



NATIONAL TYPE EVALUATION PROGRAM

Certificate of Conformance

for Weighing and Measuring Devices

For:

Taximeter
Digital Electronic, Multi-rate
Model: S700
Remote Display and entry API:
Centrodyne Taximeter App Version 3.1B and higher
NTS Inc. Disptach App Version 1.406 and higher
DDS Wireless Inc. Soft Meter App Version 1.07H and higher

***Submitted By: Contact Info. Updated January 2020**

Centrodyne Corp. of America
PO Box 5148
Essex Junction, VT 05453
Tel: 802-857-5479
Fax: 802-857-5480
Contact: Byron Corcoran
Email: bcorcoran@centrodyne.com
Web site: www.centrodyne.com

Standard Features and Options**Standard Features:**

- Single or Multi-Rate Taximeter (Max 16) Rate Number is Displayed and Printed on Receipt
- Capable of Being Programmed for Automatic or Manual Extras Entry
- Displays, 7 Segment LED, Alpha-numeric, Fare \$9999.99, Extras \$99.99, Rates 99
- Programmable Rate, Programmable to Change by Time of Day, Distance or Fare Amount (\$)
- Pre-programmed to Permit Automatic Rate Change on a Future Date
- Permanent Non-Volatile Memory for Daily and Accumulated Totals
- Summing of Fares and Extras
- Electronic Linking of Taximeter to a Vehicle (ESI) (see "sealing")
- Software Version: 1.05 or Higher

Options:

- Credit/Debit Card Reader
- Remote Printer with Paper-out and Programmable Printer Required Notification
- Password Protection, Entry Option Required to Operate Taximeter
- Multiple Communication Ports (see "Authorized Communication")
- Text Message Option to Printer (only in vacant mode)
- Automatic Shutdown of Taximeter, Error Message Displayed, For Rental Use
- Tax Calculation and Addition (only where permitted)
- Clock Drift Correction (maximum 5 minutes per month)
- Flat Rate Entry (allows the driver to select a pre-programmed rate and enter a dollar amount) (only where permitted)
- Authorized Communication (see "authorized communication")
- Remote display and entry API on tablet, smart phone or similar device
- Audit Trail sealing per NCWM Publication 14 in lieu of a physical seal
- Shared Ride display and entry API on tablet, smart phone or similar device

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of "NIST Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Hal Prince
Chairman, NCWM, Inc.

Craig VanBuren
Chairman, NTEP Committee
Issued: October 1, 2020

1135 M Street, Suite 110 / Lincoln, Nebraska 68508

The National Conference on Weights and Measures (NCWM) does not approve, recommend or endorse any proprietary product or material, either as a single item or as a class or group. Results shall not be used in advertising or sales promotion to indicate explicit or implicit endorsement of the product or material by the NCWM.



Centrodyne Corp. of America

Taximeter / S700

Application: This taximeter may be programmed for single or multi-rate fares (up to 16). This taximeter calculates and indicates, at a predetermined rate, the charge for hire of a vehicle based on time, distance or a combination of both.

Identification: The identification information is on a label on the left side front face of the taximeter. The ID label is self-destructive if attempts are made to remove it. See the section "Information Available in Vacant Mode" for instructions on how to view the software version number. For the Remote and Shared Ride display and entry APIs, the identification information is included on the display of the tablet, smart phone or similar device.

Centrodyne Taximeter App: The ID information is located on the main screen when the taximeter is registering "METER OFF". Alternatively, the ID information can be accessed by pressing the INFO button.

NTS Inc. Dispatch App: Select the "Audit" tab on the main screen. The ID information is located on the top section of the audit trail screens.

DDS Wireless Inc. Soft Meter App: When the meter indicates "VACANT", select the Statistics icon located in the bottom left of the screen.

Sealing: This taximeter may be sealed to inhibit access to the calibration and configuration programming by the use of a wire security seal. The seal may be threaded through a sealing screw and tab located on the right side of the front panel. The taximeter's bracket has provision for sealing the taximeter to the vehicle-mounted bracket.

A Category 3 Audit Trail for sealing both the configuration and calibration parameters is available in place of a physical seal for the S700 and for the Remote and Shared Ride display and entry APIs. Sample of audit trail print out follows.

Accessing the Audit Trail of S700 Meter:

While the S700 meter is Vacant press button 4 to access *Information Menu 0*. Upon entering this menu, the word *Aud* flashes in the Fare window and 0 flashes in the Rate window. Pressing button 6 enters the Audit Trail menu. The Rate window shows a solid number 0 while the Extras window shows the menu item number as per table below. The value for each menu item is displayed in the Fare window. Similar operation is used to access the Audit Trail on both the Remote and Shared Ride display and entry APIs.

Menu – 0 (Audit Trail Menu)

Item Number	Fare Display	Extras Display	Rate Display
1	Date of the last entry in configuration log	1	0
2	Date of the last print of configuration log	2	0
3	Allows user to enter a date and print configuration entries made after the date	3	0

Notes:

1. In the Audit Trail Menu the date format is always YY.MM.DD.
2. In item 2 pressing and holding Button 5 for 2 seconds will print all the entries in the event logger in reverse chronological order.
3. In item 3 the user may press button 6 and enter a date. After the date is entered pressing and holding button 5 will print event logger entries on or after the entered date.

Date Format: YY/MM/DD

16/12/05 07:05

Config Audit Trail Entries

Log# Date Time ID VALUE



Centrodyne Corp. of America

Taximeter / S700

0006	16/11/17	07:20	004	37.00
0005	16/11/17	07:20	003	3.20
0004	16/11/17	07:19	001	3.50
0003	16/11/17	07:19	132	5884
0002	16/11/16	06:47	001	2.50
0001	16/11/16	06:47	132	4993

Electronic linking for the taximeter’s installation to the vehicle only, (ESI): ESI provides a two-way electronic link between the taximeter and the vehicle-mounting bracket. Once an electronic link has been initialized between a meter "A" and a vehicle-mounting bracket "B," the ESI ensures that taximeter "A" will only operate in the vehicle with mounting-bracket "B" and no other taximeter will operate with bracket "B." Establishment of an ESI link is only accessible by breaking and removing the taximeter's wire security seal and gaining access to the taximeter's programming functions.

Accessing Audit Trail of Remote Displays and Entry API's:

- **Centrodyne Taximeter App:** select the “AUDIT” button at the top of the Taximeter App screen, then select either “CALIBRATIONS” for calibration parameters or “OPTIONS” for configuration parameters.
- **NTS Inc. Dispatch App:** select the “AUDIT” button at the top of the MAIN screen, then select either “Calibration Trail” for calibration parameters or “Audit Trail” for configuration parameters.
- **DDS Wireless Inc. Soft Meter App:** When the meter indicates “VACANT”, select the Statistics icon located in the bottom left of the screen, then select the Information icon located above the Statistics icon. Select “AUDIT TRAIL ENTRY” for the Configuration audit trail and “LAST CALIBRATION” for the calibration audit trail.

Speed/Distance Signal Input from A Vehicle:

Model S700 Can Accept Speed/Distance Data in Several Ways:

- Directly connected to a standard VSS (vehicle speed signal) through the vehicle wiring.
- Connected to a VSS through a pulse divider or signal conditioner.
- Connected to a VSS generator that interprets digital-data and converts it into a VSS signal.
- Connected directly to a digital-data source providing speed/distance information. This includes direct links to digital data available on the vehicle computer.

Operation: The taximeter has six (6) push buttons and one (1) slide switch (sealable) on the face of the taximeter.

To Select	Activate Switch	Comments
HIRED	SW1	Meter must be "Vacant"
EXTRAS	SW3	Meter must be "Hired"
TIME OFF	SW2	To return to "Time On" push SW2 again
VACANT	SW1	Meter must be "Time Off" to go "Vacant"
STATISTICS	SW3	Meter must be "Vacant"
OTHER INFO	SW4	Meter must be "Vacant"
SWITCH PROGRAMMING	SW7	Meter must be "Vacant" and the seal wire and seal plate removed
RATE	SW6	Increments rate in circular manner

Totals

Item Number	Statistic	Rate Digit
1	Total fares	1
2	Total units	2
3	Total extras	3



Centrodyne Corp. of America

Taximeter / S700

4	Total taxes	4
5	Total miles (or kilometers)	5
6	Total paid miles (or kilometers)	6
7	Number of trips	7

Automatic Shutdown of Taximeter: This taximeter has an option which allows the taximeter to be shut down preventing its use. The use of this option is for rental purposes. There are two methods that may be used to shutdown or disable and enable the taximeter: 1) a specific shutdown date and time of day may be pre-programmed into the taximeter, and 2) a message may be sent using the communication port of the taximeter instructing it to shutdown. In both instances, the taximeter can only be shutdown when the taximeter is in the vacant mode. A visual indication (error code) is displayed on the taximeter's display, and the meaning of this error code may be found in the taximeter's operating manual.

Authorized Communication: This taximeter's communication ports and protocol are approved for: a) credit card and debit card transactions, b) meter status, statistics information (e.g. trip totals, etc.), c) printer use, d) GPS data, e) communication of displayed or printed messages which may only occur when the taximeter is in vacant mode, and f) taximeter disabling and enabling options. The entry of Fare, Extra(s), and additional rates not pre-programmed in the taximeter are not permitted. All charges must only be those that are stated on the taxi's rate card and authorized by the jurisdictional authority governing the use of taximeters.

Printed Cash Receipt	Printed Credit Card Receipt (Driver Copy)	Printed Credit Card Receipt (Passenger Copy)	Printed Totals Receipt
Cab/Medallion #	Cab Co., tel No. etc.	Cab/Medallion #	Cab/Medallion #
Date	Cab/Medallion #	Merchant ID #	Date Time
From Start to End	Merchant ID #	Date	Fares \$
Trip #	Date	From Start to End	Units
Dist 0.00 mi	From Start to End	Trip #	Extras \$
Rate (1) \$	Trip #	Dist 0.00 mi	Distance
Extras \$	Dist 0.00 mi	Rate (1) \$	Paid Dist.
Total \$	Rate (1) \$	Extras \$	Trips
	Extras \$	Sub Total \$	
	Sub Total \$	Tip \$	
	Tip _____	Total \$	
	Signature _____	Approval Number	
	Issuer Statement	MC/VISA/AMEX/DISC	
		Masked Card Number	
	Paid By:		
	MC/VISA/AMEX/DISC		
	XXXXXXXXXXXX1111		

Credit/Debit Card Authorization and Payment: When payment is by credit or debit card the receipt generated by the taximeter is as shown above in Figure 2. If the card reader is not directly attached to the meter, then the meter operation is unchanged. When the card reader is attached to the meter then the operation is as follows. At the end of a trip with the taximeter Hired/Time-Off, swiping the



Centrodyne Corp. of America

Taximeter / S700

credit or debit card through the card reader places the meter into credit card mode, which is indicated on the taximeter by the TIME-OFF legend flashing on/off. The driver presses the print button on the meter (switch 5) to print the merchant copy of the receipt and passes the receipt to the passenger for entry of Tip (if any) and signature. When returned, the driver enters the TIP amount into the taximeter; the meter waits for the credit card approval and prints the passenger's receipt when received.

Information Available in Vacant Mode: In vacant mode the totals information may be viewed by pressing SW3 and menu information by pressing SW4; you may scroll through the information using SW4 and SW3, press SW 1 to exit.

The totals and menu information may be displayed for up to 10 seconds; taximeter totals, optional audit trail information, display test and brightness adjust, calibration factor and check, rate information, configuration data, date and time, taximeter-odometer and disable date and time. The taximeter totals have a maximum value of 999999.99 and may be reset via the pushbuttons if enabled in programming. The taximeter totals, Software version, rate information, etc., may be printed by pressing button 5 when viewing the selected item.

Test Conditions: This certificate supersedes Certificate of Conformance 10-051A1 and is issued to list the Remote Display and Entry API's that are authorized to be used with this taximeter and how the Audit Trail is accessed with each. For this evaluation, three display applications were submitted: Centrodyne Taximeter App Version 3.1B, NTS Inc. Dispatch App Version 1.406 and DDS Wireless Inc. Soft Meter App Version 1.07H. These apps were loaded onto a Samsung Galaxy Tab E tablet. The emphasis of the evaluation was on the API design, operation, and suitability of the display.

Certificate of Conformance 10-051A1: This Certificate supersedes Certificate of Conformance Number 10-051 and is issued to add optional Remote display and entry API capability, Audit Trail method of sealing, and Shared Ride display and entry API capability.

Remote Display and Entry API: Centrodyne's API on a tablet, smart phone, or similar device replaces the S700 taximeter display and buttons. The API connects via wireless (e.g. Bluetooth) or wired connection to the "black box" version of the S700 taximeter. The "black box" hardware has no display or operator controls (buttons). Centrodyne's API may also work with a standard S700 taximeter used as a secondary display that mirrors the API display. The emphasis of the evaluation was on the API design, operation, and suitability of the display.

Audit Trail: A fully compliant category 3 Audit Trail per NCWM publication 14 was tested and verified and may be used in place of a physical seal. The taximeter's audit trail provides the required event counters, date & time, parameter ID and new value, for both configuration and calibration parameters.

Shared Ride Display and Entry API: Centrodyne's Shared Ride API on a tablet, smart phone or similar device allows for multiple separate, independent fares to be calculated and displayed. During the trip, the driver may select which of the trips is primary on the display with others listed below. At the end of any trip, driver pauses (Time-Off) all trips while payment for the trip is completed. Similar to the Remote display API above, the Shared Ride API replaces the S700 taximeter display and buttons. The API connects via wireless (e.g. Bluetooth) or wired connection to the "black box" version of the S700 taximeter. The "black box" hardware has no display or operator controls (buttons). Centrodyne's Shared Ride API may also work with a standard S700 taximeter used to display the number trips in progress. When an optional printer is attached a ticket may be printed and issued to the passenger indicating their trip number. The emphasis of the evaluation was on the Shared Ride API design, operation, and suitability of the display. Previous test conditions are listed below for reference.

Certificate of Conformance 10-051: The emphasis of this evaluation was on device design, operation and performance. Model S700 taximeter was evaluated in the laboratory using an electronic pulse simulator to generate pulses for measuring distance, a frequency counter to determine cross over speeds and a calibrated stopwatch to evaluate time. Several series of tests were performed to determine compliance and accuracy with respect to time, distance, interference, voltage variation, power interruption and RFI testing. All displayed information on the taximeter's LED display was evaluated and measured for compliances with NIST HB 44 requirements. Additional tests were performed using the ESI linking system, as well the tax function and using other programming options. Receipts were printed during the tests and receipts formats were evaluated.

Required Field Testing: One Model S700 taximeter was installed in taxicab used in the Burlington International Airport, located in South Burlington, Vermont. This taximeter was calibrated and tested 4 times during a period of three months of use. A detailed review of calibration and testing reports indicates this taximeter maintained its performance and calibration during this period of time.



Centrodyne Corp. of America

Taximeter / S700

Evaluated By: B. Fishman (NY) 10-051; E. Morabito (NY) 10-051A1, 10-051A2

Type Evaluation Criteria Used: NIST, Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices, 2017. NCWM, Publication 14: Measuring Devices, 2016.

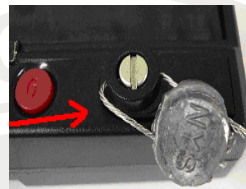
Conclusion: The results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

Information Reviewed By: J. Truex (NCWM) 10-051, 10-051A1; D. Flocken (NCWM) 10-051A2

Examples of Device:



Model S700 Taximeter



Sealing

CENTRODYNE
 CAB # 1
 TEL: 800-655-5575
 Date 01/29/2009
 FROM: 12:46 TO: 12:55
 Trip # 45
 Dist 14.5 mi
 FARE.....\$ 18.50
 EXTRAS.....\$ 1.00
 Sub Total.....\$ 19.50

TIP _____
 TOTAL _____

Paid By:
 MASTERCARD
 Card #: *****4339

Expiry Date: 10/97
 Approved #: APP 123456

Signature:
 X _____

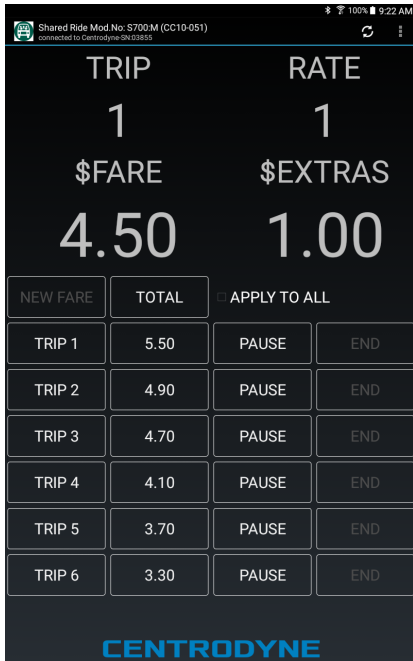
Sample Receipt Format with Payment by Credit Card

YELLOW CAB
 CAB # 123
 THANK YOU
 (800) 655-5575
 Date 03/02/2010
 FROM: 14:01 TO: 14:02
 TRIP # 34
 DIST 1.44 mi
 Rate 1.....\$ 3.90
 Rate 2.....\$ 1.20
 EXTRAS.....\$ 1.75
 TIP.....\$ 1.00
 TOTAL.....\$ 7.85
 EXPIRATION DATE 00/00
 CREDIT
 *****0454

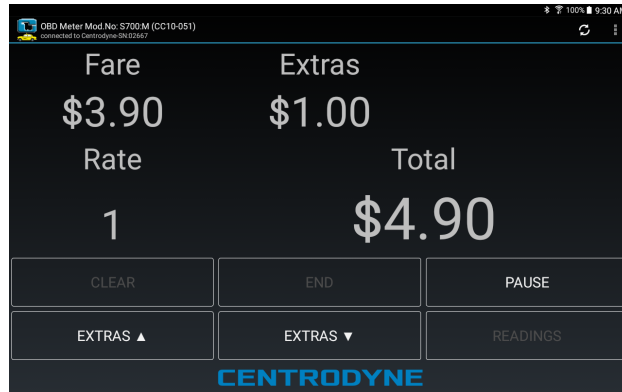
I AGREE TO PAY THE ABOVE
 TOTAL AMOUNT ACCORDING
 TO CARD ISSUER AGREEMENT

Signature: _____

Sample Receipt Format with Charges for Two Rates, Extras and Tip



Shared Ride Screen



Remote Display Screen



S700 Black Box
(example 1)

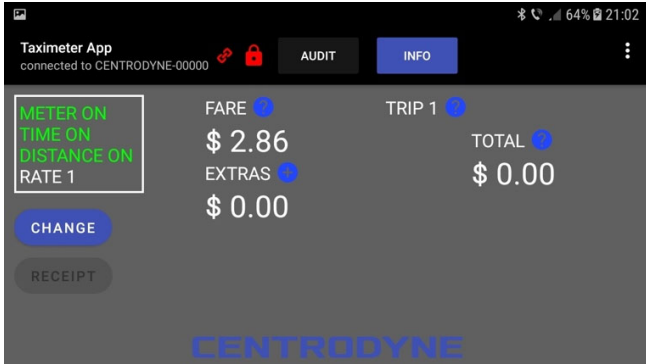


S700 Black Box
(example 2)

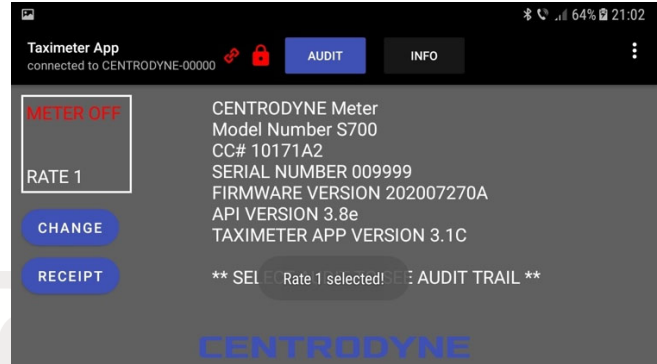


Centrodyne Corp. of America

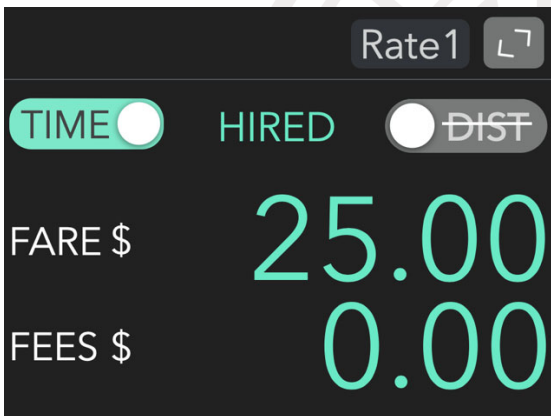
Taximeter / S700



Centrodyne TA Full Screen HIRED



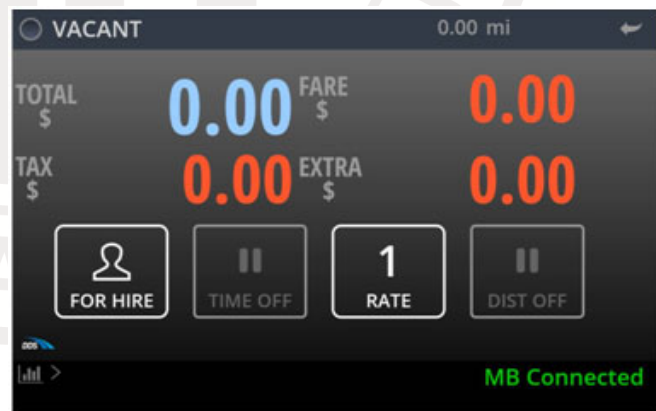
Centrodyne TA Full Screen VACANT



NTS Dispatch App, HIRED



DDS Soft Meter App, HIRED



DDS Soft Meter App, VACANT