#### 1. Dear Customers

The A&D blood pressure monitor is one of the most advanced monitors available and is designed for ease of use and accuracy. This device will facilitate your daily blood pressure regimen.

We recommend that you read through this manual carefully before using the device for the first time.

#### 2. Preliminary Remarks

- This device conforms to the European Directive 93/42 EEC for Medical Products. This is made evident by the  $\mathbf{C} \mathbf{C}_{0123}$  mark of conformity. (0123: The reference number to the involved notified
- body)
  The device is designed for use on adults, not newborns or infants.
  Environment for use. The device is for use to operate by yourself in
- the home healthcare environment. This device is designed to measure blood pressure and pulse rate of people for diagnosis

## 3. Precautions

- Precision components are used in the construction of this device.
   Extremes in temperature, humidity, direct sunlight, shock or dust should be avoided.
- Clean the device and cuff with a dry, soft cloth or a cloth dampened with water and a neutral detergent. Never use alcohol, benzene, thinner or other harsh chemicals to clean the device or cuff.
- Avoid tightly folding the cuff or storing the hose tightly twisted for long periods, as such treatment may shorten the life of the components.
- Take care to avoid accidental strangulation of babies or infants with the hose  $\ensuremath{\text{\fontfamily Do}}$  Do not twist the air hose during measurement. This may cause
- injury due to continuous cuff pressure.

  The device and cuff are not water resistant. Prevent rain, sweat
- and water from soiling the device and cuff.

  Measurements may be distorted if the device is used close to televisions, microwave ovens, cellular telephones, X-ray or other
- devices with strong electrical fields. Wireless communication devices, such as home networking devices, mobile phones, cordless phones and their base stations, walkie-talkies can affect this blood pressure monitor. Therefore, a minimum distance of 30 cm should be kept from
- When reusing the device, confirm that the device is clean.
  Used equipment, parts and batteries are not treated as ordinary household waste, and must be disposed of according to the applicable local regulations
- Do not modify the device. It may cause accidents or damage to
- □ To measure blood pressure, the arm must be squeezed by the cuff hard enough to temporarily stop blood flow through the artery. This may cause pain, numbness or a temporary red mark to the arm. This condition will appear especially when measurement is repeated successively. Any pain, numbness, or red marks will disappear with time.

  Measuring blood pressure too frequently may cause harm due to
- blood flow interference. Check that the operation of the device does not result in prolonged impairment of blood circulation, when using the device repeatedly.

  Clinical testing has not been conducted on newborn infants and
- pregnant woman. Do not use on newborn infants or pregnant woman □ If you have had a mastectomy, please consult a doctor before
- Do not let children use the device by themselves and do not use the device in a place within the reach of infants. It may cause
- There are small parts that may cause a choking hazard if
- swallowed by mistake by infants.

  Do not touch the batteries, the DC jack, and the patient at the same time. That may result in electrical shock.

  Unplug the AC adapter when not in use during the measurement.
- Use of accessories not detailed in this manual may compromise safety. Should the battery short-circuit, it may become hot and potentially cause burns.
- Allow the device to adapt to the surrounding environment before use (about one hour).
- Do not inflate without wrapping the cuff around the upper arm.

### Contraindications

4. Parts Identification

SYS mmHg

PUL

5. Symbols

М

 $\overline{77}$ 

Erg

Errg

Symbols Function / Meaning

DIA mmHg Pulse Rate

Symbols that appear on the display

Annears while measurement

is in progress. It blinks when the pulse is detected.

the pulse is detected.
I.H.B./AFib symbol appears
when an irregular heartbeat
is detected. It may light when
a very slight vibration like
shivering or shaking is

revious measurements

The battery power indicator during measurement.

LOW BATTERY

The battery power is low when it blinks.

Device internal error

stored in memory.

-ULL BATTERY

roper fit range

Index ∠

Arm Cuff

- The following are precautions for proper use of the device
- Do not apply the cuff on an arm with another medical electrical equipment attached. The equipment may not function properly.

  People who have a severe circulatory deficit in the arm must consult a
- doctor before using the device, to avoid medical problems. Do not self-diagnose the measurement results and start treatment by yourself. Always consult your doctor for evaluation
- of the results and treatment. Do not apply the cuff on an arm with an unhealed wound.

  Do not apply the cuff on an arm receiving an intravenous drip or
- blood transfusion. It may cause injury or accidents.

Artery position mark

Air Hose

- Do not use the device where flammable gases such as anesthetic gases are present. It may cause an explosion.
- Do not use the device in highly concentrated oxygen environments, such as a high-pressure oxygen chamber or an oxygen tent. It may cause a fire or explosion.

Note: The AC adapter is an optional accessory.(sold separately)

MEMORY

Systolic Pressure

Diastolic Pressure

I.H.B./AFib symbol

Battery Indicator

Pressure Bar Indicator and

Recommended Action

Measurement is in progress Remain as still as possible.

Replace all batteries with new ones when the mark plinks.

Remove the batteries and

press the START button,

and then install the batterie again. If the error still

appears, contact the deale

Heart Mark

DC jack

AC adapter plug

Display

Air Socket

**Battery Cover** 

START Button

Air Connector Plug

**Battery Compartment** 

#### Unstable blood pressure due to Remain still during movement during measurement. neasurement Err The systolic and diastolic values The pressure value did not Apply the cuff correctly, and increase during the inflatio The cuff is not applied correctly. PUL DISPLAY ERROR Е

## Symbols printed on the device case

Symbols printed on the device case.			
Symbols	Function / Meaning		
Ф	Standby and Turn the device on.		
SYS	Systolic blood pressure in mmHg		
DIA	Diastolic blood pressure in mmHg		
PUL/min Pulse per minute			
☐ R6(LR6,AA) ⊕ Battery installation guide			
===	Direct current		
<b>*</b>	Type BF: Device, cuff and tubing are designed to provide		
	special protection against electrical shocks.		
<b>C</b> € <sub>0123</sub>	EC directive medical device label		
EC REP	EU-representative		
444	Manufacturer		
2019	Date of manufacture		
<u> </u>	WEEE label		
SN	Serial number		
❷	Refer to instruction manual/booklet		
⊖ <b>.c</b> -⊕	Polarity of DC jack		
IP	International protection symbol		
<del>-                                      </del>	Keep dry		

#### 6. Using the Monitor

#### 6.1. Installing / Changing The Batteries

- Remove the battery cover. Remove the used batteries from the battery compartment in case of changing them.
  3. Insert new batteries into the
- battery compartment as shown taking care that the polarities (+) and (-) are correct. 4. Replace the battery cover. Use
- only R6P, LR6 or AA batteries CAUTION

# Step 4 Step Step 3 Step 2

- Insert the batteries as shown in the battery compartment. If installed incorrectly, the device will not work.
- When I blinks on the display and the device announces that the battery needs to be replaced, replace all batteries with new ones. Do not mix old and new batteries. It may shorten the battery life, or cause the device to malfunction. Replace the batteries two seconds or more after the device turns off.
- t does not appear when the batteries are drained.
  The battery life varies with the ambient temperature and may be shorter at low temperatures.
- Generally, four new R6P batteries will last approximately for three months when used twice for measurement each day.
- Use the specified batteries only. The batteries provided with the device
- are for testing the device performance and may have a limited life. Remove the batteries if the device is not to be used for a long time. The

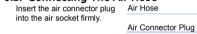
Air Socket

AC adapter Plug

DC jack

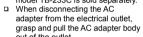
Recommended Action

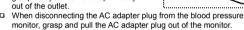
## batteries may leak and cause a malfunction. 6.2. Connecting The Air Hose



## 6.3. Connecting The AC Adapter

Insert the AC adapter plug into the DC jack. Then, insert the AC adapter into an electrical outlet. The AC adapter, the model TB-233C is sold separately





## 6.4. Selecting The Correct Cuff

Using the correct cuff size is important for an accurate reading. If the cuff is not the proper size, the reading may yield an incorrect blood oressure value

- The arm size is printed on each cuff.
- □ The index △ and proper fit range, on the cuff, tell you if you are applying the correct cuff. Refer to "6.5 Applying The Arm Cuff".
   □ If the index △ points outside of the range, contact your local dealer to
- purchase a replacement cuff.

I ne arm cuir is a	consumable. If it becomes worn,	purchase a new one.
Arm Size	Recommended Cuff Size	Catalog Number
31 cm to 45 cm	Large adult cuff	CUF-D-LA
22 cm to 42 cm	Wide range cuff	CUE-I

Arm Size	Recommended Cuff Size	Catalog Number	
31 cm to 45 cm	Large adult cuff	CUF-D-LA	
22 cm to 42 cm	Wide range cuff	CUF-I	
23 cm to 37 cm	Semi large cuff	CUF-D-MA	
22 cm to 32 cm	Adult cuff	CUF-D-A	
16 cm to 24 cm	Small adult cuff	CUF-D-SA	
Arm size: The circumference at the bicens			

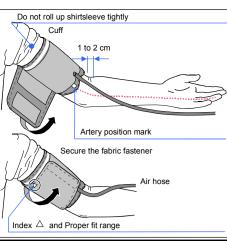
## Symbols printed on the cuff.

Symbols Function / Meaning

•	Artery Position Mark	artery of the upper arm or in line with the ring finger on the inside of the arm.	
<b>A</b>	Index		1
REF	Catalog number		
L	Proper fit range for the large adult cuff. It's printed on the large adult cuff.		
W	Proper fit range for the wide range cuff. It's printed on the wide range cuff.		
М	Proper fit range for the semi large cuff. It's printed on the semi large cuff.		
Α	Proper fit range for the adult cuff. It's printed on the adult cuff.		
S	Proper fit range for the small cuff. It's printed on the small cuff.		
	Over range printed on the adult cuff/semi large cuff/wide range cuff.	Use the large adult cuff instead of the adult cuff /semi large cuff /wide range cuff.	
S	Under range printed on the adult cuff/semi large cuff/wide range cuff.	Use the small cuff instead of the adult cuff / semi large cuff / wide range cuff.	
M/A	Over range printed on the small cuff.	Use the adult cuff/ semi large cuff instead of the small cuff.	
M	Under range printed on the large adult cuff.	Use the semi large cuff instead of the large adult cuff.	

Lot number		
Large adult cuff	Proper fit range	
	L	
Wide range cuff		
<b>S</b>	W	
Semi large cuff		
S	M	
Adult cuff		
S	A	
Small adult cuff		
	S	M/A
6.5. Applying The A	Arm Cuff	

- Wrap the cuff around the upper arm, about 1 to 2 cm above the inside of the elbow, as shown, Place the cuff directly against the skin, as clothing may cause a faint
- pulse and result in a measurement error.
- Constriction of the upper arm, caused by rolling up a shirtsleeve, may prevent accurate readings.
   Confirm that the index △ points within the proper fit range. Note: During measurement, it is normal for the cuff to feel very tight. (Do not be alarmed).



#### 7. Measurements

### 7.1. Normal Measurement

Place the cuff on the arm at heart level (preferably the left arm). Sit quietly during measurement.

2. Press the START button. All of the display segments are displayed. Zero is displayed All of the display segments blinking briefly. Then the display changes, as indicated in the figure at the right, as the measurement begins. The cuff starts to inflate. It is normal for the cuff to feel very tight. A pressure bar indicator is displayed, as in the figure at the right, during Note: If you wish to stop inflation at any time,

press the START button again 3. When inflation is complete deflation starts automatically and the (heart mark) blinks,

indicating that the measurement is in progress. Once the pulse is detected, the mark blinks with each pulse beat. Note: If an appropriate pressure is not obtained, the device starts to

inflate again automatically. 4. When the measurement is complete, the systolic and

diastolic pressure readings and pulse rate are displayed. The cuff exhausts the remaining air and deflates completely. 5. Press the START button again to turn off the power. Note: The device is provided with an automatic power shut-off function.



## If re-inflation occurs repeatedly

use the following methods. If your systolic pressure is expected to exceed 230 mmHg, use this procedure. 1. Place the cuff on the arm at heart

level (preferably the left arm). 2. Press the START button. 3. During the zero blinks, press and hold the START button until a

4. When the desired number is reached, release the START button to start measurement. Then continue

START button  $\phi$ number about 30 to 40 mmHg higher than your expected systolic pressure Inflation in progress Release the START of Parising button to stop inflation to measure your blood pressure as described on the section Normal Measurement". Refer to the section "7.1 Normal Measurement"

### 7.3. Notes for Accurate Measurement

- Sit comfortably on a chair. Rest your arm on the table. Do not cross your legs. Keep your feet on the floor and straighten your back.
- Sit down in a comfortable position. Place your arm on a table with your palm facing upward and the cuff at the same level as your heart.
- Place the center of the cuff at the same level as your heart.
   Relax for about five to ten minutes before measurement. If you are excited or depressed by emotional stress, the measurement will reflect this stress as a higher (or lower) than normal blood pressure reading
- and the pulse reading will usually be faster than normal. Remain still and keep quiet during measurement.
- Do not measure immediately after physical exercise or a bath. Rest for twenty or thirty minutes before taking the measurement.
- An individual's blood pressure varies constantly, depending on what you are doing and what you have eaten. What you drink can have a very strong and rapid effect on your blood pressure.
  This device bases its measurements on the heartbeat. If you have a
- very weak or irregular heartbeat, the device may have difficulty determining your blood pressure.
- □ Should the device detect a condition that is abnormal, it will stop the measurement and display an error symbol. Refer to the section "5 Symbols" for the description of the symbols.

  This device is intended for use by adults. Consult with your physician
- before using this device on a child. A child should not use this device unattended. Try to measure your blood pressure at the same time every day
- The automatic blood pressure monitor's performance may be affected by excessive temperature or humidity, or altitude.

The device automatically stores up to sixty blood pressure and pulse measurements in memory. Data stored in memory are assigned a data number in the order of the newest to the oldest. The oldest data displays as " $\cap_{\Omega}$  f". The  $\mathbf{M}$  symbol in the upper left corner of the display indicates that you are viewing previous data stored in memory.

8.1. Recalling Data When nothing is displayed, press and hold the START button to recall the stored data.

2. Release the button when displaying the average data. The data number and stored data are automatically displayed in

order from the last measuremen 4. The display will turn of automatically after all data is

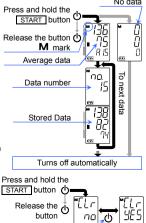
Note: If you press the START button while recalling data, the device turns off.

## 8.2. Clearing Data

displayed.

displayed.

- When turning off the device, press and hold the START button until the "[Lr no '
- 2. Select "[Lr YE5" to clear data.
- 3. Data is cleared when the M mark blinks.
- 4. The device turns automatically



UD O



At heart level w

Zero display

Starts inflation

Pressurizing

Measurement in progress

Systolic pressure

Diastolic pressure

Pulse rate

WHO classification

Exhausts remaining air

automatically

Turn off with the

At heart level ...

Press the START button 👉=

Press and hold the

68

150

90

**1**34

Ď

Press the START button 🖒

## 12. About Blood Pressure

9. What is the I.H.B./AFib

display with the measurement values

I.H.B./AFib symbol frequently

cause of stroke and heart attack

11.Pressure Bar Indicator

10.What is AFib

measurement. Pressurizing

When the monitor detects an irregular rhythm during the

measurements, the I.H.B./AFib indicator will appear on the

Note: We recommend contacting your physician if you see this <

The heart contracts due to electrical signals occurring in heart and

sends blood through the body. Arterial fibrillation (AFib) occurs

when the electrical signal in the atrium becomes confused and

leads to disturbances in the pulse interval. AFib can cause blood

to stagnate in the heart, which can easily create clots of blood, a

Releasing air

The indicator monitors the progress of pressure during

### What is Blood Pressure?

Blood pressure is the force exerted by blood against the walls of the arteries. Systolic pressure occurs when the heart contracts. Diastolic pressure occurs when the heart expands. Blood pressure is measured in millimeters of mercury (mmHq). One's natural blood pressure is represented by the fundamental pressure, which is measured first thing in the morning while one is still at rest and before eating.

#### 13.WHO Classification Indicator

Each segment of the bar indicator corresponds to the WHO blood pressure classification.

The indicator displays a segment, based on the current data corresponding to the WHO classification.

WHO Classification Indicator Severe hypertension Moderate hypertension Mild hypertension High normal Normal Optimal

urement in progress

Inflation complete

Inflation in progress

#### 14. Troubles hooting Problem Possible Reason Recommended Action Batteries are eplace all batteries with new lrained. Battery terminals are not in the correct position. egative and positive terminals natching those indicated on the pattery compartment. Battery voltage is too low. Dinks. If the The cuff Replace all batteries with new billiks. If the batteries are drained completely the mark does not does not nflate. appear. The cuff is not Apply the cuff correctly. applied properly ou moved your Make sure you remain still and quiet during measurement. The device does not measure. Readings are too high or too low. it comfortably and still. Place he cuff position your arm on a table with your palm facing upward and the cuff at the same level as your heart. not correct. If you have a very weak or irregular heartbeat, the device may have difficulty in determining your blood pressure. At a clinic or doctor's office, an The value is apprehension may cause an elevated reading. Home measurement reduces the effect lifferent from that neasured at a of outside influences on blood pressure readings, supplements the doctor's readings. clinic or doctor's Other Remove the batteries. Place the back properly and take anothe measurement.

Note: If the actions described above do not solve the problem, contact the dealer. Do not attempt to open or repair this product, as any attempt to do so will make your warranty invalid.

## 15. Maintenance

Do not open the device. It uses delicate electrical components and an intricate air unit that could be damaged. If you cannot fix the problem using the troubleshooting instructions, contact the authorized dealer in your area or our customer service department. The A&D customer service will provide technical information, spare parts and units to authorized dealers. The device was designed and manufactured for a long service life.

However it is generally recommended to have the device inspected every 2 years, to ensure proper functioning and accuracy. Please contact the authorized dealer in your area or A&D for maintenance.

Classification

16.Technical Data UA-651SLPlus Type Measurement method Oscillometric measurement Measurement range Pressure: 0 - 299 mmHg
Systolic pressure: 60 - 279 mmHg
Diastolic pressure: 40 - 200 mmHg
Pulse: 40 - 200 mmHg
40 - 180 beats / minute Pressure: Pulse: Pressure: ±3 mmHg
Pulse: ±5 %
4 x 1.5V batteries (R6P, LR6 or AA)
Optional AC adapter (TB-233C) (Not included) Measurement accuracy Power supply

Number of measurements ents
Approx. 700 times
Approx. 200 times
Approx. 200 times
With pressure value
180 mmHg, room
temperature 23 °C.
Internally powered ME equipment(Supplied
by batteries) / Class II (Supplied by adapter)
Continuous operation mode
According to ISO81060-2: 2013
IEC 60601-1-2: 2014
Last 60 maguirements

Clinical test EMC Memory

IEC 60601-1-z: ∠u+ Last 60 measurements +10 to +40 °C / 15 to 85 %RH / 800 to 1060 hPa -20 to +60 °C / 10 to 95 %RH / 700 to 1060 hPa Approx. 96 [W] x 68 [H] x 130 [D] mm Approx. 250 g, excluding the batteries Device: IP20 Operating conditions
Transport / Storage conditions
Dimensions Weight Ingress protection Applied part Useful life

Device: IP20
Cuff Type BF
Device: 5 years (when used six times a day)
Cuff: 2 years (when used six times a day)
AC adapter:5 years (when used six times a day)
TB233C r/TB233C Accessory AC ada The adapter is to connect the device to a

power source at home. Please contact your local A&D dealer for purchasing. The AC adapter is required to be inspected or

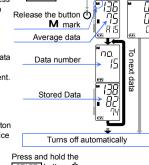
mbols that are printed on the AC adapter.		
Symbols	Function / Meaning	
合	For indoor use only	
	Class II device	
	Thermal fuse	
	Fuse	
C€	EC directive device label	
EAL	EAC certification device label	
<b>⊕•</b> •	Polarity of AC adapter plug	
	Symbols	

	•	i ciaitty of the adaptor p	.49
essories sold separately			
uff	Catalog Number	Cuff Size	Arm Size
	CUF-D-LA	Large adult cuff	31 cm to 45 cm
	CUF-I	Wide range cuff	22 cm to 42 cm
	CUF-D-MA	Semi large cuff	23 cm to 37 cm
	CUF-D-A	Adult cuff	22 cm to 32 cm
	CUF-D-SA	Small adult cuff	16 cm to 24 cm

Arm size: The circumference at the biceps

Catalog Number Plug (Outlet type) TB-233C Type C Note: Specifications are subject to change without prior notice

IP classification is the degrees of protection provided by enclosures in accordance with IEC 60529. This device is protected against solid foreign objects of 12 mm diameter and greater such as a finger. This device is not protected against water.



button

clear data.

Turns off automatically

Select "ELr 4F5" to

The M mark blinks

Data is cleared