



DMS-H1616
16X16 Matrix Switcher

Customer :

Specification for

Model : DMS-H1616

Revised : 01. 26. 2010
Original Release Date : 11. 05. 2009

OPHIT



Revision History

Version Number	Revision Date	Author	Description of Changes
0.9	11. 05, 2009	J.H LEE	Initial Version
0.91	01. 26, 2009	H.S PARK	Document Format convert and Spec revision

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1. General Description

The **DMS-H1616** Matrix Switcher shall be a new matrix switcher systems designed to satisfy the needs of small scale installations. Also, **DMS-H1616** Matrix Switcher is an integrated product which has a number of independent DVI and Optical switch, which has easy field configuration modular (which is a truly modular) frame.

The **DMS-H1616** is specially designed for switching up to 16-input DVI signals to up to 16 output destinations (16 input DVI signal allows switching up to 16 output signals). Fiber solution is used for long distance transmission (the max. distance 300m at WUXGA (1920x1200)).

This multi-mode 1 fiber cable makes it possible to use DVI transmission and compatibility with our DSL products. Using the RS232 port for control of external equipment, and intuitive control for WEB control is possible. In addition, the web is to upgrade the Firmware.

- Support 16 channels DVI-D Single-link input and 16 channels DVI-D Single-link output.
- The EDID parameter of the monitor can be preset or default.
- Power-off status protection.
- Save the last operation parameters when power suddenly shut off.
- Input signal monitor and indication.
- Output load monitor and indication.
- Support RS-232 control.
- Support Network control based on TCP/IP.
- Support WEB control.
- Built in signal generator for testing and debugging systems.

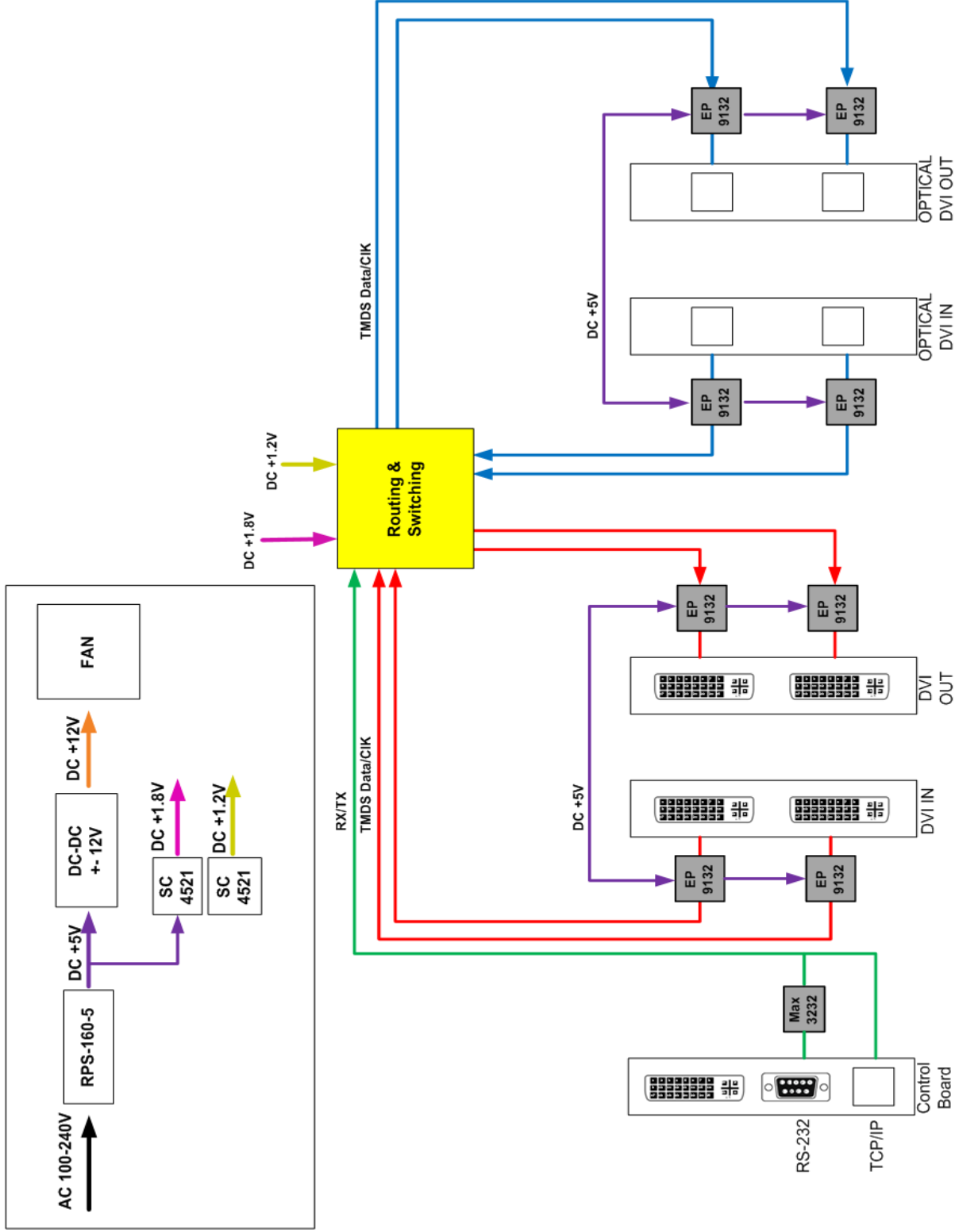
Item	Description
Input Signal	2 ~ 16 x DVI (DMS-CARD-CI / 1~8EA)
	2 ~ 16 x Optical (DMS-CARD-FI / 1~8EA))
Output Signal	2 ~ 16 x DVI (DMS-CARD-CO / 1~8EA))
	2 ~ 16 x Optical (DMS-CARD-FO / 1~8EA))
Control	Web(internet), RS-232C

2. General Function

2.1 General Specification

DVI Input	
Format	DVI single link
Number of	2 ~ 16 input channels
Pixel clock	Up to 165MHz
Equalization	40dB automatically
DVI Output	
Format	DVI single link
Number of	2 ~ 16 input channels
Pixel clock	Up to 165MHz
+5V current	500mA / Supply DVI output via pin 14
Control	
Serial	RS-232 9600 baud Rx
Network	Ethernet TCP/IP 10/100 base TX (Auto sensing)
Optical Input and Output	1 fiber per channel
Fiber	Multimode 50/125 or 62.5/125 glass fiber
Transmission distance	1600 ft
Connector	
Copper Input and Output	29 pin DVI-I female connector
Optic Card	SC
Power	IEC Power Inlet
RS-232	9p sub D female
LAN	RJ45
General	
Dimensions (including rack ears)	4U, 19" rack-mountable enclosure, 19(W) x 7(H) x 22(D) inch / 483mm x 176mm x 302mm(4U)
Weight (with the boards all installed)	9.5kg
Power	100-240V~, 50/60Hz, 2.0-1.1A
Compliance	UL, FCC, CE

2.2 DMS-H1616 System Block Diagram



2.3 Web Control


- **Setting up the system**

The system has default IP address 192.168.0.100. If the existing network is used different local IP address (ex.192.168.0.123), set up a new IP address 192.168.0.XXX to belong to your network via RS-232 communication.

- **Viewing the status of connection**

Start up browser, input IP address, then the web will display the status menu as below.

Status	Connection	Network
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DVI Matrix



Input				Output				Input				Output			
01	03	05	07	01	03	05	07	09	11	13	15	09	11	13	15
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	On	08	-	-	-	-	-	-	-	-	-	-	-
02	04	06	08	02	04	06	08	10	12	14	16	10	12	14	16

<input type="checkbox"/> On	Input signal on	
<input type="checkbox"/> -	No input signal	<input type="button" value="Back"/>
<input type="checkbox"/>	Not installed	<input type="button" value="Refresh"/>
		Input source <input type="text" value="00"/>
		No output signal <input type="text" value="-"/>
		Not installed <input type="text" value=""/>

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2.4 RS-232C Control

• **DMS-H1616 Switch Control Command**

SW	<p>Switch (Tie) Input to Output Syntax: SW:<Input>*<Output> Input = 0-16, 0 Blank Output (special case). Routing input less than 1 or greater than 16 to an output will blank that output. Output = 1-16</p>
MULTI	<p>Multi switch. Tie multiple inputs to multiple outputs as specified in list. Syntax: MULTI:<Input>*<Output>, <Input>*<Output> etc.</p>
EVERY	<p>Tie an input to all outputs. Syntax: EVERY:<Input></p>
TPRES	<p>Set test pattern resolution (7 Types). Syntax: TPRES:<horizontal resolution>X<vertical resolution>  Indicated in Appendix</p>
TPPAT	<p>Set test pattern design. Syntax: TPPAT:<design>  Indicated in Appendix</p>
BLANKALL	<p>Blank all outputs Syntax: BLANKALL</p>
INSIG	<p>Query presence of video signal on input. Same reply sent automatically if status changes (e.g. source unplugged from input). Syntax: INSIG:<Input></p>
OUTLOAD	<p>Query presence of load on output. Same reply sent automatically if status changes (e.g. monitor unplugged from output). Syntax: OUTLOAD:<Output></p>

• **DMS-H1616 Network Setting Command**

IP	Change IP Address Syntax: IP:<IPAddr0>.<IPAddr1>.<IPAddr2>.<IPAddr3>
SUBNET	Change Subnet Mask Syntax: SUBNET:<SubnetAddr0>.<SubnetAddr1>.<SubnetAddr2>.<SubnetAddr3>
GATEWAY	Change default gateway Syntax: GATEWAY:<GWAddr0>.<GWAddr1>.<GWAddr2>.<GWAddr3>
MAC	Change MAC Address Syntax: MAC:<MacAddr0>.<MacAddr1>.<MacAddr2>.<MacAddr3>.<MacAddr4>.<MacAddr5>
INNAME	Name Syntax: INNAME:<InputPortNum>,<InputPortName> <InputPortNum> = 1-16 <InputPortName> = Max Length 16
OUTNAME	Name Syntax: OUTNAME:<OutputPortNum>,<OutputPortName> <OutputPortNum> = 1-16 <OutputPortName> = Max Length 16
BAUDRATE	Change RS232 Baudrate Syntax: BAUDRATE:<baudrate> <baudrate> = 9600 / 19200 / 38400 / 57600 / 115200
FACTORYSET	GDM Matrix switch has been returned to the factory defaults

2.5 Firmware Upgrade

- a. Turn off the system.
- b. Turn on the system as the upgrade button is pushed.
- c. Enter IP address of the system on web browser. (eg. 192.168.0.100)
- d. Select a program file (XXX.bin) to upload, then press 'send file' button.

Upgrade Firmware v1.0

Select a file to upload

- e. Click 'Jump to new program' , press 'validate' button.

Upgrade Firmware v1.0

Back Jump to new program

- f. Refresh the web browser to finish upgrading the switch control program.

3. Absolute Maximum Ratings

Parameter	Rating
Storage temperature	-20°C ~ +60°C
Operating temperature	+5°C ~ +40°C
Power Supply	100-240V~, 50/ 60Hz , 2.0-1.1A
Relative Humidity	10 ~ 80 %, Non-Condensing
Lead solder temperature	380°C +/-30°C, 10 seconds

NOTICE

Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

4. Electrical & Optical Specification

4.1 Electrical Specification

Parameter		Symbol	Min	Typ	Max	Units	Condition
POWER	Supply Voltage	Vac	100		240	Vac	50 ~ 60Hz
	Internal Voltage	Vcc	4.8	5	5.2	Vdc	
	Supply Current	Icc	1	10	30	A	
	Power Dissipation	Po				W	

4.2 Optical Specification

Parameter (per Channel)	Symbol	Min	Typ	Max	Units
Optical Power ¹	Pout	-3.0	0.0		dBm
Optical Modulation Amplitude		-6.25			dBm
Center Wavelength – Lane 0		771.5	778	784.5	nm
Center Wavelength – Lane 1		793.5	800	806.5	nm
Center Wavelength – Lane 2		818.5	825	831.5	nm
Center Wavelength – Lane 3		843.5	850	856.5	nm
Optical Rise/Fall Time ² (P1TX4B-SX4V-01)			200		Ps
RMS Spectral Width			0.5		nm

Notes:

Transmitter module of Model DMS-H1616 (DMS-CARD-FO) includes VCSEL (Vertical Surface Emitting Laser Diode) with 850 nm invisible laser radiation.

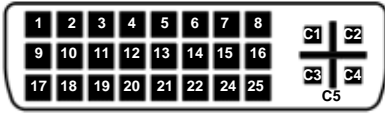
Do not view directly laser module of transmitter or the end of the other side of optical cable connected to transmitter with optical instrument.

Transmitter module of DMS-H1616A (DMS-CARD-FO) is Class 1M Laser Product.

¹ Total power at measured at 4ch on the end of 2m optical cable (62.5μm fiber).

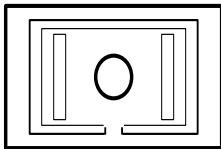
² Rise and fall times measured from 20 - 80%

4.3 Connector Pin Assignment



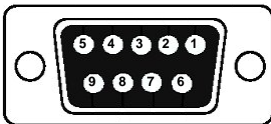
Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	T.M.D.S. Data2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2 Shield	11	T.M.D.S. Data1 Shield	19	T.M.D.S. Data0 Shield
4	No Connect	12	No Connect	20	No Connect
5	No Connect	13	No Connect	21	No Connect
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (for +5V)	23	T.M.D.S. Clock+
8	No Connect	16	Hot Plug Detect	24	T.M.D.S. Clock-
C1	No Connect	C2	No Connect	C3	No Connect
C4	No Connect	C5	No Connect		

<DVI Connector type / Female Connector>



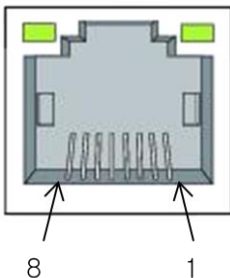
Pin	Signal Assignment
1	T.M.D.S optical output

<SC Connector type / Female Connector>



Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	DCD	4	DTR	7	RTS
2	TXD	5	Ground	8	CTS
3	RXD	6	DSR	9	RI

<RS-232C Connector type / Female Connector>

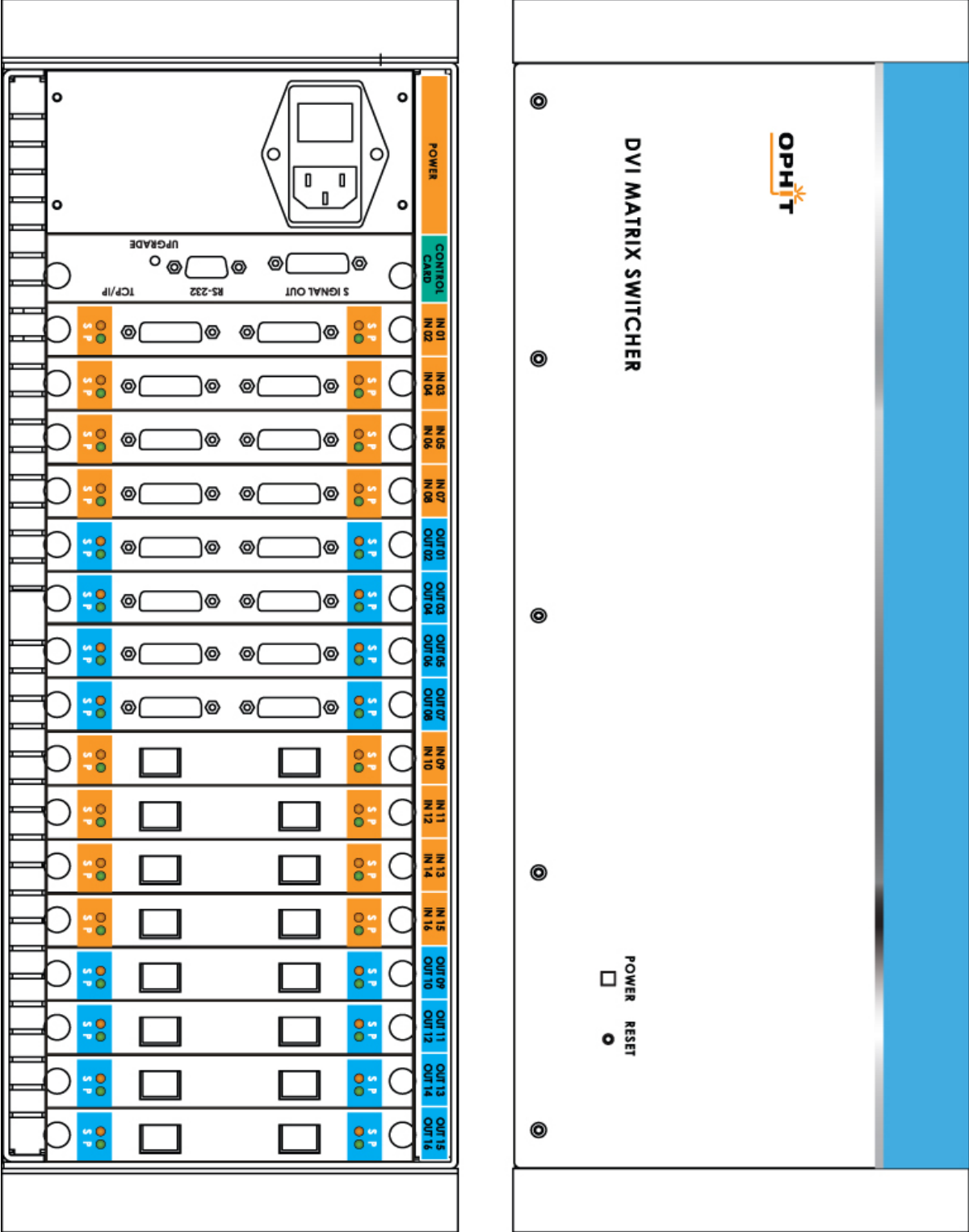


Pin	Signal Assignment	Pin	Signal Assignment
1	TX+	2	TX-
3	RX+	4	NC
5	NC	6	RX-
7	NC	8	NC

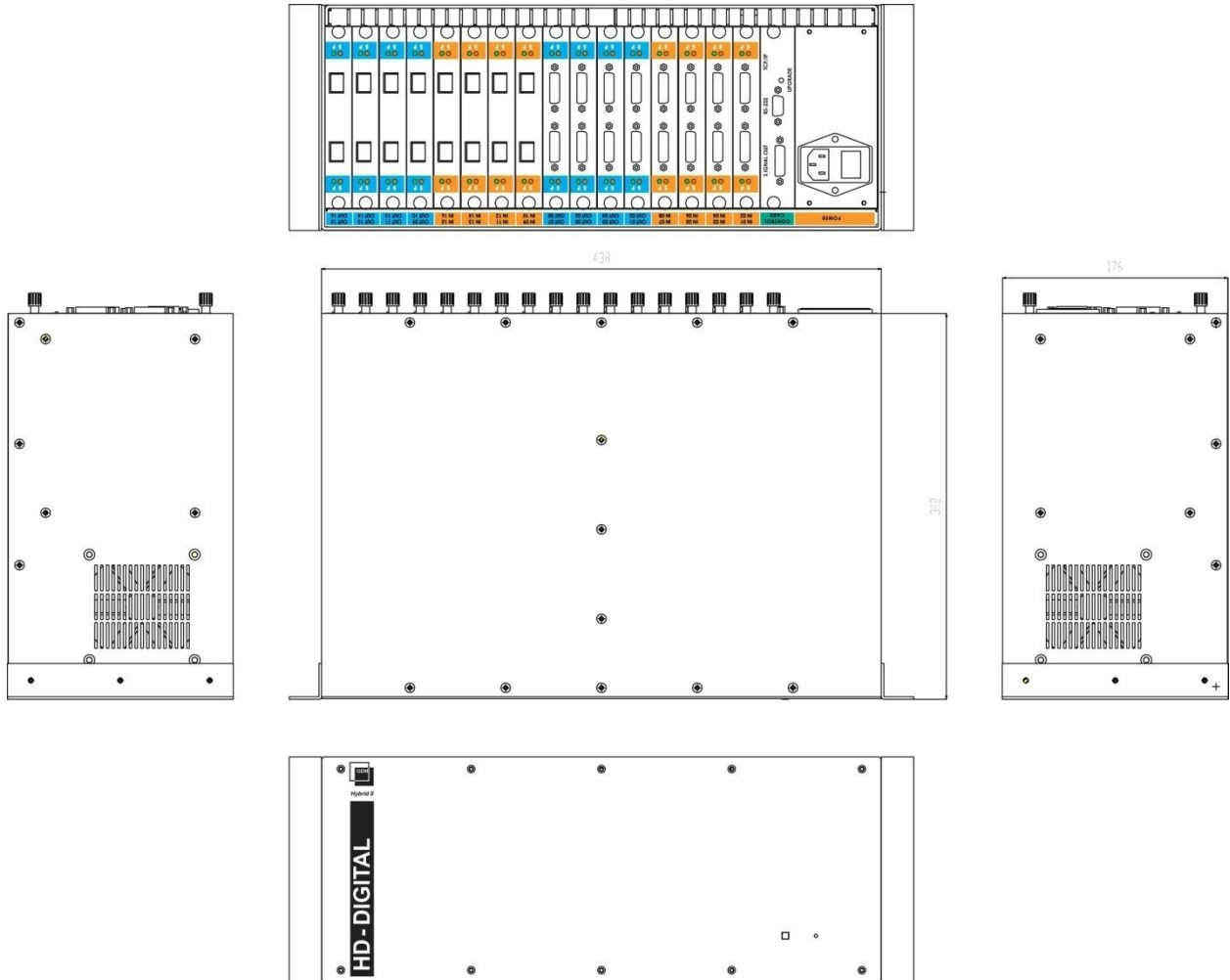
<RJ-45 Connector type / Female Connector>

5. Mechanical Specification

5.1 Back / Front Panel

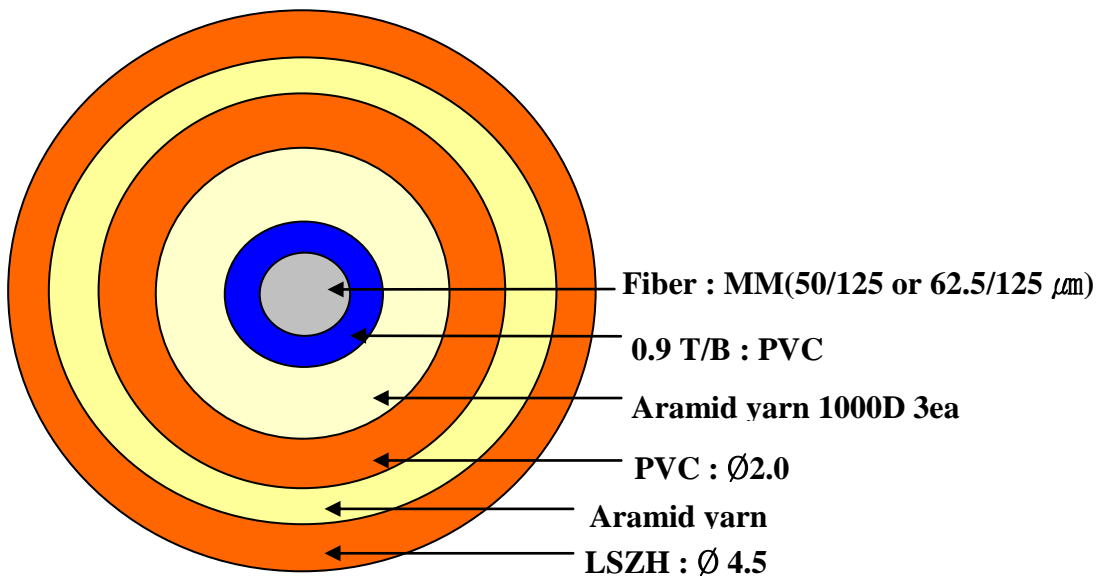


5.2 Case Dimension



5.3 SC Connector and ordering information

- Outdoor Type Cable



6. EMC & Safety Agency Approvals (TBD)

UL Safety Compliance:

This **DMS-H1616** is UL Classified with respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1.

The **DMS-H1616** complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The **DMS-H1616** (DMS-CARD-FO) has been designed and tested to comply with IEC 60825-1 requirements.

7. RoHS

Certificate of Conformance RoHS

Dear Customer,

On January 27, 2003, the European Parliament and the Administrative Council adopted Directive 2002/95/EC (RoHS) that concerns the "Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment".

The parts currently delivered by **OPHIT CO., LTD.** are already free of lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr 6), polybrominated biphenyl (PBB) and poly brominated diphenyl (PBDE).

This Certification of Conformance is to certify that the products listed below comply with RoHS Directive mentioned above:

- DMS-H1616

If you have any further questions regarding the RoHS compliance of parts delivered by **OPHIT CO., LTD.**, please do not hesitate to contact us at support@ophit.com.

Best regards,

JONG-KOOK MOON/CEO

OPHIT CO., LTD.