

Operating & Installation Instructions

Washing Machine (Household Use)

Model No. **NA-V105FR1** **NA-V10FR1** **NA-V90FR1**
NA-V10FC1 **NA-V95FC1** **NA-V90FC1**



It is essential to read these instructions.

EN

Thank you for purchasing this product.

- Read these instructions carefully for optimum performance and safety before use.
- Keep this manual for future reference.

Contents This washing machine has
 "Dry Assist" function (P. 28).

Safety Precautions	2	
Checking Your Washing Machine	7	
Before Washing	8	
Control Panel	10	
Detergent	12	
Washing	14	
Program List	16	
Details of Programs	18	
Washing Tips	20	
Changing Program Settings	22	
Dry Assist (Dry only)	28	
Changing Appliance Settings	30	
Maintenance	31	
Troubleshooting	35	
Error Display	41	
Installation	Choosing the Right Location	43
	Moving and Installing	44
	Connecting the Hoses	46
	Test Run	48
	Panasonic SmartApp+	49
Specifications	68	



Safety Precautions



WARNING

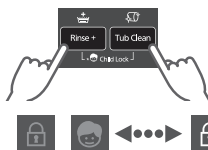
May cause serious injury or death

Children must not use it alone.



- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.

Setting the Child Lock. (P. 30)



Hold
5 sec.

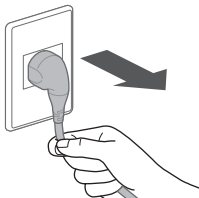


May cause fire or electric shock

Do not touch it with wet hands.



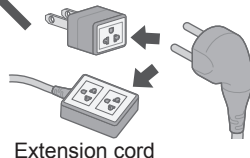
Do not hold or pull on the cord.



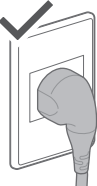
Do not use.



Plug adaptor



Fully insert it.

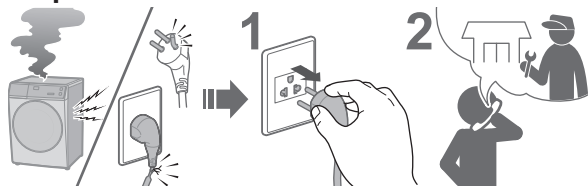


Do not use.

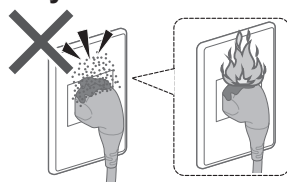


- If the power cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

In case of failure or damaged power cord, stop use and ask the electrical technician.



Accumulated dust may cause fire.



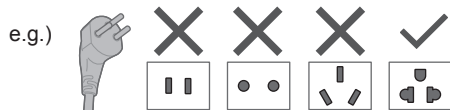
**Securely insert the ground prong.
Ask the electrical technician for a new socket.**



Wipe the power plug periodically.



Use a socket appropriate for this appliance.



- The plug shape, socket shape and rating requirement vary with the region.

Keep away from flammable materials.



May cause failure

Do not disassemble, repair or modify it by yourself.



When using the “Panasonic SmartApp+” app
(Cause of malfunction due to radio waves from the appliance) V105FR1 V10FR1 V10FC1 V90FR1

- Keep at least 15 cm away from the mounting part of the cardiac pacemaker.
- Keep away from medical equipment and automatic control equipment (automatic doors, fire alarms, etc.).

Safety Precautions (continued)



WARNING

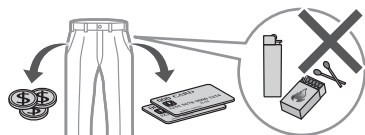
May cause fire (For safety use of the drying feature)

Do not dry items soiled with flammable materials.



- Items that have been soiled with substances such as cooking oil, acetone, alcohol, petrol, kerosene, spot removers, turpentine, waxes, wax removers and cosmetic oils must not be dried in the appliance even after having been washed.

Empty all pockets.



- Make sure that no objects are left in any of the pockets. Pay particular attention to cigarette lighters and matches. They may cause fire.

Do not dry items made of rubber, etc.



- Items such as foam rubber (latex foam), shower caps, waterproof textiles, airtight fabrics, rubber backed articles and clothes or pillows fitted with foam rubber pads should not be dried in the appliance. Such materials may be destroyed and thereby damage the appliance.
- Do not dry unwashed items in the appliance.

The lint must not be allowed to accumulate around the appliance.



Observe the following.

- Never stop the appliance before the end of the drying cycle unless all items are quickly removed and spread out so that the heat is dissipated.
- The appliance is not to be used if industrial chemicals have been used for cleaning.
- The appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by a utility.



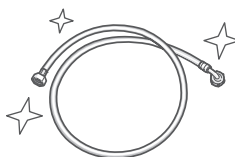
CAUTION

May cause water leakage

Turn off the water faucet.



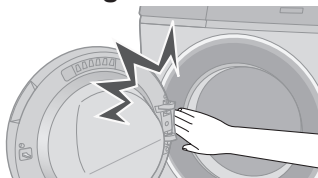
Use new hose-sets.



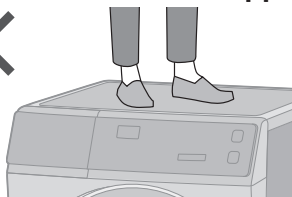
- New hose-sets supplied with the appliance are to be used and old hose-sets should not be reused.

May cause injury

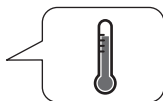
Be careful not to get your fingers caught.



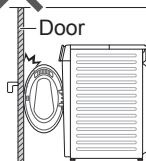
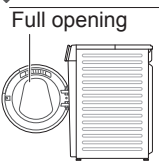
Do not climb on the appliance.



Do not touch when it is hot.



Install the appliance correctly.



- The appliance must not be installed behind a lockable door, a sliding door or a door with a hinge on the opposite side to that of the appliance, in such a way that a full opening of the appliance door is restricted.

■ For maximum mass of dry cloth and pressure of tap water, see P. 68.

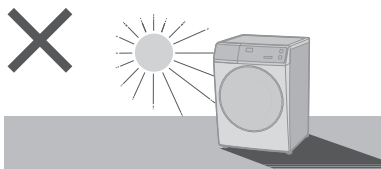
Safety Precautions (continued)



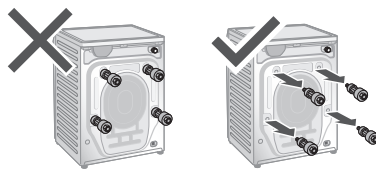
CAUTION

May cause failure

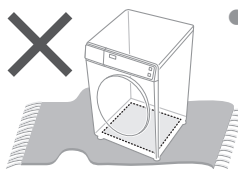
Keep away from heat and direct sunlight.



Remove anchor bolts before operation.

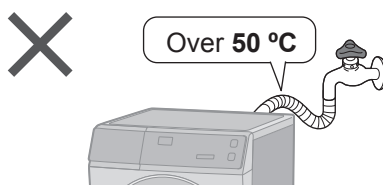


Do not obstruct.

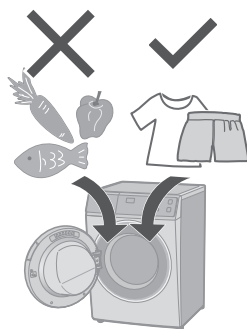


- Do not obstruct the openings of the bottom face with carpet, etc.

Do not use hot water.



For machine-washable items only.



- This appliance is intended to be used in household.
- This appliance is not intended to be used in applications such as:
 - staff kitchen areas in shops, offices and other working environments;
 - farm houses;
 - by clients in hotels, motels and other residential type environments;
 - bed and breakfast type environments;
 - areas for communal use in blocks of flats or in laundrettes.

Do not wash excessively oily clothes.



Follow the instructions.

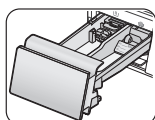


- Fabric softeners, or similar products, should be used as specified by the fabric softener instructions.

Checking Your Washing Machine

Part names

Detergent drawer (P. 12)



Control panel
(P. 10)

Do not block the
exhaust port.

Door

Drum

Hinge

Door seal

Adjustable feet
(P. 45)

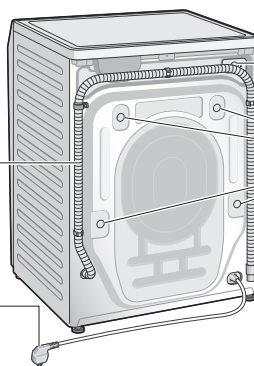
Drain filter cover
(P. 34)

Drain hose
(P. 46, 47)

Water inlet (P. 47)

Anchor bolts
(P. 45)

Power cord and plug*
*The plug shape varies
with the region.



Accessories

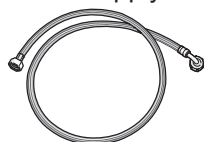
☐ Elbow (1) (P. 47)



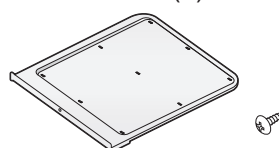
☐ Cover caps (4) (P. 45)



☐ Water supply hose (1) (P. 46, 47)



☐ Bottom cover (1) / Screw (1) (P. 44)

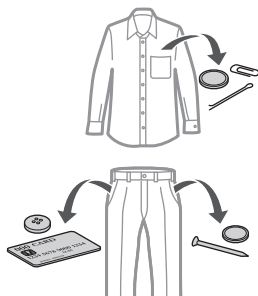


Before Washing

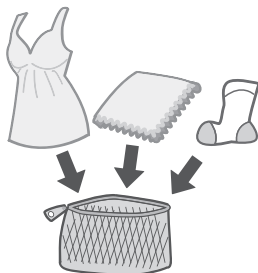
Preparing laundry

Before put clothes in drum

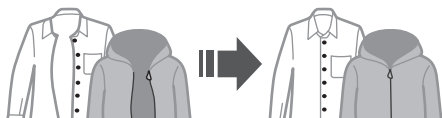
- Remove foreign objects.



- Use laundry nets for delicates and small items.



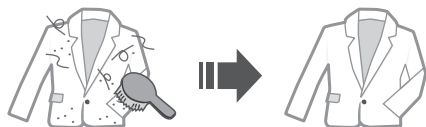
Pre-laundry check



Reverse



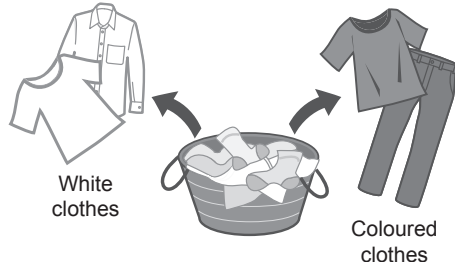
Clothes likely to pill



- Observe care labels.



- Wash separately.



- Pretreat for heavily stains.



NOTE

- “Stain Master+” programs (P. 17) are recommended for removing stains.

Cannot wash or dry

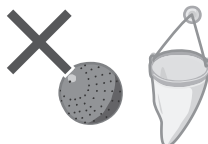
Cannot wash or dry



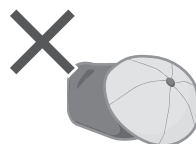
Leather / fur



Silk, rayon and cupro
(Blended fabric)



Commercially
available washing aids



Cap with hard
core materials



Cushion, Pillow, etc.



Urethane / rubber
backed or thick mats

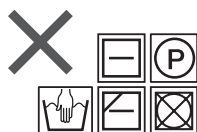


Paper diapers

Others ...

- Wrinkled and embossed articles
- Crepe fabric
- Deformable clothing (blazers, ties, dresses, etc.)
- Velvet

Cannot dry



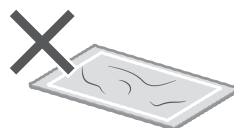
Any of the above
marks



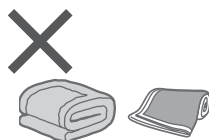
Woollen clothing



Tights or pantyhose



Mats and other
items with hair of
pets attached



Quilts



Starched clothing



Clothing with laces
or embroidery, new
synthetic fibres, etc.

NOTE

- May cause clothing deformation, damage and harm or malfunction to the appliance.

Control Panel

● Images in these instructions are of the NA-V105FR1, unless otherwise indicated.

Display

Remaining time

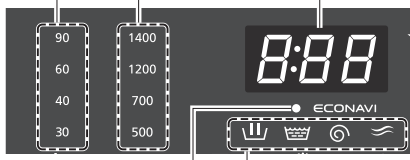


Error display (P. 41, 42, 54)

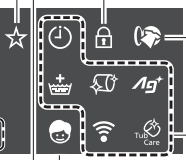


Water temperature

Spin speed



"My Favorite" program lamp (P. 49)

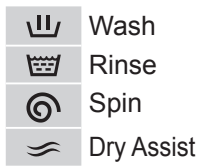


Add Wash lamp:
You can add clothes
while lit. (P. 14)

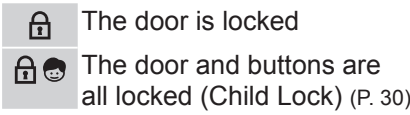
Optional function lamp

ECONAVI lamp
(P. 20)

Process

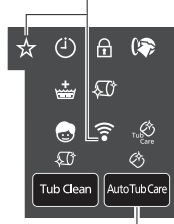


Lock



■ NA-V10FC1 / NA-V95FC1 / NA-V90FC1

NA-V10FC1 only

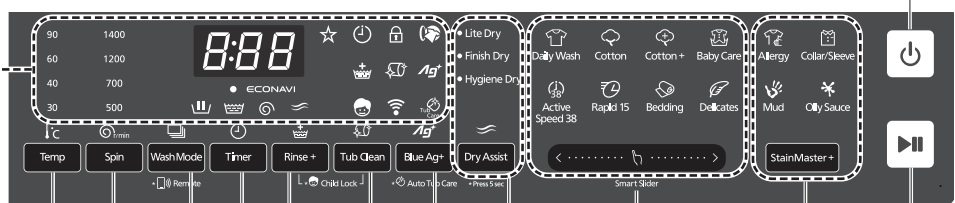


AutoTub Care Auto Tub Care (P. 26)

Control buttons

■ NA-V105FR1 / NA-V10FR1 / NA-V90FR1

Power button



Program selection
slider (P. 16)

Stain Master+
(P. 17)

Start/Pause
button

Dry Assist Dry Assist (P. 28)

Blue Ag+ (P. 27) — Press & hold 5 sec:
Auto Tub Care (P. 26)

Tub Clean (P. 33) — Press & hold 5 sec at the
same time:
Child Lock (P. 30)

Rinse+ (P. 25)

Timer (P. 24)

Wash Mode (P. 23) — Press & hold 5 sec:
Remote (P. 52)

Spin (P. 23)

Temp (P. 22)

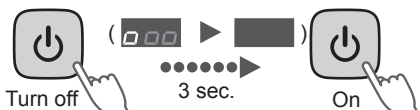
Touch operation

- If water, detergent or softener gets on, turn off and wipe off with a towel etc. immediately. (Cause of malfunction)

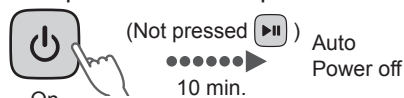


NOTE

- Turn off back on



- No operation auto power off



- In case of a power failure

When the power recovers, operation resumes from where it stopped. (Auto Restart)

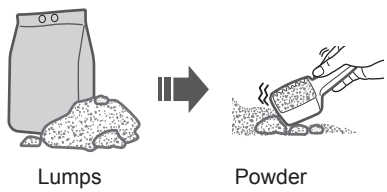
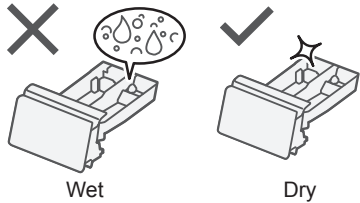
Detergent

● Follow the instructions on each package.

Detergent

Use a low foam detergent.

- To prevent powder detergent from remaining in the detergent drawer:



Detergent

Powder detergent

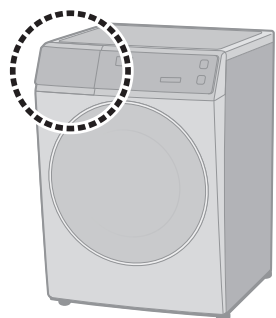
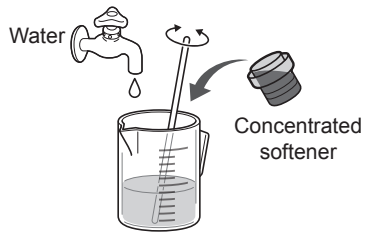
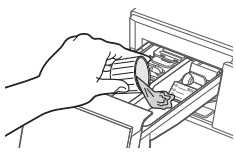
Liquid detergent



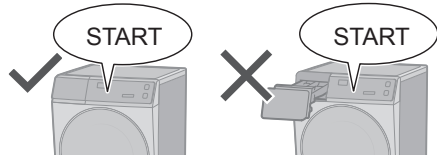
Bleach



Fabric softener



NOTE

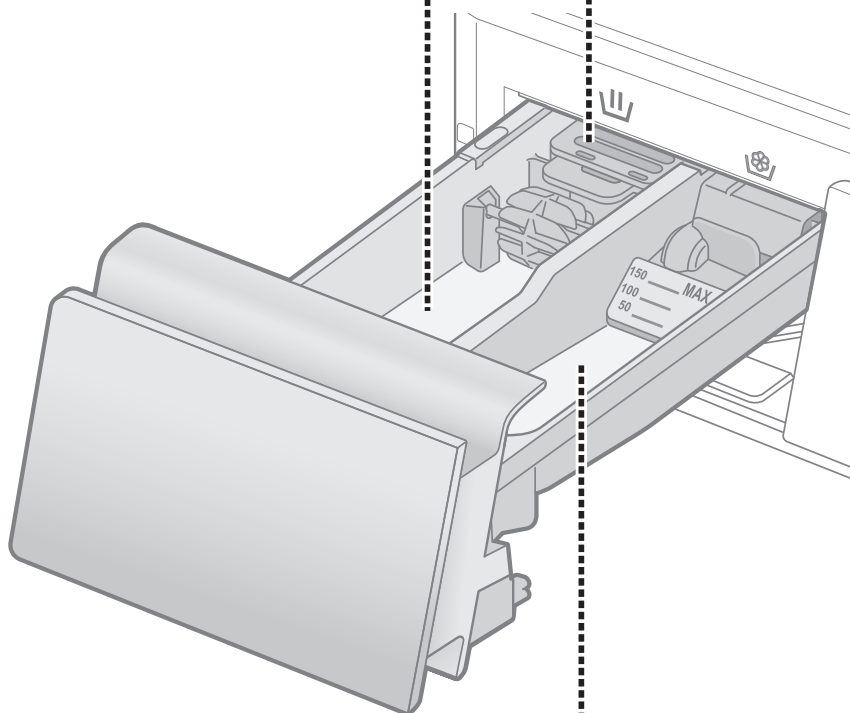


Ag+ case (P. 27, 33)

V105FR1

V10FR1

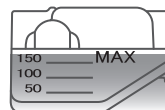
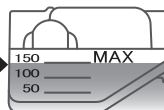
V90FR1



Fabric softener

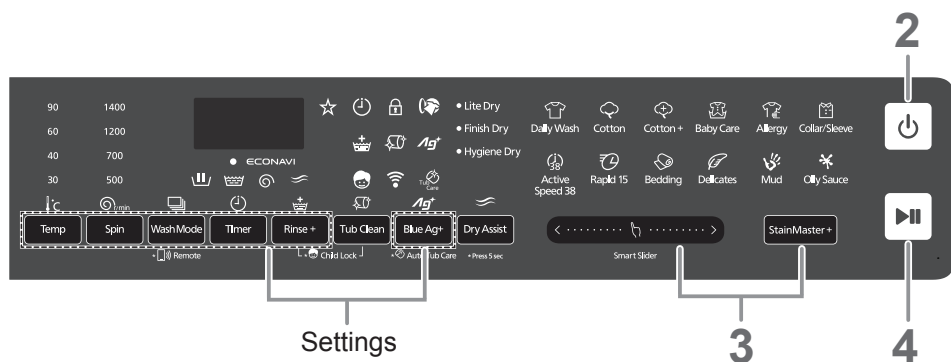


Max. 150 ml



Washing

Basic Method

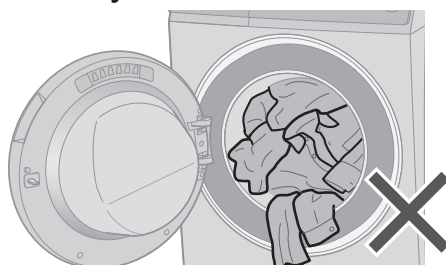


NOTE

■ Do not let laundry get caught in the door.



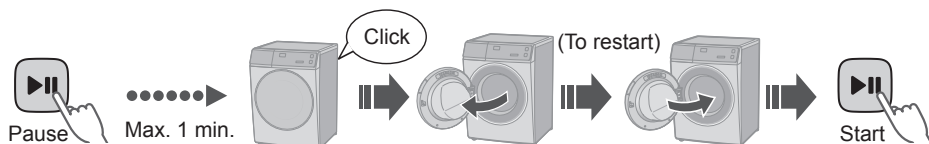
■ Do not overfill the drum with laundry.



■ To open the door during operation

● During washing

(You can add clothes when lit.)

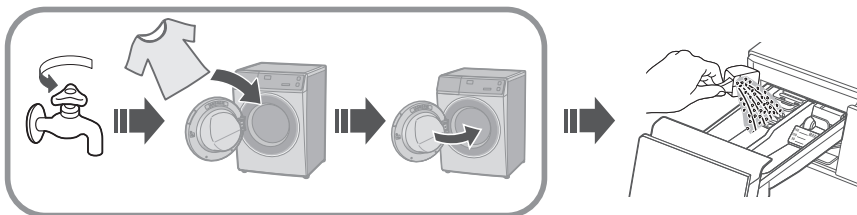


NOTE

● Door does not open ➡ (P. 36)



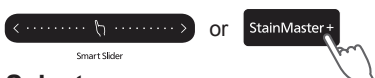
1



2



3



Select a program. (P. 16)

■ **Changing the settings.**

Settings

Temp Temp (P. 22)	Spin Spin (P. 23)	Wash Mode Wash Mode (P. 23)	Timer Timer (P. 24)
Rinse + Rinse+ (P. 25)	Auto Tub Care Auto Tub Care V10FC1 V95FC1 V90FC1 (P. 26)	Blue Ag+ Blue Ag+; Auto Tub Care V105FR1 V10FR1 V90FR1 (P. 26, 27)	

4



Measures the amount of laundry

(30 sec.)

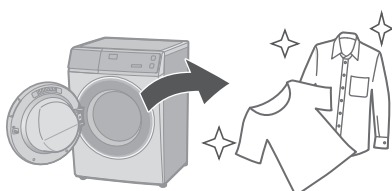


Displays the time required (recalculated)

(e.g.)



5



Program List

Program	Description	Max load (kg)				Total time
		V105FR1	V10FR1/ V10FC1	V95FC1	V90FR1/ V90FC1	
 Daily Wash	Everyday clothes (Quicker than "Cotton" program) 	10.5	10.0	9.5	9.0	1:30
 Cotton	Everyday clothes 	10.5	10.0	9.5	9.0	2:54
 Cotton +	Gentle wash with extra time 	10.5	10.0	9.5	9.0	3:00
 Baby Care	- Clothes for babies & sensitive skin - Rinsing thoroughly 	5.0				2:20
 Active Speed 38	Small loads 	5.0				0:38
 Rapid 15	Small loads of lightly soiled 	2.0				0:15

- **Total time is approximate** (When the standard water supply rate is 15 L / min).
For each program's default water temperature.

Program	Description	Max load (kg)				Total time
		V105FR1	V10FR1/ V10FC1	V95FC1	V90FR1/ V90FC1	
 Bedding	Large items 	3.0				1:30
 Delicates	Washing gently 	2.0				0:50
StainMaster +		For the following stains				
 Allergy	For ticks and pollen 	10.5	10.0	9.5	9.0	3:15
 Collar/ Sleeve		10.5	10.0	9.5	9.0	3:10
 Mud		10.5	10.0	9.5	9.0	3:30
 Oily Sauce		10.5	10.0	9.5	9.0	3:00
 Tub Clean	Cleaning the drum. 	None				3:45

Details of Programs

Settings Program	Auto setting		
	Temp (°C)	Spin (r/min)	
 Daily Wash	40	1200	
 Cotton	40	1200	
 Cotton +	60	1400	
 Baby Care	40	1400	
 Active Speed 38	40	1200	
 Rapid 15	Cold	1200	
 Bedding	Cold	700	
 Delicates	30	500	
 Allergy	90	1200	
 Collar/Sleeve	40	1200	
 Mud	40	1200	
 Oily Sauce	40	1200	
 Tub Clean	40	1200	

NOTE

- For normally soiled laundry at the rated capacity, we recommend using the “Cotton +, 60 °C, 1400 r/min” which is tested in accordance with IEC 60456 for the energy and water efficiency aspects.
- Actual water temperature may differ from the declared cycle temperature.
- These results depend on water pressure, water hardness, water inlet temperature, room temperature, type and amount of load, degree of soiling, utilized detergent, fluctuations in the main electricity supply and chosen additional options.

Setting range		Optional functions				
Temp (°C)	Spin (r/min)	Wash Mode	Timer	Rinse+	Blue Ag+	Auto Tub Care
Cold, 30, 40, 60	 , 500, 700, 1200, 1400	✓	✓	✓	✓	✓
Cold, 30, 40, 60	 , 500, 700, 1200, 1400	✓	✓	✓	✓	✓
Cold, 30, 40, 60	 , 500, 700, 1200, 1400	✓	✓	✓	✓	✓
Cold, 30, 40, 60	 , 500, 700, 1200, 1400	✓	✓	✓	✓	✓
Cold, 30, 40	 , 500, 700, 1200, 1400	✓	✓	—	✓	✓
Cold	 , 500, 700, 1200	—	✓	—	—	—
Cold, 30	 , 500, 700	✓	✓	✓	✓	—
Cold, 30, 40	 , 500	✓	—	✓	✓	—
60, 90	 , 500, 700, 1200	—	✓	✓	—	✓
40	 , 500, 700, 1200, 1400	✓	✓	✓	✓	✓
40	 , 500, 700, 1200, 1400	✓	✓	✓	✓	✓
40	 , 500, 700, 1200, 1400	✓	✓	✓	✓	✓
40	1200	—	—	—	—	—

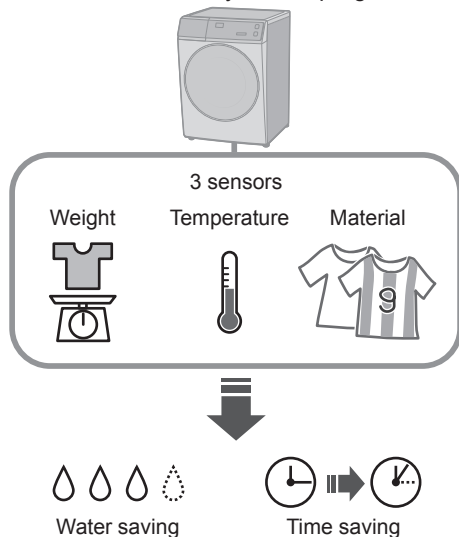
 : Drain only (No spin)

Blue Ag+:
V105FR1 / V10FR1 / V90FR1

Washing Tips

ECONAVI

- “Cotton” and “Daily Wash” programs



■ Lamp indications



Detecting



ECONAVI enabled



ECONAVI disabled

Delicates

■ When washing

- To rinse fully, use the “Rinse+” function. (P. 25)

NOTE



Bleach



Liquid detergent
for delicates

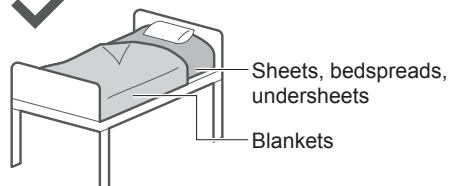
■ After operation ends



Bedding

■ Washable items

- (Wash) ● (Handwash)
- 100 % cotton or 100 % synthetic



■ Not washable items



Electric blankets



Wool



Silk

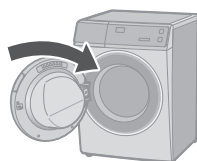


Long pile

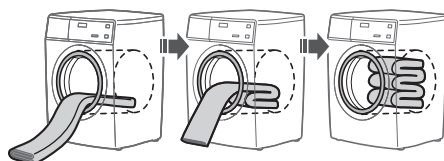
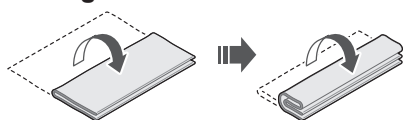


Fake fur

NOTE



■ Putting blankets into the drum



NOTE



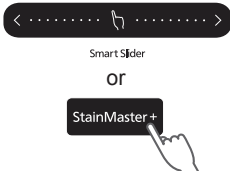
Changing Program Settings

■ Preparing

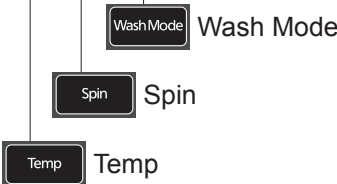
- Sort the laundry and put it into the drum. (P. 8)
- Add the detergent. (P. 12)



2 Select a program. (P. 16)



3 Change the program's settings.



- Available options and setting ranges are different depending on the program. (P. 18)
- An alarm sounds if you select an option that is unavailable.



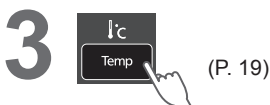
Temp

Change the washing temperature.



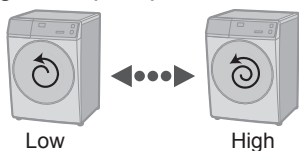
■ Setting guide

Low	High
● Colours	● White
● Lightly Soiled	● Heavily Soiled
● Easily shrinks	● Cotton



r/min Spin

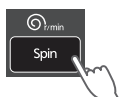
Change the spin speed.



■ Setting guide

 Low	 High
● To reduce wrinkling 	● To dry more thoroughly 

3



(P. 19)

■ To change the setting while washing



Wash Mode

Select a combination of wash, rinse and spin.



3



 *1	Wash
 *2	Rinse
 *2	Spin
	Wash and rinse
	Wash and spin
 *2	Rinse and spin

*1 Water is drained after wash process.

*2 Drains first if there is water in the drum.

Changing Program Settings (continued)

■ Preparing

- Sort the laundry and put it into the drum. (P. 8)
- Add the detergent. (P. 12)

1



2

Select a program. (P. 16)



Smart Slider

or



3

Change the program's settings.



Timer



Rinse+



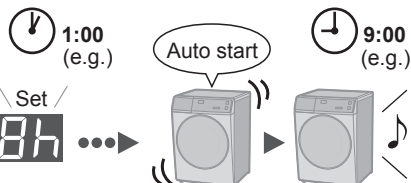
- Available options and setting ranges are different depending on the program. (P. 18)
- An alarm sounds if you select an option that is unavailable.

4



⌚ Timer

Set how many hours later to finish operation. (Up to 24 hours)

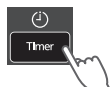


3



Press or hold

■ To check a preset time



■ To cancel settings



Turn off

(All settings are cancelled)

NOTE



Start

All indications turn off except



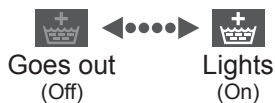
- Not available: P. 19

Rinse+

Add an extra rinse.



3



■ To change the setting while washing



1



2



3



Changing Program Settings (continued)

■ Preparing

- Sort the laundry and put it into the drum. (P. 8)
- Add the detergent. (P. 12)



2 Select a program. (P. 16)



Smart Slider

or



3 Change the program's settings.



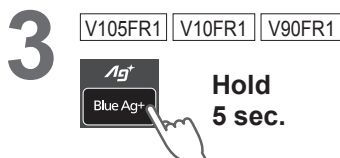
Blue Ag+
Auto Tub Care

- Available options and setting ranges are different depending on the program. (P. 18)
- An alarm sounds if you select an option that is unavailable.

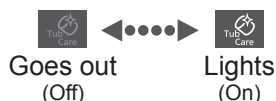


Auto Tub Care

Add tub cleaning process.



V10FC1 V95FC1 V90FC1



NOTE

- The setting is memorized.

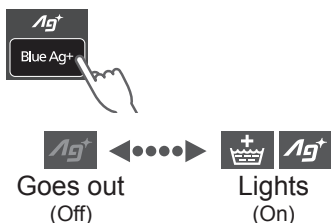
Ag⁺ Blue Ag⁺

V105FR1 V10FR1 V90FR1

Bacteria elimination function (Max. 3.0 kg).



3



■ Service life for Ag⁺ case

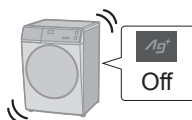
- “Blue Ag⁺” works for about 300 to 350 times (for about 7 years if used once a week).
- Replace the case when the contents are decreased.



- Replace
⇒ (P. 33)



- Wash without “Ag⁺”



NOTE

- Do not use the water for other purposes.



Drinking



Cooking



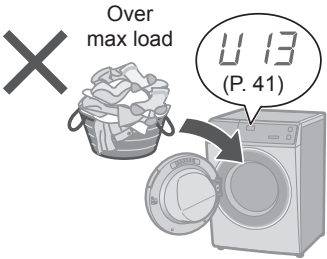
- The kind of clothes, detergent, softener, and water hardness may affect the result.
- Stop use if itchy, etc.



Dry Assist (Dry only)

This function cannot be set with other washing programs at the same time.

- 1  On
- 2  Dry Assist
- 3  Start



Dry Assist	Indicator (min)	Description	Max load (kg)
● Lite Dry	120	After spin at 1400 r/min  e.g.) 5 shirts	1.0
	180		
● Finish Dry	30	Additional drying of clothes that are not dry enough 	2.0
	120	After hang-dry  ↓  e.g.) 1 long pants, 1 shorts, 1 T-shirt, 1 underwear, 1 towel	
	180		
● Hygiene Dry	120	After spin at 1400 r/min Bacteria Elimination  	0.5
	180		

NOTE

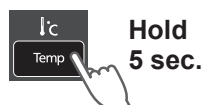
- The door is locked during drying.



- To open the door



Pause



Start cooling
9 to 24 min.



- After drying, the drum will rotate every 5 minutes for 40 seconds to prevent wrinkles caused by leaving the clothes unattended.



Approx. 2 hours



- To open the door:



Turn off

or



Pause

Symptoms

- Drying is insufficient
- Drying is uneven



Tips for nice finish

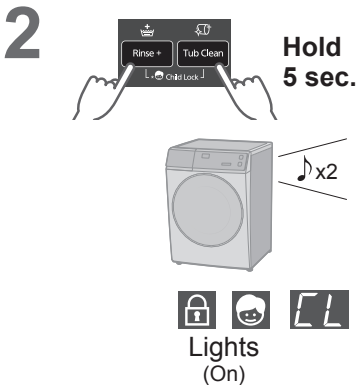
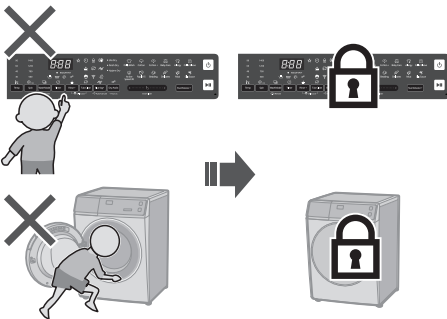
- Reduce clothing amount.



- Classify clothing. (P. 28)
- Adjust drying time to get your expected drying performance.
- Use "Finish Dry" 30 min for additional drying.

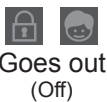
Changing Appliance Settings

Setting the Child Lock

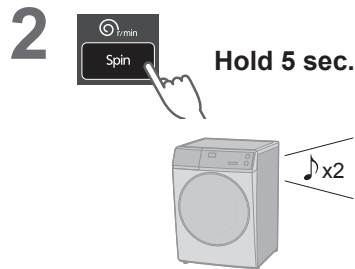


■ To cancel:

Same procedure



Cancelling the buzzer



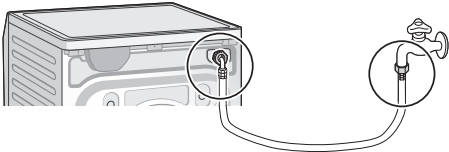
■ To reset:

Same procedure

Maintenance

Water supply filter

If water does not flow smoothly



1



Empty

2



On

3



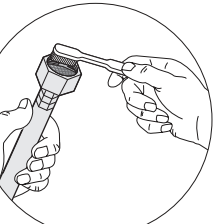
Select Daily Wash

4



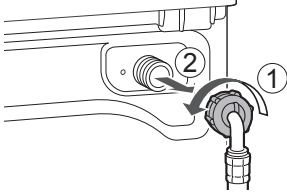
Start 1 min. Turn off

5

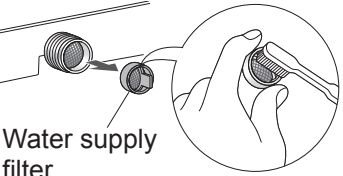


Remove and clean the filter

6

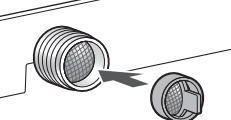


7

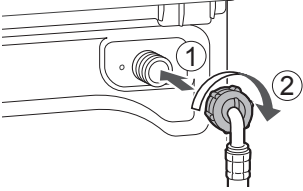


Water supply filter

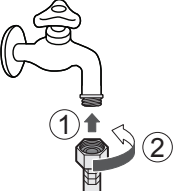
8



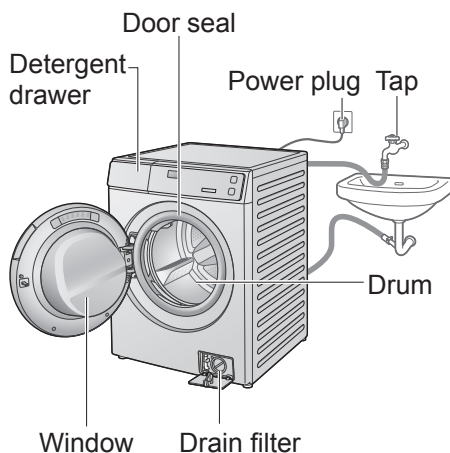
9



10



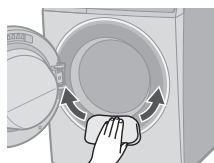
Maintenance (continued)



Appliance



Door seal



For heavy soil

Mild kitchen detergent

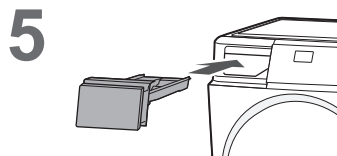
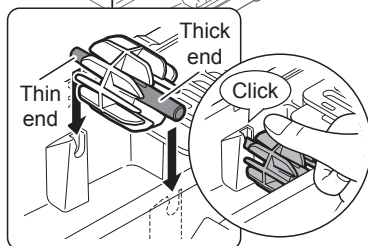
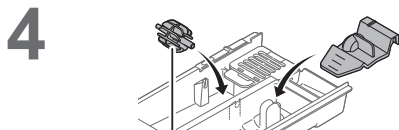
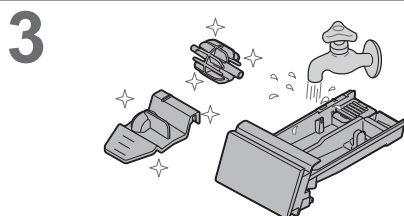
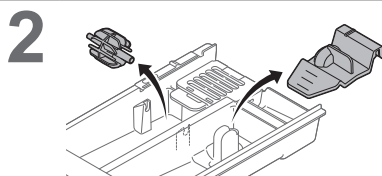
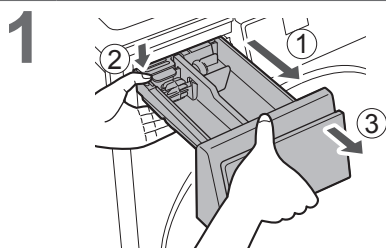


NOTE



- Do not use gritty cleaners or thinners, or products containing alcohol or paraffin oil.

Detergent drawer

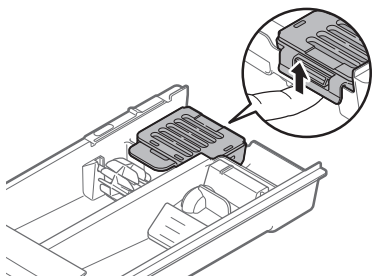


If the contents are decreased

■ Change Ag+ case

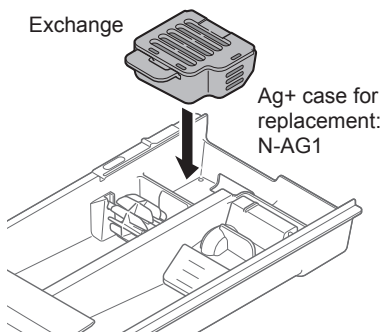
V105FR1 V10FR1 V90FR1

1



2

Exchange



NOTE

- You cannot open Ag+ case.

Drum

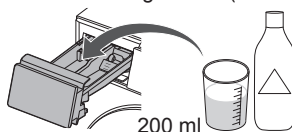
Once a month or if  flashes
<Tub Clean>

1



2

Whitening bleach (chlorine bleach)



3



No clothing



4



5



Approx.
3:45



NOTE

- If the “Tub Clean” program is not run, the indicator  goes off when other program is run 3 times.

Maintenance (continued)

Drain filter

Once a month

Be sure to drain water in the drum before this procedure.



CAUTION



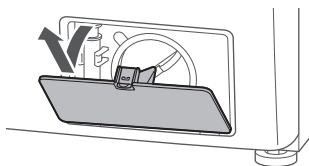
Hot water
(possibly scalding water)

1

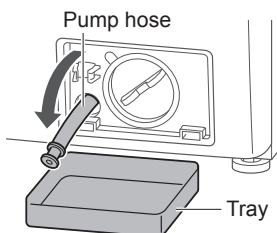


Turn off

2



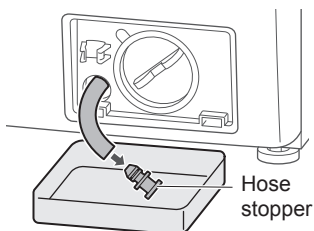
3



Pump hose

Tray

4

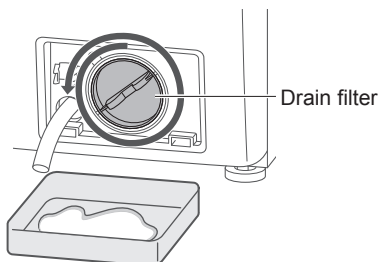


Hose
stopper

5

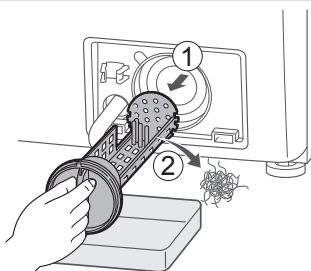


6



Drain filter

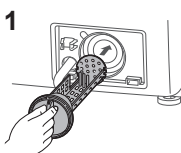
7



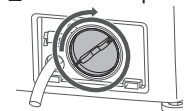
8

Replace

1



2 Until it is in place



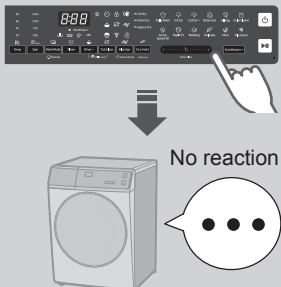
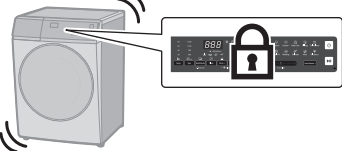
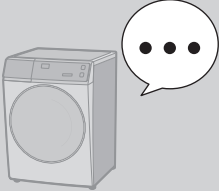
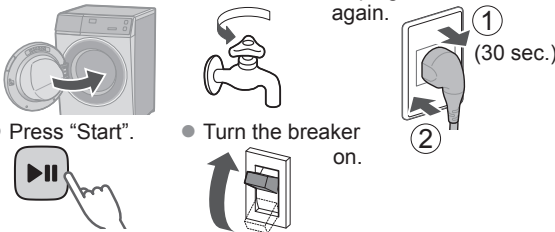
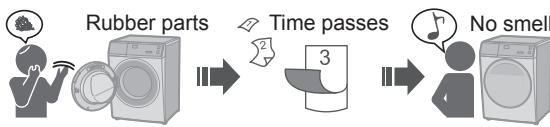
3



4

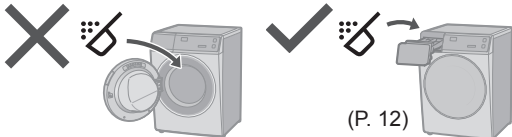
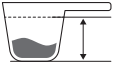
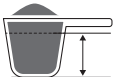
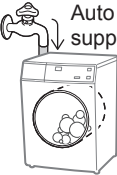


Troubleshooting

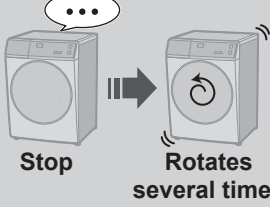
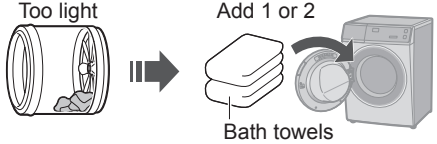
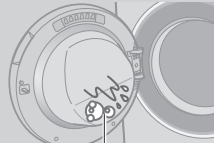
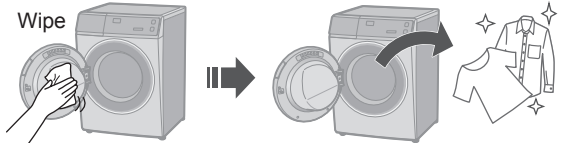
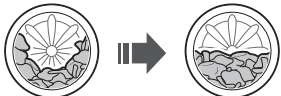
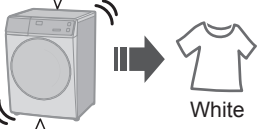
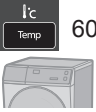
	Symptoms	Points to be checked
Main unit	Touch the buttons 	☐ Possible cause ● During an operation  ☐ Try ● Child Lock (P. 30) 
	No operation 	☐ Check ● Power cut ● Timer  ☐ Try ● Close the door. ● Turn on. ● Unplug and insert again. ● Press "Start". ● Turn the breaker on. 
	Odour of rubber 	☐ Possible cause  ☐ Try Tub Clean (P. 33) 

Troubleshooting (continued)

	Symptoms	Points to be checked
Main unit		□ Possible cause ● During an operation (washing or drying) Door is locked. To open the door: • washing (P. 14) • drying (P. 29) □ Check ● Temperature ● Water level
	Door does not open	□ Try ● Child Lock (P. 30) ● During an operation NOTE

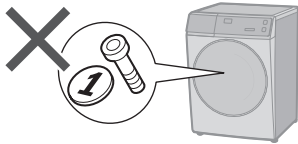
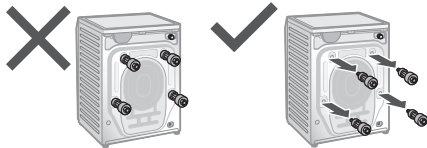
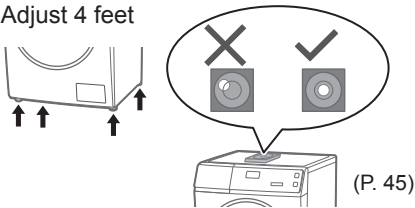
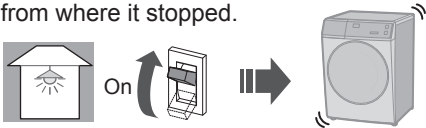
	Symptoms	Points to be checked
Detergent and foam	After washing 	☐ Check  (P. 12)
	 Foam	☐ Possible cause • The amount of foam varies. • Temperature • Water level • Water softness   
	Not enough 	☐ Check • Powder detergent  (P. 12) • Too little detergent • Low foam detergent • Heavily soiled • Load too large    
	Too much 	☐ Check • Too much detergent 
Wash	During a wash  Water drainage	☐ Possible cause Excess foam  Foam Foilam detection function  Auto drainage Auto water supply 

Troubleshooting (continued)

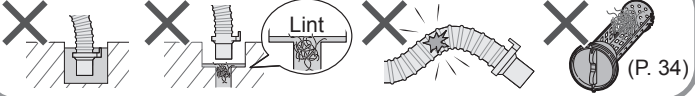
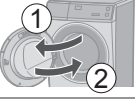
	Symptoms	Points to be checked
Rinse/Spin	During the spin process  Stop → Rotates several times	☐ Possible cause Unevenness  ☐ Try Too light  Bath towels
	After washing  Foam or water	☐ Try  Wipe
Laundry	Spin changes to rinse  Spin → Rinse	☐ Possible cause ● If clothes are uneven, this appliances automatically corrects unevenness using the rinse process. 
	If the laundry yellows  Yellow	☐ Try V105FR1 V10FR1 V90FR1 Ag+ Off  White  +  Temp 60 °C

	Symptoms	Points to be checked
Time	During a wash Displayed time  Changes	☐ Possible cause ● Remaining time is corrected during operation.  Approximate → Corrected ● If the settings changed  ● If clothes are uneven  ➡ The remaining time may increase.
	During water drainage 	☐ Possible cause ● This is normal. The drain pump is working.
	During spin process 	☐ Possible cause ● This is normal. Anti-foam leak part is working at the exhaust port.
	Sound of fan rotating 	☐ Possible cause ● This is normal. The drain pump is working.
Noise	Motor emits a sound 	☐ Possible cause ● This is normal. The motor will make a short sound when the drum engages.

Troubleshooting (continued)

	Symptoms	Points to be checked
Noise	Unusual noise (or vibration)	☐ Check ● Metal items  ● Anchor bolts (P. 45)  ● Slope or an unstable surface  ● Adjust 4 feet  (P. 45)
Others	Power cut  Breaker Off 	☐ Check ● When the power recovers, operation resumes from where it stopped. 

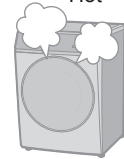
Error Display

Error Display	Points to be checked		
U 11 Unable to drain	1 Check 	2 	3  Start 
U 12 Door is open	1 	2  Start	
U 13 Unable to spin / dry	1 Check	2 	3  Start Uneven  Even  Unstable or inclined  Stable  Too much  Reduce  Too little  Add  <Dry Assist> Too wet  Spin  (1400 r/min)
U 14 Unable to supply water	1 Check	2 	3  Start Water outage  Turned off  Water supply filter (P. 31) 

Error Display (continued)

Error Display	Points to be checked		
U 17 Unable to spin	1 Restart  Turn off  On	2 Run "Rapid 15" 	• Next time:   Low foam detergent
H	1 	2 	3 

■ Information

 Unable to open	Hot 	During drying (P. 29)  Hold 5 sec.	Start cooling ●●●●●▶ 9 to 24 min.	
--	---	--	--	--

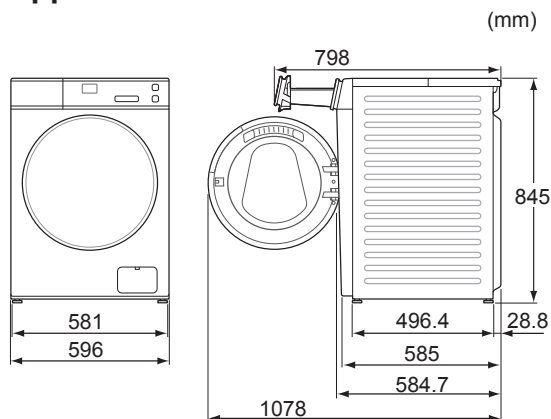
Choosing the Right Location



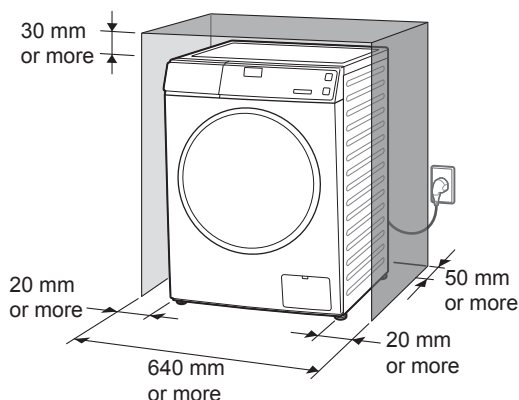
Make sure to ask a service person for installation.

- Do not install the appliance by yourself.
- Follow this installation method. If you do not, Panasonic will not be liable for any accidents or damages.

Appliance dimensions

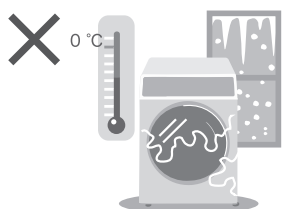
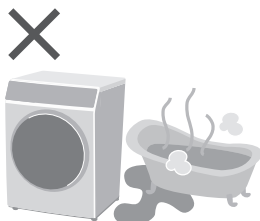
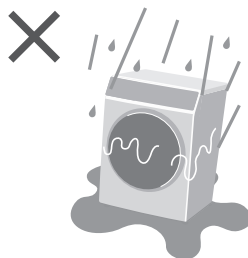


■ Set-in installation



- Do not let the metallic portions of the appliance come into contact with metal sinks or other appliances.

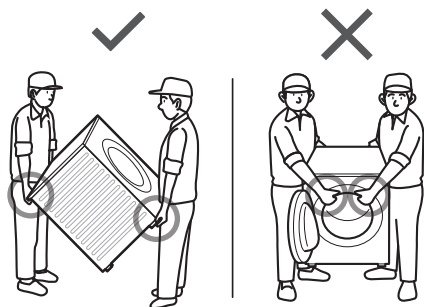
Check the location.



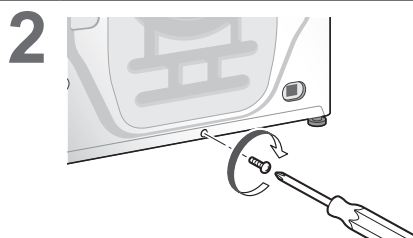
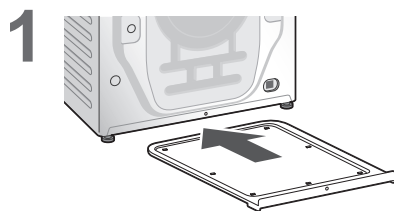
Moving and Installing

Carrying the appliance

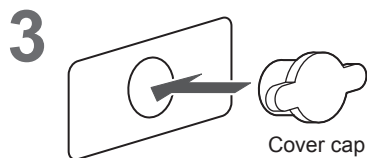
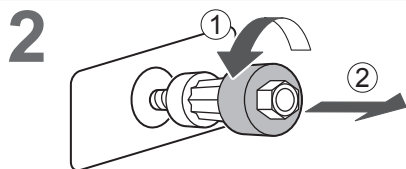
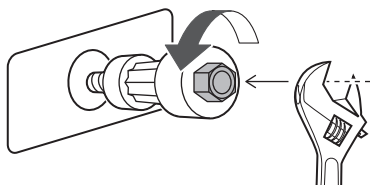
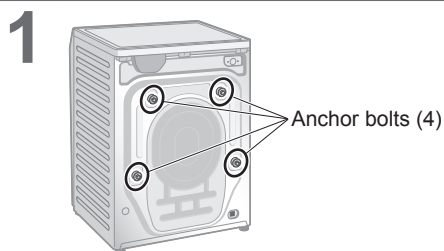
Do not do it alone.



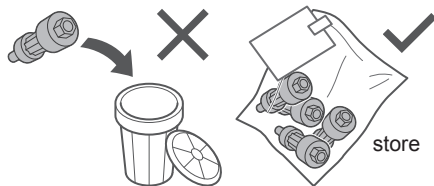
Installation of bottom cover



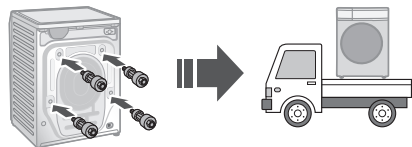
Removing the anchor bolts



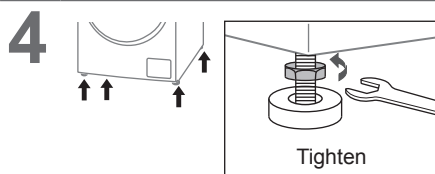
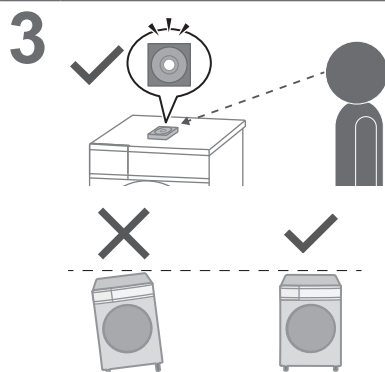
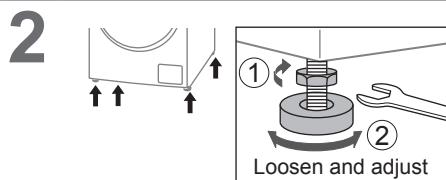
NOTE



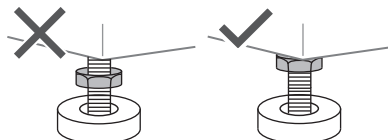
■ Moving the appliance again



Levelling the appliance



NOTE



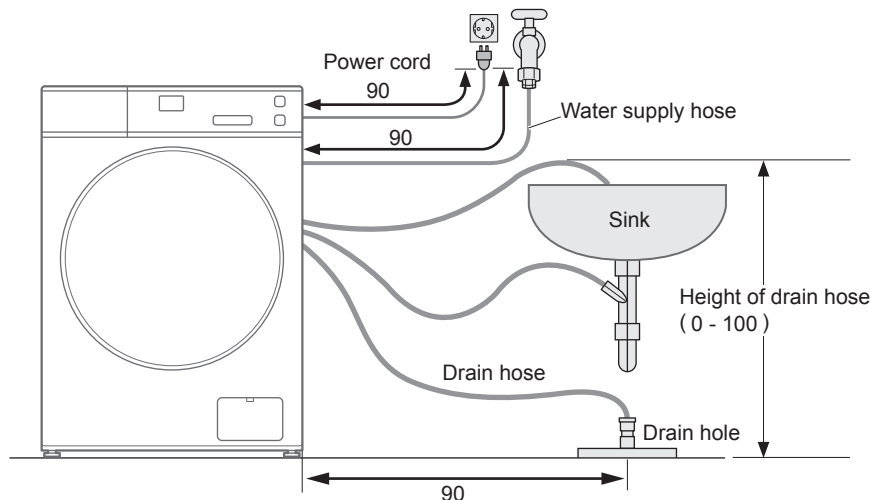
Connecting the Hoses

Connect the hoses properly to prevent water leaks.

Maximum connection distances for hoses and the power cord

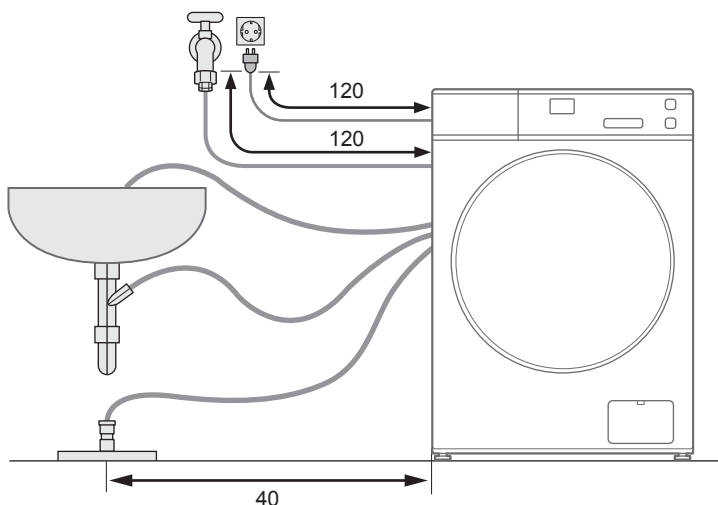
Right side connection

(cm)



Left side connection

(cm)



Water supply hose

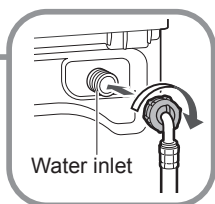
■ Connecting the water supply hose



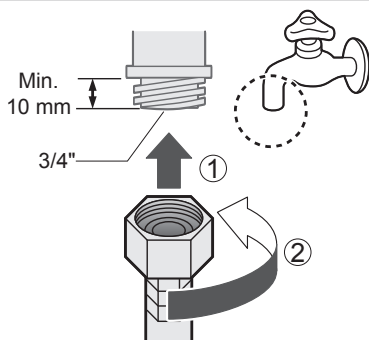
CAUTION

- Tighten the nut firmly.
- Do not twist, squash, modify or cut the hose.

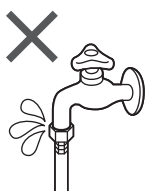
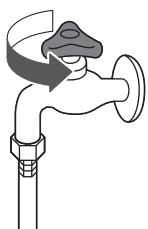
1



2



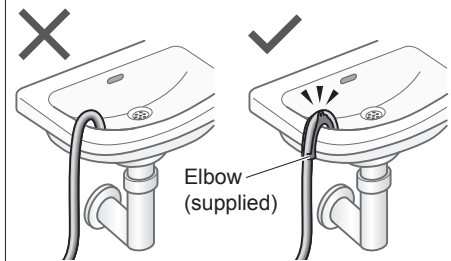
3



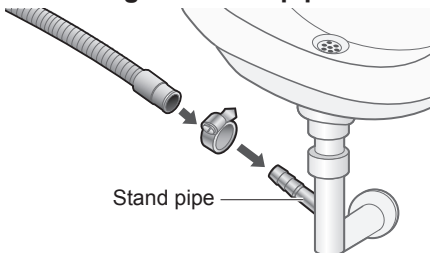
Drain hose

■ Draining to a sink or wash basin

NOTICE



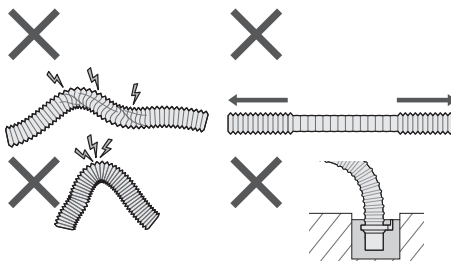
■ Draining to a stand pipe



■ Draining to a drain hole



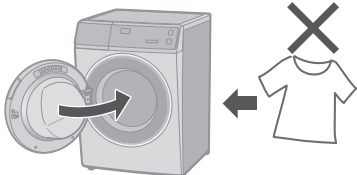
NOTE



1



2



3



4



Smart Slider

Rapid 15

5



Checking after test run

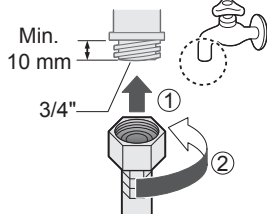
Problem

Causes and Measures

Water leaks



Connect the water supply hose properly

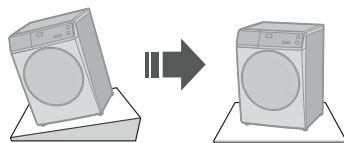


Abnormal
sounds

- Remove the anchor bolts (P. 45)



- Install stably



Error display



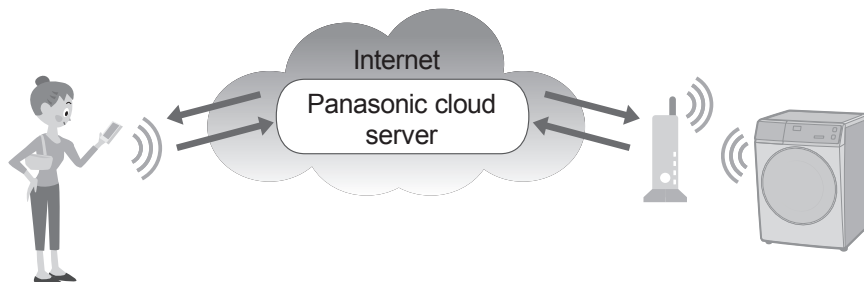
See P. 41.

Panasonic SmartApp+

V105FR1 V10FR1 V10FC1 V90FR1

More convenient with your smartphone

You can use the service using the “Panasonic SmartApp+”.

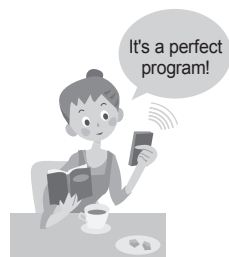


You can operate the washing machine or set the timer with application.

Support program selection from program history.

**We have “My Favorite” program.
You can create original programs
with your favorite settings.**

- Up to 10 programs.



Notification of washing status and end of operation.

Clothes can be taken out immediately after washing.

- The contents, functions and designs of this service are subject to change or termination without prior notice.

Panasonic SmartApp+ (continued)

Required Equipment and Environment

Let's check the equipment required to use the app.

- Android or iOS (iPhone) smartphone

- About supported OS

<https://www.panasonic.com/fiot/wash/>



Panasonic Website



- Wireless LAN router
Use a wireless LAN router to connect to the internet.



- Internet environment

Please confirm that it is a broadband line.

Example) FTTH (optical fiber), ADSL, CATV (cable television), etc.

Internet communication charges will be borne by the customer.



NOTE

- Make sure that the wireless LAN router has a communication standard of 2.4 GHz band. (Communication standards: IEEE802.11b, IEEE802.11g, IEEE802.11n) Other than the above cannot be used.
- Models that only support WEP cannot be used.
- As a security measure, be sure to use a wireless LAN router that can set the encryption method WPA3, WPA2, or WPA.
- We recommend WPA3 and WPA2 (AES) as the encryption method.
- We do not guarantee the operation of all wireless LAN routers. (Mobile router is not guaranteed to work.)



Initial Settings



Follow the settings on the screen of the app.

1 Install the “Panasonic SmartApp+” (free)

- You can find the link to download the application from “Panasonic Website”.
<https://www.panasonic.com/fiot/wash/>



Panasonic Website

- Alternatively, you can search for the “Panasonic SmartApp+” app on Google Play (Android) or App Store (iOS) and install the app.
- You can also scan the link to install the app from the QR code pasted on the washing machine.

2 Follow instructions displayed on the screen of the app and register the washing machine.

- Operate in a position where you can check the display on the washing machine.
- It cannot be operated while the washing machine is running.



Use the app (P. 52)

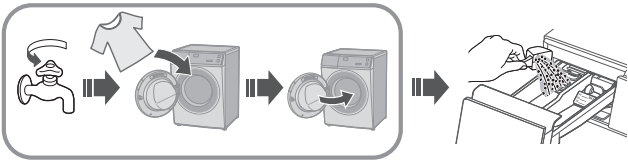
Panasonic SmartApp+ (continued)

Using the “Panasonic SmartApp+”

After initial setting is completed, you can use the app.

Preparing to use the “Remote” function

You need to prepare the washing machine before going out.

- 1**


NOTE

 - Close the door completely.
- 2**

On

Lights (On)
- 3**

Hold 5 sec.

Approx. 2 sec.

After 10 min.


All other indications turn off, except:




NOTE

- To cancel the remote control mode and unlock the door → turn the power off.
- When there is no remote control from the app, the remote control mode is released after 23 hours. During remote control mode, all buttons on the appliance (except ) are disabled. You can only control the washing machine from the app. After 23 hours, the normal screen is displayed and the remote control is disable.

To check the communication status with the lamp on control panel.

■ Lamp position

- 
Light up Communicatable (Connected)
- 
Blinking Trying to communicate (Connecting to server)
- 
Off Not connected



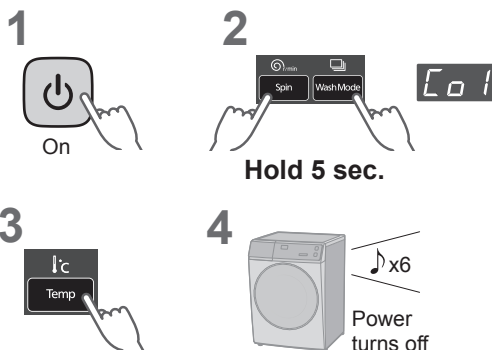
Initializing

- When you stop using the “Panasonic SmartApp+”
- Suspected use due to unauthorized access
- If the appliance is a pre-owned machine
- When you dispose of or transfer the washing machine

Reset the wireless LAN settings to the default settings.

(Operate on the washing machine)

You should also stop using the service of the app.



Panasonic SmartApp+ (continued)

Error Display	
Error display	Causes & Measures
U81	- Failed to connect the washing machine and the wireless LAN router. Check the following. - The router is not turned on. → Turn on the power. - The distance between the router and the washing machine is too long. → Bring the router closer. - There is a device that uses radio waves, such as a microwave oven, nearby. → Keep a distance. → Stop using the device or wait a while and try again. - Multiple devices are connected to the router. → Turn off the power of the device you are not using.
U82	- Communication error with the server. - There may be a problem with your internet connection. → If you do not know the cause, contact your provider, carrier, or router manufacturer.
U83	- In “Backup connection”, SSID or password of the router is incorrect. → Check the description of the router. - Failed to connect the washing machine and the router. → Check the above “U81”.
U84	“Scan connection” failed. Check the following. - The Bluetooth® setting on your smartphone is turned off. - The QR code cannot be read correctly. → Make sure that the Bluetooth® setting is ON, and then connect again. If you still cannot connect, please try “Backup connection”.
The app displayed the word like “Cannot communicate with the washing machine.”	- Communicate again after a while, or check the connection status by the following method. Hold 5 sec. → If “U81”, “U82”, etc. are displayed, it is a connection error. Check the above.

Usage for wireless LAN/Bluetooth®

■ Usage restrictions

Please note that there are the following restrictions on use. Panasonic is not liable for any incidental damages resulting from the failure to comply with the restrictions and the use or inability to use the machine.

- Do not connect to a wireless network that you do not have permission to use. A wireless network (SSID*) that you do not have permission to use during automatic search of the wireless network environment may be displayed, but if you connect, it may be considered as unauthorized access.
- Do not use in a place where magnetic field, static electricity, or radio interference is generated. If you use it near the following devices, communication may be interrupted or the speed may slow down.
 - Microwave oven
 - Other wireless LAN / Bluetooth® devices
 - Other devices that use radio waves in the 2.4 GHz band (digital cordless phones, wireless audio devices, game consoles, PC peripherals, etc.)
 - Metal objects that easily reflect radio waves

* A name used to identify a specific network on a wireless LAN. If this SSID matches on both devices, communication is possible.

■ Security measures

- Since the wireless LAN uses radio waves to send and receive data, there is a risk of unauthorized access. Take security measures to ensure the safety of your data. (P. 50) Please note that we are not responsible for any problems that occur without taking security measures.
- For the password (encryption key) of the wireless LAN router, refer to the instruction manual of the wireless LAN router and set it in consideration of security.

■ About firmware

- This machine has a function to connect to our firmware update server via the Internet and automatically update its own firmware to the latest version. Since wireless communication is temporarily interrupted during the update, communication may be interrupted or the speed may slow down.
- Do not analyze or modify the firmware.

Panasonic SmartApp+ (continued)

Copyright, etc.

- Android and Google Play are trademarks or registered trademarks of Google LLC.
- iPhone is a trademark of Apple Inc., registered in the U.S. and other countries.
- The App Store is a service mark of Apple Inc.
- “WPA™”, “WPA2™” and “WPA3™” are trademarks of “Wi-Fi Alliance®”.
- QR Code is registered trademark of DENSO WAVE INCORPORATED.
- Bluetooth® word mark and logo are registered trademarks owned by Bluetooth SIG, Inc.
- Panasonic Corporation uses these marks under license. Other trademarks and trade names are property of their respective owners.
- Other names, company names, product names, etc. described in this manual are trademarks or registered trademarks of their respective companies. Some ™ and ® marks are not included in the text.

■ About software

This product consists of the following types of software.

- (1) Software developed by or for Panasonic Corporation (Panasonic)
- (2) Software owned by a third party and licensed to Panasonic
- (3) Conditionally licensed open source software

The software classified in (3) above is distributed with the expectation that it will be useful on its own, but we do not warrant any implied guarantee of “commerciality” or “fitness for a specific purpose”. No warranty is given, including.

cJSON

Copyright (c) 2009 Dave Gamble
Copyright (c) 2009-2017 Dave Gamble and cJSON contributors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

wpa_supplicant

Copyright (c) 2005-2009, Jouni Malinen <j@w1.fi>
Copyright (c) 2008, Jouni Malinen <j@w1.fi>

wpa_supplicant
=====

Copyright (c) 2003-2019, Jouni Malinen <j@w1.fi> and contributors All Rights Reserved.

This program is licensed under the BSD license (the one with advertisement clause removed).

If you are submitting changes to the project, please see CONTRIBUTIONS file for more instructions.

License

This software may be distributed, used, and modified under the terms of BSD license:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name(s) of the above-listed copyright holder(s) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Mbed TLS

Copyright (C) 2006-2015, ARM Limited, All Rights Reserved
Copyright (C) 2006-2016, ARM Limited, All Rights Reserved
Copyright (C) 2006-2017, ARM Limited, All Rights Reserved
Copyright (C) 2006-2018, ARM Limited, All Rights Reserved
Copyright (C) 2006-2018, Arm Limited (or its affiliates), All Rights Reserved
Copyright (C) 2006-2018, Arm Limited (or its affiliates), All Rights Reserved.
Copyright (C) 2006-2019, ARM Limited, All Rights Reserved
Copyright (C) 2006-2019, Arm Limited (or its affiliates), All Rights Reserved
Copyright (C) 2016, ARM Limited, All Rights Reserved
Copyright (C) 2016-2018, ARM Limited, All Rights Reserved
Copyright (C) 2018, Arm Limited (or its affiliates), All Rights Reserved
Copyright (C) 2018, Arm Limited, All Rights Reserved

RealtekSDK

(C) COPYRIGHT 2011 STMicroelectronics
(c) COPYRIGHT 2017 Realtek Semiconductor Corporation
Copyright (C) 2019 Amazon.com, Inc. or its affiliates. All Rights Reserved.
Copyright (c) 2006-2013 ARM Limited
Copyright (c) 2009-2016 ARM Limited. All rights reserved.
Copyright (c) 2009-2017 ARM Limited. All rights reserved.
Copyright (c) 2009-2018 Arm Limited. All rights reserved.
Copyright (c) 2013 ARM LIMITED All rights reserved.
Copyright (c) 2013 Realtek Semiconductor Corp.
Copyright (c) 2013-2016 Realtek Semiconductor Corp.

Copyright (c) 2014, Realtek Semiconductor Corp. All rights reserved.
Copyright (c) 2015, Realtek Semiconductor Corporation. All rights reserved.
Copyright (c) 2015, Realtek Semiconductor Corp. All rights reserved.
Copyright (c) 2015, Realtek Semiconductor Corporation. All rights reserved.
Copyright (c) 2017, Realtek Semiconductor Corporation. All rights reserved.
Copyright (c) 2017, Realtek Semiconductor Corporation. All rights reserved.
Copyright (c) 2017-2018 Arm Limited. All rights reserved.
Copyright 2014 Tencent. All rights reserved.
Copyright(c) 2007 - 2012 Realtek Corporation. All rights reserved.
Copyright(c) 2007 - 2016 Realtek Corporation. All rights reserved.
Copyright(c) 2007 - 2017 Realtek Corporation. All rights reserved.
Copyright(c) 2007 - 2018 Realtek Corporation. All rights reserved.
Copyright(c) 2014, Realtek Semiconductor Corporation. All rights reserved.
Copyright(c) 2015, Realtek Semiconductor Corporation. All rights reserved.
Copyright(c) 2016, Realtek Semiconductor Corporation. All rights reserved.
Copyright(c) 2017, Realtek Semiconductor Corporation. All rights reserved.
Copyright(c) 2019, Realtek Semiconductor Corporation. All rights reserved.
copyright Kulesh Shanmugasundaram (kulesh [squiggly] isis.poly.edu)

Apache License

Version 2.0, January 2004
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE,
REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

Panasonic SmartApp+ (continued)

Copyright, etc. (continued)

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution".

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
- (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY,

or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets “[]” replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same “printed page” as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the “License”);
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an “AS IS” BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

lwiP

Copyright (c) 1997 Global Election Systems Inc.
Copyright (c) 2001-2003 Swedish Institute of Computer Science.

Copyright (c) 2001-2003 Swedish Institute of Computer Science. All rights reserved.

Copyright (c) 2001-2004 Axon Digital Design B.V., The Netherlands. All rights reserved.

Copyright (c) 2001-2004 Leon Woestenberg <leon.woestenberg@gmx.net>

Copyright (c) 2001-2004 Swedish Institute of Computer Science. All rights reserved.

Copyright (c) 2002 CITEL Technologies Ltd. All rights reserved.

Copyright (c) 2002-2003, Adam Dunkels.

Copyright (c) 2002-2003, Adam Dunkels. All rights reserved.

Copyright (c) 2003 by Marc Boucher, Services Informatiques (MBSI) inc.

Copyright (c) 2003-2004 Axon Digital Design B.V., The Netherlands. All rights reserved.

Copyright (c) 2003-2004 Leon Woestenberg <leon.woestenberg@axon.tv>

Copyright (c) 2007 Dominik Spies <kontakt@dspies.de> All rights reserved.

Copyright (c) 2010 Inico Technologies Ltd. All rights reserved.

Copyright (c) 2016 The MINIX 3 Project. All rights reserved.

/*

*Copyright (c) 2001, 2002 Swedish Institute of
*Computer Science. All rights reserved.

*

*Redistribution and use in source and binary forms,
*with or without modification, are permitted provided
*that the following conditions are met:

*

*1. Redistributions of source code must retain the
* above copyright notice, this list of conditions and the
* following disclaimer.

*2. Redistributions in binary form must reproduce the
* above copyright notice, this list of conditions and the
* following disclaimer in the documentation and/or
* other materials provided with the distribution.

*3. The name of the author may not be used to endorse
* or promote products derived from this software
* without specific prior written permission.

*

*THIS SOFTWARE IS PROVIDED BY THE
*AUTHOR “AS IS” AND ANY EXPRESS OR IMPLIED
*WARRANTIES, INCLUDING, BUT NOT LIMITED TO,
*THE IMPLIED WARRANTIES OF MERCHANTABILITY
*AND FITNESS FOR A PARTICULAR PURPOSE ARE
*DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
*LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
*SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
*DAMAGES (INCLUDING, BUT NOT LIMITED TO,
*PROCUREMENT OF SUBSTITUTE GOODS OR
*SERVICES; LOSS OF USE, DATA, OR PROFITS;
*OR BUSINESS INTERRUPTION) HOWEVER
*CAUSED AND ON ANY THEORY OF LIABILITY,
*WHETHER IN CONTRACT, STRICT LIABILITY, OR

Panasonic SmartApp+ (continued)

Copyright, etc. (continued)

*TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
*ARISING IN ANY WAY OUT OF THE USE OF
*THIS SOFTWARE, EVEN IF ADVISED OF THE
*POSSIBILITY OF SUCH DAMAGE.

*

*This file is part of the lwIP TCP/IP stack.

*

*Author: Adam Dunkels <adam@sics.se>

*

*/

FreeRTOS

Copyright (C) 2017 Amazon.com, Inc. or its affiliates.
All Rights Reserved.

Copyright (C) 2019 Amazon.com, Inc. or its affiliates.
All Rights Reserved.

The FreeRTOS kernel is released under the MIT open source license, the text of which is provided below.

This license covers the FreeRTOS kernel source files, which are located in the /FreeRTOS/Source directory of the official FreeRTOS kernel download. It also covers most of the source files in the demo application projects, which are located in the /FreeRTOS/Demo directory of the official FreeRTOS download. The demo projects may also include third party software that is not part of FreeRTOS and is licensed separately to FreeRTOS. Examples of third party software includes header files provided by chip or tools vendors, linker scripts, peripheral drivers, etc. All the software in subdirectories of the /FreeRTOS directory is either open source or distributed with permission, and is free for use. For the avoidance of doubt, refer to the comments at the top of each source file.

License text:

Copyright (C) 2019 Amazon.com, Inc. or its affiliates.
All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,

WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

newlib

The newlib subdirectory is a collection of software from several sources.

Each file may have its own copyright/license that is embedded in the source file. Unless otherwise noted in the body of the source file(s), the following copyright notices will apply to the contents of the newlib subdirectory:

(1) Red Hat Incorporated

Copyright (c) 1994-2009 Red Hat, Inc.
All rights reserved.

This copyrighted material is made available to anyone wishing to use, modify, copy, or redistribute it subject to the terms and conditions of the BSD License. This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY expressed or implied, including the implied warranties of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. A copy of this license is available at <http://www.opensource.org/licenses>. Any Red Hat trademarks that are incorporated in the source code or documentation are not subject to the BSD License and may only be used or replicated with the express permission of Red Hat, Inc.

(2) University of California, Berkeley

Copyright (c) 1981-2000 The Regents of the University of California. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER

OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(3) David M. Gay (AT&T 1991, Lucent 1998)

The author of this software is David M. Gay.

Copyright (c) 1991 by AT&T.

Permission to use, copy, modify, and distribute this software for any purpose without fee is hereby granted, provided that this entire notice is included in all copies of any software which is or includes a copy or modification of this software and in all copies of the supporting documentation for such software.

THIS SOFTWARE IS BEING PROVIDED "AS IS", WITHOUT ANY EXPRESS OR IMPLIED WARRANTY. IN PARTICULAR, NEITHER THE AUTHOR NOR AT&T MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND CONCERNING THE MERCHANTABILITY OF THIS SOFTWARE OR ITS FITNESS FOR ANY PARTICULAR PURPOSE.

The author of this software is David M. Gay.

Copyright (C) 1998-2001 by Lucent Technologies All Rights Reserved

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that the copyright notice and this permission notice and warranty disclaimer appear in supporting documentation, and that the name of Lucent or any of its entities not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission.

LUCENT DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL LUCENT OR ANY OF ITS ENTITIES BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN

CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

(4) Advanced Micro Devices

Copyright 1989, 1990 Advanced Micro Devices, Inc.

This software is the property of Advanced Micro Devices, Inc (AMD) which specifically grants the user the right to modify, use and distribute this software provided this notice is not removed or altered. All other rights are reserved by AMD.

AMD MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS SOFTWARE. IN NO EVENT SHALL AMD BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING FROM THE FURNISHING, PERFORMANCE, OR USE OF THIS SOFTWARE.

So that all may benefit from your experience, please report any problems or suggestions about this software to the 29K Technical Support Center at 800-29-29-AMD (800-292-9263) in the USA, or 0800-89-1131 in the UK, or 0031-11-1129 in Japan, toll free. The direct dial number is 512-462-4118.

Advanced Micro Devices, Inc.
29K Support Products
Mail Stop 573
5900 E. Ben White Blvd.
Austin, TX 78741
800-292-9263

(7) Sun Microsystems

Copyright (C) 1993 by Sun Microsystems, Inc.
All rights reserved.

Developed at SunPro, a Sun Microsystems, Inc. business.

Permission to use, copy, modify, and distribute this software is freely granted, provided that this notice is preserved.

(8) Hewlett Packard

(c) Copyright 1986 HEWLETT-PACKARD COMPANY

To anyone who acknowledges that this file is provided "AS IS" without any express or implied warranty:

permission to use, copy, modify, and distribute this file for any purpose is hereby granted without fee, provided that the above copyright notice and this notice appears in all copies, and that the name of Hewlett-Packard Company not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission.

Hewlett-Packard Company makes no representations about the suitability of this software for any purpose.

Panasonic SmartApp+ (continued)

Copyright, etc. (continued)

(9) Hans-Peter Nilsson

Copyright (C) 2001 Hans-Peter Nilsson

Permission to use, copy, modify, and distribute this software is freely granted, provided that the above copyright notice, this notice and the following disclaimer are preserved with no changes.

THIS SOFTWARE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

(11) Christopher G. Demetriou

Copyright (c) 2001 Christopher G. Demetriou
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(12) SuperH, Inc.

Copyright 2002 SuperH, Inc. All rights reserved

This software is the property of SuperH, Inc (SuperH) which specifically grants the user the right to modify, use and distribute this software provided this notice is not removed or altered. All other rights are reserved by SuperH.

SUPERH MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS SOFTWARE. IN NO EVENT SHALL SUPERH BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING FROM THE FURNISHING, PERFORMANCE, OR USE OF THIS SOFTWARE.

So that all may benefit from your experience, please report any problems or suggestions about this software to the SuperH Support Center via e-mail at softwaresupport@superh.com.

SuperH, Inc.
405 River Oaks Parkway
San Jose
CA 95134
USA

(13) Royal Institute of Technology

Copyright (c) 1999 Kungliga Tekniska Högskolan
(Royal Institute of Technology, Stockholm, Sweden).
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of KTH nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY KTH AND ITS CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL KTH OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(14) Alexey Zelkin

Copyright (c) 2000, 2001 Alexey Zelkin <phantom@FreeBSD.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(15) Andrey A. Chernov

Copyright (C) 1997 by Andrey A. Chernov, Moscow, Russia.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE

GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(16) FreeBSD

Copyright (c) 1997-2002 FreeBSD Project.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(17) S. L. Moshier

Author: S. L. Moshier.

Copyright (c) 1984,2000 S.L. Moshier

Permission to use, copy, modify, and distribute this software for any purpose without fee is hereby granted, provided that this entire notice is included in all copies of any software which is or includes a copy or modification of this software and in all copies of the supporting documentation for such software.

THIS SOFTWARE IS BEING PROVIDED "AS IS", WITHOUT ANY EXPRESS OR IMPLIED WARRANTY. IN PARTICULAR, THE AUTHOR MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND CONCERNING THE MERCHANTABILITY

Panasonic SmartApp+ (continued)

Copyright, etc. (continued)

OF THIS SOFTWARE OR ITS FITNESS FOR ANY PARTICULAR PURPOSE.

(18) Citrus Project

Copyright (c)1999 Citrus Project,
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(19) Todd C. Miller

Copyright (c) 1998 Todd C. Miller
<Todd.Miller@courtesan.com>
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.

IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(20) DJ Delorie (i386)

Copyright (C) 1991 DJ Delorie
All rights reserved.

Redistribution, modification, and use in source and binary forms is permitted provided that the above copyright notice and following paragraph are duplicated in all such forms.

This file is distributed WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

(23) Intel (i960)

Copyright (c) 1993 Intel Corporation

Intel hereby grants you permission to copy, modify, and distribute this software and its documentation. Intel grants this permission provided that the above copyright notice appears in all copies and that both the copyright notice and this permission notice appear in supporting documentation. In addition, Intel grants this permission provided that you prominently mark as "not part of the original" any modifications made to this software or documentation, and that the name of Intel Corporation not be used in advertising or publicity pertaining to distribution of the software or the documentation without specific, written prior permission.

Intel Corporation provides this AS IS, WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Intel makes no guarantee or representations regarding the use of, or the results of the use of, the software and documentation in terms of correctness, accuracy, reliability, currentness, or otherwise; and you rely on the software, documentation and results solely at your own risk.

IN NO EVENT SHALL INTEL BE LIABLE FOR ANY LOSS OF USE, LOSS OF BUSINESS, LOSS OF PROFITS, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. IN NO EVENT SHALL INTEL'S TOTAL LIABILITY EXCEED THE SUM PAID TO INTEL FOR THE PRODUCT LICENSED HEREUNDER.

(26) Mike Barcroft

Copyright (c) 2001 Mike Barcroft <mike@FreeBSD.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(27) Konstantin Chuguev (--enable-newlib-iconv)

Copyright (c) 1999, 2000
Konstantin Chuguev. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR

PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

iconv (Charset Conversion Library) v2.0

(28) Artem Bityuckiy (--enable-newlib-iconv)

Copyright (c) 2003, Artem B. Bityuckiy, SoftMine Corporation.
Rights transferred to Franklin Electronic Publishers.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(30) - Alex Tatmanjants (targets using libc/posix)

Copyright (c) 1995 Alex Tatmanjants
<alex@elvisti.kiev.ua>
at Electronni Visti IA, Kiev, Ukraine.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Panasonic SmartApp+ (continued)

Copyright, etc. (continued)

THIS SOFTWARE IS PROVIDED BY THE AUTHOR "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(31) - M. Warner Losh (targets using libc/posix)

Copyright (c) 1998, M. Warner Losh <imp@freebsd.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(32) - Andrey A. Chernov (targets using libc/posix)

Copyright (C) 1996 by Andrey A. Chernov, Moscow, Russia.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(33) - Daniel Eischen (targets using libc/posix)

Copyright (c) 2001 Daniel Eischen
<deischen@FreeBSD.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(35) - ARM Ltd (arm and thumb variant targets only)

Copyright (c) 2009-2015 ARM Ltd
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name of the company may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY ARM LTD "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL ARM LTD BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(41) Ed Schouten - Free BSD

Copyright (c) 2008 Ed Schouten <ed@FreeBSD.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT

NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

easy-ecc

Copyright (c) 2013, Kenneth MacKay
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Specifications

■ For Singapore

	NA-V10FR1 NA-V10FC1	NA-V90FR1 NA-V90FC1
Rated voltage (V)	220 - 240	
Rated frequency (Hz)	50	
Maximum energy rated power input (W)	1600 - 1900	
Heating energy rates	1445 - 1710	
power input (W)	For washing	
	For drying	300 - 350
Maximum spin speed (r/min)	1400	
Product dimensions (W x D x H) (mm)	596 × 585 × 845	
Product weight (kg)	69	
Maximum mass of dry cloth (Wash) (kg)	10.0	9.0
Maximum mass of dry cloth (Dry) (kg)	2.0	
Pressure of tap water (MPa)	0.01 - 1	

■ For Philippines

	NA-V105FR1	NA-V10FR1	NA-V95FC1	NA-V90FC1
Rated voltage (V)	230			
Rated frequency (Hz)	60			
Maximum energy rated power input (W)	1700			
Heating energy rates	1570			
power input (W)	For washing			
	For drying	325		
Maximum spin speed (r/min)	1400			
Product dimensions (W x D x H) (mm)	596 × 585 × 845			
Product weight (kg)	69			
Maximum mass of dry cloth (Wash) (kg)	10.5	10.0	9.5	9.0
Maximum mass of dry cloth (Dry) (kg)	2.0			
Pressure of tap water (MPa)	0.01 - 1			

Complies with
IMDA Standards
DB01017