RICOH

TECHNICAL BULLETIN

Model: FR6	Date: 31-Oct-97	No: 001	1/35
Subject: New Model FR6 Release		Prepared by: K. Misugi	
From: Technical Service Department		Checked by: S. Fujii	

Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other ( )		

The new model FR6 (FAX3800L) has been released as a successor model to the FX6 (FAX2700L).

This technical bulletin contains information on differences between the FR6 and the FX6. They are listed in order of sections that appear in the service manual.

1. OVERALL MACHINE INFORMATION

1.1. SPECIFICATIONS

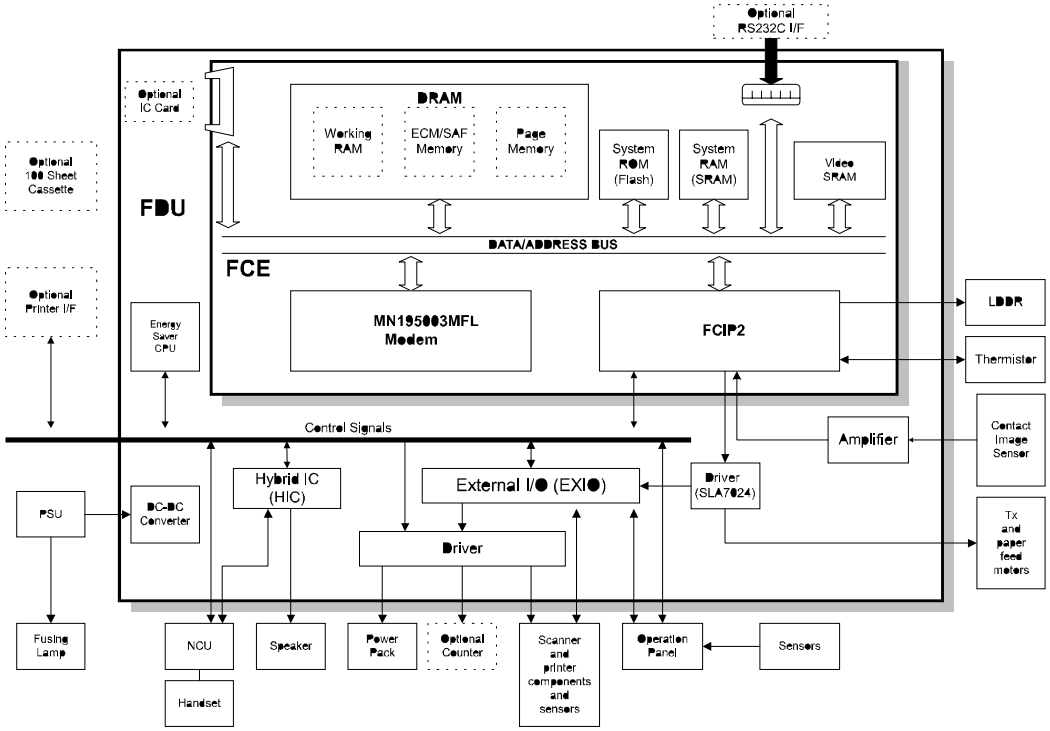
Item	FX6	FR6
Maximum Scan Width	216 mm [8.5 ins] ± 0.25%	256 mm [10 ins] ± 0.25% (Effective Scan Width: 250 mm [9.8 ins])
Memory Capacity (SAF)	244 kbytes (19 pages/ITU-T #1 Chart)	0.5 Mbyte (40 pages/ITU-T #1 Chart) With 1 Mbyte memory card:120 pages With 2 Mbytes memory card: 200 pages With 4 Mbytes memory card: 360 pages
Compression	MH, MR, EFC, MMR, SSC	MH, MR, MMR, SSC
Modulation	V.29, V.27, V.21	V.34, V.17, V.29, V.27ter, V.21
Data Rate	9,600/7,200/4,800/2,400 bps	33,600/31,200/28,800/26,400/ 24,000/21,600/19,200/16,800/ 14,400/12,000/9,600/7,200/4,800/ 2,400 bps Automatically adjusted in accordance with V.34, Automatic fallback to V.17, V.29, V.27ter
Transmission Time	9 s at 9600 bps; G3 ECM, ITU-T # 1 Chart, STD	3 s at 28,800 bps: G3 ECM, ITU-T # 1 Chart, STD
Paper Feed Unit	Not Available	Optional Paper Feed Unit Available (500 sheets, Letter, Legal)

1.2. FEATURES

The following features are available.

Features	FX6	FR6
Confidential Reception	Available with memory card	Standard
Batch Transmission	Available with memory card	Standard
Economy Transmission	Not available	Standard
Forwarding	Available with memory card	Standard
Personal codes with Conf. ID	Available with memory card	Standard
Transmission Deadline (TRD)	Available with memory card	Standard
Two in one	Not available	Available
Checkered mark	Not available	Available
Confidential ID	Available with memory card	Standard
Memory Lock (ID)	Available with memory card	Standard
Multi-Sort Document Reception	Available with memory card	Standard
Reverse Order Printing	Available with memory card	Standard
User Function Keys	Not available	Available (2 keys)
Confidential File Report	Available with memory card	Standard

1.4. OVERALL MACHINE CONTROL



The FCE contains the FCIP2, DRAM, SRAM, System ROM, MN195003MFL modem, and video processing memory. It controls the entire system through the FDU.

The FCIP2 does not contain the modem block. The Panasonic MN195003MFL modem is used for all the communications (V.34, V.17, V.29, V.27ter., and V.21).

The 2 MB 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 IC card option. A 1 MB (8 Mbit) flash ROM is used for the system ROM.

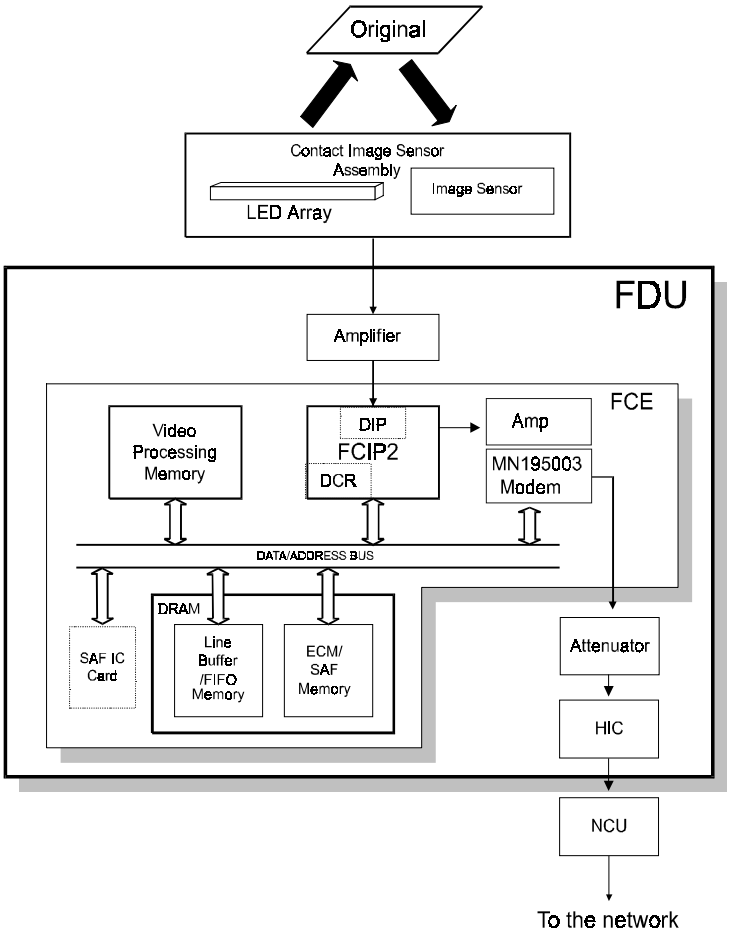
The FR6 uses two CPUs in the same way as the FX6. These are the main CPU in the FCIP2 and the power saver CPU which is used during the 2 W power saver mode.

The main differences in PCB components between the FR6 and the FX6 are listed below.

	FX6	FR6
FCE	FCIP used	FCIP2 used (The FCIP2 is used in common with the LFO.)
	Rockwell R144EFXL modem used.	Panasonic MN195003MFL modem used.
	512 kB (4 Mbit) flash ROM used.	1 MB (8 Mbit) flash ROM used.
	1 MB DRAM used.	2 MB DRAM used.
FDU	FPD motor driver used.	SLA7024M motor driver used.

1.5. VIDEO DATA PATH

1.5.1 Transmission



Immediate Transmission:

Scanned data from the CIS passes to the DIP block in the FCIP2. 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 through the modem. The MN195003 modem is used for all the communications.

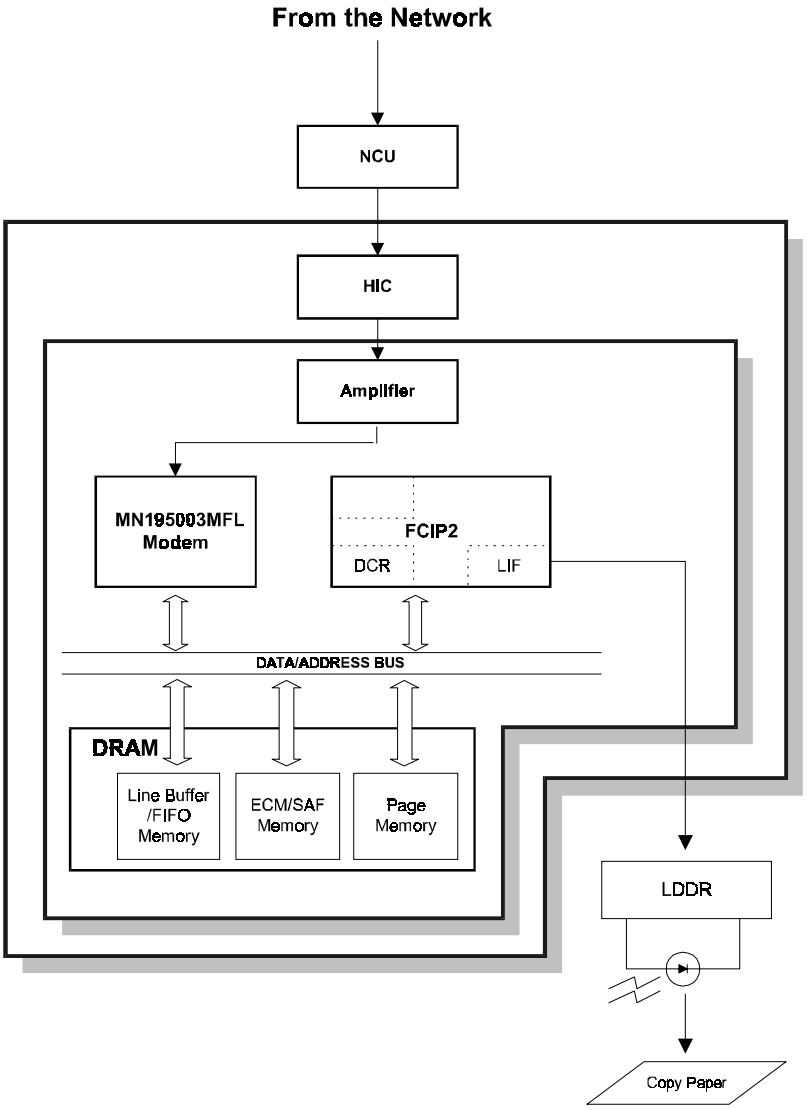
Memory Transmission:

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.

Parallel Memory Transmission:

This feature allows the machine to scan a document into the SAF memory and send the same document simultaneously.
The machine stores the processed video data in the SAF memory and sends the data through the modem at the same time.

1.5.2. Reception



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.

2. DETAILED SECTION DESCRIPTIONS

2.3. SYSTEM FEATURES

2.3.2. Automatic Service Calls

The following RAM addresses are different from the FX6.

2. Excessive Jam Alarms

Parameters	Address (H)		Initial Settings	Sys. Para. List
	ADF	Printer		
DEC (1 - 255; 0 = Disabled)	8001F5	8001F9	10 (H)	X
CALL (3 - 15; 0 = Disabled)	8001F6	8001FA	06 (H)	Y
CLR **(Low)**	8001F7	8001FB	30 (H)	–
(High)	8001F8	8001FC	00 (H)	

Counters	Address (H)		Sys. Para. List
	ADF	Printer	
JAM: Jam counter used to place a service call	8001EE	8001F2	Z
NO-JAM1: Counter used for JAM counter decrement	8001ED	8001F1	–
NO-JAM2: Counter used for clearing the JAM counter	8001EF (Low)	8001F3 (Low)	–
	8001F0 (High)	8001F4 (High)	

3. Periodic Service Call

Parameters		Address (H)
Call interval: 01 through 15 month(s) (BCD) 00: Periodic Service Call Disabled		800266
Date and time of the next call		
	Year: last two digits of the year (BCD)	800267
	Month: 01 through 12 (BCD)	800268
	Day: 01 through 31 (BCD)	800269
	Hour: 00 through 23 (BCD)	80026A

4. PM Call

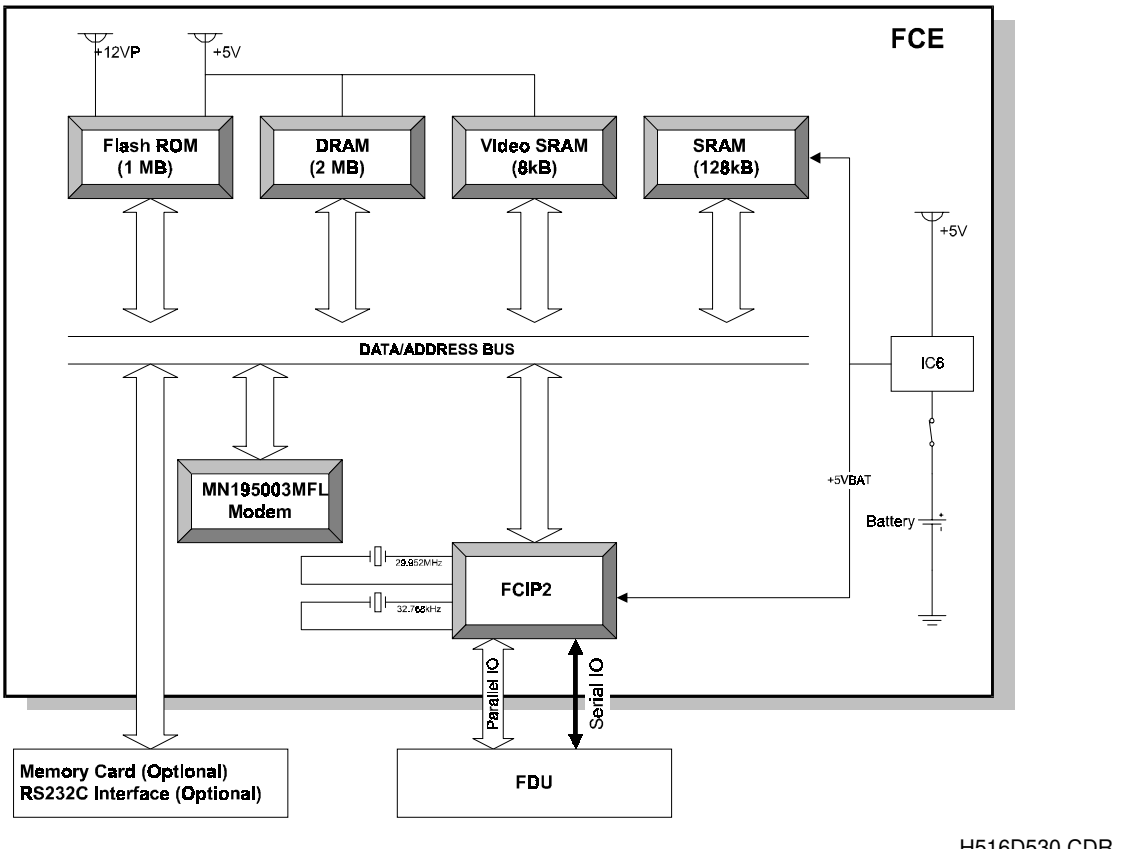
Address (H)	Bits 7 - 4	Bits 3 - 0
80019A	Tens	Units
80019B	Thousands	Hundreds
80019C	Hundred thousands	Ten thousands

5. Effective Term of Service Calls

	Address (H)
Year: last two digits of the year (BCD)	800271
Month: 01 through 12 (BCD)	800272
Day: 01 through 31 (BCD)	800273

2.4. PCBs

2.4.1. FCE



1. **FCIP2 (Facsimile Controller and Image Processor)**
   - CPU
   - 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
   - Fusing lamp control

2. **Modem (Panasonic MN195003MFL)**
   - V.34, V.17, V.29, V.27ter, V.21 modem

3. **ROM**
   - 1 MB (8 Mbit) flash ROM for system software storage.

4. DRAM

- 2 MB DRAM shared between the Line Buffer (32 kB), ECM Buffer (128 kB), Page Memory (768 kB), SAF memory (512 kB), and working area.
- Backed up by the battery on the FDU.

5. SRAM

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

6. Video SRAM

- 8 kB SRAM for video processing.

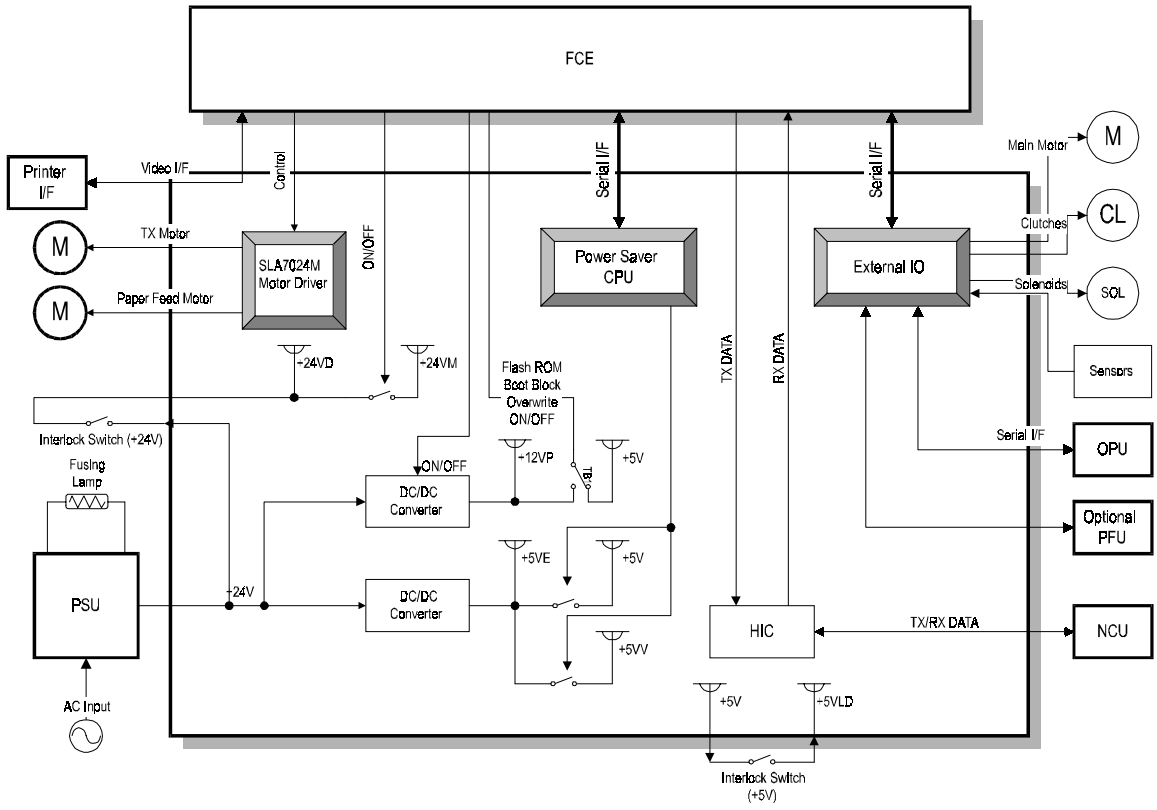
7. Oscillators

- 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.
- 24.192 MHz oscillator for the MN195003MFL modem.

8. Jumpers, Switches, and Test Points

Item	Description
SW1	Switches the backup battery ON/OFF

2.4.2. FDU



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1. **Power Saver CPU**
   - 4-bit CPU for controlling the machine during power saver mode

2. **DC/DC Converters**
   - +5V generation
   - +12V generation

3. **Motor Driver (SLA7024M)**
   - Stepper motor driver

4. **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

5. **HIC (Hybrid IC)**
   - 2-4 wire switching
   - Filters and amplifiers
   - Monitor speaker driver

6. Interlock Switches

- The fusing unit interlock switch (+24V) disables the power supply to the drive components and the power pack.
- The fusing unit interlock switch (+5V) disables the laser diode power.

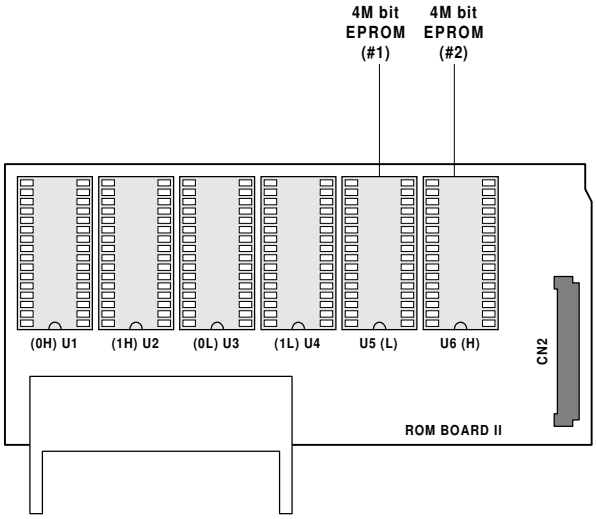
4. SERVICE TABLES AND PROCEDURES

4.1. SERVICE LEVEL FUNCTIONS

4.1.20. Software Download (Function 12)

This function copies software from an external medium to the Flash ROM on the machine's FCE. The procedures to download the software are the same as for the FX6 series.
However, if you are using the EPROM board, you must mount two 4-Mbit EPROMs because this machine uses an 8-Mbit EPROM on the FCE.

NOTE: The Flash/SRAM data copy board which is used in common with the ADAM and LFO (P/N: A1939351) must be used for this procedure.



Data Copy Board P/N: A1939351

Mount the 4-Mbit EPROM #1 in the ROM socket U5 (L) and the 4-Mbit EPROM # 2 in the ROM socket U6 (H) as shown.

It is not necessary to change the jumper at TB1 on the FCU or change system bit switch 02 bit 5 for this machine.

4.2. BIT SWITCHES

RAM Reset Level 1:

The address for RAM reset level 1 has been changed to 800005(H).
Change the data to FF(H), then turn the machine off and on to reset all the system settings.

Communication Parameters

Mode	DCS: ITU-T standard	NSS: Non-standard G3
Modem rate	336: 33,600 bps 312: 31,200 bps 288: 28,800 bps 264: 26,400 bps 240: 24,000 bps 216: 21,600 bps 192: 19,200 bps	168: 16,800 bps 144: 14,400 bps 120: 12,000 bps 96: 9,600 bps 72: 7,200 bps 48: 4,800 bps 24: 2,400 bps
Communication mode	ECM: With ECM SSC: Using SSC NML: With no ECM or SSC	
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 2/M: 2.5 ms/line 5M: 5 ms/line	10M: 10 ms/line 20M: 20 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	

System Switch 02		
No	**FUNCTION**	**COMMENTS**
5	Not used	Do not change the settings.

System Switch 06		
No	**FUNCTION**	**COMMENTS**
5	PC Fax Expander Function 0: Disabled 1: Enabled	1: Set this bit to 1 when the PC Fax Expander option has been installed.

System Switch 10		
No	**FUNCTION**	**COMMENTS**
0 to 7	Threshold memory level of parallel memory transmission	Threshold memory = N × 64 kbytes + 256 kbytes N can be between 00 - FF(H) Default setting: 04(H) = 512 kbyte

System Switch 11		
No	**FUNCTION**	**COMMENTS**
6	Conditions for memory reception if no RTI or CSI is received 0: Allow memory reception only when RTI or CSI is received 1: Allow memory reception only when RTI or CSI is received and a printer (mechanical) error has occurred	This switch functions in combination with user parameter switch 05 bit 1. User parameter switch 05 bit 1 must be set to 1 to enable this switch. User parameter switch 05 bit 1: Switch to allow memory reception if no RTI or CSI is received. 0: Allow memory reception for all communications 1: Reject if RTI or CSI is not received

System Switch 17		
No	**FUNCTION**	**COMMENTS**
6	Dialing without inserting a document 0: Disabled 1: Enabled	0: Dialing cannot be done without inserting a document in the ADF.

Printer Switch 02		
No	**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.

Communication Switch 01		
No	**FUNCTION**	**COMMENTS**
1	Not used	Do not change the settings.

Communication Switch 17		
No	**FUNCTION**	**COMMENTS**
0	Selective Polling Reception 0: Disabled 1: Enabled	1: Selective polling reception (SEP) is disabled.
1	Subaddress function (RX) 0: Disabled 1: Enabled	1: Subaddress reception is disabled.

G3 Switch 03		
No	**FUNCTION**	**COMMENTS**
2	Use of V.8 protocol 0: Disabled 1: Enabled	1: V.8 protocol is disabled.

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 0 1 1 1 16.8k 1 0 0 0 19.2k 1 0 0 1 21.6k 1 0 1 0 24.0k 1 0 1 1 26.4k 1 1 0 0 28.8k 1 1 0 1 31.2k 1 1 1 0 33.6k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers.
4 to 5	Initial modem type for 9.6k or 7.2kbps (transmission) **Bit 5 Bit 4 Setting** 0 0 V.29 0 1 V.17 1 0 Not used 1 1 Not used	These bits set the initial modem type for 9.6k and 7.2kbps, if the initial modem rate is set at these speeds.

G3 Switch 06		
	FUNCTION	**COMMENTS**
0 to 3	Initial Rx 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 0 1 1 1 16.8k 1 0 0 0 19.2k 1 0 0 1 21.6k 1 0 1 0 24.0k 1 0 1 1 26.4k 1 1 0 0 28.8k 1 1 0 1 31.2k 1 1 1 0 33.6k 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 V.27ter 0 0 1 0 V.27ter, V.29 0 0 1 1 Not used 0 1 0 0 V.27ter, V.29, V.17, 0 1 0 1 V.27ter, V.29, V.17, V.34 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.

4.5. SERVICE RAM ADDRESSES

The complete RAM addresses are listed because there are too many changes from the FX6.

800005(H) - RAM Reset Level 1
Change the data at this address to FF (H), then switch the machine off and on to reset all the system settings.
Caution: Before using this RAM, print the settings of all the system parameters (System Parameter List).

800001 to 800004(H) - ROM version (Read only)
800001(H) - Revision number (BCD)
800002(H) - Year (BCD)
800003(H) - Month (BCD)
800004(H) - Day (BCD)

800006 to 800016(H) - Machine's serial number (17 digits - ASCII)

800018(H) - Total program checksum (low)
800019(H) - Total program checksum (high)

80001A(H) - Boot program checksum (low)
80001B(H) - Boot program checksum (high)

80001C(H) - Main program checksum (low)
80001D(H) - Main program checksum (high)

80001E(H) - RDS program update counter (hex)

800020 to 80003F(H) - System bit switches
800040 to 80004F(H) - Scanner bit switches
800050 to 80005F(H) - Printer bit switches
800060 to 80007F(H) - Communication bit switches
800080 to 80008F(H) - G3 bit switches

8000A0(H) - User parameter switch 00
Bit 0: Stamp home position — 0: Disabled, 1: Enabled
Bits 1 and 2: Scanning contrast home position

Bit 2	1	Setting
0	0	Normal
0	1	Lighten
1	0	Darken

Bit 3: Do not adjust
Bits 4 and 5: Scanning resolution home position

Bit 5	4	Setting
0	0	Standard
0	1	Detail
1	0	Fine

Bit 6: Transmission mode home position — 0: Memory tx, 1: Immediate tx
Bit 7: Halftone home position — 0: Disabled, 1: Enabled

8000A1(H) - User parameter switch 01
Bits 0 to 6: Not used
Bit 7: Settings return to home position after transmission 0: Disabled , 1: Enabled

8000A2(H) - User parameter switch 02
Bit 0: Forwarding mark printing on forwarded messages 0: Disabled, 1: Enabled
Bit 1: Center mark printing on received copies 0: Disabled, 1: Enabled
Bit 2: Reception time printing 0: Disabled, 1: Enabled
Bit 3: TSI included in transmitted messages 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing 0: Disabled, 1: Enabled
Bits 5 to 7: Not used

8000A3(H) - User parameter switch 03 (Automatic report printout)
Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report 0: Off, 1: On
Bit 3: Polling reserve report (polling reception) 0: Off, 1: On
Bit 4: Polling result report (polling reception) 0: Off, 1: On
Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6: Polling clear report 0: Off, 1: On
Bit 7: TCR (Journal) 0: Off, 1: On

8000A4(H) - User parameter switch 04
Bit 0: Automatic confidential reception report output 0: Off, 1: On
Bits 1 to 6: Not used
Bit 7: Inclusion of a sample image on reports 0: Off, 1: On

8000A5(H) - User parameter switch 05
Bit 0: Substitute reception 0: Off, 1: On
Bit 1: Memory reception if no RTI or CSI received 0: Possible, 1: Impossible
Bits 2 and 3: Not used
Bit 4: Restricted Access 0: Off, 1: On
Bit 5: Not used (keep this bit at 0.)
Bit 6: Fusing lamp control during energy saver mode
0: Lamp off, 1: Standby temperature (80 °C)
Bit 7: Not used (keep this bit at 0.)

8000A6(H) - User parameter switch 06
Bit 0: TTI 0: Off, 1: On
Bit 1: Not used
Bit 2: Closed network for transmission 0: Off, 1: On
Bit 3: Not used
Bit 4: Batch transmission 0: Off, 1: On
Bits 5 to 7: Not used

8000A7(H) - User parameter switch 07

Bits 0 to 2: Not used
Bit 3: Automatic reduction (B4 ->> A4) before transmission 0: Off, 1: On
Bits 4 to 7: Not used

8000A8(H) - User parameter switch 08

Bit 0 and 1: Multi-copy reception

Bit 1	0	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are multi-copied.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are multicopied.

Bits 2 and 3: Authorized reception

Bit 3	2	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are accepted.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.

Bits 4 and 5: Specified cassette selection (optional PFU required)

Bit 3	2	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are printed to the paper in a specified cassette.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are printed to the paper in a specified cassette.

Bits 6 and 7: Forwarding

Bit 1	0	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are forwarded.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are forwarded.

8000A9(H) - User parameter switch 09

Bits 0 and 1: Memory lock (optional memory card required)

Bit 1	0	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified are kept in the memory until a memory lock ID is entered.
1	1	Faxes from senders whose RTIs/CSIs are not specified are kept in the memory until a memory lock ID is entered.

Bits 2 to 7: Not used

8000AA(H) - User parameter switch 10

Bit 0: Reverse order printing — 0: Disabled, 1: Enabled

Bit 1: Two in 1 (printing two Half-letter (A5) messages onto one Letter (A4) paper) — 0: Disabled, 1: Enabled

Bits 2 to 6: Not used

Bit 7: Halftone type — 0: Error diffusion, 1: Dither

8000AB(H) - User parameter switch 11

Bits 0 to 5: Not used

Bit 6: Printout of messages received while acting as a forwarding station — 0: Off, 1: On

Bit 7: Polling Standby duration — 0: Once, 1: No limit

8000AC(H) - User parameter switch 12

Bits 0 and 1: Not used

Bit 2: Toner saving mode — 0: Disabled, 1: Enabled

Bits 3 and 4: Printout image density (Fax mode)

Bit 4	3	Setting
0	0	Normal
0	1	Lighten
1	0	Darken
1	1	Not used

Bits 5 to 7: Not used

8000AD(H) - User parameter switch 13

Bits 0 and 1: PSTN access method from behind PABX

Bit 1	0	Setting
0	0	PSTN
0	1	Loop start
1	0	Ground start
1	1	Flash start

Bits 2 to 7: Not used

8000AE - 8000AF(H) - User parameter 14 to 15

Not used

8000B9(H) - User function 62 settings

Bit 0: Night timer — 0: Disabled, 1: Enabled

Bits 1 to 3: Not used

Bit 4: RDS operation — 0: Not acceptable
1: Acceptable for the limit specified by system switch 03

Bits 5 and 6: Not used

Bit 7: Daylight saving time — 0: Disabled, 1: Enabled

8000BA(H) - User function 62 settings

Bit 0: Not used

Bit 1: Dialing type — 0: Pulse dialing (10 pps), 1: Tone (DTMF) dialing

Bits 2 to 7: Not used

8000BB(H) - PSTN access number for loop start

Access number	Hex value to program (BCD)
0	F0
⇩	⇩
0	F0
00	00
⇩	⇩
99	99

8000C8 to 8000DB(H) - RTI (Max. 20 characters - ASCII) - **Note 1**
8000DC to 8000EF(H) - CSI (Max. 20 characters - ASCII)
8000F0 to 80010F(H) - TTI (Max. 32 characters - ASCII) - **Note 1**
800110(H) - Number of CSI characters (Hex)

Note 1: If the number of characters are less than the maximum (20 for RTI, 32 for TTI), add a stop code (FF[H]) after the last character.

800111 to 80011F(H) - Service station's fax number (Service function 13)

800120 to 80012E(H) - Own fax number (User function 61)

80012F(H) - ID code (low - Hex)
800130(H) - ID code (high - Hex)

800131(H) - Confidential ID (low - BCD)
800132(H) - Confidential ID (high - BCD)

800133(H) - Memory lock ID (low - Hex)
800134(H) - Memory lock ID (high - Hex)

800140 to 800146(H) - Last power off time (Read only)

800140(H) - Year (BCD)
800141(H) - Month (BCD)
800142(H) - Day (BCD)
800143(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday
800144(H) - Hour
800145(H) - Minute
800146(H) - Second

800150(H) - Optional equipment (Read only)

Bit 0: Memory card 0: Not installed, 1: Installed
Bit 1-3: Not used
Bit 4: 100-sheet cassette 0: Not installed, 1: Installed
Bit 5: Paper feed unit 0: Not installed, 1: Installed
Bit 6-7: Not used

800151(H) - Optional equipment (Read only)

Bit 0: Not used
Bit 1: Printer interface 0: Not installed, 1: Installed
Bit 2-7: Not used.

The following counters are listed on the System Parameter List. The names used on the system parameter list are given in brackets

800158 to 80015A(H) - Tx counter (TX)

Address	High	Low
800158(H)	Tens digit	Unit digit
800159(H)	Thousands digit	Hundreds digit
80015A(H)	Millions digit	Ten thousands digit

Note: The following counters have the same data format as above.

80015B to 80015D(H) - Rx counter (RX)

80015E to 800160(H) - Scan counter (SCN)

800161 to 800163(H) - Print counter (PRT)

800164 to 800166(H) - Printer interface output counter (PRN)

800167 to 800169(H) - Paper feed counter: standard cassette (UPPER CASSETTE)

80016A to 80016C(H) - Paper feed counter: optional PFU (CASSETTE 2)

80016D to 80016F(H) - Paper feed counter: optional 100-sheet cassette

800170 to 800172(H) - Paper feed counter: bypass feed (BY-PASS)

800176 to 800178(H) - ADF counter (ADF)

80017C to 80017E(H) - Printer total jam counter (COPY JAM)

80017F to 800181(H) - Paper jam counter: standard cassette (UPPER CST JAM)

800182 to 800184(H) - Paper jam counter: optional PFU (CST 2 JAM)

800185 to 800187(H) - Paper jam counter: optional 100-sheet cassette (OPEN CST JAM)

800188 to 80018A(H) - Paper jam counter: bypass feed (BY-PASS)

80018B to 80018D(H) - Scanner total jam counter (DOC. JAM)

80018E to 800190(H) - Fusing exit jam counter (EJECT JAM)

800191 to 800193(H) - Registration jam counter (PAPER JAM)

800197 to 800199(H) - PM counter (PM)

80019A to 80019C(H) - PM call interval: default 60,000 (PM DEFAULT)

80019D to 80019F(H) - Copy counter (COPY)

8001A0 to 8001A2(H) - OPC (master drum) counter (PCU)

8001A3 to 8001A5(H) - OPC (master drum) replacement interval (default: 30,000 prints) The machine asks the user to replace the drum at this interval, if bit 3 of system bit switch 04 is 0.

8001A6 to 8001A8(H) - CTM counter (TONER)

8001ED to 8001FC(H) - Excessive jam call parameters

800200(H) - Number of copies in multi-sort document reception (User function 83)

800201 to 80022A(H) - Night timer period (User function 71)

800201 to 800203(H) - Setting #1 for Monday
800204 to 800206(H) - Setting #2 for Monday
800207 to 800209(H) - Setting #1 for Tuesday
80020A to 80020C(H) - Setting #2 for Tuesday
80020D to 80020F(H) - Setting #1 for Wednesday
800210 to 800212(H) - Setting #2 for Wednesday
800213 to 800215(H) - Setting #1 for Thursday
800216 to 800218(H) - Setting #2 for Thursday
800219 to 80021B(H) - Setting #1 for Friday
80021C to 80021E(H) - Setting #2 for Friday
80021F to 800221(H) - Setting #1 for Saturday
800222 to 800224(H) - Setting #2 for Saturday
800225 to 800227(H) - Setting #1 for Sunday
800228 to 80022A(H) - Setting #2 for Sunday

Program format
First byte - Hour (BCD)
Second byte - Minute (BCD)
Third byte - 00(H): Timer start time, 01(H): Timer end time

800255 to 80025B(H) - Last RDS operation (Read only)

800255(H) - Year (BCD)
800256(H) - Month (BCD)
800257(H) - Day (BCD)
800258(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday
800259(H) - Hour
80025A(H) - Minute
80025B(H) - Second

80025D(H) - Daylight saving time setting (User function 62)

800260(H) - Transmission monitor volume 00 - 07(H)
800261(H) - Reception monitor volume 00 - 07(H)
800262(H) - On-hook monitor volume 00 - 07(H)
800264(H) - Buzzer volume 00 - 07(H)
800265(H) - Key acknowledgment tone volume 00 - 07(H)

800266 to 80026A(H) - Periodic service call parameters

800271 to 800273(H) - Effective term of automatic service calls

8002B4 to 8002B5(H) - Scanning top margin adjustment
8002B6 to 8002B7 (H) - Scanning bottom margin adjustment

80036F(H) - Details of the service call (hardware error)
01(H) - The fusing lamp temperature stayed above 175 °C while printing.
02(H) - The fusing lamp temperature did not reach 150 °C before starting printing.
03(H) - The fusing lamp temperature did not go down to 100 °C while in standby mode (when fusing lamp OFF was selected for power saver mode)
04(H) - The fusing lamp temperature did not go down to 100 °C while in standby mode (when fusing lamp Standby (100 °C) was selected for power saver mode)
05(H) - The fusing lamp temperature stayed below 100 °C while in standby mode (when fusing lamp Standby (100 °C) was selected for power saver mode)
07(H) - The fusing lamp temperature came below 140 °C while printing
08(H) - The fusing lamp temperature exceeded 250 °C
09(H) - A fusing thermistor error was detected

NOTE: When a service call was caused by a fusing unit failure (codes 01 - 09): After fixing the problem, reset the data at this address to 00(H), then restart the machine to clear the service call. (Refer to address 800371(H) for other hardware failures.)

800370(H) - Excessive jam alarm
Bit 3: Scanner excessive jam alarm 1: An alarm has occurred
Bit 4: Printer excessive jam alarm 1: An alarm has occurred

NOTE: Either or both of these bits will change to 1 when an excessive jam alarm occurs. Reset each bit to 0 when you have solved the problem. The machine will not be able to detect excessive jams in future if you do not reset these bits.

800371(H) - Details of the service call (hardware error)
01(H) - The fusing lamp temperature stayed above 175 °C while printing.
02(H) - The fusing lamp temperature did not reach 150 °C before starting printing.
03(H) - The fusing lamp temperature did not go down to 100 °C while in standby mode (when fusing lamp OFF was selected for power saver mode)
04(H) - The fusing lamp temperature did not go down to 100 °C while in standby mode (when fusing lamp Standby (100 °C) was selected for power saver mode)
05(H) - The fusing lamp temperature stayed below 100 °C while in standby mode (when fusing lamp Standby (100 °C) was selected for power saver mode)
07(H) - The fusing lamp temperature came below 140 °C while printing
08(H) - The fusing lamp temperature exceeded 250 °C
09(H) - A fusing thermistor error was detected
11(H) - Charge leak current was detected while the charge corona unit was activated
12(H) - Charge leak current was detected while the charge corona unit was not activated
21(H) - The laser synchronization signal was not detected during printing
31(H) - Polygonal mirror motor startup error
32(H) - Polygonal mirror motor error during printing
41(H) - Main motor startup error
42(H) - Main motor error during printing

NOTE: When a service call was caused by a fusing lamp failure (codes 01 - 09):
The same code is stored at address 80036F(H).
After fixing the problem, reset the data at address 80036F(H) to 00(H), then restart the machine to clear the service call.

When a service call was caused by another hardware failure (codes 11 - 42):
If the problem remains after restarting the machine (power off/on), fix the hardware problem. The service call condition is cleared after power-up.

800383(H) - Print top margin (standard cassette)
800384(H) - Print top margin (optional PFU)
800385(H) - Print top margin (optional 100-sheet cassette)
800386(H) - Print top margin (bypass feeder)

800388(H) - Print left margin (standard cassette)
800389(H) - Print left margin (optional PFU)
80038A(H) - Print left margin (optional 100-sheet cassette)
80038B(H) - Print left margin (bypass feeder)

80039D(H) - Sensor status (standard cassette and internal printer mechanism)
Bit 0 to 3: Paper size sensor

Bit	3	2	1	0	Setting
	0	0	0	1	Cassette not installed
	0	0	1	0	Cassette not installed
	0	1	0	0	Letter
	0	1	0	1	Cassette not installed
	0	1	1	0	Cassette not installed
	0	1	1	1	Legal
	1	0	0	0	Cassette not installed

Bit 4: Paper end sensor — 1: Paper end
Bit 5: Registration sensor — 1: Paper present
Bit 6: Fusing exit sensor — 1: Paper present
Bit 7: Standard cassette availability — 0: Available, 1: Not available (1: Jam, paper end, etc.)

80039E(H) - Sensor status (optional PFU)
Bit 0 to 3: Paper size sensor - The settings are the same as the standard cassette.
Bit 4: Paper end sensor — 1: Paper end
Bit 5: Registration sensor — 1: Paper present
Bit 6: Not used
Bit 7: Cassette availability — 0: Available, 1: Not available (1: Jam, paper end, etc.)

80039F(H) - Sensor status (optional 100-sheet cassette)
Bit 0 to 3: Paper size sensor - The settings are the same as the standard cassette.
Bit 4: Paper end sensor 1: Paper end
Bit 5: Not used
Bit 6: Not used
Bit 7: Standard cassette availability 0: Available, 1: Not available
(1: Jam, paper end, etc.)

8003A0(H) - Sensor status (bypass feed)
Bit 0 to 3: Not used
Bit 4: Paper in the bypass feed 1: Paper not present
Bit 5: Bypass feed sensor 1: Paper present
Bit 6: Not used
Bit 7: Bypass feed availability 0: Available, 1: Not available
(1: Jam, no paper, etc.)

8003AA(H) - Initial Toner Supply
Bit 3: Initial toner supply 0: Off, 1: On
Whenever the development unit is replaced, do the following procedure.
1. Make sure that a new development unit, drum, and CTM are correctly installed.
2. Turn on the machine and change this bit to 1.
3. Turn off the machine.
4. Turn on the machine. The machine starts filling up the empty development unit hopper with new toner. (This bit is reset to zero automatically.)
5. Make test copies or test patterns to check the print quality.

803540 to 8036BF(H) - Latest 64 error codes (Read only)

One error record consists of 6 bytes of data.

First error record start address - 803540(H)
Second error record start address - 803546(H)
Third error record start address - 80355C(H)
: : :
64th error record start address - 8036BA(H)

The format is as follows:
1st byte - Minute (BCD)
2nd byte - Hour (BCD)
3rd byte - Day (BCD)
4th byte - Month (BCD)
5th byte - Error code (low) [If the error code is 1-23, 23 is stored here.]
6th byte - Error code (high) [If the error code is 1-23, 01 is stored here.]

803D46 to 803F57(H) - Latest 10 error communication records

One error communication record consists of 53 bytes. The format is as follows:

1st byte - Header
Bit 0: Communication result 0: OK, 1: NG
Bit 1: Document jam 1: Occurred
Bits 2 - 3: Not used
Bit 4: Technical data printout instead of personal codes 0: No, 1: Yes
Bit 5: Type of technical data 0: Rx level, 1: Measure of error rate
Bit 6: Error report 0: Not printed, 1: Printed
Bit 7: Data validity 0: Not valid, 1: Valid

2nd to 5th bytes - Date and time when the communication started
2nd byte - Month (BCD)
3rd byte - Day (BCD)
4th byte - Hour (BCD)
5th byte - Minute (BCD)

6th and 7th bytes - Communication time
6th byte - Minutes (BCD)
7th byte - Seconds (BCD)

8th byte - Number of pages transmitted or received (Hex)

9th and 10th bytes - Personal code or number of total/burst error lines
If bit 4 of the 1st byte is 0:
9th byte - Personal code (low - BCD)
10th byte - Personal code (high - BCD)
If bit 4 of the 1st byte is 1:
9th byte - Number of total error lines (Hex)
10th byte - Number of burst error lines (Hex)

11th byte - File number (low - Hex)
12th byte - File number (high - Hex)

13th and 14th bytes - Rx level or measure of error rate
If bit 5 of the 1st byte is 0:
13th byte - Rx level (low - Hex)
14th byte - Rx level (high - Hex)
If bit 4 of the 1st byte is 1:
13th byte - Measure of error rate (low - Hex)
14th byte - Measure of error rate (high - Hex)

15th byte - Final modem rate
Bits 0 to 3: Final modem speed

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
0	1	1	1	16.8k
1	0	0	0	19.2k
1	0	0	1	21.6k
1	0	1	0	24.0k
1	0	1	1	26.4k
1	1	0	0	28.8k
1	1	0	1	31.2k
1	1	1	0	33.6k

Bits 4 to 7: Final modem type

Bit 7	6	5	4	Setting
0	0	0	1	V.27ter
0	0	1	0	V.27ter, V.29
0	0	1	1	Not used
0	1	0	0	V.27ter, V.29, V.17,
0	1	0	1	V.27ter, V.29, V.17, V.34

Other settings - Not used

16th byte to 35th byte - Remote terminal's ID (RTI, TSI or CSI) (ASCII)

36th byte - Communication mode #1
Bits 0 - 1: Resolution used

Bit 1	0	Setting
0	1	Standard
1	0	Detail
1	1	Fine

Bit 2: Not used
Bit 3: ECM 0: Off, 1: On
Bits 4 to 7: Communication mode used

Bit 7	6	5	4	Setting
0	0	0	0	Normal
0	0	0	1	Confidential
0	0	1	0	Polling
0	0	1	1	Transfer
0	1	0	0	Forwarding
0	1	0	1	Automatic Service Call

Other settings - Not used

37th byte - Communication mode #2

Bit 0: Tx or Rx	0: Tx, 1: Rx
Bit 1: Reduction in Tx	0: Not reduced, 1: Reduced
Bit 2: Batch transmission	0: Not used, 1: Used
Bit 3: Send later transmission	0: Not used, 1: Used
Bit 4: Transmission from	0: ADF, 1: Memory

Bits 5 to 7: Not used

38th byte - Number of errors during communication (Hex)

39th to 41st byte - 1st error code and page number where the error occurred
- 39th byte - Page number where the error occurred (Hex)
- 40th byte - Error code (low - BCD)
- 41st byte - Error code (high - BCD)

42nd to 44th byte - 2nd error code and page number where the error occurred
45th to 47th byte - 3rd error code and page number where the error occurred
48th to 50th byte - 4th error code and page number where the error occurred
51tst to 53rd byte - 5th error code and page number where the error occurred

F80006 to 8000F(H) - ROM part number and suffix (ASCII)

5. REPLACEMENT AND ADJUSMENT

5.12. IMAGE ADJUSTMENT

The following RAM addresses are different from the FX6.

5.12.2 Scanner Parameters

Margins

Parameter	Description	RAM address
L1	Scanning top margin	8002B4 to 8002B5(H)
L3	Scanning bottom margin	8002B6 to 8002B7(H)

5.12.3. Printer Parameters

Margins

Parameter	Description	RAM address
W1	Print left margin	800388(H): Standard cassette
		800389(H): Optional PFU
		80038A(H): 100-sheet cassette
		80038B(H): Bypass feeder
L1	Print top margin	800383(H): Standard cassette
		800384(H): Optional PFU
		800385(H): 100-sheet cassette
		800386(H): Bypass feeder
L3	Print bottom margin	800380(H): Only adjustable in bypass feed mode

6. TROUBLESHOOTING

6.4. ERROR CODES

Code	Meaning	Suggested Cause/Action
0-70	V.8 sequence (TX/RX) - modulation mode was not determined after a CM/JM exchange	Check the line connection. Check for line noise.
0-74	V.8 sequence (TX) - fallback to T.30 protocol after transmitting CI	Check the connection between the NCU and the FDU.
0-75	V.8 sequence (RX) - fallback to T.30 protocol after receiving CI	The other terminal may be defective or incompatible.
0-76	V.8 sequence (TX) - JM not detected and fallback to T.30 protocol	Adjust the TX level.
0-77	V.8 sequence (RX) - CJ not detected and fallback to T.30 protocol	
0-79	V.8 sequence (RX) - CI detected while waiting for a V.21 signal	
0-80	V.34 communication - time out during line probing	
0-81	V.34 communication - time out during equalizer training	
0-82	V.34 communication - time out during the control channel start-up sequence (Phase 4)	
0-83	V.34 communication - time out during the phase D control channel start-up sequence	
0-84	V.34 communication - error detected in the phase B control channel	
0-85	V.34 communication - error detected in the phase D control channel	
0-86	V.34 communication - a data rate which cannot be determined from the symbol rate is selected	
0-87	V.34 communication - modem status goes back to the control channel before receiving RCP	
0-88	V.34 ECM - PPR received 9 times (TX) or PPR transmitted 9 times (RX)	

7. Parts Catalog

The following parts for the FR6 are different from the FX6.

Index	FX6	FR6	Description	Used in common
3-2	H5164040	H5264040	Cover - PIF	FX6Mk2
3-3	H5164045	H5264045	Cover - Rear 2	FX6Mk2
3-9	H5272040	H5522042	Laser Plotter Unit	
3-10	H5166122	H5526000	PCB - FCE - FR6 USA	
3-11	H5166083	H5526050	PCB - FDU - FR6 USA	
3-12	54886020	54886030	PCB - NCU - USA	
3-	H5168600	H5528600	Operator's Manual - FR6 - Ricoh	
		H5528630	Operator's Manual - FR6 - Savin	
		H5528620	Operator's Manual - FR6 - NRG	
3-		H5163159	PFU Bracket	FX6Mk2
3-		H5223102	Spacer - FCE	LSO Mk2
7-2	H5164241	H5524220	Operation Panel Ass'y - FR6 - USA	
		H5524300	LCD Decal - Ricoh	
		H5524301	LCD Decal - Savin	
		H5524302	LCD Decal - Gestetner	
		H5524303	LCD Decal - Nashua	
7-4	H5165306	H5525321	Harness - OPU	
7-20	H5151355	H5521355	Separation Pad Ass'y	
7-24	H5164303	H5524309	Operation Panel Sheet	
9-15	H5164066	H5261066	Contact Image Sensor - B4	FX6Mk2
9-23	H5265310	H5525326	Harness - Image Sensor	
11-11	H5165302	H5525322	Harness - LDDR	
11-12	H5215061	H5525040	Polygon Mirror Motor	
11-13	H5215321	H5525310	Harness - Polygon Motor	
11-16	H5152715	H5522715	Laser Diode Unit	
17-16	H5165319	H5515316	Harness - Interlock SW	
19-2	H5163342	H5523342	FDU Base	
19-30	H5155085	H5525320	Harness - 100 sheets cassette	
19-36		H5153693	Positioning Pin (for the PFU)	FX4
21-5	H5163407	H5163401	Cassette Base - Universal	FX6Mk2

21-28		H5163430	Paper Size Indicator - LG	FX6Mk2
21-33	H5163583	H5513584	Decal - Bypass Feed	
21-42	H5163465	H5153465	Support Plate - End Fence (FX4)	FX4
21-		H5153466	Plastic Rivet	FX4
21-		H5164088	Cassette Cover	FX6Mk2
3-33	H5165308	Not used	Driver Harness	
3-34	H5165316	Not used	Harness - Paper Feed Motor	
3-35	H5165309	Not used	Harness - TX Motor	
3-36	H5165313	Not used	Harness - Main Motor	
3-38	H5165322	Not used	Relay Harness - Fusing Unit	
3-39	H5165301	Not used	Harness - Paper Size	
		H5515312	Harness - Main Motor (Quench/Fusing Fan)	
		H5515341	Harness - Paper Feed Unit	
		H5525313	Harness - Drive (Ozone Fan/Thermistor/Speaker)	
		H5525323	Harness - Stepper Motor (ADF Motor/Paper Feed Motor)	
		H5525325	Harness - Fusing Exit (Fusing Exit/Cassette Size SN)	
		H5525327	Harness - Mech. Counter	

8. Product Information

1. Main Frame

Model Code	Model Name	Product Code	Serial #	Note
FR6	FAX 3800L Gestetner 9867 Savin 3685	H552-20	M26 y mm 00001	

2. Options

Items	Model Name	Product Code	Note
100-sheet Cassette	Paper Cassette Type 100	H111-03	Used in common with the current F series
Paper Feed Unit	Paper Feed Unit Type 140F	H110-43	
1 MB Memory Card	Fax Expansion Type 10	H130-80	
2 MB Memory Card	Fax Expansion Type 20	H130-81	
4 MB Memory Card	Fax Expansion Type 40	H130-82	
PCFE	TBA	H144-44	

3. Supplies

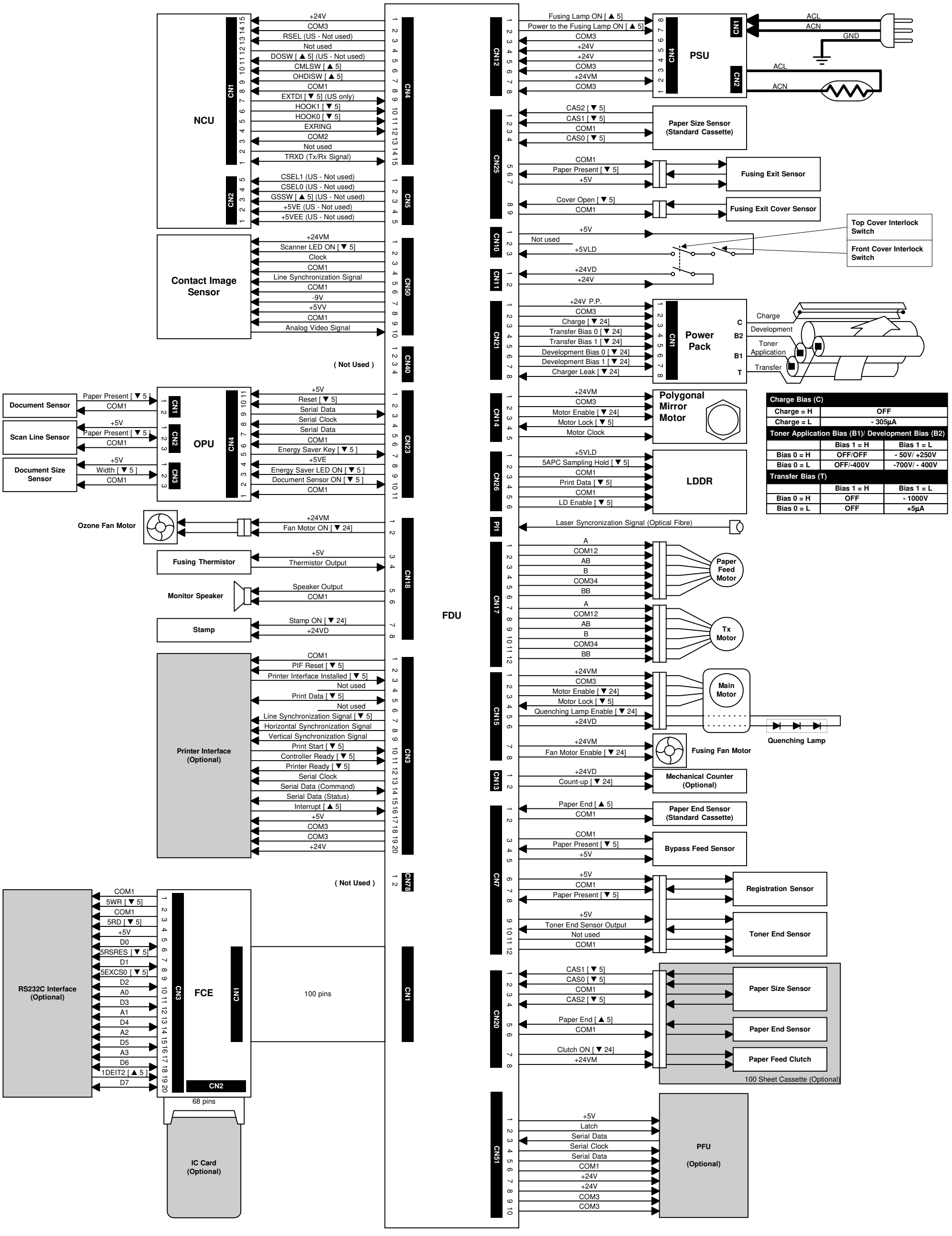
Items	Model Name	Product Code	Note
Toner (CTM)	Toner Cassette Type 150		
Drum	Photoconductor Type 100		
Stamp	Marker Type 30	H923-02	

Point-to-Point Diagram
Model:FR6 (FAX3800L)

Issued: October 1st, 1997
Revision 1.0
Subject to change

Symbol Table

———	AC Line
———	DC Line
——→	Signal Direction
▲	Active High
▼	Active Low
[ ]	Voltage



Charge Bias (C)		
Charge = H	OFF	
Charge = L	- 305µA	
Toner Application Bias (B1)/ Development Bias (B2)		
	Bias 1 = H	Bias 1 = L
Bias 0 = H	OFF/OFF	- 50V/ +250V
Bias 0 = L	OFF/-400V	-700V/ - 400V
Transfer Bias (T)		
	Bias 1 = H	Bias 1 = L
Bias 0 = H	OFF	- 1000V
Bias 0 = L	OFF	+5µA