

B\$XPO – Open Printer for Extended Printing

The B\$XPO routine opens the printer for extended printing.

1. Invocation

The original version of B\$XPO was available for GSM SP-17 and GSM SP-18. This version was modified for GSM SP-19 and later.

1.1 GSM SP-19 and later

To open the printer code:

```
CALL B$XPO USING [USING xp [pa]]
```

where *xp* is a control block of the following format:

01	XP			
02	XPVERS	PIC 9(4)	COMP	* Control block version
				* Must be 1, 2, 3 or 4
02	XPTITP	PIC PTR		* Pointer to Title text
				* (terminated by LOW-VALUE byte)
02	XPOPT	PIC X(2)		* Options flag
02	XPSTYLE	PIC X(8)		* In-built style name
02	XPFNTP	PIC PTR		* Pointer to font name (max 64 bytes)
				* (terminated by LOW-VALUE byte)
				* Introduced with GSM SP-23
* For block version 2, or higher:				
02	XPFPNT	PIC 9(2)	COMP	* Font point size
02	XPACLX	PIC 9(4,2)	C	* Cell size width
02	XPACLY	PIC 9(4,2)	C	* Cell size depth
* For block version 3, or higher:				
				* Introduced with GSM SP-26
02	XPFLAG	PIC 9(2)	COMP	* 0 = Normal
				* 1 = Realign numbers suffixed by CR or DR
* For block version 4, or higher:				
				* Introduced with GSM SP-27
02	XPSPIN	PIC 9(4)	COMP	* Optional Printer Index Number

and *pa* is a Style-block of the following format:

01	PA			
03	PAVERS	PIC 9(2,2)	C	* Block version number = 1.01
03	PANAME	PIC X(8)		* Name of this profile
03	PADCLX	PIC 9(4,2)	C	* Default cell width
03	PADCLY	PIC 9(4,2)	C	* Default cell height
03	PACNVS			* Canvas (overall print region) info:
05	PAPTYP	PIC X(32)		* Paper type (A4, Letter, etc)
05	PASIZE			* Printable size in 1/10th mm
07	PASIZX	PIC 9(4)	C	* Width for Paper Type
				* e.g. 2100 for A4; 2300 for Letter
07	PASIZY	PIC 9(4)	C	* Depth for Paper Type
				* e.g. 2970 for A4; 2750 for Letter
03	PABKDR			* Backdrop info
05	PABNAM	PIC X(64)		* Image filename with subdirectory path
05	PABORG			* Backdrop origin (top-left)
07	PABORX	PIC 9(4)	C	* - X axis; vert in 1/10th mm
07	PABORY	PIC 9(4)	C	* - Y axis; horiz in 1/10th mm
05	PABSZE			* Backdrop dimensions
07	PABSZX	PIC 9(4)	C	* - X axis; width in 1/10th mm
07	PABSZY	PIC 9(4)	C	* - Y axis; depth in 1/10th mm
05	PABIMG	PIC X		* Image alignment property

B\$XPO – Open Printer (Extended Printing)

			* "0" - Print as is (no stretch)
			* "1" - Stretch in proportion
			* "2" - Stretch to fit
05	PAVALG	PIC X	* Vertical alignment
			* "T" - Place at top
			* "C" - Centre
05	PAHALG	PIC X	* "R" - Place at right
			* Horizontal alignment
			* "L" - Place at top
			* "C" - Centre
			* "R" - Place at right
05	FILLER	PIC 9(2) C	* Must be set to #00
03	PAPRNT		* PF print region dimensions
05	PAPORG		* Origin in 1/10th mm (top-left)
07	PAPORX	PIC 9(4) C	* - X axis
07	PAPORY	PIC 9(4) C	* - Y axis
05	PAPSZE		* Size in 1/10th mm
07	PAPSZX	PIC 9(4) C	* - Width
07	PAPSZY	PIC 9(4) C	* - Depth
03	PAATRS		* Attribute information
05	PAAALL	PIC 9(4) C	* Allocated Printer Attribute records in structure
05	PAAUSD	PIC 9(4) C	* No of Printer Attribute records supplied (0-31)
05	PAATTR OCCURS n		* Attribute definition (one for each)
07	PAAOPT	PIC 9(2) C	* Type bit-flag
			* #80 0 = Font; 1= Image
			* #40 Reserved for future use
			* #20 Reserved for future use
			* #10 Reserved for future use
			* #08 Reserved for future use
			* #04 Reserved for future use
			* #02 Reserved for Transparent font attribute
			* #01 Italics (for font attribute)
07	PAAF		* Layout for font (Type 0)
08	PAAFON	PIC X(64)	* Font name
08	PAAWGT	PIC 9(4) C	* Weight
08	PAAPNT	PIC 9(2) C	* Point size
08	PAAFCL	PIC 9(6) C	* Foreground colour RGB
08	PAABCL	PIC 9(6) C	* Background colour RGB
08	PAACEL		* Font cell size
09	PAACLX	PIC 9(4,2) C	* - Width 1/10th mm (0=Use default)
09	PAACLY	PIC 9(4,2) C	* - Depth 1/10th mm (0=Use default)
09	PAACLY	PIC 9(4,2) C	* - Depth 1/10th mm (0=Use default)
*			
*			The Image Attribute is only supported by GX V4.2?, and later.
*			
01	PAAI REDEFINES PAAF		* Layout for image
03	PAIDIR	PIC X(64)	* Image subdirectory directory
03	PAIIMG	PIC X	* Image alignment property
			* "0" - Print as is (no stretch)
			* "1" - Stretch in proportion
			* "2" - Stretch to fit
03	PAIVAL	PIC X	* Vertical alignment
			* "T" - Place at top
			* "C" - Centre
			* "R" - Place at right
03	PAIHAL	PIC X	* Horizontal alignment
			* "L" - Place at top
			* "C" - Centre
			* "R" - Place at right
03	FILLER	PIC X(6)	* Unused Set to LOW-VALUES
03	PAICLX	PIC 9(4,2) C	* Image width 1/10th mm
03	PAICLY	PIC 9(4,2) C	* Image depth 1/10th mm

1.1 GSM SP-17 and GSM SP-18

To open the printer code:

```
CALL B$XPO [USING Title [Print-Opt [style-block [font]]]]
```

Where *Title* is a PIC X(64) variable containing the reports title, *Print-opt* is a PIC X(2) string literal containing print options, *style-block* is a PIC X(8) string literal or variable containing the name identifying a standard system Style-Block; and *font* is a PIC X(64) variable containing the name of the font to be used for the report.

2. STOP Codes and Exception Conditions

The following STOP codes may be generated by B\$XPO:

STOP code	Description
25386	Invalid print layout
25390	Printer already open.
25391	Style block too long.
25395	B\$XPO has been called by an application that is not running on GX.
25396	Incompatible style block version.
25397	Incompatible <i>xp</i> block version

The following EXIT codes may be returned by B\$XPO:

EXIT code	\$\$COND	Description
10101	01	GX is unable to fulfil the print request, because the backdrop file specified in the Style-Block could not be located.
10102	02	The user has cancelled the print-run.
10103	03	PDF printing is not available on the GX client. The PDF printing DLL must first be installed on the client.

10104	04	PDF printing is not available on the GX client. The PDF printing DLL must first be installed on the client.
-------	----	---

3. Programming Notes

B\$XPO is only available when running on GX. Any attempt to run B\$XPO on a non-GX terminal will result in a STOP code.

In order to convert a textual print file to PDF format, GX requires the use of the following DLL:

PDF_In_The_Box.DLL

This DLL can be purchased and downloaded from the following web-site:

<http://www.synactis.com/>

Please ensure that you comply with the licensing requirements for this 3rd party software.

When using extended printing the XP option in the compiler must be set. You must not mix extended printing with standard Speedbase printing.

The XPTITP pointer points to the optional report title string (terminated by #00), which is used to identify the report. When spooled this name is used as the file-name, and you must take care that the supplied name conforms to Windows file-naming conventions. If you do not want to set a title you must set the XPTITP pointer to HIGH-VALUES. (For SP-17 and SP-18 the title string must be passed in the *title* parameter).

The optional XPOPT (or *print-option* field in SP-17 AND SP18) indicates whether the report is to be reviewed or printed, and whether it is to be preserved. The first character can be “R” to review the report, or “P” to print it or “N” to do neither. The second character can be set to “P” to preserve the report, or “D” to delete it. Passing the string “RD” therefore indicates that the report is to be reviewed, and then deleted, “PP” indicates the report is to be printed and preserved and “NP” that the report should just be preserved.

You may additionally supply a font name by pointing XPFNTP at the font name string (terminated by #00) in your program (or the supplying the *font* parameter for SP-17 or SP-19). The font name will override the standard font associated with the Style-Block. You must ensure that the chosen font is compatible with the Style-Block, i.e. that the characters of that font will fit within the space allocated by the chosen style, or does not turn out to be un-readably small. It is essential that the font name does not exceed 64 characters. If you do not do this, or if the font name is invalid or not available on the GX Client, then the font will again revert to standard fixed pitch. If you do not want to set a font then you must move HIGH-VALUES into the XPFNTP pointer (or do not pass the *font* parameter for SP-17 and SP-18).

If you pass a Style-Block-id via XPSTYLE (or the *Style* parameter for SP-17 and SP-18), it must match one of the standard Style-Blocks. If the Style-Block name you pass is incorrect, it will again default to “P132V100”, without resulting in an error.

The following two Standard In-built Style-Blocks are currently available:

P132V100

This PDF output Style-Sheet is 132 characters wide by 96 lines deep. Using a default fixed pitch font, output is fully aligned at column positions. Output is printed on Sysbackdrop1, which contains a border confining a very light grey background. A divider separates Line 1 from Line 4. Lines 2 and 3 should not be printed on.

This Style-Sheet is the System Default Style-Sheet.

The Style-Sheet is monochrome, using a mixture of point sizes and darkened character backgrounds for emphasis. The Style-Sheet contains 4 attributes:

Attr 0	Normal Data	7 Point font Dark grey foreground
Attr 1	Heading Line 1	8 Point font, V Dark grey foreground
Attr 2	Heading Line 2	8 Point font, V Dark grey on mid-grey background
Attr 3	Totals	8 Point Font V Dark grey on mid-grey background

P120V100

This PDF output Style-Sheet is 120 characters wide by 85 lines deep. Other than changes to point sizes, this Style-Sheet is otherwise identical to P130V100. When using the default fixed pitch font, output is fully aligned at column positions. Output is printed on Sysbackdrop1, which contains a border confining a very light grey background. A divider separates Line 1 from Line 4. Lines 2 and 3 should not be printed on.

The Style-Sheet is monochrome, using a mixture of point sizes and darkened character backgrounds for emphasis. The Style-Sheet contains 4 attributes:

Attr 0	Normal Data	8 Point with Dark grey foreground
Attr 1	Heading Line 1	9 Point with V Dark grey foreground
Attr 2	Heading Line 2	9 Point with V Dark grey on light-grey background
Attr 3	Totals	9 Point Font V Dark grey on light-grey background

For SP-19 or later, if you do not want to use any of the standard Style-Blocks described, you may define your own Style-Block by supplying the optional *pa* parameter.

Field PACNVS describes the canvas around which the report has been designed. The block defines the page-size in pixels, defining the overall region in which all printing will occur.

PAPTYP gives the report's preferred stationery type (such as "A4"), while PASIZE gives the stationery's page width and depth in pixels at a nominal DPI count. We recommend that PASIZE is based on the recommended stationery dimensions (less printer margins) at 300 DPI resolution.

At run-time, GX builds each page at the resolution given by PASIZE. Before printing the page, GX rescales it to conform to the target printer's DPI count as necessary. Note that PASIZE implies orientation. Where PASIZX exceeds PASIZY, orientation is landscape.

The Paper Size is controlled by the PASIZX and PASIZY fields. For example, for "A4" pages the values

must be 2100 and 2970, respectively. Other values will be required for other Paper Sizes (e.g. 2300 and 2750, for "Letter"). Please refer to the "PaperSizeName" section in the PDF-In-A-Box on-line help for further details.

The sizes of some common Page Sizes are given in the following table:

Page Size Name	Size in mm	PASIZX value	PASIZY value
Letter	230 x 275	2300	2750
LetterSmall	230 x 279	2300	2790
A3	297 x 420	2970	4200
A4	210 x 297	2100	2970
A5	148 x 210	1480	2100
B4	250 x 354	2500	3540
B5	182 x 257	1820	2570

Note that the PASIZx fields are in 1/10mm - multiply the mm sizes in the PDF-In-A-Box information by a scaling factor of 10.

All we have done so far is specify how a page is CONSTRUCTED. The canvas size specifies the area in pixels needed to construct the page **in memory**. The backdrop and font descriptions are based on this assumed canvas size. Only when the entire page has been constructed in memory do we consider rescaling to match the printer.

The combination of printer DPI count and loaded stationery will often result in a printable area that is different to the area assumed by the Style-Block. GX will adjust the image to the printer's print region, by rescaling the image either to fit exactly, or by rescaling to an integral factor, and then centering the resulting image.

PABKDR provides details of the Backdrop image file to be printed on each page. PABNAM is the name of the image file which is the subdirectory and file path from the print images folder. PABORG provides the origin i.e. top left-hand pixel position, at which the image is to be printed. The origin allows the

backdrop to be positioned at a specific location on the canvas, which can be critical for form-print applications, and is useful to centre small images like watermarks. Backdrop images files are downloaded automatically to the GX client, where they are cached. All images must be available on the Global Application Server (i.e. the computer that is running GLOBAL.EXE) in the Windows folder specified by the following registry setting:

..\Client\Customisations\PFPrintImagesFolder

If this registry setting is not defined the "PFPrintImages" folder, relative to the GSM folder is used. For example, if GSM is installed into C:\GSM the various image files must be available in folder C:\GSM\PFPrintImages

PAPRNT defines the print region within the canvas to which all PF print operations are directed. PAPORG specifies the origin (top-left-hand corner) of the printing zone. This allows the print region to be positioned at a specific point on the canvas, which can be useful for form-print applications and to print into a bordered area.

PAPSIZ specifies the size of the print region in pixels. It is used it to detect page boundary conditions, and calculate PF offsets.

The last section of the block defines a variable number of Print attributes, each of which specifies a font, point-size and colour combination. When a PF is printed, the Initialise PF operation associates an attribute with the invocation of the PF. All fields in the PF are then printed using the supplied attribute.

The first attribute in the block is known as attribute 0, which is used to print normal data. This attribute is key, as its cell size is used to construct a notional grid that controls page layout. Four standard attribute numbers have been assigned as follows:

0	Normal Data
1	Heading Line 1
2	Heading Line 2
3	Totals.

The application programmer can define further print attributes up to a total of 32.

Field PAAALL gives the number of attribute records allocated (but not necessarily supplied) in the block. Field PAAUSD gives the number of entries in use. The contents of print attribute entries beyond PAAUSD are undefined. **PAAALL & PAAUSD MUST BOTH BE NONZERO**. For most applications PAAALL and PAAUSD will contain the same (nonzero) value.

For a font attribute the following is specified; PAAFON is a #00 terminated string containing the font name; PAAWGT and PAAPNT give the weight and point size of the selected font. PAAOPT contains font options. PAAFCL and PAABCL specify the foreground and background colours as RGB triplets. When the background colour triplet is all zero, the background is taken to be transparent.

The attribute also contains a character cell size in PAACEL. This specifies the notional character cell size used when mapping line and column numbers within the PF. The cell size field is only used by GX to calculate the position of under and over-scores, as field positions are otherwise supplied as pixel addresses.

The cell size is used to calculate print start positions, thus constructing a grid to which line and column

numbers are mapped. Cell size has no bearing on the number of characters that can be printed on a line, which is determined by the font size, the amount of space available, and, for proportional fonts, the actual size of the individual characters being printed. Precise column alignment is only possible using fixed pitch fonts. The Standard System Style-Sheets are all exactly column aligned when used with the default fixed pitch font, and are therefore compatible with existing PF based reports.

For an image attribute the following is specified: PAIDIR is the name and path of the image subdirectory from the print images folder. PAIIMG, PAIVAK, PAIHAL are the image alignment properties and PAICLX and PAICLY the image width and depth. The image file name itself must be contained within the character field with the image attribute.

It is not necessary to explicitly open the printer. If you do not do so, the printer will be opened automatically when the first PRINT statement is executed. In this event, the report name will default to “Speedbase TCPI Report” and will be opened in Review Mode, with Preservation, using System Style-Sheet “P132V100” with the Style-Sheets default font .

The only GX.INI file setting that applies to the Extended PF Printing option is in the following section:

[pfprint]

The setting is:

PFPrintStaleFileTimeout=0

This setting specifies the minimum amount of time (in minutes) a print file will remain in the temporary folder before it is deleted. The default value is zero which means the automatic deletion of print files is disabled.

If this setting is absent, or set to 0, any print reports that are printed repeatedly, will gradually fill the directory. Note that no print report is ever overwritten because GX automatically adds an incrementing index number to the print file name to avoid name clashes (e.g. first print of a report named "REPORT" gives the name REPORT.PDF; the next will be REPORT(1).PDF; the next REPORT(2).PDF, etc.).

No GX.INI file settings are available to specify the folders used to hold print files and images. These folders are hard-coded into GX. All print files are created in the PFPRINT sub-folder of the GX folder. Within this subdirectory there are three further directories:

TEMP	where the print files are created;
IMAGES	which stores any backdrops and image files;
KEPT	which is used to archive print files.

These directories are automatically created by GX when a GX session is started if they don't already exist.

4. Examples

No examples available.

5. Copy-Books

The XP control block is available as copy-book \$X in the S.SYS32 copy-library.
The PA control block is available as copy-book \$P in the S.SYS32 copy-library

6. See Also

B\$XPC Close printer
B\$XPAT Change/Add attribute