



Technical Bulletin No. F/L Series - 041

SUBJECT: New Model LSOMkII

DATE:

1996. 8. 18

PREPARED BY: K. Misugi / M.Mano

FROM : 2nd Field Information Group,

CHECKED BY: S. Fujii

QA Division

CLASSIFICATION:
☐ Action Required

☐ Troubleshooting

☐ Retrofit Information

☐ Revision of service manual

☒ Information only

☐ Other

MODEL:

RICOH MV310E

Savin 9910DPe

Ges 3210X

The new model LSOMkII (RICOH MV310E) has been released in the line-up of the LSO (RICOH MV310) series.

This technical bulletin contains information on differences between the LSOMkII and the LSO. They are listed in order of sections that appear in the service manual.

1. OVERALL MACHINE INFORMATION

1.1. SPECIFICATIONS

	LSO	LSOMkII
SAF Standard Size	576 kbytes (45pages/Slerese letter)	640 kbytes (52pages/Slerese letter)
SAF with an optional memory card	Optinal memory card not available	+1 Mbytes (135 pages/Slerexe letter) / +2 Mbytes (218 pages/Slerexe letter) / +4 Mbytes (384 pages/Slerexe letter)
Modulation	V.29, V27ter, V21	V.33, V.29, V.27ter, V21
Data Rate (bps)	9600/7200/4800/2400	14,400/12,000/ 9600/7200/4800/2400
Transmission Time	9 s at 9600 bps; (Measured with G3 ECM using memory for a ITU-T #1 test document at standard resolution)	6 s at 14,400 bps; (Measured with G3 ECM using memory for a ITU-T #1 test document at standard resolution)
Paper Size and Capacity: (for paper feed unit)	Optional paper feed unit not available	Paper Feed Unit (Optional): 500 sheets, available paper size USA: Letter, Legal Europe: A4, A5 sideways Asia: A4, A5 sideways, F/F4



Technical Bulletin

No. F/L Series - 041

SUBJECT: New Model LSOMkII

DATE:

1996. 8. 18

1.2. FEATURES

Sub-Title	Item	LSO	LSOMkII
Equipment	Fax Expansion Card (1MB / 2MB / 4MB)	Not available	Available
	Optional paper feed unit	Not available	Available (500 sheets)
Features	Reverse Order Printing	Not available	Available (with 1/2/4MB memory card)
	Sort Copy	Not available	Available (with 1/2/4MB memory card)

1.4. OVERALL MACHINE CONTROL (Please refer to page 7.)

1.5. VIDEO DATA PATH (Please refer to page 8 and 9.)

1.6. POWER DISTRIBUTION DIAGRAM (Please refer to page 10.)

2. DETAILED SECTION DESCRIPTIONS

2.1. Scanner

2.1.1. Mechanisms

The scanning speed of LSOMkII: 2.7 s. (Slerexe Letter).
(The scanning speed of LSO: 5.7 s.)

2.2. PRINTING

2.2.7. Paper Feed

5. Drive Mechanism

Paper Feed Priority

If all the cassettes contain paper of the same size, the machine uses the paper in the optional paper feed unit first, the paper in the standard cassette second, and the paper in the optional 100 sheet cassette last. However, this order can be changed with printer bit switch 02 bit 0.
(Please refer to section 4 of this RTB.)

**Technical Bulletin****No. F/L Series - 041****SUBJECT:** New Model LSOMkII**DATE:**

1996. 8. 18

2.2.8. Registration**Jam Detection**

New error codes have been added for the optional paper feed unit (500 sheets).

	Condition	Error Code
When the optional paper feed unit is used	When the relay sensor in the paper feed unit is not turned on within 2.0 seconds after the paper feed clutch is turned on.	9-50
	When the registration sensor in the fax machine is not turned on within 2.0 seconds after the paper feed motor started.	9-51

2.2.13. Paper Size Selection

Same as the previous page for the Paper Feed Priority.

2.4. PCBs

2.4.1. FCE3 (Please refer to page 11.)

2.4.2. FDU2 (Please refer to page 13.)



Technical Bulletin

No. F/L Series - 041

SUBJECT: New Model LSOMkII

DATE:

1996. 8. 18

4. SERVICE TABLES AND PROCEDURES

The settings and the switches that are different from the LSO are shaded.

Communication Parameters:

Mode	DCS: ITU-T standard NSS: Non-standard G3
Modem rate	144: 14400 bps 120: 12000 bps 96: 9600 bps 72: 7200 bps 48: 4800 bps 24: 2400 bps
Communication mode	ECM: With ECM SSC: Using SSC EFC: Using EFC NML: With no ECM, SSC, or EFC
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression
Resolution	SSF: Fine, transmitted at 8 x 15.4 dots per mm DTL: Detail, transmitted at 8 x 7.7 dots per mm STD: Standard, transmitted at 8 x 3.85 dots per mm
I/O rate	0M: 0 ms/line 10M: 10 ms/line 2/M: 2.5 ms/line 20M: 20 ms/line 5M: 5 ms/line 40M: 40 ms/line
Width and reduction	=A4: A4 (8.3"), no reduction =B4: B4 (10.1") no reduction >A4: Reduced to A4 (8.3") before transmission

Printer Switch 02		
	FUNCTION	COMMENTS
0	Paper Feed Priority 0: Optional paper feed unit > 100 sheet cassette > Standard cassette 1: Optional paper feed unit > Standard cassette > 100 sheet cassette	This bit determines which set of priorities the machine uses for feeding the paper when all the cassettes contain the same paper size.
1 to 7	Not used	Do not change the settings.



Technical Bulletin

No. F/L Series - 041

SUBJECT: New Model LSOMkII

DATE:

1996. 8. 18

G3 Switch 05

	FUNCTION	COMMENTS
0 to 3	Initial Tx modem rate Bit 3 2 1 0 Setting (bps) 0 0 0 1 2.4k 0 0 1 0 4.8k 0 0 1 1 7.2k 0 1 0 0 9.6k 0 1 0 1 12.0k 0 1 1 0 14.4k Other settings - Not used	These bits set the initial starting modem rate for transmission.
4 to 7	Not used	Do not change the settings.

G3 Switch 06

	FUNCTION	COMMENTS
0 to 3	Initial Rx modem rate Bit 3 2 1 0 Setting (bps) 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0k 0 1 1 0 14.4k Other settings - Not used	The setting of these bits is used to inform the transmitting terminal of the available modem rate for the machine in receive mode. Use a lower setting if high speeds pose problems during reception.
4 to 7	Modem types available for reception Bit 7 6 5 4 Setting 0 0 0 1 V27ter 0 0 1 0 V27ter and V29 0 0 1 1 V27ter, V29, V33 0 1 0 0 V27ter, V29, V33 Other settings - Not used	The setting of these bits is used to inform the transmitting terminal of the available modem type for the machine in receive mode.

**SUBJECT:** New Model LSOMkII**DATE:**

1996. 8. 18

5. REPLACEMENT AND ADJUSTMENT

5.11. IMAGE ADJUSTMENT

5.11.3. Printer Parameters

New parameters have been added for the adjustment of the paper feed unit.

1. Margin (Main Scan Direction)

Parameter	RAM Address	Unit	Initial Setting
W1	Optional Paper Feed Unit 800358(H)	0.5mm	07(H) Min:0(H) / Max:64(H)

2. Margin (Sub Scan Direction)

Parameter	RAM Address	Unit	Initial Setting
L1	Optional Paper Feed Unit 80034E(H)	0.5mm	06(H) Min:0(H) / Max:30(H)

6. TROUBLE SHOOTING

6.4. ERROR CODES

New error codes have been added for the book scanner.

Code	Meaning	Suggested Cause / Action
9-90	Scanner home position: H.P. sensor does not go On, when the scanner returns to the home position.	Check the H.P. sensor (and its connection) Replace the FCE.
9-91	Scanner home position: H.P. sensor does not go Off, when the scanner starts scanning	Check the H.P. sensor (and its connection) Replace the FCE.

DATE: _____

1996. 8. 18

[illegible]

The FCE3 (Facsimile Control Engine) contains the FCIP (Facsimile Control and Image Processor), DRAM, SRAM, System ROM, R144EFL modem, and video processing memory, and controls the entire system through the FDU2 (Facsimile Driver Unit).

There are two cpus in the machine: the main cpu (FCIP) on the FCE and the energy saver cpu on the FDU. In energy saver mode, the main CPU switches off and the energy saver CPU takes over.

The FCIP consists of the following component blocks:

- RU8 CPU - Main CPU
- LIF- Laser Interface
- PRIF - Printer Interface
- DCR - Data Compression and Reconstruction
- MDM - Modem (only used for V.21)
- DMAC - DMA Controller
- DIP - Digital Image Processor

The modem in the FCIP is used for V.21 communications (and also as a tone generator). The Rockwell R144EFL modem is used for V.33, V.29, and V.27ter communications.

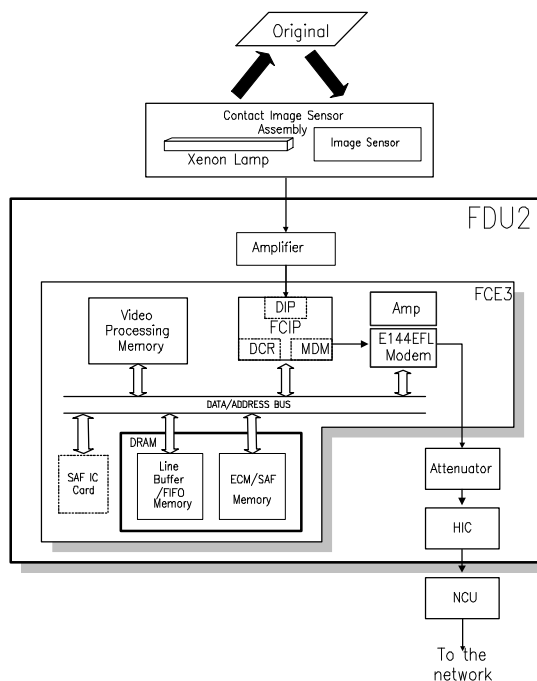
The FCE3 contains two 2 MB DRAMs. The DRAM contains the SAF memory, ECM buffer memory, work area, and page memory. The SAF memory can be extended by 1, 2, or 4 Mbytes with an optional IC card.

Another 2MB DRAM is used only as a page memory.

A 512 kB (4 Mbit) flash ROM is used for the system ROM. Software in this ROM can be rewritten from the IC card slot or by RDS. Another 128 kB mask ROM contains LCD wording data.

SUBJECT: New Model LSOMkII**DATE:**

1996. 8. 18

1.5.VIDEO DATA PATH**1.5.1. Transmission**

H522V502.wmf

DIP: Digital Image Processor

DCR: Data Compression & Reconstruction

Immediate Transmission:

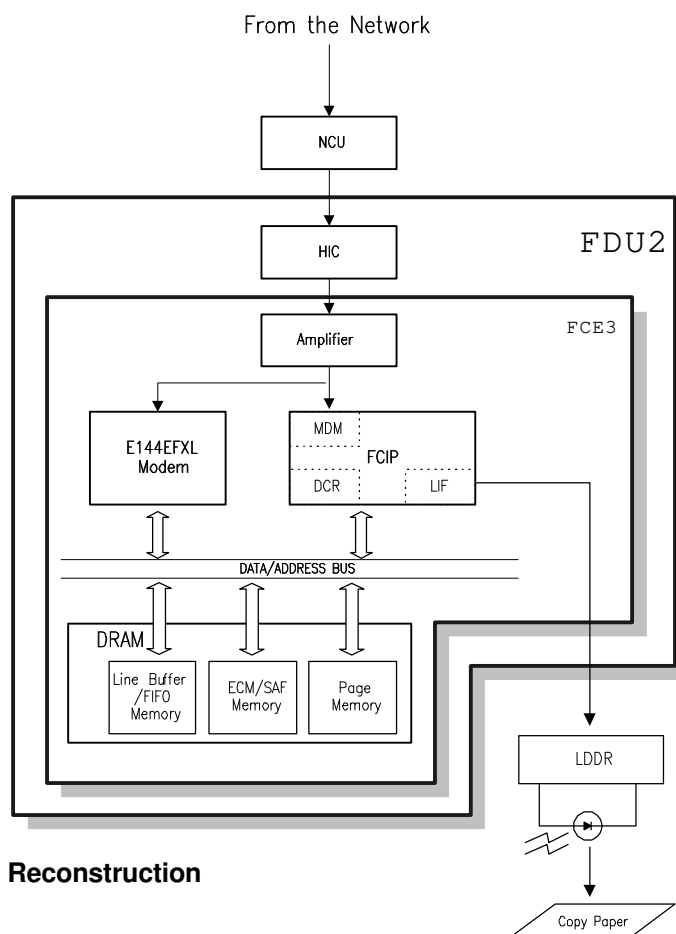
Scanned data from the contact image sensor passes to the DIP block in the FCIP. After analog/digital video processing, the DCR block compresses the data for transmission. The compressed data then passes either to the FIFO memory or to the ECM memory before it is sent to the telephone line through the modem.

Memory Transmission:

First, the scanned data is stored in the SAF memory after compression in the DCR block. At the time for transmission, the DCR block decompresses the data from the SAF memory, then compresses it again after handshaking with the other terminal is done. The compressed data then passes either to the FIFO memory or to the ECM memory, before it is sent to the telephone line through the modem.

SUBJECT: New Model LSOMkII**DATE:**

1996. 8. 18

1.5.2. Reception**LIF: Laser Interface****DCR: Data Compression & Reconstruction****MDM: Modem**

H522V503.wmf

Data from the line passes to the modem through the NCU and hybrid IC. After the modem demodulates the data, the decompressed data passes to the DCR block, through either the FIFO or the ECM memory, where the data is decompressed to raster image data. At the same time, the compressed data passes to the SAF memory as a backup in case of mechanical problems during printing (substitute reception).

The raster image data is then passed to the page memory for printing. After a page of data has been stored in the page memory, the data is sent to the LDDR through the LIF block.

DATE: _____

1996. 8. 18

1.6.1. Distribution Diagram

The PSU supplies +24V dc power to the FDU. The FDU converts the +24V dc power supply to the following supplies.

+5V	This is normally on when the main switch is on.
+5VE	This is used for detecting an activation signal from the NCU, document feeder, or operation panel when the machine is in energy saving mode.
+5VLD	This supplies the laser diode. It is interrupted if the fusing unit cover interlock switch opens.
+5VV	This is a more stable power supply than +5V. It is used for the Contact Image Sensor.
+5VD	This supplies back up power for the DRAM and the optional IC card on the FCE. It can back up stored data for one hour after the power is switched off. A rechargeable battery on the FDU is used to generate +5VD.
+5VBAT	This supplies back up power to the system RAM on the FCE to back up the programmed data. A lithium battery is used to generate +5VBAT.
+24V	This is normally on when the main switch is on.
+24VD	This is interrupted if the fusing unit cover interlock switch opens.
+24VIN	This supplies +24V to the fusing unit on/off switching circuit. It is interrupted if the fusing unit cover interlock switch opens.
+24VM	This is interrupted if the machine enters energy saving mode.
-5V	This is used for the image sensor.
+12VP	This is supplied to the Flash ROM on the FCE and the optional IC card.

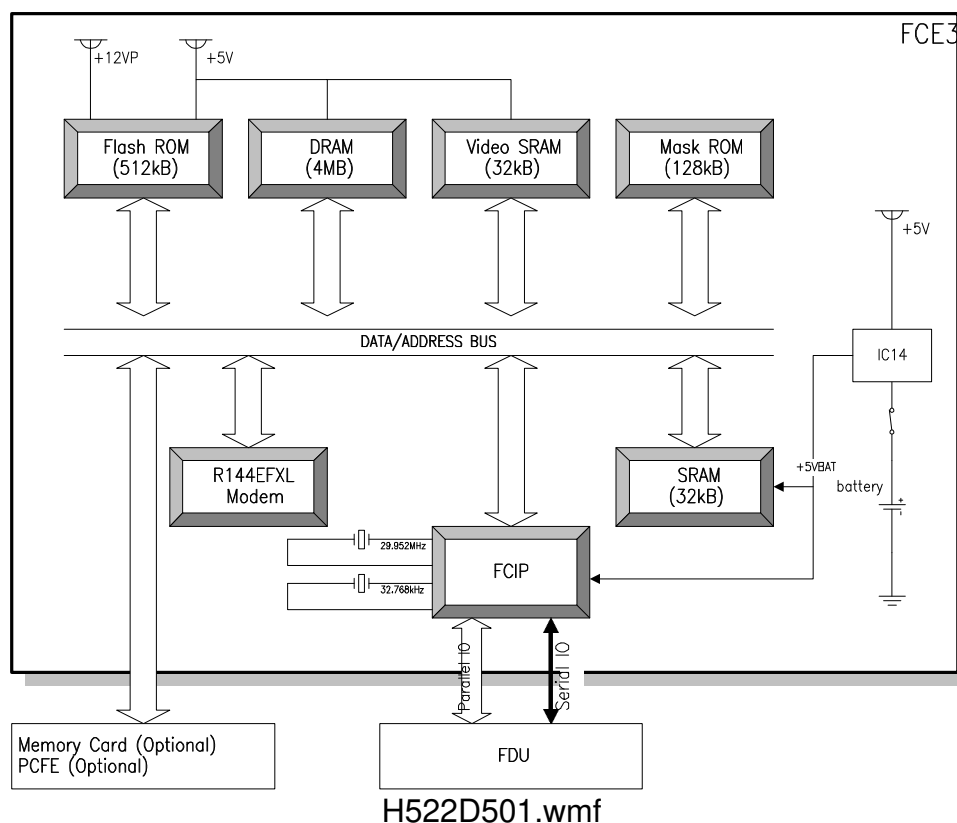
SUBJECT: New Model LSOMkII

DATE:

1996. 8. 18

2.4. PCBs

2.4.1. FCE3



1. FCIP (Facsimile Controller and Image Processor)

- CPU
- Modem (V.21, tone generator)
- Data compression and reconstruction (DCR)
- Digital image processor (DIP)
- Laser interface (LIF)
- DMA controller
- Clock generation
- Stepper motor control
- Serial interface to the FDU
- DRAM backup control
- Ringing signal/Tone detection
- Fusing lamp control

**SUBJECT:** New Model LSOMkII**DATE:**

1996. 8. 18

2. Modem (Rockwell R144EFL)

- V.33 / V.29 / V27ter. modem

3. ROM

- 512 kB (4 Mbit) flash ROM for system software storage.
- 128 kB (1 Mbit) mask ROM for LCD wording data storage (not used in the US model)

4. DRAM

- 2x2 MB DRAM shared between the line buffer (32 KB), ECM buffer (128 KB), Page memory (3 MB), and SAF memory (640' KB).
- Backed up by the battery on the FDU.

5. SRAM

- 32 kB SRAM for system and user parameter storage.
- Backed up by the battery on the FCE.

6. Video SRAM

- 32 KB SRAM for video processing.

7. Oscillators

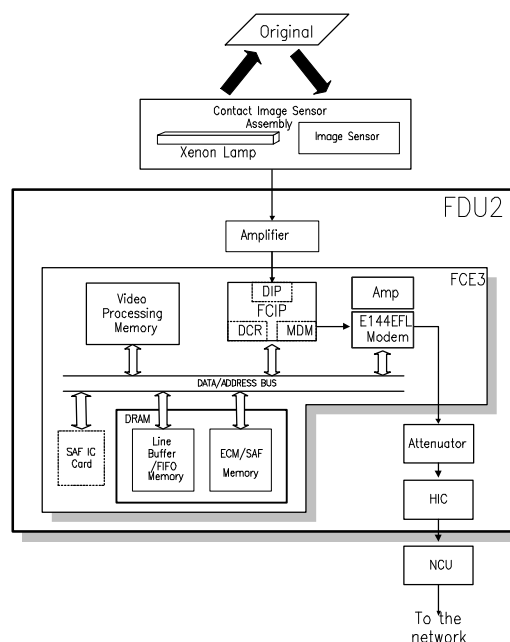
- 29.952 MHz oscillator for system clock generation.
- 32.768 MHz oscillator for the real time clock. This is backed up by the battery on the FCE.
- 38.00053 MHz oscillator for the R144EFL modem.

8. Jumpers, Switches, and Test Points

Item	Description
SW1	Switches the backup battery ON/OFF

SUBJECT: New Model LSOMkII**DATE:**

1996. 8. 18

2.4.2. FDU2

H522D502.wmf

1. Power Saver CPU

- 4 bit CPU for controlling the machine during power saver mode.

2. PSIF (Peripheral Serial I/F)

- One of the gate-array controlling the paper feed motor, and catch the ADF sensor's data, and the book-size sensor's data.

3. EXIO (External I/O)

- Serial interface to the FCE and OPU.
- Serial interface to an optional paper feed unit.
- Parallel interface to the main motor, clutches, and sensors.

4. Motor Driver (SLA7024M)

- Controlling the ADF motor, and the scanner motor. (Except the paper feed motor)

5. HIC (Hybrid IC)

- 2-4 wire switching
- Filters and amplifiers
- Monitor speaker driver

6. DC/DC Converters

- +5V generation
- 12V generation

Model: LSO-MKII

Issued on: August 28th, 1996
Revision 1.0
Subject to change

