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iR1200/iR1300 Series

SERVICE MANUAL

REVISION 0

Canon

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CANON iR1200/iR1300 Series REV. 0 AUG. 2002

Application

This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

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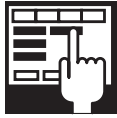


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Caution

Use of this manual should be strictly supervised to avoid disclosure of confidential information.

1 Symbols Used

This documentation uses the following symbols to indicate special information:

Symbol	Description
	Indicates an item of a non-specific nature, possibly classified as Note, Caution, or Warning.
	Indicates an item requiring care to avoid electric shocks.
	Indicates an item requiring care to avoid combustion (fire).
	Indicates an item prohibiting disassembly to avoid electric shocks or problems.
	Indicates an item requiring disconnection of the power plug from the electric outlet.
 Memo	Indicates an item intended to provide notes assisting the understanding of the topic in question.
 REF.	Indicates an item of reference assisting the understanding of the topic in question.
	Provides a description of a service mode.
	Provides a description of the nature of an error indication.
	Refers to the Copier Basics Series for a better understanding of the contents.



2 Outline of the Manual

This Service Manual provides basic facts and figures needed to service the iR1200 Series/iR1300 Series products in the field, and it consists of the following chapters:

Chapter 1	Product Outline:	specifications, names of parts, safety and warnings
Chapter 2	Using the Machine:	control panel, user mode, service mode
Chapter 3	Installation:	site requirements, installation procedure, work for relocation
Chapter 4	Operation:	mechanical system by function, principles of operation of electrical systems
Chapter 5	Mechanical System:	mechanical construction, disassembly/assembly
Chapter 6	Maintenance and Inspection:	periodically replaced parts, durables (life), basic servicing chart, cleaning
Chapter 7	Troubleshooting:	standards/adjustments, troubleshooting image faults, troubleshooting malfunctions
Appendix:		general timing chart, general circuit diagrams

The descriptions in this Service Manual are based on the following rules:

1. In each chapter, the uses of the function in question and its relationship to electrical and mechanical systems are discussed and the timing of operation of its associated parts is explained by means of outlines and diagrams.

In the diagrams, the symbol  represents a mechanical path, while the symbol  with a name next to it indicates the flow of an electric signal.

The expression “turn on the power” means turning on the power switch, closing the front cover, and closing the delivery cover so that the machine will be supplied with power.

2. In circuit diagrams (digital), a signal whose level is High is expressed as being ‘1’, while a signal whose level is Low is expressed as being ‘0’; the level of voltage, however, varies from circuit to circuit.

The machine uses CPUs, whose internal mechanisms cannot be checked in the field, and, therefore, are not explained. In addition, the machine’s PCBs are not intended for repairs at the user’s and, therefore, are explained by means of block diagrams: two types are used, i.e., between sensors and inputs of PCBs equipped with a control or drive function and between outputs equipped with a control or drive function and loads; in addition, functional block diagrams are used at times.

Changes made to the machine for product improvement are communicated in the form of a Service Information bulletin as needed. All service persons are expected to go through all service documentation including the bulletins and be equipped to respond to the needs of the field (as by being able to identify possible causes of problems).

INTRODUCTION


This service manual covers the models shown in the following table. Be sure to have a good understanding of the difference from model to model before referring to this manual.

Model	Type code	ADF function	Printer function	Fax function	Cassette	Default Ratio	Power supply
iR1210	MTC		√		500 sheet (A4)	4R3E	230V
	PVZ		√		500 sheet (A4)	4R3E	230V
	QTL		√		250 sheet (A4)	2R2E	230V
	UMA		√		250 sheet (A4)	2R2E	230V
	UVB		√		250 sheet (A4)	2R2E	230V
	UVC		√		250 sheet (A4)	2R2E	230V
	UVD		√		250 sheet (A4)	2R2E	230V
	UVE		√		250 sheet (A4)	2R2E	230V
ZTY			√		250 sheet (Universal)	2R2E	127V
iR1230	MTD	√	√		500 sheet (A4)	4R3E	230V
	MTE	√	√		500 sheet (A4)	4R3E	230V
	QTM	√	√		250 sheet (A4)	2R2E	230V
	UNA	√	√		250 sheet (A4)	2R2E	230V
	UVF	√	√		250 sheet (A4)	2R2E	230V
	UVG	√	√		250 sheet (A4)	2R2E	230V
	UVH	√	√		250 sheet (A4)	2R2E	230V
	UVJ	√	√		250 sheet (A4)	2R2E	230V
iR1270F	MTF	√	√	√	250 sheet (A4)	4R3E	230V
	MTG	√	√	√	500 sheet (A4)	2R2E	230V
	UPA	√	√	√	250 sheet (A4)	4R3E	230V
iR1310	ZTW		√		500 sheet (LTR/LGL)	3R2E	120V
iR1330	ZTZ	√	√		500 sheet (LTR/LGL)	3R2E	120V
iR1370F	ZUB	√	√	√	500 sheet (LTR/LGL)	3R2E	120V

The notation “√” indicates that the item in question is available.

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CHAPTER 1

PRODUCT OUTLINE

1 Specifications

1.1 Type

Item	Specifications
Body	Desk top (ADF standard type, copyboard standard type)
Copyboard glass	Fixed
Light source	LED
Lens	CIS (contact sensor)
Photosensitive medium	OPC drum (30-mm dia.) : Drum unit

1.2 Mechanisms

Item	Specifications
Reproduction	Indirect electrostatic
Charging	Roller contact
Exposure	Semiconductor laser
Copy density adjustment	Auto or manual
Development	Dry, 1-component toner projection
Pickup	Cassette: 1 cassette Multifeeder: 1 feeder
Transfer	Roller transfer
Separate	Static (static eliminator) + curvature
Cleaning	Rubber blade
Fixing	SURF (on-demand)

1.3 Functions

Item	Specifications
Resolution	
printer engine	600 x 600 dpi
copy	1200 equivalent x 600 dpi
print	2400 equivalent x 600 dpi
Original type	Sheet, book, 3-D object (2 kg max.)
Maximum original size	A4 (297 ×210 mm / 11.7" ×8.3"), LGL (356 ×216 mm / 14.0" ×8.5")
Reproduction ratio	AB:4R3E, A:2R2E, Inch:3R2E
Zoom	50% to 200% (1% increments)
Wait time	8.5 sec (after plug in) / 1.0 sec (after pressing Energy Saver key)
First copy time	13 sec or less 21.5 sec (after plug in) 18 sec (after pressing Energy Saver key)
Continuous reproduction	99 pages max.
Reproduction size	
250-sheet cassette (Fixed to A4 size)	A4
250-sheet cassette (Universal)	LGL, LTR, A4, B5
500-sheet cassette	LGL, LTR, A4
Manual feed tray	Width: 76.2 to 216 mm (3.0" to 8.5") Length: 127 to 356 mm (5.0" to 14.0") Weight: 56 to 128 g/m ²
Paper type	
250-sheet cassette	Plain paper (64 to 80 g/m ²), recycled paper (64 to 80 g/m ²), colored paper (64 to 80 g/m ²)
500-sheet cassette	Plain paper (64 to 80 g/m ²), recycled paper (64 to 80 g/m ²), colored paper (64 to 80 g/m ²)
Manual feed tray	Plain paper (64 to 80 g/m ²), recycled paper (64 to 80 g/m ²), colored paper (64 to 80 g/m ²), transparency, tracing paper, label, postcard, thick paper (56 to 128 g/m ²), envelope
Cassette	Claw separation, front loading
Manual feed tray capacity	10 mm deep, (about 100 sheets of 80 g/m ² paper)
Delivery tray capacity	100 sheets max.
Non-image width	Leading edge: 3.0 ± 2.0 mm (0.12" ± 0.08"), left/right edge: 2.5 ± 2.0 mm (0.10" ± 0.08")

Item	Specifications
AE	Yes
Image mode	Yes (text, text/photo, photo)
Toner save mode	Yes
Special mode	Yes: Tracing paper mode, transparency mode, special paper 1 mode* ¹ , special paper 2 mode* ²
Auto power-off	No
Power save mode	Yes (manually ON/OFF, auto OFF after specific time, auto ON after fax reception/print data reception)
N-on-1	Yes (in some functions, 2-on-1)
1-on-N memory copy	Yes
Auto copy start	Yes
Jam recovery	Yes
Auto clear	Yes
Date/time set	Yes
Weekly timer	Yes
Toner level detection* ³	Yes
Cassette paper level detection	Yes
LGL size detection	Yes
Toner supply cover open/closed detection	Yes
Toner bottle position detection	Yes
Humidity sensor	Yes
Waste toner full detection	Yes
e-Maintenance	Yes

*1: Thick paper mode; including paper of 105 to 128 g/m² and Bond paper with poor surface characteristics.

*2: Thick paper H mode; envelope, etc.

*3: At this time, the copier/printer is capable of printing only so many prints, suspending operation thereafter.

In the case of fax, select 'Print' or 'Remain the image data in the memory' at the user mode display in advance. Follow the action selected at the user mode.

1.4 Others

Item	Specifications
Operating environment	
Temperature range	0° to 35°C / 32° to 95°F
Humidity range	35% to 85%
Atmospheric pressure range	0.61 to 1.01 hPa (0.6 to 1 atm)
Power supply	120V (50/60Hz), 230V (50/60Hz)
Serial number	MTCxxxx MTDxxxx MTExxxx MTFxxxx MTGxxxx PVZxxxx QTLxxxx TMxxxx UMAxxxx UNAXxxx UPAxxxx UVBxxxx UVCxxxx UVDxxxx UVExxxx UVFxxxx UVGxxxx UVHxxxx UVJxxxx ZTWxxxx ZTYxxxx ZTZxxxx ZUBxxxx
Power consumption	
Maximum	780 W or less
Standby	16 W (approx.; reference only)
Operation	280 W (approx.; reference only)
Energy save stanby	2 W or less (approx.; reference only)
Noise	
Standby	Copyboard type: 40 dB or less (impulse mode) ADF type: 40 dB or less (impulse mode: reference)
Copying	Copyboard type: 66 dB or less (fast mode) ADF type: 69 dB or less (fast mode: reference)
Ozone (after 50000 pages)	0.05 ppm (Ave.)
Dimensions	
Width	Copyboard type: 475 mm (18.7"), ADF type: 475 mm (18.7")
Depth	Copyboard type: 442 mm (17.4"), ADF type: 442 mm (17.4")
Height	
250-Sheet cassette	Copyboard type: 295 mm (11.6"), ADF type: 352 mm (13.9")
500-Sheet cassette	Copyboard type: 327 mm (12.9"), ADF type: 384 mm (15.1")
Weight	
250-Sheet cassette	Copyboard type: 20.5 kg, ADF type: 22.6 kg
500-Sheet cassette	Copyboard type: 21.9 kg, ADF type: 24.0 kg
Consumables storage	
Paper	Keep wrapped to avoid humidity.
Toner	Avoid direct sunshine, and store between 0° and 35°C / 32° and 95°F, between 35% and 85%.

1.5 Reproduction Ratio

Item	4R3E (AB configuraiton)	2R2E (A configuration)	3R2E (Inch configuration)
Direct	1 : 1.000	1 : 1.000	1 : 1.000
Reduce I	1 : 0.500	1 : 0.500	1 : 0.500
Reduce II			1 : 0.647
Reduce III	1 : 0.707	1 : 0.707	
Reduce IV			1 : 0.786
Reduce V	1 : 0.816		
Reduce VI	1 : 0.865		
Enlarge I	1 : 1.154		
Enlarge II			1 : 1.294
Enlarge III	1 : 1.414	1 : 1.414	
Enlarge IV	1 : 2.000	1 : 2.000	1 : 2.000

1.6 Copying Speed

1.6.1 Copying Speed (AB type, A type)

Ratio	Size	Paper size	copies/min	
			Cassette	Manual feed tray ^{*1}
Direct	A4 (210 ×297mm / 8.3" ×11.7")	A4	12	12
	B5 (182 ×257mm / 7.2" ×10.1")	B5	13	13
	A5 (149 ×210mm / 5.9" ×8.3")	A5	-	13
Reduce I (50.0%)	A4R → postcard	postcard	-	6 ^{*3}
	III (70.7%) A4R → A5R	A5	-	13
	V ^{*2} (81.6%) B5R → A5R	A5	-	13
	VI ^{*2} (86.5%) A4R → B5R	B5	13	13
EnlargeI ^{*2} (115.4%)	B5R → A4R	A4	12	12
	III (141.4%) A5R → A4R	A4	12	12
	IV (200.0%) postcard → A4R	A4	12	12

*1: If the manual feed tray is in use, the copying speed is indicated assuming that the paper size setting is correct.

*2: AB-configured paper only.

*3: In the case of 'Special paper 2 mode' selected at the user menu.

The machine performs 3-step copying speed reduction control designed to prevent cracking of the fixing heater, otherwise possibly occurring as a result overheating of the ends of the fixing assembly. (See 5.4 of Chapter 4.)

1.6.2 Copying Speed (Inch type)

Ratio	Size	Paper size	copies/min	
			Cassette	Manual feed tray**1
Direct	LTR (216 ×279mm / 8.5" × 11.0")	LTR	13	13
	LGL (216 ×356mm / 8.5" ×14.0")	LGL	10	10
	STMTR (139 ×216mm / 5.5" ×8.5")	STMT	-	13
Reduce I (50.0%)	MIN	STMT	-	13
	II (64.7%) LGL → STMT	STMT	-	13
	IV (78.6%) LGL → LTR	LTR	13	13
Enlarge II (129.4%)	STMTR → LTRR	LTR	13	13
	IV (200.0%) MAX (LTR)	LTR	13	13

*1: If the manual feed tray is in use, the copying speed is indicated assuming that the paper size setting is correct.

The machine performs 3-step copying speed reduction control designed to prevent cracking of the fixing heater, otherwise possibly occurring as a result of overheating of the ends of the fixing assembly. (See 5.4 of Chapter 4.)

1.7 ADF (if equipped with ADF functions)

Items	Specifications
Pickup	Auto pickup/delivery (top separation by double-pad)
Original type	Single-sided sheet (50 to 128 g/m ²)
Original size	A4R, B5R, A5R, B6, LGL, LTRR, STMTR Length: 128 to 356 mm (5" to 14"), width: 139 to 216 mm (5.5" to 8.5")
Original orientation	Face-down
Original position	Center reference
Original processing mode	From single-sided to single-sided
Original reading	Stream reading
Stack	30 sheets or less (if A4/LTR or smaller) 15 sheets or less (if LGL)
Mixed original sizes	Yes (only if of the same paper configuration)
Original AE detection	No
Original size recognition	No
Stamp	No
Power supply	From host (5 VDC and 24 V)
Operating environment	Same as host

The machine may not be able to handle the following types of originals:

- original with a carbon back
- original made of multiple layers (pasted, bound)
- original with a cut-off, 5 or more holes, or tear
- original with a clip, adhesive tape, or glue
- original with curling, wrinkling, or appreciable bending
- transparency

Advise the user to remove as much curling as possible, if any, and place the original in the original tray so that the side with the curling is the trailing edge.

1.8 FAX (if equipped fax functions)

1.8.1 Communications specifications

Applicable lines

Analog line (one line)

- PSTN (Public Switched Telephone Network)

Transmission method

Half-duplex

Transmission control protocol

ITU-T T.30 binary protocol/ECM protocol

Modulation method

G3 image signals	ITU-T V.27ter (2.4kbps, 4.8kbps)
	ITU-T V.29 (7.2kbps, 9.6kbps)
	ITU-T V.17 (14.4kbps, 12kbps, TC9.6kbps, TC7.2kbps)
	ITU-T V.34 (2.4Kbps, 4.8Kbps, 7.2Kbps, 9.6Kbps, 12Kbps, 14.4Kbps, 16.8Kbps, 19.2Kbps, 21.6Kbps, 24Kbps, 26.4Kbps, 28.8Kbps, 31.2Kbps, 33.6Kbps)
G3 procedure signals	ITU-T V.21 (No.2) 300bps
	ITU-T V.8, V34 (300bps, 600bps, 1200bps)

Transmission speed

33.6Kbps, 31.2Kbps, 28.8Kbps, 26.4Kbps, 24Kbps, 21.6Kbps, 19.2Kbps, 16.8Kbps, 14.4Kbps, 12Kbps, TC9.6Kbps, TC7.2Kbps, 9.6Kbps, 7.2Kbps, 4.8Kbps, 2.4Kbps
With automatic fallback function

Coding

MH, MR, MMR, JBIG

Error correction

ITU-T ECM

Canon express protocol

None

Transmission output level

from 0 to -15 dBm

Minimum receive input level

-43 dBm (at. V.17)

Modem IC

CONEXANT FM336

1.8.2 Scanner section specifications

Scanning method

Contact sensor scanning method

Scanning line density

Horizontal:

Standard/Fine/Superfine 203.2 dpi (8 dots/mm)

Ultrafine 406.4 dpi (16 dots/mm) (Interpolated)

Vertical:

Standard 97.79 dpi (3.85 lines/mm)

Fine 195.58 dpi (7.7 lines/mm)

Superfine/Ultrafine 391.16 dpi (15.4 lines/mm)

Scanning density adjustment

Light, Standard, Dark: The density level of each mode can be selected by the user mode menu.

Half tone

64-gradation error diffusion system

1.8.3 Printer section specifications

Printing resolution

600dpi x600dpi

Reduction for reception

Fixed reduction (75%, 90%, 95%, 97%)

Auto reduction (70~100%)

1.8.4 Functions

STAMP

None

FAX/TEL switching

Method CNG detection

Message None

Pseudo CI None

Answering machine connection

Yes (Telephone answering priority type)

CNG detection

DPRD

Yes

Polling

Polling transmission

None

Polling reception

Receives from a fax in automatic transmission mode

One touch locations Max. 12

Confidential reception

None

Confidential transmission

None

Remote reception

Method

ID call# (ID input method)

Remote ID (with ID call#)

2 digits (Default : 25)

Memory reception

Yes

Auto dialing

Telephone number digits	Average 39 digits
One-touch dial	Max. 12
Coded speed dial	Max. 100
Group dial	Max. 111 (One-touch : 11, Coded speed dial : 100)
Redial	Numeric button redial function (max. 120 digits)

Delayed transmission

Locations	Max. 122 (One-touch : 12, Coded speed dial : 100) Numeric button: 10)
No. of reservation	Max. 20

Broadcast transmission

Locations	Max. 122 (One-touch : 12, Coded speed dial : 100) Numeric button: 10)
Group button addresses	Max. 111 (One-touch : 11, Coded speed dial : 100)

Relay broadcasting originating

None

Relay broadcasting

None

Closed network

None

Direct mail prevention

None

Dual access

File No. of reservation	Max. 21 files
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