4610 Flash Memory Support

1 General Information

This function provides an API for the application to utilize the EPROM Flash memory in the 4610 printers. This memory can only be written to once per location. If the same position is to be written to again, the whole EPROM flash memory area must be erased.

The printer flash memory will retain the information until is is erased by the PosIOCtl() - **POS_PRN_ERASE_EPROM_MEMORY**. When the printer is powered back on the last PosNrecordLength and PosNmaximumRecords resources will be restored from the printer's flash memory.

When the EPROM memory is erased, 0xFF are loaded in the printer's flash memory. The resources **PosNrecordLength** and **PosNmaximumRecords** are set to zero. Reading and writing to the printer's flash memory is not allowed until **PosNrecordLength** is set to a value greater that 0.

2 New PosWrite() Escape Character Sequences

2.1 Read Flash Memory

Syntax: 1b.72.r1.r2.r3.r4

Where: *r1*, *r2*, *r3*, and *r4* is a 32 bit number, in little-endian format, indicating the record number.

Purpose: Read the data located at the record number.

Remarks:

1. The number of bytes requested is defined by the **PosNrecordLength** resource.

2. When the data is returned from the printer, a **POSM_PRN_DATA_AVAIL** event message will be sent to the application indicating **PosPRINT_DATA_AVAIL_FLASH**. The application can then call the *PosRead()* function to retrieve the data.

3. If the record number specified is greater than **PosNmaximumRecords** or if the record number is 0, a **POSERR_PRN_INVALID_RECORD** error will be returned to the application and no data will be read from the printer.

4. Valid record range 1 to value in maximumRecords.

5. The flash data must be retrieved before another printer flash read command is issued.

2.2 Write Flash Memory

Syntax: (1b.77.r1.r2.r3.r4.n1.n2.data)

Where: *r1*, *r2*, *r3*, and *r4* is a 32 bit number, in little-endian, format indicating the record number. (Little-endian format places the least significant byte of a number into the lowest memory address. For the record number, the actual order read in from the buffer is r4, r3, r2,r1.)

n1 and *n2* is a 16 bit number, in little-endian format indicating the number of data bytes in this Write Flash Memory escape character sequence. Maximum value is the value defined by the recordLength.

Purpose: Write Data to Printer Flash memory at a specific record location

Remarks:

1. If the length is greater than **PosNrecordLength**, the data will be truncated.

2. If the length is less than **PosNrecordLength**, the data written will be appended with the bytes set to zero (0) up to the **PosNrecordLength** size.

3. If the record number specified is greater then **PosNmaximumRecords**, or if the record number is 0 or if the data to be written exceeds the maximum memory available, a **POSERR_PRN_INVALID_RECORD** error will be returned to the application and no data will be written to the printer.

4. . Valid record range is 1 to value in **PosNmaximumRecords**.

4. The actual data bytes must match the number of bytes to be written. Otherwise, unpredictable characters will be written in the positions for which no data is supplied.

2.3 Updated PosRead()

When Flash Memory is available, a **POSM_PRN_DATA_AVAIL** event message is sent to the application. The size returned includes four bytes for the record number, four bytes for the length of data read from the printer (equals **PosNrecordLength**), and the data.

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When an application reads the data with the *PosRead()* function, it must pass the following structure for reading the data:

```
typedef struct _FLASHDATA
        {
         long recordNumber;
         long length;
         char data[200];
        } FLASHDATA;
```

The *length* field will contain the number of data bytes in the *data* field. The *recordNumber* will be the number requested with the **Read Flash Memory** escape character sequence.

3 Resources

Class Name   PosPrinter
Include   <pos/printer.h>

3.1   **PosNmemoryAvailable**   "memoryAvailable"
Type   int
Default   n/a
Access   G

The PosNmemoryAvailable resource returns a value specifying the amount of memory in the printer's Flash Memory that can be used for printer Flash Read and Write operations.

Notes:

1. This resources is updated every time the printer driver is Opened.

2. Typical values are in the table below.

4610 Model Type	Default Memory	Memory Available for Flash Read / Write Operations	Memory Available for Flash Read / Write Operations
TI1/2/3/4	104K	106,238	0x19EFE
TI5 –296K	296K	302,846	0x49EFE
TI3/4 with 2 meg	2 meg	1,934,334	0x1D83FE
TI3/4 with 8 meg	8 meg	8,384,254	0x7FEEFE
TI7 with 2 meg	2 meg	1,934,334	0x1D83FE
TI8 with 8 meg	8 meg	8,384,254	0x7FEEFE

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TI8 default 128K	128K	130,814	0x1FEFF
TI8 in TI4 Mode	104K	106,238	19EFE

3. The size of printer flash memory available depends on the printer's flash memory partition setting and the internal driver usage of the flash memory.

3.2 PosNrecordLength   "recordLength"

Type   int
Default   0 until the recordLength is set
Access   GS

Notes:

1. Number of bytes for each record.

2. Default value zero until first updated.

3. This set back to 0 when the printer flash memory is erased.

4. In order to do a read or write operation this must be set to value other than 0.

5. Modified by calling the **POS_SYS_SET_VALUES** *PosIOCtl()* function.

6. The maximum record size allowed is 200 bytes. If a value greater than 200 is specified, a **POSERR_PRN_INVALID_RECORD_LENGTH** will be returned and no value will be set.

7. The minimum record size is 1 byte,

3.3 PosNmaximumRecords   "maximumRecords"

Type   int
Default   n/a
Access   G

Notes:
Maximum number of records. Calculated after **PosNrecordLength** set.

4 New PosIOCtl():

POS_PRN_ERASE_EPROM_MEMORY - Erase user flash memory sector. The flash memory must be erased before changing the record size. The drivers will not automatically erase the memory. When this PosIOCtl() is executed, the **PosNrecordLength** and the **PosNmaximumRecords** resources will be set to a 0.

5 Updated Event Messages:

POSM_PRN_DATA_AVAIL
    PosPRINT_DATA_AVAIL_FLASH - 0x00003 (Status Byte 5, Bit 4)
    Length of data read plus four byes for the record number and 4 bytes for the length of data.

POSM_PRN_PRINTER_ERROR
    PosERROR_EPROM_FULL - 0x0405 (Status Byte 3, Bit 5)
    The printer's flash memory is full. To write, the printer's flash memory must be erased. All data in the flash will be lost when it is erased.

    PosERROR_EPROM_LOAD_ERROR - 0x0415 (Status byte 3, bit 3)
    A read or write has been attempted to a printer flash memory location which already has data in it.

End of readme--