

## ELSA WINman (ELSA ȳ'è), ĩfwf<fv

ELSA WINman (ELSA ȳ'è), ĩ AELSA fOf%oftfBfbfN f{[fh, ÆELSA Windows fhf  
%ofCfo, đf, fĵf^, É“K ȳ, ȳ, 1, é, 1/2, ß, ĩfvf[Of%of€ , Å, · B

Ú, μ, ç, ±, Æ, ĩ AŽŸ, ĩL[f[fh, đfNfŠfbfN, ·, é, © Afwf<fv, ĩ ð^ø, đfNfŠfbfN, μ, Å, , ȳ/4, ȳ, ç B

WINman <N“ ® f\_CfAf fO

f, fĵf^, ĩfvf[fpfefB

fOf%oftfBfbfN f, [fh, ĩ C ȳ Afĵf%o[ffvfX/%ođ'œ“x/f^fCf~f“fO, ĩ'2 ȳ ®

fOf%oftfBfbfN f, [fh/f^fCf~f“fO



,é□ê□‡,É□Af}f<f`fXfNfŠ□[f“,đŽg—p,·,é,±,Æ,ª,Â,«,Ü,·□BELSA,ìf}f<f`fXfNfŠ□[f“í  
%ož,đfCf“fXfg□[f<,·,é,Æ□A^È%oº,ì,æ,ɤ,ÉŽg—p,·,é,f,ffj^□”,â□Af,ffj^,ì•À,Ñ,đ`è<`,·,é,±  
,Æ,ª,Â,«,Ü,·□B

3'ä□...•½,É ~~DEL~~~~DEL~~ 3,Â,ìf,ffj^,ª%oì,É3'ä•À,ñ,¾CE`,Â,·□B

2'ä□,¼,É ~~DEL~~ 2,Â,ìf,ffj^,ª□c,É•À,ñ,¾CE`,Â,·□B

~~DEL~~

3'ä□...•½□A ~~DEL~~~~DEL~~ □c,É2—ñ□A%oì,É3—

2'ä□,¼,É ~~DEL~~~~DEL~~ ñ□A□‡CEv6'ä,ìf,ffj^,ª•À,ñ,¾CE`,Â,·□

B

,æ,è□Ú,μ,ç□î•ñ(DirectX,âOpenGL,ì□\$CEÀŽ—□€,É,Â,ç,Ä),í□Af}f<f`fXfNfŠ□[f“,ì□€—Ú,đ,²—,·,  
,¾,³,ç□B

### [f,ffj^,ì□‡□~](f)f<f`fXfNfŠ□[f“Žž,ì,Ý):

fRf“fsf...□[f^,Éf}f<f`fXfNfŠ□[f“í%ož,ì•ì□”,ìELSA fOf%oftfBfbfN f{□[fh,Æ□AELSA MULTIman  
Windowsfhf%ofCfo,Æ,ªfCf“fXfg□[f<,³,é,Ä,ç,é,î□A,±,±,Âf,ffj^,ì□‡□~,Æ^È'u,đŽw`è,·,é,±  
,Æ,ª,Â,«,Ü,·□B

'É□í,í□Ý`è,ì•K—v,í,·,è,Ü,¹,ñ,ª□A,½,Æ,ì,î□^,ñ`t,ìf,ffj^,

ÂDOS,đfu□[fg,³,¹,½,ç□ê□‡,É□Af,ffj^,ì•À,Ñ,í}1,2,3},ì□‡“Ô,Â,í,É,}2,1,3},ì□‡“Ô,É,É,è,Ü,·□B

,±,ì□Ý`è,ª%o,ß,ìf\_cfAf□fOf{fbfNfX,ÉCE©,Â,©,ç,È,ç□ê□‡,í□A'}□Ú□×...'}f{f^f“,đfNfŠfbfN,μ,Ä,-  
,¾,³,ç□B

### [fEfBf“fhfE□\$CEä](f)f<f`fXfNfŠ□[f“Žž,ì,Ý):

f}f<f`fXfNfŠ□[f“,đŽg—p,μ,Ä,ç,Äɤf\_cfAf□fO fEfBf“fhfE,đf,ffj^,ì<«ŠE,É•Ž!,μ,½,-

,È,ç□ê□‡□ADESKman,à,μ,,íDeskTools“à,ìfEfCf“fhfE□\$CEä,đfAfNfefBfu,É,μ,Ä,,¾,³,ç□B

,à,μ□A,±,ì□Ý`è%oæ—È,ªWINman,©,çŽQ□Æ,Â,«,È,ç

,Æ,«,í□ADESKman□i,Ü,½,íDeskTools□j,đfCf“fXfg□[f<,·,é,±,Æ,Â□A'}%oæ—

È,ìfvf□pfefB"}“à,É□Ý`èfy□[fW,ª'Ç%oÁ,³,é,Ü,·□B

fOf%o0ftfBfbfN f,[]fh,ìC³[]Afjf%o[]ffvfX/%o0đ'œ"x/f^fCf~f"fO,ì'²[]®

•K—v,Èffj%o[]ffvfX[]A%o0đ'œ"x[]AfŠftfCefbfVf... fC[]fg,đ"ü—í,·,é,é,±,Æ,Å,f,jff^  
f^fCf~f"fO,³[]¶[]¬,³,ê,Ü,·[]B,±,ìf^fCf~f"fO,í[]V,μ,çfOf%o0ftfBfbfN f,[]fh,Æ,μ,Ä•Ù'¶,Å,«,Ü,·[]B

,» ,ê,É,í[]Af,jff^,ÅŽg—p,Å,«,é[]Å'â...•½'-[]\_Žü"g[]" (kHz),ª•ª,©,Á,Ä,ç,é,±,Æ,ª•K—v,Å,(f,jff^  
ff[]f^,ìC^'èŽQ[]Æ)[]B

,Ü, ,í•K—v,Èffj%o[]ffvfX ('Êí[]A8 bpp = 256[]F),đ'l'đ,μ,Ü,·[]Bffj%o[]ffvfX,ª'â,«,-  
,È,é,Æ[]A[]Å'âfsfNfZf< fNf[]fbfN,ÍŽ©"®"l,ÉCE ,è,Ü,·[]B•K—v,È%o0đ'œ"x,đ'²[]®,μ,Ü,·[]B  
%o0đ'œ"x,í[]Af,jff^ fTfCfY,ª 15",ì,Æ,«,í 800 x 600[]A16",©,ç 18",ì,Æ,«,í 1024 x  
768[]A19") ^È[]ã,ì,Æ,«,í 1280 x 1024,ª'ê"Ê"l,Å,·[]B

•K—v,ÈŠftfCefbfVf... fC[]fg,đ Hz,Å"ü—í,μ,Ü,·[]B  
"wCei,ì,Ü,Æ,ñ,Ç,ª[]•,ìfAfvfŠfP[]fVf#f",ì[]ê[]#[]A60 Hz,Å[]•ª,Å,·[]BWindows,È,Ç"wCei,ì-  
¾,é,çfAfvfŠfP[]fVf#f",í[]AfffBfXfvfCfC,ì,ç,Ä,«,đ-h,®,½,ß,É[]Å'á75 Hz^È[]ã,ÅŽÀ[]s,μ,Ä,-  
,¾,³,ç[]B'Êí[]A[]Å"K,ÈŠftfCefbfVf... fC[]fg,í85 Hz,Å,·[]B100 Hz,đ%oz,ì,Ä,à-Ú,ÉCE©,ì,½  
%o0ü'P,ª,È,ç,ì,ª•[]'Ê,Å,·[]B

fefXfg fpf^[]f",ª^À'è,μ,½,ç[]A,Ü, ,[]Ý'è"à—  
e,đ•Ù'¶,μ[]AWindows,đ[]Ä·N"®,μ,Ä,©,ç[]AfffBfXfvfCfC,ìfTfCfY,Æ^Ê'u,ì'²[]®,đŽn,ß,Ü,·[]B  
fffbfXfvfCfC,ìfTfCfY,Æ^Ê'u,đf,jff^,Å'²[]®,μ,Ä,Ý,Ä,,¾,³,ç[]B,¶,Ü,,ç,©,È,ç[]ê[]#,í[]A[WINman  
(ELSA[]Ý'è)],Åf,jff^ f^fCf~f"fO,đ'²[]®,·,é,±,Æ,à,Å,«,Ü,·[]B

## fefXfg fXfNfŠ[f“

WINman (ELSA[Ý'è),Å,Í[A[V,μ,çf,fjf^

f^fCf~f“fO,ª•Ù'¶,³,è,é'O,É[A[V,μ,çf^fCf~f“fO,ªf,fjf^,É“K,μ,Ä,ç,é,©,Ç,κ,©,ªf`fFbfN,³,è,Ü,·[B  
,»;,½,β,É[A,í,·,©,ÈŽžŠÔ,Å,·,ªfefXfg fXfNfŠ[f“ ,ª•\Ž!,³,è,Ü,·[B

fefXfg fXfNfŠ[f“ ,ª•\Ž!,³,è,Ä,à[AfGfXfP[fv fL[(Esc),ð%oÿ,·,±,Æ,Å,ç,Å,Å,à[A,·,±,Æ,ª,Å,«,Ü,·[B  
Žÿ,É[AfefXfg fpf^ [f“ ,É-à'è,ª,È,ç,©,Ç,κ,©[q,Ë,ç,è,Ü,·[B

fefXfg fpf^ [f“ ,ª^À'è,μ,½,ç[A,Ü,·[Ý'è“à—

e,ð•Ù'¶,μ[AWindows,ð[Ä·N“®,μ,Ä,©,ç[AffBfXfvfÇfC,ìTfCfY,Æ^Ê'u,ì'²[®,ðŽn,β,Ü,·[B  
ffBfXfvfÇfC,ìTfCfY,Æ^Ê'u,ðf,fjf^,Å'²[®,μ,Ä,Ý,Ä,¾,¾,ç[B,κ,Ü,·,ç,©,È,ç[é[±,Í[A[WINman  
(ELSA[Ý'è)],Åf,fjf^ f^fCf~f“fO,ð'²[®,·,é,±,Æ,à,Å,«,Ü,·[B

**fOf%oftfBfbfN f,[]fh(frfffif,[]fh)[]Af,fff^ f^fCf~f"fo**

fOf%oftfBfbfN f,[]fh(,Ü,½,ífrfffif,[]fh),í[]A, ,éflf%o[]lfffvfX[]A%ođ'œ"x[]Af,fff^  
f^fCf~f"fo[]A,»,ì'¼,·,×,Ä,ì" @[]if,[]fh,ÉŠÖ~A,·,éfefNfjffj< ff[]f^,đ<L[]q,·,éff[]f^ fZfbfg,Å,·[]B

f,fff^ f^fCf~f"fo,í[]Af,fff^[]M[]t,ì^èžž" @[]i,đ'è<` ,·,éff[]f^ fZfbfg,Å,·[]B  
Šî-{ "I,É,ífsfNfZf< fNf[]fbfN[]A...·½'-[]\_Žü"q[]"[]Aftf[]f€,ìfŠftf[]fbfVf... f[]f[]fg,Å,·[]B  
[]...·½[],'¼·\Ž;ŽžŠÔ[]A'O" f[]f^ []A" ~Šúfpf<fX(Sync)[]A[]Eã·" f[]f` ,Æ,ç,æ[]¾—  
t,Å,æ,è[]³Šm,É<L[]q,³,è,Ü,·[]B

•\Ž;ŽžŠÔ,Æ,í[]A" dŽqfr[]f€,æ%æ-É,ÉfsfNfZf<,đ·` %æ,·,éžžŠÔ,ì,±,Æ,Å,·[]B,»,ì[]Eã[]A" dŽqfr[]f€  
,đ[]Å[]%o,ì^È'u,É-ß,·,É,ì^è'è,ìžžŠÔ,đ—v,µ,Ü,·[]B,±,ìfuf%of" fNžžŠÔ,í[]A'O" f[]f` (·\  
Ž;ŽžŠÔ,æ[]i,í,Á,Ä, ©,ç" ~Šúfpf<fX,æžn,Ü,é,Ü,Å,ìžžŠÔ)[]A" ~Šúfpf<fX(" ~Šúfpf<fX,ìžžŠÔ)[]A, ",æ,  
Ñ[]Eã·" f[]f` (" ~Šúfpf<fX,æ[]i,í,Á,Ä, ©,çžŸ,ì·\Ž;ŽžŠÔ,æžn,Ü,é,Ü,Å,ìžžŠÔ),Å[]\[]¬,³,è,Ü,·[]B,±,è,í[]...  
·½[],'¼—¼·ù,ìf^fCf~f"fo,É,Å,ç,Ä" —I,Å,·[]B

**fjf%o[fffvfX/ bpp**

fjf%o[fffvfX,ì'P^É,íbpp,©A[F",Á, ,ç,í,³,è,Ü,·B  
 bpp (Bits Per Pixel),íŠefsfnfZf<,ÉŽg—p,Á,«,éfrffl f[f,fŠ,ì—e—É,Á,·B,½,Æ,ì,íA8  
 bpp,ìèè#AŠefsfnfZf<,í8frfbfg,ðŽg—p,μA256 (= 2,ì8æ)F,ðŠi"[A·\Ž!,Á,«,Ü,·B,±  
 ,ì",ìA(%æ-Éä,ì·\Ž!,É\•ª,ÈfsfnfZf<,ª, ,éèè#)"~Žž,É·\Ž!,Á,«,éF,ì",ì,±,Æ,Á,·B

Windows ,ìèè#A'Éí,í32768F(= 15 bpp)^Èä,ªŽg—p,³,è,Ü,·B,±,ìF",ªA·\  
 Ž!,ì'‰ŽÀ"x,Æf[f,fŠÁ"i/·\Ž!'—"x,Æ,ìŠÖEW,ÁA—Ç,ì'Á<!"\_¾,©,ç,Á,·B[F",ª,È,ç  
 ,ÆAfCf[fW,ìfnfìfŠfB,ª'á‰,μA½,,ìèè#AfffBfUfŠf"fo,ªK—v,É,È,è,Ü,·B[F",ª½,ç  
 ,ÆAf[f,fŠ,ìÁ"i,ª,ìA'Éí,ìWindows fhf%ofCfo,ì—"x,ªx,,È,èA‰ð'œ"x,ð‰,°,é,©A"~,¶  
 ‰ð'œ"x,Á,àfŠftfCfbfVf... fC[f,g,ð‰,°,È,ç,Æ·\Ž!,Á,«,È,,È,è,Ü,·B  
 ^è"É"ì,É,íŽŸ,ìÝ'è,ð,,§,μ,Ü,·B  
 256F(8 bpp): 'Éí,ìfìftfBfX fAfvfŠfP[fVf#"[i3D,ðŽg—p,μ,È,ç,Æ,«j  
 32768,Ü,½,í65536F(15,Ü,½,í16 bpp),ìfnfCjff%o[: frffl,Ü,½,í3DfAfvfŠfP[fVf#"  
 1670-œF(24,Ü,½,í32 bpp),ìftf<fjf%o[: , "x,È‰æ'œ^—ü, ~

**^è"É"ì,Èfjf%o[fffvfX**

F,ì"	bpp,Á·\ ,í,μ,½fjf %o[fffvfX	fRf"fg
2	1	"[·Af,fmfNf
16	4	VGA 640x480,È,Ç,ìpfCfbfg
256	8	fpfCfbfgA^è"É"ì,È,‰ð'œ" xfOf%oftfBfbfN f{[fh,ì·W€f,[fh
32768	15	fnfCjff%o[ 5 + 5 + 5 bpg
65536	16	fnfCjff%o[ 5 + 6 + 5 bpg
1670-œ	24,Ü,½,í32	ftf<fjf%o[ 8 + 8 + 8 bpg

4,Ü,½,í8 bpp,ìèè#A[F,ì",ìfpfCfbfg(RAM DACjff%o[ fe[fuf<),ðŽg,Á,Á·\  
 Ž!,³,è,éŽÀÛ,ìF,É·İŠ·,³,è,Ü,·B,½,Æ,ì,ìA,±,ìfpfCfbfg,Á262144F,ìfGf"fgfŠ(6 bpg,ìèè#),à1670-  
 œF,ìfGf"fgfŠ(8 bpg,ìèè#),ì^—,ª‰Á"·\,·B

bpg ,Æ bpp,đ□-“¯,μ,È,ç,æ,κ,É,μ,Ä,,¾,¾,ç□Bbpg,Í□ARGB□F•ª”z,²,Æ,ìjff%□[ffvfX,đŽ!,μ,Ü,·(bpg =  
Bits Per Gun)□B,½,Æ,!,î□A16 bppfnfCjff%□[,ìê□#□A5 + 6 + 5 bpg,Í 3□F•ª”z,ìÔ□A—î□A□Â,ÉŽg—  
p,Â,«,éfrfbfg□”,Â,·□B



**fXfNfŠ[f“ fTfCfY A%ŮŽ</fo[f` fff< fXfNfŠ[f“ ,ì%Ůđ‘œ“x**

**fXfNfŠ[f“ fTfCfY**

f, fff^ fTfCfY, ì'I, í%ŮA<ÉüŠÇ(CRT), ì'íŠpü, ìCEö]fTfCfY, Å, ·B%ŮŽ<·\Ž|—  
 ì^æ, ì'íŠpüfTfCfY, æ, è, à, µ'â, «, È'I, Å, ·B^ê"É"l, È'I, íŽŸ, ì·\, ì, Æ, ", è, Å, ·B

íŠpü, ìCEö]f	íŠpü, ìCEö]f	, ", , æ, » , ì	^ê"É"l, È%Ůđ‘œ“x
TfCfY (inch)	TfCfY (cm)	%ŮŽ<—	ì^æ (cm)
-----	-----	-----	-----
14"	35,5	27 x 20	800 x 600
17"	43	32 x 24	1024 x 768
20"	51	38 x 29	1280 x 1024

u"v, ífCf" f` A1 inch = 2.54 cm B

**%ŮŽ<%Ůđ‘œ“x**

%Ůđ‘œ“x, Æ, íA·\Ž|, Å, «, éfsfNfZf<“, ì, ±, Æ, Å, ·B, ½, Æ, í, íA1024 x 768, ìê#A...·½, ìŠe s, É  
 1024fsfNfZf<, a·\Ž|, ³, êA, '¼, ìŠe—ñ, É768fsfNfZf<, a·\Ž|, ³, è, Ü, ·B, µ, ½, a, Å, Ä%Ůæ—  
 Êã, ì'fsfNfZf<“, í1024 x 768 = 786432, É, È, è, Ü, ·B

'ÉíA13", Ü, Å, ìf, fff^ , ì%Ůđ‘œ“x, í 640 x 480, ÉA14", ©, ç15", ìf, fff^ , ì%Ůđ‘œ“x, í800 x 600, ÉA16", ©, ç  
 18", ìf, fff^ , ì%Ůđ‘œ“x, í1024 x 768, ÉA19" ^Êã, ìf, fff^ , ì%Ůđ‘œ“x, í1280 x  
 1024, ÉfZfbfg, ³, è, Ü, ·B, ½, ¾, µAÅ, %Ůđ‘œ“x, ìfhfbfg fsfbf` fTfCfY, âÅâ...·½- , Žü"q", È, Ç, ì  
 —v^ö, É, æ, Å, Ä^Ü, È, è, Ü, ·B

%Ůđ‘œ“x, ìdpi (Dot Per Inch), Å, à·\Ž|, Å, «, Ü, ·B

**fo[f` fff< %Ůđ‘œ“x (fXfNfŠ[f“ , ìpf“)**

fo[f` fff< fXfNfŠ[f“ , AfNfefBfu, É, È, Á, Ä, ç, é, ÆAWindows, ìì<Æ—ì^æ, í·\Ž|, ³, è, Ä, ç, é  
 %ŮŽ<fXfNfŠ[f“ , æ, è, à'â, «, , È, è, Ü, ·(, Å, Ü, èAfo[f` fff<%Ůđ‘œ“x, í%ŮŽ<%Ůđ‘œ“x, æ, è, à'â, «, -  
 , È, é) B

%oB,ê,½—ì^æ,í[Af}fEfX fj□[f]f<,³fXfNfŠ□[f“ ,ì«ŠE,É—^,é,ÆŒ© ,l,é,æ,α,É,È,è,Ü,·□B,» ,ìŒă  
%oÂŽ<fXfNfŠ□[f“ ,ì“à—e,³fXfNf□□[f<,³,ê,Ü,·□B,±,ì“®□i,đ,Â□ufpf“□v,Æ,àŒ¾,ç,Ü,·□B

## fsfNfZf< fNf[]bfN/MHz

fsfNfZf< fNf[]bfN,Ü,½,ÍfsfNfZf< fCE[]fg,ÍMHz(f[]Kfwf<fc),Å•\,í,³,ê,Ü,·[]B,±,ì'ì"í'í'Éí10,©,ç250  
MHz,Å,·[]B,½,Æ,ì,í[]A%ø'œ"x 1024 x 768[]A75 Hz,Å,í[]A79 MHz,ÍfsfNfZf< fNf[]bfN,ª•K—  
v,Å,·[]BfsfNfZf< fNf[]bfN,ì'ì,í[]A1•b,É[]',«[]ž,Ü,ê,éfsfNfZf<[]",ð•S-œ'P^Ê,ÅŽ!,μ,Ü,·[]B

□...•½'-□, Žü"g□"/kHz

□...•½'-□, Žü"g□"□A, ,È,í,ž□A•îĚüŽü"g□",ì'è'è'P^Ê,í kHz,Å,·□B,±,ì'l,ì"í"í"í'Êí 30,©,ç110  
kHz,Å,·□B,½,Æ,!,î□A%øđ'œ"x 1024 x 768□A75 Hz,ìê±□A60 kHz,ì...•½'-□, Žü"g□",ª•K—  
v,Å,·□B,±,ì'l,í□AfsfNfZf< f%ofCf",ª□',«□ž,Ü,ê,é'¬,³□A,Â,Ü,è□A"dŽqfr□[f€,ª%øA<ÉüŠÇ,ì't,đ-^•b  
%ø½□ç%øñ□¶,©,ç%øE,É"®,,ì,©,đŽ!,μ,Ü,·□B

**fŠftfCEfbfVf... fCE[]fg/Hz**

ftfCE[]f€ fŠftfCEfbfVf...

fCE[]fg,·,È,í,¿,¼•ÎCEüŽü”g” ,ì’è’P^Ê,ÍAHZ,Â,·B’Ê[]A’l,ì”í’í,í60,©,ç100

Hz,Â,·BHz,Æ,ÍHertz(fwfjfc),ì—<sup>a</sup>CEê,Â,·B75 Hz,È,ç[]A-^•b75,ìftfCE[]f€,<sup>a</sup>•\Ž|,<sup>3</sup>,ê,é,Æ,ç,±,±,Æ,Â,·B

”wCEi,ì,Ù,Æ,ñ,Ç,<sup>a</sup>•,ìfAfvfŠfP[]fVf#” ,ì[]ê[]#[]A60 Hz,Â[]•<sup>a</sup>,Â,·B,æ,è”wCEi,ì-<sup>3</sup>/<sub>4</sub>,é,çWindows,ì,æ,±,ÈfAfvfŠfP[]fVf#” ,ì[]ê[]#[]A,¿,ç,Â,«,ð-hŽ~ ,·,é,½,ß,É[]A[]Á’á75 Hz^È[]ä,ÂŽÀ[]s,µ,Ä,-<sup>3</sup>/<sub>4</sub>,<sup>3</sup>,ç[]B’Ê[]í[]A[]Á”K,ÈfŠftfCEfbfVf... fCE[]fg,í85 Hz,Â,·BfŠftfCEfbfVf... fCE[]fg,<sup>a</sup>100 Hz,ð%øz,ì,Ä,à-Ú,ÁŠm”F,Â,«,é%øü’P,ì, ,è,Ü,<sup>1</sup>,ñ[]B

’Ê[]í,ìfmf”fCf”f^[]fCE[]fX” @[]ì,Â,Í[]AftfCE[]f€,ìfŠftfCEfbfVf...

fCE[]fg,í,¼•ÎCEüŽü”g” ,Æ” ,¶,Â,·B

’á[]...•½’-[] ,Žü”g” ,Â,à[] ,fŠftfCEfbfVf... fCE[]fg,ð^ó[]Ú•t, ,é,½,ß,ÉfCf”f^[]fCE[]fX fffBfXfvfCEfC,<sup>a</sup>%øß<Ž,É,æ,—p,ç,ç,è,Ü,µ,½[]B,±,ìf,[]f[]h,Â,Í[]AŠeftfCE[]f€,<sup>a</sup>2•<sup>a</sup>Š,,,<sup>3</sup>,è,Ü,·B[]Á[]%ø,ì”¼•<sup>a</sup>,ìftfCE[]f€,Á<ð[]”f%øfCf” ,<sup>a</sup>•`%øæ,<sup>3</sup>,è[]A1f%øfCf”fV•<sup>a</sup>fVftfg,µ,ÄŠi[]” ,ìf%øfCf” ,<sup>a</sup>•`%øæ,<sup>3</sup>,è,Ü,·B,µ,½,<sup>a</sup>,Á,Ä[] ,¼•ÎCEüŽü”g” ,ìftfCE[]f€ fŠftfCEfbfVf... fCE[]fg,ì” {,É,È,è,Ü,·B,±,ì•\Ž|Žè-@,Í[]AfefCEfr,ÉŽg,í,è,Ä,ç,Ä[]AIBM 8514/Afrffffi fAf\_fvf^ ,É,à[]ì—p,<sup>3</sup>,è,Ä,ç,Ü,·B,½,<sup>3</sup>/<sub>4</sub>,µ[]A•\Ž|•í^Ê,<sup>a</sup>[],ç,ì,ìfmf”fCf”f^[]fCE[]fX f,[]f[]h,ì•ù,Â,·B

ftfCE[]f€ fŠftfCEfbfVf... fCE[]fg,íf,fjf^ ,ð[]IŠÔ[]HŠw”l,ÉCE©,½[]ê[]#[]A[]d—v,Â,·B75Hz,ð%ø<sup>a</sup>%øñ,éfŠftfCEfbfVf... fCE[]fg,â[]AfCf”f^[]fCE[]fX,ìŽg—p,Í[]IŠÔ[]HŠw”l,É[]D,Ü,µ,,È,ç,Æ,<sup>3</sup>,è,Ä,ç,Ü,·B[]iftfŠfbfj[] ,<sup>a</sup>-Ú—§,¿,Ü,·j,à,¿,è,ñ[]IŠÔ[]HŠw”l,É,Í[]A•úŽÈ[]ü,<sup>a</sup>[],È,ç,±,Æ,â[]Af,fjf^ fTfCfY, ,æ,Ñfhfbfg fsfbf` ,É”K,µ,½%øø’œ”x,È,Ç,ì”Á[]<,à[]ì—¶,<sup>3</sup>,è,Ü,·B

## f}f<f`fXfNfŠ[]f“

fRf“fsf...[]f^,Éf}f<f`fXfNfŠ[]f“í%ž,ìELSAfOf  
%oftfBfbfNfXf{[]fh,â•;[]“fCf“fXfg[]f<,³,ê,Ä,¨,è[]A,³,ç,Éf}f<f`fXfNfŠ[]f“í%žfhf  
%ofCfo,âfCf“fXfg[]f<,³,ê,Ä,ç,ê,î[]A•;[]”,ìf,fj^,ðŽg—  
p,μ,ÄWindows,ð•;[]“fXfNfŠ[]f“(f}f<f`fXfNfŠ[]f”),ÅŽg,±,±,Æ,â,Ä,«,Ü,·[]B  
Windows 95<y,ÑNT[]ã,Ä,í[]A“~^ê,ìfOf%oftfBfbfN f,[]fh,Ä[]A“~,¶—e—  
Ê,ìf[]f,fŠ,ðŽ[],Á,½[]A“~“™,ìELSAf{[]fh,Äf}f<f`fXfNfŠ[]f“ŠÂ<<,ð[]‘z%Ä“\,Ä,·[]BWindows  
98<y,ÑWindows NT 5.0,É,¨,ç,Ä,í[]AOSŽ©‘ì,â^Ü,È,éf^fCfv,ìfOf  
%oftfBfbfNfXf{[]fhŠÖ,Ä,ìf}f<f`fXfNfŠ[]f“,ðfTf[]f,·,é—\‘è,Ä,·[]B

f}f<f`fXfNfŠ[]f“,ðŽg—p,·,é[]Ü,É,í[]ADirect3D,â[]AOpenGL,ìfAfvfŠfP[]fVf+f“,É‘½[]-  
,ì[]\$EÀ,â[]¶,¶,Ü,·[]B<ì‘ì“ì,É,í[]Afn[]fhfEfFfA fAfNfZf%ofE[]fVf+f“,í^ê-±-Ü,ìfOf  
%oftfBfbfNfXf{[]fh‘±,Ä,μ,©[]s,í,ê,È,ç[]A,à,μ,,ìftf<%æ-Ê,ÅŽÀ[]s,μ,½,Æ,«,μ,©[],‘-  
%»»,³,ê,È,ç[]A,È,Ç,Ä,·[]B

fEfCf“fhfE,ì[]\$Eä,âf,fj^,ì[]±“Ô,ì•ï[]X,ð[]s,±,É,í[]A ELSA WINman (ELSA[]Ý‘è),ðŽg—p,μ,Ä,,¾,³,ç[]B

## ftfHf“fg fTfCfY

Windows, ÅŽg—p, ·, éftfHf“fg fTfCfY, í² @ %oÅ”\, Å, · BftfHf“fg fTfCfY, í A800x600, Ü, Å, ì%ođ‘œ“x, Å, í 96dpi (□¬) □A1024x768^È□ã, ì%ođ‘œ“x, Å, í 120dpi (‘â), ¢• □’ÊŽg—p, ¢, ê, Ü, · □B

## f, fff^ ff[]f^, iC^'è

ELSA fOf%oftfBfbfN f{[]fh, ðf, fff^, É"K[]#, ³, ¹, é, É, í[]Af, fff^" @[]), ìff[]f^, Æ"í^í, ðC^'è, :, é, ±, Æ, ³, K—  
v, Å, ·[]B  
, ±, ±, Å, í[]Af, fff^, ì[]Å'â[]... ·½'—[], Žü" g[]" (kHz), ³"Á, É[]d—v, Å, ·[]B, ±  
, ì[]ãCÈÀ, ð', !, é, Æ[]A[]Å^«, ì[]ê[]f, fff^, ÉCÈ[]á, ð, «, ½, :, ±, Æ, ³, , è, Ü, ·[]B

## f, fff^, ìf[][]fj[][]Af, fff^, ì@Ží-¼

'É[]í[]Af[][]fj[][], "æ, ÑC^—¼, ìf, fff^, ì"w-Ê, É, , è, Ü, :, ³[]A, È, ç[]ê[]#, ìf, fff^ f} fff... fAf<, ðŽQ[]Æ, µ, Ä, -  
, ¾, ³, ç[]B

## Cö[]ìf, fff^ fTfCfY

f, fff^ fTfCfY, ì'l, í[]A%oA<É[]üŠÇ(CRT), ì'ÍŠp[]ü, ìCö[]ìfTfCfY, Å, ·[]B, ±, è, í[]A%oAŽ<·Ž|—  
ì^æ, ì'ÍŠp[]ü, ìfTfCfY, æ, è, à[], µ'â, «, È'l, Å, ·[]B ê"É"l, È'l, í[]A14" (35.5 cm)[]A17" (43 cm) []A, Ü, ½, í20" (51  
cm), Å, ·[]B<L[]t[]u"[]v, ìfCf"f` (2.54 cm), ð·\, µ, Ü, ·[]B

[]... ·½'—[], Žü" g[]", ì"í^í(kHz)[]A  
[], ¼fŠftfCfBfVf... fC[][]fg, ì"í^í(Hz)

[]Å'â, "æ, Ñ[]Å'á, ì[]... ·½'—[], Žü" g[]", ÆfŠftfCfBfVf... fC[][]fg, í[]A, "Žè<, ìf, fff^ f} fff...  
fAf<, É<L[]Ú, ³, è, Ä, ç, Ü, ·[]B  
, ±, ±, Å, í[]Af, fff^, ì[]Å'â[]... ·½'—[], Žü" g[]" (kHz), ³"Á, É[]d—v, Å, ·[]B, ±  
, ì[]ãCÈÀ, ð', !, é, Æ[]A[]Å^«, ì[]ê[]f, fff^, ÉCÈ[]á, ð, «, ½, :, ±, Æ, ³, , è, Ü, ·[]B, »; ì'¼, ì'l, ³C^, Ü, ç, È, ç[]ê[]#[]Af  
[f[], ì, Ü, Ü, É, µ, Ä, "ç, Ä, ©, Ü, ç, Ü, ¹, ñ[]B

## f, fff^, ìfvf[]fpfefB, iC^'è

f, fff^, ìfvf[]fpfefB, ðC^'è, :, é, É, í[]AZŽ, ÉŽ!, ·, ç, , Å, ©, ì·û-@, ³, , è, Ü, ·[]B

f, fff^ f} fff... fAf<:

f, fff^, ì<Z[]pŽd—l, í[]Af, fff^, É·t' @, :, éf} fff... fAf<, É<L[]Ú, ³, è, Ä, ç, Ü, ·[]B



VESA DDC:

f, fjjf^, ÉVESA DDC fRfIfNf^, a' • " ö, ³, ê AfOf%oftfBfbfN f{[]fh, a VESA DDC ĀÉŠ·, ìê[]#[]Af, fjjf^ ff[]f^, Ìf, fjjf^ fP[]fuf<, ð%oî, µ, ÄfOf%oftfBfbfN f{[]fh, ÉŽ © " ® " I, É' — []M, ³, ê, Ü, · []B

VESA VDIF f, fjjf^ < L []qftf@fCf< (\* .VDA):

f, fjjf^, ÉVESA VDIF f, fjjf^ < L []qftf@fCf< (\* .VDA), a " Y • t, ³, ê, Ä, ç, é []ê[]#[]A • K — v, Èff[]f^, Í, ±, ê, ©, ç " Ç, Ý []ž, Ü, ê, Ü, · []Bf, fjjf^ ff[]f^, ð " ü — Í, ·, é, Æ, « []AWINman (ELSA []Ý`è), É []AVDIFftf@fCf<, ð " Ç, Ý []ž, p, ½, ß, Ìf {f^f" , a • \Ž |, ³, ê, Ü, · []B

ELSA f, fjjf^ < L []qftf@fCf< WINman.MON:

ELSA f, fjjf^ < L []qftf@fCf< WINman.MON, ÉŽg — p, ·, ·, éf, fjjf^, a < " , a, Á, Ä, ç, ê, Î []A, » , ±, ©, çf, fjjf^ ff[]f^, a Žæ " ¾, ³, ê, Ü, · []B, ±, ê, Í []Af, fjjf^ ff[]f^ " ü — Í, ì []Û, Éf, fjjf^, Ìf [][]fj [] [, Æ < @ Ž í - ¼, ð ' I ' ð, ·, é, ±, Æ, Å Ž © " ® " I, É []s, í, ê, Ü, · []B

## f, fjjf^ f}fjf...fAf<

ELSA fOf%oftfBfbfN f{ [fh, ðf, fjjf^, ÉÅ“K, Èó‘Ô, Å“K†, ³, ¹, é, ½, ß, ÉAZÿ, ÉŽ!, ·ff [f^, ðf, fjjf^, ìf}fjf...  
fAf<, Å‘T, μ, Ä,, ¾, ³, çB

f, fjjf^ f [f] [Af, fjjf^, ì<@Ží-¼AfCf“f` ,Ü, ½, ìfZf“f` ‘P^Ê, ì‘íŠpü, ìœö ìf, fjjf^ fTfCY (= fCf“f` ,Ü, ½, ìfZf“f` ‘P^Ê, ìCRT, ì‘íŠpüüfTfCY) AkHz‘P^Ê, ìÅ‘á, “, æ, ÑÅ‘â... •½’- , Žü”g” (= ... •½•îœüŽü”g” = ‘- , f [fg] AHZ‘P^Ê, ìÅ‘á, “, æ, ÑÅ‘â, ¼ftf [f€fŠftfCbVf... f [fg] (= , ¼•îœüŽü”g”)B

, ±, ±, Å, í [Af, fjjf^, ì<—eÅ‘â... •½’- , Žü”g” (kHz), ²“Á, Éd—v, Å, ·B, ± , ìăœÀ, ð’ , !, é, ÆAÅ^«, ìê†f, fjjf^, ÉÈìá, ð, «, ½, ·, ±, Æ, ², , è, Ü, ·B

**WINman.MON**

ELSA f,fjf^<L□qftf@fCf<WINman.MON,ÉŽg—p,·,éf,fjf^,ª<“,ª,Á,Ä,ç,ê,î□A,»±,©,ç“®□ì”íí,ª•ª,©,è,Ü,·□B,±,ìftf@fCf<,É,í□Af|fsf...f%□[,Èf,fjf^,ìŽâ,È“Á□«,Æ□\$CEÀ,ª<L%□,ª,è,Ä,ç,Ü,·□B

,±,ìASCIIfeLfxfg ftf@fCf<,É,í,f,fjf^,ìff□[f^,ª<L□q,ª,è,Ä,ç,Ü,·□B,»ì<L□q,ìfGf“fgfŠ,íŽŸ,ì,Æ,“,è,Á,·□B f,fjf^,ìf□□[f□□Af,fjf^,ì<@Ží-¼□AfCf“f`'P^Ê,ì'íŠp□ü,ìCEö□ìf,fjf^  
fTfCfY□Akhz'P^Ê,ì□Á'á,“,æ,Ñ□Á'á□...•½'-□,Žü”g□”□AHz'P^Ê,ì□Á'á,“,æ,Ñ□Á'á□,¼ftfCE□[f€  
fŠftfCEfbvf... fCE□[fg□Af~fŠ'P^Ê,ìfsfNfZf< fTfCfY/fhfbfg fsfbf` □B

,±,ìftf@fCf<,Á,ì,f,fjf^,ì<L□q,í—á,ì,ìŽŸ,ì,æ,ᄡ,É,È,è,Ü,·□B  
ELSA, GDM-17E40, 17", 29-82kHz, 50-150Hz, 0.26mm

## VESA VDI f, f j f ^ < L q f t f @ f C f <

VDIF, í f, f j f ^ Ž d — l, ð < L q, , é, ½, ß, ì f t f @ f C f < Ć Ž ©, ð ' è ` , , é VESA < K Š i, Å, . BVDIF f t f @ f C f <, É, í % œ — Ê, ì ' Í Š p ü f T f C f Y, È, Ç, ì f, f j f ^ " Á < , â A Å ' á < — e ... • ½ ' — , Ž ü " g " (kHz), È, Ç, ì f, f j f ^, ì " ® ì " í ^ í, É, Å, ç, Ä, ì f f [ f ^ , ð Š Ü, Ü, ê A, » , ì [ P R E A D J U S T E D \_ T I M I N G ] , ì f Z f N f V f f " , É, Í Š Y " — , , é f, f j f ^ , É " K, µ, ½ f, f j f ^ f ^ f C f ~ f " f O, É, Å, ç, Ä, ì f f [ f ^ f Z f b f g, ð < L q, , é, Ä, ç, Ü, . B

VDIF f t f @ f C f <, ð Ž g — p, , é, Æ A f, f j f ^ f f [ f ^ , ì • Ú ' ¶ A ^ ø " n, µ A Ä — ~ — p, ð, Å, «, Ü, . B

\*. VDA VDIF, í A S C I I f t f @ f C f <, È, ì, Å A • W ¶ € , ì f e f L f X f g f G f f f B f ^ , ð Ž g, Á, Ä ì — , , æ, Ñ C C , , é, ± , Æ, ð, Å, «, Ü, . B

\*. VDB VDIF, ì f o f C f i f Š f R [ f h f t f @ f C f <, È, ì, Å A " Á Ž è, È f t f g f E f f A, ¾, , Å Ž g — p, , é, Ü, . B  
WINman (ELSA ¶ Ý ' è), í \* . VDA

VDIF f t f @ f C f <, ì " Ç, Ý Ž æ, è, Æ ¶ ' « ¶ Ž, Ý, ð, Å, «, Ü, . B WINman, ð f t f @ f C f <, ð ¶ ' « ¶ Ž, b, Æ, «, í A WINman, É Š Ö Ć W, , é ¶ € — Ú, ¾, , ð < L " ü, , é, Ü, . B WINman, Å ì — , , é, ½ f t f @ f C f <, ð ' ¼, ì f t f g f E f f A, ð Ž g — p, , é ê ð ¶ A u = ¶ v < L ¶ t, ì % E, ì ó — " , É A • s ' «, µ, ½ ¶ ^ ñ, ð f e f L f X f g f G f f f B f ^ , ð Ž g, Á, Ä < L " ü, , é, ± , Æ, ð • K — v, Å, . B

\*. VDA VDIF f t f @ f C f <, í A Ž Ý, É Ž ì , , ç, , Å, ©, ì f Z f N f V f f " , Å ì — , , é, Ä, ç, Ü, . B

### [VERSION]

VESA < K Š i, ì f o [ f W f f " " Ó ¶ t B

### [MONITOR\_DESCRIPTION]:

Manufacturer = f, f j f ^ f [ f j [ A M o d e l N u m b e r = f, f j f ^ , ì < Ž í — ¼ A C R T S i z e = % œ — Ê, ì ' Í Š p ü f T f C f Y, È, Ç, ì ^ è " É " I, È f, f j f ^ < L q B

### [OPERATIONAL\_LIMITS]:

MinHorFrequency = Å ' á ... • ½ ' — , Ž ü " g " A M a x H o r F r e q u e n c y = Å ' á ... • ½ ' — , Ž ü " g " A M i n V e r F r e q u e n c y = Å ' á , ¼ f Š f t f Ć f b f V f ... f Ć [ f g A M a x V e r F r e q u e n c y = Å ' á , ¼ f Š f t f Ć f b f V f ... f Ć [ f g, È, Ç, ì f, f j f ^, ì " ® ì " í ^ í B

### [PREADJUSTED\_TIMING]:

PreadjustedTimingName = f ^ f C f ~ f " f O — ¼ A H o r P i x e l / V e r P i x e l = X / Y • Ú Ć ü, ì % ð ' œ " x A H o r F r e q u e n c y = ... • ½ ' — , Ž ü " g " A V e r F r e q u e n c y = , ¼ f Š f t f Ć f b f V f ...

fCE[]fg[]APixelClock = fsfNfZf< fNf[]fbfN fCE[]fg[]ATotalTime = ŽžŠÔ[]#CEv[]AAddrTime = •\  
Ž!ŽžŠÔ[]ABlankStart = •\Ž!,aŽn,Ü,Á,Ä,©,çfuf%of“fLf“fO,aŽn,Ü,é,Ü,Â,ìŽžŠÔ[]ABlankTime = fuf  
%of“fLf“fOŽžŠÔ[]ASyncStart = •\Ž!,aŽn,Ü,Á,Ä,©,ç“Šúfpf<fX,aŽn,Ü,é,Ü,Â,ìŽžŠÔ[]ASyncTime =  
“Šúfpf<fX,ìŽ[]±ŠúŠÔ,È,Ç,ìf,fjf^ f^fCf~f“fO,ìff[]f^ fZfbfg[]B

## VESA VDI F f, f j f ^ < L q f t f @ f C f < , i " Ç , Ý Ž æ , é

ELSA fOf%oftfBfbfN f{[]fh, ðf, f j f ^ , É " K ð † , ³ , ¹ , é , ½ , ß , É [] Af, f j f ^ " @ [] , ì f f [] [ f ^ , Æ " í ^ í , ð Ç ^ ' è , , , é , ± , Æ , ² • K — v , Å , · [] B Ž g — p f , f j f ^ , É Š Y " — , , , é VESA VDI F f, f j f ^ < L q f t f @ f C f < (\* . VDA) , ² , , é , ì [] A , » , ì f t f @ f C f < , ð Ž g — p , μ , Å , , ¾ , ³ , ç [] B , » , ì ' ¼ , ì • ù — @ , ì [] Af, f j f ^ f f [] [ f ^ , ì Ç ^ ' è , Æ , ç , æ Ç © [] o , μ , Å [] à — ¾ , ³ , é , Å , ç , Ü , · [] B

[WINman (ELSA[]'è)], ì [VESA VDI F f, f j f ^ < L q f t f @ f C f < , ð " Ç , Ý Ž æ , é ], ì f \_ f C f A f [] f O , Å [] A , Ü , , · K — v , È f j f %oo [] [ f f f v f X ( ' Ê [] í [] A8 b p p = 256 [] F ) , ð ' I ' ð , μ , Ü , · [] B f j f %oo [] [ f f f v f X , ² , , ç , Æ [] A ' I ' ð , Å , « , é f , f j f ^ f ^ f C f ~ f " f O , ì ' I , Í Ž © " @ " I , É [] ¬ , ³ , , È , è , Ü , · [] B Ž Y , É • K — v , È f , f j f ^ f ^ f C f ~ f " f O , ð ' I ' ð , μ , Ü , · [] B [] Å [] %oo , ì 2 , Å , ì ' I , Í X , Æ Y , ì %oo ð ' œ " x ( [] ... • ½ , Æ [] , ¼ , ì %oo ð ' œ " x ) , ð • \ , í , μ , Ü , · [] B %oo ð ' œ " x , ì f , f j f ^ f t f C f Y , ² 15 " , Ü , Å , ì f , f j f ^ , É , Í 800 x 600 [] A 16 " , © , ç 18 " , Ü , Å , ì f , f j f ^ , É , Í 1024 x 768 [] A 19 " ^ È [] ä , ì f , f j f ^ , É , Í 1280 x 1024 , ² • [] ' È , Å , · [] B Ž Y , ì ' I , ì f t f Ç [] [ f € , ì f Š t f Ç f b f v f ... f Ç [] [ f g ( f t f Ç [] [ f € / • b ) , ð H z ' P ^ Ê , Å • \ , í , μ , Å , ç , Ü , · [] B " w Ç i , ì , Ü , Æ , ñ , Ç , ² • , ì f A f v f Š f P [] [ f v f † " , ì [] è [] † [] A 60 H z , Å [] \ • ² , Å , · [] B , æ , è " w Ç i , ì — ¾ , é , ç Windows , ì , æ , æ , È f A f v f Š f P [] [ f v f † " , ì [] è [] † [] A , ç , ç , Å , « , ð — h Ž ~ , , , é , ½ , ß , É [] A [] Á ' á 75 H z ^ È [] ä , Å Ž À [] s , μ , Å , - , ¾ , ³ , ç [] B ' È [] í [] A [] Å " K , È f Š t f Ç f b f v f ... f Ç [] [ f g , Í 85 H z , Å , · [] B f Š t f Ç f b f v f ... f Ç [] [ f g , ² 100 H z , ð %oo z , ì , Å , à — Ú , Å Š m " F , Å , « , é %oo ü ' P , í , , è , Ü , ¹ , ñ [] B — ² Ç È [] u i [] v , " , æ , Ñ [] u n i [] v , í [] A , » , é , ¼ , è f C f " f ^ [] [ f Ç [] [ f X , " , æ , Ñ f m f " f C f " f ^ [] [ f Ç [] [ f X , ð • \ , í , μ , Å , ç , Ü , · [] B k H z , ì ' I , ì ... • ½ ' — [] , Ž ü " g [] " , ð • \ , í , μ , Ü , · [] B , ± , é , æ f , f j f ^ , ì [] Á ' á ... • ½ ' — [] , Ž ü " g [] " , ð ' ' , ì , Å , í , ç , , Ü , ¹ , ñ ( VDI F f t f @ f C f < , Å ' ' , ì , é , ± , Æ , í , , è , Ü , ¹ , ñ ) [] B M H z , ì ' I , ì f s f N f Z f < f N f [] f b f N , ð • \ , í , μ , Ü , · [] B f O f %o f t f B f b f N f { [] [ f h , í [] A , » , ì f s f N f Z f < f N f [] f b f N , ð ¶ [] ¬ , Å , « , é , ± , Æ , ² • K — v , Å , · ( W I N m a n , æ ^ f f f b f N , μ , Ü , · ) [] B

**f.fjf^ f^fCf~f"fo,δ VESA VDIF ftj@fCf<,Æ,μ,Ä•Ü'¶,.,é**

[WINman (ELSA ¶'è)],lf\_fCfA fO[VESA VDIF f.fjf^<Lqftf@fCf<,Æ,μ,Ä•Ü'¶],Ä,íA V,μ,çf.fjf^ f^fCf~f"fo,ª VESA VDIF f.fjf^<Lqftf@fCf<(\*.VDA),É•Ü'¶,³,è,Ü,·B

,±,±,Ä,íA Windows,íV,μ,çfOf%oftBfbfN f,¶fh,É,íØ,è'Ö,í,è,Ü,¹,ñB

VDIF,íA f.fjf^ "Á«,ð<Lq,.,é,½,ß,lf¶[f^CE'Ž® ,ð'è<' ,.,éVESA<KŠi,Ä,·BVDIFftj@fCf<,É,í%æ- È,ì'ÍŠpüfTfCfY,È,Ç,lf.fjf^ "Á«,âA A'â<—e...•½'-¶,Žü"gp"(kHz),È,Ç,lf.fjf^,ì"®¶"í^í,É,Ä,ç ,Ä,lf¶[f^,ªSÜ,Ü,è¶A,» ,ì[PREADJUSTED\_TIMING],lfZfNfvf¶" ,É,ÍŠY"-.,é,f.fjf^ ,É"K,μ,½f.fjf^ f^fCf~f"fo,É,Ä,ç,Ä,lf¶[f^ fzfbfg,ª<Lq,³,è,Ä,ç,Ü,·B VDIFftj@fCf<,ðŽg—p,.,é,Æ¶A f.fjf^ ff¶[f^,ì•Ü'¶¶A^ø"n,μ¶AÄ~—p,ª,Ä,« ,Ü,·B

[WINman (ELSA ¶'è)],íA V<KVDIFftj@fCf<— p,lfef"fvfCE¶[fg,ð¶¶—,μ,Ü,·B WINTM,Ä,í,.,x,Ä,í¶€—Ú,ª"ü—í,³,è,é,í,¯,Ä,È,¶Aftj@fCf<,ð~— p,.,é,ì,É¶Ä"Ç,Ýžž,Ý,.,é•K—v,ì, ,é¶€—Ú,¾,¯,Ä,·Bftj@fCf<,ð'¼,lfvf¶Of%of€,ÄŽg— p,.,é¶ê¶A'¼,í¶€—Ú,à"ü—í,μ,È,¯,è,î,È,è,Ü,¹,ñ¶B L¶[f¶¶fh,ª, ,é,ì,É¶A¶u=¶v<L¶t,ì%œ'ª ,ª<ó",ì¶ó'Ö,Ä, ,è,í¶A•s'« ,μ,½¶î•ñ,ð<L"ü,μ,È,¯,è,î,È,è,Ü,¹,ñ¶B\*.VDA VDIF,í¶f^ ,È ASCIIftj@fCf<,È,ì,Ä¶A^È¶ã,ì¶i<Æ,í•W¶€,lfefLfxfg fGfffBf^ ,Äs,í,Ü,·B WINman,í,.,x,Ä,lf.fjf^ f^fCf~f"fo,É'í,μ,Ä¶V<Kftj@fCf<,ð¶¶—,μ,Ü,·B""^êf.fjf^ ,É•i¶",lf.fjf^ f^fCf~f"fo,ª® ,μ¶A,» ,è,ç,ð,Ð,Æ,Ä,É,.,é¶ê¶AfeLfxfg fGfffBf^ ,ðŽg,Ä,Ä¶A'¼,lfj@fCf<,ì[PREADJUSTED\_TIMING]fZfNfvf¶" ,ð¶A¶%,lfj@fCf<,ì¶i,í,è,É'Ç %œÄ,μ,È,¯,è,î,È,è,Ü,¹,ñ¶B

**VDIFftj@fCf<-¼**

VDIFftj@fCf<,ì¶A¶%,ì 3•¶Žš,lf.fjf^ f¶¶[f¶¶[-¼,Ä¶A'±, 5,Ä,ì•¶Žš,Ü,½,í¶"Žš,lf.fjf^,ì<@Ží- ¼,Ä,·Bftj@fCf<-¼,ìŠg'£Žq,í.VDA,É,μ,Ä,,¾,³,ç¶B"ü—í,³,è,½fpx- ¼,í¶A,Ä,« ,è,lfj@fCf<¶[ fffBfxFN,Ä,È,fn¶fh fffBfxFN,ÉŽw'è,μ,Ü,·Bftj@fCf<¶[ fffBfxFN,ÉŽw'è,.,é,Æ¶A•Ü'¶,É,©,È,è'.,çŽžŠÔ,ð—v,μ,Ü,·B

**CEö¶lf.fjf^ ftjCfY**

f.fjf^ ftjCfY,ì'í,í¶A%œA<É¶üŠÇ(CRT),ì'ÍŠpü,ìCEö¶lfjTfCfY,Ä,·B,±,è,í¶A%œÄŽ<•Ž!— ì^æ,ì'ÍŠpüfTfCfY,æ,è,à¶,μ'â,« ,È'í,Ä,·B"è^É"í,È'í,í¶A14" (35.5 cm)¶A17" (43 cm) ¶A20" (51 cm) ,Ä,·B<L¶t¶u"v,lfCf" f` (2.54 cm),ì,±,Æ,Ä,·Bfvf¶Of%of€,ªŽg—p,.,é,ì,lfCf" f` ,ì'í,¾,¯,Ä,·,ª¶A,± ,ì'í,ðCE^ ,ß,é,ì,È¶A'ÍŠpü,lfTfCfY,ðfZf" f` ,Ä•\,í,μ,Ä¶A%œÄŽ<%œÈ—

î^æ, ðfzf" f^, Å' a' è, µ, ½, Ý, Ä, à, æ, ç, Å, µ, å, x □ B

**kHz □ ... • ½' - □, Žü" g □ " " í ^ í □ A**

**Hz □, '¼ fŠftfCEfbfVf... fCE □ [fg, ì" í ^ í**

□ Å' á, Æ □ Å' å, ì □ ... • ½' - □, Žü" g □ " " í ^ í □ A, ÆftfCE □ [f€, ìfŠftfCEfbfVf... fCE □ [fg, íf, fíf ^ f} fíf... fAf<.

, É, à < L □ Ú, ³, ê, Ä, ç, Ü, · □ B

, ±, ±, Å, í □ Af, fíf ^, ì □ Å' å □ ... • ½' - □, Žü" g □ " (kHz), ³ " Á, É □ d — v, Å, · □ B, ±

, ì □ ä CE À, ð' , !, é, Æ □ A □ Å ^ «, ì □ ê □ † f, fíf ^, É CE ì □ á, ð, «, ½, ·, ±, Æ, ³, , è, Ü, · □ B



## VESA DDC (•\Ž|ff□f^ f`fff“f|f<)

f, fjjf^, aVESA DDC, đfTfj□[fg, μ□Af, fjjf^ fP□[fuf<, a DDC, É“K, μ□AfOf%oftfBfbfN f{□[fh, aVESA DDCÉÝŠ, ì□ê□#□Af, fjjf^ ff□[f^, đfOf%oftfBfbfN f{□[fh, Éf, fjjf^ fP□[fuf<, đ%oî, μ, ÄŽ©“®“I, É’— □M, Å, «, Ü, ·□B

ŽŸ, ÉŽ|, ·, Æ, ¨, è□ADDC1□ADDC2B□ADDC2AB, Æ, ç, x 3, Å, ì^Ù, È, Á, ½<KŠi, a, , è, Ü, ·□B

### DDC1

f, fjjf^ fP□[fuf<, ìf%ofCf“, í□Af, fjjf^, ©, çfOf%oftfBfbfN, Ö•P•ûCEü, ì~A’±, μ, ½ff□[f^ fXfgfŠ□[f€, đ’— □M, ·, é, ì, ÉŽg—p, 3, è, Ü, ·□B•W□€, ì IBM VGACEÝŠ• 15-fsf“ f, fjjf^ fRf|fNf^, ì□ê□#□Afsf“ 12 (^È’O□Af, fjjf^ IDfrrfbfg 1, Æ, μ, ÄŽg—p), Íff□[f^—□M, ÉŽg—p, 3, è□Afsf“ 14, ì□, ’¼“—Šú□M□t, í’— □MfNf□fbfN(VCLK), Æ, μ, ÄŽg—p, 3, è, Ü, ·□B128fofCfg, ìEDID ff□[f^ fZfbfg(Šg’£fffBfXfvfCEfCID), íCEJ, è•Ô, μ’—□M, 3, è□A, », ±, ©, çfRf“fsf...□[f^, ÌŽâ—v, Èf, fjjf^ ff□[f^, đ“Ç, ÝŽæ, é, ±, Æ, a, Å, «, Ü, ·□B, ±, ìff□[f^, ì□\□¬—v’f, í□A3•¶Žš, ìf□□[fj□[, ìEISA-CFG fL□[□Af, fjjf^ fTfCfY□ADPMSfTfj□[fg, ì’í^í□Afjf %o□[“Á□«□AfTfj□[fg, 3, è, Ä, ç, é VESA f, fjjf^ f^fCf~f“fO, ìfŠfXfg□A, ç, ., Å, ©, ÌŽ©— R, É’è<`, ì, Å, «, éf, fjjf^ f^fCf~f“fO, È, Ç, Å, ·□B

### DDC2B

12Cfvf□fgfRf<, ÉŠî, Å, ‘o•ûCEüff□[f^ f`fff|f<, a□Af, fjjf^, ÆfOf%oftfBfbfN f{□[fhŠÖ, ì’É□M, ÉŽg— p, 3, è, Ä, ç, Ü, ·□B•W□€, ì IBM VGACEÝŠ• 15-fsf“ f, fjjf^ fRf|fNf^, ì□ê□#□Afsf“ 12 (^È’O□Af, fjjf^ IDfrrfbfg 1, Æ, μ, ÄŽg—p), Íff□[f^—□M, ÉŽg—p, 3, è(SDA)□Afsf“ 15(^È’O□Af, fjjf^ IDfrrfbfg 3, Æ, μ, ÄŽg—p), í’— □MfNf□fbfN(SCL), Æ, μ, ÄŽg—p, 3, è, Ü, ·□BfOf%oftfBfbfN f{□[fh, í’Z, çEDID□î•ñ(DDC1ŽQ□Æ), Æ□A, æ, è•ïŠ‡“I, ÈVDIF□î•ñ(VESAfffBfXfvfCEfCŽ~•Êftf@fCf<), đ<x, É—v<□, Å, «, Ü, ·□B

### DDC2AB

DDC2B, ÌŽŸ, ÌDDC2AB, Å, í□A%oæ—É, ì^É’u, â—¾, é, 3, ì^2□®, È, Ç□Af, fjjf^ □\$CEä, ìfRf}f“fh, đfRf“fsf... □[f^, ©, ç’—□M, ·, é, ±, Æ, a, Å, «, Ü, ·(ACCESSfOfX, É<ß, ç)□B

## VESA DPMS

ffBfXfvfCfC,ì“d—ÍŠÇ—□□M□†

VESA DPMS<KŠi,í□Af,fjf^—çŽg—pŽž,ì□È“d—Íf,□[fh,É□Ø,è’Ö,ì,é•û-@,ð<L□q,μ,Ä,ç,Ü,·□B,±,ì•û-  
@,ÍfXfNfŠ□[f“ fZ□[fo□[ fvf□fOf%of€È,Ç,É,æ,èŽ©“®“I,É<N“®,Å,«,Ü,·□B,±  
,è,ÍfL□[f{□[fh,Æf}fEfX,ª, ,é^è’è,ìŽžŠÔŽg—p,³,è,È,ç,Æ□Af,fjf^,ð□È“d—Íf,□[fh,É,μ,Ü,·□BfL□[,ð  
%oÿ,·,©f}fEfX,ð“®,©,·,Æ□Af,fjf^,í□³í,È“®□ì,É□Ø,è’Ö,í,è,Ü,·□B

,±,±,Å’è<` ,³,è,éDPMS□ó’Ô,Ížÿ,ì4,Å,Å,·□B

## ON

“d—Í,ì□ß-ñ,È,μ□A□³í“®□□AfffBfXfvfCfC,ÍfAfNfefBfu□B

## fXf^f“fofC

“d—Í,ì□ß-ñ,í,í,·,©□A•œ<AŽžŠÔ,í’Z,ç□B

%oæ-Ê,ðfuf%of“fN,É,μ□A□...•½“~Šú□M□†,ðfift,É,·,é,±,Æ,Åf,fjf^,É’—□M,³,è,Ü,·□B  
,±,Íf,□[fh,í□í,ÉfTf|□[fg,³,è,Ä,ç,é,í,¯,Å,í, ,è,Ü,¹,ñ□B

## fTfXfyf“fh

,©,È,è,ì□È“d—Í□A•œ<AŽžŠÔ,í’·,ç□B

%oæ-Ê,ðfuf%of“fN,É,μ□A□,¼“~Šú□M□†,ðfift,É,·,é,±,Æ,Åf,fjf^,É’—□M,³,è,Ü,·□B

## OFF

□Å’å,ì□È“d—Í□A•œ<AŽžŠÔ,í□Å’·□B

%oæ-Ê,ðfuf%of“fN,É,μ□A□...•½□,¼,ì“~Šú□M□†,ðfift,É,·,é,±,Æ,Åf,fjf^,É’—□M,³,è,Ü,·□B

## fCEfWfXfgfŠ,ìft[fU fAfJfEf“fgCE —~

fCEfWfXfgfŠ,Ö,ì□',«□ž,ÝCE —~,ðŽ□,Á,Ä,ç,È,ç,½,ß,É□A[OK],Ü,½,í[“K—p]f{f^f“,ð  
%oÿ,µ,½CEã,É□AfOf%oftfBfbfN f,□[fh,ð□Ø,è'Ö,!,é,±,Æ,ì,Ä,«,È,çŽ|,ð'm,ç,¹,éfGf  
%o□[ f□fbfZ□[fW,ª□o,½□ê□#□AZÿ,ÉŽ!,.,Æ,“,è□AŞÇ—□ŽÒ,É,»,ìCE —~,ð—v<□,µ,Ä,,¾,¾,ç□B

fCEfWfXfgfŠ,Å□A[HKEY\_LOCAL\_MACHINE]□AZÿ,É[System\CurrentControlSet\Services\WINNER]  
,Æ□i,ñ,ÅfL□[,ð'ì'ð,µ,Ü,·□B[fZfLf...fŠfefB]¤[fAfNfZfXCE ]  
,ð'ì'ð,µ,Ä□Af\_fCfAf□fO[fCEfWfXfgfŠfL□[,ìfAfNfZfXCE ],ðŠJ,«,Ü,·□B  
,±,ìfL□[,É'í,µ,Ä□A•K—v,Èft□[fU fOf<□[fv('Ê□í□AçUsers£,Ü,½,íçPower User£)  
,ì[fCEfWfXfgfŠfL□[,ìfAfNfZfXCE ],ðŠg'£,µ,Ü,·□B,Â,Ü,è,±,ìfOf<□[fv,É'í,µ,Ä□A[“ÁŽè,ÈfAfNfZfXCE ...]  
,ì,Æ,±,è,Å□A['ì,ì□Æ%oï]□A['ì,ì□Ý'è]□A[fTfu fL□[,ì□ì□¬]□A[fTfu fL□[,ì—ñ<“]□A[□í□œ]  
,ìŠefAfNfZfXCE ,ð—^,!,Ä□A[fAfNfZfXCE ],ð□C□³,µ,Ü,·□Bf\_fCfAf□fO[fCEfWfXfgfŠfL□[,ìfAfNfZfXCE ]  
,Åf`fFfbfNf{fbfNfX[Šù'¶,ìfTfu fL□[,ìfAfNfZfXCE ,ð'u,«Š·,!,é],ðfAfNfefBfu,É,µ,Ü,·□B

