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C-29-1403F

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NEWHAVEN DISPLAY INTERNATIONAL

User's Guide

# C-29-1403F

# VFD

(Vacuum Fluorescent Character Display Module)

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October 31, 2006

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# Vacuum Fluorescent Display Specification

**PART NUMBER:** C-29-1403F

**FEATURES:** 12 Digits, 5x7 Dot Matrix, with Icons – DVD / VCR Audio Player

**APPLICATION:** Character Display (*5x7 Dot Matrix*)

**RATINGS:** Below

| | | | | | |
|---|---|---|---|---|---|
| **Outer Dimensions** | Panel Length | | P.L. | 118.2 | mm |
| | Panel Height | | P.H. | 29.0 | mm |
| | Panel Thickness | | P.T. | 6.5 | mm |
| | | | | | |
| **Leads** | Lead Pitch | | L.P. | 2.0 | mm |
| | Lead Out | | - | SIL | |
| | | | | | |
| **Character Size** | Character Height | | C.H. | 6.6 | mm |
| | Character Width | | C.W. | 4.1 | mm |
| | | | | | |
| **Item** | **Symbol** | **Min.** | **Recommended** | **Max.** | **Unit** |
| **Filament Voltage** | Ef | 4.1 | 5.0 | 5.0 | Vac |
| **Peak Grid Voltage** | ec | - | 29.0 | 32.0 | Vp-p |
| **Peak Anode Voltage** | eb | - | 29.0 | 32.0 | Vp-p |
| **Cut-off Bias** | Ek | - | - | - | - |
| **Duty Cycle** | Du | - | 1/15 | - | - |
| **Pulse Width** | tp | - | 100 | - | uS |
| **Operating Temperature** | Topr | -40 | - | + 80 | C |
| **Storage Temperature** | Tstg | -50 | - | + 85 | C |
| **Color of Illumination** | Green / Red | | | | |

C-29-1403F

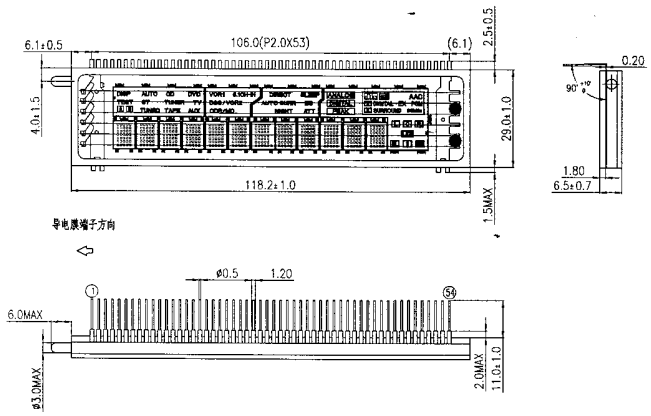
**Electrical Characteristics**

| Item | Symbol | Test Condition | Min. | Typical | Max. | Unit |
|---|---|---|---|---|---|---|
| **Filament Current** | If | Ef = 4.5 Vac | 146.0 | 162.0 | 178.0 | mAac |
| | - | eb = ec = 0 | - | - | - | - |
| **Anode Current** | ib/1G~12G | Ef = 4.5 Vac | - | 5.0 | 10.0 | mAp-p |
| | ib/13G | eb = 29.0 Vp-p | - | 28.0 | 56.0 | mAp-p |
| | ib/14G | ec = 29.0 Vp-p | - | 20.0 | 40.0 | mAp-p |
| | - | Du = 1/15 | - | - | - | mAp-p |
| | - | tp = 100 uS | - | - | - | mAp-p |
| **Grid Current** | ic/1G~12G | | - | 4.0 | 8.0 | mAp-p |
| | ic/13G | | - | 25.0 | 50.0 | mAp-p |
| | ic/14G | | - | 20.0 | 40.0 | mAp-p |
| | - | | - | - | - | mAp-p |
| | - | | - | - | - | mAp-p |
| **Luminance** | L(G) | | 350 (102) | 700 (204) | - | $cd/m^2$ (fL) |
| | L(R) | | 35 (10) | 70 (20) | | $cd/m^2$ (fL) |
| | - | | - - | - - | | $cd/m^2$ (fL) |
| **Luminance Ratio** | Lmin/Lmax | | 50 | - | - | % |
| **Grid Cut-off Voltage** | Ecco | Ef = 4.5 Vac<br>Eb = 29.0 Vdc | -6.0 | - | - | Vdc |
| **Anode Cut-off Voltage** | Ebco | Ef = 4.5 Vac<br>ec = 29.0 Vp-p<br>Du = 1/15<br>tp = 100 uS | -6.0 | - | - | Vdc |

***Drive Mode: Dynamic state***

型号 Type No. VFD29-1403F

附图 1：外形图 Outline Drawing (Unit:mm)

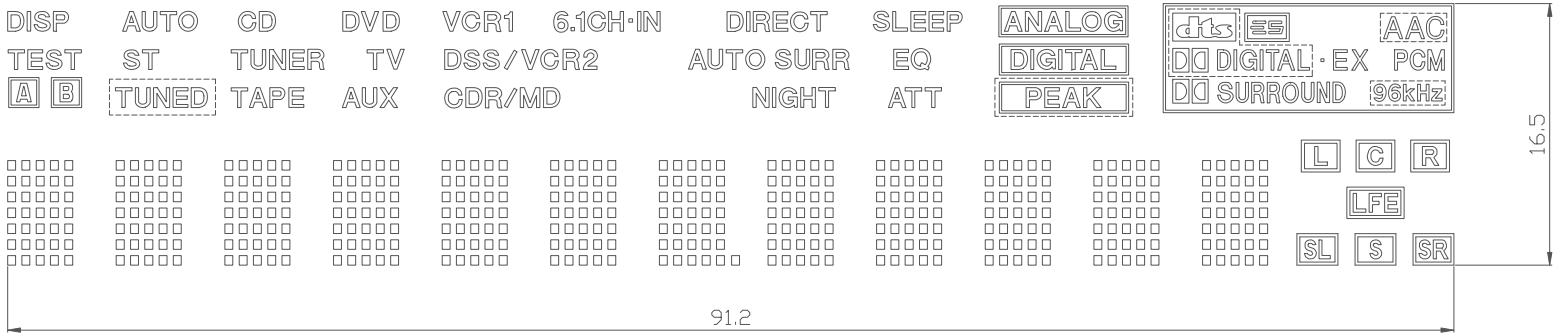



管脚连接 (PIN CONNECTION)

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 端子序号 (PIN NO.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 连接 (CONNECTION) | F | F | P36 | P35 | P34 | P33 | P32 | P31 | P30 | P29 | P28 | P27 | P26 | P25 | P24 |
| 端子序号 (PIN NO.) | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 连接 (CONNECTION) | P23 | P22 | P21 | P20 | P19 | P18 | P17 | P16 | P15 | P14 | P13 | P12 | P11 | P10 | P9 |
| 端子序号 (PIN NO.) | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| 连接 (CONNECTION) | P8 | P7 | P6 | P5 | P4 | P3 | P2 | P1 | 14G | 13G | 12G | 11G | 10G | 9G | 8G |
| 端子序号 (PIN NO.) | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | | | | | | |
| 连接 (CONNECTION) | 7G | 6G | 5G | 4G | 3G | 2G | 1G | F | F | | | | | | |

注：F: 灯丝 (Filament) P: 阳极 (Anode) G: 栅极 (Grid) NX: 无外接脚(No extended pin) NP: 无引出脚 (No pin)

附图 2：显示内容Display Pattern

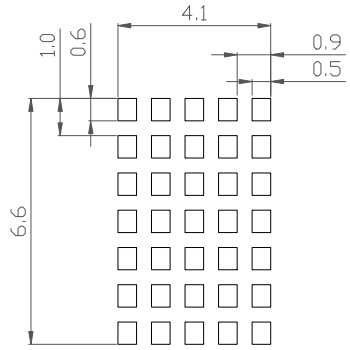



显示颜色(Color of illumination)

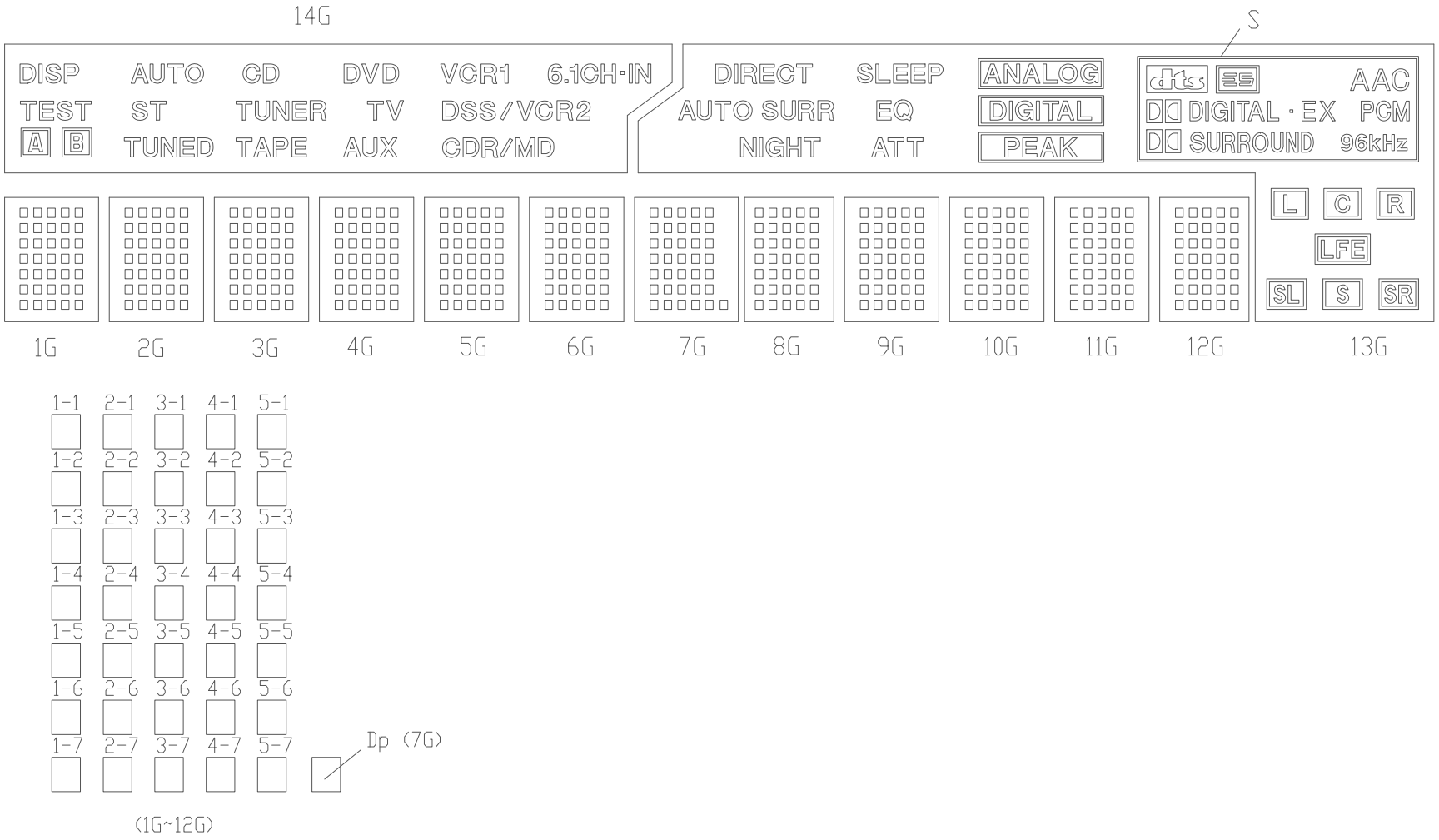
红橙色(Reddish Orange:x=0.627,y=0.371)：—— —— —— —— 虚线中图形(Within dotted lines)

绿色(Green:x=0.250,y=0.440)：—— —— —— —— 其余(Alll other graphics)

阴体字(Negative Patterns)：



附图 3：栅网分割 Grid Assignment



附图 4：阳极连接 Anode Connection

| | 1G | 2G | 3G | 4G | 5G | 6G | 7G | 8G | 9G | 10G | 11G | 12G | 13G | 14G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | 1-1 | | CDR/MD |
| P2 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | 2-1 | | AUX |
| P3 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | 3-1 | | TAPE |
| P4 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | 4-1 | | TUNED |
| P5 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | 5-1 | | B |
| P6 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | | A |
| P7 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | 2-2 | | TEST |
| P8 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | 3-2 | | ST |
| P9 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | 4-2 | | TUNER |
| P10 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | 5-2 | | TV |
| P11 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | 1-3 | | DSS/VCR2 |
| P12 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | 2-3 | ATT | DISP |
| P13 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | 3-3 | NIGHT | AUTO |
| P14 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | 4-3 | EQ | CD |
| P15 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | 5-3 | AUTOSURR | DVD |
| P16 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | SLEEP | VCR1 |
| P17 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | 2-4 | DIRECT | 6.1CH·IN |
| P18 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | 3-4 | PEAK | |
| P19 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | 4-4 | DIGITAL | |
| P20 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | 5-4 | ANALOG | |
| P21 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | L | |
| P22 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | 2-5 | C | |
| P23 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | 3-5 | R | |
| P24 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | LFE | |
| P25 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | 5-5 | SR | |
| P26 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | 1-6 | S | |
| P27 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | 2-6 | SL | |
| P28 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | 3-6 | DD SURROUND | |
| P29 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 4-6 | 96kHz | |
| P30 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | 5-6 | DD DIGITAL | |
| P31 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | 1-7 | ·EX | |
| P32 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | 2-7 | PCM | |
| P33 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | 3-7 | dts | |
| P34 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | 4-7 | ES | |
| P35 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | 5-7 | AAC | |
| P36 | | | | | | | Dp | | | | | | S | |