

## WEEE Disassembly Manual

FUTURE DESIGN CONTROLS

7524 WEST 98<sup>TH</sup> PLACE, BRIDGEVIEW, IL 60455, USA

The following sample(s) was/were submitted and identified by/on behalf of the applicant as :

Type of Product : MULTI-LOOP CONTROLLER  
Style/Item No. : MCT4-4  
Manufacturer/Vendor : FUTURE DESIGN CONTROLS  
Sample Receiving Date : 2018/11/08



=====

CONCLUSION: Please refer to the next page

  
Vincent Huang, Ph.D. / Sr. Supervisor  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei



**CONCLUSION:**

The MULTI-LOOP CONTROLLER is classified as Category 5 under Annex I & II of Directive 2012/19/EU WEEE (recast). The following table shows the WEEE (recast) Directive compliance conclusion.

Assessment Item	Recycled Rate (%)	Recovered Rate (%)
Result of Assessment	79.88	85.83
Minimum Recovery targets under WEEE (recast) Directive Annex V	55	75
WEEE (recast) requirement compliance	PASS	PASS
Disassembly time (sec.)	687	

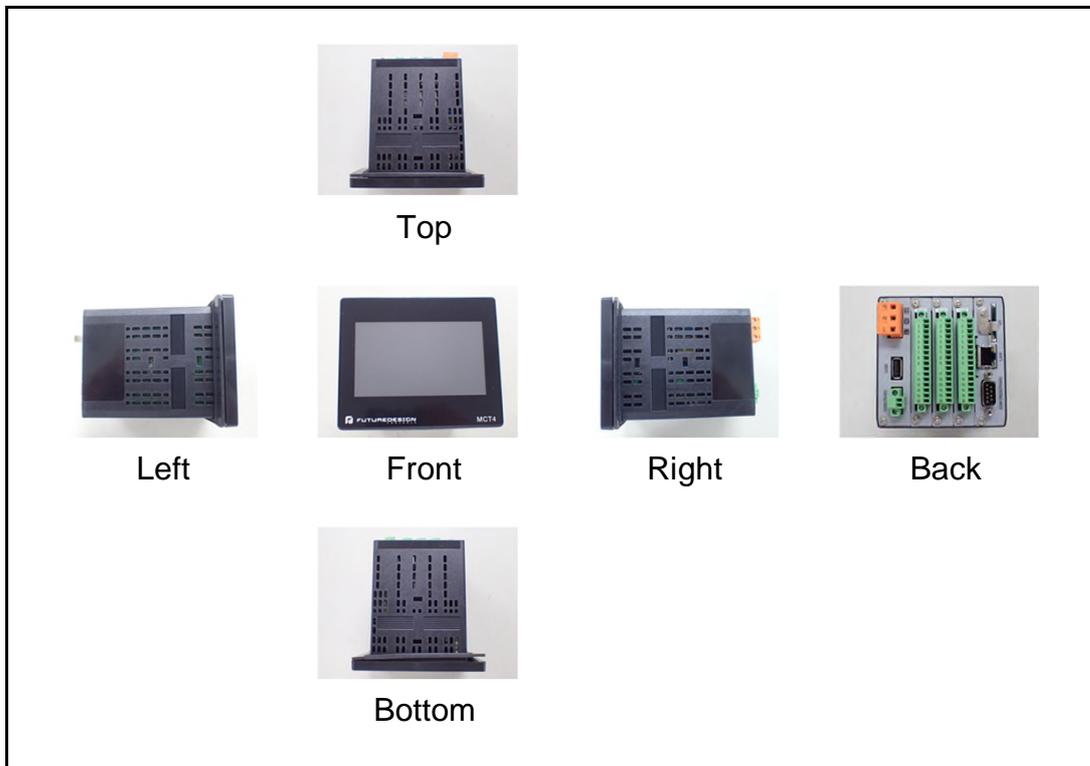
## Contents

### Section

1. Product Information
2. Product Composition
3. Disassembly Procedure
4. Reuse / Recycling / Recovery Assessment
5. WEEE (recast) Directive Compliance

## 1. Product Information

The product is a MULTI-LOOP CONTROLLER. The weight of this product excluding package is 670.2220 g.The appearance of the product is as follows:



## 2. Product Composition

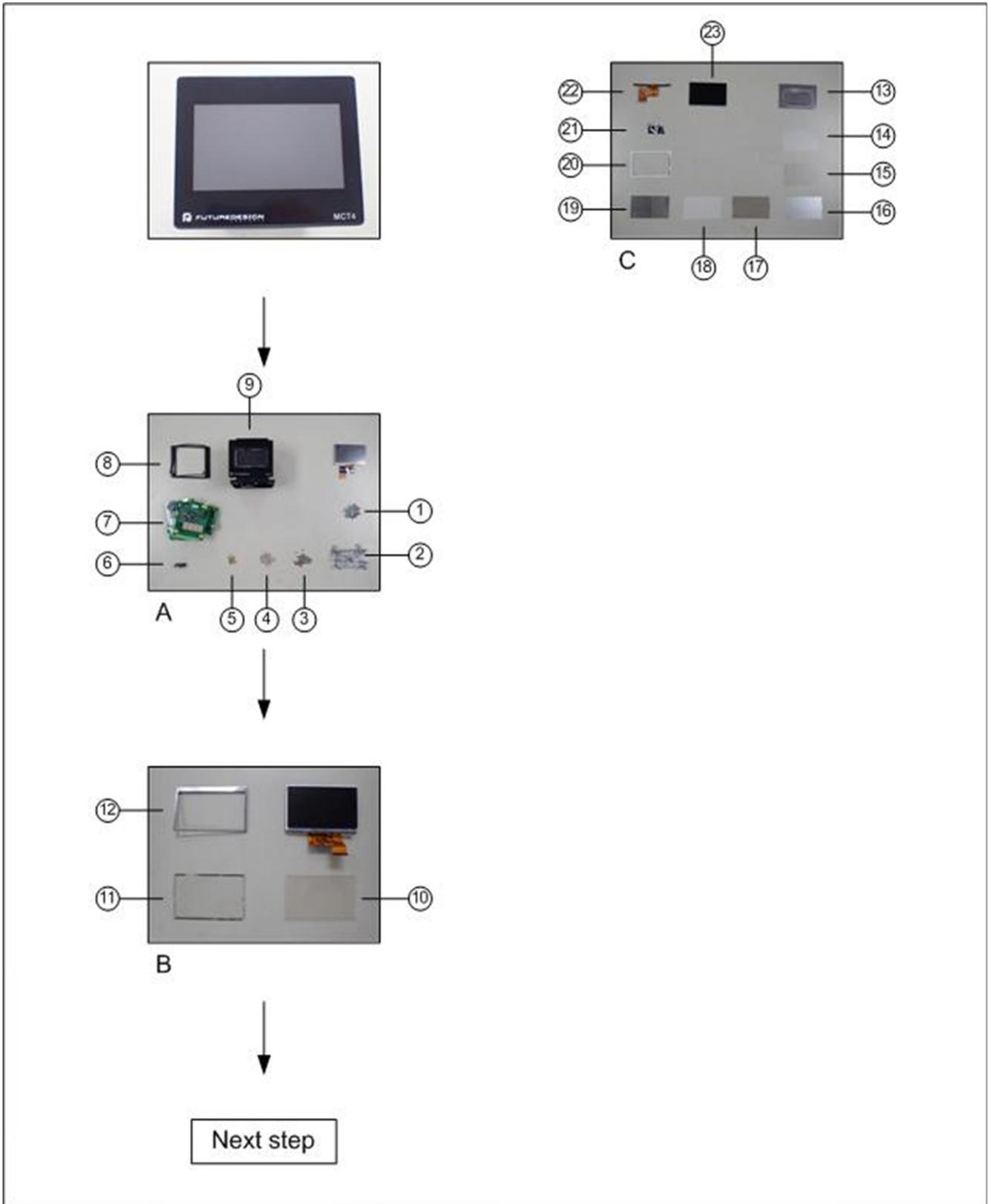
The composition and weight of each part is described as follows:

Part Name	Composition	Weight (g)	Percent (%)
Rubber, Plastic case, Film, Plastic sheet, Plastic frame, Label	Plastic	199.4248	29.76
Screw, Metal frame, Metal piece, Nut, Shielding	Metal	109.5259	16.34
LED displayer	Mix	17.9835	2.68
PCBA, FPCA	PCBA	337.0427	50.29
Capacitor	Capacitor	6.2451	0.93
Total		670.2220	100.00

### 3. Disassembly Procedure

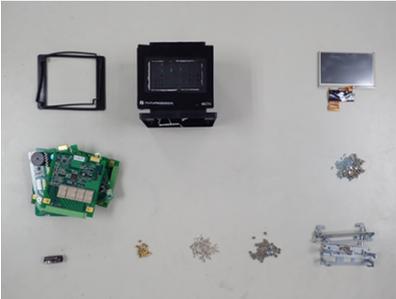
#### 3.1 Flow Chart for Disassembly Procedure

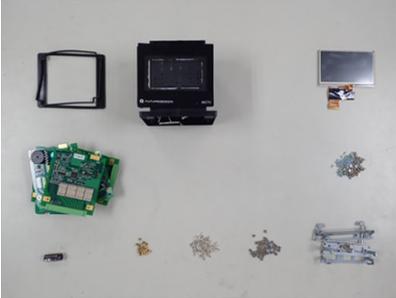
The disassembly procedure taken here is in accordance with the treatment requirements under the Annex VII of the WEEE (recast) Directive. In addition to considering economic and efficiency factors, manual operation and disassembly tools have been applied to separate the components and materials from this product in order to simulate the scenario at the treatment facility, and to achieve the objective that the separated components and materials can be reused, recycled and recovered.



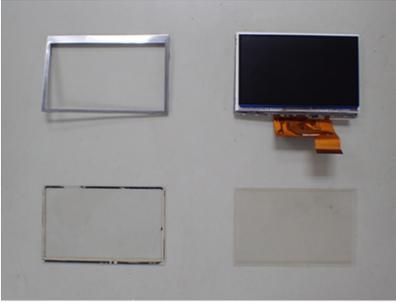
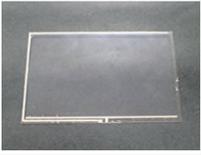
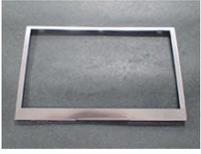
### 3.2 Component and Material Composition

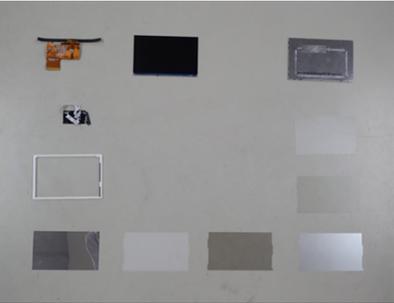
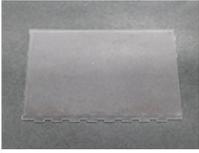
The material declaration for this product, the disassembly tools and the disassembly time are described in the following table.

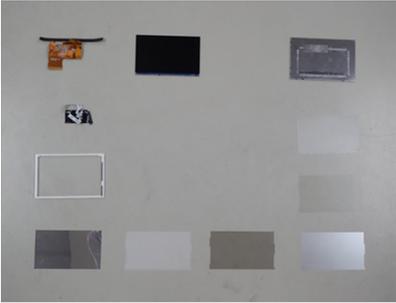
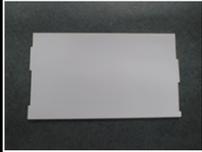
Procedure		Part					Disassembly			Remark
No.	Picture	No.	Name	Picture	Material	Weight (g)	Connection Technique	Tool	Time (s.)	
A		1	Screw		Metal	20.2894	Plug, Solder, Snap, Adhesive, Screw	Screwdriver, Lever, Pliers, Knife	614	-
		2	Metal frame		Metal	54.1000				
		3	Metal piece		Metal	12.1638				
		4	Metal piece		Metal	4.1864				

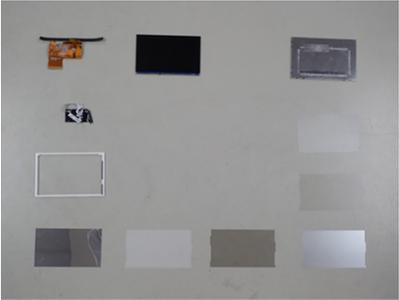
Procedure		Part					Disassembly			Remark
No.	Picture	No.	Name	Picture	Material	Weight (g)	Connection Technique	Tool	Time (s.)	
A		5	Nut		Metal	4.1256	-	-	-	No.6 is an electrolyte capacitor. According to WEEE (recast) directive, No.6 requires selective treatment.
		6	Capacitor		Capacitor	6.2451				

Procedure		Part					Disassembly			Remark
No.	Picture	No.	Name	Picture	Material	Weight (g)	Connection Technique	Tool	Time (s.)	
A		7	PCBA		PCBA	335.8000				No.7 is a PCBA. The surface of No.7 is greater than 10 square centimeters. According to WEEE (recast) directive, No.7 requires selective treatment.
		8	Rubber		Plastic	17.7000				
		9	Plastic case		Plastic	157.5000				

Procedure		Part					Disassembly			Remark
No.	Picture	No.	Name	Picture	Material	Weight (g)	Connection Technique	Tool	Time (s.)	
B		10	Film		Plastic	1.9002	Snap, Adhesive	Knife	35	-
		11	Plastic sheet		Plastic	12.2489				
		12	Metal frame		Metal	3.2437				

Procedure		Part					Disassembly			Remark
No.	Picture	No.	Name	Picture	Material	Weight (g)	Connection Technique	Tool	Time (s.)	
C		13	Shielding		Metal	11.4170	Snap, Adhesive	Knife	38	-
		14	Plastic sheet		Plastic	5.6844				
		15	Film		Plastic	0.4633				
		16	Film		Plastic	0.8545				
		17	Film		Plastic	0.4598				

Procedure		Part					Disassembly			Remark
No.	Picture	No.	Name	Picture	Material	Weight (g)	Connection Technique	Tool	Time (s.)	
C		18	Film		Plastic	0.2349	-	-	-	-
		19	Film		Plastic	0.4786				
		20	Plastic frame		Plastic	1.7344				
		21	Label		Plastic	0.1658				

Procedure		Part					Disassembly			Remark
No.	Picture	No.	Name	Picture	Material	Weight (g)	Connection Technique	Tool	Time (s.)	
C		22	FPCA		PCBA	1.2427	-	-	-	No.22 is a PCBA. The surface of No.22 is greater than 10 square centimeters. According to WEEE (recast) directive, No.22 requires selective treatment.
		23	LED displayer		Mix	17.9835				

### 3.3 Disassembly Tool

The disassembly tool used for this product shows in the following table.

Disassembly Tool	Picture
Screwdriver	
Lever	
Pliers	
Knife	

### 3.4 Connection Technology

For this product, the connection technology including is as follows:

Connector Tech.	Number
Plug	11
Solder	2
Snap	123
Adhesive	15
Screw	89

#### 4. Reuse / Recycling / Recovery Assessment

The reuse, recycling and recovery assessment for this product is based upon the waste treatment technologies and equipment that are most frequently available to the market. The following table is the result of the assessment.

Part Name	Composition	Recycled Rate (%)*	Energy Recovery Rate (%)*	Recovered Rate (%)*
Rubber, Plastic case, Film, Plastic sheet, Plastic frame, Label	Plastic	22.32	5.95	28.27
Screw, Metal frame, Metal piece, Nut, Shielding	Metal	15.52	-	15.52
LED displayer	Mix	1.34	-	1.34
PCBA, FPCA	PCBA	40.23	-	40.23
Capacitor	Capacitor	0.47	-	0.47
Total		79.88	5.95	85.83

\*: the percentages are based on the total device weight.

## 5. WEEE (recast) Directive Compliance

### 5.1 Selective Treatment for Materials and Components

This product contains component and material items, listed in Annex VII of the WEEE (recast) Directive, that require selective treatment for materials and components of waste electrical and electronic equipment in accordance with Article 8. They are described in the following table.

Component/Material	Photo No.
Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume)	6
Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters	7, 22

### 5.2 Reuse/Recycling/Recovery Assessment

Assessment Item	Recycled Rate (%)	Recovered Rate (%)
Result of Assessment	79.88	85.83
Minimum Recovery targets under WEEE (recast) Directive Annex V	55	75
WEEE (recast) requirement compliance	PASS	PASS
Disassembly time (sec.)	687	

### 5.3 Selective Treatment for Material and Components of Waste Electrical and Electronic Equipment (Annex VII of WEEE (recast) Directive)

- Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters
- Batteries
- External electric cables
- Liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimeters and all those back-lighted with gas discharge lamps
- Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume)
- Mercury containing components, such as switches or backlighting lamps
- Plastic containing brominated flame retardants
- Polychlorinated biphenyls (PCB) containing capacitors
- Toner cartridges, liquid and pasty, as well as colour toner
- Asbestos waste and components which contain asbestos
- Cathode ray tubes
- Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC)
- Gas discharge lamps
- Components containing refractory ceramic fibers
- Components containing radioactive substances with the exception of components that are below the exemption thresholds set in Article 3 of and Annex I to Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation