JET3 UP

The „LJ2"-Protocol in the JET3up

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Content

1 Overview

1.1 Objective

The JET3UP is able to emulate a LJ2 through its interface. The objective is replacing an existing LJ2, which is integrated in a system control by a JET3UP without changing the system control itself.

Because the JET3UP is very similar to the LJ2 this is possible and there will be not many differences.

1.2 Restrictions and differences

- The JET3UP emulates a LJ2 SE with the software version V40.2.19.03. This is the latest / the last LJ2 software with largest instruction set. Therefore all system controls should be able to handle this. For a 64 kHz device the emulation states a 64 kHz device, for all other devices the emulation states 96 kHz.

- The only difference between the LJ2 and the LJ2 SE is the baud rate of the RS232 interface. Because the JET3UP does not know fixed baud rates. Therefore activating the LJ2 protocol the user can set the baud rate that is expected by the system control. Nevertheless the command for switching the baud rate will only alternate between 115200 baud respective 38400 baud which is the standard of the LJ2 SE.

- The JET3UP saves print jobs and graphics as files, which offers more comfortable possibilities for backups than the LJ2, did. Therefor the commands for the reading and saving of Flash-Pages is not supported anymore. The commands "0x83 0x98" (saving the Jobpages) and "0x83 0x9B" (saving the graphic page) will recognize the data and discard them.

- The command "0x0F 0x00" (clear receiving buffer) is leftover from older software/protocol versions and has no effects.

- The command **Factory Reset** will set the default values for the JET3UP, which differ from the default values of the LJ2.

- The modified storing behavior affects the moment when printing parameter take effect. PrintParameter 1…4 will take effect not until the next print job programming (e.g. characters for replacements). For users who programmed the LJ2 with the WinJet software this is the standard behavior anyway.

- LJ2 jobnames are limited to 8 characters. Longer names will be shortened accordingly which may cause double entries.

- Some of the commands of the LJ2 interface and the commands for external job selection assume that the print jobs are placed in the defined blocks 0 to 127 and a job is selected accordingly. Therefore the print jobs in the JET3UP have to be named in the same way as they were name in the LJ2 e.g. **000.job** or **097.job**.

- Since there are no country specific versions of the JET3UP the table with the 7 variable fonts is determined to the following fonts:

0xAC	Iso 5 7x5 (Russian)
0xAD	Iso C 14 Punkte (Chinese)
0xAE	Iso 5 16x10 (Russian)
0xAF	Iso 9 7x6 (Arabic)
0xED	Iso 9 16 Punkte (Arabic)
0xEE	Iso 7 7x5 (Greek)
0xEF	Iso 7 16x10 (Greece)

- Extern Text is not emulated because it has to be manually activated and print jobs have to be adjusted in the JET3UP as well as in the LJ2. But the JET3UP reacts differently from the LJ2:

   o With the LJ2 it was possible to send any number of data. With each PrintGo the printer fetched the required number of data from the memory and printed it.

   o The JET3UP all fetches with each PrintGo all data are from the memory and print it. Therefore with the next PrintGo the memory is empty and new data are expected mandatorily.

- The bit "Activate ExternText" from the special functions of the print parameter part 1 will be ignored.

- The JET3UP is not able to work with job lists, which are within another job list. Therefore it is not possible to configure print jobs with text block organization within the Extern-Job select configuration. This kind of print jobs are carried out with batch-job job lists.

- Using the mailing function the LJ2 is able to switch between different fonts or between barcode and plaintext with each mailing record. Because the emulator regards only the format of the first print out this is not possible with the JET3UP. For all printouts following only the text content will be taken over. The mailing data has to have always the same structure.

- Setting the mirror bit within a text block of the first printout will activate the alternating printout.

- The mailing function in combination with barcodes is only possible with exactly one mailing field.

- As with the LJ2 the mailing data buffer will be cleared on receiving new parameter.

- It is not possible to link text blocks beyond the limits of mail blocks. E.g., the last text block from one mailing block cannot be sent with the next mailing block. All texts of one PrintGo have to be sent in one block.

- The JET3UP is not able to process a "Day of the year". This format will be ignored. It will be just missing in the print out without further notice.

- The JET3UP supports only **one** counter and **one** date object within a barcode. Print jobs which contain barcodes more objects of that kind will be rejected as erroneous.

- The JET3UP is to able to process decimal counters. Decimal points within counter readings will be just ignored.

- The LJ2 protocol states all distances as encoder pulses. But there is no conversion factor defined within the protocol. Therefore the JET3UP defines print jobs with a default value of 25 pulses per mm. This will not affect the printing operation because there will be always used the same factor. Only the fact that the values indicated are not correct may be irritating.

- The LJ2 state the flight time compensation in encoder pulses the JET3UP in μs. The encoder pulses will be interpreted in μs. This is arithmetically not correct. But with this workaround it is possible to keep the function adjustable.

1.3 Commands and parameter

1.3.1 Query of the software version

The JET3UP reports itself always as a LJ2 with the software version V40.2.19.03.

For 64 kHz device the JET3UP reports 64 kHz for all other devices it reports 96 kHz.

1.3.2 Status query

There is a new error code: 0x87 StrokeGo error (Strokes to fast)

1.3.3 Delete a print job

The byte used for identification will be converted into the 3-digit job name. E.g., 0x0D will be converted into 013.job.

1.3.4 Print parameter 1

The LJ2 states the font width as pre-scaler for the encoder pulses. E.g., the value **3** means that only each third encoder signal will be used. The conversion in μm for the JET3UP is done using the resolution of the encoder: $Stroke\,width = \dfrac{\Pr e - scaler}{Encoder\,resolution}$

The calculation of the internal speed is carried out using this formula:

$$\frac{Drop\,frequency}{pre-scaler * encoder\,resolution}$$

A pre-scaler of 3 stands for a fast speed, a pre-scaler of **5** for a slow speed.

The JET3UP needs less time to get ready for printing than the LJ2. Therefore, the special function **direct start** is not available for the JET3UP. The JET3UP would start printing before all parameters were transferred.

The special function "Print editing after PG signal" has no more effect because the print editing of the JET3UP is not processable.

1.3.5 Print parameter 3

The offset for the date is limited to 23 hours instead the 99 hours of the LJ2.

1.3.6 Date / Expiry date

The JET3UP is not able to insert a date and an expiry date in one barcode. Therefor all kind of dates within a barcode will always be converted, either into a date or an expiry date. Determining is the last date object on the format list.

The JET3UP is able to calculate the expiry date only based on days or months. The LJ2 is able to calculate the expiry date based on days, months and years. Therefor the conversion is carried out under the following rules:

- If the number of the days is a nonzero number the expiry date is calculated based on days. The values for month and year will be ignored.

- In all other cases the expiry date is calculated based on months whereby the months are calculated as follows: `12*years + months`

1.3.7 Two-line printout

A two-line printout is restricted to plain text. The LJ2 allows the create two-line barcodes but the printing result makes no sense. A line break in a barcode will cause a error message.

If there are stated too many lines or too large fonts the lines at the top end of the printout will be shifted out of the printable area. This will not cause an error message.

If a multi-line text with only one line of text is defined only one line will be printed. There will be no error message.

The lines will be printed at the bottom with a distance of one drop.

1.3.8 Print jobs

As far as possible, the current print job is handled as a standard print job and it will be saved that way.

- With external print job selection activated, an **Extern-Job-Select-List** will be created and all jobs that match the numbering scheme will be loaded. For non-existing numbers an empty job will be created. In this state, no job data (e.g. Print parameter 1-4) will be accepted. It is not possible to save the job list.

- If a print job is sent which contains text arranged in text blocks, these text blocks, will be re-arranged as individual jobs in a batch-job job list. Saving such a list will always save the complete list. A single job from the job list may be saved under the same name as the job list. This is possible because the JET3up uses different types of

files for job lists and single jobs. It is not possible to save a job list within another job list. That is the reason why such a configuration cannot be used with Extern-Job-Select.