Embedded Compact Thermal Printer FTP-600 Series

The number of point-of-sales opportunity is currently increasing, creating a demand for small and high-resolution printer solutions optimal for printing applications. Fujitsu Component Limited supports customer needs by proposing comprehensive solutions including embedded mechanisms, control LSIs, control boards, composite units, stand-alone printers, and driver software.

Introduction

As printing applications have expanded rapidly in recent years, our customer layers have also grown. Simplicity of system design and reliability are important product selection factors.

Overview

As corporations have moved forward with downsizing and reduced device design periods, reduction in device design man-hours has become an important issue. Fujitsu Component Limited offers a lineup of products suitable for various applications involving low-voltage operation with batteries and so forth to 24V; they range from 2 to 4 inches in size. We also develop and offer composite printer solutions including auto-cutters, units and stand-alones.

Product Features

Our products offer optimal solutions that address the recent trends of downsizing and operation simplicity.

Table 1 presents the main specifications of the principal products.

Compact and high-reliability design

By adopting a die-cast frame for the case, a compact mechanism with high reliability has been proposed.

Case stiffness plays an important role when miniaturization is advanced. Depending on the flatness of the customer's attachment surface, torsional force is applied to the printer case. If the printer case is susceptible to this torsion, the positions of the head and platen may shift and affect the printing quality.

Fujitsu Component Limited has realized high quality through the adoption of a die-cast frame that enables the shipment quality to equal the arrival quality, regardless of the flatness of the customer's attachment surface.

Heat-radiative design with a die-cast frame

To maintain high performance despite the compact size, a small motor with high output is required. Heat generation increases as the motor size is reduced. Depending on the conditions of use, it may generate heat that frequently exceeds the safety range. Excessive heat generation may destroy the insulative coating inside the motor and cause the coil to short-circuit. As such, it is necessary to mount a short-circuit protection fuse on the operating circuit side as a safety measure.

Fujitsu Component Limited uses a die-cast frame in the case so as to radiate the motor heat. This achieves a heat radiative effect that is about 10℃ lower than that of the mold case.

High-output motor adopted

Paper feeding load fluctuates depending on the environment. The load increases due to static or sticking at low temperatures and due to increased paper surface viscosity under high-temperature and high-humidity conditions.

The overall paper feeding load is formed by "printing load+paper pulling load+environmental fluctuation load." Stable printing feeding needs to be guaranteed without print jamming under this load. Fujitsu Component Limited has achieved stable printing and feeding by developing and adopting a high-output motor that is compatible with environmental load fluctuations.

Design concept with a focus on operability

•Easy paper loading

An easy paper loading system is adopted that allows printing to be started by simply dropping a roll of paper. In this way, paper can quickly be replaced even during busy times.

Table 1 Main Specifications of Principal Products

	FTP-608 MCL100 Series	FTP-628 MCL700 Series	FTP-608 MCL400 Series	FTP-607 MCL100 Series	FTP-607 MCL400 Series	FTP-627 USL400 Series	FTP-609 MCL100 Series	FTP-609 MCL300 Series	FTP-639 USL000 Series	FTP-628 WSL100 Series
Head resolution (lines/mm)	8									
Paper size (mm)	58 / 80 / 114	58	58/80			58	58 / 80	58 (60) / 80 (82.5)	80	58
Printing speed (mm/sec)	80 (@8.5V) *			100 (150 at max.) *		100	200 (3" :250 possible)		150	40 (@4.2V)
Driving voltage Head motor/ logic (V)	4.2 to 8.5 / 3 to 5.25			24 / 5			24 / 5			1 cell Li ion battery
Cutter	None		Low-profile cutter	None	Low-profile cutter		None	Platen-incorporated, etc.	Presenter unit	None
Paper setting	Easy loading							Easy loading / automatic feeding	Automatic feeding	Easy loading
Major applications	Mobile terminals, Payment terminals, Medical, Measuring	Mobile terminals, Payment terminals, Automotive	Payment terminals, POS, Medical, Measuring			POS, KIOSK		POS, KIOSK, ATM	ATM / KIOSK	Mobile terminals
Others	Low-voltage products are also available.	Vertical model	Low-profile cutter		150mm/sec products are also available.		Fast models		Receipt unit	1.5m fall endurance, Bluetooth and IrDA supported

*With temperature 25℃, 64 simultaneous impression dots, and standard printing paper (equivalent to PD150R)

Photo 1 FTP-607/608MCL100 Series

Photo 2 FTP-628MCL700 Series

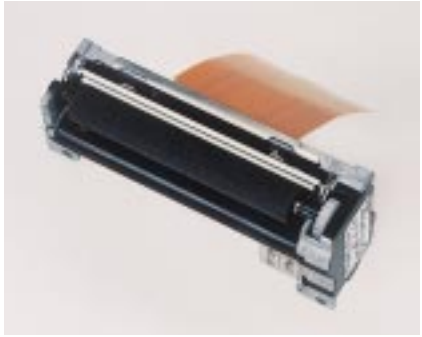

Photo 3 FTP-607/608MCL400 Series

•Easy cutter operation

[Low-profile cutter series]
FTP-627/637/628/638MCL400 Series

Cutter jamming can be canceled using the same operation as that for paper replacement. This also provides a fail-safe design in which the cutter is protected even when the paper is being pulled during cutter operation. The mechanism in which the cutter blade resides is separated from the operating block and remains fixed even if an anomaly occurs during paper replacement. This protects users even in POS applications where the operators may be unfamiliar with the product.

[Platen-incorporated cutter series]
FTP-629/639MCL350 Series

A platen-incorporated cutter system is adopted for easy maintenance in embedded applications in KIOSK and so forth. Head cleaning is easily performed by opening the cutter—this enables simple head cleaning while replacing the paper.

Designer-friendly concept

•Easy print paper size change

Fujitsu Component Limited proposes small sizes from 2 to 4 inches by adopting die-cast frames.

Since the printer cross-section shape is identical, different paper sizes can be used simply by changing the widths of the printer mechanism's mounting material. The motor also has a common design, enabling the use of various paper sizes simply by changing the driving coil current.

•Easy driving voltage change

The same design concept is adopted for different driving voltages, from low voltage with batteries and so forth to 24V driving. A stepping motor is adopted for the cutter drive of the low-profile 400 Series. While the conventional DC motor system requires large peak currents under low voltage and larger motors as a result, our method does not require a special power supply. Sizes from 2 to 3 inches and voltages from low to 24V are flexibly offered without requiring a change in power supply or motor shape.

•Small units optimal for embedded applications

In recent years, display size and multifunctionality in systems have been increasing and the diameters of paper rolls are growing in concurrence. Given this, printer size reduction enables flexible measures to be taken when designing for customers. The adoption of our original cutter system has offered small and low-profile units. Our products also allow even unfamiliar operators to replace the paper easily and cancel cutter jams.

Control boards/chips

Control boards and chips are supported in order to reduce the design man-hours for the customer.

Stand-alone printers

We also develop and offer stand-alone printers supporting Bluetooth and IrDA. They are small in size and optimal for portable applications with a 1.5m fall endurance.

Enhanced driver software lineup

Drivers supporting Windows XP/2000, OPOS and Linux are available to allow the printers to be used under various OS environments.

Photo 4 FTP-609MCL100 Series

Photo 5 FTP-609MCL300 Series

Photo 6 FTP-627USL400 Series

Application Examples

ECR/payment terminal applications

Our FTP-607/608MCL Series are small and low-profile printer solutions. The 100 Series, which do not have cutters, and the 400 Series, which have low-profile cutters, are also available. Our original cutter system allows the printers to be used in applications where the operators are not specified.

POS terminal applications

The FTP-609MCL Series is optimal for achieving fast printing and utilizing large-diameter paper rolls. The adoption of our original cutter system has simplified the maintenance procedure. The FTP-607MCL400 Series, which offers easy cutter jamming cancellation, is also available.

KIOSK/ATM terminal applications

The units from the FTP-627USL Series and FTP-609USL Series, which have incorporated paper holders and control boards, are optimal for these applications. The FTP-639USL Series mounts standard specification presenters, providing an optimal solution to applications in which the paper needs to be collected.

Mobile terminal applications

The FTP-608MCL Series is optimal for incorporated applications in mobile terminals. The vertical model 700 Series, with its characteristic small depth dimensions, is also available.

Medical/Measuring applications

The small and low-voltage FTP-608MCL Series is available.

Automotive applications

The vertical model FTP-628MCL700 Series is optimal in applications where the printer mechanism and paper need to be stored at 1DIN height.

Future Development

Fujitsu Component Limited will continue to address our increasingly diverse customer needs by developing more small and high-quality printing solutions. *

NOTES

* Windows is a registered trademark of the U.S. Microsoft Corporation in the U.S. and other nations.
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* OPOS stands for Open POS for OLE.
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Photo 7 FTP-639USL000 Series

Photo 8 FTP-628WSL100 Series