



DK007

Directional Drilling Locating System

User Manual

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1. Introduction

DK007 Directional Drilling Locating System is an instrument that assists the guiding hand in judging and tracking the position and direction of the underground drill of the trenchless horizontal directional drilling machine. The system includes receiver, remote display and transmitter. The transmitter that loaded in the transmitter chamber will detect the inclination of the drill, the position, the temperature and the battery power of the transmitter, then transmit the information to the receiver on the ground through low-frequency phase modulation; the receiver on the ground receives the magnetic field information of the transmitter signal at the receiver position through a three-dimensional orthogonal antenna, thereby judging the drill orientation (front and rear points and positioning lines); calculating the point-to-point distance between the probe and the receiver based on the attenuation relationship of the magnetic field signal. The operator of the horizontal directional drilling machine can see the drill information through the receiver, so that the drilling direction of the drill can be controlled to meet the construction requirements.

DK007 provides 4 wireless 433M data channels so that remote users can receive information.

Shanghai Dekree Digital Tech. Co., Ltd remains the right to update the contents of this user manual without notifying the user, in order to provide the latest, accurate and reliable information to help users better understand and operate this system.

2. Precautions






- Do a good job in the prospecting work before the operation, and clearly mark the location and potential interference sources of buried power lines, gas pipelines, natural gas pipelines, telephone lines, TV lines, light guides and groundwater pipelines, to avoid unnecessary loss and disaster of people and things during the operation
- Check and ensure that the directional drilling locating system is working properly and obtain a good command of the correct use of the positioning device, including basic guidance and methods to reduce interference.
- This equipment must not be turned on or used near flammable or explosive materials, and protective equipment should be properly worn to ensure construction safety.
- Observe local safety regulations and all other safety regulations.
- The locating system is just an auxiliary tool that helps the user determine the position of the drill. The user is responsible for determining the position of the drill. Shanghai Dekree Digital Tech. Co., Ltd will not be responsible for any loss caused by the use of the DK007 guiding system.

3. Receiver

3.1 Specification




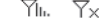



- System Frequency: 12K/30K
- Battery: Dekree rechargeable lithium battery
- Battery Life: 24h
- Display: 3.8 inch industrial LCD graphic display
- Radio Channels: 4
- Ambient Temperature: lower than 85°C
- Dimension: 680mm * 135mm * 290mm
- Weight: 2.88kg
- Waterproof Grade: IP65

3.2 Operational Button




-  Power Button: Long press to turn the receiver ON/OFF, click to turn the backlight ON/OFF
-  Up Button: Click to move the option to the previous location
-  Down Button: Click to move the option to the next location
-  Enter Button: Click to confirm the marked options
-  Setting Button: Click to enter the settings interface or return to the previous interface

3.3 Interface












3.3.1 Icons

-  30K : Transmitter type
-  : Battery Power of Receiver
-  : Battery Power of Transmitter
-  : Remote Display Status
-  1 2 3 4% : Transmitter Dip Angle
-  : Transmitter Temperature
-  : Transmitter Signal Intensity

3.3.2 Operating Procedures

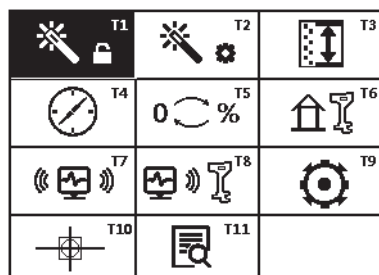
- 1) Press  to enter the setting interface.
- 2) **Magnifying glass function:** Long press  to enter the magnifying glass function. At this time, the display area will be enlarged, which is mainly designed for the change of the positioning of the mobile receiver when the transmitter is relatively in deep. This function only works in the front and rear points and the positioning line area.
- 3) **Transmitter orientation display function:** Long press , the relative position of the transmitter at the receiver will be displayed. This function is mainly used when the marker is not marked underground. ——— Note: Please move the receiver smoothly to make it more accurate.

3.4 Configuration Interface

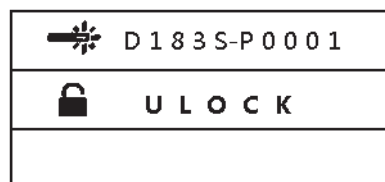
 T1	 T2	 T3
 T4	 T5	 T6
 T7	 T8	 T9
 T10	 T11	



- T1: Transmitter activation
- T2: Transmitter selection
- T3: Range calibration
- T4: Clock calibration
- T5: Dip system
- T6: Cross positioning
- T7: Remote display channel
- T8: Remote display pairing
- T9: Unlock the instrument
- T10: Steering speed
- T11: Instrument information

3.5 Transmitter Activation



Click  on the main interface to enter the configuration interface.

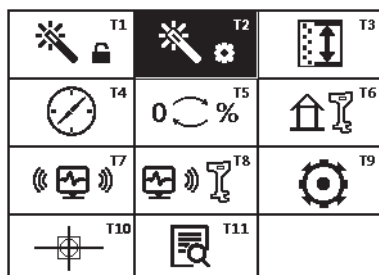


Click  to enter the configuration interface, when the transmitter is power on, the transmitter number and lock status will be displayed here. Long press  to unlock the transmitter.

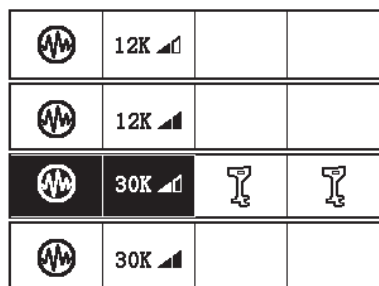
* This feature is the factory activation of the original transmitter and is currently used internally.






3.6 Transmitter Selection



Click  on the main interface to enter the configuration interface.

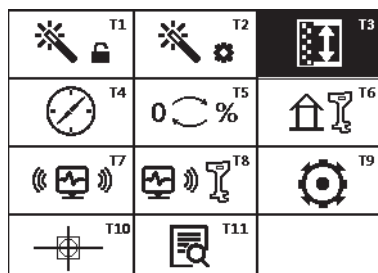


Click  or  to select the frequency or power of the transmitter, click  to confirm the settings; During the setting process, the corresponding icon will flash, and the rest of the operation can be performed after the setting is successful. The button will be locked during the setting process.

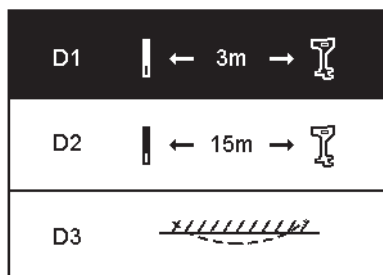
The 3rd column is to set the parameters corresponding to the receiver; the 4th column is to set the dual-frequency bar or dual-power bar parameters, the 4th type of icon will not be displayed when the ordinary single-frequency bar is operated.

3.6 Distance calibration

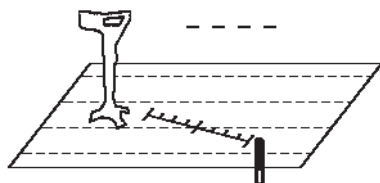
3.6.1 3-meter calibration



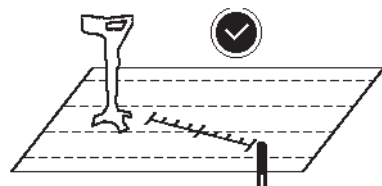
Click on the main interface to enter the configuration interface.



Click or to select 3-meter distance calibration.



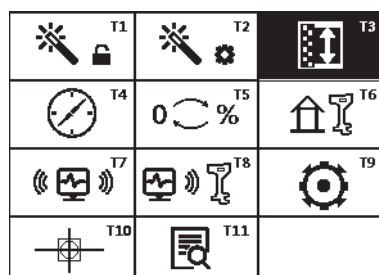
Click to start 3-meter distance calibration.



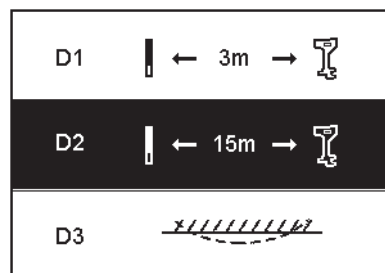
3-meter distance calibration complete.



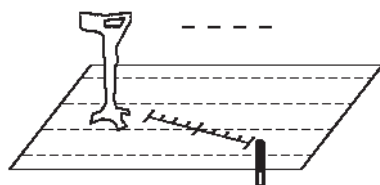
3.6.2 15-meter distance calibration



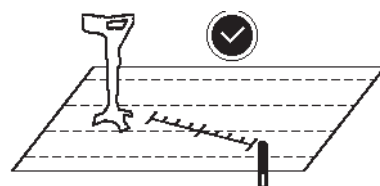
Click on the main interface to enter the configuration interface.



Click or to select 15-meter distance calibration.



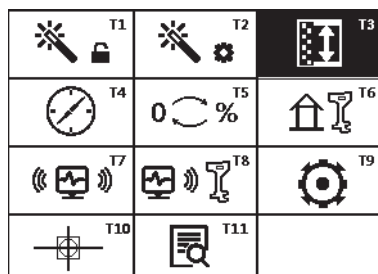
Click to start 15-meter distance calibration.



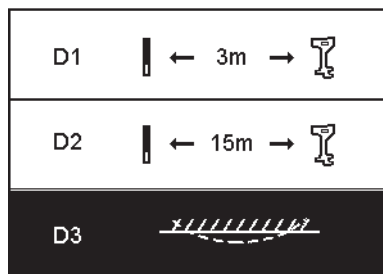
15-meter distance calibration complete.



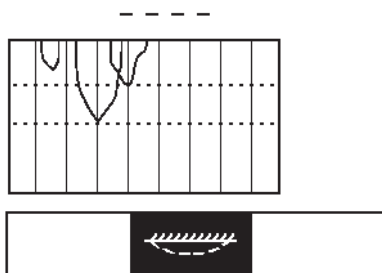
3.6.3 Depth prediction



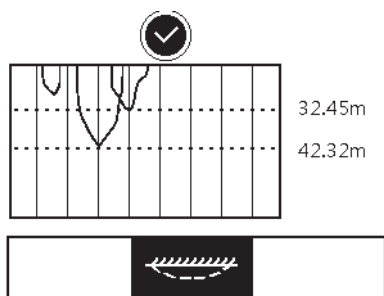
Click  on the main interface to enter the configuration interface.



Click  or  to select depth prediction.

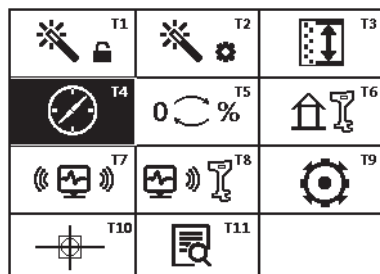


Click  to start depth prediction.

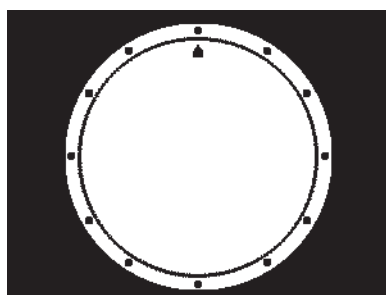



Depth prediction completed. The first line shows the distance at 12k; the second line shows the transmitter distance of 30k; this prediction is based on the interference value of the environment to determine the farthest distance of the transmitter information analysis.

3.7 Clock calibration

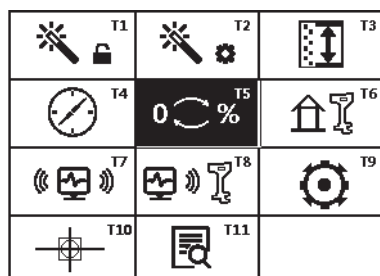


Click  on the main interface to enter the configuration interface.

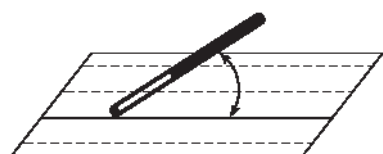





Click  to start clock calibration, the receiver records the position of the transmitter at this time and corrects it to the 12 o'clock position. It will also be saved after the power is turned off. This function can only be performed when the probe is powered on.

3.8 Dip system selection



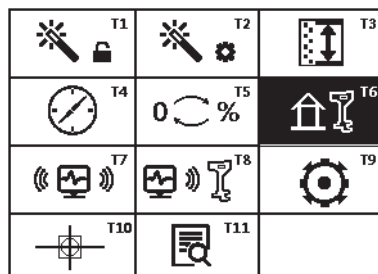
Click  on the main interface to enter the configuration interface.



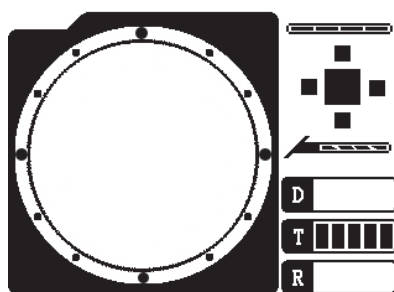
Click  or  to select dip mode, click  to confirm.



3.9 Cross positioning

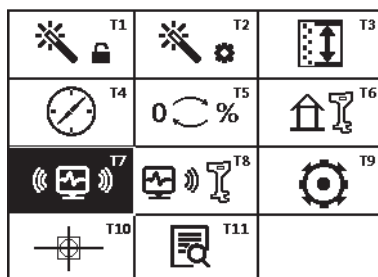


Click  on the main interface to enter the configuration interface.

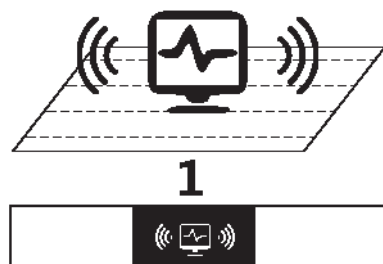


Mainly used for finding points under the condition of passive interference such as barbed wire. Currently this feature is only used internally.

3.10 Remote display channel

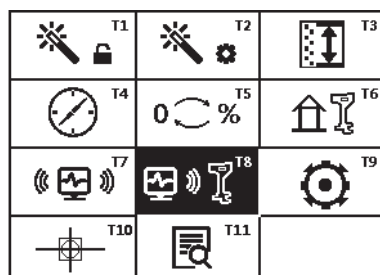


Click  on the main interface to enter the configuration interface

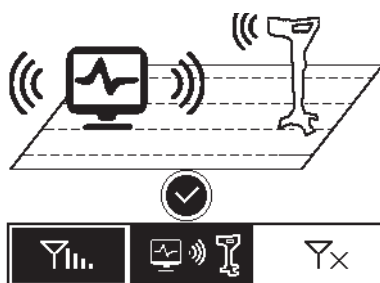


Click  or  to select remote display channel.

3.11 Remote display pairing

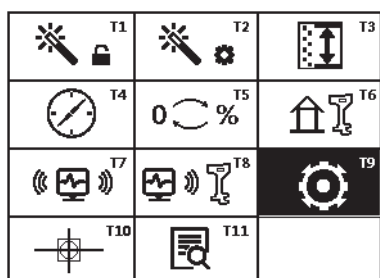


Click on the main interface to enter the configuration interface.

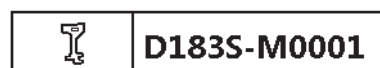


Click or to turn ON/OFF the remote display, click to confirm your selection. The system will automatically search for the remote display and communicate.

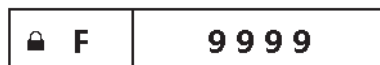
3.12 Unlock the instrument



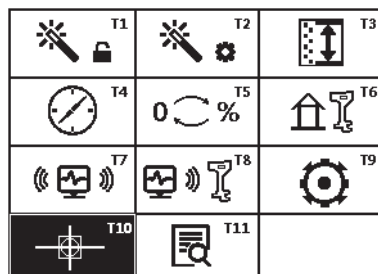
Click on the main interface to enter the configuration interface.



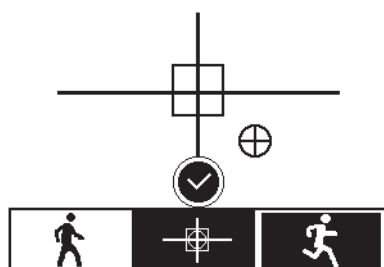
This function is mainly designed for installment customers, and can only be operated by relevant people of the company.






3.13 Steering speed

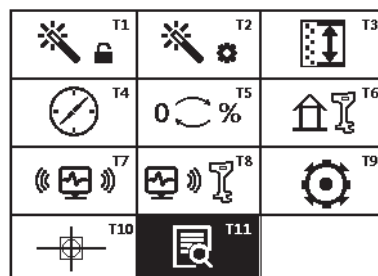


Click  on the main interface to enter the configuration interface.



Click  or  to select steering speed, click  to confirm your selection. When the interference is intense, you can choose slow steering to help prevent interference.

3.14 System Information



Click  on the main interface to enter the configuration interface.




Click  or  to change passwords.



Yaw :12.34	Day: 12
Pitch:56.78	Hour: 34
State: O K	Min: 56



Click  to enter system information interface. The first column shows in turn: the yaw angle, the tilt angle of the transmitter, and the state of the transmitter; the second column shows the power-on working time of the receiver since it was shipped from the factory.

3.15 Receiver Maintenance

- The receiver uses a rechargeable lithium battery, to prevent the battery leaking from corroding the receiver. If it is not used for a long time, please take out the battery
- Keep the receiver in a safe place to avoid serious physical vibration or shock
- Keep the receiver away from fire and overheated locations
- Avoid soaking the receiver in the water





4. Remote Display

4.1 Specification

- Radio Frequency: 433MHz
- Radio Channels: 4
- Communication Distance: 1000m
- Power Source: Dekree rechargeable lithium battery
- Operation Time: 48h
- Display: 5 inch industrial LCD display
- Dimension: 170mm * 125mm * 225mm
- Weight: 1.3kg
- Waterproof Grade: IP65

4.2 Operation

- 1) Press the operational button, the same as that of receiver;
- 2) Main interface: the same as that of receiver;
- 3) Configuration interface:

 T1	 T2	 T3
 T4		

T1: Remote display channel

T2: Remote display channel

T3: Dip system selection

T4: System information

*** Related operations are consistent with that of the receiver**

4.3 Remote Display Maintenance

- The remote display uses a rechargeable lithium battery, to prevent the battery leaking from corroding the remote display. If it is not used for a long time, please take out the battery
- Keep the remote display in a safe place to avoid serious physical vibration or shock
- Keep the remote display away from fire and overheated locations
- Avoid soaking the remote display in the water

5. Transmitter

5.1 Introduction

- Dekree transmitter provides the receiver with information of the temperature, clock position, power state, tilt angle and detection signal of the drill.
- Clock:1-12 points, half point accuracy.
- inclination: 0.1-degree resolution
- Ambient temperature: less than 85 °C
- Battery level: divided into 4 cells according to battery power, when the battery is full blank, the battery runs out
- the system will asleep after 15 minutes without turning

5.2 Classification

Model NO.	Dimension	Voltage	Accepted Battery	Working Hour	Communication Distance
DKPB-01-xxK	32x380mm	DC3.6v	1 x ER261020 Customized non-rechargeable lithium battery	>48h	50m
DKPB-02-xxK	32x480mm	DC7.2v	2 x ER261020 Customized non-rechargeable lithium battery	>24h	70m
DKPB-03-xxK	32x600mm	DC10.8v	3 x ER261020 Customized non-rechargeable lithium battery	>24h	90m

5.3 Transmitter Maintenance

- Do not place the transmitter in a place where the temperature is too high (above 85 °C)
- Do not tap the transmitter
- Remove the battery after each use of the transmitter
- Clean the springs in the battery compartment and the threads and O-rings on the battery cover
- Always check the O-ring on the battery cover. If the O-ring is broken or broken, please replace it in time.

6. Battery and Charger

- DK007 uses dedicated rechargeable lithium battery
- The rechargeable lithium battery can be charged and discharged hundreds of times, but will eventually fail. When the usage time is significantly shorter than the normal time, please replace the rechargeable battery. This rechargeable battery must be charged with a dedicated charger. Use of unlicensed rechargeable batteries and chargers may present a risk of fire, explosion, leakage or other hazards.
- When the battery is charging, the charger lights red. When the charger green light is on, it indicates that charging is complete. Do not connect a fully charged battery to the charger, as overcharging will shorten the battery life.
- Keep the rechargeable battery temperature between 15 °C and 25 °C as much as possible. Too high or too low temperature will reduce the battery capacity and shorten the battery life; when the temperature is much lower than the freezing point, the performance of the battery is particularly limited.
- Do not short-circuit the rechargeable battery. Do not throw the battery into a fire to prevent the battery from exploding. Damaged batteries can also explode. Please dispose of the battery according to local regulations. Please recycle the battery if possible. Do not dispose of the battery as domestic waste.
- Do not disassemble, cut, open, crush, bend, damage, or immerse the battery in water or other liquids.
- Please install the battery or charge the battery in the correct direction.

7. Warranty

- The warranty of receiver and remote display is 12 months
- Warranty period of all types of DK transmitter of all types is 6 months, value preservation period is 30 months

*** Note: the warranty does not cover damage resulted from abnormal use.**