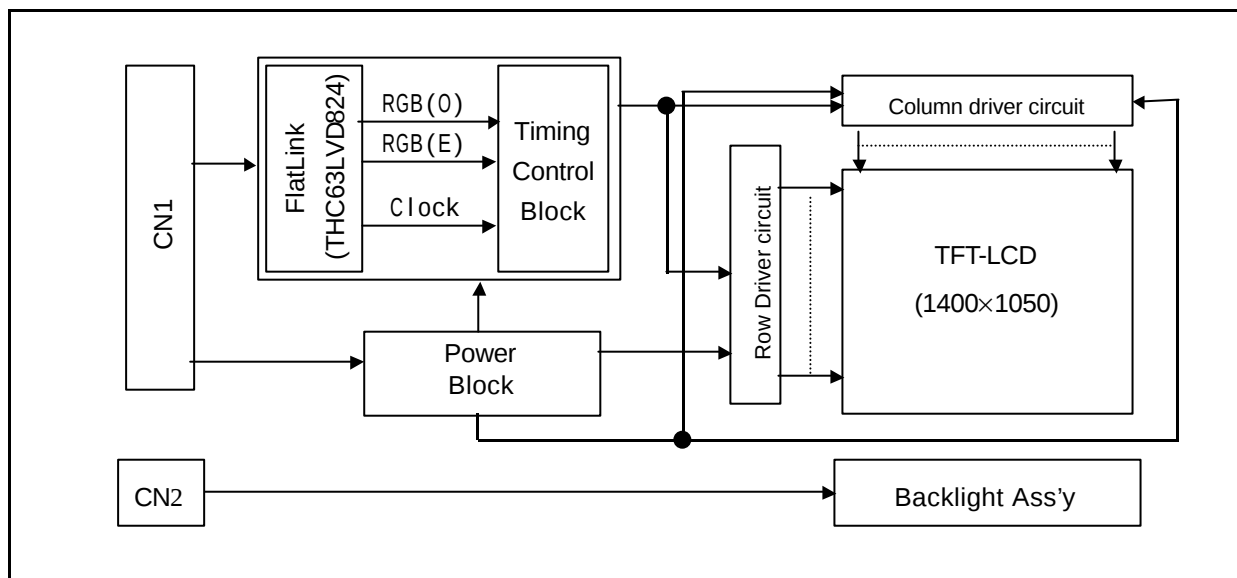


1. General Description

The LP141E2-A1 is a Color Active Matrix Liquid Crystal Display with an integral Cold Cathode Fluorescent Lamp(CCFL) backlight system. The matrix employs a-Si Thin Film Transistor as the active element. It is a transmissive type display operating in the normally white mode. This TFT-LCD has a 14.1 inches diagonally measured active display area with SXGA+ resolution (1050 vertical by 1400 horizontal pixel array). Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 6-bit gray scale signal for each dot, thus, presenting a palette of more than 262,144 colors.

The LP141E2-A1 has been designed to apply the interface method that enables low power, high speed, low EMI. Flat Link must be used as a LVDS(Low Voltage Differential Signaling) chip.

The LP141E2-A1 is intended to support applications where thin thickness, low power are critical factors and graphic displays are important. In combination with the vertical arrangement of the sub-pixels, the LP141E2-A1 characteristics provide an excellent flat panel display for office automation products such as Notebook PC.



General Features

Active screen size	14.1 inches(35.7cm) diagonal
Outline dimensions	298.5(H) × 227.0(V) mm (Typ.), 6.0(D) mm(Max.)
Pixel pitch	0.204 mm × 0.204 mm
Pixel format	1400 horiz. by 1050 vert. pixels
	RGB stripe arrangement
Color depth	6bit, 262,144 colors
Luminance,White	185 cd/m ² (Typ.)
Power Consumption	1.32W typ. (Circuit) / 4.08W Max. (Backlight)
Weight	510g (Typ.)
Display operating mode	Transmissive mode, normally white
Surface treatments	Hard coating (3H), Anti-glare treatment of the front polarizer

2. Electrical Specifications

2-1. Electrical Characteristics

The LP141E2-A1 requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second input which powers the CCFL, is typically generated by an inverter. The inverter is an external unit to the LCD.

Table 1 ELECTRICAL CHARACTERISTICS:

Parameter	Symbol	Values			Units	Notes
		Min.	Typ.	Max.		
MODULE:						
Power Supply Input Voltage	V _{CC}	3.0	3.3	3.6	V _{dc}	
Power Supply Input Current	I _{CC}	-	0.400	0.450	A	1
Differential Impedance	Z _m	90	100	110	ohm	2
Power Consumption	P _c	-	1.32	1.50	Watts	1
Rush current (I ² t)		-	-	10	%	3
LAMP						
Operating Voltage	V _{BL}	680	725	850	V _{RMS}	4
Operating Current	I _{BL}	3.0	5.0	6.0	mA	
Established Starting Voltage						5
at 25 °C		-	-	1100	V _{RMS}	
at 0 °C		-	-	1450	V _{RMS}	
Operating Frequency	f _{BL}	45	60	80	KHz	6
Discharge Stabilization time	T _S			3	Minutes	7
Power Consumption	P _{BL}	-	3.63	4.08	Watts	8
Life Time(at 25 °C)		10,000	15,000	-	Hrs	9

Notes: 1. The specified current and power consumption are under the $V_{CC} = 3.3V$, 25 °C, $f_v = 50Hz$ condition whereas Black pattern is displayed.

2. This impedance value is needed to proper display and measured form LVDS Tx to the mating connector.

3. Littel Fuse guarantees 100,000 pulses(Inrush current), If I^2t is less than 22%.

4. The variance of the voltage is +- 10%.

5. The transformer output voltage in the inverter must be high considering to the loss of the ballast capacitor in the inverter.

The voltage above V_s should be applied to the lamps for more than 1second for start-up.

Otherwise, the lamps may not be turned on.

6. The output of the inverter must have symmetrical(negative and positive) voltage waveform and symmetrical current waveform.(Unsymmetrical ratio is less than 10%) Please do not use the inverter which has unsymmetrical voltage and unsymmetrical current and spike wave.

Lamp frequency may produce interference with horizontal synchronous frequency and as a result this may cause beat on the display. Therefore lamp frequency shall be as away as possible from the horizontal synchronous frequency and from its harmonics in order to prevent interference.

7.Let' s define the brightness of the lamp after being lighted for 5 minutes as 100%.

T_s is the time required for the brightness of the center of the lamp to be not less than 95%.

8.The lamp power consumption shown above does not include loss of external inverter.

9. The life time is determined as the time at which brightness of lamp is 50% compare to that of initial value at the typical lamp current on condition of continuous operating at 25 +- 2°C .

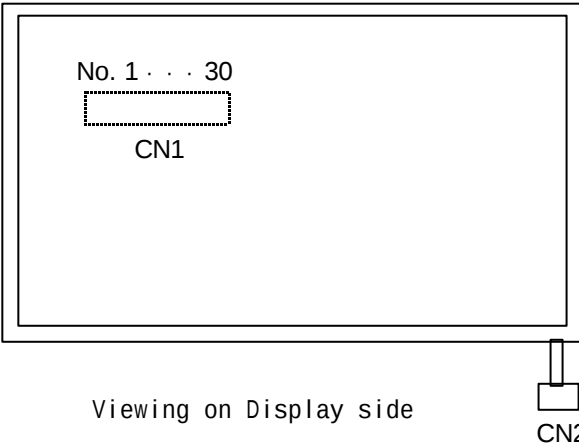
Product Specification

2-2. Interface Connections

This LCD employs two interface connections, a 30 pin connector is used for the module electronics and the other connector is used for the integral backlight system.

The electronics interface connector is a model FI-XB30SR-HF11 manufactured by JAE or equivalent. The pin configuration for the connector is shown in the table below.

Table 2 MODULE CONNECTOR PIN CONFIGURATION (LVDS) [CN1]

Pin	Symbol	Description	Notes
1	Mode	Option	1. Interface chips 1.1 LCD : LPZ4E122S6L (Thine) (THC63LVDF824A core + Timing Controller) 1.2 System : THC63LVDM8233A (Thine) 2. Mode option -. High : 1-channel(Odd channel) -. Low : 2- channel(Odd, Even channel) 3. Connector 2.1 LCD : FI-XB30SR-HF11 (JAE) or compatible 2.2 Mating -. Wire type : FI-X30H (JAE) -. FPC type : FI-X30M (JAE) 2.3 Connector pin arrangement 
2	Vcc	Supply Voltage(+3.3V)	
3	Vcc	Supply Voltage(+3.3V)	
4	GND	Ground	
5	GND	Ground	
6	NC	No Connection	
7	NC	No Connection	
8	RA1-	Odd Channel Differential signal	
9	RA1+	Odd Channel Differential signal	
10	GND	Ground	
11	RB1-	Odd Channel Differential signal	
12	RB1+	Odd Channel Differential signal	
13	GND	Ground	
14	RC1-	Odd Channel Differential signal	
15	RC1+	Odd Channel Differential signal	
16	GND	Ground	
17	RCLK1-	Odd Channel Differential signal	
18	RCLK1+	Odd Channel Differential signal	
19	GND	Ground	
20	RA2-	Even Channel Differential signal	
21	RA2+	Even Channel Differential signal	
22	GND	Ground	
23	RB2-	Even Channel Differential signal	
24	RB2+	Even Channel Differential signal	
25	GND	Ground	
26	RC2-	Even Channel Differential signal	
27	RC2+	Even Channel Differential signal	
28	GND	Ground	
29	RCLK1-	Even Channel Differential signal	
30	RCLK2+	Even Channel Differential signal	

Product Specification

The backlight interface connector is a model BHSR-02VS-1, manufactured by JST. The mating connector part number is SM02B-BHSS-1 or equivalent. The pin configuration for the connector is shown in the table below.

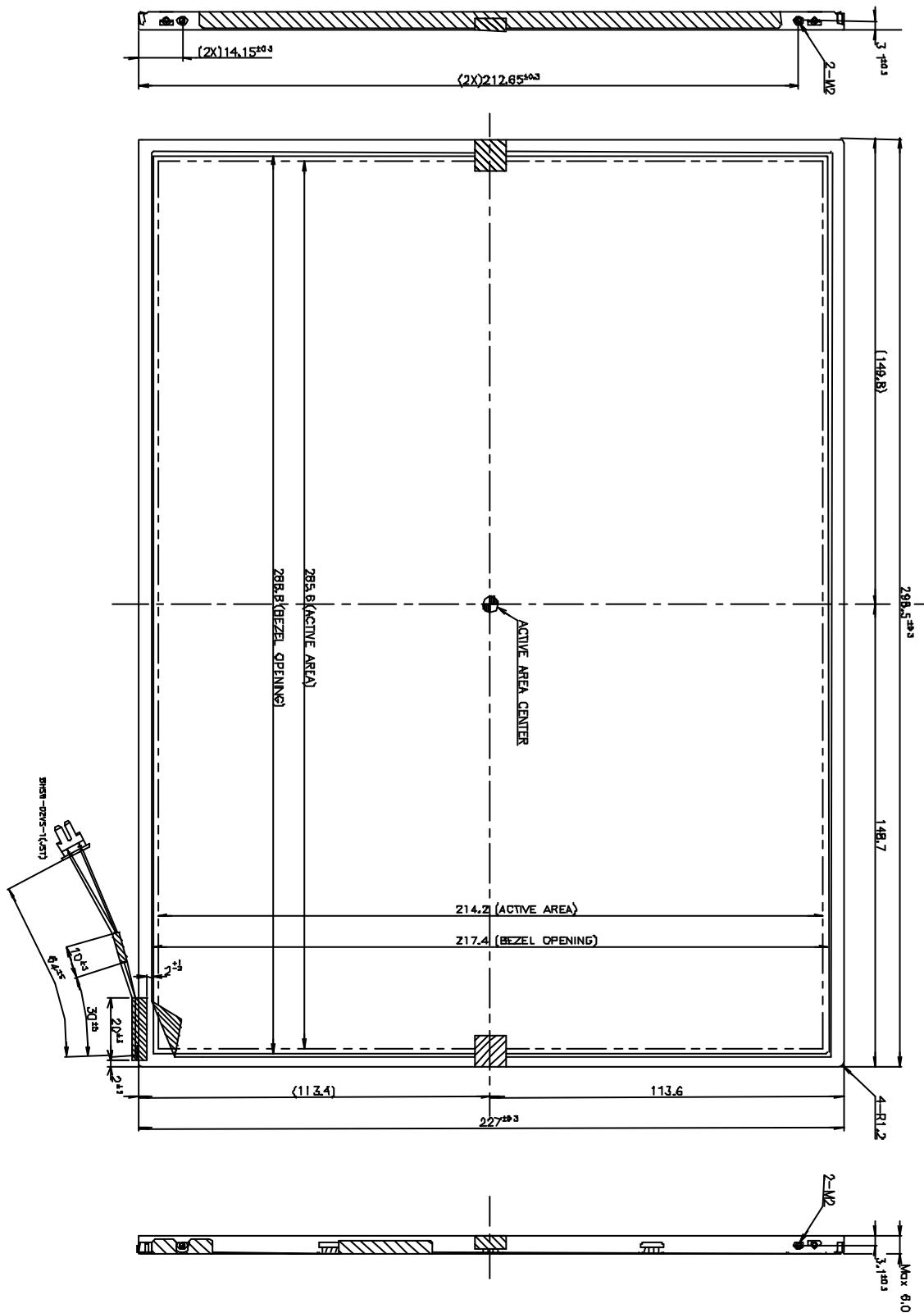
Table 3 BACKLIGHT CONNECTOR PIN CONFIGURATION [CN2]

Pin	Symbol	Description	Notes
1	HV	High voltage input	1
2	LV	Low voltage input	2

Notes: 1. The high voltage input terminal is colored white.
2. The low voltage input terminal is colored black.

Product Specification

< FRONT VIEW >



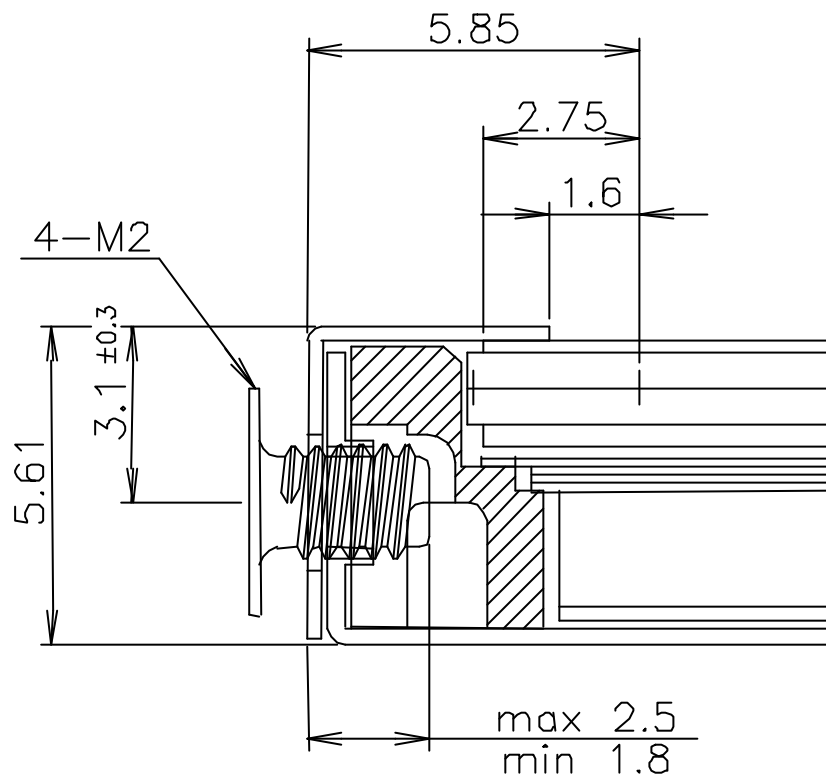
- Notes
1. Unspecified dimensional tolerances are ± 0.5 mm
 2. The dimensions of 298.5 and 227 are measured along 4 edges of active area.
 3. Th part fixing wire increases 0.15mm in thickness because of tape thickness.

Practical

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

Product Specification

<DETAIL DESCRIPTION OF SIDE MOUNTING SCREW>



*SCREW TORQUE : max 3.0kgf.cm

3.PRECAUTIONS

The LCD Products listed on this documents are not suitable for use of Military,Industry,Medical etc. system.

If customers intend to use these LCD products for above application, Please contact ours sales people in advance.