

US-M6+ Smart Weighing Indicator



Service Manual v1.01

(Only for trained Scale Technicians)

Instructions

Thank you for choosing USA Measurements "We Out Measure the Competition". USA Measurements is an American Scale brand providing scales for the weighing industry. We are located out of Las Vegas, NV and we ship worldwide. USA Measurements provides R&D for developing software, hardware, and weighing products.

Please read this manual carefully and if you have any questions, please reach out to any local scale company or USA Measurements directly for help.





CHAPTER 1 M6+ FUNCTIONS AND SPECIFICATIONS

1. Main Functions:

- a. Data Transfer: Wired or Wireless. From weighing scale to indicator data transfer methods are optional. The wire would be offered by scale and connector will be offered with this indicator. The wireless is using RFID to identify each scale.
- b. 8" IPS Touch screen with True Color display.
- c. Menu could be clicked by fingers or Mouse (optional).
- d. Build-in Multiple Channels. Default is 2 channels and maximum 16 channels.
- e. Multiple working methods are optional.
- f. Records stored and could be inquired by "License Number", "Date", and more filters.
- g. Records could be export to USB drive / Smart Phone Application at any time with CVS format. *If LTE/5G communication is installed, data could be upload to cloud.*
- h. 1 Channel Static Weighing, 2 Channels Dynamic Weighing, 2 Channels Static Weighing, More Channels Static Weighing are build-in supported.

2. Specifications:

- a. Enclosure Material: ABS
- b. Units of Measurement: kg, ton, lb., kilo lb.
- c. Power Supply and Consumption: AC Adopter 110 ~ 240V 50/60Hz. Rechargeable Battery 6V/4000mA
- d. Working Humidity: < 90% RH
- e. Working Temperature: -10° C to 60° C / 14° F to 140° F
- f. Driving Number of Load cells: Up to 24 x 350 Ω or 12 x 700 Ω
- g. A/D Converter: 24bit 4.8kHz
- h. Conversions per second: 200/s
- i. Division: 1, 2, 5, 10, 15, 20, 25, 50
- j. Communication Interface: RS232, USB, Bluetooth, WIFI (Optional), LET/5G (Optional)
- k. Baud rate: 4800, 9600 bit/s
- 1. Printer: Build-In Thermal Printer
- m. Mini Weighing Capability: 20e

3. Sample Picture:



4. Printing Tickets:

WEIGHING REPORT Department:HOLISCALE Serial No.:00023 Date:05-05-2021 Time:16:25 Truck:ABCDEFGHI012 Operator:001 Driver: Location: CHANGZHOU JIANGSU CHINA 0.8km/h Speed: 5582kg Total weight: No.1 Axle 2101kg Axle Weight: No.2 Axle Axle Weight: 1709kg No.3 Axle Axle Weight: 1772kg

Printing ticket sample for Auto-Dynamic Weighing

Department: Manual input. Blank information will not be printed.

Serial No: Generated by indicator. Date and Time: Set in the system. Truck: Vehicle License Number. Manual input.

Operator: For signature purpose. *Driver*: For Signature purpose.

Location: Manual input. Blank information will not be printed.

Speed: System auto detect.

Total Weight: Auto Add up by system.

No.1 Axle: Two scales weights added.

WEIGHING REPORT

Department:HOLISC Serial No.:00027 Date:05-05-2021 Time:16:27 Truck:ABCDEFGHI012 Operator:001 Driver: Location:CHANGZHOU	ALE 2 J JIANGSU CHINA
Speed: 0.7km	ı∕h
Total weight:	5498kg
No.1 Axle Type: Axle Weight:	1 2015kg
No.2 Axle Type: Axle Weight:	5 3483kg

WEIGHING REPORT

		-
Department:HOLIS Serial No.:00024 Date:05-05-2021 Time:16:25 Truck:ABCDEFGHI0 Operator:001 Driver:	ICALE	
Total weight:	5923kg	
No.1 Axle Axle Weight: (CH A): (CH B):	1974kg 975kg 999kg	
No.2 Axle Axle Weight: (CH A): (CH B):	1975kg 975kg 1000kg	
No.3 Axle Axle Weight: (CH A): (CH B):	1974kg 975kg 999kg	
		-

Printing ticket sample for **Manual-Dynamic** Weighing

Department: Manual input. Blank information will not be printed.

Serial No: Generated by indicator.

Date and Time: Set in the system.

Truck: Vehicle License Number. Manual input. *Operator*: For signature purpose.

Driver: For Signature purpose. *Location*: Manual input. Blank information will not be printed.

Speed: System auto detect. Total Weight: Auto calculated by system. No.1 Axle Type: Two scales weights allocated by system according to different Axle Type. Axle Type: Manual Input.

Printing ticket sample for Static Weighing

Department: Manual input. Blank information will not be printed.

Serial No: Generated by indicator. Date and Time: Set in the system. Truck: Vehicle License Number. Manual input. Operator: For signature purpose. Driver: For Signature purpose. Location: Disabled.

Total Weight: Auto added by system. *No.1 Axle Type*: Two scales weights added by system.

CH A: Scale weight on Channel A. *CH B*: Scale weight on Channel B.

CHAPTER 2 SCALE PREPARE

1. Prepare:

a. Wired

Single Scale (Typical: Weighbridge): Connect your scale to the indicator Channel A OR Channel B.

Double Scale (Typical: Axle Scale): Connect your scale to the indicator Channel A AND Channel B.



Multiple Scale (Typical: Wheel Scale):

Connect your scale to the indicator Channel 1# and Channel 2# for the 1^{st} axle, Channel 3# and Channel 4# for the 2^{nd} axle, ... Channel 15# and Channel 16# for the 8^{th} axle.

Combined Scale (Typical: Multi Decks Combined Weighbridge):

Connect 1st Deck to Channel 1#, 2nd Deck to Channel 2#, 3rd Dec to Channel 3#.

<u>Please note</u> the indicator has 4 pins male connectors as default.

b. Wireless

No need to connect any cable. Switch on wireless scale first then indicator. They will setup connection automatically.

2. Portable Scales Check

a. For portable scales, usually for portable axle scale or wheel scale, please make below preparation:

- **b.** Choose a flat area to place the portable scales. Make sure the scales stand on ground without seesawing.
- c. Make sure the ground is clear and without small chippings.
- d. Make sure the scale is towards the vehicle wheels center.
- e. Make sure the distance between two scales is suitable and wheels will not move out of the scales.
- f. For wireless scales, make sure the antenna towards to the indicator.

3. Switch on

- **a.** For Wired scales, switch on indicator.
- **b.** For Wireless scales, switch on scales first. Scales will start to look for indicator connection immediately.



flash, it is ON.

c. Please switch on the indicator within 1 minutes after scales are on to setup the connection. If the connection cannot be established, the scales will automatically switch off. When indicator is switched off after work, the wireless scales will automatically switch off.

CHAPTER 3 SYSTEM OPERATION

1. System a. Switch On

Press the "Power" button on indicator first to start power supply. Please note the indicator should be charged or connected to the AC power supply.



The indicator will start self-checking process, and this will take up to 10 seconds.





The default password for "Admin" is "holim6+". Please cation for password case when input. If this is incorrect, please check with us for password.



Click on "User Permission" to change password for User and Administrator

User P	ermiss	ion		
Serial No. 0	User Na USEF	Change password		×
1	ADMI	📓 User:		
		Password:		
		New password:		ange Nassword
		Confirmation:		
			Cancel OK	Quit
	_	III		

2. Settings

Click on "Settings" to enter the settings menu.

		Settings		
Department	1. 2. 3.		Operator	
Mode		Auto End	OFF	Print Mode: Manual
	Manual 🥥 A	Auto	Speed:	Km/h Copy:
Location	1. 2. 3.			
	Weighing Setting(II)	System Setting	g Back	
HD: a 1 0 6 MW:	E2.3.01 beta1	admin 05/19/2021	Wed 15:20:08 A	🔚 📶 B 🔚 📶 📗

"*Department*" There are 3 lines to enter the using department information including company name, company address, contact number, etc. The information will be printed in the weighing ticket.

Please note: Each line accepts maximum 128 alphabets.

"Operator" Enter the name of operator.

"Manual" It is set the system to Manual In-Motion Weighing

"Auto" It is set the system to Auto In-Motion (Unmanned) Weighing (see next page)

"Speed" It is selecting the speed unit - "km/h" or "mph".

"Print Mode" Selecting whether ticket will be printed after weighing process completed *"Auto"* Means the ticket will be printed automatically after weighing. *"Manual"* Means the ticket will NOT be printed.

"Copy" It is to select tickets quantity each time prints.

"*Location*" There are 3 lines to enter the location of the weighing process. The information will be printed in the weighing ticket.

<u>Please note</u>: Each line accepts maximum 128 alphabets.

When "Auto" weighing mode is selected, there is an extra option of whether the unmanned system will be working.



When this is ON, the countdown timing can be changed.

Auto End Auto End Timing 10

Default is 10 seconds. In "Dynamic Weighing" the countdown timer will be available.

Brightness		
	5 M19D 2021 Y 14:02:21	
80-		
60-	BeepOFF	
40-	Screen Saver Time 0 Mins	
-	Backlight Time 3 Mins	
20-	Brightness Down 2 _{Mins}	
	Back	
	↓	5
HD: a 1 0 6 MW: E2.3	.01 beta1 USER 05/19/2021 Wed 14:02:22	

In "System Setting", brightness of the screen, date, time screen saver time, can be adjusted.

3. Weighing Setting (II)

When click on "Weighing Setting", the system will ask for password.



The default password for this is "878586" and in case you changed it, please write down and keep the password at a safe place.

<u>*Please note*</u>: Everywhere require Class II level password will be the same. If you have ever changed this password, you will need to use new password for other places where require Class II level password.

The (II) stands for password level. In the system there are three levels password.

"I" or No Marking stands for level 1 password. This password is stored plaintext in the system. Typical for this is the user password. It is stored in the system and in case it is lost, the Administrator could be able to change it.

"II" stands for level 2 password. This password is stored by normal encryption algorithm in the system. If it is lost, our factory could use our own tool to read the password by connecting to the indicator. Default password is 878586

"III" stands for level 3 password. This password is stored in chip by SHA-256 encryption algorithm. This is unchangeable because there is no way to recover it. However, we could customize this password for different distributors. Default password is 549717.



4. Enter main menu of Weighing Setting

Caution: All options here are related with kernel computing and any Unauthorized Change may result in Losing Warranty.

"Axle Config Optimize" This is the key algorithm of our system for different axles. This data comes from our analysis to over 12,000 vehicles. Default would suggest switching it on when the indicator is connected for in-motion weighing purpose. It is not recommended to change this unless it is authorized by the manufacturer.

"*Optimize the speed*" This is the key algorithm of our system for different speed. This data comes from our analysis to over 12,000 vehicles. Default would suggest switching it on when the indicator is connected for in-motion weighing purpose. It is not recommended to change this unless it is authorized by the manufacturer.

Speed Ratio	Please set th	e speed ra	atic	o from low	to high				\otimes
Speed is over 1.0 Kr	Scale Factor	92	%	Speed is over	6.5	Km/h	Scale Factor	103	%
Speed is over 1.5 Kr	Scale Factor	93	%	Speed is over	7.0	Km/h	Scale Factor	104	%
Speed is over 2.0 Kr	Scale Factor	94	%	Speed is over	7.5	Km/h	Scale Factor	105	%
Speed is over 2.5 Kr	Scale Factor	95	%	Speed is over	8.0	Km/h	Scale Factor	106	%
Speed is over 3.0 Kr	Scale Factor	96	%	Speed is over	8.5	Km/h	Scale Factor	107	%
Speed is over 3.5 Kr	Scale Factor	97	%	Speed is over	9.0	Km/h	Scale Factor	108	%
Speed is over 4.0 Kr	Scale Factor	98	%	Speed is over	9.5	Km/h	Scale Factor	109	%
Speed is over 4.5 Kr	Scale Factor	99	%	Speed is over	10.0	Km/h	Scale Factor	110	%
Speed is over 5.0 Kr	Scale Factor	100	%	Speed is over	10.5	Km/h	Scale Factor	111	%
Speed is over 5.5 Kr	Scale Factor	101	%						
Speed is over 6.0 Kr	Scale Factor /h	102	%						

Upgrade Firmware(III)

This is to make the upgrade of the system. <u>Please note</u>: Please use the firmware offered by the manufacturer only. Unauthorized Firmware will result in Losing Warranty.

Axle Config optimize					
12	Axle Ratio	15	Axle Ratio	32	Axle Ratio
125	Axle Ratio	35	Axle Ratio	127	Axle Ratio
325	Axle Ratio	157	Axle Ratio	327	Axle Ratio

This is the algorithm for AUTO In-Motion Weighing (Unmanned). This data comes from our analysis to over 12,000 vehicles. Default would suggest switching it on when the indicator is connected for in-motion weighing purpose. It is not recommended to change this unless it is authorized by the manufacturer.

Defaut Settings(III)

This is option to load default ex-factory settings and data. This is the final step for rescue the system. Usually, it is not recommended to offer the end user this service manual because any untrained

operation may affect the accuracy and get system into endless loop. But in case anything has been changed due to error operation, click on this button to drop all customized setting and load default setting may rescue the system. If this doesn't work, the indicator has to be returned to the manufacturer for maintenance.

5. Scale (III)

This is settings to connect the indicator to the scales.





This is to select the Channels which is going to work. For two channels system, there are Channel A and Channel B for option. If only 1 channel is selected, the wire must be connected to the Selected Channel Port. Typical

Application for one channel is getting the total weight from a weighbridge. In some cases, customer will use one weighing scale to weigh one side of the vehicle and make the result multiply by 2. This will get a roughly total weight of a vehicle, but the accuracy could be up to 20%. Typical Application for 2 Channels is the axle weighing scale or wheel scale.



Extend Capability: When this is ON, it is used for big weighing capability from 0.5t – 600t. And unit for below weighing capability setting will be Ton or Kilo lbs.

When this is OFF, it is used for normal weighing capability from 0.5kg – 50,000kg. And unit for below weighing capability setting will be KG or lbs.



lb

Unit:

This is to set the single scale capability, even the system is connected to multiple scales.

This is the minimum weight for the system to record down. Maximum value of this limit is 10% of the maximum single scale capability. And Minimum value is 0.1 unit. But when

the value is lower, the readability and stability of the scale are going to be less.

0.0

This is to switch unit of weights. It can be selected from: Kilo Gram, lbs, Ton or Kilo lbs.

<u>Please note:</u> When unit is changed, the system will drop all calibration data and full scale will need to be re-calibrated.



CHAPTER 4 CALIBRATION

Back to Login)		1000000000		User Permissions
	PORT	ABLE	AXLE	SCALE	
	Q	Please enter the	e password:		
		* *	* * * * * *	T	
					.)
	Dooorda			Shut Down	
	Records			Shut Down	
					<u>i</u>
HD: a 1 0 6 MW: E2.3.01 b	eta1	ADMIN 05/19	/2021 Wed 1	4:42:54	

1. Calibration (II)

When click on Calibration (II) on main menu, you will need to enter password, the default password is 878586. However, the Admin can change it after calibration and once the password is changed, there is no way to recover. So, please keep the new password at a safe place.

Back to Login	MIN: MAX:				
POR			* * * * * *		-
2	1	2	3	0	-
	4	5	6 🗟	•	CLR
Record	7	8	9	Er	nter
HD: a 1 0 6 MW: E2.3.01 beta1	admin 05/1	9/2021 Wed	1 14:43:09		·····

2. Check the details:



Please confirm the unit and select the division as your demand before calibration.

3. Although two channels are connected, only ONE channel could be calibrated at one time.

4. Calibrate ZeroPoint first. Make sure there is nothing left on the scale.



If only 2 points calibration is executed, the system will automatically record the loading. If multi-point calibrated, the system would have linear compensation.

^A 100	0	₿ 10(00
Division:	Loaded Poin	nt successful	
	СН А	СН В	
	Restart from ZERO	Restart from ZERO	
Load 2nd Point-Weight			
	2000	2000	
Change password(II)			Back
HD: a 1 0 6 MW: E2.3.01 beta1	admin 05/19/20	21 Wed 14:48:22	\

The loading point must be input before loading the weights on scale.

During calibration, the procedure could be always re-start again by clicking on "Restart from ZERO".

5. When changing password, please input

twice new password.

A	_0			0
	Change password		×	
Division:	Please pay atte	ntion to message	2.	
Unit: lb	Password:	* * * *	* * * *	
	New password:	* * *	* * * *	
Make sure Scale A is em	Confirmation:	* * *	* * * *	Make sure Scale B is empty.
		Cancel	ок	
Change password(II)	CH A	Load	CH B Load	Back
a 1 0 6 MW: E2.3.01 beta1	ADMIN	05/19/2021 W	Ved 14:43:52	·····

CHAPTER 5 PRINTER

1. Main Functions:

- a. It is using thermal printing method.
- b. It is with CPU inside with 6 pins Data
 and Power supply serial port, it is
 workable with all kinds of PC, Tablet, Smart
 Instrument, etc.
- c. It is compatible with classic printer in command, characters, alphabet, graphics, and instruction set.

- d. The printing speed is adjustable by programming.
- e. It starts with self-check program and is able
 to print all coding with high resolution
 characters and fonts.
- f. The valid buffering is 18kb.
- g. Printing paperis thermo-sensitive paperand width is

57.5±0.5mm.

- h. Power Supply: RG-E487B-L:3.5-8.5V, 2Amp.
- i. Working temperature: $0^{\circ}C \sim 50^{\circ}C$
- j. Work in DOS, Windows, Linux, Unit, etc. all operation system in 8 dots/mm, 384 dots/row.
- k. 16 Bitmap fonts, 24 Bitmap fonts, Code Page are all included and changeable by programming.

2. Specifications:

- a. Printing: Thermo-sensitive dot matrix printing
- b. Port: Serial Port RS-232 (IDC10) or TTL (3.3V) (IDC10) or

Parallel Port (IDC26)

c.	Power	Suppl	y:	PDK3				
d.	Control	Code:	ESC,	FS,	GS			
e.	Press physi	cal	butto	n	to	feed	printing	paper.
f.	Any error	with	red	light	alarm	1.		
g.	Stability:	(5	~	15)	х	106	rows no	error.
h.	Working 20% ~	Temp 85%	eratu	re:	0°C	~	50°C Humi	dity:

CHAPTER 6 MAINTENANCE

1. Charging

When the battery volume is less than 5%, we suggest charging the battery. The battery volume is shown in the icon.

2. Storage

a). This instrument is a precision tool and please make sure the pelican case is protecting the indicator when transporting.

b). Please keep this instrument stored at a low humidity (<80%) and low temperature (<40°C) place.

3. Tips

- **a.** The touch screen is soft. Please use USB mouse, stylus pen, or your finger on the touch screen.
- **b.** In dynamic weighing, please make sure the vehicle speed is less than 10km/h and passing keep on average speed. Do not accelerate or decelerate the vehicle when driving over the scale.
- **c.** For your best accuracy have the vehicle start driving at a place 2 times longer than the overall length of the scale. Ensure the vehicle speed is stable when driving over the scales.
- **d.** Do NOT open the indicator panel without authorization. This will void your Warranty **immediately**.
- e. Consult with local scale distributor when experiencing any error codes or issues with accuracy. The in-motion scales are a very technical scale that should always be serviced by an expert.