
in it	Initialize memory
rEcord	number of records in memory
inFo	information query
SEr iAL	Serial number
UEr	Software version b 15.04
UErA	Software version approved A 10.00
AdUALu	A/D value
rESEt	reset
ALL	reset all

4.1 Adjustment procedure

(VEr iFY = oFF)

1. Turn the scale on and allow the scale to acclimatize and stabilize for sufficient time.
2. Press and hold the ON/OFF and TARE key to enter setup menu. Display shows CAL.
3. Press ➔, display show CALEHt.
4. Press ➔, display show the first selectable calibration weight.
5. Press ↓ or ↑ to scroll to other selectable calibration weights.
6. Press ➔, display show ZEro, then PtLd, then display calibration weight.
7. Place the calibration weight onto the scale gently.
8. Press ➔, display show HA it, then rEMULd. Remove the calibration weight. Scale will return to the weigh mode and display weight.

Note:
- Adjustment function will be blocked for verified scale.
- In step 8, in case Hr onG is displayed, this indicates a calibration error. Turn the scale off and then on and repeat the procedures.
- Press ↓↑ to scroll. Press ← to esc/exit. Press ➔ to enter/confirm.
- There is an alternative way to enter the CALEHt menu through the service menu (may need to break the seal).

(VEr iFY = on)

1. Turn the scale on and allow the scale to acclimatize and stabilize for sufficient time.
2. Break the seal. Press the internal verification button to enter service menu. Display shows H 10.
3. Press ↓ or ↑ to scroll to AdJuSt.
4. Press ➔, display show CAL.
5. Press ➔, display show CALEHt.
6. Press ➔, display show the first selectable calibration weight.
7. Press ↓ or ↑ to scroll to other selectable calibration weights.
8. Press ➔, display show ZEro, then PtLd, then display calibration weight.
9. Place the calibration weight onto the scale gently.
10. Press ➔, display show HA it, then rEMULd. Remove the calibration weight. Scale will return to the weigh mode and display weight.

Note:
- In step 10, in case Hr onG is displayed, this indicates a calibration error. Turn the scale off and then on and repeat the procedures.
- Press ↓↑ to scroll. Press ← to esc/exit. Press ➔ to enter/confirm.

4.2 Linearization Procedure

1. Connect scale platform. Allow the scale to acclimatize and stabilize for sufficient time.
2. Turn on the scale, press the verification button on the main board to enter the service menu (may need to break the seal and remove the cover). Display shows H 10.
3. Press ↓ or ↑ to scroll to PArAMS. Press →. Go through the menu to set up the scale parameters.
4. Display will turn off.
5. Turn on the scale, press the verification button to enter the service menu again. Display shows H 10.
6. Press ↓ or ↑ to scroll to AdJuSt. Press →, display show cAL.
7. Press ↓ or ↑ to scroll to L inEAr. Press →, display show 2Po int.
8. Press ↓ or ↑ to scroll to 3Po int or 5Po int.
9. Press →, display show UA it, then ZEro, then Put Ld, then the standard weight for the first point.
10. Place the calibration weight onto the scale gently.
11. Press →, display show UA it, then rEMUL d. Remove the calibration weight. Display show Put Ld, then the calibration weight for the next point.
12. Repeat step 10 and 11 until display show SuccES.

5 Maintenance

5.1 Service, maintenance

The appliance may only be opened by trained service technicians who are authorized by KERN.
Disconnect the scales before opening.

5.2 Error Codes

Error message	Explanation
⌐Eroh ı	Zero too high at power up
⌐EroLo	Zero too low at power up
⌐L ıN ıt	Over zeroing range
undEr⌐	Under zeroing range
ınStAb	Unstable weight
⌊‾‾‾⌋	Over weight
⌈‾‾‾⌉	Under weight
Wrong	Adjustment error
LobAt	Batteries / rechargeable battery exhausted
SEtrtc	Real time clock incorrect / not set
N unAU	Scale memory failed / not detected

5.3 Trouble Shooting

Power on

↓

Full Segments?

If no display,

- check battery / mains power,
- check connection between battery / SMPS board —main board.

If missing segments,

- check LCD pins; damage of LCD.

↓

Display Zero?

If display [LO bAt], check battery >4.2V, SMPS board ~6V.

If display [CErOH ı] or [CErOLO] check the load cell connections, load cell damaged?

If display [ıNSTAb] weight platform, overload stopper, loadcell and wires terminal, environment and stable table.

If display [SEt rtC] check RTC battery, set clock.

↓

Proper readout?

If unstable reading, check weight platform, overload stoppers, loadcell and wires terminal, environment and stable table.

If always zero, check ADC. Linearization if necessary.

↓

Correct reading?

If not accurate, perform adjustment or linearization.

If cannot reach full capacity, check tray top, overload stopper, loadcell.

↓

Buttons functioning?

If some buttons not working, check the keyboard FPC connection. Replace keyboard if needed.

↓

Interface functioning?

If interface not working, check installation and the connection wires.

↓

Normal operation.

6 Exchange of components

6.1 Spare parts list

RTKFC-20022.51.01.08520300	Main board TKFC-TM-C
RTKFC-40016.01.45.08520000	Overlay TKFC-TM-C
RTKFC-80024.25.01.01002000	EVA foot
RTKFC-80014.37.04.08520400	Battery door
TYBA-A18-A6.02.50.08520000	Working Cover
2.40.02.08520000	Wall mount stand kit
TYKA-27-A5.90.06.10009200	Power adaptor 5.9V 1A 3-plug

6.2 Opening the device

To open / close the device, unscrew / screw in the 6 M4x16 screw on the bottom housing.

6.3 Exchange of components

Below components can be replaced without opening the device:

RTKFC-40016.01.45.08520000	Overlay TKFC
RTKFC-80024.25.01.01002000	EVA foot
RTKFC-80014.37.04.08520400	Battery door

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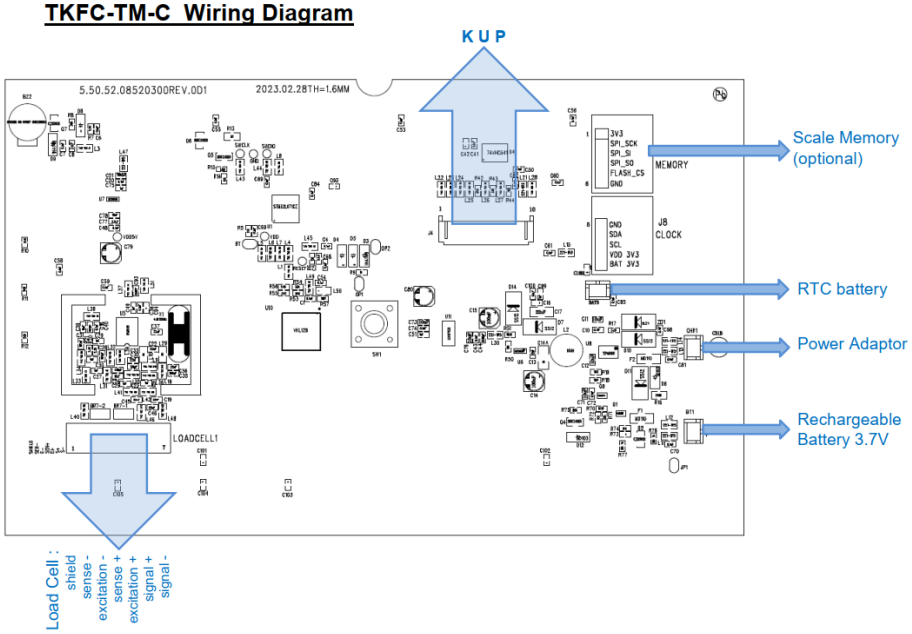
Replacement of the main board:

1. Break the verification seal. Open the device by removing the 6 screws and bottom housing
2. Disconnect the connections to the main board
3. Remove the 8 screws
4. Replace a new main board
5. Fix the main board with the 8 screws
6. Connect the main board as per the Wiring Diagram
7. Install the 6 screws to close the device
8.
9. Perform Linearization and Adjustment

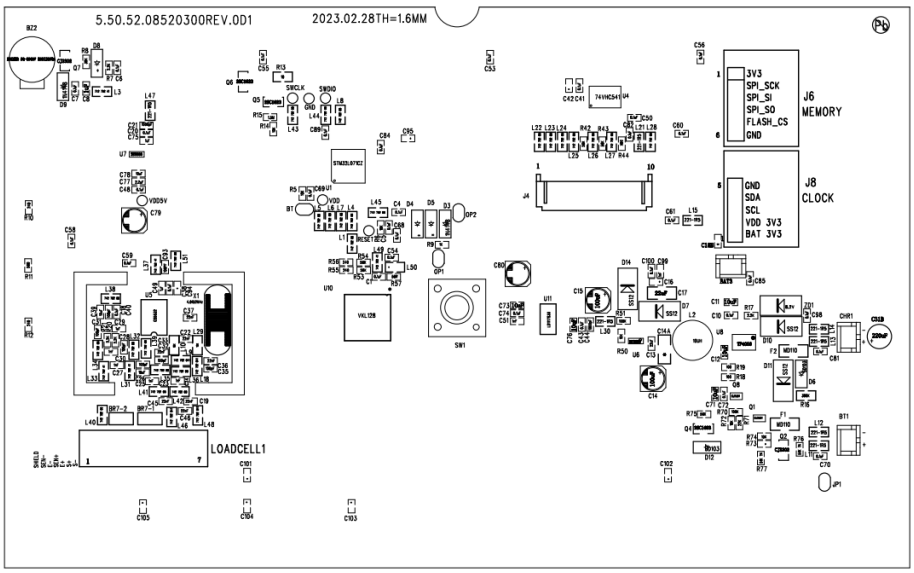
7 Technical drawings

7.1 Wiring Diagram

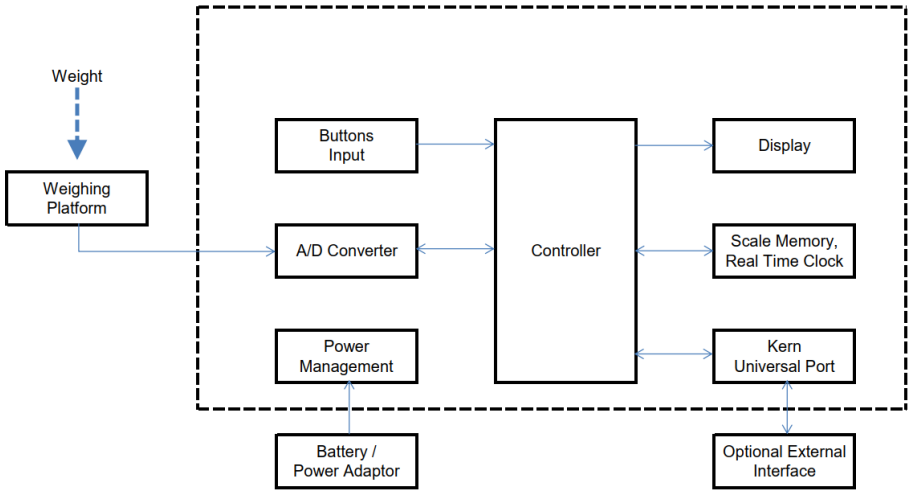
TKFC-TM-C Wiring Diagram



7.2 Component Diagram



7.3 Functional Block Diagram



7.4 Schematic Diagram

