X Logical Font Description Conventions

X Consortium Standard

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X Logical Font Description Conventions: X Consortium Standard

© !!" # $ %
© !!" # & '(%

) * + , %

- . / +) * 0

1+ 2. /) * 1 + * /

+ 3) * 4

5 2) * 5 1 /

) * 2 1 /

!!" # $ %

6 " * * / " / * * / /%
* 7 8 * 89" * % / " / % %
% " / " * " " % " % " % / " : / * * "
* *% " % ; / * /

+ . / / / / % / % *
*

+-' , +<23' 1 63, 1&'& 82 1 8" <1+-,=+ <2332>+? , 2>? @1>&" '$63' ,3 14601'&" 1> 0=&1>
5=+ >,+ 0141+'& +, +-' <2332>+1' , 4'3 -2>+25101+?" 1+>' ,3 2 623+1 =023 6=36, ' 2>&
>,>1> 31> '4'>+ 1> >, ' '>+ -200 +-' $,> ,3+1=4 5' 01250' ,3 2>? 0214" &242 ' ,3
,+-'3 0125101+?" <-'+-'3 1> 2> 2 +1,> , ,>+32 +" +,3+ ,3 ,+-'3<1 '" 231 1> 3,4" ,=+ ,
,3 1> ,>>' +1,> <1+- +-' , +<23' ,3 +-' = ' ,3 ,+-'3 &'201> 1> +-' , +<23'

'A/ / / " * $ % % .
" % * % % B * $ %

!!" ! & '(% " 4 42 2 .

6 % " / " * " % /% * % % *
" . . / / / / & '(%
) % % * % * * /% +
/% . % A

Table of Contents

1 %/ C
C 3 (% C
6 . = (% & / . > C
% 4% / C
% / 6 / C
% + * % * D
5 1 * $. , 1 D
% 2 A 4 / % % D
5 'A D
D $ 0 / & / #
> #
> A #
> & *
'A C
6 D
,=>&3?
2410?E>24'
<'1 -+E>24'
02>+
'+<1&+-E>24'
2&&E +?0'E>24'
61$'0E 1F' I
6,1>+E 1F' I
3' ,0=+1,>E$ I
3' ,0=+1,>E? J
62 1> J
2 '32 'E<1&+- J
-23 '+E3' 1 +3? J
-23 '+E'> ,&1> J
41>E 62 ' J
>,34E 62 ' !
42$E 62 ' !
'>&E 62 ' !
2 E 261+20E<1&+- !
2 E0,<'3 2 'E<1&+-
G=2&E<1&+-
1 =3'E<1&+-
=6'3 316+E$ CR
=6'3 316+E? CR
=5 316+E$ CR
=5 316+E? C
=6'3 316+E 1F' C
=5 316+E 1F' C
4200E 26E 1F' C
=>&'301>'E6, 1+1,> CC
=>&'301>'E+-1 @>' CC
+31@',=+E2 '>+ CC
+31@',=+E&' '>+ CD
1+201 E2> 0' CD
26E-'1 -+ CD

$E-'1 -+ C#
3'02+1 'E '+<1&+- C#
3'02+1 'E<'1 -+ C
<'1 -+ CI
3' ,0=+1,> CI
,>+ CI
2 'E>24' CI
=00E>24' CJ
,6?31 -+ CJ
>,+1 ' CJ
&' +1>2+1,> CJ
,>+E+?6' C!
,>+E '3 1,> C!
32 +'31F'3E>24' C!
32 +'31F'3E '3 1,> C
32<E2 '>+ C
32<E&' '>+ C
32<EH C
2$1 E>24' C
2$1 E0141+ DR
2$1 E+?6' DR
5% 6 2 DR
4 A + * D
4 / 6 DC
/ D#
I 6 / DI
J 2** / ' * $ $ 6 / D
! 5& * / #R
$0 & * / 3 (% #R
,>+E2 '>+" ,>+E&' '>+" &' 2=0+E -23 #R
,>+E2 '>+ #R
,>+E&' '>+ #
&' 2=0+E -23 #

Chapter 1. Introduction

1 (% $ / / % / .
" . ** * " / . " *
- . " * // (% " * "
/ * . / . * * . (%
* * / / / *

$ / % / * . .
. % * / %
* * /) / / 1 * / (%
// % . * / * / *
" * (% A " * % /
- . / * / * " / / % (% .
* - . / * " " " B "
/ / . * *

+ /% . / * / 7 * *
$0 &9 / . % / / / / (%
// / / / $. 1
/ / * . * * " $0 &
. * *) / *

+ $0 & . (% * / * " %/
26E-'1 -+" $E-'1 -+" 3'02+1 'E '+<1&+-" * %
/ * / % % /%
/ * . % %) * 1 "
* (% / / % / % /
/ " / " / . % "

Chapter 2. Requirements and Goals

+ $0 & . / *
/

K 6 . % (% " / . * % /

K % % * . " / / " /

K % / * / / *

K % * % * *

K 1 * $. *

K % / A * / % %

K 1 A

Provide Unique and Descriptive Font Names

1 % . * % / .
% . * % (% % .
B 3 % B * " % .
* " % / *

+ * % %/ % /
" % $ / / * (% % *
* .

Support Multiple Font Vendors and Character Sets

+ * % % * %
** * . % < /
/ . *) % % * *
% / // /% (%

2 % * * . . / * * * "
/ * / . / .
* / / /
* , * / .
6 . % * * (% / *
* / * / / . . % /
%

Support Scalable and Polymorphic Fonts

1* * % / / / B . " %
* / * / * * "
/ % / %/ * * / * / /

Support Transformations and Subsetting of Fonts

2 * * * %
(% / / %/ * * % * / *
* / (% * / / * / * ** * * "
% (% * / / * * * ** / /

Be Independent of X Server and Operating or File System Implementations

$ / / (% /% * % % /
. %) * * %
. - . " % * . . *
* A) " % /
% (% * * + % . 7 A /
9

Support Arbitrarily Complex Font Matching and Substitution

1 * " $0 & % * * / .
* " % * /) * * + / /
. * / * / * * * /
% %) %) * " (%

Be Extensible

+ $0 & % A : . / . *
/ / * * %) A $ / .

Chapter 3. X Logical Font Description

$0 & . / / " / . *
* % (% * * $ / (% 7* A "
" " 9 . * "
/ / *

+ % * (% % / $ /
(% 1 / * . % * $ %
/ 5 & % 75& C 9

+ % * * %
/ $ / (% * %/ % +
/ . % * / *
* 5& C / * /

FontName

' / / / * * A
* ! + % 1 , !! / +
A 7
$ % 9 * % / *
! A /

2 * / * / * / %
* A" / * 8 8 7-?6-'>9 2
* A * * L " / * . / *% % $0 &
/ * / " . $ % * *% % A $0 & *
1* (% " A /% $0 & * / %/
* /% %/ % " / A
* + . * * A *
% .

1 $ / / * / " (% M / "
% / * . % (% . 2
! * * M % / . %
% "

FontName Syntax

+ %/ % " 7 * +31> !9 5 /)%
> % A / *

> N $ > 3 $ > %*
* A O 6 . > 3 6 .
> %** A

$ > 3 N $ >& O $ >'A 6 * A $ >
&

$ > %** A N ,=>&3? $ >& 2410?E>24'
$ >& <'1 -+E>24' $ >&
02>+ $ >& '+<1&+-E>24'
$ >& 2&&E +?0'E>24' $ >&

61$'0E 1F' $ >& 6,1>+E 1F'
$ >& 3' ,0=+1,>E$ $ >&
3' ,0=+1,>E? $ >& 62 1>
$ >& 2 '32 'E<1&+- $ >&
-23 '+E3' 1 +3? $ >&
-23 '+E'> ,&1>

N +31> ! $0 & .
* A *
A 7* A " 8 #89

$ >'A 6 * A N , +'+ 8L8 760= 9

$ >& N , +'+ 8 8 7-?6-'>9

6 . > 3 N +31> !
. $0 &

6 . > %** A N +31> !

. % / %/ * 1 , !! / / / " A/ %
*

K P P 7-?6-'>9" $0 & * / /

K PQP 7G=' +1,> 423@9 8H8 72 +'31 @9" $ / *
/ /

K P"P 7 ,4429" % $ $0 & * *

K P8P 7G=,+2+1,> 423@9" % / / %/ (% *

2 / / / % * % / /
* $. * / * (%
(% * / + * % .
C / / 1 / / / %/ * (%
A / / % * . % A / % >
62 ' . / / * * M * A " 81+ 2.
/8 2410?E>24'

FontName Field Definitions

+ / /%

K ,=>&3? *

K 2410?E>24' *

K <'1 -+E>24' *

K 02>+ *

K '+<1&+-E>24' *

K 2&&E +?0'E>24' *

K 61$'0E 1F' *

K 6,1>+E 1F' *

K 3' ,0=+1,>E$ 3' ,0=+1,>E? *

K 62 1> *

K 2 '32 'E<1&+- *

K -23 '+E3' 1 +3? -23 '+E'> ,&1> *

FOUNDRY Field

,=>&3? A " * * * %
B % * " * ** " * *
B * * / *

+ / / . * /
* % / 7* A " 1+ 9 % B % * **
% ' / . * " "
** / * B * " / %
/ * * % " * * " / / *
) * / * /% * % % /
/ *)

1 % % $ % % *
* // / % * %

+ $ % * / % * * %
% " * % / % " * %/
* % $0 & *

FAMILY_NAME Field

2410?E>24' * * * * /
. * / / + % % *% "
/ " (% + % % %
% * * % * * / *

1 % % % % *
* * " /% . "
% * * P /) 5 / . "
2410?E>24' 2410?E>24' / % / *
* / . * * / *

+ * A * 2410?E>24'

K - . /

K 1+ 2. /

K +

K + 3

K 5 2

K

WEIGHT_NAME Field

<'1 -+E>24' * * P / " "
/) * * " // ,=>&3?P ;% +
% % % % * * % +
. % 8R8 % / / * 7]I" 9

+ * * / / % /
;% * . * * /
* (% M " & 5 * * / %
(% . / * 5 * * *

<'1 -+E>24' / % / %
* * P / % % - . " % %
* * / % % % " $ / / % %
* 73'02+1 'E<'1 -+ <'1 -+9 .
/ . / /% " / .

SLANT Field

02>+ / / . % * * /
% * + / *

838	3	=
818	1 /	1 / " / /) * . /
8,8	, (%	, (% % " / /) * . /
8318	3 . 1 /	1 / " / % / /) * . /
83,8	3 . , (%	, (% % " / % / /) * . /
8,+8	,	,
% /	6 /	]I"

+ 02>+ / * / . / % % / .
(% . % % * * %

SETWIDTH_NAME Field

'+<1&+-E>24' . * P /
" " B % * * " //
,=>&3?P ;% + . % 8R8 % / / * 7
]I" 9

2 <'1 -+E>24'" * * *
/" / % P ;% *

. * * / * (% %
* * / % % " $ / / % %
3'02+1 'E '+<1&+- * . . /
/ /%

+ * A * '+<1&+-E>24'

K >

K

K >

K & % <

ADD_STYLE_NAME Field

2&&E +?0'E>24' * / *
/ % * % * /% *
+ / / 8S8 * % / / * 7
]I" 9

2&&E +?0'E>24' * / / * / * % * % (%
1 % " %/ " / /

+ * A * 2&&E +?0'E>24'

K *

K *

K 1 *

K & /

PIXEL_SIZE Field

61$'0E 1F' . B * * /% 6,1>+E 1F'
3' ,0=+1,>E? 61$'0E 1F'
8S8 2 8S8 A 7]#"
9 61$'0E 1F' % % / . / / /
* * 7> " . " . % /
(% . * * % A 9 F % / /
* 7] " 9

61$'0E 1F' % % % $ / / (% * //
. / B " * B . / % *
/ *

SN POINT_SIZE Field

6,1>+E 1F' . B * / * 6,1>+E 1F'
8S8 2 8S8
A 7]#" 9 + * % %
/ . / / / * *
7> " . " 6,1>+E 1F' / (% . *
* % A 9 6,1>+E 1F' A / 7

* $ / JC CJ (% / 9 F % /
/ * 7] " 9

6,1>+E 1F' 3' ,0=+1,>E? % $ / (% * //
. / B / A B *
61$'0E 1F' % * *

RESOLUTION_X and RESOLUTION_Y Fields

3' ,0=+1,>E$ 3' ,0=+1,>E? % .
B . / % " % A / 7 9" *
/ * F % / / * 7] "
9 - B . / . % (% / %
* % * . ** / 7*
A " " # D" C " 9

+ * A B % / / % $ *
. . ** . / / / 7* A " B .
/ % " / A B " A " 9 //
* + * " * A " % ** #
* * J 7 B * % # A 9 # *
* R 7 B * % C! A 9 % " .
* / % % / / / . % " 6,1>+E 1F'
3' ,0=+1,>E? . **
* * A " " B * //

SPACING Field

62 1> / / / / * * " "
/ 7* A / 9" 7. / 9" / / 7 /
/ * / * / / / / *
9 + / *

868	6	2 * / / / . * / > / / / * *
848	4 /	2 * / / / / 7 " . * / 9 > / / / * / *
8 8		2 / * * / / / 7 " * * / $ / 8 A 8 *

* A
*
A 9 5 * "
.
/ / / "
. 8)8
% * / /
/ +)
7 " /
/ .
/ R TN *
TN TN
M .
/ TN *
TN TN
B 9 2 " . /
A * *
A/ . / /
7 " /
/ / TN
* / /
TN * / 9 + /
N * / L
* / "
N 2 '32 'E<1&+-

AVERAGE_WIDTH Field

2 '32 'E<1&+- / / . % . %
/ * % . % * * /
* 7 % * A 9" % * /
* * * 2 8U8 7+10&'9 / . . %
/ / / / * " * * F
% / / * 7] " 9

CHARSET_REGISTRY and CHARSET_ENCODING Fields

+ / / % / * * 7 / * P
9" $ % / /
-23 '+E3' 1 +3? A * %
/ * / -23 '+E'> ,&1>
* / / / * %
" " %

2 % $ / A / .) % / /
/ " A / . *)
* / / * * *
* / / . / + -23 '+E3' 1 +3? -23 '+E'> ,&1>
* $ / * (% / * / * / /
. . % / % + .
* /% / / * .

+ . / * / / " /
-23 '+E3' 1 +3? -23 '+E'> ,&1> / %/ /
/ * / .

3 N

3 > O 6 .
3 >

' / N

' / > O 6 .
' / >

3 > N

, B 1 >% O ,
B 1 >% & ?

6 . 3 > N

, B 1 +31> !

' / > N

+31> ! % / % * *
/

6 . ' / > N

+31> !

, B 1 N

+31> !
/ * * /
B

>% N

+31> ! * / %

, B 1 N

+31> !
/ * B

& N

, +'+ 8 8 7 =00 +,69

? N

+31> ! % / 7* A "
! 9

+ $ % % * %/ / /
* % $ / * / * $0 &

+ 1 , 0 / / $ %
-23 '+E3' 1 +3? -23 '+E'> ,&1> . % 81 ,!! 8

1* -23 '+E'> ,&1> / 8S8 70' + G=23' 532 @'+9" 8S8
/ / * % 8V8 731 -+ G=23' 532 @'+9 %
* % / / % * / /
* * + * % / / " " % * /
/ / % * / / + / / A / .
/ * / / " * / /
* + * / /% /
/ / %

+ 5> * %

% N

3 0 N

3 N

>% N

- A>% N

& />% N

& /& N

0 * 5 /) 3 0 3 5 /)

3 O 3 / 3 0

>% O >% = / >%

8RA8 - A>% O & />%

- A& O - A& - A>%

& /& O & /& & />%

8R8 O 8 8 O 8C8 O 8D8 O 8#8 O 8 8 O 8I8 O 8J8 O 8!8 O 8 8

- A& N	& /& O 8 8 O 8 8 O 8/8 O 8 8 O 8 8 O 8*8
0 * 5 /) N	8S8 70' + G=23' 532 @'+9
3 5 /) N	8V8 731 -+ G=23' 532 @'+9
/ N	8WR8 7 62 '9
= / N	8E8 70,< 01>'9

' / 3 / * / / * % / %
* 2 3 / >% / * * / / " / %
. " * * / / 2 3 >% / *
/ / / % * 2 - A>% A /
% 2 & />% / % + * / *
% * 3 3 0

A "

! " " # $ $ $ $ $ %%&' ()*& +$ %$,'$-

* % / / / / I "JR" !R R

Examples

+ * A * * . * / *
$ % %

+& "

C	5 4 % 3 > C CR J J 6 I! 1 ,!!
5 C	5 5 3 > C CR J J 6 JI 1 ,!!
5 1 / C	5 5 1 > C CR J J 6 J 1 ,!!
1 / C	5 4 % 1 > C CR J J 6 II 1 ,!!
% !	2 % 4 % 3 > ! !R J J 4 R 1 ,!!
% R	2 % 4 % 3 > R RR J J 4 IR 1 ,!!
% C	2 % 4 % 3 > C CR J J 4 JR 1 ,!!
% C#	2 % 4 % 3 > C# C#R J J 4 R 1 ,!!
% 5 R	2 % 5 3 > R RR J J 4 IR 1 ,!!
% 5 , (% R	2 % 5 , > R RR J J 4 IR 1 ,!!
% , (% R	2 % 4 % , > R RR J J 4 IR 1 ,!!

($$ "

R	2 4 % 3 > # RR RR RR 6 ! 2 ,>+ 6' 1 1
#	2 4 % 3 > CR #R RR RR 6 RJ 2 ,>+ 6' 1 1
!	2 4 % 3 > C !R RR RR 6 #C 2 ,>+ 6' 1 1
C#	2 4 % 3 > D# C#R RR RR 6 2 ,>+ 6' 1 1
+ 5 R	2 + 5 3 > # RR RR RR 6 JI 1 ,!!
+ 5 1 / R	2 + 5 1 > # RR RR RR 6 JJ 1 ,!!
+ 1 / R	2 + 4 % 1 > # RR RR RR 6 JD 1 ,!!
+ 3 R	2 + 4 % 3 > # RR RR RR 6 J# 1 ,!!

Font Properties

2 * % / % * * "
* * " % *% * / . % *
(% % * + $0 & / * A . *
$ * " " * /) %
* * . * + . / /
% * *) % / * /
/ %

% 1 , !! /

2 $ * * * *% %
. A $ * 6 . * %
* / * / * $ / .
. * / % % " " . *
* * 8E8 70,< 01>'9" * B * "
* 8E8 70,< 01>'9"

+ 5 /)% > % A / * $ * *

6 N	, 6 0
, 6 0 N	>=00 O , 6 , 6 0
, 6 N	6 . 6 O $ 6

6 . 6 N +31> ! O = /
, B 1 =
/ +31> !

$ 6 N ,=>&3? O
2410?E>24' O
<'1 -+E>24' O 02>+
O '+<1&+-E>24' O
2&&E +?0'E>24' O
61$'0E 1F' O 6,1>+E 1F'
O 3' ,0=+1,>E$
O 3' ,0=+1,>E?
O 62 1> O
2 '32 'E<1&+- O
-23 '+E3' 1 +3? O
-23 '+E'> ,&1>
O G=2&E<1&+- O 3' ,
0=+1,> O 41>E 62 '
O >,34E 62 '
O 42$E 62 '
O '>&E 62 ' O
=6'3 316+E$
O =6'3 316+E?
O =5 316+E$
O =5 316+E? O
=>&'301>'E6, 1+1,> O
=>&'301>'E+-1 @>'
O +31@',=+E2 '>+ O
+31@',=+E&' '>+
O 1+201 E2> 0' O
$E-'1 -+ O <'1 -+
O 2 'E>24' O
=00E>24' O ,>+
O ,6?31 -+ O
2 E 261+20E<1&+- O
2 E0,<'3 2 'E<1&+-
O 3'02+1 'E '+<1&+-
O 3'02+1 'E<'1 -+
O 26E-'1 -+ O =
6'3 316+E 1F'
O 1 =3'E<1&+- O
=5 316+E 1F' O
4200E 26E 1F'
O >,+1 ' O &' +1
>2+1,> O ,>+E+?6'
O ,>+E '3 1,> O
32 +'31F'3E>24' O
32 +'31F'3E '3 1,>
O 32<E2 '>+ O
32<E&' '>+ O
32<EH O 2$1 E>24'
O 2$1 E0141+ O
2$1 E+?6'

= / N , +'+ 8E8 70,< 01>'9

, B 1 N +31> !
* B

FOUNDRY

,=>&3? * A/ 2+,4

,=>&3? / / /% * % * % *

FAMILY_NAME

2410?E>24' * A/ 2+,4

2410?E>24' / / /% * % * % *

WEIGHT_NAME

<'1 -+E>24' * A/
2+,4

<'1 -+E>24' / * % * % * " *

```
./  01 ,  2   "     "3  4
/  01 ,  2  5    2.62 "   63
```

SLANT

02>+ * A/ 2+,4

02>+ / * % * % * " *

```
.        "     "3  4
       5    2.6 63
```

SETWIDTH_NAME

'+<1&+-E>24' * A/
2+,4

'+<1&+-E>24' / * % * % * " *

```
.   /   1,  2    "     "3  4
   /   1,  2  5    2.6     #63
```

ADD_STYLE_NAME

2&&E +?0'E>24' * A/
2+,4

2&&E +?0'E>24' / * % * % * " *

```
.   ,  7  ,  2    "      "3  4
    ,  7  ,  2  5    2.663
```

PIXEL_SIZE

61$'0E 1F' * A/ 1>+DC

$ / (% A . % * . % / * A / 7 / "
/ " / 9 / % * * / % . %
* / * * *

```
                    4 5 +889+
    2       5   :   ..     :    ,  ;      ,  < 3 =                    43
            5   :   . 2      = 83
    1         5   :   . 2      = >3?
```

7:9 . ") 7H9 % / "
3,=>& *% / % % %
A + % // $ N 0,,3 7 L R 9" 0,,3
*% / % %

61$'0E 1F' / A * % * " //
*

```
                4 5 +889+
.     ,  <    "      "3  4
    ,  <  5   :   ..     :    ,7 ;      ,  < 3 =                    43
```

POINT_SIZE

6,1>+E 1F' * A/ 1>+DC

$ / (% . / . % * / " / " /
/ % *

```
    2       5   :   .     ,  <  = ($3
            5   :   .     ,  <  = 8$3
    1         5   :   .     ,  <  = >$3
```

& 6,1>+E 1F' / / /% A

RESOLUTION_X

3' ,0=+1,>E$ * A/
23&DC

3' ,0=+1,>E$ / / /% A

RESOLUTION_Y

3' ,0=+1,>E? * A/
23&DC

3' ,0=+1,>E$ / / /% A

SPACING

62 1> * A/ 2+,4

62 1> / / /% * % * " // *
. . *

AVERAGE_WIDTH

2 '32 'E<1&+- * A/
1>+DC

2 '32 'E<1&+- / / /% * . * " //
*

. @ 0 ,/ 1 " "3 4
@ 0 ,/ 1 5 : .2 . A .B " 4 4 # 4 33 ; ($3
; . ." B " 3 4 (# (3

4'2> *% / % / * %

$ / (% . % * % * / / / 7 /9 *
/ * / % * % 2 '32 'E<1&+-
3' ,0=+1,>E$ *

. C 0 #3 4
C4 4 5 . : , ; ($3 = @ 0 ,/ 1

CHARSET_REGISTRY

-23 '+E3' 1 +3? * A/
2+,4

-23 '+E3' 1 +3? / * % * % *

CHARSET_ENCODING

-23 '+E'> ,&1> * A/
2+,4

-23 '+E'> ,&1> / * % * % *

MIN_SPACE

41>E 62 ' . % 7 * 1>+DC9 . /
% / . % % *

41>E 62 ' / A * . * " //
*

.2 , C " "3 4
2 , C 5 : .$9+& ; 2, C 3

NORM_SPACE

>,34E 62 ' . % 7 * 1>+DC9 . /
/ . % % *

>,34E 62 ' / A * . * " //
*

4 5 +889+
. 2, C " "3 4
. C # 4 ! 3 4
2, C 5 B " 4 C
2, C 5 : ..$9>> ; : , ; , < 3= 43

MAX_SPACE

42$E 62 ' . % 7 * 1>+DC9 . / A
% / . % % *

42$E 62 ' / A * . * " //
*

.2 , C " "3 4
2 , C 5 : .(9& ; 2, C 3

END_SPACE

'>&E 62 ' . % 7 * 1>+DC9 . / /
* /

'>&E 62 ' / A * . * " //
*

. , C " "3 4
, C 5 2, C

AVG_CAPITAL_WIDTH

2 E 261+20E<1&+- . % 7 * 1>+DC9 . %
/ * % . % * * / / * "
* A " % * / * *
* + 0 0 * 0 * "

/ 2 % F + % % % * * /
% %

2 E 261+20E<1&+- / / /% * . * " //
*

. @0,C ,/ 1 " "3 4
. # ! 3 4
@0,C ,/ 1 5 : .2
. A .B " 4 4 # # 433 ; ($3
; . ." B " 3 4 (# (3
@0,C ,/ 1 " "

AVG_LOWERCASE_WIDTH

2 E0,<'3 2 'E<1&+- . % 7 * 1>+DC9 . %
/ * % . % * * /
/ * * A " % *
/ * * * 0 * " /
% B + % % % * * / % %

< " 2 E0,<'3 2 'E<1&+- / A * .
* " // *

. @0, / C ,/ 1 " "3 4
.# B ! 3 4
@0, / C ,/ 1 5 : .2
. A .B " 4 4 # B # 433 ; ($3
; . ." B " 3 4 (# (3
@0, / C ,/ 1 " "

QUAD_WIDTH

G=2&E<1&+- / /7 * 1>+DC9 .
* (% 7 9 /

5 / % / * A / 7 " " 9 / *
. * B 7 " . // 9" % *
* / $ / (% /
* A / . % / % / % % * G=2&E<1&+-
/ % . % * * 7* A " 61$'0E 1F'9
$ / (% * . % % %
1 =3'E<1&+- * . / / *
72 '32 'E<1&+-" 2 E 261+20E<1&+- 2 E0,<'3 2 'E<1&+-9

FIGURE_WIDTH

1 =3'E<1&+- / / 7 * 1>+DC9 .
* % * % " * % * % 7

(% 9 0 * " % * % 2 / % R
%

1 =3'E<1&+- / A * % * " //
*

. # " " " D B " 4 E #3 4
0: ,/ 1 5 B " 4
0: ,/ 1 " "

SUPERSCRIPT_X

=6'3 316+E$. % 7 * 1>+DC9 . /
B ** A * $ * / %
/ A 1* /% S$"?V" % / %
S$ L =6'3 316+E$" ? =6'3 316+E?V

=6'3 316+E$ / A * . * " //
*

. : C , " "3 4
. 0 . C, 0 3 " "3 4
: C , 5 : ..$9F$; C ,1 01 3 = 0 . C, 0 33
: C , 5 : .$9F$; C ,1 01 3

+2> '>+ / *% / % * %
" / :I#

SUPERSCRIPT_Y

=6'3 316+E? . % 7 * 1>+DC9 . /
. / ** A * ? * / % /
A 1* /% S$"?V" % / % S$ L
=6'3 316+E$" ? =6'3 316+E?V

=6'3 316+E? / A * . * " //
*

. : C ,7 " "3 4
: C ,7 5 : .$9F$; C ,1 01 3

SUBSCRIPT_X

=5 316+E$. % 7 * 1>+DC9 . /
B ** A * $ * / % /
A 1* /% S$"?V" % / % S$ L
=5 316+E$" ? L =5 316+E?V

=5 316+E$ / A * . * " //
*

```
. :A C   ,   "    "3  4
   .  0   .    C,  0  3 "    "3  4
    :A C   ,  5   :  ..$9F$ ; C  ,1  01 3 =   0   .    C,  0  33
 #   :A C   ,  5   :  .$9F$ ; C  ,1  01 3
```

SUBSCRIPT_Y

=5 316+E? . % 7 * 1>+DC9 . / .
/ ** A * ? * / % /
A 1* /% S$"?V" % / % S$ L
=5 316+E$" ? L =5 316+E?V

=5 316+E? / A * . * " //
*

```
. :A C   ,7   "    "3  4
 :A C   ,7 5   :  .$9F$ ; C  ,1  01 3
```

SUPERSCRIPT_SIZE

=6'3 316+E 1F' . % 7 * 1>+DC9 . /
B * / % / % * " A +
B * /% * M " % /
* * ** // =6'3 316+E$ =6'3 316+E?

=6'3 316+E 1F' / A * . * " /
/ *

```
. :   C   ,  <   "    "3  4
 :   C   ,  <  5   :  .$9*$ ;    ,  < 3
```

SUBSCRIPT_SIZE

=5 316+E 1F' . % 7 * 1>+DC9 . /
B * / % / % * " A 2
=6'3 316+E 1F'" B * /% * M
" % / * * ** // =5 316+E$
=5 316+E?

=5 316+E 1F' / A * . * " //

```
. :A C   ,  <   "    "3  4
 :A C   ,  <  5   :  .$9*$ ;    ,  < 3
```

SMALL_CAP_SIZE

4200E 26E 1F' . % 7 * 1>+DC9 . /
B * / / % * " A /

```
          *        *   *              >  **   S$"?V
   /

4200E 26E 1F' /       A     *     .     *       " //
    *


    . 2    ,C  ,  <     "      "3   4
     2    ,C  ,  <  5    :  .      ,  <  ; .. ,1   01
                                  G ..C  ,1   01      ,1   01 3 = >33 = C  ,1   01 33
```

UNDERLINE_POSITION

```
=>&'301>'E6, 1+1,>          . %  7 *     1>+DC9      .      /
    .  /   **      A   *                  *    %       1*
  /%                  S$"?V"       *            .     S$" ? L
=>&'301>'E6, 1+1,>V

=>&'301>'E6, 1+1,> /        A      *      .       *       "
 //        *


    .:          ,              "      "3   4
    :          ,           5    :  ..  !      "       3 = 83

                                A %   /  7          9    A   *
        *
```

UNDERLINE_THICKNESS

```
=>&'301>'E+-1 @>'          . % 7 *    1>+DC9     .     /
    %        /)   "    A

=>&'301>'E+-1 @>'  /       A     *     .     *       "
 //        *


C       / " 4 5   H       B " 4      4                    #
    .:          , 1 CI        "      "3   4
    :          , 1 CI      5 C       / " 4
```

STRIKEOUT_ASCENT

```
 +31@',=+E2  '>+           . %  7 *     1>+DC9      .     .  /
  /   *    A     .              *    1*    /%              S$"?V
          A     '$+'>+"    %     * /     *      ) %   A     S$"
?   +31@',=+E2  '>+V             /     *     A     S$ L '$+'>+"
? L  +31@',=+E&'  '>+V

 +31@',=+E2  '>+ /        A      *      .      *       " /
/        *


    .     I   : ,   C       "      "3
```

```
        I  : ,  C    5   !

                          A %  /  7 .      9   A   *
      *
```

STRIKEOUT_DESCENT

```
+31@',=+E&'  '>+          . %  7 *    1>+DC9     .    .  /
 /  *   A    .            *   1*   /%            S$"?V
        A     '$+'>+"   %    * /    *     ) %   A    S$"
?   +31@',=+E2  '>+V            /    *    A    S$ L '$+'>+"
? L  +31@',=+E&'  '>+V

+31@',=+E&'  '>+ /      A     *     .     *      " /
/       *


   .    I  : ,   C      "     "3
        I  : ,   C    5   !     "

                          A %   /  7         9   A   *
        *
```

ITALIC_ANGLE

```
1+201 E2> 0'          . %  7 *    1>+DC9     .          %
    *     * /    "   :I#    "   %   *           / %
 / /)   *         P/  /)

1+201 E2> 0' /     * %    *     .     *      " //
*


   .     C,  0     "     "3  4
        C,  0   5 .'$ ; *F3
```

CAP_HEIGHT

```
26E-'1 -+          . %  7 *    1>+DC9     .            *
 /        /         *  "    / *       ,=>&3?     * /


   /     (%   26E-'1 -+   /  %   /   * /           **
  *      B            *                    A
 /    .       *   7*   A   "    /    "  %    "  *   "
  9  26E-'1 -+      /  /  * /    *    /     %   %

26E-'1 -+ /      A     *     .     *      " //
 *


  .C  ,1  01    "     "3  4
     .          3  4
     C  ,1  01  5  C4        9      )  #  4  -
   #      .      #   !   3  4
```

```
      C  ,1  01  5  C4        9      )              "       #  #  4-
   #   C  ,1  01    "      "
```

X_HEIGHT

```
$E-'1 -+          . %  7 *    1>+DC9     .              .
        *      /      /          *  "     / *
 ,=>&3?     * /

2      26E-'1 -+" $E-'1 -+     (%      /    /      /  %   /
* /   *       B      /            *          A  /
.      *     % /  $E-'1 -+    /  /  * /    *    /      %
  %

$E-'1 -+ /       A     *     .     *      " //
*


   . ,1  01    "      "3  4
      .          3  4
       ,1  01  5  C4        9      )  #  4  !-
    #      .# B        !    3  4
         ,1  01  5  C4        9      )              " #   #  4 B  4          "
    #    ,1  01    "      "
```

RELATIVE_SETWIDTH

```
3'02+1 'E '+<1&+-      %          . %  7 *     23&DC9      .
  /              *   *  "    .     )   *    *
  * / *   " //              P    ,=>&3?P  ;%

3'02+1 'E '+<1&+-      *   R   R     R  * %  *     % )    +
*      *  / . %     *


R                          =  *                      =  *     % )
 R                         =                         +         * .

CR                         'A
DR                                                        " >   "
                                                          "

#R
 R                         4  %                      4  % " >   " 3  %
                                                        "

IR                           'A                        'A    " &  'A
                                                        "

JR                         'A
!R                         'A  'A                    'A  'A    " <  "
 R                         =   'A                    +         * .
```

3'02+1 'E '+<1&+-/ * % * . * " //
*

. @ , / 1 " "3 4
@ , / 1 5 &$

/ * " 3'02+1 'E '+<1&+- / *% /
* * P A

$ / / /% * * 7 "
* * * / *
* . 9 / % *

/ 1 5 @0,C ,/ 1 = .C ,1 01 ; ($3

'+<1&+- % B / /%

RELATIVE_WEIGHT

3'02+1 'E<'1 -+ % . % 7 * 23&DC9 .
/ * * " .) * * * / * "
// P ,=>&3?P ;%

3'02+1 'E<'1 -+ * R R R * % * %) +
* * / . % *

R	= *	= * %)
R	= 0	+ *
CR	'A 0	
DR	0	
#R	0	0 " 5)"
R	4 %	4 % " > " 3 % "
IR	5	5 " & 5 "
JR	5	
!R	'A 5	'A 5 " - ."
R	= 5	= 5 " 5 /)" " *

3'02+1 'E<'1 -+ / * % * . * " //
*

. @ ,/ 01 " "3 4

@ , / 01 5 &$

/ * " 3'02+1 'E<'1 -+ / *% / *
* P A

WEIGHT

/% <'1 -+ % . % 7 * 23&DC9 .
/ /% * * " / % * /
26E-'1 -+" R RRR" R

<'1 -+ / / /% * % * " // *

C / " 4 5 H B " 4 4 #
. / 01 " "3 4
/ 01 5 : ..C / " 4 ; ($$$3 = C ,1 01 3

2 / /% . % * / / * * ** *
/ % 3'02+1 'E<'1 -+ <'1 -+E>24'
* / % " // / / " * "
% ; / . /% <'1 -+ . * *
* / * * .

RESOLUTION

3' ,0=+1,> . % 7 * 1>+DC9 . % * /
* / " % : RR A

2 B . / % /
(% // (% / " % *
* / " 3' ,0=+1,>E$
3' ,0=+1,>E? * * : . * 7 /
D C D C R9 $ / / % / % % *
3' ,0=+1,> / % % $"?
% " (%

FONT

,>+ 7 * 2+,49 . *% $0 & * * "
. % / % / * *

1* . " ,>+ / / /%

FACE_NAME

2 'E>24' % % 7 * 2+,49 . *%
. / * / " / % " " " "
% % " B " + % * /)
% * /

2 'E>24' / / /% A * . *

FULL_NAME

=00E>24' 2 'E>24' 1 % / " % * %
*

COPYRIGHT

,6?31 -+ % % 7 * 2+,49 . /
* * * *

+ * (% / * * % * /
% * % 7 " / / % /
/ % * ** / / 9

,6?31 -+ / / /% A * . *

NOTICE

>,+1 ' % % 7 * 2+,49 . /
* * * * " * / ")
* * * / 2410?E>24'

+ * /) / . * / % / % "
= 2 . / / /% . % / % '%
** * / *) / 2
,6?31 -+" * (% / * * %
* /% * %

>,+1 ' / / /% A * . *

DESTINATION

&' +1>2+1,> % / 7 * 23&DC9 . *
" " / * *
/ * 7<? 1<? 9" . * 7
/ * 9 * A / . 7. A 9"

+ * / . ** " /% % "
*) * / * . **
&' +1>2+1,> % / % $
. A / " %/ /% " (% * $ /
* % /% (%

+ / *

R <? 1<? + * B
/ /
/ *
(% . *

A + * B *
/

FONT_TYPE

,>+E+?6' % % 7 * 2+,49 /
* * * * /% *
% / 1 / % * % / 1 / % / /
* % * % B %
*

6 * . % *

85 8 - % *

B . %
/ * *
* (% B
%

86 % 8 2 * *
/ /
85 8" "
% A "
* *
/
/ % / *
B % /
86 % 8"
85 8

8+ 8 2 + *

8+ % + 8 2 + % + *

8 8 2 *

8 D8 2 D *

, . % $ %

FONT_VERSION

,>+E '3 1,> % % 7 * 2+,49 /
* * . * * . . %

RASTERIZER_NAME

32 +'31F'3E>24' % % 7 * 2+,49
/ * / * B * B
7 %/ / * % 9 *

+ * 32 +'31F'3E>24'" * * /

3 B > N
, B 1 N

3 B N

/ N

, B 1 / 3 B
+31> !X $ 3 ,3 2>1F2
+1,> * B

/ . " % %
%/ * B
< %
62 '
, +'+Y8 8 7 62 '9

'A

C A #
C (J
C " J
" K 2
#

1* 32 +'31F'3E>24' * " " B
,>+E+?6'

RASTERIZER_VERSION

32 +'31F'3E '3 1,> % % 7 * 2+,49
* * . * * B +
32 +'31F'3E '3 1,> % / / %/ . %
) % " /

RAW_ASCENT

* * A" 32<E2 '>+ * / RRR
A / 7 / / Z4 / 6 [9

RAW_DESCENT

* * A" 32<E&' '>+ * / RRR
A / 7 / / Z4 / 6 [9

RAW_*

* * A" * B
. / B / // "
A/ * A 832<E8" / % /
/ / Z4 / 6 [

AXIS_NAMES

2$1 E>24' * * A * / * "
% 7R9 + % * % * / 7
/ I9

AXIS_LIMITS

2$1 E0141+ * " * / A " . % A
% . % * A * / * 7]I"
9

AXIS_TYPES

2$1 E+?6') 2$1 E>24' " % / . / * /
/ 7 / I9

Built-in Font Property Atoms

+ * * * * .
* / /

!"

41>E 62 '	1>+DC
>,34E 62 '	1>+DC
42$E 62 '	1>+DC
'>&E 62 '	1>+DC
=6'3 316+E$	1>+DC
=6'3 316+E?	1>+DC
=5 316+E$	1>+DC
=5 316+E?	1>+DC
=>&'301>'E6, 1+1,>	1>+DC
=>&'301>'E+-1 @>'	1>+DC
+31@',=+E2 '>+	1>+DC
+31@',=+E&' '>+	1>+DC
,>+E2 '>+	1>+DC
,>+E&' '>+	1>+DC
1+201 E2> 0'	1>+DC
$E-'1 -+	1>+DC
G=2&E<1&+-	1>+DC Y /
<'1 -+	23&DC
6,1>+E 1F'	1>+DC
3' ,0=+1,>	23&DC Y /
,6?31 -+	2+,4
=00E>24'	2+,4 Y /
2410?E>24'	2+,4
&' 2=0+E -23	23&DC

Chapter 4. Matrix Transformations

2 $0 & . / . 6,1>+E 1F' 61$'0E 1F'
* / / 8S8 1* * / / * * 8S8" / /
% * 2 11 * * % * %
8V8" / % /
% * 8S8 8V8 / / >% % *
A % % / / 8U8 %
A

+ 5> * A * *

4 A N

, / N

/ N

N

4 N

N

>% N

1 N

& N

'A N

1 N

0 * 5 /) N

3 5 /) N

/ N

+ N

6 % N

& N

0 * 5 /) , / /
/ / ,
/ 3 5 /)

88 O /

/ O / /

4 O 4 'A

>% O >%

6 % O +

1 O 1 & 1 O & 1

& O & 1

8R8 O 8 8 O 8C8 O 8D8 O 8#8 O 8 8 O 8I8 O 8J8 O 8!8 O 8 8

8 8 1 O 8'8 1

1 O 1

, +'+ Y 8S8 70' + G=23' 532 @'+9

, +'+ Y 8V8 731 -+ G=23' 532 @ '+9

, +'+ Y 8 8 7 62 '9

, +'+ Y 8\8 7+10&'9

, +'+ Y 8L8 760= 9

, +'+ Y 8 8 7 =00 +,69

+ 8S / V8 / * * *
A

S R V

S / R V

S R R V

2 * //% % * +
/% / . % A * . % /
. % 8>8 6,1>+E 1F' * %/ A 8S>: R
R R >: RV8 * " / . % 8>8 61$'0E 1F' * %/

A 8S>H3' ,0=+1,>E$:3' ,0=+1,>E? R R >V8
*

1* / / * * 6,1>+E 1F' 61$'0E 1F'" %
* / / * /
/

61$'0E 1F'E42+31$ N S A R R V H 6,1>+E 1F'E42+31$

A N 3' ,0=+1,>E$: JC CJ

N 3' ,0=+1,>E? : JC CJ

1* 6,1>+E 1F' 61$'0E 1F' * % / * 7 8R8 /
9" / * % / % / % *

Metrics and Font Properties

1 / " 8 RRR A / 8 / %
* B) % * %
* * / * RRR A "
/ > * / / % (%
* / B % ** % B / (%
B * % * *

> /

+ /) / 7 " " / " / 9)
A * * %

+ / A / * * / /

+ * / / / * * * /
/

+ ,>+ % * / A % "
% / % / * * + %
/ A / / * (% 1*" * A "
% (%

```
! "  "  #  $ )8 ( $ $9$ G($9$- +8 +8  $  %%&' (
```

% ,>+

```
! "  "  #  )('9' $ $ ($- )8$ $ $ ($- +8 +8  $  %%&' (
```

+ ,>+ / % / 61$'0E 1F'
6,1>+E 1F' *

+ //% / * * / / " % *
* $ 1 * / * / / RRR A / +
% * %

+ C * * " 32<E2 '>+
32<E&' '>+" / / RRR A /

2 * B / .
. % A / * * / 2 *
. / / . . % /
* * / ' / %/ //
" A/ * A 832<E8" .
. % * " " / RRR A /

Chapter 5. Scalable Fonts

+ $0 & % / * 2 / * * % / *
/ / * B / . 2 / * % /
% B % * / * /
B % " / / B
* " * 7 . ;% * 9

+ * * % *% * /% / *

/ ## "

K # $

2 / # " * / * / / *
< / / / * * * $0 &

K # K#

2 * $0 & / / / 8R8
61$'0E 1F"' 6,1>+E 1F"' 2 '32 'E<1&+- *

K # K# #"

+ $0 & * 61$'0E 1F"' 6,1>+E 1F"' 3' ,0=+1,>E$" 3' ,0=+1,>E?'
2 '32 'E<1&+-

K H "

+ % * / / * * * . %
* / % / % %/ * * % / 2 /
" % (% " / * *
% / /

K 0# K # #

+ * % % $. *
/ (% 8H8 * / /
% * %

+ / * * . * * % / 1* *
% / / % % / / 7 / * -23 '+E3' 1 +3?
-23 '+E'> ,&1> * 9" / %/ / / % % *
* / * % / " *
* / / / / % / * % / "
/ * * / / / / % 1
/ * " / * / . / / %
+ . * . / / / *
/ " * / % + .
* / * /

+ . % * 3' ,0=+1,>E$ 3' ,0=+1,>E? * * / *
" % A B /) / "
% B . % " * A " % /

. / 7 / . 9 5 / % A /
/ / * A B " . .
/ % . / * / % " * / /
* " * / * / . / * % / /
/ / * % * " / % * /
/ %** /

+ $ / (% / * % * /
. / * *

+ $ / (% * $0 & % *
" * / % % . % /
/ / * " % % / %/ * /
* / / * / % * "
* / * / / . % %/ .
/ " . * * >) * "
* / % %
%
%

A " .

A #" # $ $ ($$ ($$ $ %%&' (
A #" # $ $ ($$ ($$ $ %%&' (
2 " # $ $ ($$ ($$ $ %%&' (
2 " # $ $ ($$ ($$ $ %%&' (

(%

; ; # ; (8$ ($$ ($$; %%&' (

% %

A #" # $ (8$ ($$ ($$ $ %%&' (
2 " # $ (8$ ($$ ($$ $ %%&' (

/ / * $0 &
(% % * /
$. " % (% " %
/ /

Chapter 6. Polymorphic Fonts

/ . B % /
! 4% 4 + * * / *
% A * A / * / . " "
/ B M / % * A

+ % / * " / . % / . * *
* $0 & *

<'1 -+E>24'

02>+

'+<1&+-E>24'

2&&E +?0'E>24'

+ 8R8 / / . % 1 <'1 -+E>24'" 02>+"
'+<1&+-E>24' * " 8R8 % * + %
/ . % 2&&E +?0'E>24' * + % % 8S8
8V8 / " 8SRWRRV8 + / . % / A
* 1 / / . %
* 2&&E +?0'E>24' *

+ * / * * / * /
/ * * / *

+ * / A *. " 2$1 E>24' "
2$1 E0141+ " 2$1 E+?6' 2$1 E>24' * * A
* * " % 7R9 + % *
% * / 2$1 E0141+ * " * / A " .
% A % . % * A 2$1 E+?6')
2$1 E>24' " % / . / * / /

+ A *
+ / * *) * / /
. % *

'A

+ 2 4 44 * A < / .
* C !DR" * DRR JRR

```
L
      " K  2    " 22 $   $  $ $ $ $   $    %%&' (
,  2  L
     /   4 M / " 4
,  2   L
     8(&M %>$M >$$M +$$
, 7   L
      " K  /   4 M  " K  / " 4
#  "   H "         L
      " K  2    " 22 F(8   &+&  ; (8$ ($$ ($$   ;    %%&' (
```

+ 2 4 44 1 /* " " / B A

```
L
      " K  2      22 $   $ )$- $ $ $ $   $    %%&' (
,  2  L
     /   4 M / " 4M       #   J
,  2   L
     >F&M *8$M F&$M *$$M *M +8
,  7   L
      " K  /   4 M  " K  / " 4M  " K        #  J
#  "   H "         L
      " K  2      22 &&$   F%$ )(%- ; (%$ ($$ ($$   ;    %%&' (
```

+ 2 4 44 1 /* A . %
+ 8SRV8 2&&E +?0'E>24' * / / A

```
L
      " K  2      22 $   $  B  4)$- $ $ $ $   $    %%&' (
,  2  L
     /   4 M / " 4M       #   J
,  2   L
     >F&M *8$M F&$M *$$M *M +8
,  7   L
      " K  /   4 M  " K  / " 4M  " K        #  J
#  "   H "         L
      " K  2      22 &&$   F%$  B  4)(%- ; (%$ ($$ ($$   ;    %%&' (
```

+ $?F 2 /* " / * " / B A A +
/ /. % 2&&E +?0'E>24' *

```
L
      7<  K  2 "          # )$ $- $ $ $ $   $    %%&' (
,  2  L
           #   J M   4   4
,  2   L
     *M +8M F$$M *$$
,  7   L
      7<       #  J M  7<  4   4
#  "   H "         L
      7<  K  2 "          # )(F &($- ; (F$ ($$ ($$   ;    %%&' (
```

1* A . . % " / (% . . % %
8U8 7+10&'9 %

2A / $ % " /

1* * / /. % / /
* * % / " * % / * % % . %
/ . - . " * % / % % . % %
/ * /% * A " * / B
. % . " * % / % . . %
B * *

+ % * / * % * . % * / * % *
+ * % / A " " . % *
/ . % " A // . %

Chapter 7. Affected Elements of Xlib and the X Protocol

+ * $ / (% % % $0 & / .

K * %

K * %

K / 4 * %

1 " * $ *% / % % $0 & / .

K " * %

K / 4 * %

K "N * %

K * %

Chapter 8. BDF Conformance

+ * % / * $ %
75& C 9 . / * * * * $
* . * * " % A
/ * * / * *
. 5& * + / * (% * 5& *
/ * $0 &

XLFD Conformance Requirements

2 5& * / * $0 & / * / * * * /
*

K + . % * 5& / * A / *
* $0 &

K + $ * A 8 8

K 2 $0 & * *

K 2 6 . / * / $0 &
*

2 * * / * / % . *
* A 8 8" % * *
/ * . % . " / * /
$0 & * * * .

FONT_ASCENT, FONT_DESCENT, and DEFAULT_CHAR

,>+E2 '>+" ,>+E&' '>+" &' 2=0+E -23 . 5&
/ * / . 5& * /
$. / * / * / 1* "
/ * / *

FONT_ASCENT

,>+E2 '>+ . % 7 * 1>+DC9 . /
/ / . * / / * /
* * A 1* /% *
S$"?V" * A " # $ 7 * *
/ 9 S$" ? L ,>+E&' '>+ L ,>+E2 '>+ V

,>+E2 '>+ / A * . * " //
*

. , C " "3 4
, C 5 !

A % / A % / 7 . 9 A *
*

FONT_DESCENT

,>+E&' '>+ . % 7 * 1>+DC9 . /
/ / * / / * /
* * A 1* /% *
S$"?V" * A " #$ 7 * *
/ 9 S$" ? L ,>+E&' '>+ L ,>+E2 '>+ V

+ / A * * / % . ?/ . % ?
,>+E2 '>+ ? L ,>+E&' '>+ L

,>+E&' '>+ / A * . * " //
*

. , C " "3 4
, C 5 ! "

A % / A % / 7 9 A *
*

DEFAULT_CHAR

+ &' 2=0+E -23 % . % 7 * 23&DC9 / *
A * * % / / % $.
% * A / / * 7 * %
C A * " A / H I DI L
C 9 1* &' 2=0+E -23 * / * % * A / /
* " *

&' 2=0+E -23 / A * . *