

	Technical Specification of Type Approval for Taximeters	S/N.	CNPA 21																				
		Rev.	3																				
<p>1. This Technical Specification is developed pursuant to Paragraph 3, Articles 25 of the Weights and Measures Act.</p> <p>2. The date of promulgation, document number, date of enforcement and content of amendment are listed as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Rev.</th> <th style="text-align: center;">Date of Promulgation</th> <th style="text-align: center;">Document No. (Ching-Piao-Szu-Tsu)</th> <th style="text-align: center;">Date of Enforcement</th> <th style="text-align: center;">Content of Amendment</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2003-05-01</td> <td style="text-align: center;">No.09240004910</td> <td style="text-align: center;">2003-07-01</td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">2006-09-06</td> <td style="text-align: center;">No.09540003690</td> <td style="text-align: center;">2006-09-06</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2015-05-20</td> <td style="text-align: center;">No.10440004560</td> <td style="text-align: center;">2015-05-20</td> <td> 1.Specifying the scope of this specification. 2.Corresponding to new feature, adding the requirements of appearance, construction, function, display columns, indicating of status, and anti-fraud. 3.Corresponding to the reversion of this technical specification, setting the sunset clause for the approved taximeters. </td> </tr> </tbody> </table> <p>3. This technical specification is formulated with reference to the following national specifications: CNS 12626 Method of Test for Electronic Taximeter (Dec 28, 1992)</p> <p>4. This technical specification is formulated with reference to the following international specifications: OIML R21 Taximeter (2007)</p>				Rev.	Date of Promulgation	Document No. (Ching-Piao-Szu-Tsu)	Date of Enforcement	Content of Amendment	1	2003-05-01	No.09240004910	2003-07-01		2	2006-09-06	No.09540003690	2006-09-06		3	2015-05-20	No.10440004560	2015-05-20	1.Specifying the scope of this specification. 2.Corresponding to new feature, adding the requirements of appearance, construction, function, display columns, indicating of status, and anti-fraud. 3.Corresponding to the reversion of this technical specification, setting the sunset clause for the approved taximeters.
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NO GUARANTEE ON THE TRANSLATION

In case of discrepancies between the English translation and Chinese text, the Chinese text shall govern.

1. Scope: this specification applies to the performance test related to metrological requirements of the electronic taximeters (hereinafter referred to as "taximeters"), i.e., with electronic devices, a pricing meter installed in a taxi to calculate and display the amount payable by the passenger.
2. Definitions of Terms
 - 2.1 Set number of signals (revolutions): the number of pulse waves received by a taximeter, a numeric value representing a distance travelled of 1 km.
 - 2.2 Initial charge: a minimum fixed sum to be paid by the passenger.
 - 2.3 Distance count: the pricing mode based on distance travelled.
 - 2.4 Time count: the pricing mode based on the time duration that the car speed under a specified car speed.
 - 2.5 Distance and time count: the pricing mode that calculating the fare based on the sum of distance counted and time counted that both counted independently but the total fare shall be the sum of fare based on distance and time.
 - 2.6 Fare: the sum calculated by the taximeter based on the distance counted and time counted that passenger travelled.
 - 2.7 Range setting: related parameters for setting tariffs, including metrology parameter and fare rate parameter.

Metrology Parameter: the parameter including the set numbers of signals (revolutions) and time.

Fare Rate Parameter: according to the requirements of the traffic administrations.
 - 2.8 Business mode: the time duration between the "distance and time" key pressed and the "blank" key pressed are refer as the business mode.
3. Appearance, Construction and Function
 - 3.1 The following items shall be marked or indicated correctly on the front panel of a taximeter: fare (NTD), distance (kilometer), time (hour, minute and second). The front panel shall have extra the space left for adherence the verification compliance tag. The set number of signals (revolutions) of the taximeter shall be able to be searched in the database of the taximeter and displayed.

The trademark, type, type approval number and serial number of taximeter shall be branded, inscribed, engraved or printed on the frontal panel. (The colors of inscriptions shall be contrasted strongly to that of frontal panel).

The height of the characters of the trademark, fare (NTD) shall be not less than 7mm. The height of characters of the distance, kilometer, time, hour, minute and second shall be not less than 5mm.

All markings at the front of the taximeter shall be correct, legible and indelible.

Taximeters with national highway toll function shall clearly indicate or display toll in NTD and the height of characters of the toll shall be not less than 5mm.
 - 3.2 The taximeter shall be embedded a real-time clock with date and time function. The real-time clock with 24-hour shall be with hour, minute and second. The real-time clock shall record the date and time daily and meet the following requirements:
 - (1)The accuracy of the clock shall be ± 0.02 % of the local time,
 - (2)The correction of the real-time clock shall be not more two minutes per week, and the correction shall not be proceeded without breaking the seal.
 - (3)The real-time clock shall feature with calibration either automatic or manual activated.

However, the calibration shall be not activated by automatic or manual under business mode. The calibration shall be traceability.

- 3.3 The display columns of time, distance, fare and highway toll shall be distinctly separated and consistent with the corresponding text marking.
 - 3.4 The keys of a taximeter shall be installed on the body of the taximeter, and shall not be loose. The shape of the key and the character shall be indicating clearly on the taximeter.
 - 3.5 The adjust switch of set number of signals (revolutions) of the taximeter shall be covered with a hole on the cover for seal. The components of the taximeter shall not be able to be touched without breaking the seal with the fasten screws be loosed.
 - 3.6 Colors of electric wires used in the circuits of a taximeter are prescribed as follows:
 - (1) A red wire shall be connected to the anode of the battery or ancillary power facility (ACC).
 - (2) A black wire connected to the cathode of the battery and the cathode of the sensor plug.
 - (3) A green wire connected to the small light switch or ancillary power facility (ACC).
 - (4) A brown wire connected to the TAXI light.
 - (5) A yellow wire connected to the signal input terminal of the car speed sensor.
 - 3.7 A taximeter shall not be changed the set number of signals (revolutions) without breaking the seal. The metrology parameter and rate parameter shall be independently and shall be sealed separately.
 - 3.8 The housing of a taximeter shall be manufactured robustly and prevented from deformation.
 - 3.9 A taximeter shall be equipped with a device for processing or converting the signals required by the car.
 - 3.10 For a taximeter with printing function, the printing output end can be either a modular or an external type; the latter one shall be a fixed receptacle. All the receptacles for circuits shall be located on a same face. The measuring performance of the taximeter must not be changed after an output system is added.
 - 3.11 The data transfer interface of the taximeter shall prevent from changing the set number of signals (revolutions); the ancillary device of output equipment shall not interfere the metrology performance of the taximeter.
 - 3.12 Self-test function: taximeters shall be embedded a self-test program so that the display screen displays the characters and the indication light lasting for at least three seconds.
4. Operational Functions
- 4.1 The functions of the keys of a taximeter are as follows:
 - 4.1.1 Press the “Distance and Time function” key into business mode, the function of distance based or distance and time based pricing shall be activated and the initial charge shall be displayed in the fare column. Under the circumstance that other fees will be charged, the fare column shall display the initial charge and the other fees simultaneously. All keys shall not be functioned except the “stop” and “highway” keys.

Range setting shall not be adjusted or changed when business mode activated.
 - 4.1.2 Under the business mode, when press the “stop” the taximeter shall stop calculate the fare. Once the “stop” key had been pressed, all keys shall not be functioned except the

“stop” and “print” keys. To continue calculate the fare, press “stop” key again and it shall return to its original status.

4.1.3 Under the business mode, when press the “print” key to print the receipt and the information displayed on the indicator shall be displayed and last at least 10 seconds. During the printing all keys shall not be functioned except the “print” and “blank” keys. To press the “print” key again to re-print the receipt, press the print key again.

4.1.4 Under the business mode, when press the “blank” key to end the business mode the column information that including fare, tollage, distance and time count shall turn to empty and both the quantity of fare of the distance drive and time drive shall not be displayed on the taximeter.

4.1.5 The requirements of setting the keys:

(1) The change of the set number of signals (revolutions) of the taximeter shall be prohibited.

(2) The revision, deleting or adjustment to the software and the software defense mechanism of the taximeter shall be prohibited.

4.1.6 When any function key is pressed, a beep shall be given promptly and the conditions of the taximeter used shall be displayed or indicated clearly.

4.1.7 When a fare calculation is based on the drive by distance and time, the distance based charge and the time based charge shall be calculated separately. However, the total fare shall be the sum of fare based on distance and time.

4.2 The display of a taximeter shall conform to the following requirements:

4.2.1 Fare column

To display the total fare of the drive by distance, time and night surcharge in the unit price of “NTD.” The height of the characters shall be not less than 10 mm. The taximeter shall flash and beep simultaneously when the amount changes.

4.2.2 Time column

Display the fare of the drive by time. The counting of time shall be started at the speed of car below the specified speed and stopped at the speed of car over the specified speed. When the accumulate time less than an hour shall be indicated as 0 ~ 59 minutes 59seconds; while the time not less than an hour shall be indicated as 1hour 0 minute ~ 99 hours 59 minutes. The height of displaying numbers shall be not less than 6 mm.

4.2.3 Distance column:

Display the fare of the drive by distance. The distance based pricing in km, rounded to the 1st decimal place. The height of displaying numbers shall be not less than 6 mm. The distance count shall work with obvious signals LED.

4.2.4 Real-time clock column: The indicator column shall indicate hour, minute and second and the height of displaying numbers shall be not less than 6mm. The Real-time clock column shall be not adjacent immediately to the time column.

- 4.2.5 Taximeter embedded with the national highway toll function shall be a toll column, the height of displaying numbers shall be not less than 6 mm.
- 4.2.6 There should be no indication “zero” prior to a valid number displayed in a display column.
- 4.2.7 A taximeter embedded with multi-region-rate shall indicate clearly of the regions with the Chinese characters, the height of characters shall be not less than 5mm.
- 4.2.8 A taximeter embedded with “Lunar new year rate” or “airport remains fee” function shall indicate clearly of the situation with the Chinese characters as “Lunar new year” or “airport” and the height of characters shall be not less than 5mm.
- 4.2.9 A taximeter working during the night time shall indicate clearly with Chinese characters as “night time”, the height of characters shall be not less than 5mm.

5. Performance Test

- 5.1 A taximeter shall work normally when the power voltage varies between 9V and 16V. Original values shall be displayed when the voltage declines to 6V and then return to 12V within 10 seconds.
The displayed fare shall not be changed after the power is switched 5 times continuously under an ordinary working voltage.
- 5.2 A power noise disturbance test shall be performed on a taximeter according to CNS 12626 Section 4.3; the taximeter must be free of functional abnormality during the test.
- 5.3 A voltage test shall be performed on a taximeter according to CNS 12626 Section 4.3.2; the taximeter must be free of functional abnormality after the test.
- 5.4 A static electricity test shall be performed on a taximeter according to CNS 12626 Section 4.4; the taximeter must be free of functional abnormality after the test.
- 5.5 An audio volume test shall be performed on a taximeter according to CNS 12626 Section 4.5 in a testing room with background noise of less than 12dB (A). The test result, i.e. the indicated value on the audio volume meter, shall be between 60 to 90 dB (A). The taximeter shall sound once at change of fee in the distance/time pricing mode, or sound twice at change of fare in the night surcharge-pricing mode. The duration of each prompt sound shall be between 0.2 to 0.5 seconds.
- 5.6 After an electromagnetic wave disturbance test (EMI) is performed on a taximeter according to CNS 12626 Section 4.6.1, the radiation of electromagnetic waves from a distance of 1 meter to the taximeter must not exceed the limits prescribed in Table 1.

Table 1

Radiation Frequency	Intensity
30 MHz~48 MHz	$207.36 \times 10^4 / f^2 \mu\text{V/m}$
48 MHz~1 GHz	900 $\mu\text{V/m}$

Note: "f" must be in MHz

- 5.7 An electromagnetic wave radiation endurance test (EMS) shall be performed on a taximeter according to CNS 12626 Section 4.6.2; the taximeter must be free of functional abnormality during the test.
- 5.8 A temperature property test, low temperature test, high temperature test, temperature circulation test and temperature/humidity test shall be performed on a taximeter according to CNS 12626 Section 4.7 and Section 4.8. The taximeter must be free of deformation or damage in appearance and mechanical structure or any functional abnormality after the test.
- 5.9 After a resonance frequency test, vibration characterization test, vibration fatigue test and scanning vibration fatigue test are performed on a taximeter according to CNS 12626 Section 4.9, the appearance and mechanical structure of the taximeter must be free of damage and the electric properties must not deviate from the rated values.
- 5.10 An impact test shall be performed on a taximeter according to CNS 12626 Section 4.10. Errors must not occur during the test, the appearance and mechanical structure of the taximeter must be free of damage, and the electrical properties must not deviate from the rated values.
- 5.11 Taximeters shall be performed performance test according to section 5.1 through 5.10. The taximeter constant k verification shall be conducted following every single section 5.1 through 5.10 and the errors of every k verification shall meet the MPEs as the technical specification for Verification and Inspection of Taximeters.
6. The legitimacy of certificates of type approval of taximeters issued prior to this specification going into force could last until the expiration date of those certificates.