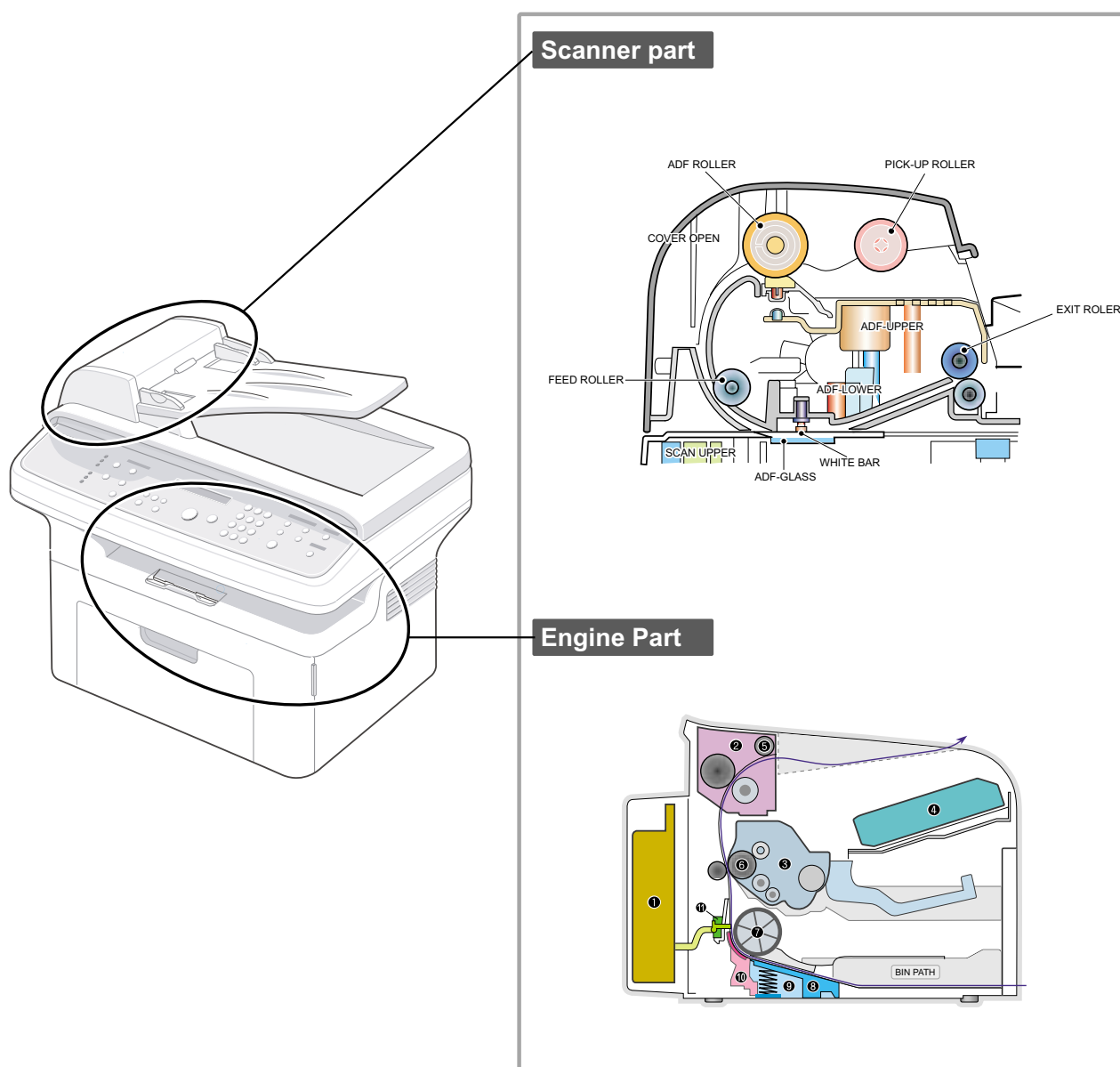


## 3. System Overview

### 3.1 System Layout

The SCX-4521F/4321 is roughly made up Main Control part, Operation Panel part, Scanner part, Line Interface part and Power part. Each Part is separated Module which focus on common and standard design of different kind products. main control part adopting Fax & LBP Printer exclusive Controller is chorus2 CPU(ASIC) and 1 Board. Scanner part is composed of ADF and Platen and is connected with Main by Harness.



### 3.1.1 Feeding section

---

There is a universal cassette which automatically loads paper and the manual feed which supplies paper single sheet at a time. The cassette has a friction pad which separates paper to ensure single sheet feeding, and it has a sensor, which checks when the paper tray is empty.

- Feeding Method: MP Cassette Type
- Feeding Standard: Center Loading
- Feeding Capacity: Cassette-150 sheets (75g/m<sup>2</sup>, 20lb paper standard)  
Manual 1 sheet (Paper, OHP, Envelop, etc.)
- Paper detecting sensor: Photo sensor
- Paper size sensor: None

### 3.1.2 Transfer Ass'y

---

This consists of the PTL (pre-transfer lamp) and the Transfer Roller. The PTL shines a light onto the OPC drum. This lowers the charge on the drum's surface and improves transfer efficiency. The transfer roller transfers toner from the OPC drum surface to the paper.

- Life expectancy: Over 50,000 sheets (at 16~30°C)

### 3.1.3 Driver Ass'y

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- Gear driven power unit. The motor supplies power to the paper feed unit, the fuser unit, and the toner cartridge.

### 3.1.4 Fixing Part(Fuser)

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- The fuser consists of the Heat Lamp, Heat Roller, Pressure Roller, Thermistor, and Thermostat. It fixes toner to the paper using pressure and heat to complete the printing job.

#### 3.1.4.1 Temperature-Intercepting Device (Thermostat)

The thermostat is a temperature sensing device, which cuts off the power to the heat lamp to prevent overheating fire when the heat lamp or heat roller overheats.

#### 3.1.4.2 Temperature Detecting Sensor (Thermistor)

The Thermistor detects the surface temperature of the heat roller, this information is sent to the main processor which uses this information to regulate the temperature of the heat roller.

#### 3.1.4.3 Heat Roller

The surface of the Heat Roller is heated by the Heat Lamp. As the paper passes between the Heat and Pressure rollers the toner is melted and fixed permanently to the paper. The surface of the roller is coated with Teflon. This ensures that toner does not adhere to the roller surface.

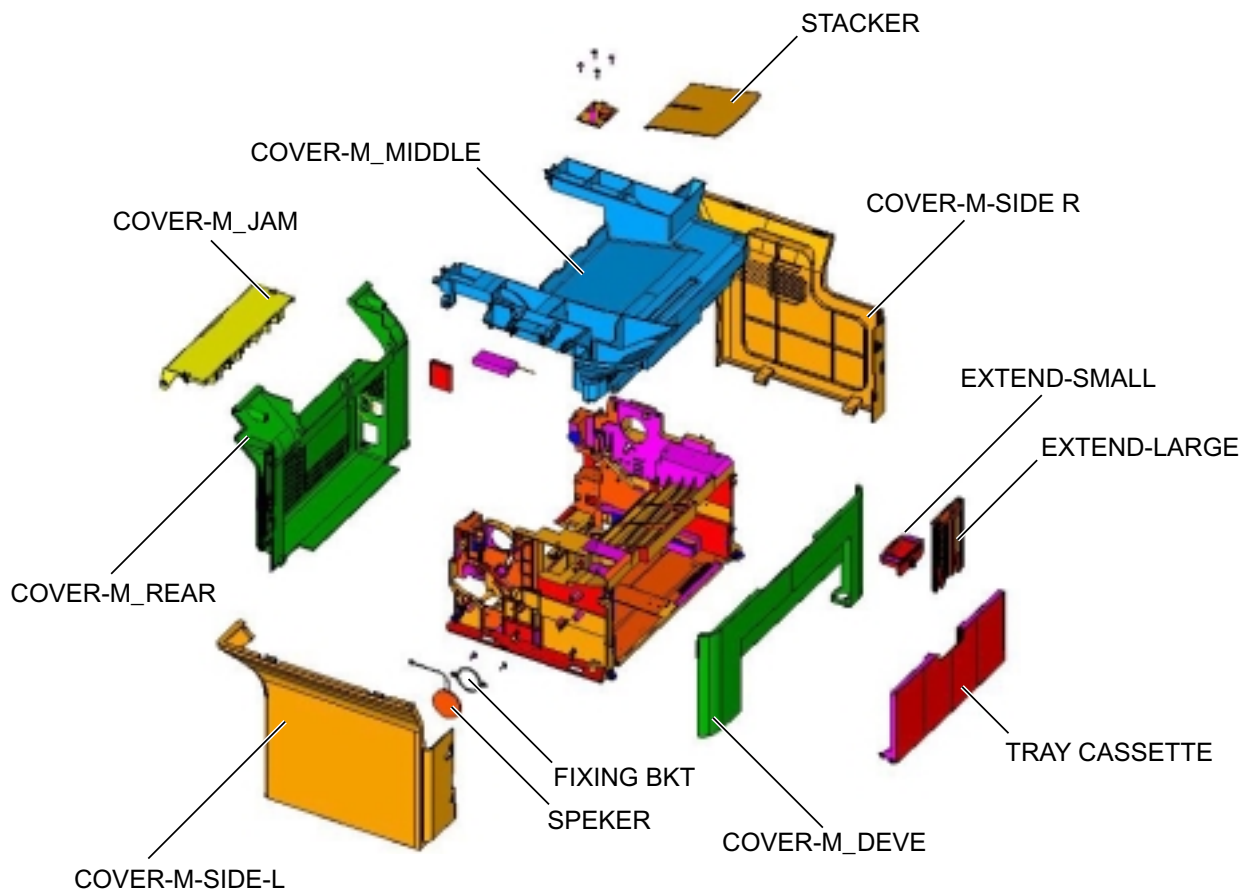
#### 3.1.4.4 Pressure roller

The Pressure Roller mounted under the heat roller, it is made of a silicon resin, and the surface of the roller is coated with Teflon. This ensures that toner does not adhere to the roller surface.

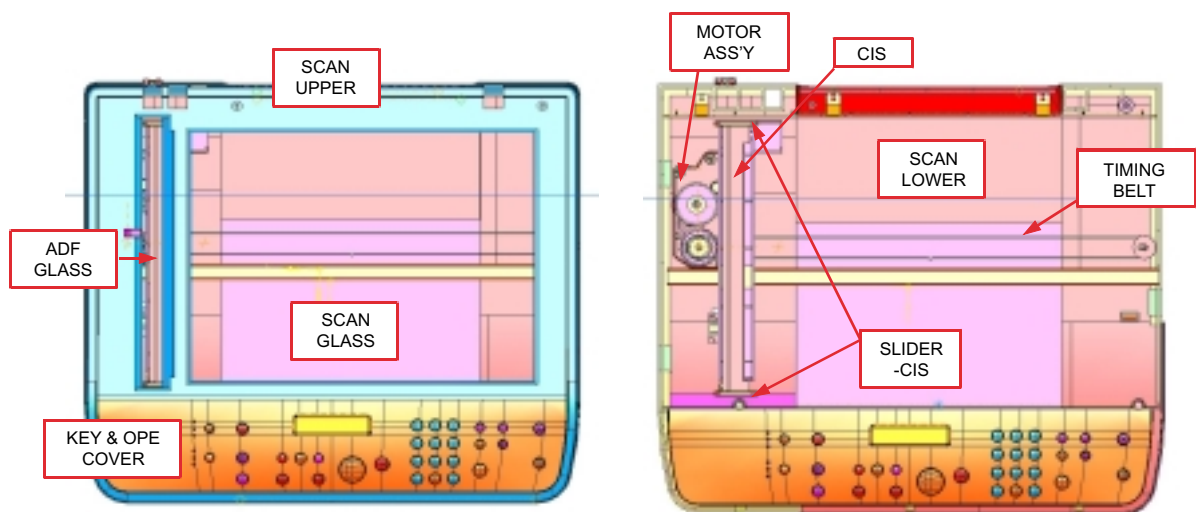
#### 3.1.4.5 Safety Features

- To prevent overheating
  - 1st protection device: Hardware cuts off when overheated
  - 2nd protection device: Software cuts off when overheated
  - 3rd protection device: Thermostat cuts off mains power to the lamp.
- Safety device
  - Fuser power is cut off when the front cover is opened
  - LSU power is cut off when the front cover is opened
  - The temperature of the fuser cover's surface is maintained at less than 80°C to protect the user and a caution label is attached where the customer can see it easily when the rear cover is opened.

### [Case part figure]



### [Scan part figure]



## 3.2 Engine H/W Specification

- 1) Recording Method : LSU(Laser Scanning Unit)
- 2) Printing Speed : 20ppm  
(In continuing printing base Letter, printing pages from 2nd to last during 1min)
- 3) Recording Density : 600 dpi
- 4) Cassette Capa. : Cassette ; 150sheets(75g/㎡ Base), 1-sheet Feeding : N/A((DRIVE Selection : Paper, OHP, Envelop - 1 sheet)
- 5) Manual Tray : All paper 1 sheet
- 6) Paper Size : Cassette ,Manual ; Width = 76 ~ 216mm, Length = 125mm ~ 356mm
- 7) Effective recording size
  - A4 :202 x 291 mm
  - Letter :208 x273mm
  - Legal : 208 x 350 mm
  - Folio : 208 x 325 mm
  - TopMargin: 2 ±2 mm
  - Left, Right Margin : 2 ±2 mm
- 8) CRU(Toner Cartridge)Life : 3,000pages Printing(A4, ISO 5% Pattern Printing)
- 9) First Print Out Time : within 11sec ( Standby )
- 10) Warming up time : within 35sec (Ambient : 25 °C)

### 3.2.1 Main Board Control Part

Main control part of SCX-4521F is made of ASIC(CPU, Image processor, PC I/F part include, Scan interface part, FAX Modem part and Printing process I/F part. CPU handles the BUS control, I/O interface, scan interface, PC interface and other miscellaneous driver circuit.

- 1) Main Board
  - Main Board has a function of sending Current Image Video Data to LSU of the machine, controlling motor Driving Circuit and monitoring Paper Exit Sensor, Cover Open switch, OPE Panel Inputs.
- 2) Main Controller
  - CPU : Chorus2 is the main CPU and is made up on the 16/32bit RISC architecture using ARM7TDMI core. Main CPU controls the whole system according to the program code which stored in the Flash-ROM memory.
  - Summary of the Key Function Block:
    - 1.8V for internal Core, 3.3V for I/O Pad with 4KByte Cache.
    - Image Processor included.
    - On-Chip clock generator with PLL.
    - Memory and External Bank Control.
    - DMA Control (5-Channel)
    - Interrupt Control.
    - 2-port USB Host/1-port USB device(ver 1.1) interface control.
    - Parallel interface control.
    - UART(2-Channel)

- Synchronous Serial Interface Control.
  - A/D Converter(10-bit, 2channel).
  - General I/O Port control.
  - Tone Generator.
  - RTC with calendar function.
  - S/W Assistant function(Rotator)
- Flash Memory : Stores system program and can be updated to the newer system program code through the PC interface. It stores the FAX Journal List, One Touch dial number, speed dial number, and machine configuration setup data.
- Capacity : 2 Mbyte
  - Access Time : 70 nsec
- SDRAM : SDRAM is used for Print Buffer, Scan buffer when scanning, ECM Buffer when FAX Receiving, and system working memory.
- Capacity : 16 Mbyte
  - Access Time : 66MHz based on system bus clock.
  - Data Backup : 72 Hours
  - Backup Battery Charging Time : 100hours when completely discharged.

### 3.2.2 Scan Part

#### 1) Image Signal Input Part

- Image Signal from CIS has a level of about 1.2V and is goes to ADC of Chorus2.
- After ADC, CIS analog signal will be converted to 8-bit Digital signal.

#### 2) Image Processing

- On the surface of the original paper, the light from the CIS LED reflected and goes to the CIS Sensor. Then the light is converted to the appropriate voltage suitable for ADC input. Analog signal from CIS sensor is used for ADC input then is converted to 8-bit digital data. Image processor of the Chorus2 will do the Shading correction function at first, then Gamma correction function next. After then, the data goes to different module according to the copy or FAX resolution mode. When Text mode, the image data goes to LAT module, when Photo mode, the image data goes to Error Diffusion module, when PC-Scan mode, the image data goes directly to the PC through DMA access.

- Summary of the Image sensor interface is as below;
  - Minimum Scan Line Time :1.5ms
  - Scan Resolution : 600\*600 dpi
  - Scan Width : 208mm
  - Function
    - White Shading Correction
    - Gamma Correction
    - CIS Interface
    - 256 Gray Scale

### 3) CIS Driving Part

- CIS Supply Voltage : +3.3V
- CIS Max frequency : 5MHz
- CIS Linetime
  - Fax/Copy - 1.5ms
  - PC-Scan - 4.5ms
- White output volt. : Max 0.8V

### 4) ADF Driving Part : Driving ADF Stepper motor, and the maximum motor speed is 2000PPS.

- MOTOR DRIVER : A3978(Allegro)
- Driving Voltage : 24V DC
- Phase : 2-2 Phase 2000PPS at Quick Scan,  
2-2 Phase 1000PPS AT Fine Scan,  
2-2 Phase 667PPS AT Super Fine Scan

## 3.2.3 Fax Modem Part

### 1) Modem Part

The modem part is consist of FM336(FAX Modem chip), LIU(Line Interface Unit) and modem analog front end(AFE) functional part.

- The feature of the FM336 modem chip is as below;

- ① Communication Mode : Half Duplex
- ② Modem Method
  - GROUP 3 : ITU-T V34, V17, V29, V27ter
  - Tonal Signal : ITU-T T.30
  - Binary Signal : ITU-T V.21, T.30
- ③ Image Transmission Time : 3sec ( ITU-T NO.1 CHART/Memory Tx/ECM )
- ④ Data Compress : MH, MR, MMR, JPEG
- ⑤ Modem Speed : 33600 / 28800 / 14400 / 12000 / 9600 / 7200 / 4800 / 2400 bps
- ⑥ Receive Level : 0 ~ -48dBm
- ⑦ Output Level
  - Adjustable : -6 ~ -15dBm ( 1dBm Step )
  - Initial Setting : -12dBm
- ⑧ Receive dynamic range:
  - 0 dBm to -43 dBm for V.17, V.29, V.27 ter and V.21
  - -9 dBm to -43 dBm for V.34 halfduplex

### 2) The Gain of the Line signal can be adjusted by setting the register value of the FAX modem chip ,Tx and Rx path is almost directly connected to the impedance matching transformer of the LIU.

- Adjust Tx Level within Setting Level+0,-2dB range.
- Adjust Rx Level that has the same level as the TIMS out level if possible, and must not exceed the TIMS out level.

### 3) Speaker Driving Part

Analog Switch(MC14053BD) makes a path for FAX Tone, Ring, Key click sound and Analog MUX (MC14051) makes a different signal level so that the the Speaker driver chip(MC34119) can driving the Speaker with different sound volume.



### 3.2.4 Printing Process Part

Printing Process part is made of PC-Interface part, PVC(Priter Video Controller), LSU control part, High Voltage control part and Fuser Unit control part. PC-interface core is included in the Chorus2 ASIC and controls the PC-interface. LSU control part controls the LSU polygon motor, Laser diode, video data output so that the printing image can be made up on the OPC Drum.

### 3.2.5 Line Interface Part

Line interface part helps the machine connect to the PSTN or PABX Line and is made of almost primary circuit. Its main function is Line connection, Line state monitoring and TAD interface that enables a extension telephone or TAD machine to connect to the SCX-4521F machine.

### 3.2

Photo Diode

Feeding

OPC Drum

Polygon Mirror

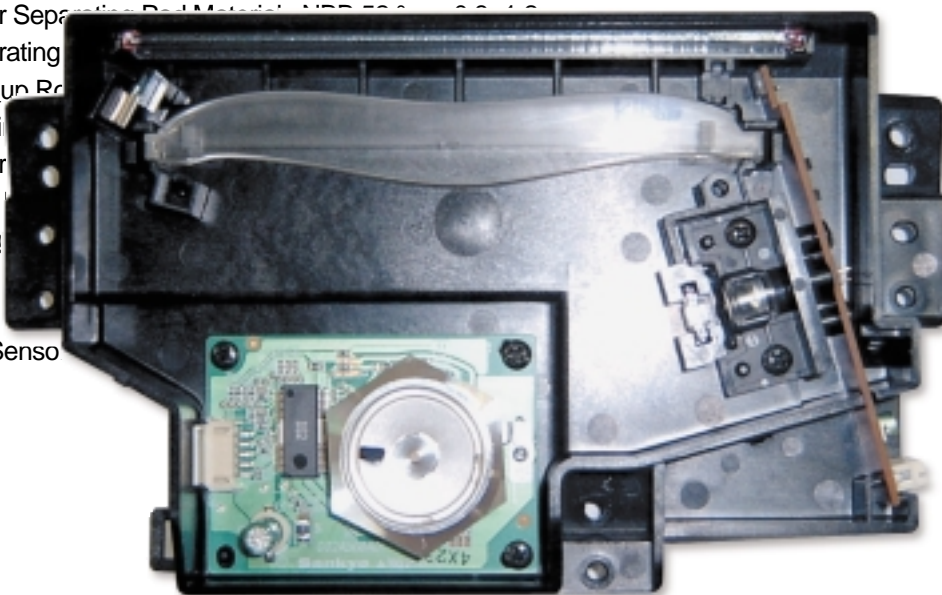
Polygon Motor

Motor Driver

- 1) Feeding Type : MP Cassette Type
- 2) Feeding Standard : Center Loading
- 3) Feeding Qty : Cassette 150 sheets
- 4) 1 sheet (Paper, OHP, Envelope etc.)
- 5) Separating Type: Cassette - Friction Pad
- 6) LD Driver circuit
- 7) Driver Type : Driving by Gearing from Main Motor
- 8) Pick\_up Roller Driver : Solenoid
- 9) Pick\_up Roller : Rubber
- 10) Pick up velocity : 94.8731mm/Sec (Process : 93.0667mm/sec)
- 11) Paper detecting Sensor : Photo Sensor
- 12) Paper Size Sensor : None
- 13) Paper Separating Pad Material : NBR 50 Shore A
- 14) Separating
- 15) Pick\_up Roller
- 16) Feeding
- 17) Paper
- 18) Feeding
- 19) Spring
- 20) Feeding
- 21) Feeding
- 22) Exit Sensor

Protector panel

LD(Laser Diode)





### 3.3 Develope Process

- Developing Method : Non magnetic 1 element contacting method
- Toner : Non magnetic 1 element shatter type toner
- Toner Qty:35gf /60gf (1k/3k)
- The life span of toner 1k/3k sheets (ISO 5% Coverage )
- Toner Residual Sensor : None
- OPC Cleaning : Use the conventional cleaning blade
- Handling of wasted toner : Discard by collecting waste-toner at waste-toner bin.
- OPC Drum Protecting Shutter : None
- Classifying device for toner cartridge: ID is classified by interruption of the frame channel.
- Development Roller type : conductive elastic roller
- Doctor BLADE Type : Regulating toner layer by pressure
- Charge Roller Type : Conductive Roller Contact-Charge

#### 3.3.1 Fuser Specification

##### 1) Heat Lamp

- Heat Lamp Terminal Shape : Terminal Single Type
- Voltage 120 V :  $115 \pm 5 \%$ , 220 V :  $230 \pm 5 \%$
- Capacity : 600 Watt  $\pm 30$  W
- Light Qty Distribution : 140%
- Life : 3000 Hr

##### 2) Thermostat

- Thermostat Type : Non-Contact type THERMOSTAT
- Control Temperature :  $150^{\circ}\text{C} \pm 5^{\circ}\text{C}$

##### 3) Thermistor

- Thermistor Type : HF-R0060 (SEMITEC 364FL Type)
- Temperature Resistance :  $7 \text{ k}\Omega (180^{\circ}\text{C})$
- SYSTEM Temperature SETTING
  - Stand by :  $165 \pm 5^{\circ}\text{C}$
  - Printing :  $175 \pm 5^{\circ}\text{C}$ (5 minutes before)  
 $170^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (5 minutes after)
  - Overshoot:  $200^{\circ}\text{C}$  or less
  - Overheat :  $210^{\circ}\text{C}$  or less

##### 4) Safety Relevant Facts

- Protecting device when overheating
  - 1st protecting device : H/W cuts off when detecting an overheating
  - 2st protecting device : S/W cuts off when detecting overheating
  - 3st protecting device : Thermostat cuts off the power
- Safety device
  - The power of Fuser is cut-off after front cover is open.
  - The overheating safety device for customer
  - The surface temperature of the Fuser Cover is under  $80^{\circ}\text{C}$

## 3.4 Sanner Part

600dpi Color CIS Module for Flat bed, SCX-4521F uses the CIS scanning method

### 1) CIS SPEC

- Scanning size : 216 mm ( width for letter-size)
- Light source : LED
- Scanning sensor: CIS 600/300 dpi
- Scanning mode : Color SCAN / Mono SCAN
- MTF : 30% (300 dpi Chart)
- CIS interface : Analog output
- Power supply : 3.3V
- Clock Frequency: 5MHz max.
- Number of output : 1
- LED Current : Red/Green/Blue : 60mA
- Clamp Level : 1.1V
- Connection : 12 pin FFC connector (pitch 1.0mm)

### 2) Scan Resolution

#### (a) Transmission

- Normal : Vertial: 3.85 Line/mm, Horizontal: 8 Pels/mm :203 x 98dpi
- Fine : Vertial: 7.7 Line/mm, Horizontal: 8 Pels/mm :203 x 196dpi
- Super Fine : Vertial: 11.8 Line/mm, Horizontal: 11.8 Pels/mm ;300 x 300dpi

- (b) When Copy : Vertial: 11.8 Line/mm, Horizontal: 23.6 Pels/mm :600x300dpi(ADF)  
Vertial: 23.6 Line/mm, Horizontal: 23.6 Pels/mm :600x600dpi(Platen)

### 3) Half Tone (Gray Scale) : 256 Levels

### 4) Scan Line Time

#### (a) Tx

- Normal : 1.5 ms/Line
- Fine : 1.5 ms/Line
- Super Fine : 1.5 ms/Line

#### (b) Copy : 1.5 ms/Line

#### (c) Scan

- Color : 4.5msec/line
- Gray : 4.5msec/line
- Mono : 4.5msec/line

### 5) Scanning Width

- MAX SCAN WIDTH : 216 mm (8.5 inches)
- Effective Scan Width: 208mm

### 6) ADF Motor

#### (a) Motor Spec

- 정격전압 : 24VDC
- 정격전류 : 0.6A(Peak)

## 7) Motor Driver speed &amp; method

## (a) FAX Transmission

- Normal Mode : 2000 pps
- Fine Mode : 1000 pps
- Super Fine Mode : 667 pps

## (b) Copy Job : 667 pps, 2-2

- max(30sheets) : 50gf
- min(1sheets) : 20gf

## 8) Document Detect sensor

## (a) Type : Photo interrupt

## (b) Position : ADF PBA

## (c) LED - max current : 50mA

- max voltage : 3.3V

## (d) Output - Logic "H" : No Paper

- Logic "L" : Paper

## (e) Lever-Sensor DOC : ADF Lower Torsion Spring

## 9) Regi Detect sensor

## (a) Type : Photo interrupt

## (b) Position : ADF PBA

## (c) LED - max current : 50mA

- max voltage : 3.3V

## (d) Output - Logic "H" : No Paper

- Logic "L" : Paper

## (e) Lever-Sensor DOC : ADF Lower Torsion Spring

## 10) Document Scan sensor

## (a) Type : Photo interrupt

## (b) Position : ADF PBA

## (c) LED : - Max current : 50mA

- Max Voltage : 3.3V

## (d) Output - Logic "H" : Off(No Position), No Paper

- Logic "L" : On (Doc Position), Paper

## (e) LEVER - SENSOR SCAN : Scan Lower Torsion Spring

### 3.5 OPE(Operational Panel Equipment)

#### 1) Ope Panel

OPE Panel has a MICOM Chip on it and communicates with Main CPU using Serial communication Line(SIO). OPE Panel consists of Micom, Key Matrix Part, LED Driving Part and LCD Part.

#### 2) Key Description

No	Part	Feature	Function
1	Common	3*4Key	Dialing and Option Input
		S	
		S	
		M	
		L	
		E	
		I	
		T	
2	Save	F	
3	Copy	N	
		C	
		L	
		F	
4	Fax	F	
		F	
		E	
		C	
		F	
5	Scan	Scan to	select [scan to PC], [scan to FAX], [scan to E-mail] function.

#### 3) LCD Part

- Number of Characters : 16 Characters x 2 line
  - Clock, Date display
  - System Status display
  - Alarm, Error Message display
  - Function Dialog Message display

## 3.6 SMPS & HVPS

It is the power source of entire system. It is assembled by an independent module, so it is possible to use for common use. It is mounted at back of the machine. Power part is divided by two independent PBAs - SMPS PBA and HVPS PBA. SMPS PBA supplies the DC power for driving the system and supplies the AC power to the fuser. SMPS has two output channels : +5V and +24V. HVPS PBA supplies High voltage to the developer part to make a printing image on the paper. High voltages applied to the MHV, THV, DEV, SUPPLY.

### 3.6.1 SMPS

#### 1) AC Input

- Input Rated Voltage : AC 220V ~ 240V / AC 110V ~ 127V
  - Input Voltage fluctuating range: AC 180V ~ 270V / AC 100V ~ 135V
  - Rated Frequency : 50/60 Hz
  - Frequency fluctuating range : 47 ~ 63 Hz
  - Input Current : Under 4.0Arms / 2.5Arms
- (But, the status when lamp is off or rated voltage is inputted/outputted )

#### 2) Rated Output Power

NO	Items	CH1	CH2	Remarks
1	CHANNEL	+5V	+24.0V	
2	CONNECTOR PIN	CON 2 5V PIN : #5pin GND PIN: #6pin	CON 2 24V PIN: #2, #3, #4 GND PIN: #7pin	Jam cover switch included
3	Rated Output	+5V $\pm$ 5%(4.75 ~ 5.25V)	+24V -10%/+15%(21.6V ~ 27.6V)	
4	Max. Output current	0.8 A	2.5 A	
5	Peak Loading current	1.0 A	2.7 A	within 1ms Duration
6	RIPPLE NOISE Voltage	100mVp-p or less	500mVp-p or less	
7	Maximum output	2.5W	36W	
8	Peak output	4W	55.2W	1ms
9	Protection for loading shortage and overflowing current	Fuse Protection or Shutdown within 1.5A ~ 3.0A range.	Fuse Protection or Shutdown within 3.5A ~ 4.5A range.	

#### 3) Consumption Power

NO	Item	CH1(+5V)	CH2(24V)	System
1	Stand-By	0.6 A	1.3 A	AVG : 65Wh
2	Printing	0.8 A	1.9 A	AVG : 350Wh
3	Sleep-Mode	0.5 A	0.3 A	AVG : 10Wh

4) Power Cord Length : 1830  $\pm$ 50mm

5) Power Cord Switch : Exist

6) Feature

- Withstand Resistance : 100  $M\Omega$  or more (at DC 500V)
- Insulating revisiting pressure : Must be no problem within 1 min. (at1000Vac,10mA)
- Leaking Current : under 3.5mA
- Running Current : under 40A PEAK (AT 25 °C,COLDSTART)  
under 50A PEAK (In other conditions)
- Rising Time : within 2Sec
- FallingTime : over 20ms
- Surge : Ring Wave 6KV-500A (Normal, Common)

7) Environment Condition

- Operating temperature range : 0 °C ~ 40 °C
- Maintaining temperature range : -20 °C ~ 40 °C
- Preserving Humidity Condition : 10% ~ 90% RH
- Operating atmospheric pressure range : 1atm

8) EMI Requirement : CISPR, FCC, CE, MIC,

9) Safety Requirement : IEC950 UL1950, CSA950, C-UL, Semko, EK, CB, CCC(CCIB),GOST, EPA,

### 3.6.2 HVPS Board

The HVPS board creates the high voltage of THV/MHV/Supply/Dev and supplies them to the developer part for making best quality printing image. The HVPS part takes the 24V and outputs the high voltage such as THV/MHV/Supply/Dev, and the outputted high voltage is supplied to the toner, OPC cartridge, and transfer roller.

(a) Transfer High Voltage (THV+)

- Input Voltage : 24 V DC +15% / -10% (21.6V~27.6V)
- Out Voltage : +1300KV  $\pm$ 1.5% (200  $M\Omega$  Load )
- Out Voltage Trigger : 6.5  $\mu$ A
- Input Voltage Variation :  $\pm$ 5 %  
Load Variation :  $\pm$ 5 %
- Out Voltage Rising Time : 100 ms Max
- Out VoltageFalling Time : 100 ms Max
- Transfer Variation Voltage on Environment Variation : +500 V ~ +5000V
- Control Method on environment : THV-PWM ACTIVE, transfer Active signal, of environment sensing voltage is input and get feed back current, and recalculate it to resistance .
- Control method on transfer output voltage : It is controlled by changing its duty of THVPWM Signal as follows. 10% Duty : +500V, 90% Duty : +5000V

(b) Charge Voltage (MHV)

- Input Voltage : 24 V DC +15% / -10% (21.6V~27.6V)
- Out Voltage : -1300KV  $\pm$ 50V(50  $M\Omega$  Load)
- Out Voltage Rising Time : 50 ms Max
- Out VoltageFalling Time : 50msMax
- Out Voltage Range : 30  $M\Omega$  ~ 1000  $M\Omega$
- Output Control Signal(MHV-PWM) : Active Low PWM signal for controlling MHV

## (c) Developing Voltage (DEV)

- Input Voltage : 24V DC +15% / -10% (21.6V~27.6V)
- Output Voltage: -350V  $\pm$  20V (50 M $\Omega$  Load)
- Output Voltage Fluctuation range: PWM Control
- Input contrast of the output stability degree :  $\pm$ 5 % or less
- Loading contrast :  $\pm$ 5 % or less
- Output Voltage Rising Time : 50 ms Max
- Output Voltage Falling Time : 50 ms Max
- Output Loading range : 10 M $\Omega$  ~ 1000 M $\Omega$
- Output Control Signal (BIAS-PWM) : Active Low PWM signal for controlling MHV

## (d) Supply

- Output Voltage : -550V  $\pm$  50V (50 M $\Omega$  Load)
- Input contrast of the output stability degree : under  $\pm$ 5 %
- Loading contrast :  $\pm$ 5 % or less
- Output Voltage Rising Time : 50 ms Max
- Output Voltage Falling Time : 50 ms Max
- Output Loading range : 10 M $\Omega$  ~ 1000 M $\Omega$
- Output Control Signal (BIAS-PWM) : Active Low PWM signal for controlling MHV

### 3.7 FUSER AC POWER CONTROL

The Fuser (HEAT LAMP) gets heat from AC power. The AC power controls the switch with the Triac, a semiconductor switch. The 'ON/OFF control' is operated when the gate of the Triac is turned on/off by Phototriac (insulating part). In other words, the AC control part is passive circuit, so it turns the heater on/off with taking signal from engine control part.

When the 'HEATERON' signal is turned on at engine, the LED of PC102 (Photo Triac) takes the voltage and flashes. From the flashing light, the Triac part (light receiving part) takes the voltage, and the voltage is supplied to the gate of Triac and flows into the Triac. As a result, the AC current flows in the heat lamp, and heat is occurred. On the other hand, when the signal is off, the PC102 is off, the voltage is cut off at the gate of Triac, the Triac becomes off, and then the heat lamp is turned off.

1) Triac feature : 12A, 600V SWITCHING

2) Phototriac Coupler (PC102)

- Turn On If Current : 15mA~50mA (Design : 16mA)
- High Repetitive Peak Off State Voltage : Min 600V