P C B L A Y O U T D O C U M E N T A T I O N

ProTeleVision A/S - PT5201 Mini VariTime SPG

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R E V I S I O N R E C O R D

Revision	Date	Authorization of change	Pages affected	Brief description of change
1	2000.02.13		All	Original issue of document.

1 INTRODUCTION

1.1 Scope

This document and the files provided with it, contains all data and specifications necessary for ordering and producing the printed circuit board for:

PT5201 Mini VariTime SPG

Revision 1 - ProTeleVision A/S P/N 4008 117-06990

1.2 Audience and Prerequisites

This document is directed to technical personnel involved in development, production and maintenance of:

PT5201 Mini VariTime SPG

Revision 1 - ProTeleVision A/S P/N 4008 117-06990

1.3 Organization of document

Chapter 1 - is this introduction.

Chapter 2 - presents PCB specifications.

Chapter 3 - presents the drilling and milling information.

Chapter 4 - presents the gerber data.

2 PCB SPECIFICATIONS

2.1 Quality

The PCBs must be produced in accordance with this document. Topics not covered or only partly covered by this document must be produced in accordance with:

Danish PERFAG 3C except thickness or material

and

UL 94-VO, UL 94-V1 flammability compliance.

The PCB manufacturers logo, Week/Year code for PCB production, and the UL flammability rating MUST be indicated on the PCB. If the code and rating are only to be placed in specified boxes, it will be specified in clear text on the relevant films. Then no other manufacturer additions on any of the films are allowed. Otherwise it is determined by the manufacturer where to put code and rating. See chapter 2.9 for possible restrictions.

Prior to delivery of multi-layer PCB, a 100% electrical test must be performed.

2.2 Incoming Inspection Level

AQL = 0.65 (Major failures)
AQL = 1.00 (Minor failures)

2.3 PCB

Multilayer Plated-Through PCB

Number of copper lays	: 6
Thickness	: 1.61mm
Tolerance of thickness	: 10%
Laminate code	: FR4
Laminate	:
Class	: Not specified, None
Copper foil thickness	: please refer to section 2.4
Blind/buried vias	: None.
Minimum track width	: 6mil ~ 0.15mm
Minimum isolation	: 6mil ~ 0.15mm
Impedance-controlled tracks	: None

All measures are final.

Protective coating : Tin/lead plating with reflowing or Solder (tin/lead) coating and hot-air levelling

PCB size approximately : 375.0 mm x 345.0 mm

The PCB is intended for Surface Mounted Technology

2.4 PCB Build-Up

Layer		Material	Thickness
1	----------	Cu	35um
	XXXXXXXXXXXXXXXXXXX	FR4	200um
2	----------	Cu	18um
	XXXXXXXXXXXXXXXXXXX	FR4	355um
3	----------	Cu	18um
	XXXXXXXXXXXXXXXXXXX	FR4	355um
4	----------	Cu	18um
	XXXXXXXXXXXXXXXXXXX	FR4	355um
5	----------	Cu	18um
	XXXXXXXXXXXXXXXXXXX	FR4	200um
6	----------	Cu	35um
Total thickness			1.61mm

2.5 Holes

Drilled holes, layer 1 through 6:

Plated :

num:	4300	size: 15.8mil	= 0.4mm	TOL= +0/-0.2mm
num:	2	size: 15.8mil	= 0.4mm	
num:	6	size: 35.4mil	= 0.9mm	
num:	49	size: 39.4mil	= 1mm	
num:	4	size: 47.2mil	= 1.2mm	
num:	7	size: 55.1mil	= 1.4mm	
num:	6	size: 63mil	= 1.6mm	
num:	12	size: 78.7mil	= 2mm	
num:	7	size: 126mil	= 3.2mm	

Non plated :

num:	192	size: 31.5mil	= 0.8mm
num:	14	size: 59.1mil	= 1.5mm
num:	2	size: 63mil	= 1.6mm
num:	6	size: 118.1mil	= 3mm
num:	2	size: 126mil	= 3.2mm

Tooling holes : 6

It is IMPORTANT, that the tooling holes are drilled in the first drilling process together with the drilling of the plated holes, if any.

2.6 Gold Plated Contacts

None.

2.7 Notation Mask

Number of masks : 1

Mask type : Determined by PCB manufacturer in accordance with PERFAG 3C.

Mask color : Contrast to Solder Mask.

2.8 Solder Mask

Number of masks : 2

Mask type : Determined by PCB manufacturer in accordance with PERFAG 3C.

Mask color : Green.

2.9 Additional Remarks

Please contact customer if minor modifications are advisable or imply essential cost savings.

3 DRILLING & MILLING INFORMATION

3.1 Drill Data Format

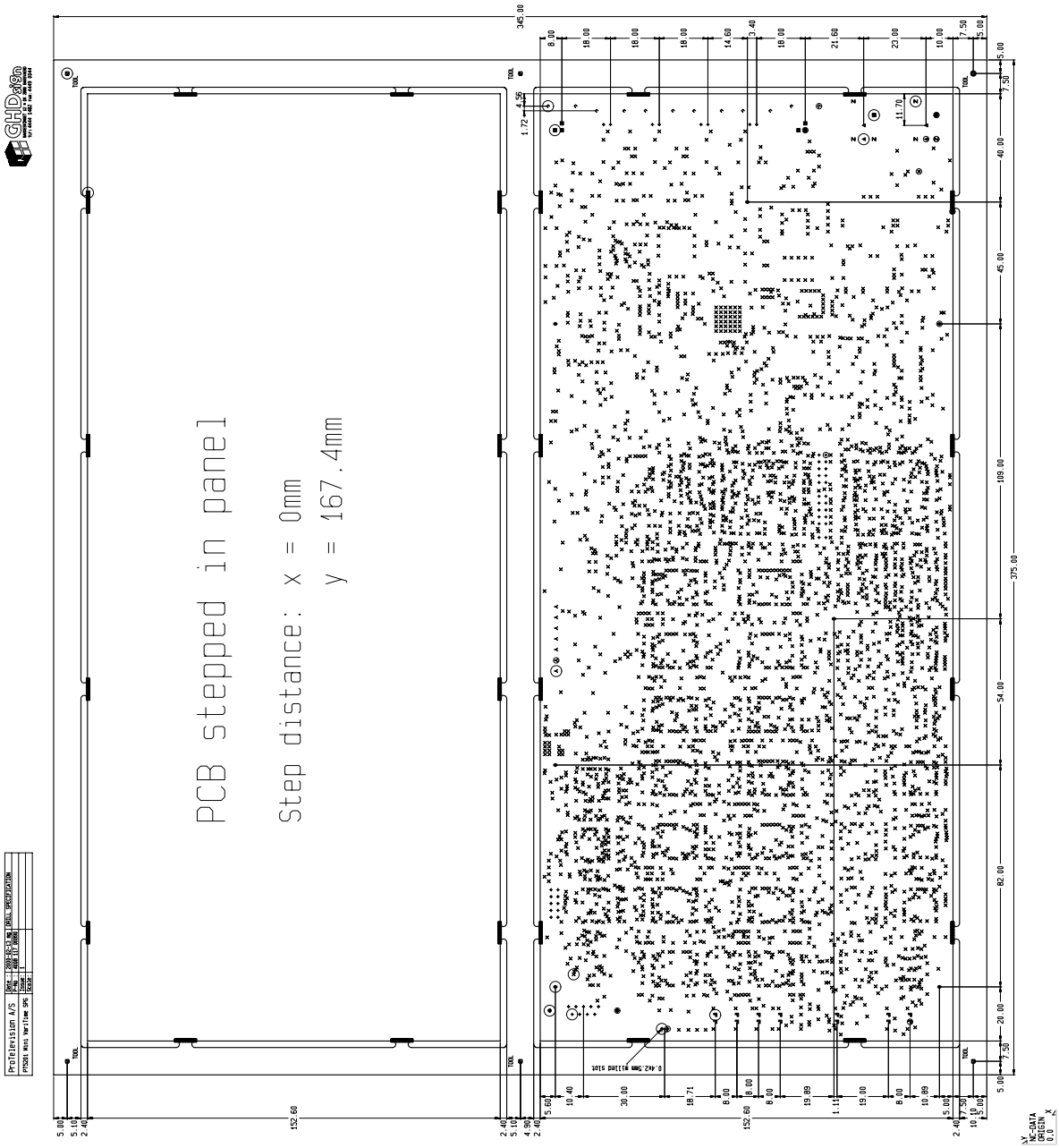
Format of file DRILL.MM

```
start of tape             = <32*396>%<13><10>
start of block            = none
end of block              = <13><10>
end of tool               = none
end of plated             = M30<13><10><32*396>%<13><10>
end of non plated         = none
end of tape               = M30<13><10><32*396><13><10>
start of tool change      = <13><10>T
end of tool change        = none

header                    = n
supress zeroes            = n
supress equal digits      = n
data code                 = ascii noparity
digits before             = 3
digits after              = 3
data unit                 = mm
autotoolchange            = y
continuous tool numbering = n
```

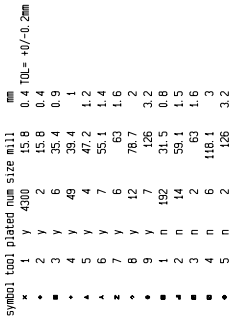
Format of file DRILL.INC

```
start of tape             = <32*396>%<13><10>
start of block            = none
end of block              = <13><10>
end of tool               = none
end of plated             = M30<13><10><32*396>%<13><10>
end of non plated         = none
end of tape               = M30<13><10><32*396><13><10>
start of tool change      = <13><10>T
end of tool change        = none

header                    = n
supress zeroes            = n
supress equal digits      = n
data code                 = ascii noparity
digits before             = 2
digits after              = 4
data unit                 = inch
autotoolchange            = y
continuous tool numbering = n
```

3.2.1 Drill Drawing Layer 1 through 6 - Scale 0.40



3.2.1.1 Drill Label Layer 1 through 6 - Scale 0.40



4 GERBER DATA

4.1 Gerber Data Format

The gerber files comply with the Extended Gerber Format specification, RS-274X.

4.2 Gerber Files

This chapter presents the gerber files accompanying this document.

1) File name : CU_01_PO.GER
   Electric copper layout for top side.
   Plotted positively in the document.

2) File name : CU_02_NE.GER
   Electric copper layout for innerlay 1
   Plotted negatively in the document.

3) File name : CU_03_NE.GER
   Electric copper layout for innerlay 2
   Plotted negatively in the document.

4) File name : CU_04_NE.GER
   Electric copper layout for innerlay 3
   Plotted negatively in the document.

5) File name : CU_05_PO.GER
   Electric copper layout for innerlay 4
   Plotted positively in the document.

6) File name : CU_06_PO.GER
   Electric copper layout for bottom side.
   Plotted positively in the document.

7) File name : SM_01_NE.GER
   Solder mask layout for top side.
   Plotted negatively in the document.

8) File name : SM_06_NE.GER
   Solder mask layout for bottom side.
   Plotted negatively in the document.

9) File name : NO_01_PO.GER
   Component notation layout for top side.
   Plotted positively in the document.

10) File name : TM_01_PO.GER
    Tin mask layout for top side.
    Plotted positively in the document.

11) File name : FI_01_PO.GER
    Fiducial marks for alignment for top side.
    Plotted positively in the document.

12) File name : DR_00_PO.GER
    Drill drawing, common for top and bottom side.
    Plotted positively in the document.