

# DH7516-S

## Receiving Card



Specifications

## Change History

| Document Version | Release Date | Description                                                                                                                                                                                               |
|------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| V1.1.0           | 2024-06-14   | Delated support for settings of a stored image in the receiving card.                                                                                                                                     |
| V1.0.3           | 2023-12-30   | Updated feature descriptions.                                                                                                                                                                             |
| V1.0.2           | 2022-12-27   | <ul style="list-style-type: none"> <li>Updated the description of the maximum resolution.</li> <li>Updated the dimensions diagram.</li> </ul>                                                             |
| V1.0.1           | 2022-08-31   | <ul style="list-style-type: none"> <li>Added the table of appearance description.</li> <li>Added the net weight.</li> <li>Updated the input voltage.</li> <li>Updated the packing information.</li> </ul> |
| V1.0.0           | 2022-03-21   | First release                                                                                                                                                                                             |

## Introduction

The DH7516-S is a general receiving card developed by Xi'an NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar). For PWM driver ICs, a single DH7516-S supports resolutions up to 512×384@60Hz. For common driver ICs, a single DH7516-S supports resolutions up to 384×384@60Hz. Supporting various functions such as brightness calibration, quick adjustment of dark or bright lines, 3D, individual gamma adjustment for RGB, and image rotation in 90° increments, the DH7516-S can significantly improve the display effect and user experience.

The DH7516-S uses 16 standard HUB75E connectors for communication, resulting in high stability. It supports up to 32 groups of parallel RGB data and is suitable for various on-site setups

## Certifications

RoHS, EMC Class A

**If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact NovaStar to confirm or address the problem. Otherwise, the customer shall be responsible for the legal risks caused or NovaStar has the right to claim compensation.**

## Features

### Improvements to Display Effect

- Brightness calibration**  
 Work with NovaStar's high-precision calibration system to calibrate the brightness of each pixel, effectively removing brightness differences and enabling high brightness consistency.
- Quick adjustment of dark or bright lines**  
 The dark or bright lines caused by splicing of modules and cabinets can be adjusted to improve the visual experience. The adjustment can be easily made and takes effect immediately.
- 3D**  
 Work with the LED controller that supports 3D function to enable 3D image output.
- Individual gamma adjustment for RGB**  
 Working with NovaLCT (V5.2.0 or later) and the LED controller that supports this function, the receiving card supports individual adjustment of red gamma, green gamma and blue gamma, which can effectively control image non-uniformity at low grayscale conditions and white balance offset, allowing for a more realistic image.
- Image rotation in 90° increments**  
 The display image can be set to rotate in multiples of 90° (0°/90°/180°/270°).

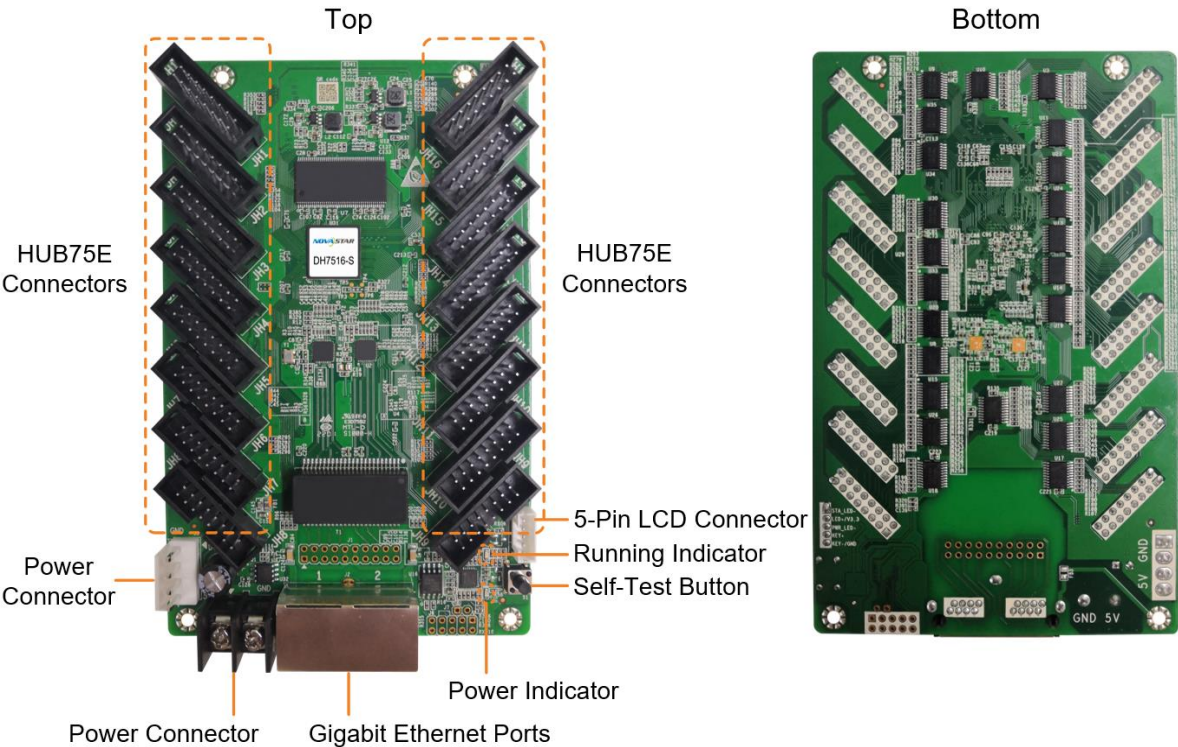
Improvements to Maintainability

- Quick uploading of calibration coefficients  
Upload the calibration coefficients quickly to the receiving cards to improve efficiency.
- Mapping 1.1  
The cabinets can display the LED controller number, receiving card number and Ethernet port information, allowing users to easily obtain the locations and connection topology of receiving cards.
- Temperature and voltage monitoring  
The receiving card temperature and voltage can be monitored without using peripherals.
- Cabinet LCD  
The LCD module of the cabinet can display the temperature, voltage, single run time and total run time of the receiving card.
- Bit error detection  
The Ethernet port communication quality of the receiving card can be monitored and the number of erroneous packets can be recorded to help troubleshoot network communication problems.
- Firmware program readback  
The receiving card firmware program can be read back and saved to the local computer.
- Configuration parameter readback  
The receiving card configuration parameters can be read back and saved to the local computer.

Improvements to Reliability

- Loop backup  
The receiving card and LED controller form a loop via the main and backup line connections. If a fault occurs at a location of the lines, the screen can still display the image normally.
- Dual program backup  
Two copies of firmware program are stored in the receiving card at the factory to avoid the problem that the receiving card may get stuck abnormally during program update.

Appearance



All product pictures shown in this document are for illustration purpose only. Actual product may vary.

| Name | Description |
|------|-------------|
|------|-------------|

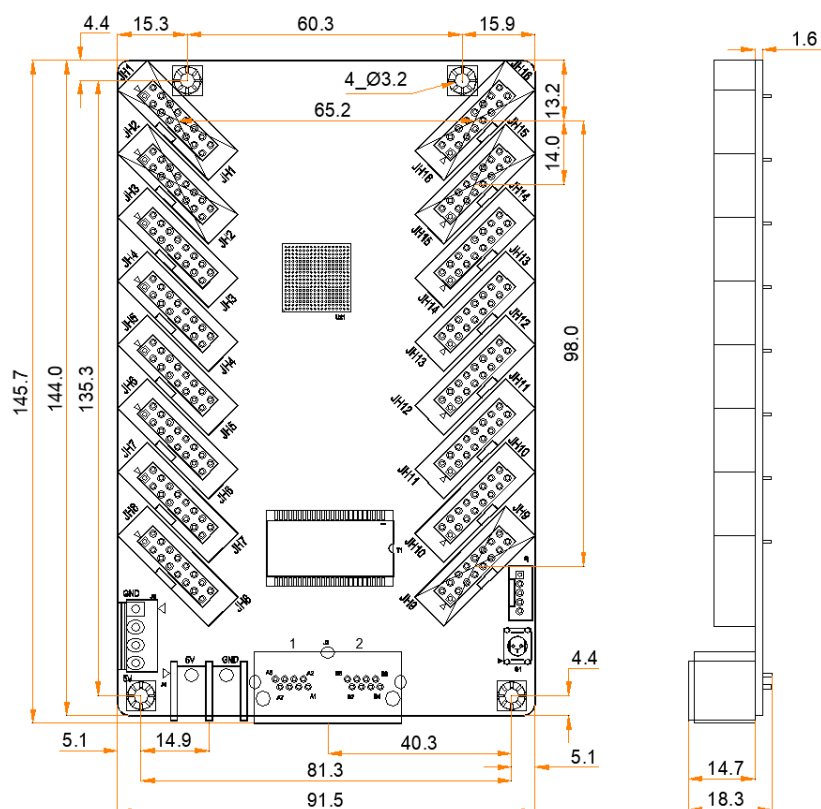
| Name                   | Description                                                                                                                                                                                    |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HUB75E Connectors      | Connect to the module.                                                                                                                                                                         |
| Power Connector        | Connect to the input power. Either of the connectors can be chosen.                                                                                                                            |
| Gigabit Ethernet Ports | Connect to the sending card, and cascade other receiving cards. Each connector can be used as input or output.                                                                                 |
| Self-Test Button       | Set the test pattern.<br>After the Ethernet cable is disconnected, press the button twice, and the test pattern will be displayed on the screen. Press the button again to switch the pattern. |
| 5-Pin LCD Connector    | Connect to the LCD.                                                                                                                                                                            |

## Indicators

| Indicator         | Color | Status                      | Description                                                                                                           |
|-------------------|-------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Running indicator | Green | Flashing once every 1s      | The receiving card is functioning normally. Ethernet cable connection is normal, and video source input is available. |
|                   |       | Flashing once every 3s      | Ethernet cable connection is abnormal.                                                                                |
|                   |       | Flashing 3 times every 0.5s | Ethernet cable connection is normal, but no video source input is available.                                          |
|                   |       | Flashing once every 0.2s    | The receiving card failed to load the program in the application area and is now using the backup program.            |
|                   |       | Flashing 8 times every 0.5s | A redundancy switchover occurred on the Ethernet port and the loop backup has taken effect.                           |
| Power indicator   | Red   | Always on                   | The power supply is normal.                                                                                           |

## Dimensions

The board thickness is not greater than 2.0 mm, and the total thickness (board thickness + thickness of components on the top and bottom sides) is not greater than 19.0 mm.



Tolerance:  $\pm 0.3$       Unit: mm

To make molds or trepan mounting holes, please contact NovaStar for a higher-precision structural drawing.

## Pins

| JH1    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R1     | 1  | 2  | G1    |  |  |
| B1     | 3  | 4  | GND   |  |  |
| R2     | 5  | 6  | G2    |  |  |
| B2     | 7  | 8  | HE1   |  |  |
| HA1    | 9  | 10 | HB1   |  |  |
| HC1    | 11 | 12 | HD1   |  |  |
| HDCLK1 | 13 | 14 | HLAT1 |  |  |
| HOE1   | 15 | 16 | GND   |  |  |

| JH2    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R3     | 1  | 2  | G3    |  |  |
| B3     | 3  | 4  | GND   |  |  |
| R4     | 5  | 6  | G4    |  |  |
| B4     | 7  | 8  | HE15  |  |  |
| HA15   | 9  | 10 | HB15  |  |  |
| HC15   | 11 | 12 | HD15  |  |  |
| HDCLK2 | 13 | 14 | HLAT2 |  |  |
| HOE2   | 15 | 16 | GND   |  |  |

| JH3    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R5     | 1  | 2  | G5    |  |  |
| B5     | 3  | 4  | GND   |  |  |
| R6     | 5  | 6  | G6    |  |  |
| B6     | 7  | 8  | HE2   |  |  |
| HA2    | 9  | 10 | HB2   |  |  |
| HC2    | 11 | 12 | HD2   |  |  |
| HDCLK3 | 13 | 14 | HLAT3 |  |  |
| HOE3   | 15 | 16 | GND   |  |  |

| JH4    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R7     | 1  | 2  | G7    |  |  |
| B7     | 3  | 4  | GND   |  |  |
| R8     | 5  | 6  | G8    |  |  |
| B8     | 7  | 8  | HE16  |  |  |
| HA16   | 9  | 10 | HB16  |  |  |
| HC16   | 11 | 12 | HD16  |  |  |
| HDCLK4 | 13 | 14 | HLAT4 |  |  |
| HOE4   | 15 | 16 | GND   |  |  |

| JH5    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R9     | 1  | 2  | G9    |  |  |
| B9     | 3  | 4  | GND   |  |  |
| R10    | 5  | 6  | G10   |  |  |
| B10    | 7  | 8  | HE3   |  |  |
| HA3    | 9  | 10 | HB3   |  |  |
| HC3    | 11 | 12 | HD3   |  |  |
| HDCLK5 | 13 | 14 | HLAT5 |  |  |
| HOE5   | 15 | 16 | GND   |  |  |

| JH6    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R11    | 1  | 2  | G11   |  |  |
| B11    | 3  | 4  | GND   |  |  |
| R12    | 5  | 6  | G12   |  |  |
| B12    | 7  | 8  | HE11  |  |  |
| HA11   | 9  | 10 | HB11  |  |  |
| HC11   | 11 | 12 | HD11  |  |  |
| HDCLK6 | 13 | 14 | HLAT6 |  |  |
| HOE6   | 15 | 16 | GND   |  |  |

| JH7    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R13    | 1  | 2  | G13   |  |  |
| B13    | 3  | 4  | GND   |  |  |
| R14    | 5  | 6  | G14   |  |  |
| B14    | 7  | 8  | HE4   |  |  |
| HA4    | 9  | 10 | HB4   |  |  |
| HC4    | 11 | 12 | HD4   |  |  |
| HDCLK7 | 13 | 14 | HLAT7 |  |  |
| HOE7   | 15 | 16 | GND   |  |  |

| JH8    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R15    | 1  | 2  | G15   |  |  |
| B15    | 3  | 4  | GND   |  |  |
| R16    | 5  | 6  | G16   |  |  |
| B16    | 7  | 8  | HE12  |  |  |
| HA12   | 9  | 10 | HB12  |  |  |
| HC12   | 11 | 12 | HD12  |  |  |
| HDCLK8 | 13 | 14 | HLAT8 |  |  |
| HOE8   | 15 | 16 | GND   |  |  |

| JH9    |    |    |       |  |  |
|--------|----|----|-------|--|--|
| R17    | 1  | 2  | G17   |  |  |
| B17    | 3  | 4  | GND   |  |  |
| R18    | 5  | 6  | G18   |  |  |
| B18    | 7  | 8  | HE5   |  |  |
| HA5    | 9  | 10 | HB5   |  |  |
| HC5    | 11 | 12 | HD5   |  |  |
| HDCLK9 | 13 | 14 | HLAT9 |  |  |
| HOE9   | 15 | 16 | GND   |  |  |

| JH10    |    |    |        |  |  |
|---------|----|----|--------|--|--|
| R19     | 1  | 2  | G19    |  |  |
| B19     | 3  | 4  | GND    |  |  |
| R20     | 5  | 6  | G20    |  |  |
| B20     | 7  | 8  | HE13   |  |  |
| HA13    | 9  | 10 | HB13   |  |  |
| HC13    | 11 | 12 | HD13   |  |  |
| HDCLK10 | 13 | 14 | HLAT10 |  |  |
| HOE10   | 15 | 16 | GND    |  |  |

| JH11    |    |    |        |  |  |
|---------|----|----|--------|--|--|
| R21     | 1  | 2  | G21    |  |  |
| B21     | 3  | 4  | GND    |  |  |
| R22     | 5  | 6  | G22    |  |  |
| B22     | 7  | 8  | HE6    |  |  |
| HA6     | 9  | 10 | HB6    |  |  |
| HC6     | 11 | 12 | HD6    |  |  |
| HDCLK11 | 13 | 14 | HLAT11 |  |  |
| HOE11   | 15 | 16 | GND    |  |  |

| JH12    |    |    |        |  |  |
|---------|----|----|--------|--|--|
| R23     | 1  | 2  | G23    |  |  |
| B23     | 3  | 4  | GND    |  |  |
| R24     | 5  | 6  | G24    |  |  |
| B24     | 7  | 8  | HE14   |  |  |
| HA14    | 9  | 10 | HB14   |  |  |
| HC14    | 11 | 12 | HD14   |  |  |
| HDCLK12 | 13 | 14 | HLAT12 |  |  |
| HOE12   | 15 | 16 | GND    |  |  |

| JH13    |    |    |        |  |  |
|---------|----|----|--------|--|--|
| R25     | 1  | 2  | G25    |  |  |
| B25     | 3  | 4  | GND    |  |  |
| R26     | 5  | 6  | G26    |  |  |
| B26     | 7  | 8  | HE7    |  |  |
| HA7     | 9  | 10 | HB7    |  |  |
| HC7     | 11 | 12 | HD7    |  |  |
| HDCLK13 | 13 | 14 | HLAT13 |  |  |
| HOE13   | 15 | 16 | GND    |  |  |

| JH14    |    |    |        |  |  |
|---------|----|----|--------|--|--|
| R27     | 1  | 2  | G27    |  |  |
| B27     | 3  | 4  | GND    |  |  |
| R28     | 5  | 6  | G28    |  |  |
| B28     | 7  | 8  | HE9    |  |  |
| HA9     | 9  | 10 | HB9    |  |  |
| HC9     | 11 | 12 | HD9    |  |  |
| HDCLK14 | 13 | 14 | HLAT14 |  |  |
| HOE14   | 15 | 16 | GND    |  |  |

| JH15    |    |    |        |  |  |
|---------|----|----|--------|--|--|
| R29     | 1  | 2  | G29    |  |  |
| B29     | 3  | 4  | GND    |  |  |
| R30     | 5  | 6  | G30    |  |  |
| B30     | 7  | 8  | HE8    |  |  |
| HA8     | 9  | 10 | HB8    |  |  |
| HC8     | 11 | 12 | HD8    |  |  |
| HDCLK15 | 13 | 14 | HLAT15 |  |  |
| HOE15   | 15 | 16 | GND    |  |  |

| JH16    |    |    |        |  |  |
|---------|----|----|--------|--|--|
| R31     | 1  | 2  | G31    |  |  |
| B31     | 3  | 4  | GND    |  |  |
| R32     | 5  | 6  | G32    |  |  |
| B32     | 7  | 8  | HE10   |  |  |
| HA10    | 9  | 10 | HB10   |  |  |
| HC10    | 11 | 12 | HD10   |  |  |
| HDCLK16 | 13 | 14 | HLAT16 |  |  |
| HOE16   | 15 | 16 | GND    |  |  |

| Pin Definitions (Take JH1 as an example) |        |    |    |       |                      |
|------------------------------------------|--------|----|----|-------|----------------------|
| /                                        | R1     | 1  | 2  | G1    | /                    |
| /                                        | B1     | 3  | 4  | GND   | Ground               |
| /                                        | R2     | 5  | 6  | G2    | /                    |
| /                                        | B2     | 7  | 8  | HE1   | Line decoding signal |
| Line decoding signal                     | HA1    | 9  | 10 | HB1   |                      |
|                                          | HC1    | 11 | 12 | HD1   | Latch signal         |
| Shift clock                              | HDCLK1 | 13 | 14 | HLAT1 |                      |
| Display enable signal                    | HOE1   | 15 | 16 | GND   | Ground               |

## Specifications

|                           |                                                                   |                                                                                                      |
|---------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Maximum Resolution        | 512×384@60Hz (PWM driver ICs)<br>384×384@60Hz (Common driver ICs) |                                                                                                      |
| Electrical Specifications | Input voltage                                                     | DC 3.8 V to 5.5 V                                                                                    |
|                           | Rated current                                                     | 0.5 A                                                                                                |
|                           | Rated power consumption                                           | 2.5 W                                                                                                |
| Operating Environment     | Temperature                                                       | −20°C to +70°C                                                                                       |
|                           | Humidity                                                          | 10% RH to 90% RH, non-condensing                                                                     |
| Storage Environment       | Temperature                                                       | −25°C to +125°C                                                                                      |
|                           | Humidity                                                          | 0% RH to 95% RH, non-condensing                                                                      |
| Physical Specifications   | Dimensions                                                        | 145.7 mm × 91.5 mm × 18.3 mm                                                                         |
|                           | Net weight                                                        | 100.9 g<br>Note: It is the weight of a single receiving card only.                                   |
| Packing Information       | Packing specifications                                            | Each receiving card is packaged in a blister pack.<br>Each packing box contains 100 receiving cards. |
|                           | Packing box dimensions                                            | 625.0 mm × 180.0 mm × 470.0 mm                                                                       |

The amount of current and power consumption may vary depending on various factors such as product settings, usage, and environment.

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