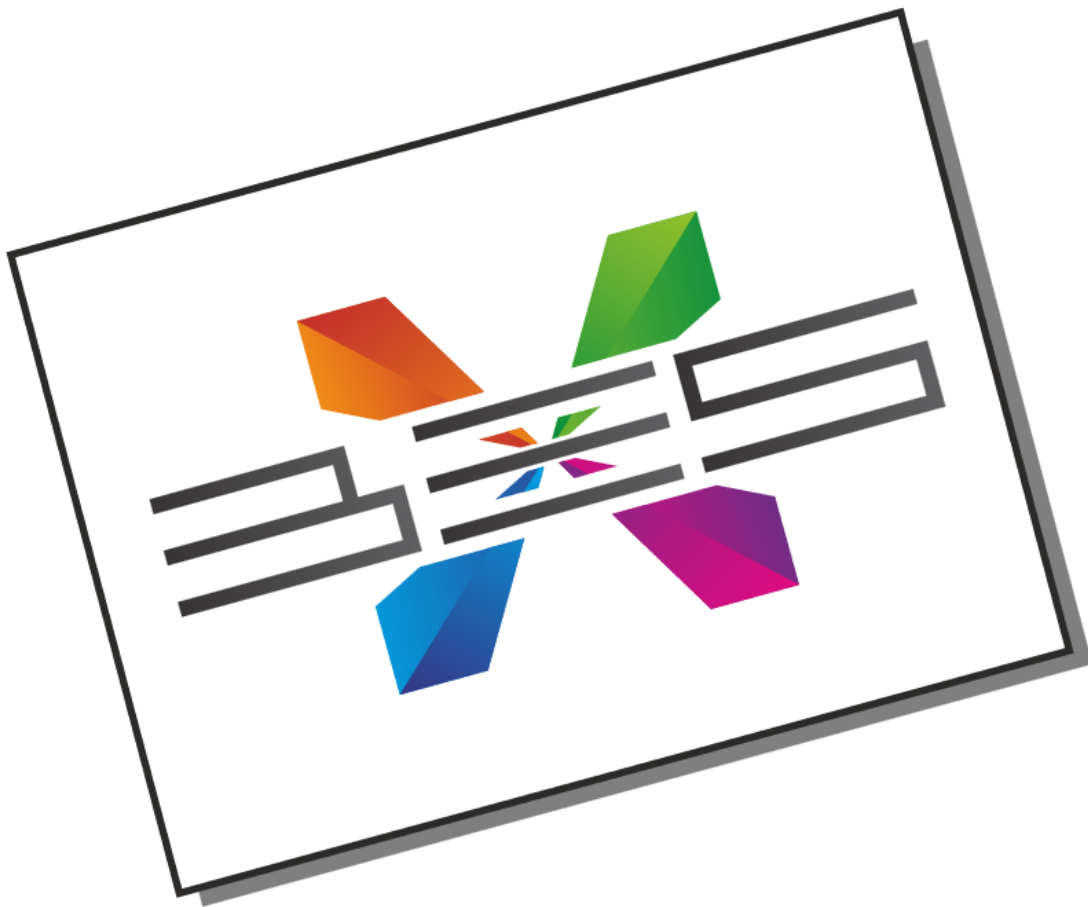




QUBICAAMF
MAKING BOWLING AMAZING



INSTALLATION MANUAL

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CONDITIONAL INFORMATION

This manual assumes that the QubicaAMF equipment and/or software has been installed by a QubicaAMF-authorized technician and is functional in every aspect. Should you encounter problems in operating the equipment, follow the instructions in this manual before contacting QubicaAMF for service under warranty.

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Table of Contents

SUMMARY OF CHANGES	I
GENERAL INSTALLATION NOTES	II
TEMPERATURE AND HUMIDITY REQUIREMENTS.....	II
HAZARDS AND INDICATORS	III
RJ45 CONNECTORS.....	IV
1 SYSTEM COMPONENTS	1
1.1 4HD-HUB and 5HD-HUB	1
1.1.1 Installation notes	1
1.1.2 5HD-HUB label description	2
1.1.3 5HD-HUB Rev.2 label description	2
1.1.4 4HD-HUB label description	3
1.1.5 Connections.....	3
1.1.6 How the 4HD/5HD-HUB works.....	4
1.1.7 288250025-02 5HD-HUB specs.....	4
1.1.8 288250021 4HD-HUB Rev.3 specs.....	5
1.1.9 288250014 4HD-HUB Rev.1 and 288250018 4HD-HUB Rev.2 specs.....	5
1.2 4HD-CPU and 5HD-CPU	6
1.2.1 Installation notes	6
1.2.2 5HD-CPU Label description.....	7
1.2.3 4HD-CPU Label description.....	7
1.2.4 Connections.....	8
1.2.5 How the 4HD/5HD-CPU works	8
1.2.6 288250023 5HD-CPU specs	9
1.2.7 288250020 or 288250017 4HD-CPU.....	9
T.00.071 – Mounting the 4HD/5HD-CPU on a single monitor frame.....	10
T.00.072 – Mounting the 4HD/5HD-CPU on a double monitor frame.....	11
T.90.174 – 4HD/5HD-CPU mounting	12
2 ELECTRICAL SPECIFICATIONS	13
3 BES X SYSTEM CONFIGURATIONS	14
3.1 No console present.....	14
T.10.025 – 2 overhead monitors no console	15
3.2 EasyKey console – brief description	16
3.2.1 EasyKey Pair console	16
T.10.026 – 2 overhead monitors with EasyKey Pair console.....	18
3.2.2 EasyKey Lane and EasyKey Twin console	19
T.10.027 – 2 overhead monitors with EasyKey Lane console	20
T.10.028 – 2 overhead monitors with EasyKey Twin console	21



3.3	SuperTouch console	22
3.3.1	Brief description	22
3.3.2	Exposure of the SuperTouch console to ultraviolet (UV) rays	22
3.3.3	SuperTouch Pair console	23
	T.10.058 – 2 overhead monitors with SuperTouch console ver. 2 (or higher) Pair console	24
	T.10.074 – 2 overhead monitors with SuperTouch (288150024) Pair console and EDGE String pinspotter	25
	T.10.029 – 2 overhead monitors with SuperTouch (288150024) Pair console	26
3.3.4	SuperTouch Lane console	27
	T.10.073 – 2 overhead monitors with SuperTouch Rev.5 Lane console	28
	T.10.059 – 2 overhead monitors with SuperTouch ver.2 or higher Lane console	29
	T.10.075 – 2 overhead monitors with SuperTouch (288150024) Lane console and EDGE String pinspotter	30
	T.10.030 – 2 overhead monitors with SuperTouch (288150024) Lane console.....	31
3.4	EDGE String for 10 pin	32
	T.90.313 – 5HD-HUB connection with EDGE String for BES X	32
4	CONSOLE PEDESTAL ASSEMBLY	33
	T.10.060 - 286002861 single and 286002863 short single pedestal assembly parts	33
	T.10.061 - 286002861 single and 286002863 short single pedestal assembly instructions	34
	T.10.065 - 286002864 single pedestal assembly with table parts	35
	T.10.066 - 286002864 single pedestal assembly with table instructions.....	36
	T.10.040 – 286002800 single and 286002827 short single pedestal assembly parts	37
	T.10.041 – 286002800 single and 286002827 short single pedestal assembly instructions	38
	T.10.055 – How to mount an EasyKey console on the pedestal – single	39
	T.10.056 – How to mount a SuperTouch console on the pedestal – single	40
	T.10.062 - 286002862 dual pedestal assembly parts.....	41
	T.10.063 - 286002862 dual pedestal assembly instructions	42
	T.10.067 - 286002865 dual pedestal assembly with table parts.....	43
	T.10.068 - 286002865 dual pedestal assembly with table instructions.....	44
	T.10.042 – 286002801 dual pedestal assembly parts	45
	T.10.043 – 286002801 dual pedestal assembly instructions	46
	T.10.057 – How to mount the EasyKey consoles on the pedestal – twin	47
	T.10.069 - 286002830 and 286002868 parts and instructions	48
	T.10.064 - 286002869 BES X consoles table mount assembly	49
	T.10.048 – 286002840 BES X console table mount assembly.....	50
	T.10.051 – 610325104 Kit for mounting two BES X pedestals at 96° (286002845)	51
	T.10.053 – 610325104 Kit for mounting two BES X pedestals at 60° (286002846)	52
	T.10.054 – 610325104 Kit for mounting one BES X pedestal (286002847)	53
5	SCORING NETWORK.....	54
5.1	Installation notes	54
	T.20.096 – BES X scoring network cables length	55
	T.20.104 – 4HD/5HD-HUB installed on XLi pinspotters with low ceiling safety kit.....	56
	T.20.083 – 4HD/5HD-HUB installed on XLi pinspotters with safety kit.....	57



5.2	Centers with up to 12 lanes.....	58
5.2.1	Centers with up to 12 lanes with single channel video server.....	58
	T.20.091 – BES X scoring network with: up to 12 lanes and single channel video server.....	59
5.2.2	Centers with up to 12 lanes, MMS or TCS or Q-COM and single channel video server.....	60
	T.20.092 – BES X scoring network with: up to 12 lanes, MMS or TCS or Q-COM and single channel video server.....	61
5.2.3	Centers with up to 12 lanes, MMS, TCS, Q-COM and single channel video server.....	62
	T.20.093 – BES X scoring network with: up to 12 lanes, MMS, TCS, Q-COM and single channel video server.....	63
5.3	Centers with more than 12 lanes and up to 68 lanes or split-house	64
	T.20.094 – BES X scoring network for centers with more than 12 lanes and up to 68 lanes.....	65
5.4	Centers with more than 68 lanes or split-house	66
	T.20.095 – BES X scoring network for centers with more than 68 lanes	67
5.5	Scoring Network IP addresses	68
	T.20.081 – BES X connection to front desk.....	68
	T.40.042 – Standard CAT6 cable.....	69
	T.40.012 – Cat.5e Wall Mounting Box standard network cable.....	70
	T.40.008 – Standard Network Cables.....	70
6	LCOM LINE.....	71
6.1	LCOM wiring	71
6.2	Replacement of LCOM devices.....	71
6.3	Solving problems on the LCOM line	72
7	OVERHEAD MONITORS	75
7.1	Preface.....	75
7.2	Monitor requirements.....	75
7.3	How to enable the “Just Scan” (or “Screen Fit”) and “HDMI-CEC” capabilities on monitors supplied by QubicaAMF	76
	T.00.064 – Monitor position.....	78
	T.00.065 – 4HD/5HD-CPU monitor connection.....	79
	T.00.069 – 610325206 infrared transmitter.....	80
8	TV SIGNAL WIRING	81
	T.00.011 – Cable television installation, TV displays.....	81
	T.00.012 – Cable television installation, detail of four lanes	82
9	FRONT DESK	83
9.1	Installation Notes.....	83
9.2	Conqueror X Residential Edition installation.....	84
9.3	Lanes Control Box Service	85
10	SINGLE CHANNEL VIDEO SERVER	86
10.1	288201089 wiring.....	86
	T.90.247 – 288201089 single channel video server	86
10.1.1	How to change the video standard from NTSC to PAL with 288201089.....	87
10.2	288201034 wiring.....	89



T.90.211 – 288201034 single channel video server	89
T.90.235 – Single channel video server connection	90
10.3 Single channel video server Conqueror X setup.....	91
11 COMPATIBILITY WITH MICRO AND FLY CONSOLES DIAGRAMS	92
T.10.031 – 2 overhead monitors IR Fly console	92
T.10.032 – 2 overhead monitors IR Micro I console.....	93
T.10.033 – 2 overhead monitors IR Micro II console.....	94
T.10.034 – 2 overhead monitors Fly console.....	95
T.10.035 – 2 overhead monitors Micro I console.....	96
T.10.036 – 2 overhead monitors Micro II console.....	97
12 SYSTEM FIRST START-UP	98
12.1 Lane setup parameters screen – brief description.....	101
13 SYSTEM BOOT-UP SEQUENCE	105
13.1 Boot-up screen description	105
13.2 Error list	107
14 HOW TO	111
14.1 How to turn on/off the pair of lanes	111
14.1.1 Turning ON the system.....	111
14.1.2 Turning OFF the system.....	111
14.1.3 How to boot the BES X system in emergency (in the case of a Conqueror X server PC crash) ...	111
14.1.4 How to open a lane from an EasyKey bowler terminal.....	112
14.1.5 How to open a lane from a SuperTouch bowler terminal.....	112
14.2 How to upload programs or reinitialize the system.....	112
14.3 How to upload animations to the 4HD/5HD-CPU units	113
14.3.1 Upload Animations buttons brief description	114
14.4 How to configure the speaker and microphone for the Virtual Waiter in Windows	115
14.5 How to clean a SuperTouch or an EasyKey console	117
14.6 How to replace the SuperTouch cable cover (P/N: 288100019).....	118
14.6.1 How to understand when to adjust the 288100019 cable cover	118
14.6.2 How to adjust the 288100019 cable cover.....	119
15 BES X DUAL MODE	120
15.1 Introduction.....	120
15.2 EDGE String installation.....	121
T.90.311 – 5HD-HUB connection with EDGE String for Highway66 or Duckpin.....	121
T.40.041 – 288401053	121
15.3 TMS Installation.....	122
T.90.262 – Typical layout with 5HD-HUB	122
T.90.263 – 5HD-HUB connection with Highway66 or Duckpin	123
T.90.250 – Typical layout with 4HD-HUB and 4HD-2COM units for Highway66.....	123
T.90.251 – 4HD-HUB and 4HD-2COM units connections	124



15.4	How to install the card reader device on the console pedestal	124
15.4.1	How to replace the old table plate with the card reader plate on a pedestal	124
15.4.2	How to install the card reader on the pedestal.....	127
15.5	Software setup	128
15.5.1	Dual Mode Conqueror X Lane Setup	128
16	REPLACEMENTS	129
16.1	How to replace the 4HD/5HD-HUB unit	129
16.2	How to replace the 4HD/5HD-CPU unit	129
16.3	How to replace an EasyKey console	130
16.4	How to replace a SuperTouch console	130
17	PARTS.....	132
18	CONQUEROR PRO PROCEDURES.....	133
18.1	How to upload programs or reinitialize the system.....	133
18.2	How to upload animations to the 4HD/5HD-CPU units	134
18.2.1	Upload Animations buttons brief description	135
18.3	How to replace the 4HD/5HD-CPU unit	136
18.4	How to replace a SuperTouch console	138



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Summary of changes

REV N (06/23, ECR N° 23-0167)

Chapter 3:

- Added note regarding L1 cable to the whole chapter.

Chapter 5:

- Added **T.40.042 – Standard CAT6 cable** table on page 69.

Chapter 11:

- Added note regarding L1 cable to the whole chapter.

REV M (07/22, ECR N° 22-0117)



General Installation Notes

For devices directly connected to the power, it is necessary to check that the electrical capacity of the system is suitable for the maximum power requirements of the equipment (as indicated on the labels of the equipment).

Always open the circuit breaker and disconnect the power plug from the powered units before looking for and clearing any problems.

To reduce the risk of fire or electrical shock, do not expose this equipment to moisture.

This appliance must be positioned such that the mains supply cord connector is accessible after installation.

Be aware of the voltage being supplied to the equipment (i.e. from 100V to 240V) and that the equipment is set for the correct voltage (when applicable).

Failure to set the equipment for the correct voltage will result in damage to the equipment.

The electrical safety of the equipment is obtained only when the equipment is connected to an effective GROUNDING SYSTEM (in accordance with the existing electrical codes and safety regulations).

It is necessary to have the power and grounding inspected by a licensed and certified electrician.

The manufacturer cannot be responsible for possible injury, damages or malfunctioning of the equipment due to the absence of or improper grounding of the equipment.

Temperature and Humidity requirements

All QubicaAMF **ELECTRONIC** products are specifically designed and engineered to be used inside a bowling center environment.

QubicaAMF **ELECTRONIC** equipment has an **OPERATING** temperature range of 15° to 35° C (59° to 95° F) and an **OPERATING** humidity range of 10% to 80%.

Temperatures and humidity levels outside the listed ranges will negatively affect the operation and lifespan of the QubicaAMF **ELECTRONIC** equipment.


QubicaAMF strongly suggests not to use or store any of the supplied electronic equipment where the temperature and humidity level cannot stay within the specified ranges.

Restrictive temperature and humidity requirements are specified by the producer of the lanes that will not be listed inside this manual.



Hazards and Indicators

During the installation of the components of the **BES X™** system, you will be exposed to potentially hazardous situations. To alert you to a possible hazard, the following symbol is shown with the step.

	<p>WARNING! Read This <u>BEFORE</u> Proceeding</p>
<p>TO AVOID INJURY</p> <p>Read the safety precautions before attempting to install any QubicaAMF equipment.</p> <p>Failure to follow these procedures may result in severe personal injury, fire, or permanent damage to property.</p>	

This symbol is “shorthand” for the warning and instructions in the text-box to the left. When you see this symbol, follow the instructions for the step carefully and ensure you have performed the following actions:



Before installing the BES X system, read and understand the maintenance instructions. Contact Technical Support for clarification if you do not understand a maintenance task or have any questions.



This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



Additionally, follow the safety precautions listed below:

- Before installing, removing, or replacing electronic equipment, be certain that the power supply to the unit has been turned OFF at the main circuit breaker box.
- Before turning on power to the **BES X™** system, be sure that all cables have been connected properly — especially the main power cables.
- DO NOT connect any of the power cords for any of the components to “live” outlets until all components have been installed or you may damage the components.
- If you are doing the installation while your bowling center is in use, do not allow bowling on the lanes where you are installing the system or on the lanes to either side of where you are working.
- Wear safety glasses when drilling.

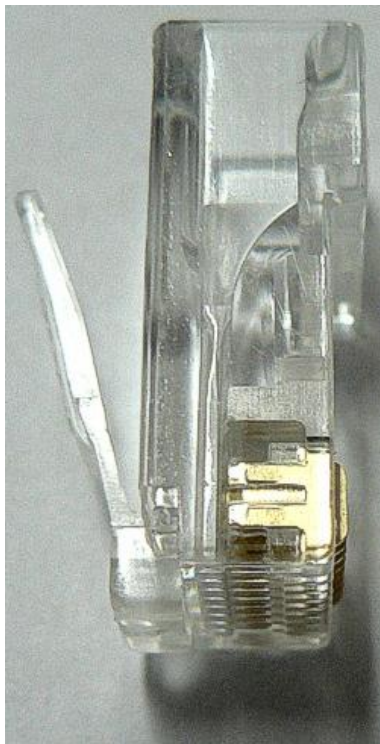


RJ45 connectors

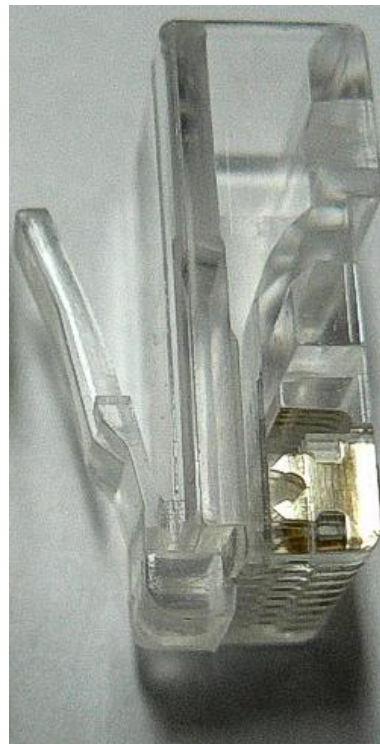
Each connector has sharp prongs inside that, when crimped, pierce the insulation of the wire and connect with the conductor. Ethernet cables may have solid or stranded wire conductors and the sharp prongs are different in the connectors made for each type of wire. Connectors for solid (single strand) wire often have three slightly splayed prongs on each contact to securely surround and grip the conductor.

Connectors for stranded wires have prongs that are designed to connect to multiple wire strands.

Connector plugs are designed for either solid or stranded wire; a plug for one wire type might not make reliable contact when crimped to a cable with wires of the other type.



RJ45 CONNECTOR FOR
SOLID NETWORK CABLE



RJ45 CONNECTOR FOR
PATCH NETWORK CABLE

IMPORTANT NOTE: **NEVER** pull the network cables from the connector for any reason. Always pull the network cable from the cable itself.

1 System components

The core of the BES X scoring system is composed OF two units: the 4HD/5HD-HUB and the 4HD/5HD-CPU units. Install both units for each pair of lanes present in the bowling center, as explained in this manual.

1.1 4HD-HUB and 5HD-HUB

IMPORTANT: the 5HD-HUB unit, P/N: 288250025, is supported by Conqueror Pro version 12.14.00 or higher.

The 4HD-HUB, 5HD-HUB and the 5HD-HUB Rev.2 are the interfaces between the 4HD/5HD-CPU, the LCOM devices (pinspotter interfaces, camera, etc.) and all the other 4HD/5HD devices (such as the console) with the scoring network. The main functionalities of these units are to act as a network hub and supply power for all the devices connected to it, except for the main (or slave) scoring network switch connected to the N1 connector, that does not take power from the 4HD/5HD-HUB/5HD-HUB Rev.2 unit. The turning on or off of these units (by the plugging or unplugging of the power cord) will result in the turning on or off of the complete pair of lanes. These units must be installed on the rear side of the curtain wall (or on the aisle between each pair of pinspotters, if 90 XLi with CE safety kit are present).

There are three different versions of the 4HD-HUB unit. The latest version is called “4HD-HUB Rev.3”. The main difference between the 4HD-HUB Rev.3 unit and the previous versions is the absence of the D1 and D2 ports on the 4HD-HUB Rev.3.

Starting from June 2020 a new version of the 5HD-HUB unit will be manufactured, with P/N: 288250025-02. It will replace and be fully compatible with the previous versions (288250025 and 288250025-01). The 288401054 adapter is used with the 5HD-HUB (288250025-02 and 288250021-01) to manage the SuperTouch console Rev.1.

In this manual, we will use 4HD/5HD-HUB as shorthand to refer to the three 4HD-HUB and three 5HD-HUB versions for simplicity. We will use “4HD-HUB” and “5HD -HUB” version only when it is necessary to discuss the characteristics or properties of a specific version.

1.1.1 Installation notes

The 4HD/5HD-HUB is the input/output device for the scoring system.

This unit communicates with the front desk through a standard network via the N1 connector and is connected to all other devices by a standard network with Power Over Ethernet (POE). NEVER connect, for any reason, a standard network device (such as a network switch) to a port different than the N1 port. Connecting a standard network device to a port different from N1 may result in major damage to the device or the 4HD/5HD-HUB unit itself.

The 4HD/5HD-HUB unit must be installed on the curtain wall, between the pair of pinspotters, in an easily accessible position.

If installation on the curtain wall is not possible, the 4HD/5HD-HUB unit can be placed on the wall behind the pinspotters.

If 90 XLi pinspotters with safety kit are present, install the 4HD/5HD-HUB on the panel located at the end of the aisle present between each pair of pinspotters as explained in Table **T.20.083**.

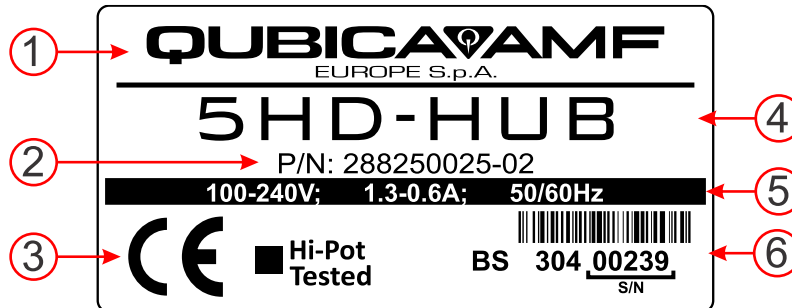
The connection between the 4HD/5HD-HUB and the 4HD/5HD-CPU or the console are made with different cables depending on the distance between the units:



- Up to 50 m (up to 150 ft.): one AWG-24 Cat. 5e network cable;
- More than 50 m (more than 150 ft.): one solid AWG-23 Cat. 6 cable.

These cables are provided by QubicaAMF.

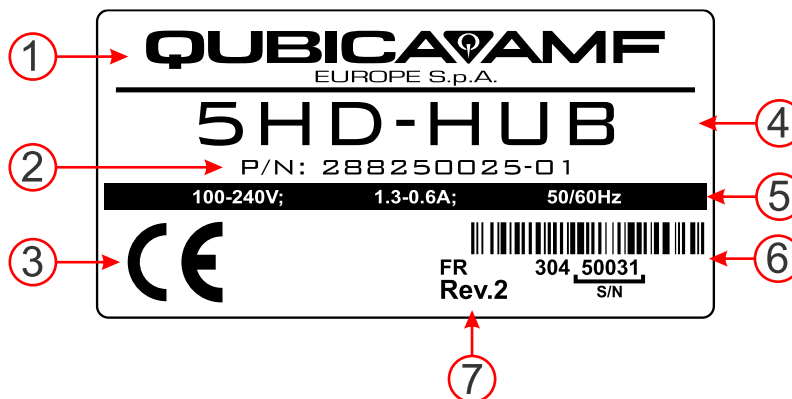
1.1.2 5HD-HUB label description



The image above shows the label located on the side of the 5HD-HUB unit.

1. Manufacturer (QubicaAMF Europe S.p.A.);
2. Part number (P/N: 288250025-02);
3. List of certifications (CE certification, Hi-Pot Tested);
4. Name of the unit (5HD-HUB);
5. Electrical notes (100-240 V; 1.3-0.6 A; 50/60 Hz);
6. Serial number with bar code.

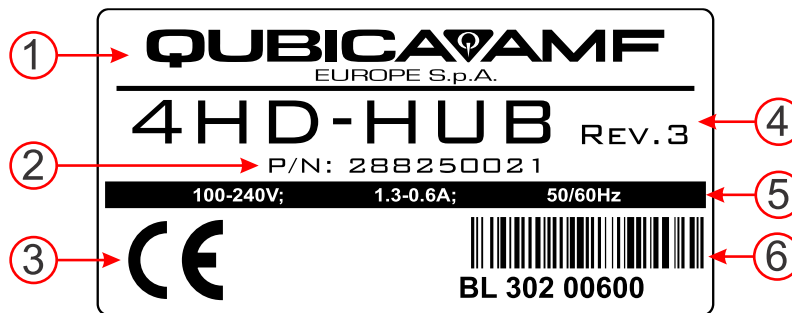
1.1.3 5HD-HUB Rev.2 label description



The image above shows the label located on the side of the 5HD-HUB Rev.2 unit.

1. Manufacturer (QubicaAMF Europe S.p.A.);
2. Part number (P/N: 288250025-01);
3. List of certifications (CE certification);
4. Name of the unit (5HD-HUB);
5. Electrical notes (100-240 V; 1.3-0.6 A; 50/60 Hz);
6. Serial number with bar code.
7. Revision of the unit (Rev.2)

1.1.4 4HD-HUB label description



The image above shows the label located on the side of the 4HD-HUB unit.

1. Manufacturer (QubicaAMF Europe S.p.A.);
2. Part number (P/N: 288250021 or 288250018 or 288250014);
3. List of certifications (CE certification);
4. Name of the unit (4HD-HUB Rev.3 or 4HD-HUB Rev.2 or 4HD-HUB);
5. Electrical notes (100-240 V; 1.3-0.6 A; 50/60 Hz);
6. Serial number with bar code.

1.1.5 Connections

Power specifications for the 4HD/5HD-HUB are: **100-240 V; 1.3-0.6 A; 50/60 Hz.**

On the 4HD/5HD-HUB the following connections are available:

Connectors on the front side of the 4HD/5HD-HUB unit:

- **L1 CPU COM line:** Network connection with POE for the 4HD/5HD-CPU.
- **L2 Powered COM line:** Currently not used.
- **L3 ODD console COM line:** Network connection with POE for the odd lane console (EasyKey or SuperTouch models only). When a single console per pair of lanes is installed, this output is not used.
- **L4 EVEN/SINGLE console COM line:** Network connection with POE for the even lane console (EasyKey or SuperTouch models only). This output is always used when the console is installed, even in the case of a single console per pair of lanes.
- **PRESENT ONLY ON THE 4HD-HUB:** P1 LCD console backlight: Power out for SuperTouch console backlights NOT used with SuperTouch Ver.2 consoles (P/N: 288150026).
- **PRESENT ONLY ON THE 4HD-HUB Rev.1 and 4HD-HUB Rev.2: D1 Console Data ODD:** For OLD consoles only. Power supply, XCOM and input / output audio channels for the odd lane console (Micro I, Micro II or Fly console models only). When a single console per pair of lanes is installed, this output is not used.
- **PRESENT ONLY ON THE 4HD-HUB Rev.1 and 4HD-HUB Rev.2: D2 Console Data EVEN / SINGLE:** For OLD consoles only. Power supply, XCOM and input / output audio channels for the even lane console (Micro I, Micro II or Fly console models only). This output is always used when the console must be installed, even in the case of a single console per pair of lanes.
- **PRESENT ONLY ON THE 5HD-HUB: D1 Pinspotter COM line:** Connection to TMS and EDGE string pinspotter chassis.
- **PRESENT ONLY ON THE 5HD-HUB: D2 YCOM COM line:**
 - **On the 288250025:** Connection for Control I/O 3 **ONLY**.
 - **On the 288250025-01 and 288250025-02:** Connection for Control I/O 3 **OR** the “5HD-HUB to first generation SuperTouch – cable adapter” (P/N: 288401054).

Connectors on the upper side of the 4HD/5HD-HUB unit:

- **N1 Network:** Standard network connection to the scoring network.

4HD/5HD-HUB LEDs:

Each RJ45 port is equipped with two colored LEDs (orange and green).

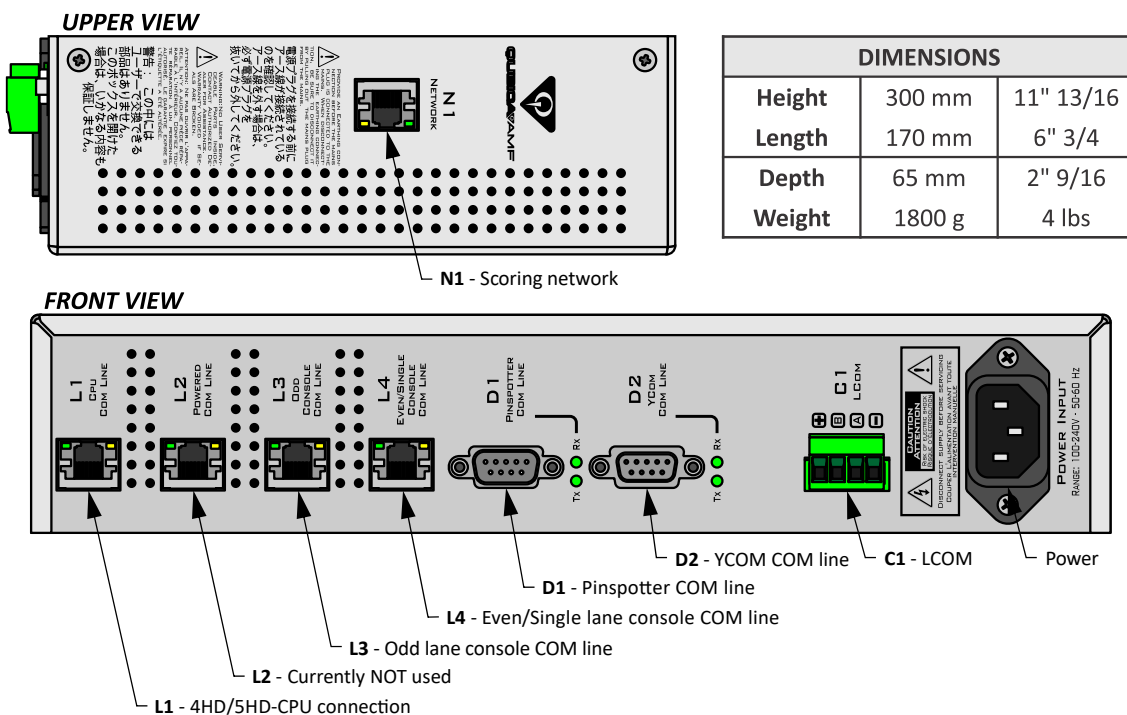
- **N1:**
 - **Green:** The LED is ON when a link is present.
 - **Orange:** The LED flashes when it is transmitting or receiving data from the network.
- **L1, L2, L3 and L4:**
 - **Green:** Power Over Ethernet status. When the LED is ON, it indicates the 4HD/5HD-HUB is providing the correct power over Ethernet to the connected device.
 - **Orange:** The LED flashes when it is transmitting or receiving data from the network.
- **4HD-HUB Rev.1 and 4HD-HUB Rev.2 D1 and D2:**
 - **Green:** Power output status. When the LED is ON, it indicates the CPU is providing the correct power to the connected device.
 - **Orange:** XCOM communication line. The LED flashes when the XCOM line is running.
- **5HD-HUB D1 and D2:**
 - **Tx:** The LED flashes when transmitting data from the connected device.
 - **Rx:** The LED flashes when receiving data from the connected device.

1.1.6 How the 4HD/5HD-HUB works

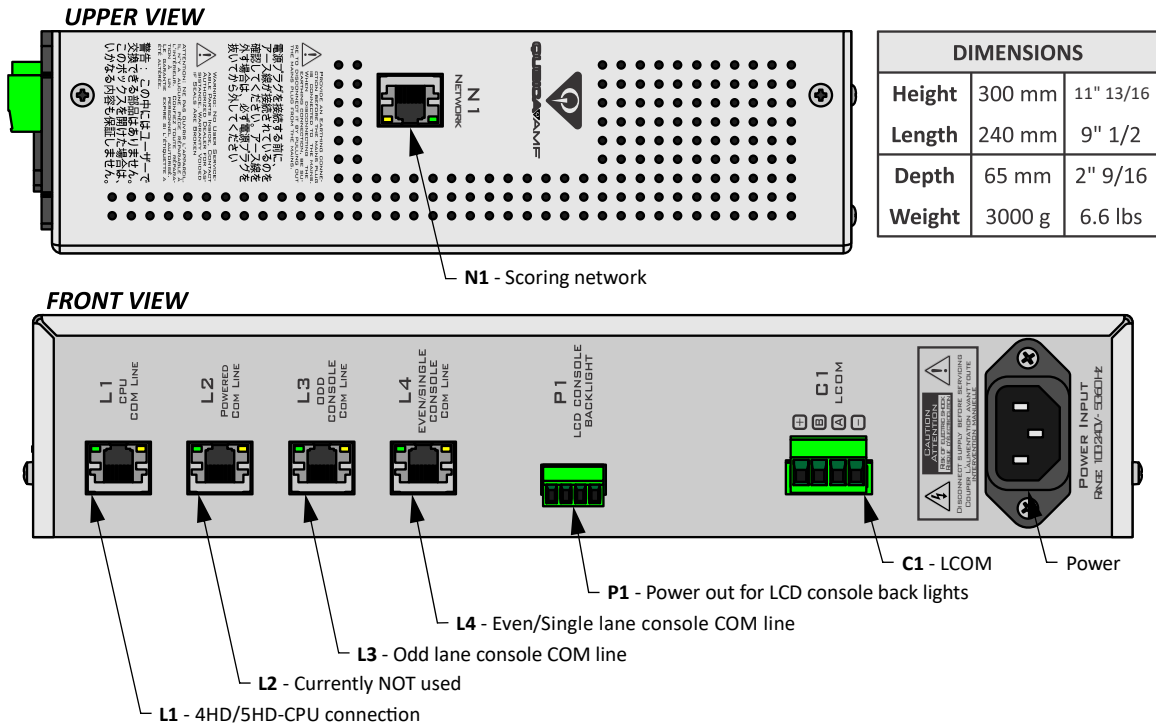
The communication between the 4HD/5HD-HUB unit and the front desk is based on the TCP/IP protocol.

The operation of the 4HD/5HD-HUB is similar to a normal network hub, with the additional functionality to give power to all the lane devices (4HD/5HD-CPU, SuperTouch, EasyKey, pinspotter interface, etc.) connected to it. The turning on/off of the 4HD/5HD-HUB results in the turning on/off of the entire pair of lanes devices (4HD/5HD-CPU, SuperTouch, EasyKey, pinspotter interface, etc.).

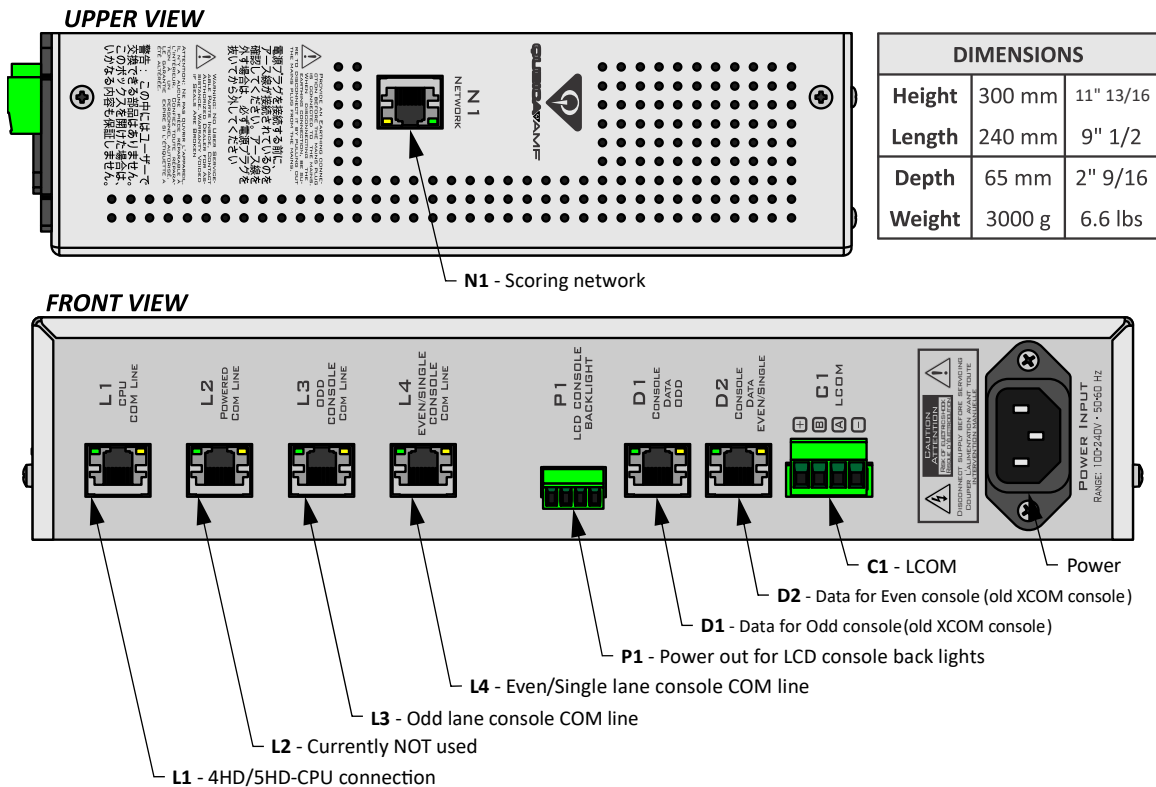
1.1.7 288250025-02 5HD-HUB specs



1.1.8 288250021 4HD-HUB Rev.3 specs



1.1.9 288250014 4HD-HUB Rev.1 and 288250018 4HD-HUB Rev.2 specs



1.2 4HD-CPU and 5HD-CPU

IMPORTANT: the 5HD-CPU unit, P/N: 288250023, is supported by Conqueror Pro version 12 or higher.

The 4HD-CPU and 5HD-CPU are the graphic engine of the BES X scoring system. Their functionality is to display the scoring grids, the animations, the different environments, etc. They are connected to the 4HD/5HD-HUB unit with a single network cable and must be installed near the overhead monitors.

These units can manage up to two independent video outputs for the scoring system, but they can control (monitor ON/OFF, channel change, etc. only on supported monitors) on up to three monitors (two for the scoring system and one with an independent video signal). They communicate and take power from the 4HD/5HD-HUB unit through the network cable connected to the L1 connector and are connected to the overhead monitors through the HDMI connectors. These units must be installed near the overhead monitors: in particular, the 4HD-CPU and the 5HD-CPU must be installed on the monitor frames if the monitor frames are supplied by QubicaAMF. If the monitor frames are not supplied by QubicaAMF, the 4HD-CPU or the 5HD-CPU unit must be fixed to a vertical surface **NEAR** the overhead monitors, in an area that ensures correct air circulation around the unit, with the L1 connector facing upwards.

There are two versions for the 4HD-CPU unit with part numbers: 288250017 and 288250020. In this manual, we will use “4HD-CPU” as shorthand to refer to the two 4HD-CPU versions for simplicity. We will use the 4HD-CPU version only when it is necessary to discuss the characteristics or properties of a specific version.

There is one version of the 5HD-CPU unit with part number: 288250023.

1.2.1 Installation notes

The 4HD/5HD-CPU unit communicates with the 4HD/5HD-HUB via a standard POE network. The connection between the 4HD/5HD-CPU and the 4HD/5HD-HUB is between the L1 port of the 4HD/5HD-CPU unit and the L1 port of the 4HD/5HD-HUB, as explained in this manual.

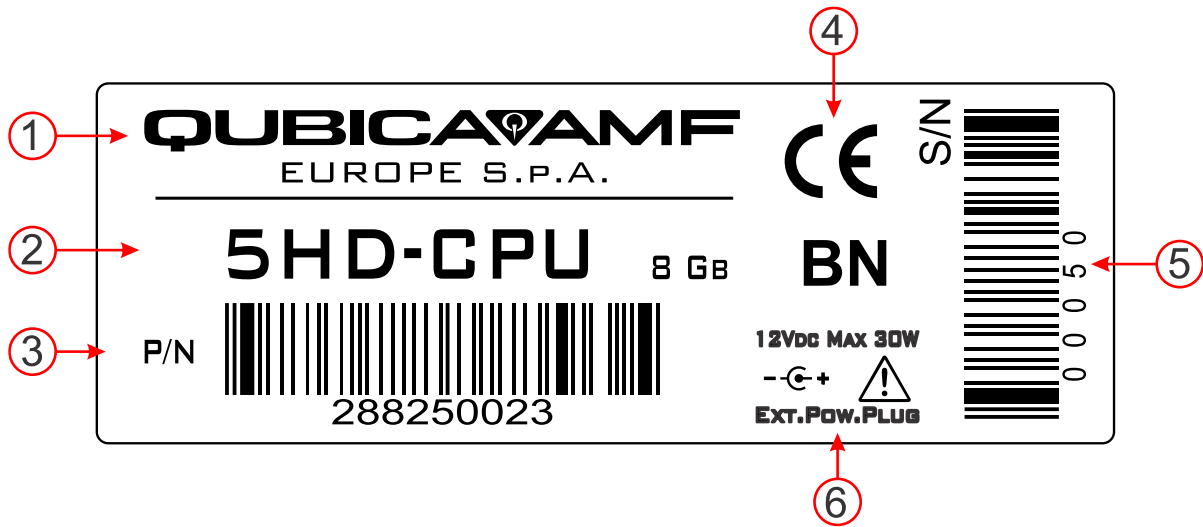
In the case of monitors and monitor frames provided by QubicaAMF, the 4HD/5HD-CPU unit must be installed on the monitor frames. If the monitor frames are not supplied by QubicaAMF, the 4HD/5HD-CPU unit must be fixed to a vertical surface NEAR the overhead monitors, in an area that ensures correct air circulation around the unit, with the L1 connector facing upwards.

The connection between the 4HD/5HD-HUB and the 4HD/5HD-CPU is made with a different cable, depending on the distance between the units:

- Up to 50 m (up to 150 ft.): one AWG-24 Cat. 5e network cable;
- More than 50 m (more than 150 ft.) and up to 100 m (up to 330 ft.): one solid AWG-23 Cat. 6 cable (P/N: 288401038).

These cables are provided by QubicaAMF.

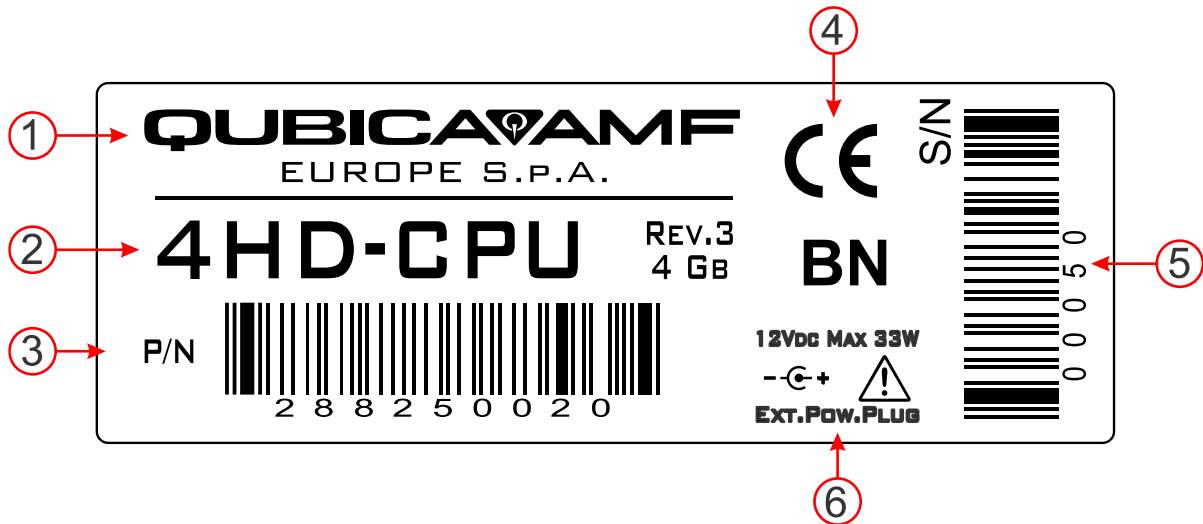
1.2.2 5HD-CPU Label description



The image above shows the label located on the side of the 5HD-CPU unit.

1. Manufacturer (QubicaAMF Europe S.p.A.);
2. Name of the unit (5HD-CPU);
3. Part number with bar code (P/N: 288250023);
4. List of certifications (CE certification);
5. Serial number with bar code.
6. Electrical specifications (12 VDC Max 30W Ext. Pow. Plug)

1.2.3 4HD-CPU Label description



The image above displays the label located on the side of the 4HD/5HD-CPU unit.

1. Manufacturer (QubicaAMF Europe S.p.A.);
2. Name of the unit (4HD-CPU Rev.1 or 4HD-CPU);
3. Part number with bar code (P/N: 288250020 or 288250017);
4. List of certifications (CE certification);
5. Serial number with bar code.
6. Electrical specifications (12 VDC Max 33W Ext. Pow. Plug)



1.2.4 Connections

On the 4HD/5HD-CPU the following connections are available:

Connectors on the upper side of the 4HD/5HD-CPU unit:

- **EXTERNAL POWER SUPPLY:** AC/DC external power supply. Not used when the 4HD/5HD-CPU is used for score purposes.
- **L1:** Network connection to the 4HD/5HD-HUB unit.
- **U1:** Currently not used.
- **U2:** Currently not used.

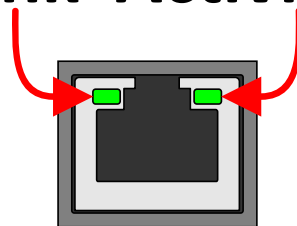
Connectors on the front side of the 4HD/5HD-CPU unit:

- **EVEN CTRL:** Serial control for the even lane overhead monitor. Only for supported monitors.
- **EVEN HDMI:** Digital video output for the even lane overhead monitor. The control through the HDMI connector works only on supported monitors.
- **AUX CTRL:** Serial control for the third overhead monitor. Only for supported monitors.
- **4HD-CPU ONLY: AUX HDMI:** HDMI control **ONLY** for the third overhead monitor. The control through the HDMI connector works only on supported monitors.
- **ODD CTRL:** Serial control for the odd lane overhead monitor. Only for supported monitors.
- **ODD HDMI:** Digital video output for the odd lane overhead monitor. The control through the HDMI connector works only on supported monitors.

4HD/5HD-CPU LEDs:

The L1 network port equipped with of two colored LEDs (both LEDs are green). The LED on the top left angle of the port, is ON with an active link and OFF if it is disconnected. The LED on the top right angle will blink with the activity of the network.

Link Activity



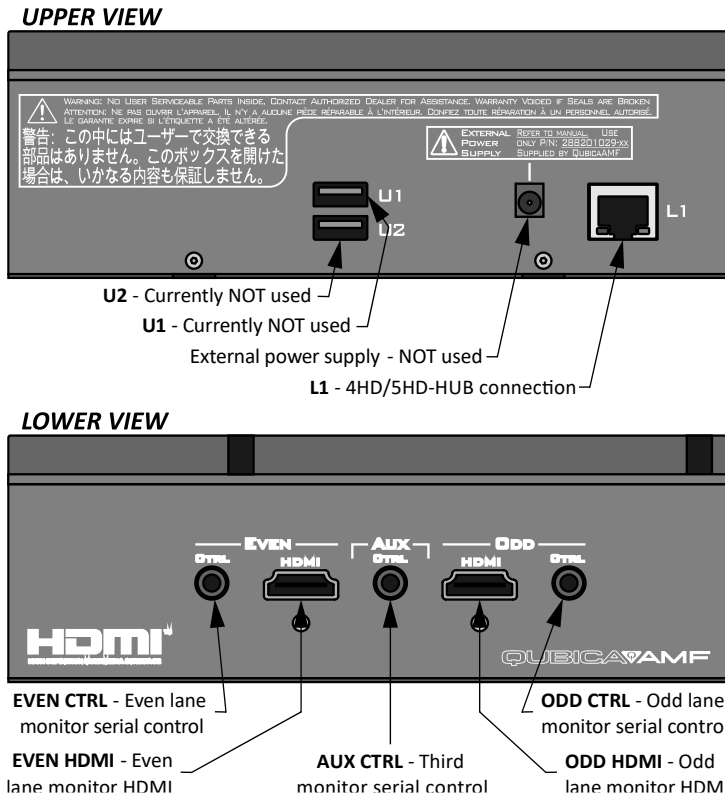
1.2.5 How the 4HD/5HD-CPU works

The communication between the 4HD/5HD-CPU unit and the 4HD/5HD-HUB is based on the TCP/IP protocol.

Thus, 4HD/5HD-CPU units have an IP address that changes depending on the number of the pair of lanes where they are installed. E.g., the address is 192.168.216.101 for the pair no. 1, 192.168.216.102 for the pair no. 2, and so on.

This information is displayed on the lane monitors during the boot-up process, when testing the devices, together with the information concerning the version of programs loaded on the 4HD/5HD-CPU and the serial number (a univocal number that identifies the 4HD/5HD-CPU unit). The serial number is used to address the 4HD/5HD-CPU units, it can be read off the lane monitors and a dedicated label applied to one side of the 4HD/5HD-CPU unit.

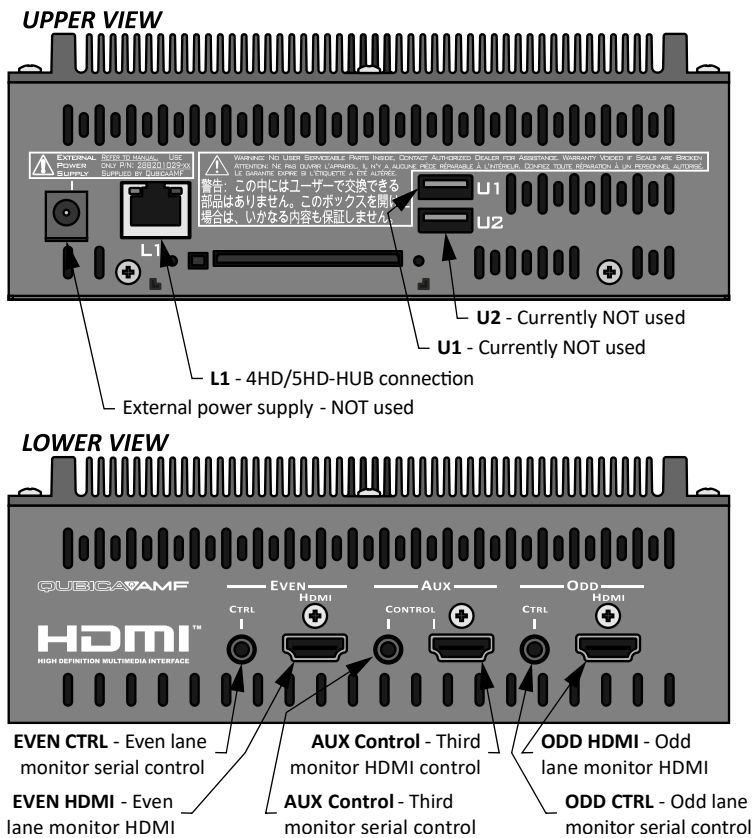
1.2.6 288250023 5HD-CPU specs



DIMENSIONS		
Height	124 mm	4" 7/8
Length	155 mm	6" 1/8
Depth	55 mm	2" 3/16
Weight	600 g	1.3 lbs

The 5HD-CPU (288250023) is supported by Conqueror Pro version 12 or higher

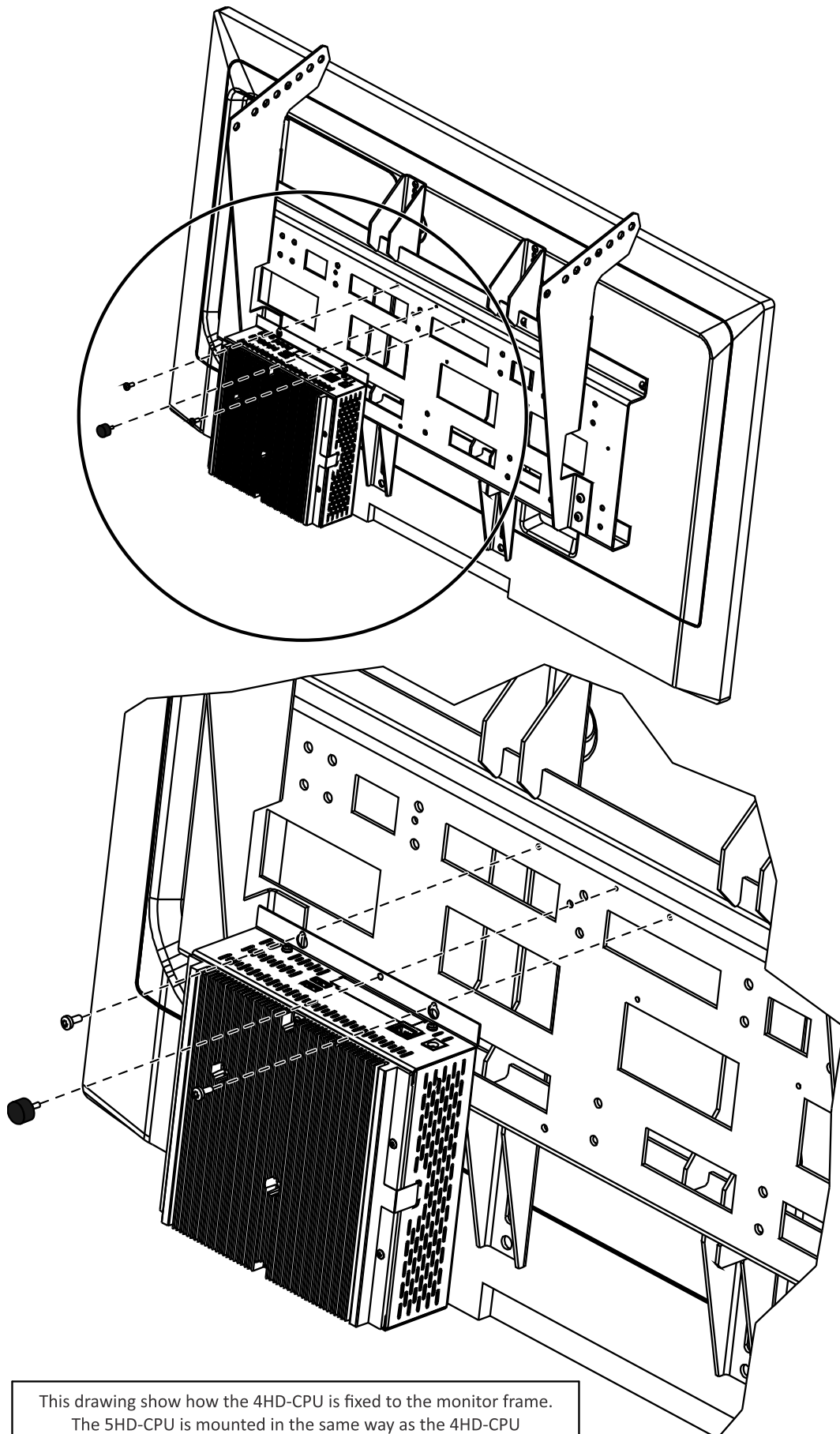
1.2.7 288250020 or 288250017 4HD-CPU



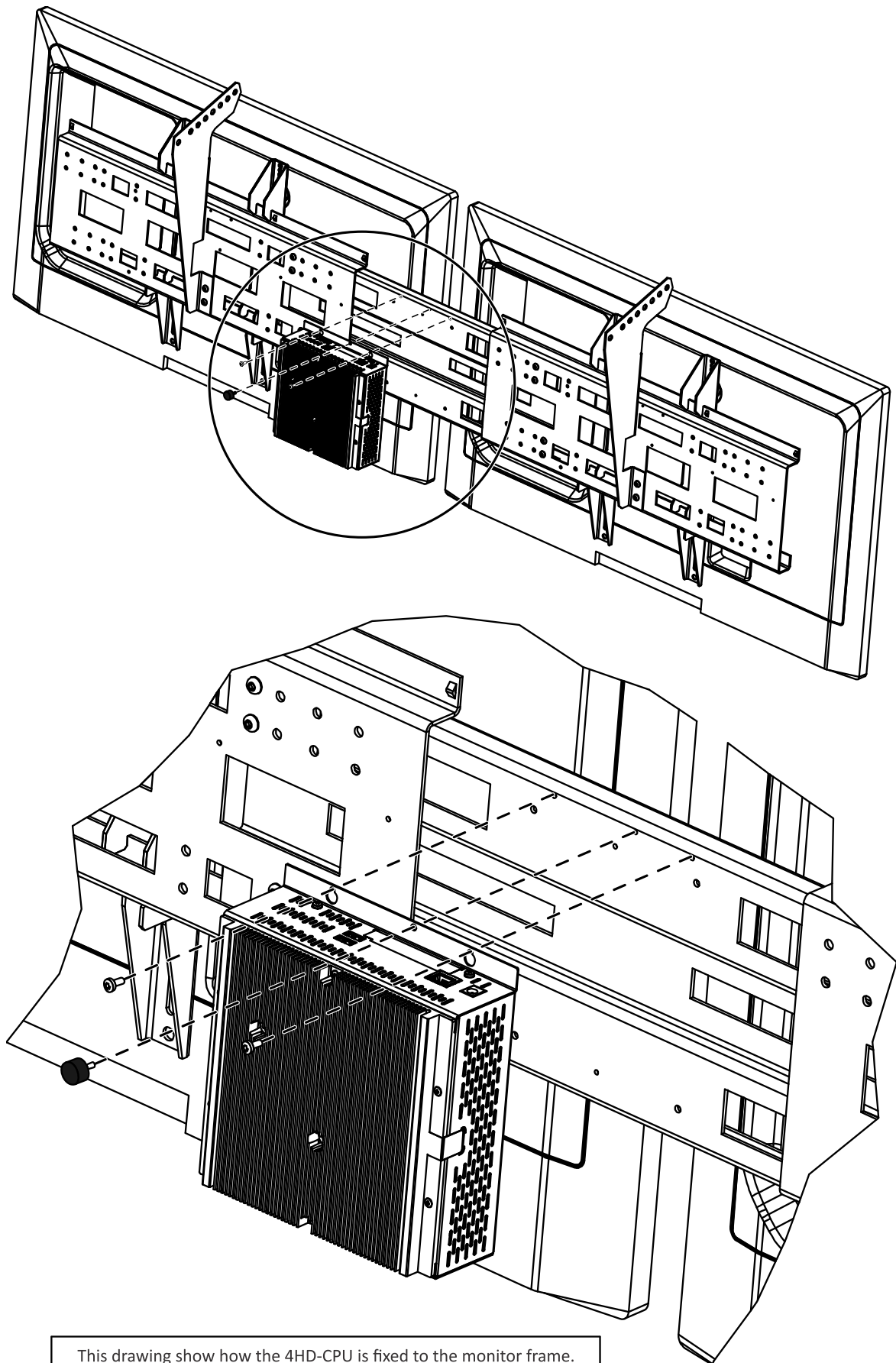
DIMENSIONS		
Height	190 mm	7" 1/2
Length	185 mm	7" 5/16
Depth	68 mm	2" 11/16
Weight	1200 g	2.6 lbs



T.00.071 – Mounting the 4HD/5HD-CPU on a single monitor frame



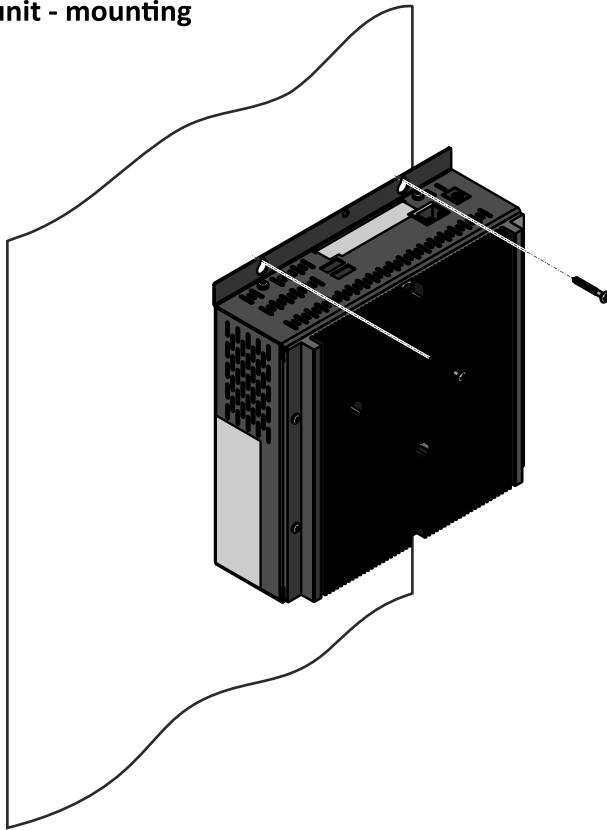
T.00.072 – Mounting the 4HD/5HD-CPU on a double monitor frame



This drawing show how the 4HD-CPU is fixed to the monitor frame.
The 5HD-CPU is mounted in the same way as the 4HD-CPU

T.90.174 – 4HD/5HD-CPU mounting

CPU unit - mounting

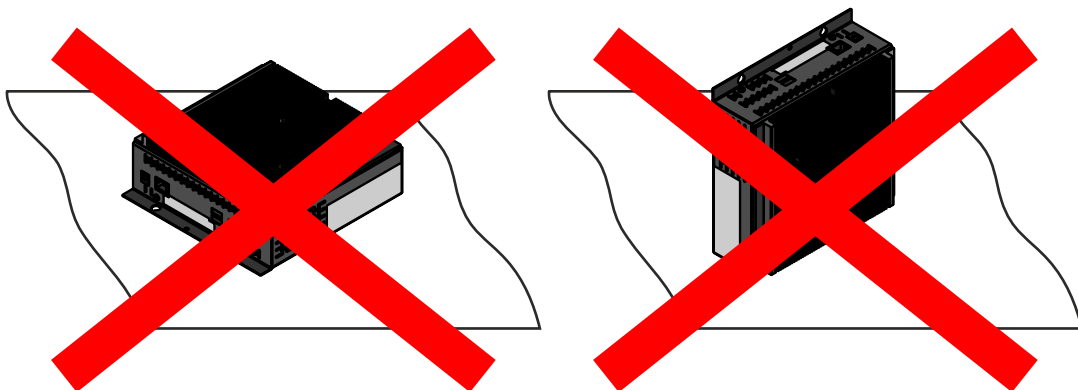


This drawing show how the 4HD-CPU is fixed to the monitor frame. The 5HD-CPU is mounted in the same way as the 4HD-CPU

4HD-CPU DIMENSIONS		
Height	190 mm	7" 1/2
Length	185 mm	7" 5/16
Depth	68 mm	2" 11/16
Weight	1200 g	2.6 lbs

5HD -CPU DIMENSIONS		
Height	124 mm	4" 7/8
Length	155 mm	6" 1/8
Depth	55 mm	2" 3/16
Weight	600 g	1.3 lbs

CPU unit - What NOT to do



2 Electrical specifications

Provide AC power to the system components via an electrical subpanel that is dedicated solely to the BES X system. The subpanel must have a neutral bus and a separate insulated third-wire isolated ground that is connected at the main service panel only.

Provide AC power to other system components as described for each component, including the installation of distribution boxes and running power cables to the final location of the other system components.

Test the electrical ground before installing any components and periodically thereafter to ensure the BES X system remains properly grounded.

IMPORTANT: Only QubicaAMF-supplied devices should be plugged into the outlets dedicated for QubicaAMF components.

ALWAYS FOLLOW YOUR LOCAL CODES FOR WIRE STANDARDS AND WIRING CIRCUITS.

PLEASE REFER TO THE “**BES X PRE-INSTALLATION MANUAL**” FOR FURTHER DETAILS.



3 BES X system configurations

IMPORTANT NOTE: Never, for any reason, run low voltage signal cables (such as network cables) near any kind of high voltage source.

3.1 No console present

This is the simplest configuration. The following devices are installed on each pair of lanes:

- The camera (Q-Vision or T/M-Vision).
- The pinspotter interface.
- Other optional LCOM devices (Bumper interface, Q-FOUL, TMR, etc.).
- One 4HD/5HD-HUB.
- One 4HD/5HD-CPU.
- The overhead monitors (i.e.: two overhead monitors).

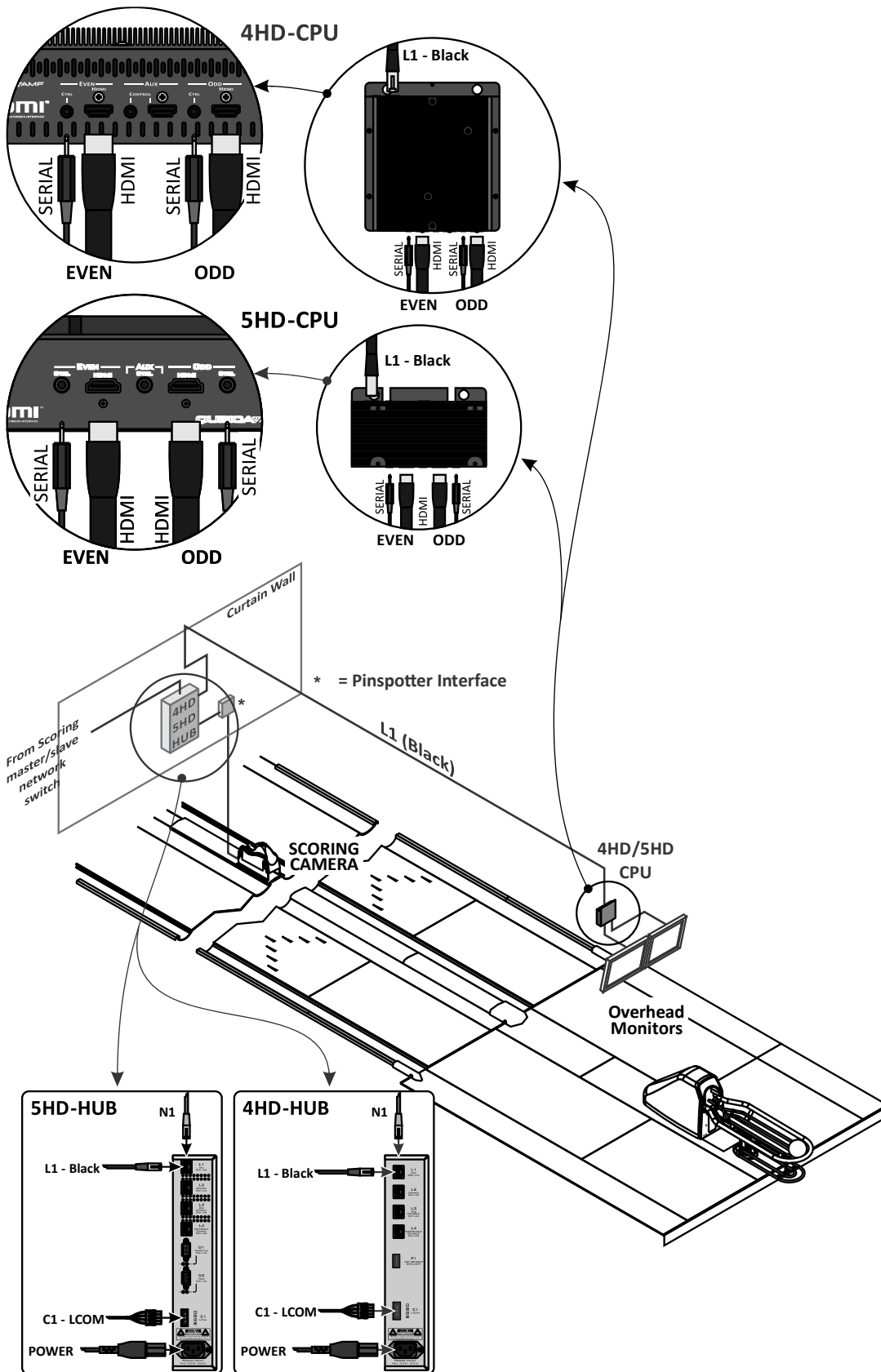
The camera, pinspotter interface and the other optional LCOM devices are connected to the 4HD/5HD-HUB via the LCOM cable (Refer to section **LCOM Line** for further information).

The L1 port of the 4HD/5HD-CPU is connected to the L1 port of the 4HD/5HD-HUB via a network cable. In the case that a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Each overhead monitor is connected to the corresponding port of the 4HD/5HD-CPU unit with a HDMI cable. If the monitors do not support commands via the HDMI, a serial communication cable (P/N: 288401007) must be installed between the overhead monitors and the 4HD/5HD-CPU in order to be controlled directly from a Conqueror X computer.



T.10.025 – 2 overhead monitors no console



L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.



3.2 EasyKey console – brief description

The EasyKey is the keyboard console. It gives access to the basic on-lane functions of the BES X system.

The EasyKey console is Intercom-ready. This does not mean that the Intercom system will be automatically available on the lanes because the Intercom system must be purchased separately.

During the operation of the lanes, only the active buttons are lit up on the EasyKey console.

During the boot-up of the system, the EasyKey console will light up different buttons (letters and numbers), then a single character will blink for a few seconds:

- “O” button blinking: The EasyKey console is configured to run in the “Twin” configuration with two EasyKey consoles on the same pedestal.
- “Q” button blinking: The EasyKey console is configured to operate as a single console with a single pedestal (one EasyKey console per lane with a single pedestal or one EasyKey console per pair of lanes).

There are three generations for the EasyKey consoles. The new EasyKey consoles have the following part numbers:

- EasyKey Rev.3, International P/N: 288150038.
- EasyKey Rev.3, Russian P/N: 288150039.
- EasyKey Rev.3, Japanese P/N: 288150040.

The EasyKey Rev.3 consoles are supported from:

- Conqueror Pro 11: version 11.43.04 or higher.
- Conqueror Pro 12: version 12.21.01 or higher.

3.2.1 EasyKey Pair console

In this configuration, the following devices are installed on each pair of lanes:

- The camera (Q-Vision or T/M-Vision).
- The pinspotter interface.
- Other optional LCOM devices (Bumper interface, Q-FOUL, TMR, etc.).
- One 4HD/5HD-HUB.
- One 4HD/5HD-CPU.
- The overhead monitors (i.e.: two overhead monitors).
- One EasyKey console.

The camera, pinspotter interface and the other optional LCOM devices are connected to the 4HD/5HD-HUB via the LCOM cable (Refer to section **LCOM Line** for further information).

The L1 port of the 4HD/5HD-CPU is connected to the L1 port of the 4HD/5HD-HUB via a network cable. In the case that a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Each overhead monitor is connected to the corresponding port of the 4HD/5HD-CPU unit with a HDMI cable. If the monitors do not support commands via the HDMI, a serial communication cable (P/N: 288401007) must be installed between the overhead monitors and the 4HD/5HD-CPU in order to be controlled directly from a Conqueror X computer.



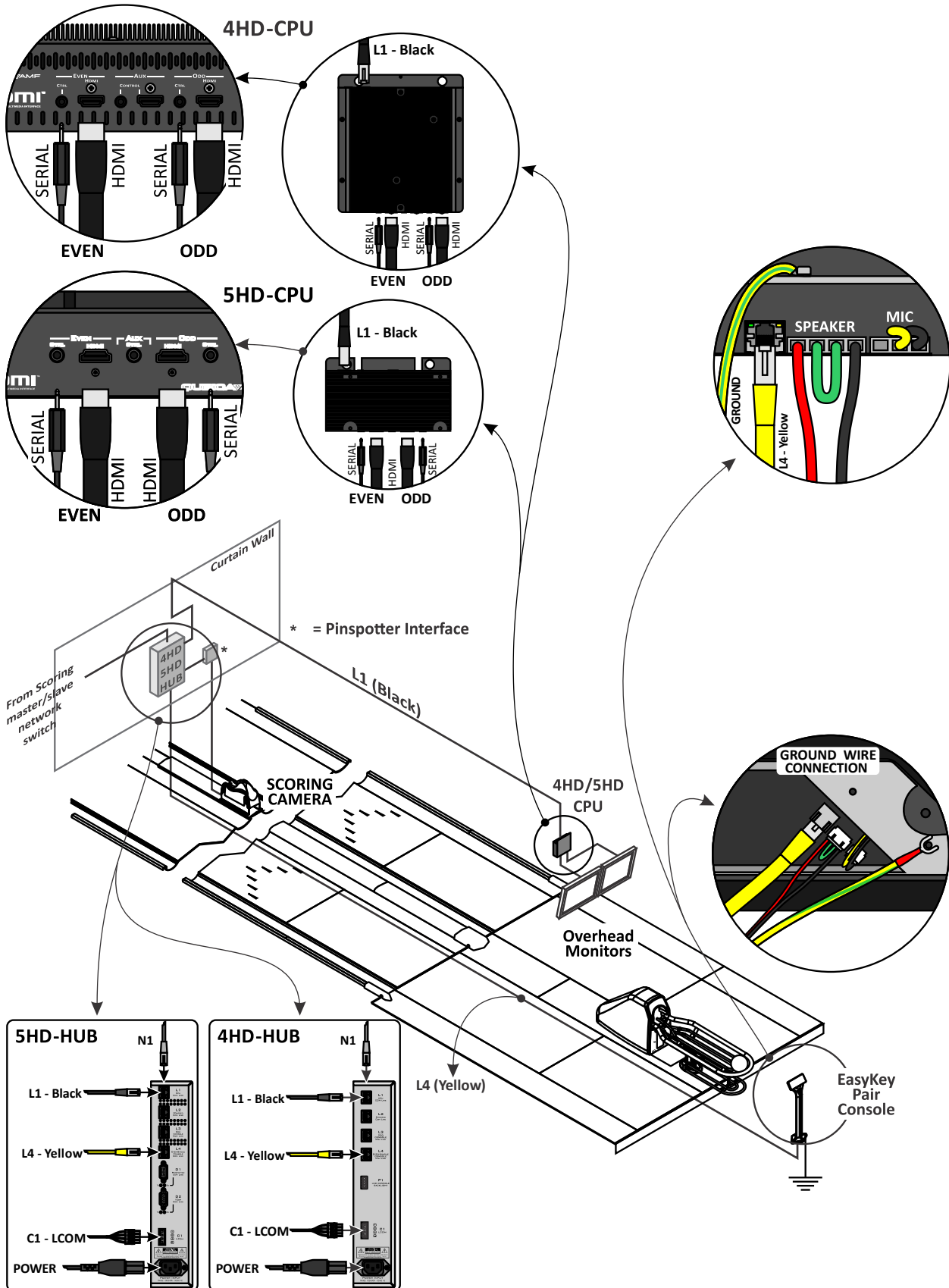
The EasyKey Pair is a single EasyKey console on a single pedestal installed on each pair of lanes.

The EasyKey console is connected to the L4 port of the 4HD/5HD-HUB through a network cable (yellow cable).

Each console must be connected to ground. Please refer to the section **Suggested ground connection** of the **BES X – Pre-Installation Manual** for further information.



T.10.026 – 2 overhead monitors with EasyKey Pair console



L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Required Conqueror Pro versions:
 Rev. 3 (288150038, 288150039, 288150040) and
 Rev. 2 (288150032, 288150033, 288150034):
 11.43.04 or higher AND 12.21.01 or higher



3.2.2 EasyKey Lane and EasyKey Twin console

In this configuration, the following devices are installed on each pair of lanes:

- The camera (Q-Vision or T/M-Vision).
- The pinspotter interface.
- Other optional LCOM devices (Bumper interface, Q-FOUL, TMR, etc.).
- One 4HD/5HD-HUB.
- One 4HD/5HD-CPU.
- The overhead monitors (i.e.: two overhead monitors).

For the console, there are two options:

- EasyKey Lane: two EasyKey console on two different pedestals (please refer to Table **T.10.027**).
- EasyKey Twin: two EasyKey console on the same pedestal (please refer to Table **T.10.028**).

The camera, pinspotter interface and the other optional LCOM devices are connected to the 4HD/5HD-HUB via the LCOM cable (Refer to section **LCOM Line** for further information).

The L1 port of the 4HD/5HD-CPU is connected to the L1 port of the 4HD/5HD-HUB via a network cable. In the case that a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Each overhead monitor is connected to the corresponding port of the 4HD/5HD-CPU unit with a HDMI cable. If the monitors do not support commands via the HDMI, a serial communication cable (P/N: 288401007) must be installed between the overhead monitors and the 4HD/5HD-CPU in order to be controlled directly from a Conqueror X computer.

The EasyKey console on the ODD lane is connected to the L3 port of the 4HD/5HD-HUB through a network cable (grey cable).

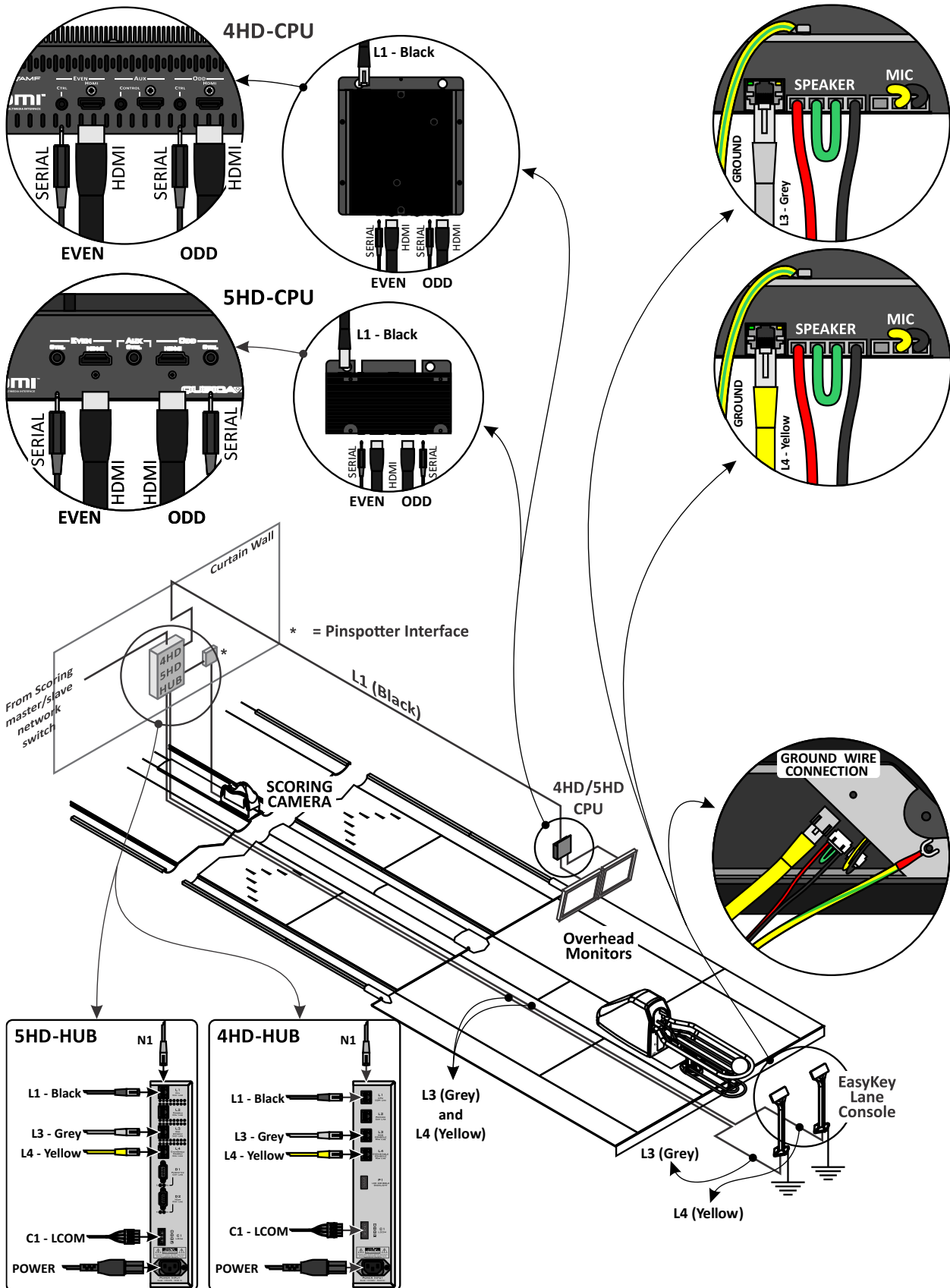
The EasyKey console on the EVEN lane is connected to the L4 port of the 4HD/5HD-HUB through a network cable (yellow cable).

The differences between the two console configurations are in the quantity of pedestals and the quantity of speakers installed, because each pedestal has only one speaker. Due to this fact, the connection cable for the speaker is slightly different between the two situations.

Each console must be connected to ground. Please refer to the section **Suggested ground connection** of the **BES X – Pre-Installation Manual** for further information.



T.10.027 – 2 overhead monitors with EasyKey Lane console

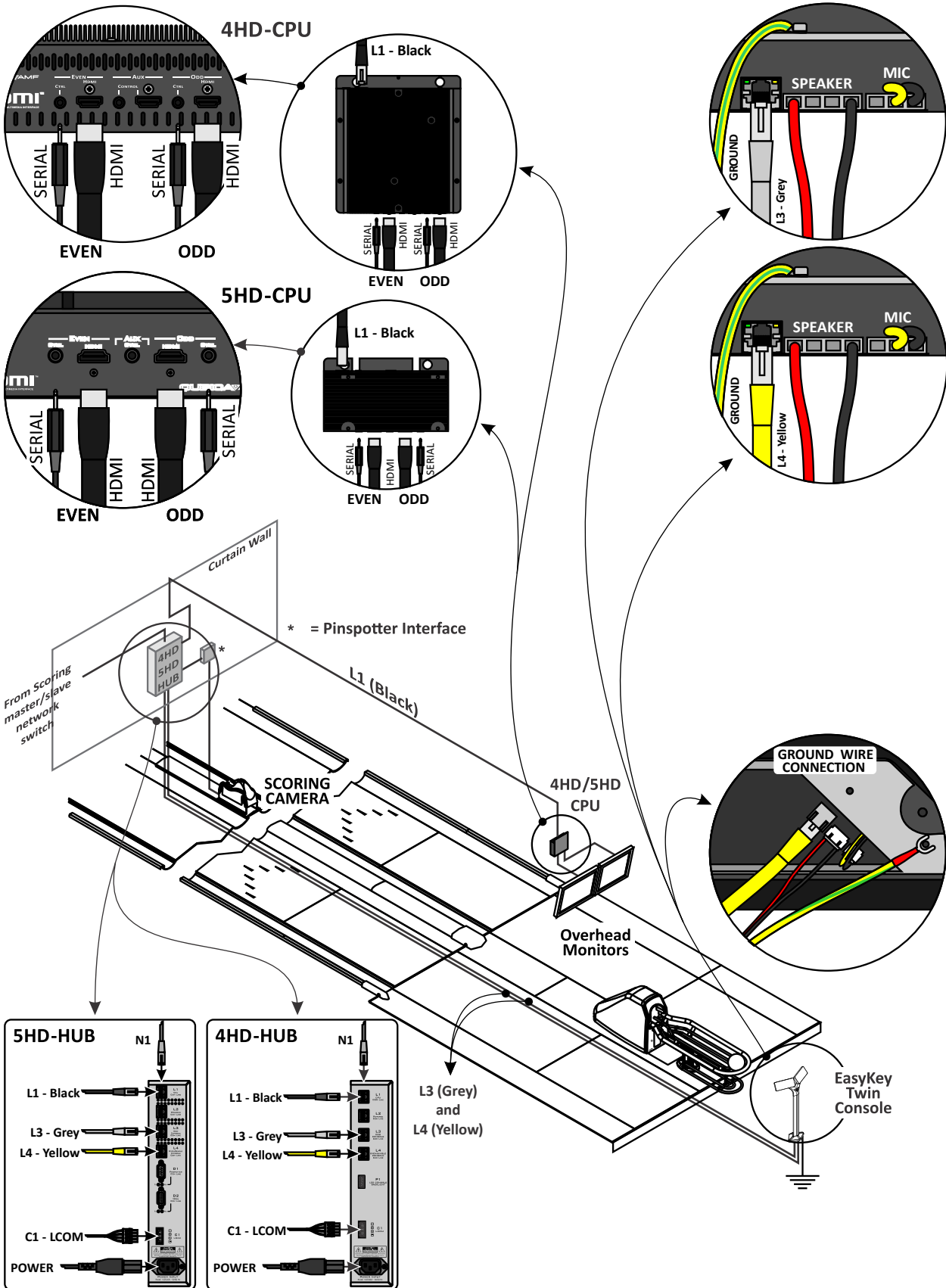


L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Required Conqueror Pro versions:
 Rev. 3 (288150038, 288150039, 288150040) and
 Rev. 2 (288150032, 288150033, 288150034):
 11.43.04 or higher AND 12.21.01 or higher



T.10.028 – 2 overhead monitors with EasyKey Twin console



L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Required Conqueror Pro versions:
 Rev. 3 (288150038, 288150039, 288150040) and
 Rev. 2 (288150032, 288150033, 288150034):
 11.43.04 or higher AND 12.21.01 or higher



3.3 SuperTouch console

3.3.1 Brief description

The SuperTouch is the touch screen console. It gives access to all of the on-lane functions of the BES X system.

The SuperTouch console is Intercom-ready. This fact does not mean that the Intercom system will be automatically available on the lanes because the Intercom system must be purchased separately.

There are different versions for the SuperTouch console:

- SuperTouch console, P/N: **288150024**.
- SuperTouch Ver. 2, P/N: **288150026** (from Conqueror Pro version 10.12.05 or higher).
- SuperTouch Rev. 3, P/N: **288150027** (from Conqueror Pro version 11.05.04 or higher).
- SuperTouch Rev. 4, P/N: **288150028** (from Conqueror Pro version 11.05.04 or higher).
- SuperTouch Rev. 4.1, P/N: **288150031** (from Conqueror Pro version 11.43.05 or higher, or Conqueror Pro version 12.21.03 or higher).
- SuperTouch Rev. 5, P/N: **288150029** (from Conqueror Pro version 13.00.00 or higher).

The main difference between the SuperTouch console (P/N 288150024) and the newer versions is that the first generation SuperTouch console (P/N: 288150024) needs to be connected to the 4HD/5HD-HUB unit using two network cables, while the newer versions need to be connected to the 4HD/5HD-HUB unit using one network cable.

288150031 SuperTouch consoles that have a serial number starting with “5”, e.g. “50136”, are equipped with a different generation of touchscreen.

It is possible to install different versions of SuperTouch consoles together in the same installation. Please refer to the drawings below for further information.

3.3.2 Exposure of the SuperTouch console to ultraviolet (UV) rays

The principal recommendation is to **AVOID** the SuperTouch console being exposed to ultraviolet rays. Following this recommendation:

- Do **NOT** expose the SuperTouch console to direct sunlight.
- **NEVER** install, for any reason, a SuperTouch console near a window or in a position where it will be exposed to direct sunlight.
- In the case of Wood lamps (UV lamps):
 - **MINIMUM** distance allowed: 3 mt (10'). **NEVER** install, for any reason, a SuperTouch console within a range of 3 mt from a Wood lamp (UV lamp).
 - **RECOMMENDED** minimum distance: 6 mt. (20').
 - If a Wood lamp (UV lamp) is installed within the range of 3 mt. (10') and 6 mt. (20'), the usage of the lamp must not exceed 20 hours per week.

Failing to follow these recommendations will cause permanent damage to the SuperTouch console.



3.3.3 SuperTouch Pair console

In this configuration, the following devices are installed on each pair of lanes:

- The camera (Q-Vision or T/M-Vision).
- The pinspotter interface.
- Other optional LCOM devices (Bumper interface, Q-FOUL, TMR, etc.).
- One 4HD/5HD-HUB.
- One 4HD/5HD-CPU.
- The overhead monitors (i.e.: two overhead monitors).
- One SuperTouch console.

The camera, pinspotter interface and the other optional LCOM devices are connected to the 4HD/5HD-HUB via the LCOM cable (Refer to section **LCOM Line** for further information).

The L1 port of the 4HD/5HD-CPU is connected to the L1 port of the 4HD/5HD-HUB via a network cable. In the case that a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Each overhead monitor is connected to the corresponding port of the 4HD/5HD-CPU unit with a HDMI cable. If the monitors do not support commands via the HDMI, a serial communication cable (PN: 288401007) must be installed between the overhead monitors and the 4HD/5HD-CPU in order to be controlled directly from a Conqueror X computer.

The SuperTouch console version 2 (or higher) is connected to:

- L4 port of the 4HD/5HD-HUB through a network cable (yellow cable).

Or

The SuperTouch console (PN: **288150024**) is connected to:

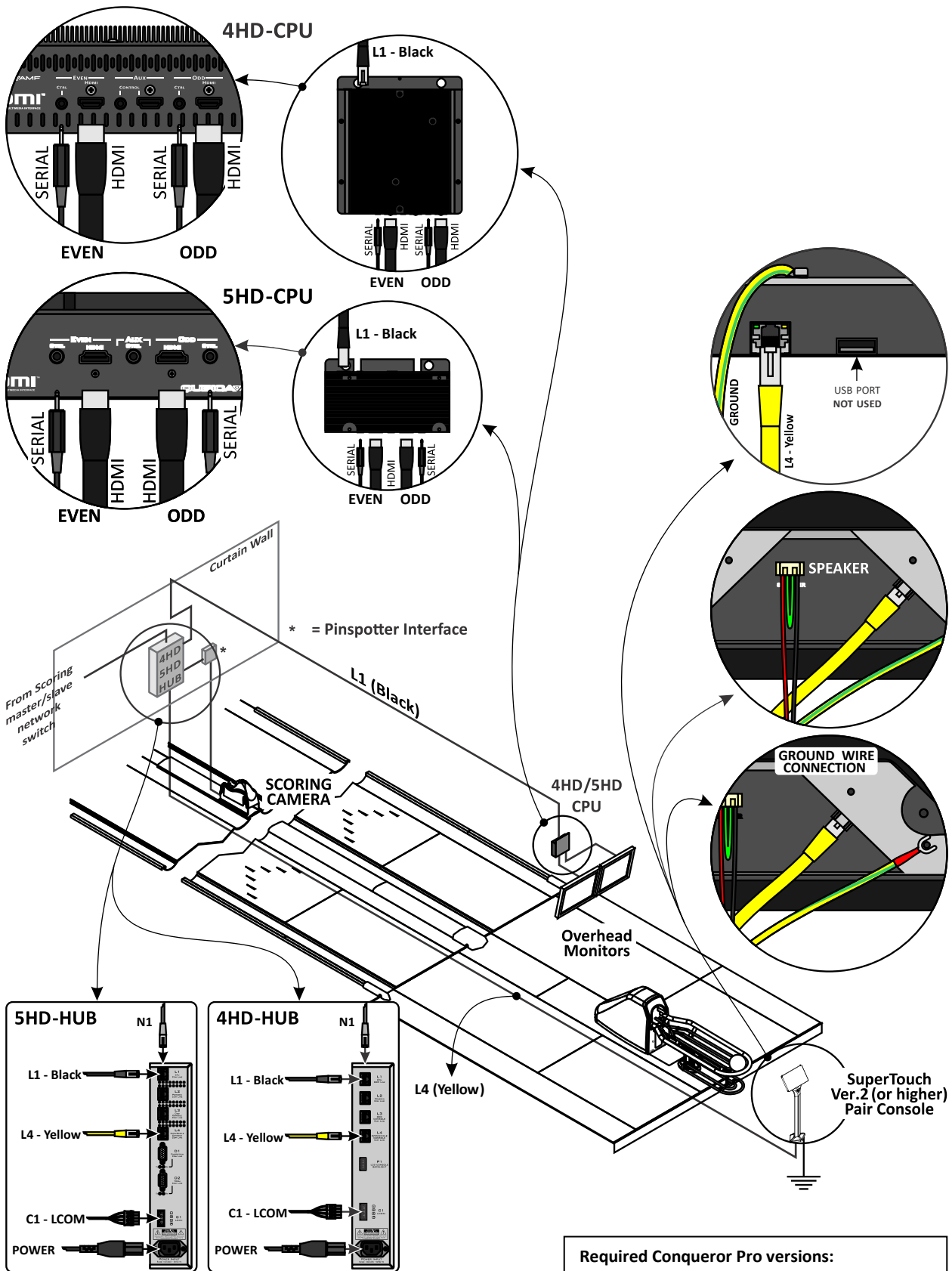
- L4 port of the 4HD-HUB through a network cable (yellow cable).
- P1 port of the 4HD-HUB through a network cable (blue cable): connect the network cable on the 4HD-HUB side to the **288401035** cable adapter, then connect the **288401035** cable adapter to the P1 connector of the 4HD-HUB unit.

In the case that an existing BES X bowling center, already equipped with SuperTouch consoles (P/N **288150024**), purchases EDGE String pinspotters, the existing 4HD-HUB units **MUST** be replaced with the 5HD-HUB P/N: **288250025-01** or P/N: **288250025-02** units and the “5HD-HUB to first gen. SuperTouch – cable adapter” (P/N: **288401054**). Please refer to **T.10.074** for further information.

Each console must be connected to ground. Please refer to the section **Suggested ground connection** of the **BES X – Pre-Installation Manual** for further information.



T.10.058 – 2 overhead monitors with SuperTouch console ver. 2 (or higher) Pair console

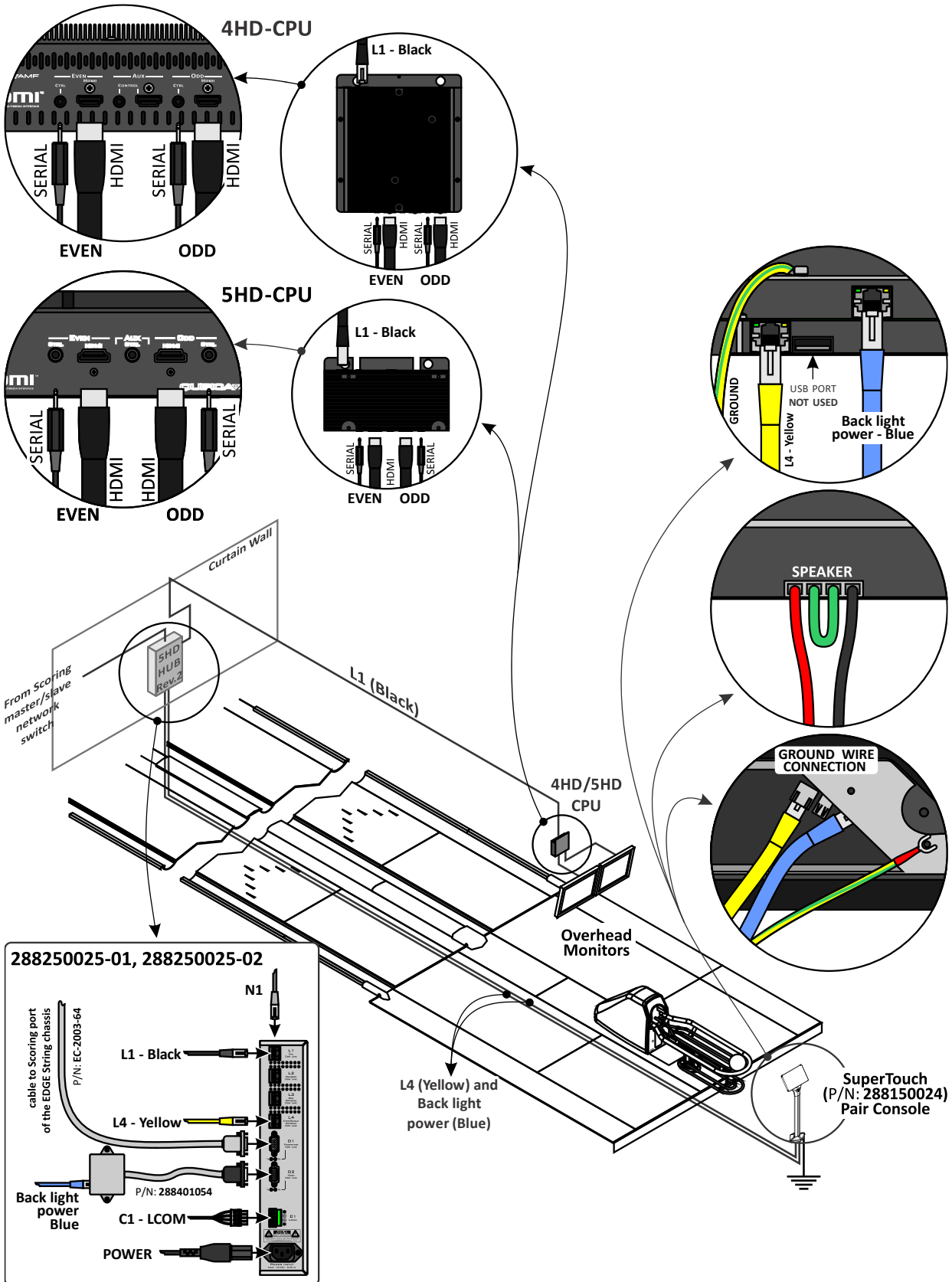


L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Required Conqueror Pro versions:
 Ver. 2 (288150026): 10.12.05 or higher;
 Rev. 3 (288150027): 11.05.04 or higher;
 Rev. 4 (288150028): 11.05.04 or higher;
 Rev. 4.1 (288150031): 11.43.05 or higher
AND 12.21.03 or higher.



T.10.074 – 2 overhead monitors with SuperTouch (288150024) Pair console and EDGE String pinspotter

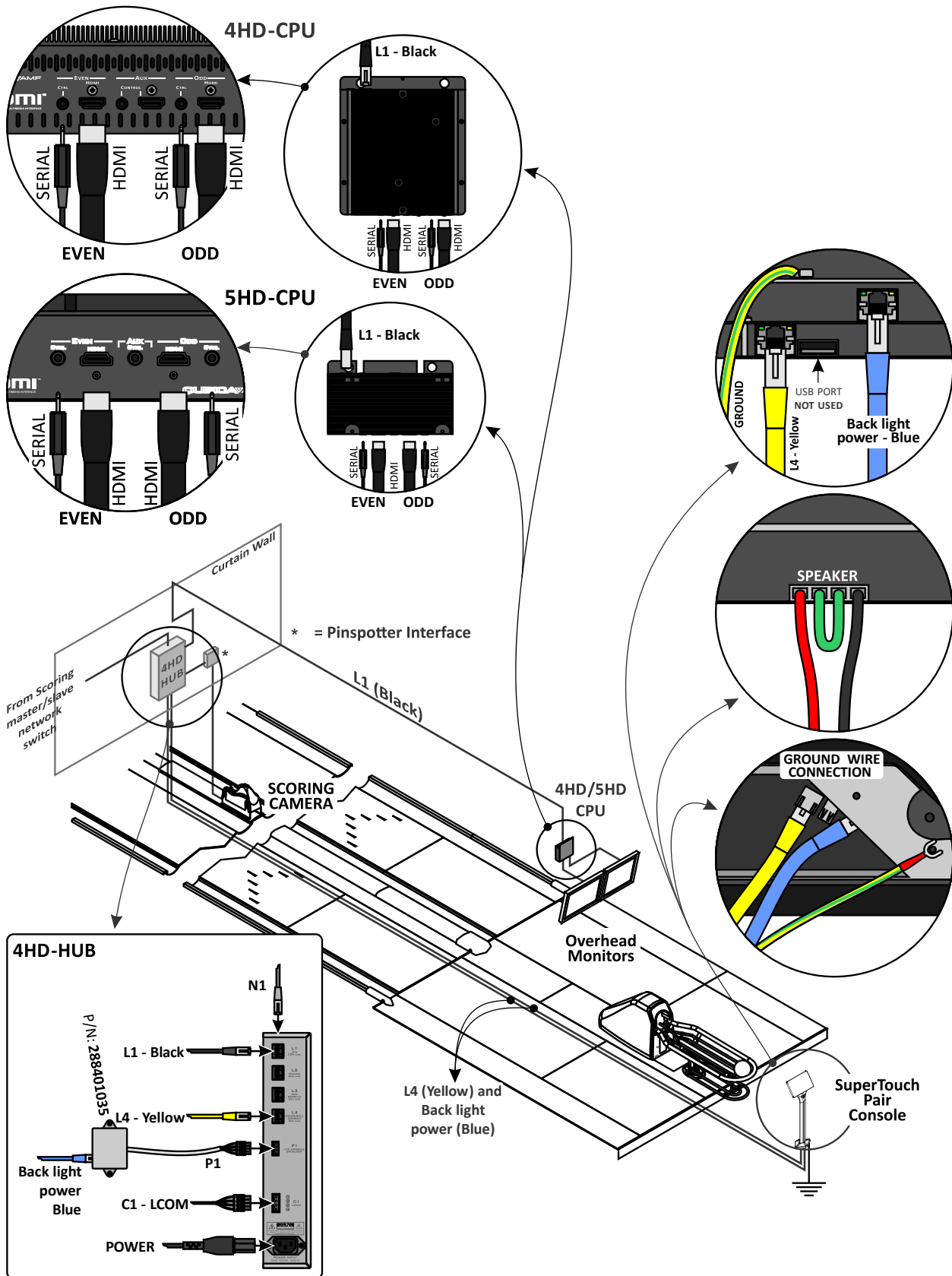


L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Required Conqueror Pro versions:
5HD-HUB (288250025): 13.00.00 or higher.



T.10.029 – 2 overhead monitors with SuperTouch (288150024) Pair console



L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.



3.3.4 SuperTouch Lane console

In this configuration, the following devices are installed on each pair of lanes:

- The camera (Q-Vision or T/M-Vision).
- The pinspotter interface.
- Other optional LCOM devices (Bumper interface, Q-FOUL, TMR, etc.).
- One 4HD/5HD-HUB.
- One 4HD/5HD-CPU.
- The overhead monitors (i.e. two overhead monitors).
- Two SuperTouch consoles.

The camera, pinspotter interface and the other optional LCOM devices are connected to the 4HD/5HD-HUB via the LCOM cable (Refer to section **LCOM Line** for further information).

The L1 port of the 4HD/5HD-CPU is connected to the L1 port of the 4HD/5HD-HUB via a network cable. In the case that a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Each overhead monitor is connected to the corresponding port of the 4HD/5HD-CPU unit with a HDMI cable. If the monitors do not support commands via the HDMI, a serial communication cable (P/N: **288401007**) must be installed between the overhead monitors and the 4HD/5HD-CPU in order to be controlled directly from a Conqueror X computer.

The SuperTouch console version 2 (or higher) on the odd lane is connected to:

- L3 port of the 4HD/5HD-HUB through a network cable (grey cable).

The SuperTouch console version 2 (or higher) on the even lane is connected to:

- L4 port of the 4HD/5HD-HUB through a network cable (yellow cable).

Or

The SuperTouch console (PN: **288150024**) on the odd lane is connected to:

- L3 port of the 4HD-HUB through a network cable (grey cable).
- P1 port of the 4HD-HUB through a network cable (red cable): connect the network cable on the 4HD-HUB side to the 288401035 cable adapter then the 288401035 cable adapter to the P1 connector of the 4HD-HUB unit.

The SuperTouch console (PN: 288150024) on the even lane is connected to:

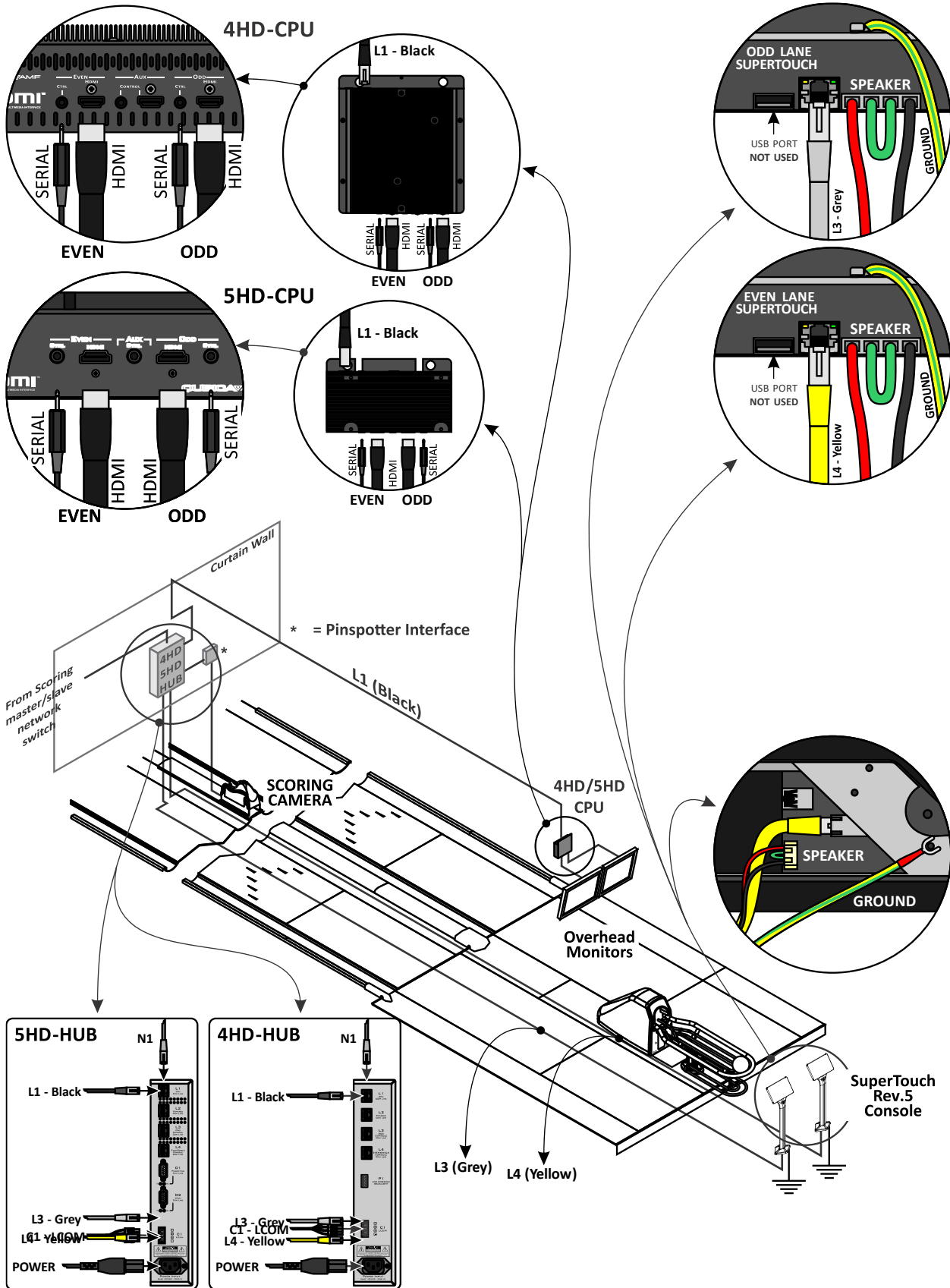
- L4 port of the 4HD-HUB through a network cable (yellow cable).
- P1 port of the 4HD-HUB through a network cable (blue cable): connect the network cable on the 4HD-HUB side to the 288401035 cable adapter, then connect the 288401035 cable adapter to the P1 connector of the 4HD-HUB unit.

In the case that an existing BES X bowling center, already equipped with SuperTouch consoles (P/N **288150024**), purchases EDGE String pinspotters, the existing 4HD-HUB units **MUST** be replaced with the 5HD-HUB P/N: **288250025-01** or P/N: **288250025-02** units and the “5HD-HUB to first gen. SuperTouch – cable adapter” (P/N: **288401054**). Please refer to **T.10.075** for further information.

Each console must be connected to ground. Please refer to the section **Suggested ground connection** of the **BES X – Pre-Installation Manual** for further information.



T.10.073 – 2 overhead monitors with SuperTouch Rev.5 Lane console

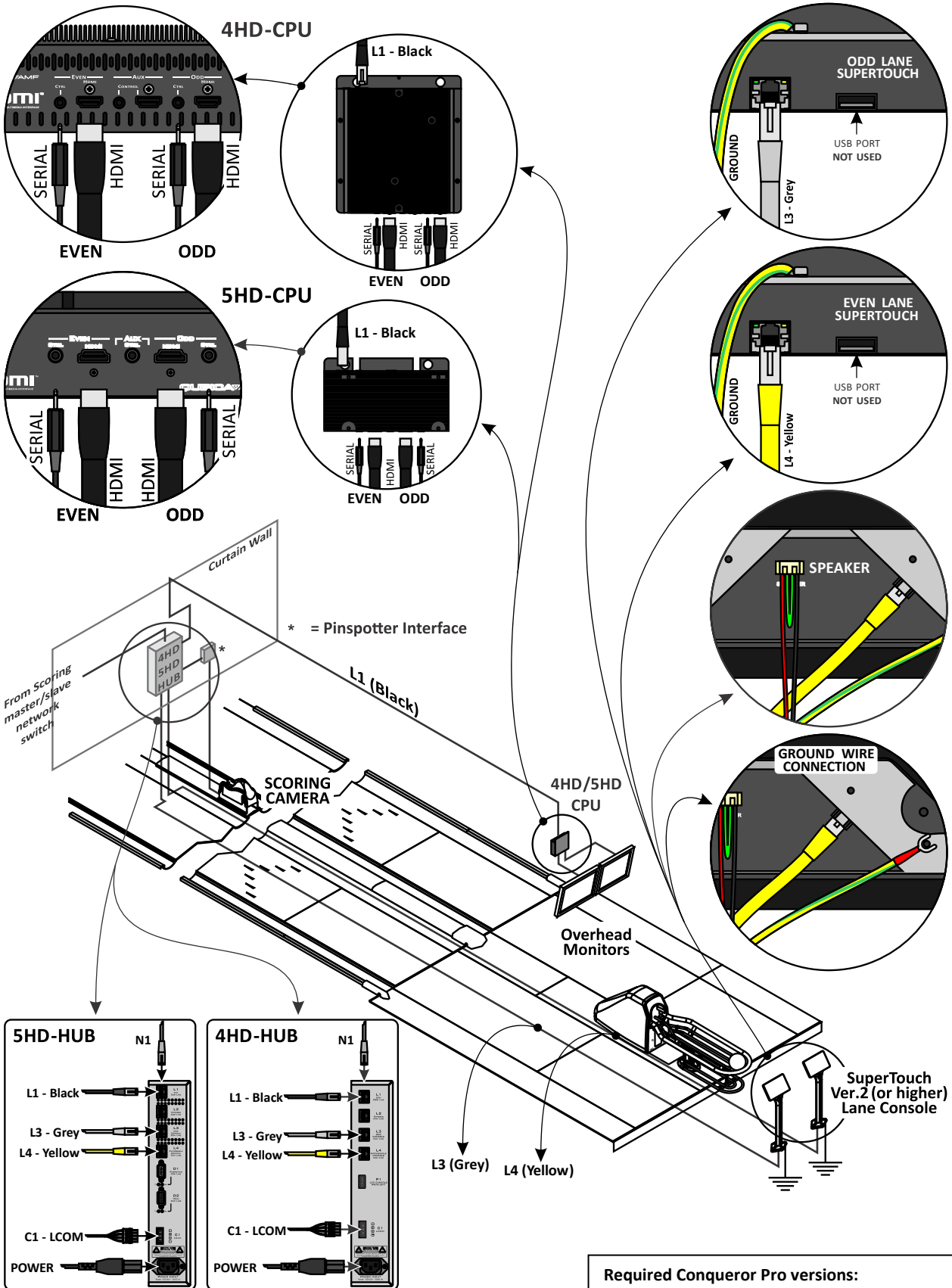


L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Required Conqueror Pro versions:
Rev. 5 (288150029): 13.00.00 or higher.



T.10.059 – 2 overhead monitors with SuperTouch ver.2 or higher Lane console

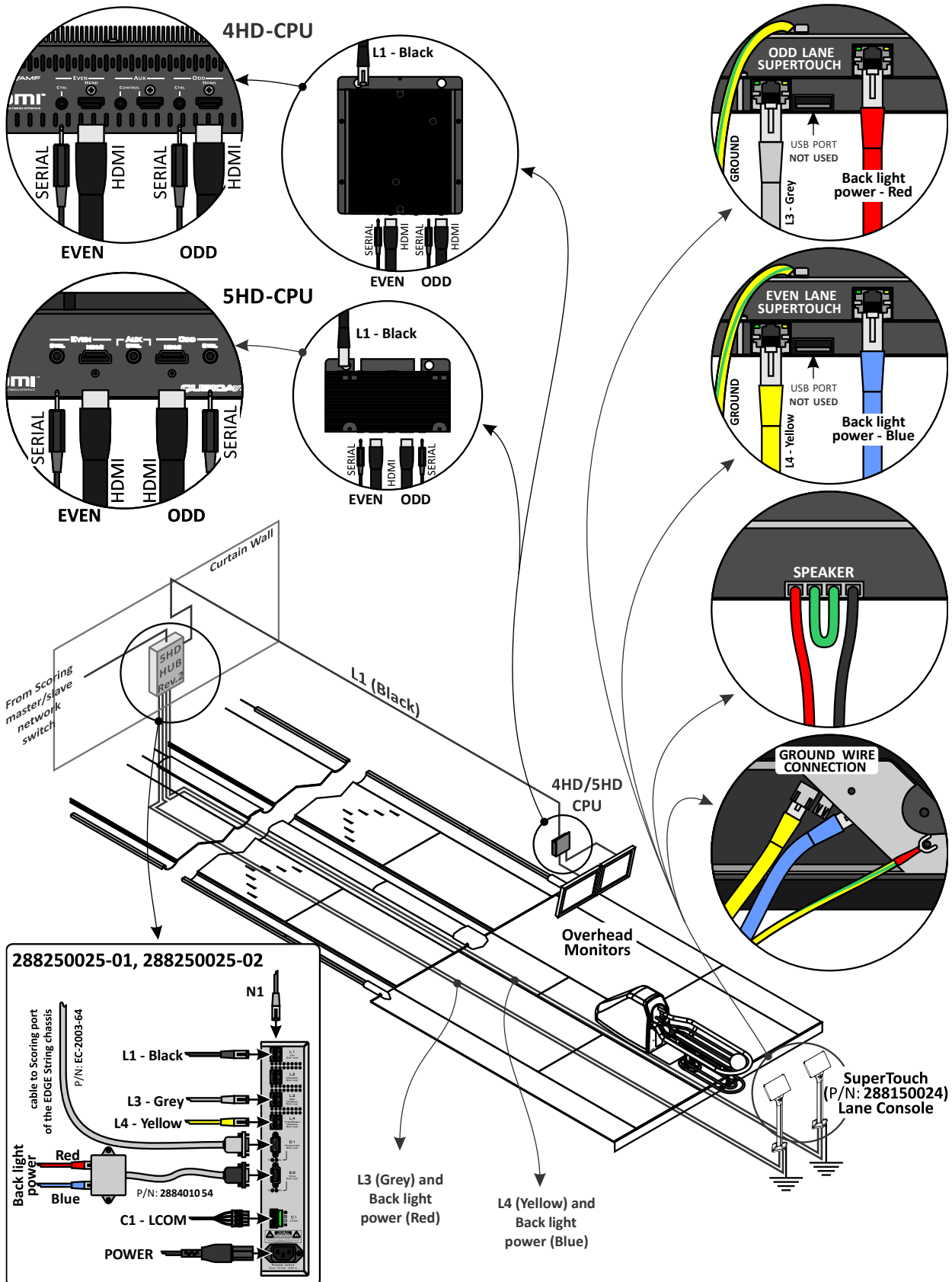


L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Required Conqueror Pro versions:
 Ver. 2 (288150026): 10.12.05 or higher;
 Rev. 3 (288150027): 11.05.04 or higher;
 Rev. 4 (288150028): 11.05.04 or higher;
 Rev. 4.1 (288150031): 11.43.05 or higher
AND 12.21.03 or higher.



T.10.075 – 2 overhead monitors with SuperTouch (288150024) Lane console and EDGE String pinspotter

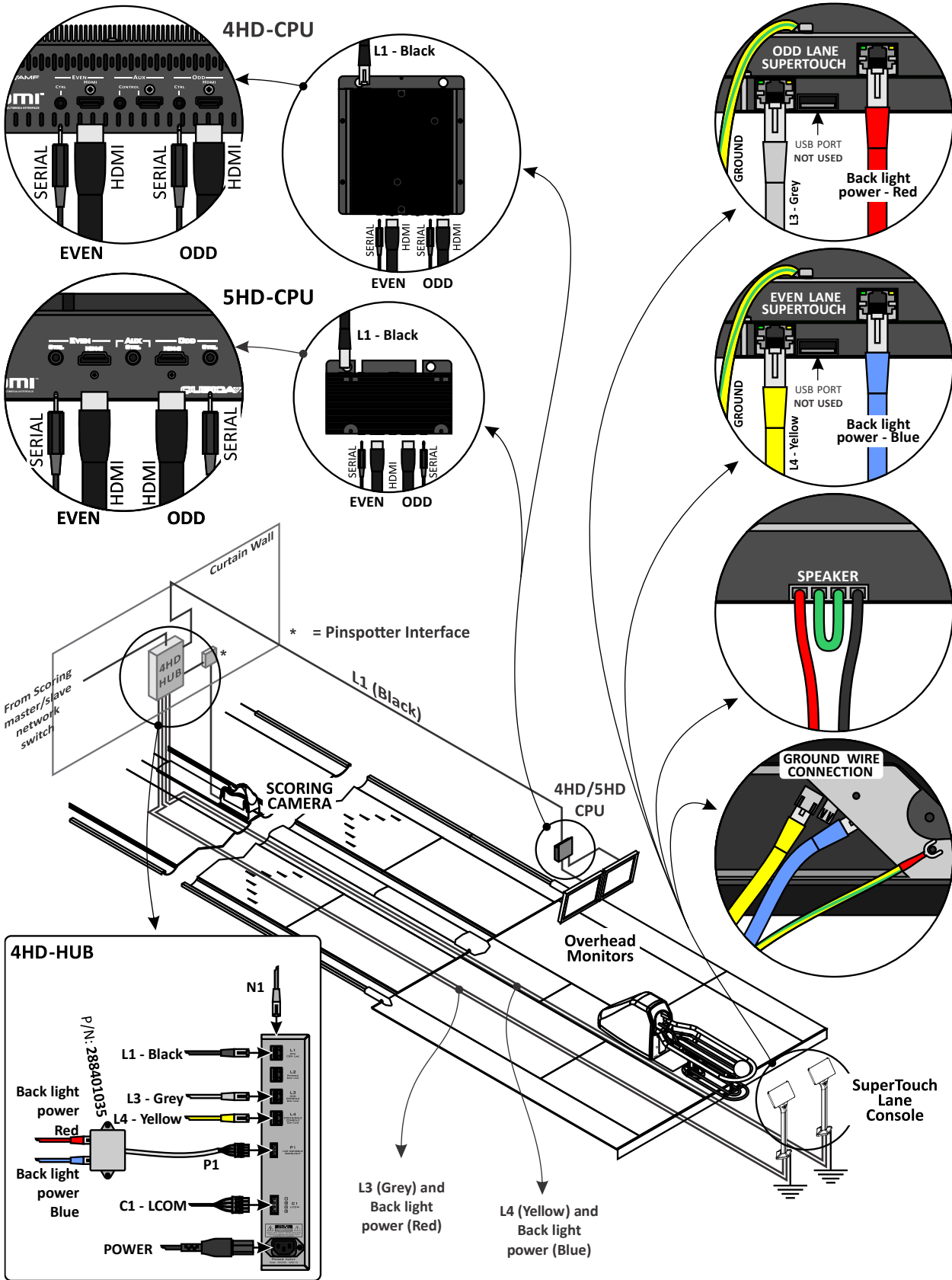


L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

Required Conqueror Pro versions:
5HD-HUB (288250025): 13.00.00 or higher.



T.10.030 – 2 overhead monitors with SuperTouch (288150024) Lane console

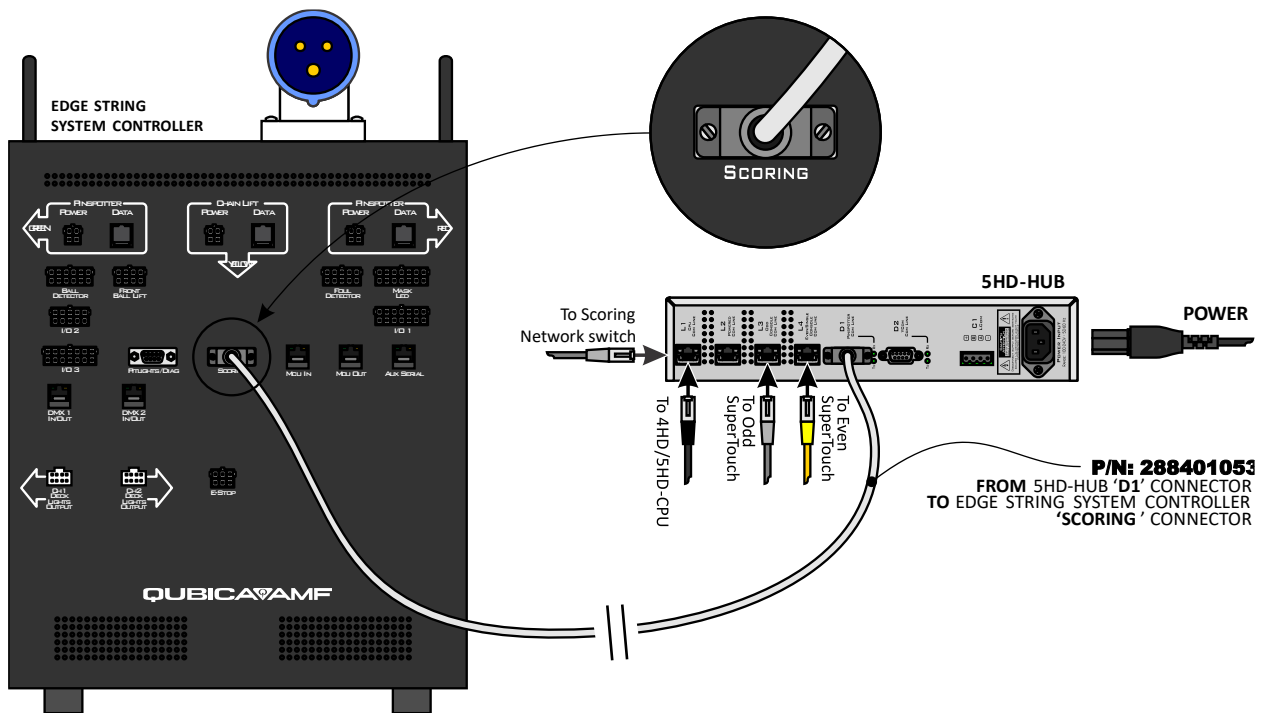


L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.



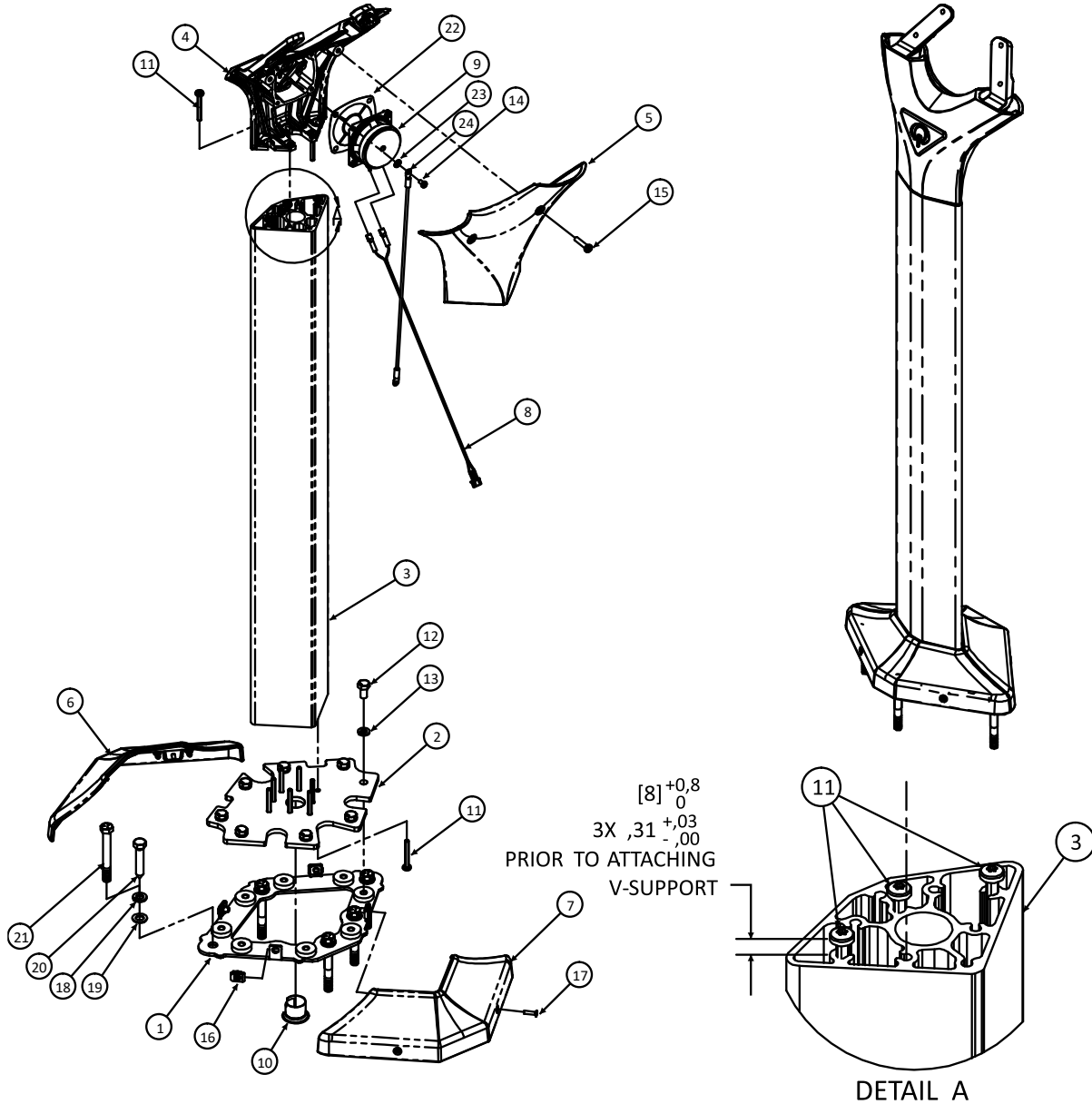
3.4 EDGE String for 10 pin

T.90.313 – 5HD-HUB connection with EDGE String for BES X



4 Console pedestal assembly

T.10.060- 286002861 single and 286002863 short single pedestal assembly parts



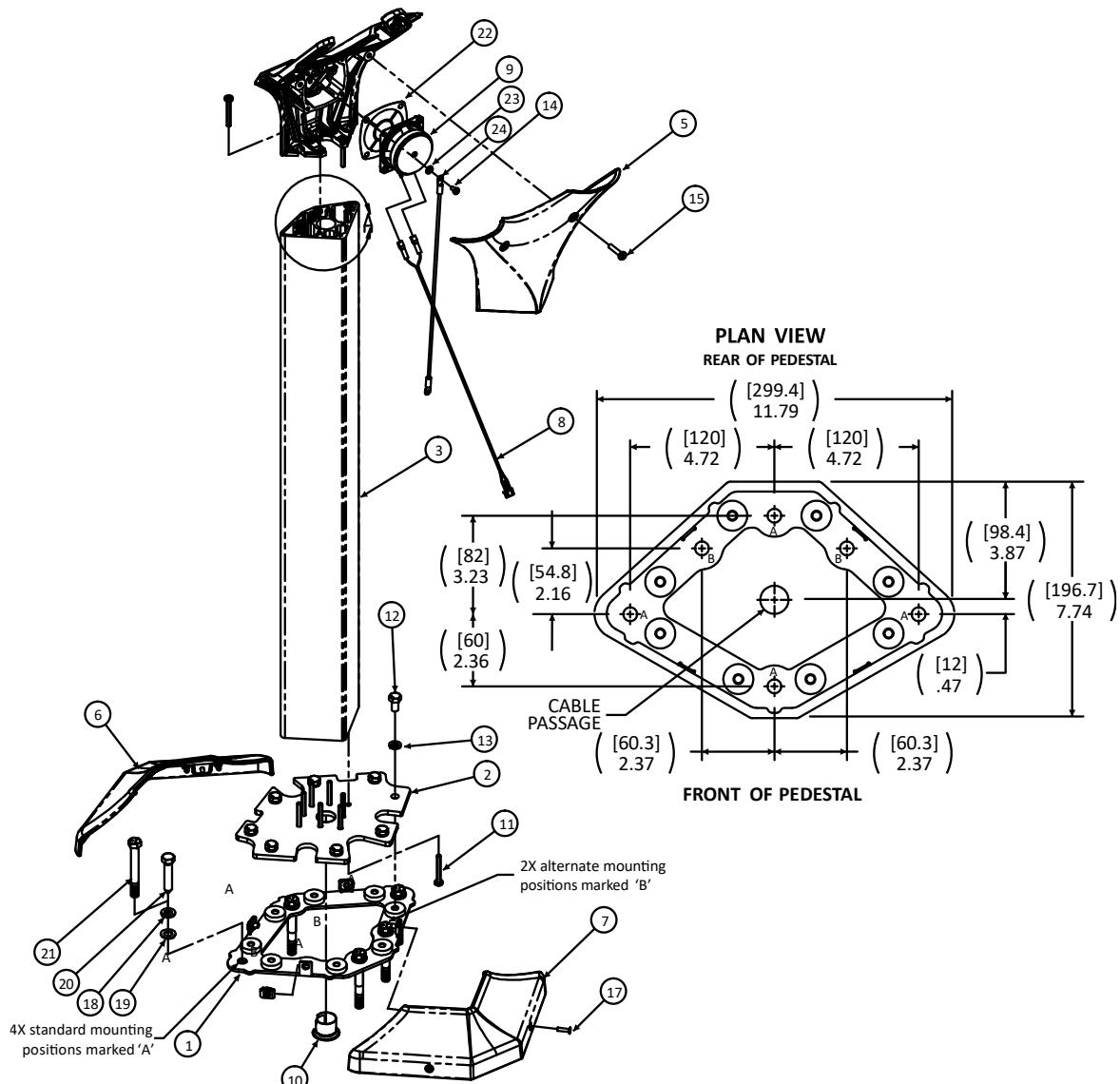
PARTS LIST

#	QTY	P/N	DESCRIPTION
1	1	286002802	Base sheet metal – Lower
2	1	286002806	Base sheet metal – Higher
3	1	286002857 286002859	Console extrusion machined Console extrusion short
4	1	286002866	V-Support single assembly
5	1	286002852	V-Support back
6	1	286002854	Front base cover
7	1	286002855	Rear base cover
8	1	286002824	Speaker wire harness single
9	1	770047105	Speaker
10	1	741510403	3/4" anti-short bushing
11	13	821805407	PHTTS M5-,8 x 40 ZN THFM TRI
12	8	802408167	HHCS M8-1,25 x 16 CL10,9 ZN

#	QTY	P/N	DESCRIPTION
13	8	927158127	SWM M8 D-127A ZN
14	4	863040087	PHPMS M4-,7 x 8 ZN
15	2	813005257	PHPMS M5-,8 x 25 ZN
16	4	724520001	CON U M4-,7 TPH ZN
17	4	819304167	FHPMS M4-,7 x 16 ZN
18	5	951164007	SWM 3/8 ANSI ZN
19	9	948767132	FW 0,41 x 0,73 x 0,06 ZN
20	5	810564420	HHLB 3/8 x 2,00 ZN
21	5	709007063	ANCR TB 3/8 x 3,00 ZN
22	1	286002873	Speaker plate
23	1	01033	ETLW10 ANSI ZN
24	1	088500224	CBL, ground wireway cover



T.10.061- 286002861 single and 286002863 short single pedestal assembly instructions

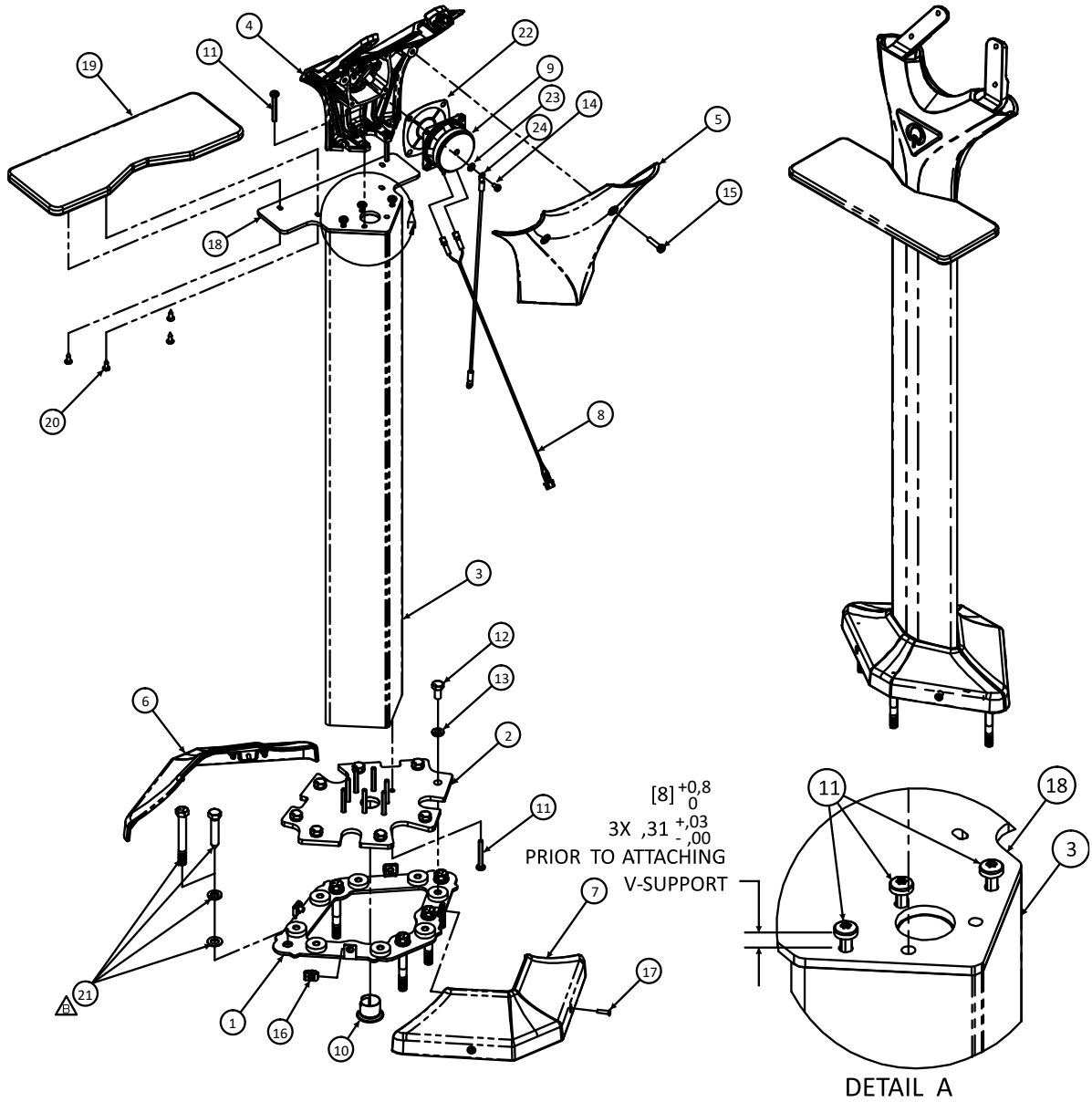


INSTALLATION INSTRUCTIONS

1. Un-pack pedestal.
2. Remove mounting hardware stretch wrapped to extrusion (item 3).
3. Remove V-Support back (item 5) secured by 2 PHPMS M5-.8 X 25 SCREWS (item 15).
4. Remove front & rear base covers (items 6 & 7) secured by 4 FHPMS M4-.7 X 16 ZN screws (item 17).
5. Position pedestal on the floor in the desired position and orientation.
NOTE: Please install the pedestal in a position far enough away from the ball rack to avoid potential damage caused by bowling balls falling from the ball rack.
6. Mark/transfer the mounting holes in base sheet metal - lower (item 1) to the floor. Note if the standard mounting hole positions marked 'A' in the plan view below interfere with the cable conduit in the floor, use both of the alternate positions marked 'B' in the plan view below for the supplied anchors.
7. Remove base sheet metal - lower (item 1) from base sheet metal - upper (item 2) secured with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
8. Position base sheet metal - lower (item 1) on the floor and install with the appropriate supplied anchors. For wood floors drill \varnothing 1/4 holes and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 19), SWM 3/8 ANSI ZN (item 18), and HHLB 3/8 X 2.00 ZN (item 20). For concrete floors drill \varnothing 3/8 holes to a minimum depth of 3-1/2 inches [89mm], clear the holes of all debris and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 19), SWM 3/8 ANSI ZN (item 18) and ANCR TB 3/8 X 3.00 ZN (item 21). Drive taper bolt into place leaving 3/16 inch [4.8mm] head clearance. Tighten taper bolt to minimum of 40FT-LB [54 Nm].
NOTE: extra flat washers FW 0.41 X 0.73 X 0.06 ZN are included for leveling purposes; if not needed discard.
9. Install console cables thru the anti-short bushing (item 10) and thru the extrusion (item 3).
10. Re-install pedestal on base sheet metal - lower and secure with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
11. Re-install front & rear base covers (items 6 & 7); secure using 4 FHPMS M4-.7 X 16 screws (item 17).
12. Install keyboard or LCD assembly and connect per instructions provided with keyboard or LCD.
13. Re-install V-Support back (item 5); secure using 2 PHPMS M5-.8 X 25 screws (item 15). Take care not to pinch any wires or cables.



T.10.065- 286002864 single pedestal assembly with table parts



PARTS LIST

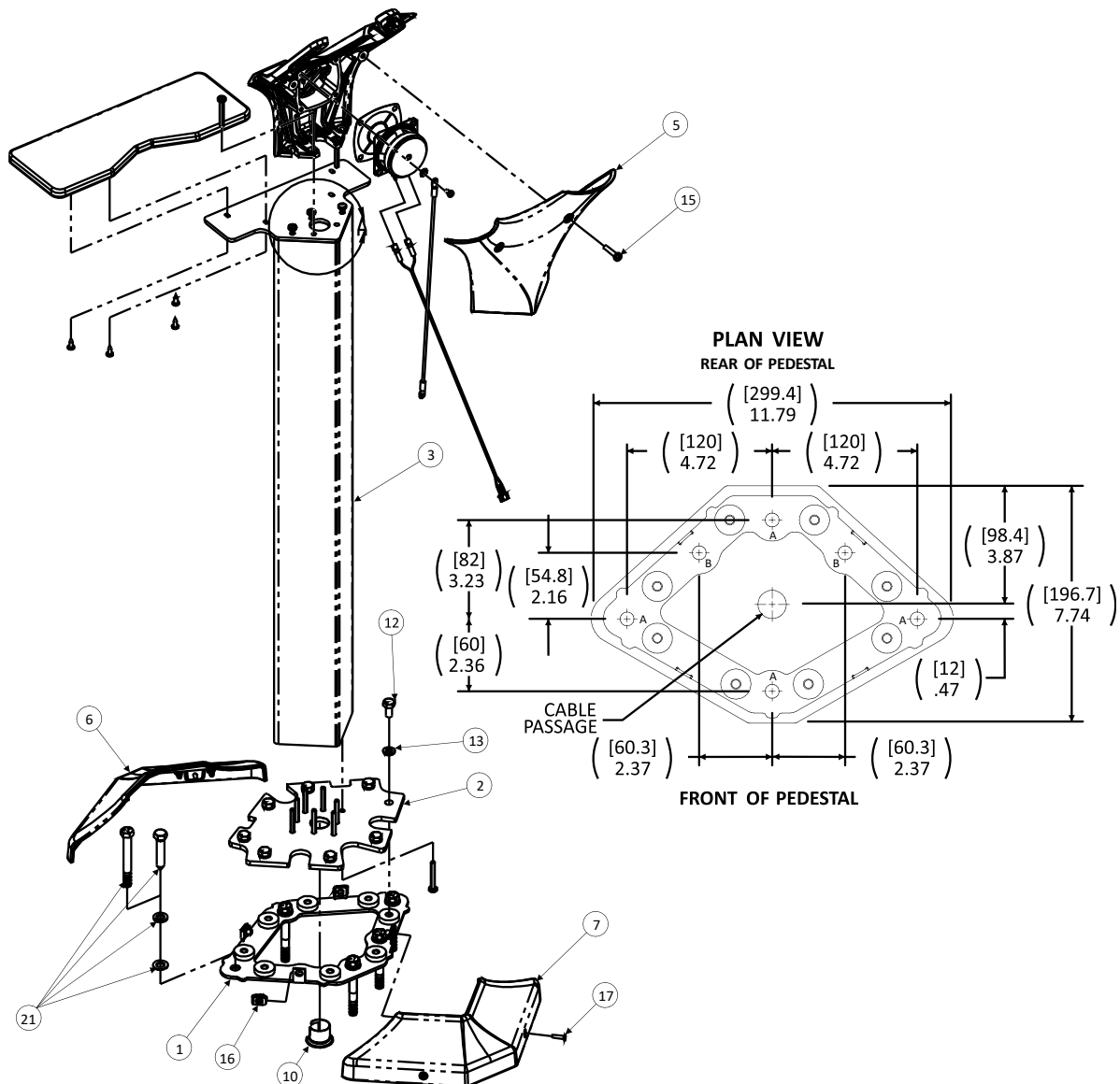
#	QTY	P/N	DESCRIPTION
1	1	286002802	Base sheet metal – Lower
2	1	286002806	Base sheet metal – Higher
3	1	286002857	Console extrusion machined
4	1	286002866	V-Support single assembly
5	1	286002852	V-Support back
6	1	286002854	Front base cover
7	1	286002855	Rear base cover
8	1	286002824	Speaker wire harness single
9	1	770047105	Speaker
10	1	741510403	3/4" anti-short bushing
11	13	821805407	PHTTS M5-,8 x 40 ZN THFM TRI
12	8	802408167	HHCS M8-1,25 x 16 CL10,9 ZN



#	QTY	P/N	DESCRIPTION
13	8	927158127	SWM M8 D-127A ZN
14	4	863040087	PHPMS M4-,7 x 8 ZN
15	2	813005257	PHPMS M5-,8 x 25 ZN
16	4	724520001	CON U M4-,7 TPH ZN
17	4	819304167	FHPMS M4-,7 x 16 ZN
18	1	286002860	Console table plate
19	1	286002832	Console table top
20	4	822332081	PHPTS 8 x .5 BO TYAB
21	5	286002800HW	Pedestal installation hardware
22	1	286002873	Speaker plate
23	1	01033	ETLW10 ANSI ZN
24	1	088500224	CBL, ground, wireway cover



T.10.066- 286002864 single pedestal assembly with table instructions

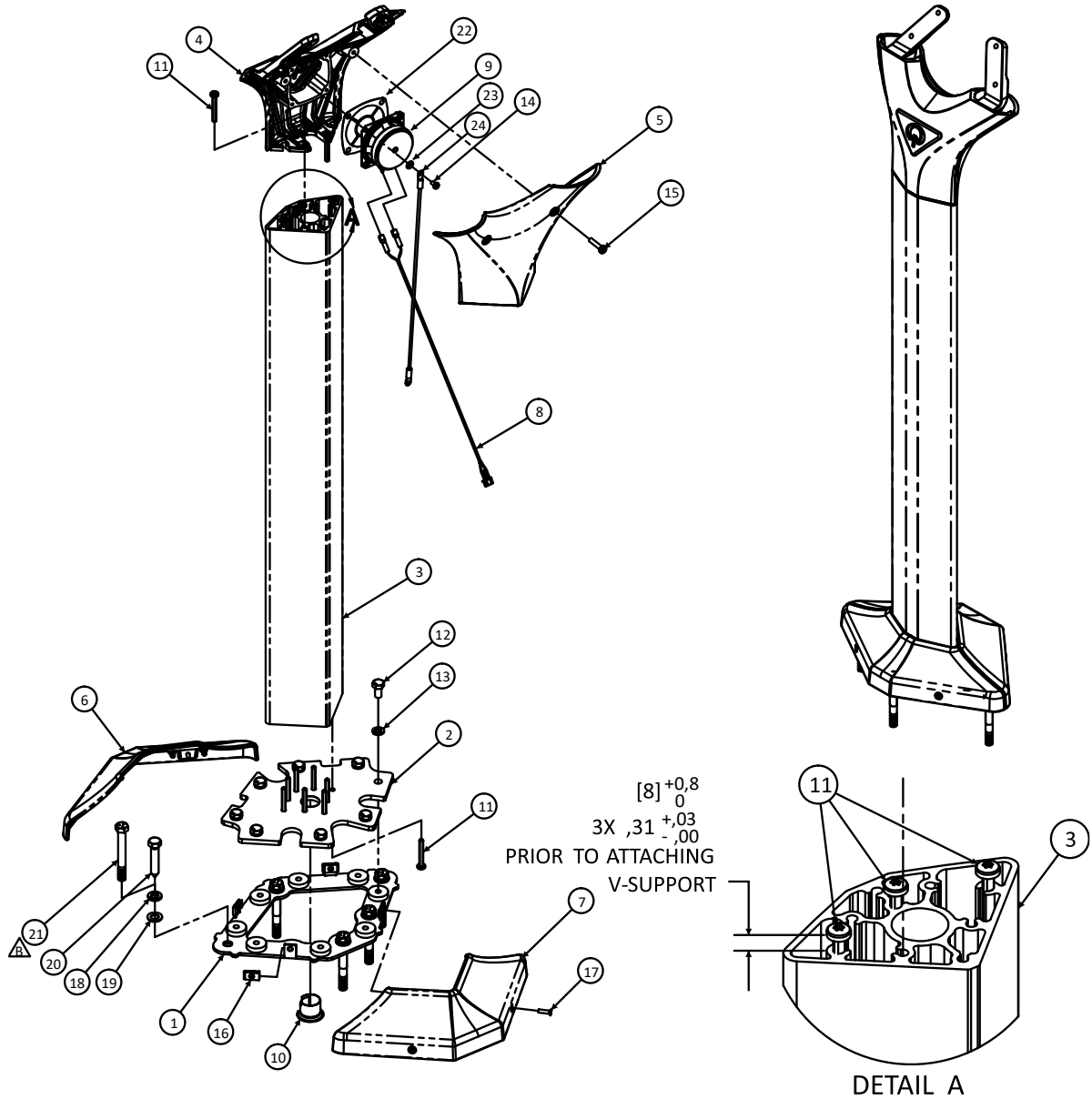


INSTALLATION INSTRUCTIONS

1. Un-pack pedestal.
2. Remove mounting hardware stretch wrapped to extrusion (item 3).
3. Remove V-Support back (item 5) secured by 2 PHPMS M5-.8 X 25 SCREWS (item 15).
4. Remove front & rear base covers (items 6 & 7) secured by 4 FHPMS M4-.7 X 16 ZN screws (item 17).
5. Position pedestal on the floor in the desired position and orientation.
NOTE: Please install the pedestal in a position far enough away from the ball rack to avoid potential damage caused by bowling balls falling from the ball rack.
6. Mark/transfer the mounting holes in base sheet metal - lower (item 1) to the floor. Note if the standard mounting hole positions marked 'A' in the plan view below interfere with the cable conduit in the floor, use both of the alternate positions marked 'B' in the plan view below for the supplied anchors.
7. Remove base sheet metal - lower (item 1) from base sheet metal - upper (item 2) secured with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
8. Position base sheet metal - lower (item 1) on the floor and install with the appropriate supplied anchors. For wood floors drill \varnothing 1/4 holes and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 21), SWM 3/8 ANSI ZN (item 21), and HHLB 3/8 X 2.00 ZN (item 21). For concrete floors drill \varnothing 3/8 holes to a minimum depth of 3-1/2 inches [89mm], clear the holes of all debris and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 21), SWM 3/8 ANSI ZN (item 21) and ANCR TB 3/8 X 3.00 ZN (item 21). Drive taper bolt into place leaving 3/16 inch [4.8mm] head clearance. Tighten taper bolt to minimum of 40FT-LB [54 Nm].
NOTE: extra flat washers FW 0.41 X 0.73 X 0.06 ZN are included for leveling purposes; if not needed discard.
9. Install console cables thru the anti-short bushing (item 10) and thru the extrusion (item 3).
10. Re-install pedestal on base sheet metal - lower and secure with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
11. Re-install front & rear base covers (items 6 & 7); secure using 4 FHPMS M4-.7 X 16 screws (item 17).
12. Install keyboard or LCD assembly and connect per instructions provided with keyboard or LCD.
13. Re-install V-Support back (item 5); secure using 2 PHPMS M5-.8 X 25 screws (item 15). Take care not to pinch any wires or cables.



T.10.040 – 286002800 single and 286002827 short single pedestal assembly parts



PARTS LIST

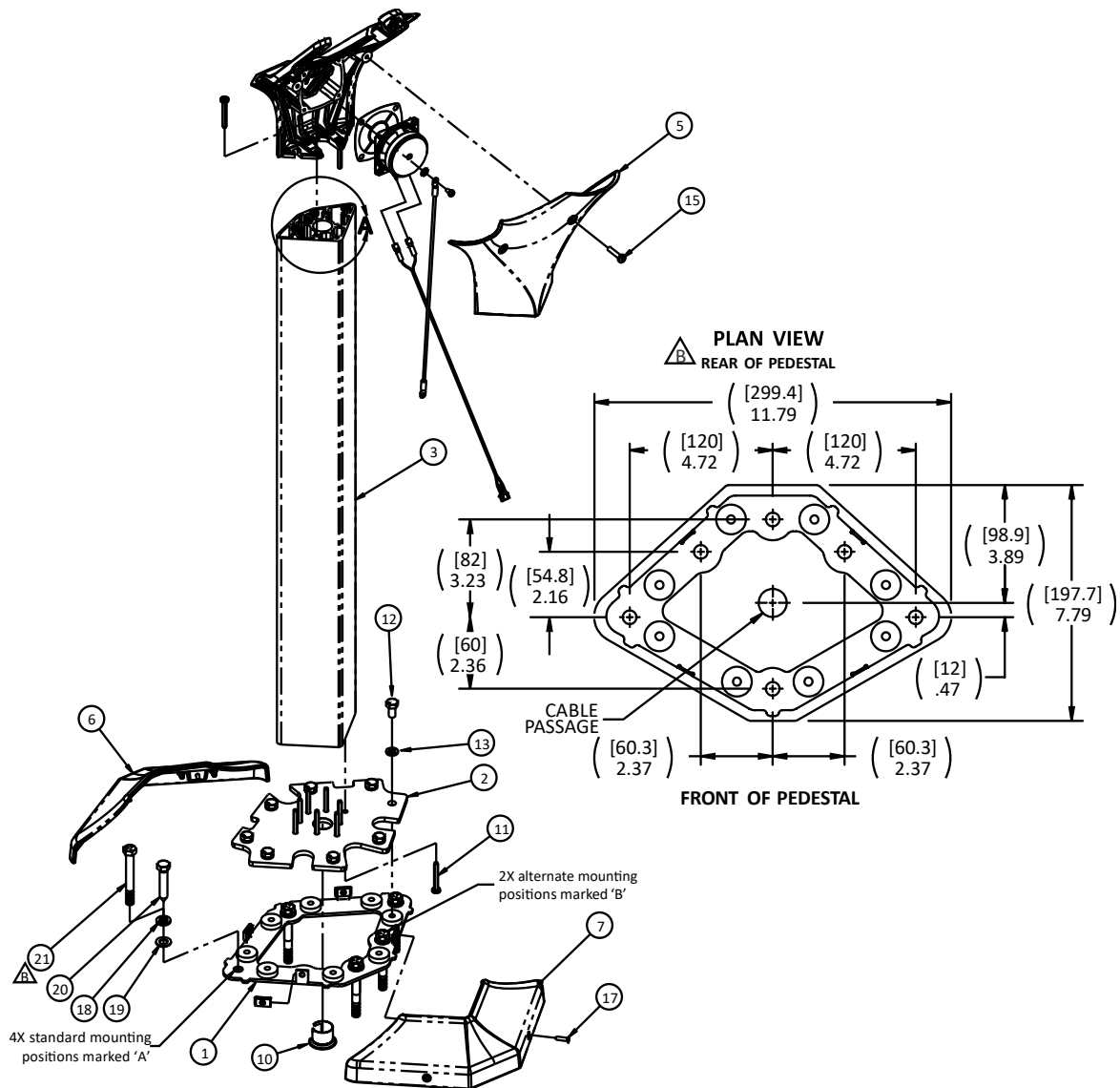
#	QTY	P/N	DESCRIPTION
1	1	286002802	Base sheet metal – Lower
2	1	286002806	Base sheet metal – Higher
3	1	286002814	Console extrusion machined
		286002826	Console extrusion short
4	1	286002820	V-Support single assembly
5	1	286002807	V-Support back
6	1	286002815	Front base cover
7	1	286002816	Rear base cover
8	1	286002824	Speaker wire harness single
9	1	770047105	Speaker
10	1	741510403	3/4" anti-short bushing
11	13	821805407	PHTTS M5-,8 x 40 ZN THFM TRI
12	8	802408167	HHCS M8-1,25 x 16 CL10,9 ZN



#	QTY	P/N	DESCRIPTION
13	8	927158127	SWM M8 D-127A ZN
14	4	863040087	PHPMS M4-,7 x 8 ZN
15	2	813005257	PHPMS M5-,8 x 25 ZN
16	4	724511006	CON U 8-32 STD BP
17	4	819304167	FHPMS M4-,7 x 16 ZN
18	5	851164007	SWM 3/8 ANSI ZN
19	9	948767132	FW 0,41 x 0,73 x 0,06 ZN
20	5	810564420	HHLB 3/8 x 2,00 ZN
21	5	709007063	ANCR TB 3/8 x 3,00 ZN
22	1	286002873	Speaker plate
23	1	01033	ETLW10 ANSI ZN
24	1	088500224	CBL, ground wireway cover



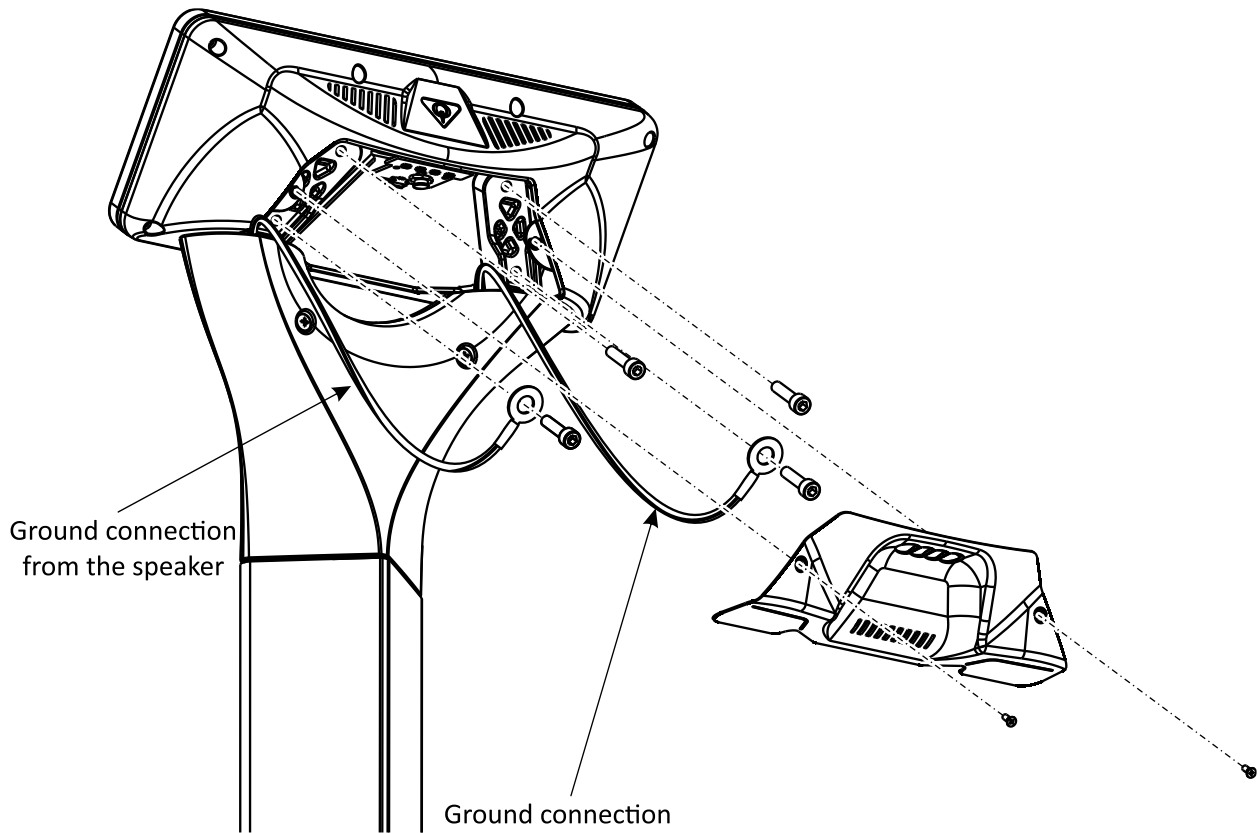
T.10.041 – 286002800 single and 286002827 short single pedestal assembly instructions



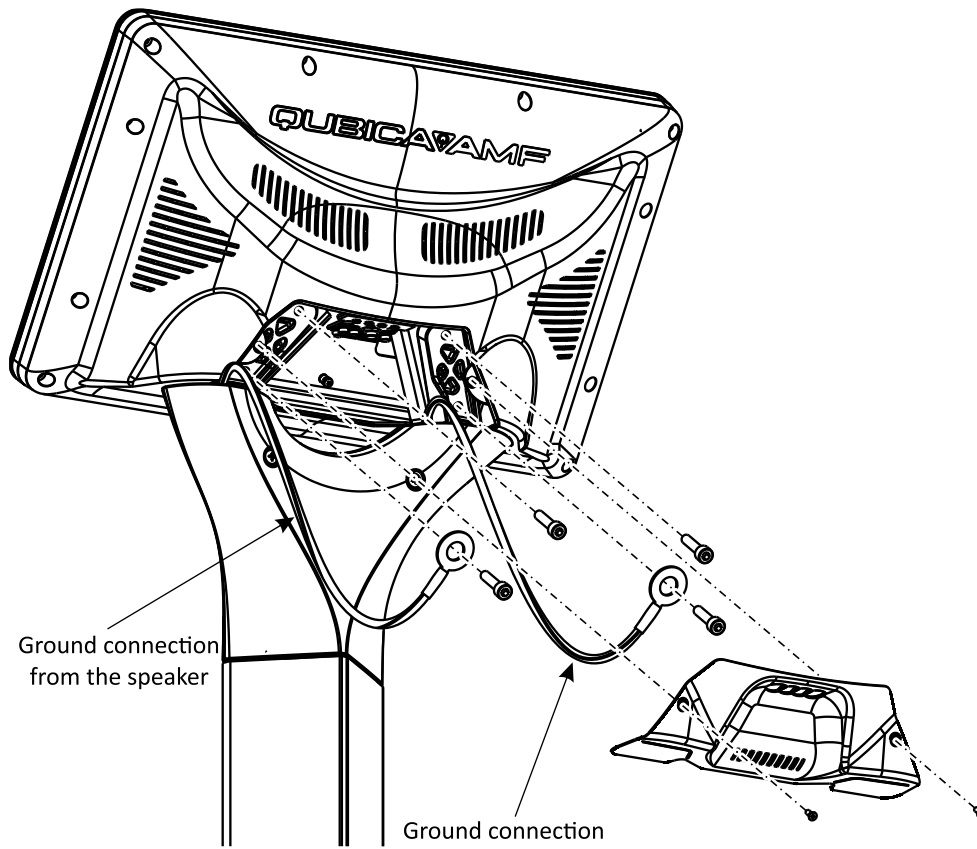
INSTALLATION INSTRUCTIONS

1. Un-pack pedestal,
2. Remove mounting hardware stretch wrapped to extrusion (item 3).
3. Remove V-Support back (item 5) secured by 2 PHPMS M5-.8 X 25 SCREWS (item 15).
4. Remove front & rear base covers (items 6 & 7) secured by 4 FHPMS M4-.7 X 16 ZN screws (item 17).
5. Position pedestal on the floor in the desired position and orientation.
NOTE: Please install the pedestal in a position far enough away from the ball rack to avoid potential damage caused by bowling balls falling from the ball rack.
6. Mark/transfer the mounting holes in base sheet metal - lower (item 1) to the floor.
NOTE: if the standard mounting hole positions marked 'A' in the plan view below interfere with the cable conduit in the floor, use both of the alternate positions marked 'B' in the plan view below for the supplied anchors.
7. Remove base sheet metal - lower (item 1) from base sheet metal - upper (item 2) secured with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
8. Position base sheet metal - lower (item 1) on the floor and install with the appropriate supplied anchors. For wood floors drill \varnothing 1/4 holes and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 19), SWM 3/8 ANSI ZN (item 18), and HHLB 3/8 X 2.00 ZN (item 20). For concrete floors drill \varnothing 3/8 holes to a minimum depth of 3-1/2 inches [89mm], clear the holes of all debris and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 19), SWM 3/8 ANSI ZN (item 18) and ANCR TB 3/8 X 3.00 ZN (item 21). Drive taper bolt into place leaving 3/16 inch [4.8mm] head clearance. Tighten taper bolt to minimum of 40FT-LB [54 Nm].
NOTE: extra flat washers FW 0.41 X 0.73 X 0.06 ZN are included for leveling purposes; if not needed discard.
9. Install console cables thru the anti-short bushing (item 10) and thru the extrusion (item 3).
10. Re-install pedestal on base sheet metal - lower and secure with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
11. Re-install front & rear base covers (items 6 & 7); secure using 4 FHPMS M4-.7 X 16 screws (item 17).
12. Install keyboard or LCD assembly and connect per instructions provided with keyboard or LCD.
13. Re-install V-Support back (item 5); secure using 2 PHPMS M5-.8 X 25 screws (item 15). Take care not to pinch any wires or cables.

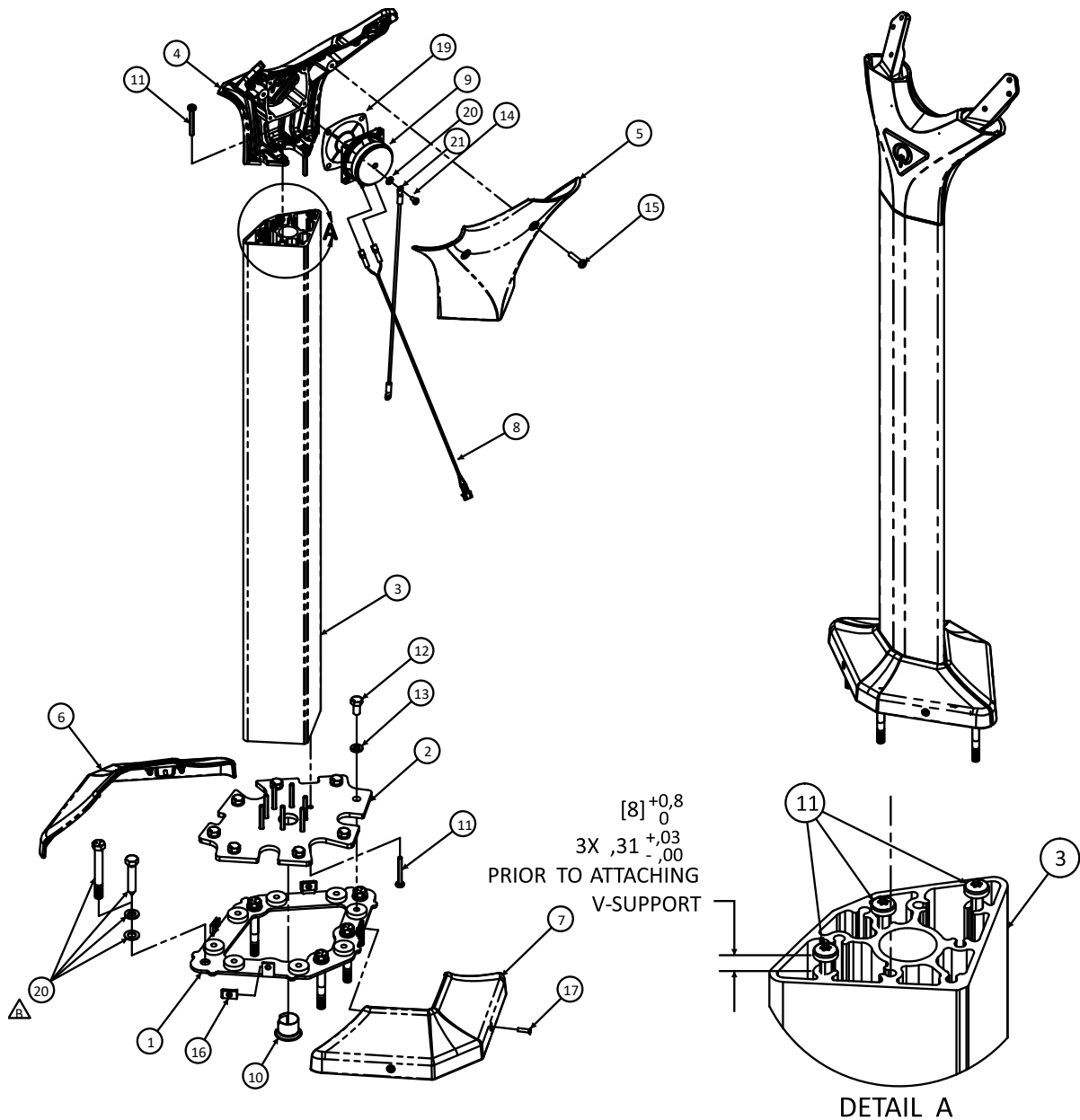
T.10.055 – How to mount an EasyKey console on the pedestal – single



T.10.056 – How to mount a SuperTouch console on the pedestal – single



T.10.062- 286002862 dual pedestal assembly parts



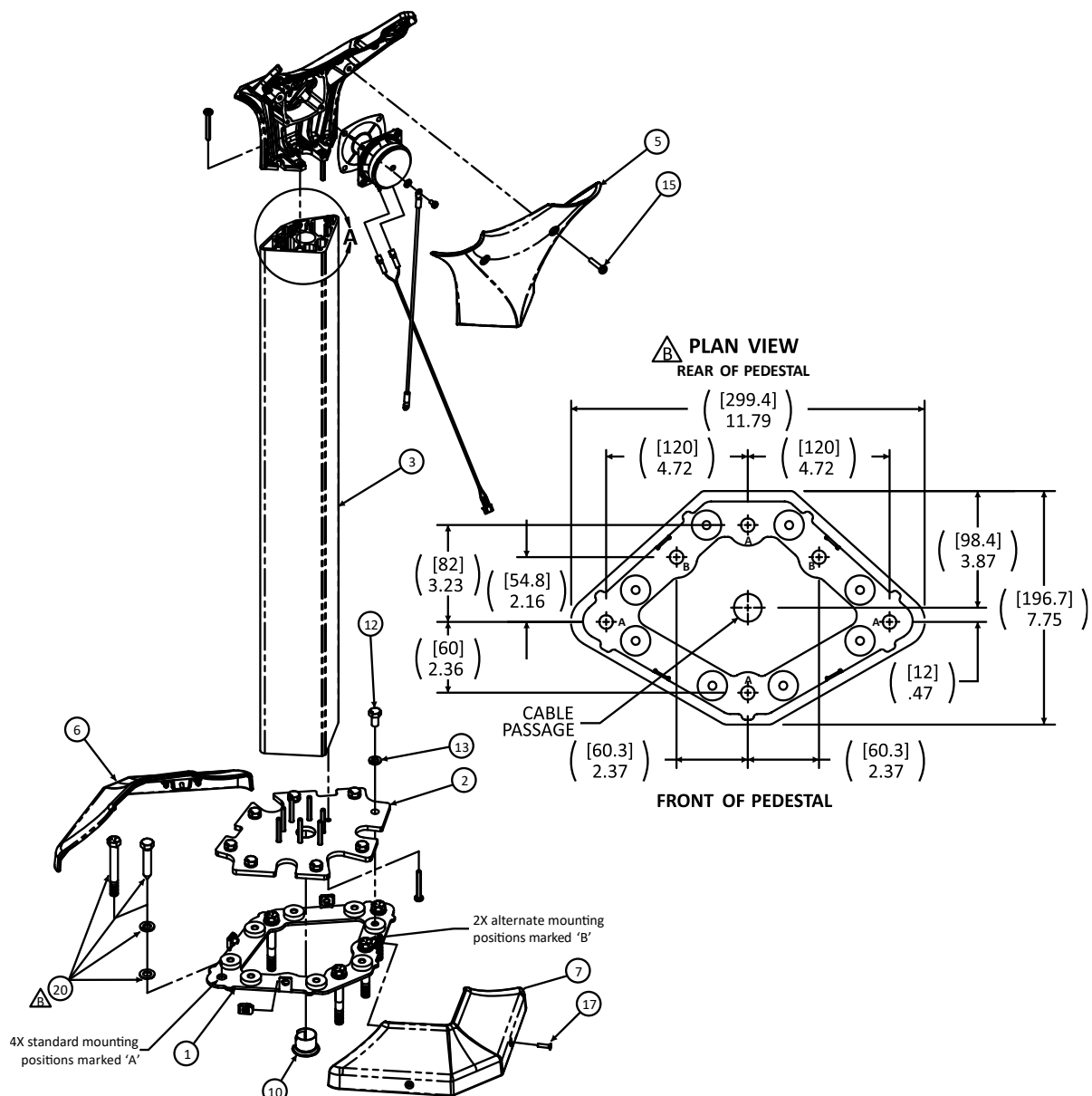
PARTS LIST

#	QTY	P/N	DESCRIPTION
1	1	286002802	Base sheet metal – Lower
2	1	286002806	Base sheet metal – Higher
3	1	286002857	Console extrusion machined
4	1	286002867	V-Support dual assembly
5	1	286002852	V-Support back
6	1	286002854	Front base cover
7	1	286002855	Rear base cover
8	1	286002819	Speaker wire harness
9	1	770047105	Speaker
10	1	741510403	3/4" anti-short bushing
11	13	821805407	PHTTS M5-,8 x 40 ZN THFM TRI

#	QTY	P/N	DESCRIPTION
12	8	802408167	HHCS M8-1,25 x 16 CL10,9 ZN
13	8	927158127	SWM M8 C-127A ZN
14	4	863040087	PHPMS M4-,7 x 8 ZN
15	2	813005257	PHPMS M5-,8 x 25 ZN
16	4	724520001	CON U M4-,7 TPH ZN
17	4	819304167	FHPMS M4-,7 x 16 ZN
18	5	286002800HW	Pedestal installation hardware
19	1	286002873	Speaker plate
20	1	01033	ETLW10 ANSI ZN
21	1	088500224	CBL, ground, wireway cover

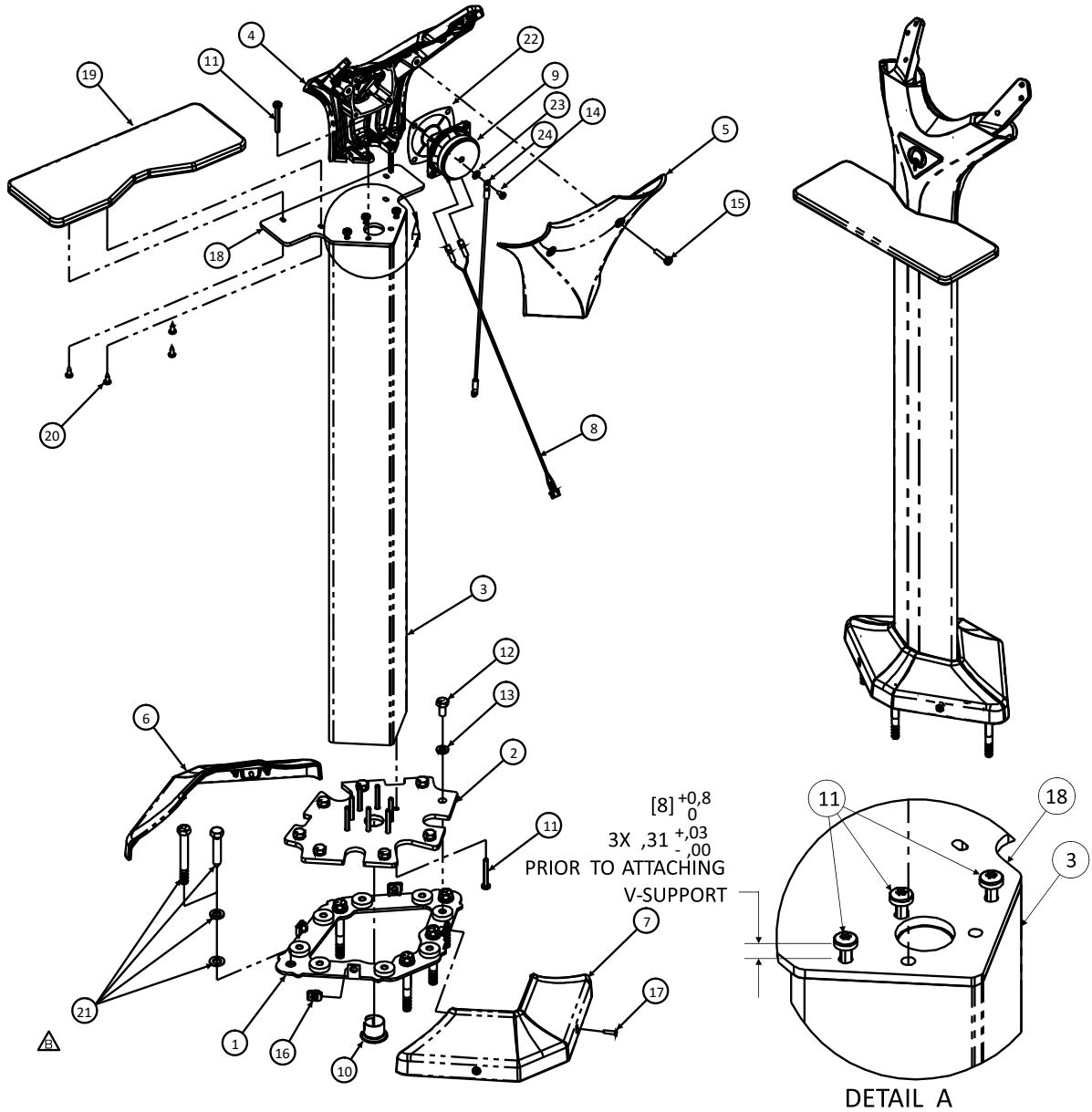


T.10.063- 286002862 dual pedestal assembly instructions

**INSTALLATION INSTRUCTIONS**

1. Un-pack pedestal,
2. Remove mounting hardware stretch wrapped to extrusion (item 3).
3. Remove V-Support back (item 5) secured by 2 PHPMS M5-.8 X 25 SCREWS (item 15).
4. Remove front & rear base covers (items 6 & 7) secured by 4 FHPMS M4-.7 X 16 ZN screws (item 17).
5. Position pedestal on the floor in the desired position and orientation. NOTE: Please install the pedestal in a position far enough away from the ball rack to avoid potential damage caused by bowling balls falling from the ball rack.
6. Mark/transfer the mounting holes in base sheet metal - lower (item 1) to the floor.
NOTE: if the standard mounting hole positions marked 'A' in the plan below interfere with the cable conduit in the floor, use both of the alternate positions marked 'B' in the plan view below for the supplied anchors.
7. Remove base sheet metal - lower (item 1) from base sheet metal - upper (item 2) secured with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
8. Position base sheet metal - lower (item 1) on the floor and install with the appropriate supplied anchors. For wood floors drill \varnothing 1/4 holes and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 20), SWM 3/8 ANSI ZN (item 20), and HHLB 3/8 X 2.00 ZN (item 20). For concrete floors drill \varnothing 3/8 holes to a minimum depth of 3-1/2 inches [89mm], clear the holes of all debris and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 20), SWM 3/8 ANSI ZN (item 20) and ANCR TB 3/8 X 3.00 ZN (item 20). Drive taper bolt into place leaving 3/16 inch [4.8mm] head clearance. Tighten taper bolt to minimum of 40FT-LB [54 Nm].
NOTE: extra flat washers FW 0.41 X 0.73 X 0.06 ZN are included for leveling purposes; if not needed discard.
9. Install console cables thru the anti-short bushing (item 10) and thru the extrusion (item 3).
10. Re-install pedestal on base sheet metal - lower and secure with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
11. Re-install front & rear base covers (items 6 & 7); secure using 4 FHPMS M4-.7 X 16 screws (item 17).
12. Install keyboard or LCD assembly and connect per instructions provided with keyboard or LCD.
13. Re-install V-Support back (item 5); secure using 2 PHPMS M5-.8 X 25 screws (item 15). Take care not to pinch any wires or cables.

T.10.067- 286002865 dual pedestal assembly with table parts



PARTS LIST

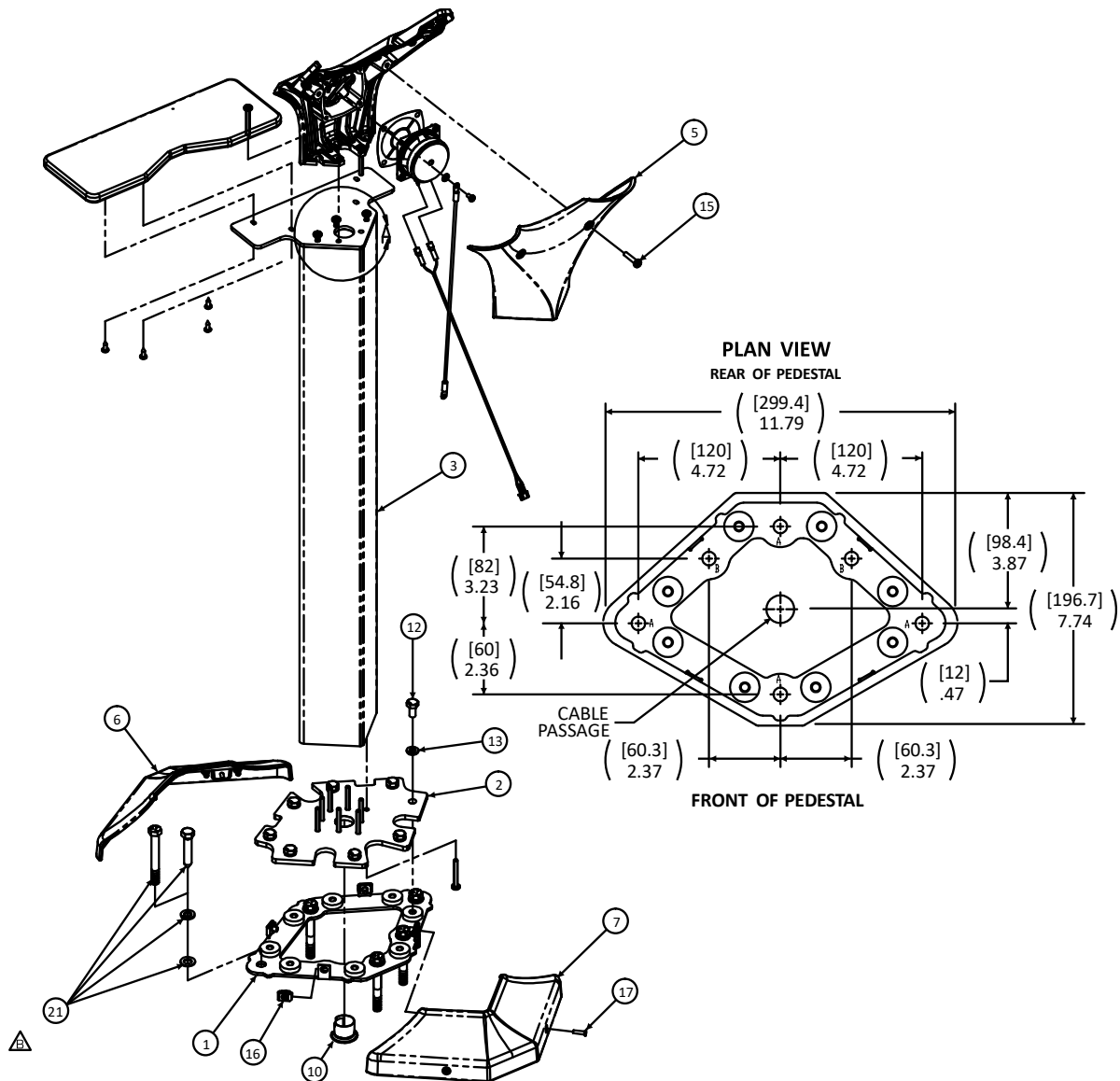
#	QTY	P/N	DESCRIPTION
1	1	286002802	Base sheet metal – Lower
2	1	286002806	Base sheet metal – Higher
3	1	286002857	Console extrusion machined
4	1	286002866	V-Support single assembly
5	1	286002852	V-Support back
6	1	286002854	Front base cover
7	1	286002855	Rear base cover
8	1	286002819	Speaker wire harness
9	1	770047105	Speaker
10	1	741510403	3/4" anti-short bushing
11	13	821805407	PHTTS M5-,8 x 40 ZN THFM TRI
12	8	802408167	HHCS M8-1,25 x 16 CL10,9 ZN



#	QTY	P/N	DESCRIPTION
13	8	927158127	SWM M8 D-127A ZN
14	4	863040087	PHPMS M4-,7 x 8 ZN
15	2	813005257	PHPMS M5-,8 x 25 ZN
16	4	724520001	CON U M4-,7 TPH ZN
17	4	819304167	FHPMS M4-,7 x 16 ZN
18	1	286002860	Console table plate
19	1	286002832	Console table top
20	4	822332081	PHPTS 8 x .5 BO TYAB
21	5	286002800HW	Pedestal installation hardware
22	1	286002873	Speaker plate
23	1	01033	ETLW10 ANSI ZN
24	1	088500224	CBL, ground, wireway cover



T.10.068- 286002865 dual pedestal assembly with table instructions

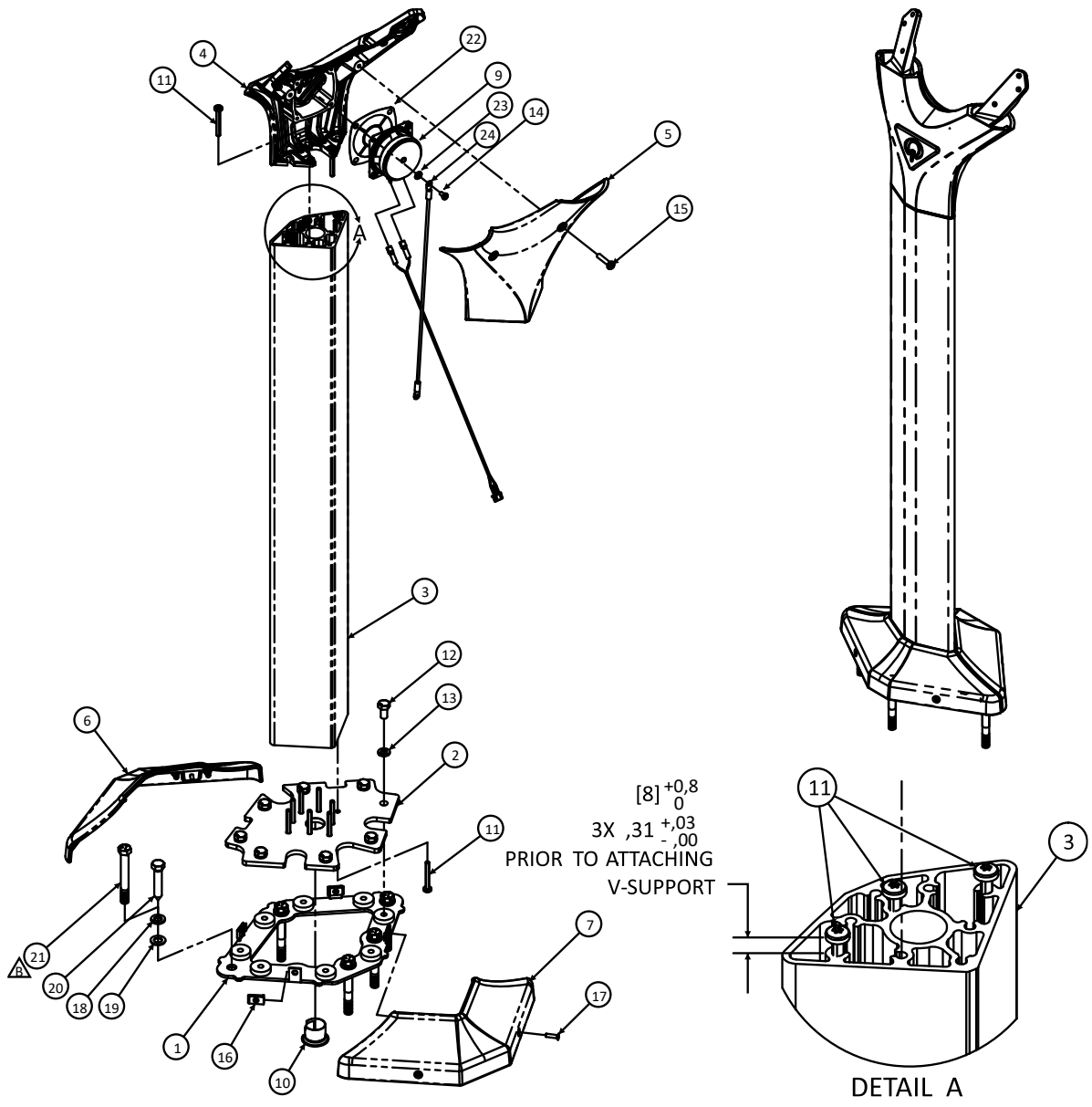


INSTALLATION INSTRUCTIONS

1. Un-pack pedestal.
2. Remove mounting hardware stretch wrapped to extrusion (item 3).
3. Remove V-Support back (item 5) secured by 2 PHPMS M5-.8 X 25 SCREWS (item 15).
4. Remove front & rear base covers (items 6 & 7) secured by 4 FHPMS M4-.7 X 16 ZN screws (item 17).
5. Position pedestal on the floor in the desired position and orientation.
NOTE: Please install the pedestal in a position far enough away from the ball rack to avoid potential damage caused by bowling balls falling from the ball rack.
6. Mark/transfer the mounting holes in base sheet metal - lower (item 1) to the floor.
NOTE: if the standard mounting hole positions marked 'A' in the plan view below interfere with the cable conduit in the floor, use both of the alternate positions marked 'B' in the plan view below for the supplied anchors.
7. Remove base sheet metal - lower (item 1) from base sheet metal - upper (item 2) secured with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
8. Position base sheet metal - lower (item 1) on the floor and install with the appropriate supplied anchors. For wood floors drill \varnothing 1/4 holes and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 21), SWM 3/8 ANSI ZN (item 21), and HHLB 3/8 X 2.00 ZN (item 21). For concrete floors drill \varnothing 3/8 holes to a minimum depth of 3-1/2 inches [89mm], clear the holes of all debris and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 21), SWM 3/8 ANSI ZN (item 21) and ANCR TB 3/8 X 3.00 ZN (item 21). Drive taper bolt into place leaving 3/16 inch [4.8mm] head clearance. Tighten taper bolt to minimum of 40FT-LB [54 Nm].
NOTE: extra flat washers FW 0.41 X 0.73 X 0.06 ZN are included for leveling purposes; if not needed discard.
9. Install console cables thru the anti-short bushing (item 10) and thru the extrusion (item 3).
10. Re-install pedestal on base sheet metal - lower and secure with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
11. Re-install front & rear base covers (items 6 & 7); secure using 4 FHPMS M4-.7 X 16 screws (item 17).
12. Install keyboard or LCD assembly and connect per instructions provided with keyboard or LCD.
13. Re-install V-Support back (item 5); secure using 2 PHPMS M5-.8 X 25 screws (item 15). Take care not to pinch any wires or cables.



T.10.042 – 286002801 dual pedestal assembly parts



PARTS LIST

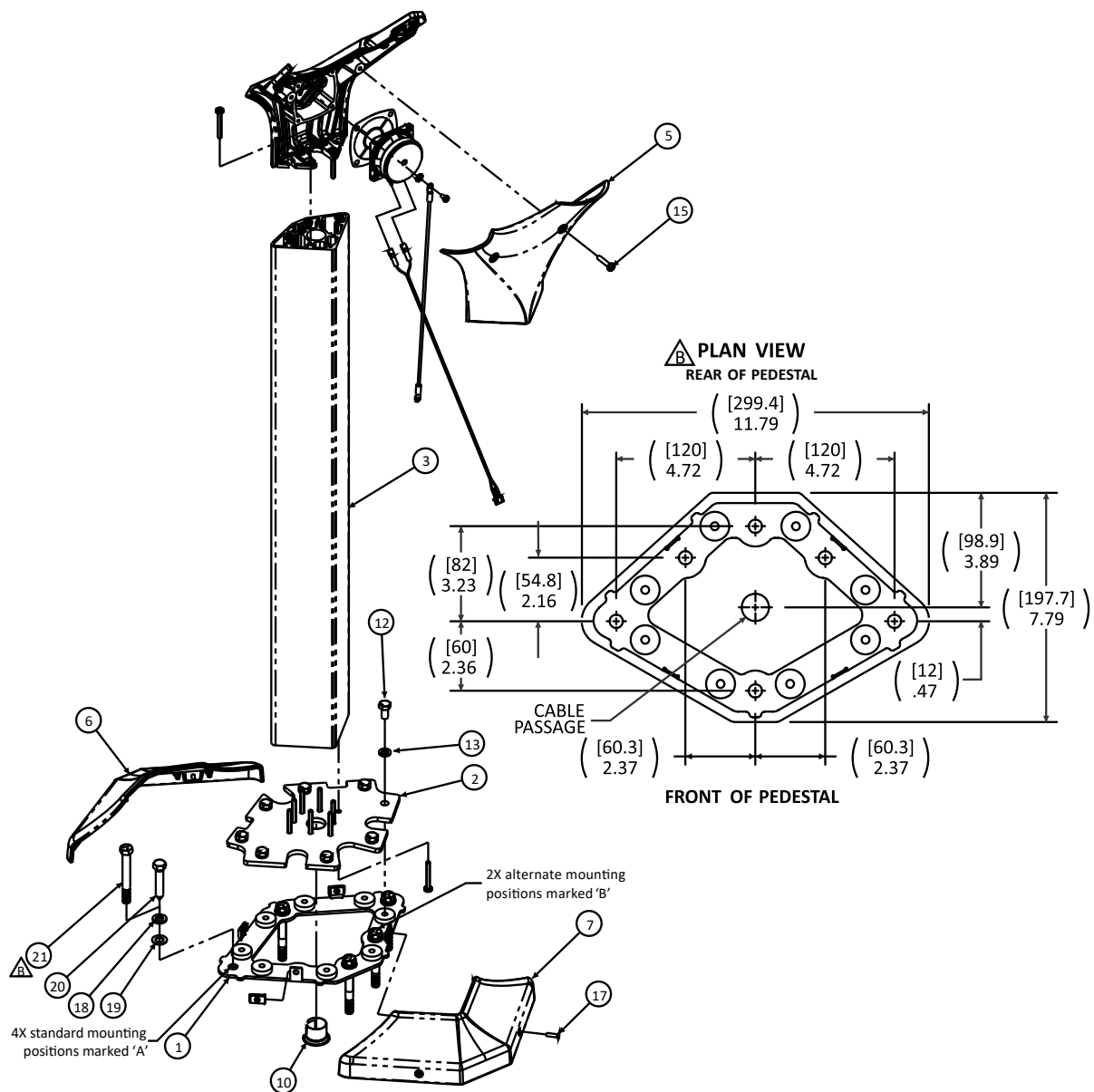
#	QTY	P/N	DESCRIPTION
1	1	286002802	Base sheet metal – Lower
2	1	286002806	Base sheet metal – Higher
3	1	286002814	Console extrusion machined
4	1	286002821	V-Support dual assembly
5	1	286002807	V-Support back
6	1	286002815	Front base cover
7	1	286002816	Rear base cover
8	1	286002819	Speaker wire harness
9	1	770047105	Speaker
10	1	741510403	3/4" anti-short bushing
11	13	821805407	PHTTS M5-,8 x 40 ZN THFM TRI
12	8	802408167	HHCS M8-1,25 x 16 CL10,9 ZN



#	QTY	P/N	DESCRIPTION
13	8	927158127	SWM M8 D-127A ZN
14	4	863040087	PHPMS M4-,7 x 8 ZN
15	2	813005257	PHPMS M5-,8 x 25 ZN
16	4	724511006	CON U 8-32 STD BP
17	4	819304167	FHPMS M4-,7 x 16 ZN
18	5	951164007	SWM 3/8 ANSI ZN
19	9	948767132	FW 0,41 x 0,73 x 0,06 ZN
20	5	810564420	HHLB 3/8 x 2,00 ZN
21	5	709007063	ANCR TB 3/8 x 3,0 ZN
22	1	286002873	Speaker plate
23	1	01033	ETLW10 ANSI ZN
24	1	088500224	CBL, ground, wireway cover



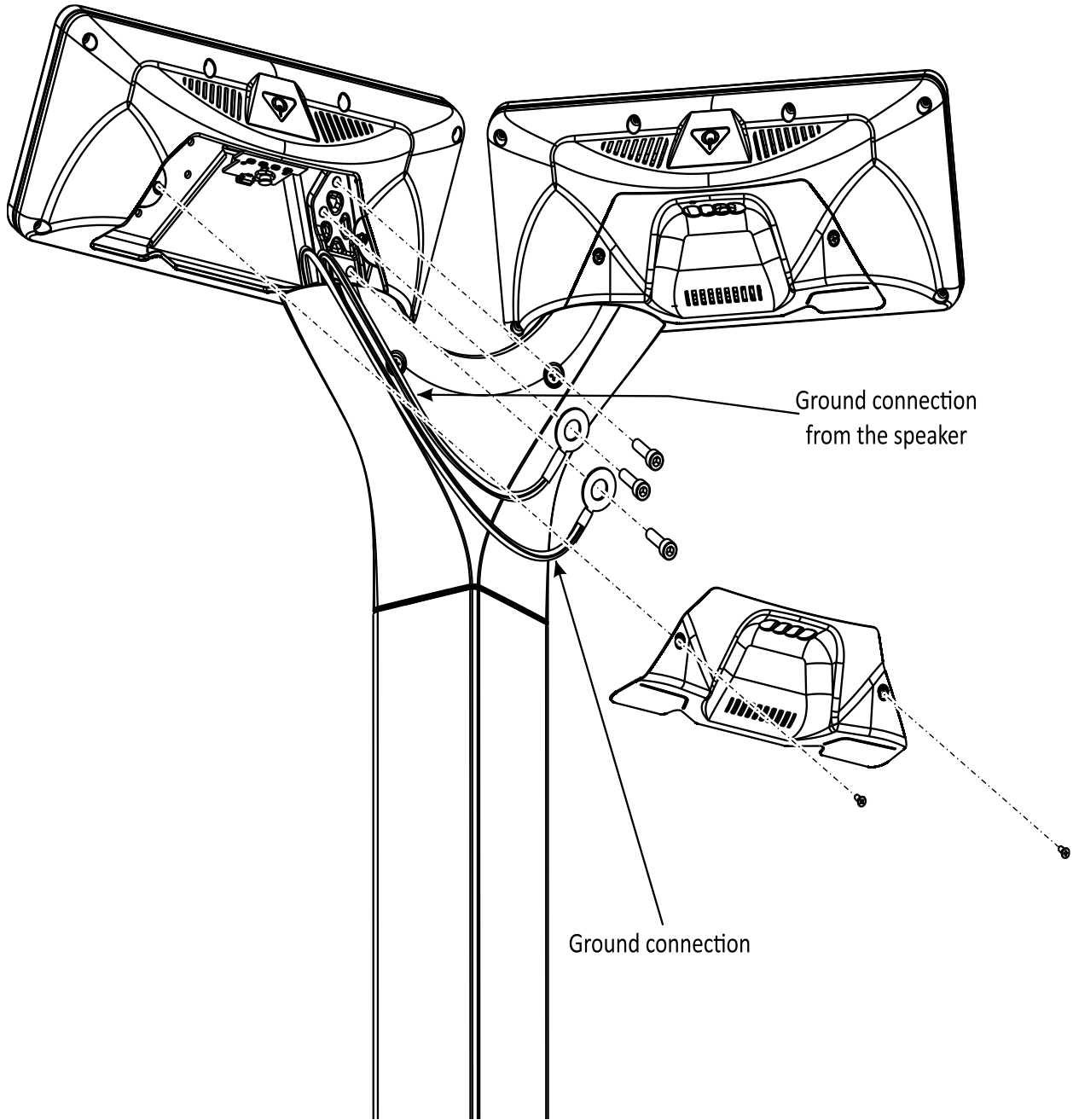
T.10.043 – 286002801 dual pedestal assembly instructions

**INSTALLATION INSTRUCTIONS**

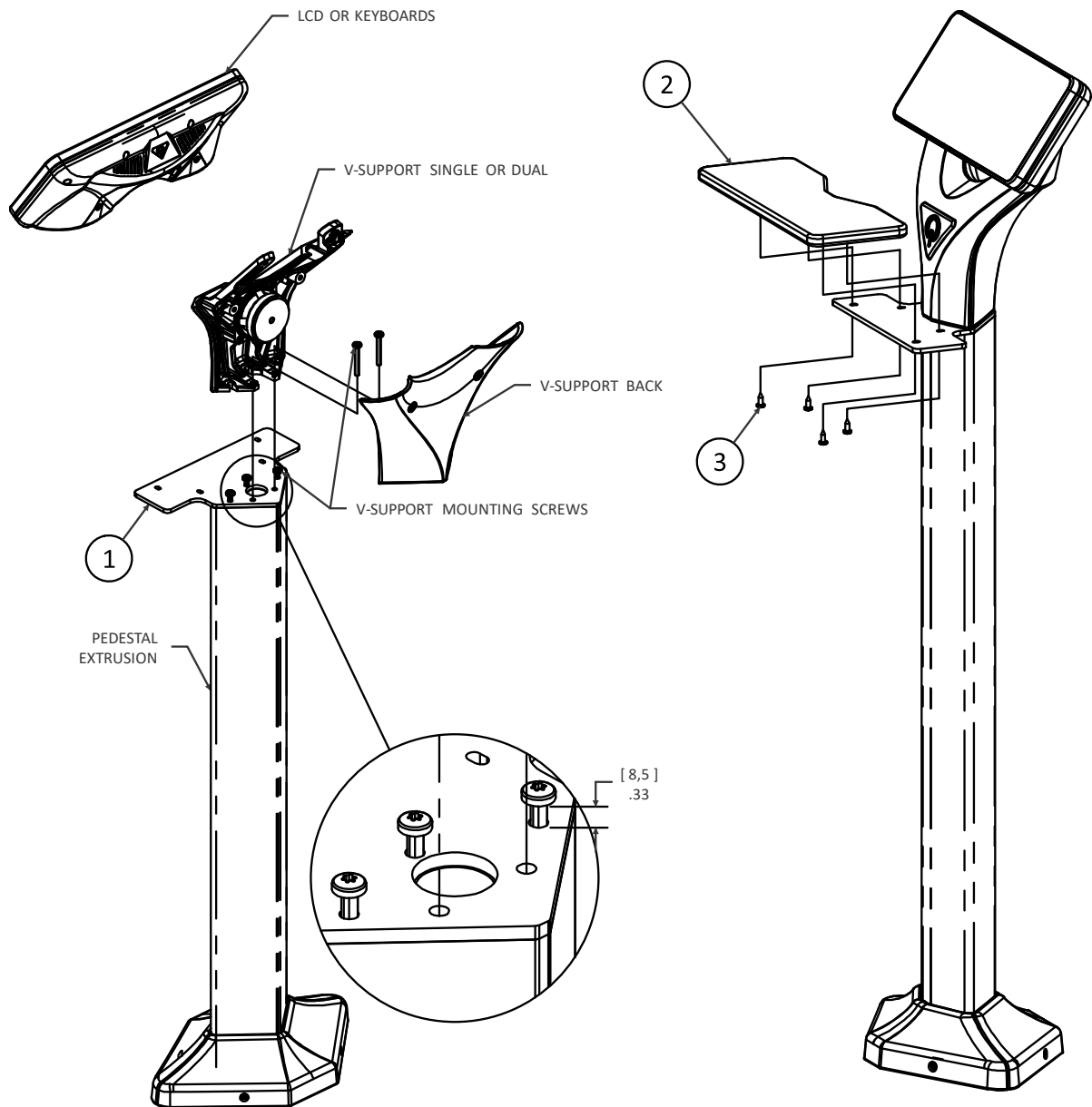
1. Un-pack pedestal,
2. Remove mounting hardware stretch wrapped to extrusion (item 3).
3. Remove V-Support back (item 5) secured by 2 PHPMS M5-.8 X 25 SCREWS (item 15).
4. Remove front & rear base covers (items 6 & 7) secured by 4 FHPMS M4-.7 X 16 ZN screws (item 17).
5. Position pedestal on the floor in the desired position and orientation.
NOTE: Please install the pedestal in a position far enough away from the ball rack to avoid potential damage caused by bowling balls falling from the ball rack.
6. Mark/transfer the mounting holes in base sheet metal - lower (item 1) to the floor. **NOTE:** if the standard mounting hole positions marked 'A' in the plan below interfere with the cable conduit in the floor, use both of the alternate positions marked 'B' in the plan view below for the supplied anchors.
7. Remove base sheet metal - lower (item 1) from base sheet metal - upper (item 2) secured with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
8. Position base sheet metal - lower (item 1) on the floor and install with the appropriate supplied anchors. For wood floors drill \varnothing 1/4 holes and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 19), SWM 3/8 ANSI ZN (item 18), and HHLB 3/8 X 2.00 ZN (item 20). For concrete floors drill \varnothing 3/8 holes to a minimum depth of 3-1/2 inches [89mm], clear the holes of all debris and secure using 4 or 5 each of FW 0.41 X 0.73 X 0.06 ZN (item 19), SWM 3/8 ANSI ZN (item 18) and ANCR TB 3/8 X 3.00 ZN (item 21). Drive taper bolt into place leaving 3/16 inch [4.8mm] head clearance. Tighten taper bolt to minimum of 40FT-LB [54 Nm].
NOTE: extra flat washers FW 0.41 X 0.73 X 0.06 ZN are included for leveling purposes; if not needed discard.
9. Install console cables thru the anti-short bushing (item 10) and thru the extrusion (item 3).
10. Re-install pedestal on base sheet metal - lower and secure with 8 each of HHCS M5-.8 X 16 (item 12) & SWM M8 D-127A ZN (item 13).
11. Re-install front & rear base covers (items 6 & 7); secure using 4 FHPMS M4-.7 X 16 screws (item 17).
12. Install keyboard or LCD assembly and connect per instructions provided with keyboard or LCD.
13. Re-install V-Support back (item 5); secure using 2 PHPMS M5-.8 X 25 screws (item 15). Take care not to pinch any wires or cables.



T.10.057 – How to mount the EasyKey consoles on the pedestal – twin



T.10.069- 286002830 and 286002868 parts and instructions



PARTS LIST

#	QTY	P/N	DESCRIPTION
1	1	286002831	Console table plate (included in 286002830)
		286002860	Console table plate (included in 286002868)
2	1	286002832	Console table top
3	1	822332081	PHPTS 8 x ,50 B0 TYAP

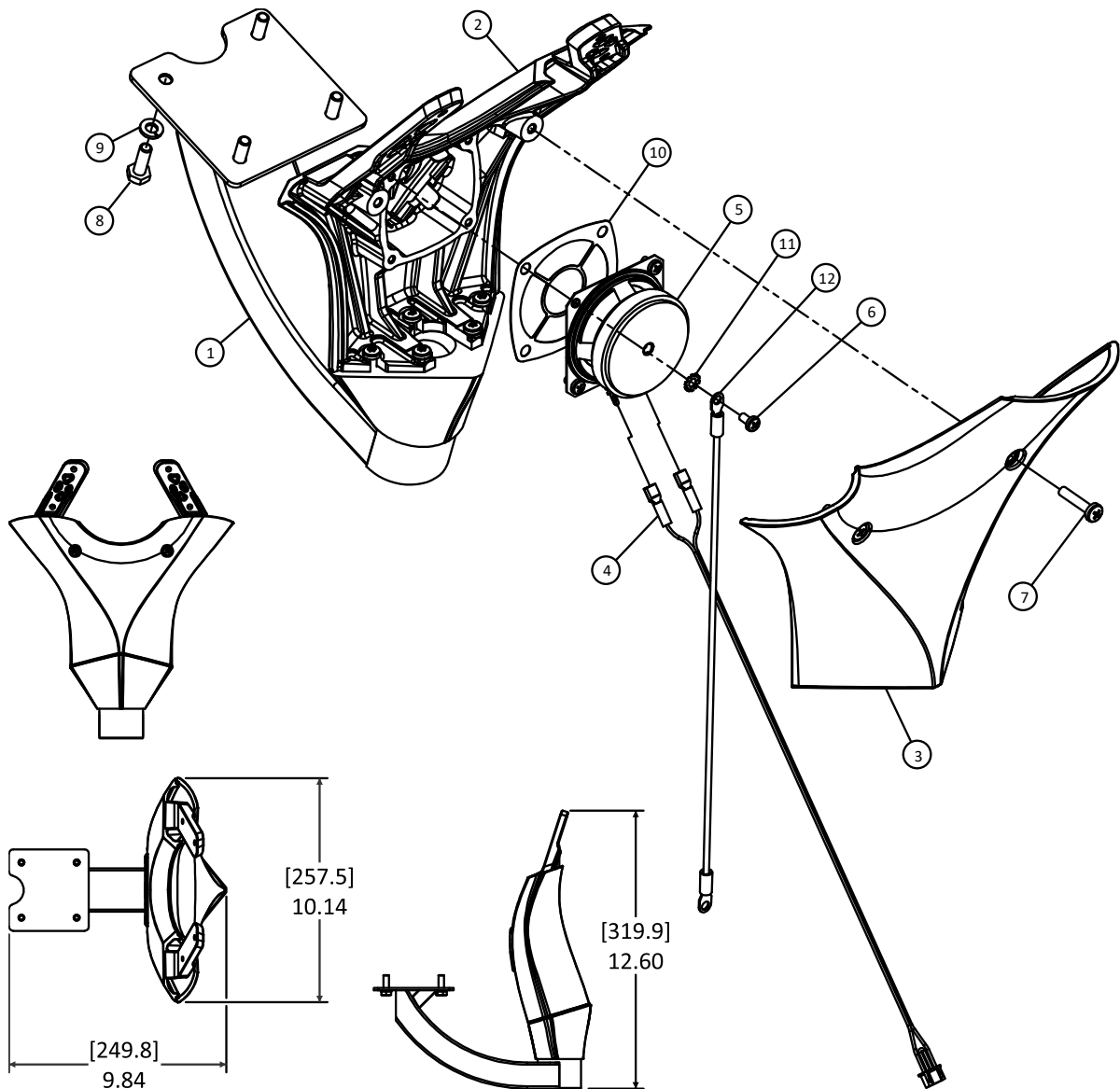
INSTALLATION INSTRUCTIONS

1. Remove V-Support back.
2. Remove LCD or keyboard if already installed.
3. Remove V-support single or dual.
4. Remove all 5 V-support mounting screws.
5. Locate console table plate (item 1) on the pedestal extrusion as shown.
6. Re-install the front 3 of 5 V-support mounting screws thru the table plate into the pedestal extrusion. Set the screw head height of these 3 screws to .33 (8.5mm) above the table plate, as shown.
7. Re-install the single or dual V-support on top of the table plate and secure loosely with the remaining 2 V-support mounting screws.
8. Align the V-support and table plate with the pedestal extrusion and tighten all 5 V-support mounting screws.
9. Install table top (item 2) and secure, using the provided 4 screws (item 3).
10. Re-install LCD or keyboard if previously removed.
11. Re-install the back cover of the pedestal.

NOTE: The 286002868 table assembly has to be used with 286002861, 286002862, 286002863, or as a replacement on 286002864 or 286002865.



T.10.064- 286002869 BES X consoles table mount assembly



PARTS LIST

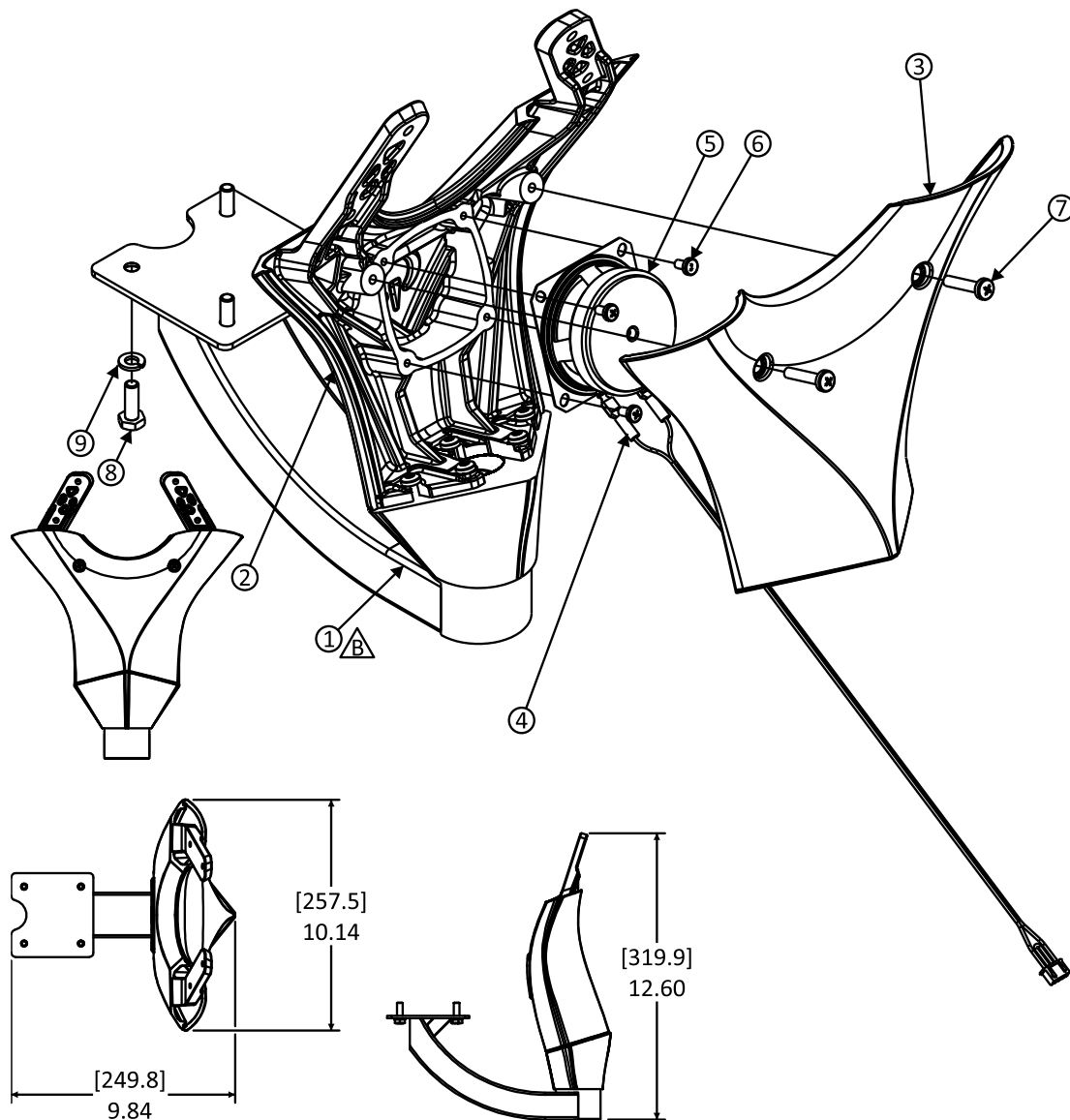
#	QTY	P/N	DESCRIPTION
1	1	289100113	Table-mount support arm W/SWVL
2	1	286002866	V-Support single assembly
3	1	286002852	V-Support back
4	1	286002824	Speaker wire harness single
5	1	770047105	Speaker
6	4	863040087	PHPMS M4-,7 x 8 ZN
7	2	813005257	PHPMS M5-,8 x 25 ZN
8	4	7010-002520-075	HHCS 1/4 – 20 x 0.75 GR5 ZN
9	4	7060-025046-006	SWM 1/4 ANSI ZN
10	1	286002873	Speaker plate
11	1	01033	ETLW 10 ANSI ZN
12	1	088500224	CBL, ground, wireway cover

INSTALLATION INSTRUCTIONS

1. Mount V-Support (item 2) to table mount swivel assembly (item 1). Secure with the screws provided with item 1.
2. Mount speaker (item 5) to V-Support (item 2). Secure with four screws (item 6). Include the static protection items: 11, 12, 13.
3. Attach wire harness (item 4) to speaker (item 5). Attach black wire harness terminal to speaker «-» terminal and attach red wire harness terminal to speaker «+» terminal. Protect wire harness by inserting connector and excess cable into the cable passage hole of the table mount swivel assembly.
4. Assemble V-Support back (item 3) to V-Support (item 2). Secure with two screws (item 7). Take care not to pinch speaker wire harness.



T.10.048 – 286002840 BES X console table mount assembly



PARTS LIST

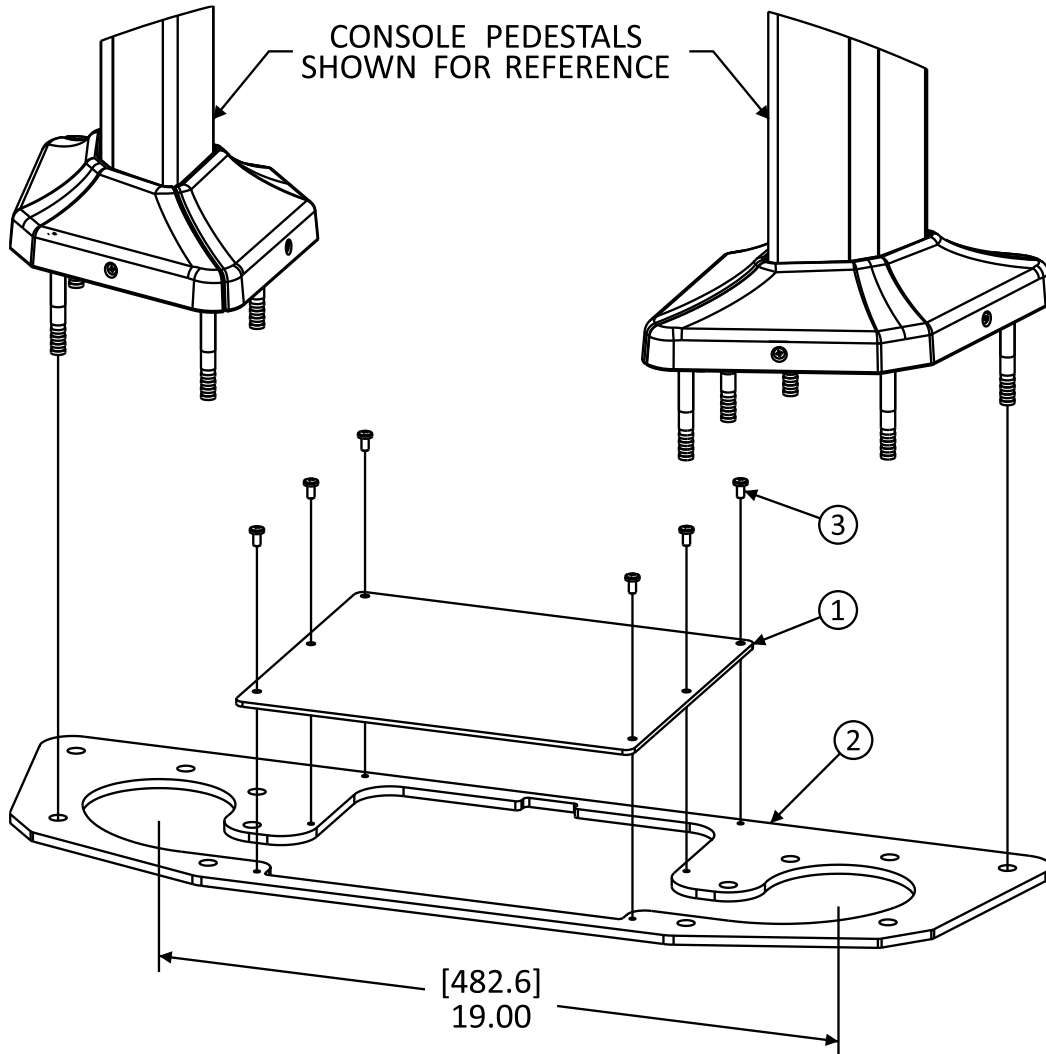
#	QTY	P/N	DESCRIPTION
1	1	289100113	Table-mount support arm W/SWVL
2	1	286002820	V-Support single assembly
3	1	286002807	V-Support back
4	1	286002824	Speaker wire harness single
5	1	770047105	Speaker
6	4	863040087	PHPMS M4-,7 x 8 ZN
7	2	813005257	PHPMS M5-,8 x 25 ZN
8	4	7010-002520-075	HHCS 1/4 – 20 x 0.75 GR5 ZN
9	4	7060-025046-006	SWM 1/4 ANSI ZN

INSTALLATION INSTRUCTIONS

1. Mount V-Support (item 2) to table mount swivel assembly (item 1). Secure with the screws provided with item 1.
2. Mount speaker item 5 to V-Support (item 2). Secure with four screws (item 6).
3. Attach wire harness (item 4) to speaker (item 5). Attach black wire harness terminal to speaker «-» terminal and attach red wire harness terminal to speaker «+» terminal. Protect wire harness by inserting connector and excess cable into the cable passage hole of the table mount swivel assembly.
4. Assemble V-Support back (item 3) to V-Support (item 2). Secure with two screws (item 7). Take care not to pinch speaker wire harness.



T.10.051 – 610325104 Kit for mounting two BES X pedestals at 96° (286002845)



PARTS LIST

#	QTY	P/N	DESCRIPTION
1	1	286002841	CVR plate two pedestals at 96°
2	1	286002842	MTG plate two pedestals at 96°
3	6	01-019	PHPMS 10-32 x 0.38 ZN

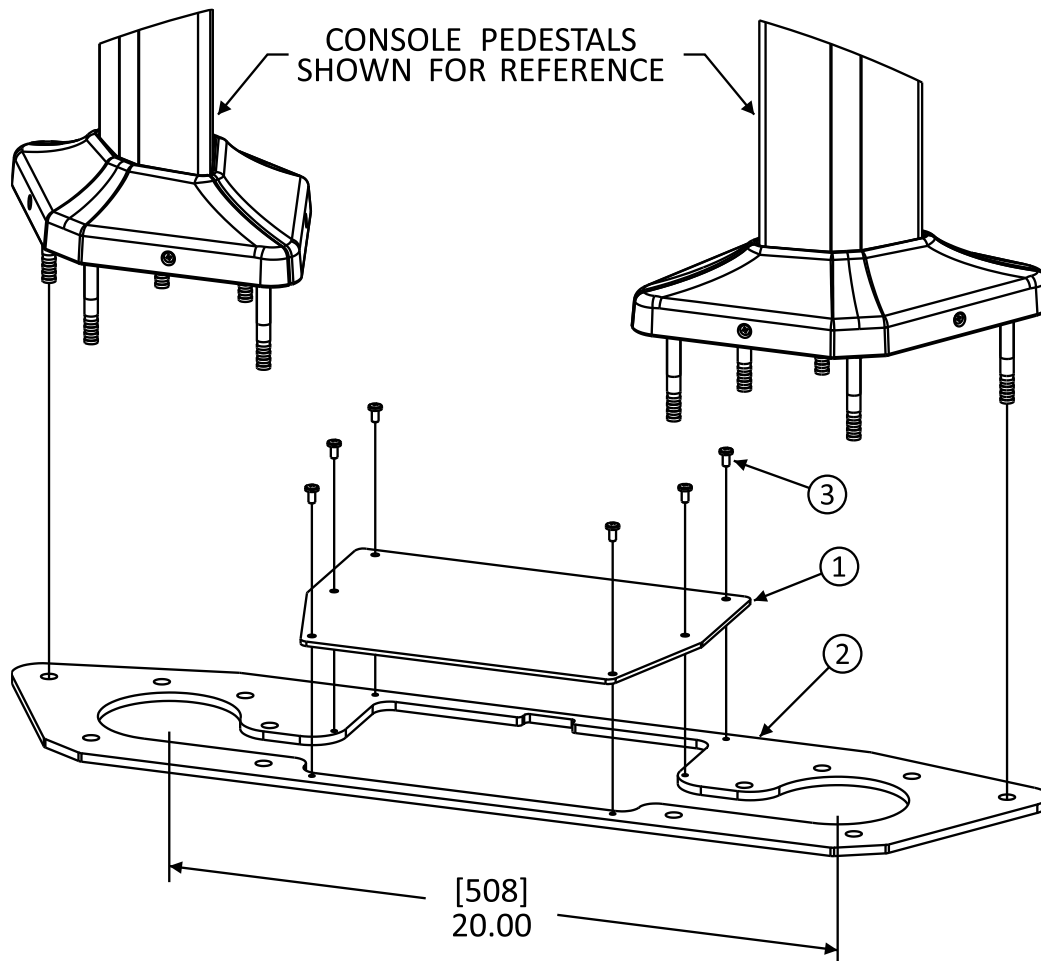
This kit is for the purpose of mounting two BES X pedestals with a common cable entry. The mounting plate (item 2) provides cable passage to the two BES X pedestals; the cover plate (item 1) is removable to provide access for servicing of the BES X cables.

INSTALLATION INSTRUCTIONS

1. Use mounting plate (item 2) to transfer and drill mounting holes for two BES X pedestals to floor.
2. Loosely mount base of the BES X pedestals to floor thru the mounting plate.
3. Pass cables for both BES X pedestals beneath bases of the BES X pedestals.
4. Install the cover (item 1) on the mounting plate (item 2) using the screws provided (item 3).
5. Mount the rear base covers of the BES X pedestals to the BES X pedestal bases.
6. Adjust the BES X bases with rear covers so that the BES X base covers do not interfere with the cover (item 1).
7. Secure the BES X base to the floor and mounting plate.
8. Continue with the installation of the BES X pedestals.



T.10.053 – 610325104 Kit for mounting two BES X pedestals at 60° (286002846)



PARTS LIST

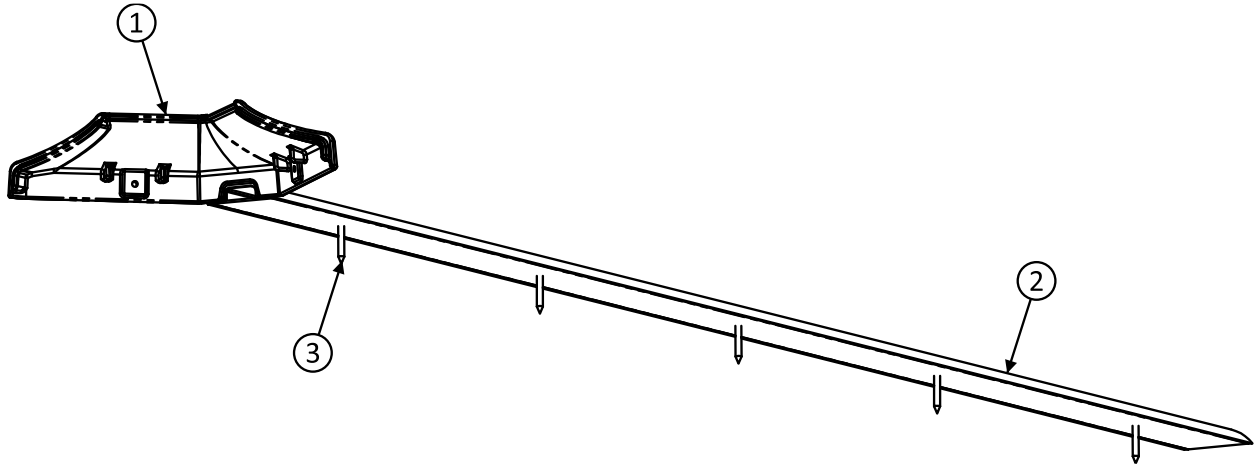
#	QTY	P/N	DESCRIPTION
1	1	286002843	CVR plate two pedestals at 60°
2	1	286002844	MTG plate two pedestals at 60°
3	6	01-019	PHPMS 10-32 x 0.38 ZN

This kit is for the purpose of mounting two BES X pedestals with a common cable entry. The mounting plate (item 2) provides cable passage to the two BES X pedestals; the cover plate (item 1) is removable to provide access for servicing of the BES X cables.

INSTALLATION INSTRUCTIONS

1. Use mounting plate (item 2) to transfer and drill mounting holes for two BES X pedestals to floor.
2. Loosely mount base of the BES X pedestals to floor thru the mounting plate.
3. Pass cables for both BES X pedestals beneath bases of the BES X pedestals.
4. Install the cover (item 1) on the mounting plate (item 2) using the screws provided (item 3).
5. Mount the rear base covers of the BES X pedestals to the BES X pedestal bases.
6. Adjust the BES X bases with rear covers so that the BES X base covers do not interfere with the cover (item 1).
7. Secure the BES X base to the floor and mounting plate.
8. Continue with the installation of the BES X pedestals.

T.10.054 – 610325104 Kit for mounting one BES X pedestal (286002847)



PARTS LIST

#	QTY	P/N	DESCRIPTION
1	1	286002848	Rear base cover FMW
2	1	286002849	Cable cover
3	5	862137200	ANCR BL 3/16 x 1.25 BC

Use this kit with pedestal **286002861**, **286002862**, **286002863**, **286002864** or **286002865** secured to floor. This kit is for the purpose of mounting one BES X pedestal where the cable entry location is not exactly under the pedestal position.

INSTALLATION INSTRUCTIONS

1. Separate the two-piece cable cover (2).
2. Cut the cable cover base part to length as necessary to locate the cable cover on the floor between the 4HD/5HD console and the cable entry location.
3. Remove the adhesive strip liners from the bottom of the cable cover base and secure the cable cover base part to the floor in the desired location.
4. Drill 5/32" (4mm) holes a minimum of 1.5" (40mm) deep thru the cable cover base part into the floor close to each end and approximately every 12" (300mm).
5. Use the holes to secure the cable cover base part to the floor with anchor screws (3).
6. Install cables in the pedestal assembly and place cables in the cable cover base part.
7. Replace the existing rear base cover **286002855** from the pedestal assembly **286002861**, **286002862**, **286002863**, **286002864** or **286002865** with the rear base cover FMW **289002848** (1).
8. Routing the cables thru the opening in the rear base cover FMW.
9. Cut the cable cover top part (2) to fit snugly between the rear base cover FMW (1) and the cable entry.
10. Install the cable cover top part over the cables in the cable cover base part.



5 Scoring network

5.1 Installation notes

4HD/5HD-HUB units operate on a standard network, made of standard network cables and one or more network switches.

4HD/5HD-HUB units are connected through a main scoring network switch that links all the 4HD/5HD-HUB units, MMS digital, TCS and Q-COM sub-networks together with the second network card of the Conqueror Server.

QubicaAMF supplies scoring network switches with 8 ports. One additional network switch will be supplied for TCS or MMS Digital kits. QubicaAMF also supplies the network cables needed for the installation. Each cable's length is dimensioned according to the distance between each 4HD/5HD-HUB unit and the main (or slave) scoring network switch (refer to Table **T.20.096**).

The connection between the main scoring network switch with the Front Desk, between the main scoring network switch with the MMS digital, the TCS and the Q-COM network switches and the single channel video server operates on a Cat.5e solid network cable that must not exceed 300 feet – 100 m supplied by QubicaAMF.

Please refer to **T.40.012** for the connection for the Cat. 5e wall mounting boxes.

When a custom length patch cable is needed, make it by following the instructions in Table **T.40.008**.

For a correct installation, the network must be balanced. This means that between each 4HD/5HD-HUB unit and the Conqueror server, there will always be the same number of switches divided into homogenous groups.

Install each scoring network switch in the middle of the lanes area that it serves.

For an easier troubleshooting process, fix each network switch with the port side facing downward in a manner that is easily accessible, and connect each 4HD/5HD-HUB to its scoring network switch while respecting the correct port numbering.

QubicaAMF recommends the installation of a cable conduit along the whole length of the curtain wall, to accommodate the network and the audio/video cables.

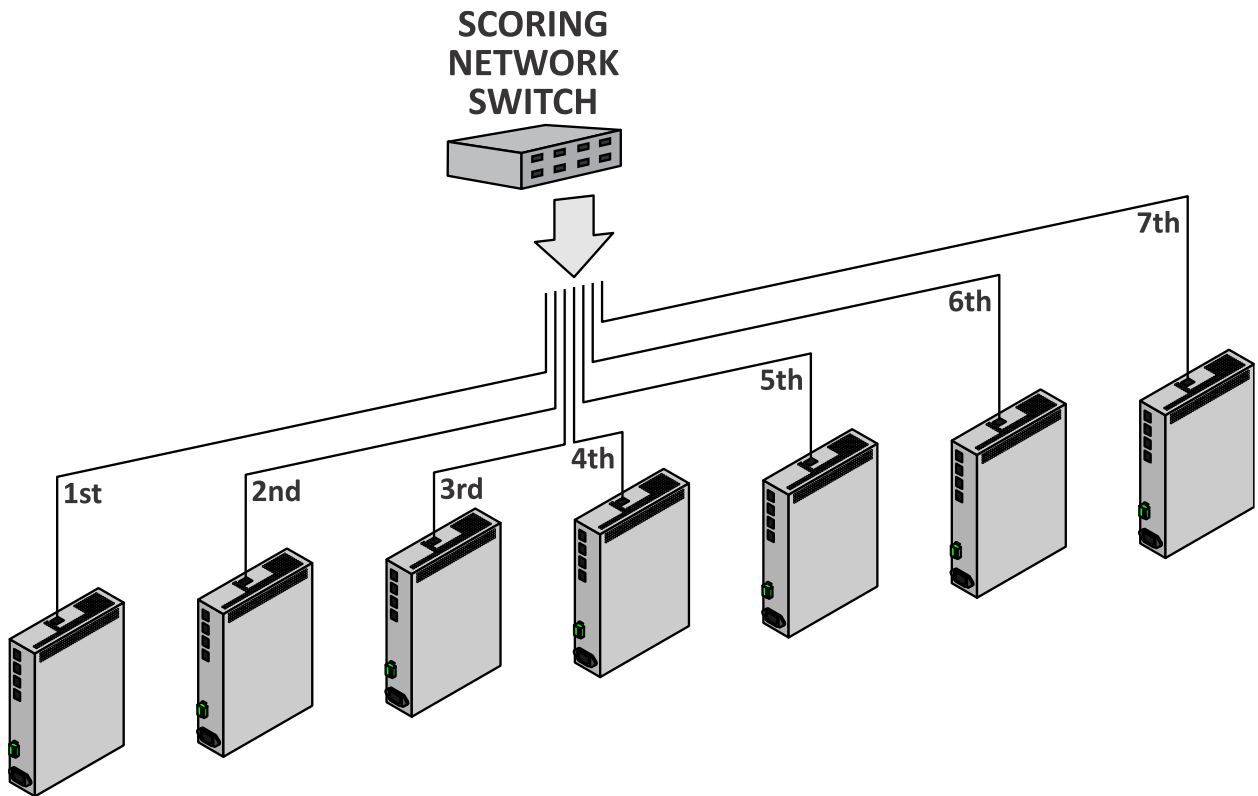
Example: In a 60-lane installation, a total of six network switches will be supplied (one used as main and five as slaves, where each slave will serve a group composed of twelve lanes):

- fix the main scoring network switch between lanes 30 and 31;
- fix the first slave scoring network switch between lanes 6 and 7, the second between lanes 18 and 19, the third between lanes 30 and 31, and so on;
- connect the first 4HD/5HD-HUB of each group to port number 1 of its slave scoring network switch, the second to port 2, the third to port 3, and so on.
- Connect the first slave scoring network switch to port 1 of the main scoring network switch, the second to port 2 of the main scoring network switch, the third to port 3 of the main scoring network switch, and so on.

Continue reading this manual for further information.

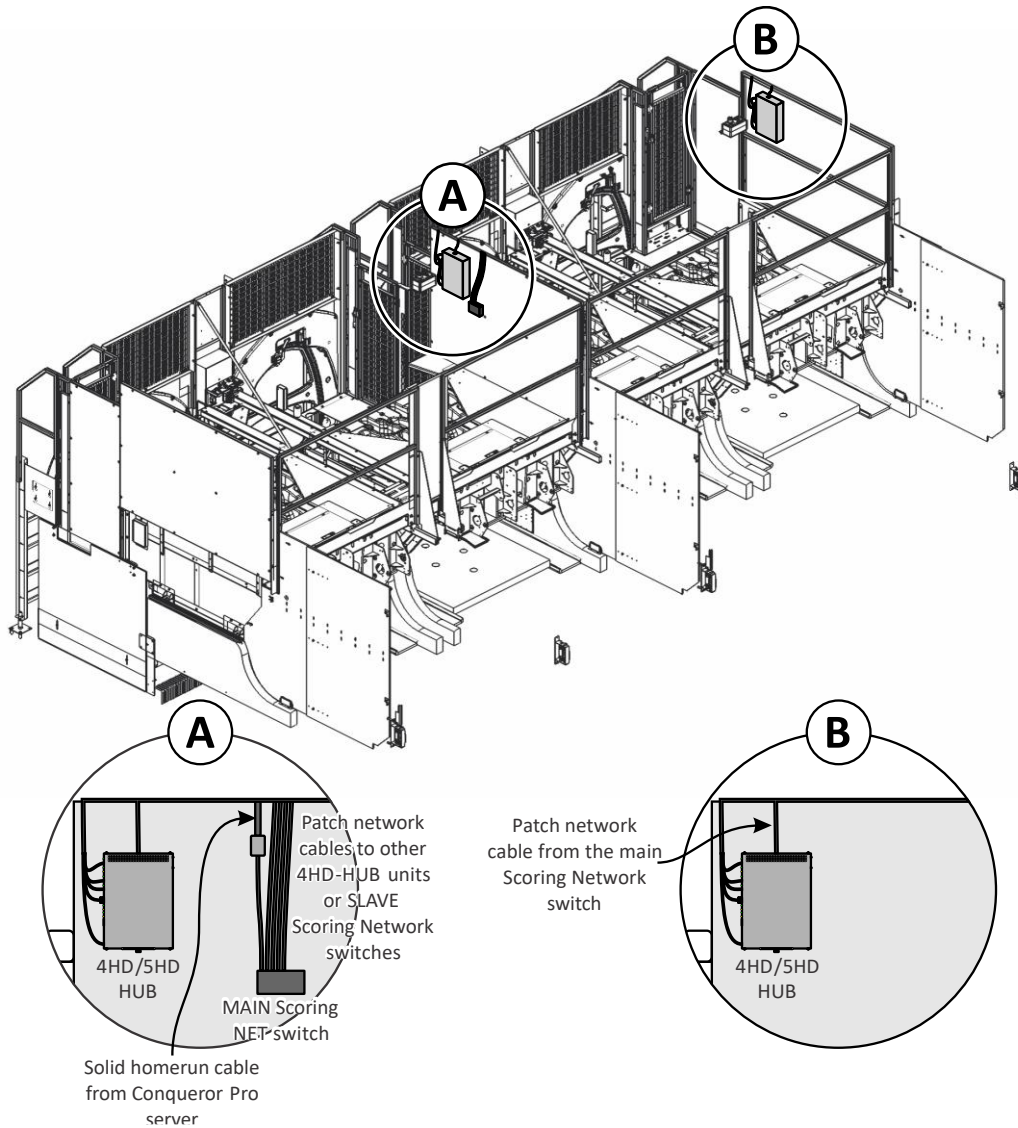


T.20.096 – BES X scoring network cables length



CABLES LENGTH		
#	EMEA (m)	USA (ft)
1 st	15	50
2 nd	15	50
3 rd	10	25
4 th	3	10
5 th	10	25
6 th	15	50
7 th	15	50

T.20.104 – 4HD/5HD-HUB installed on XLi pinspotters with low ceiling safety kit



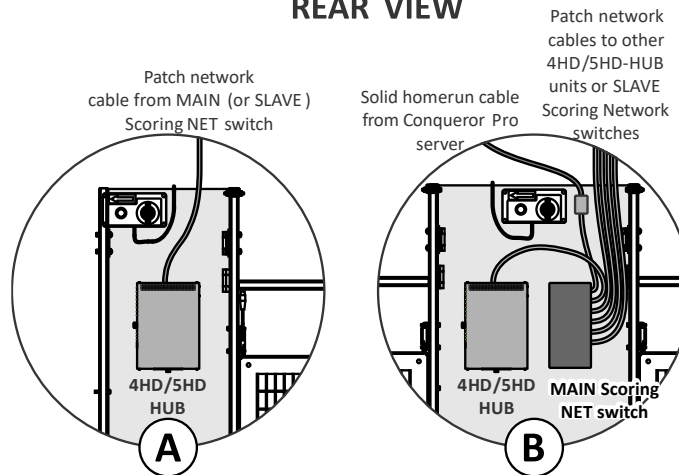
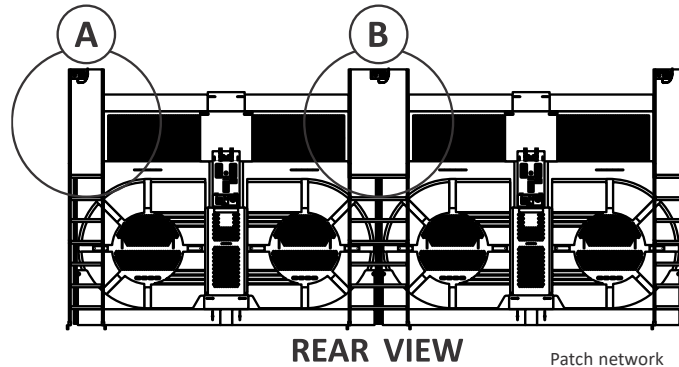
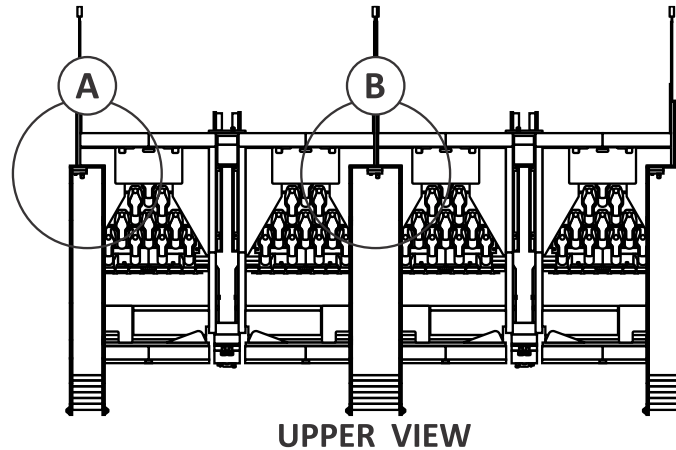
With Xli pinspotters with the low ceiling safety kit, always install the 4HD/5HD-HUB unit and all other devices to the panel located between each pair of pinspotters, as shown in the details A and B.

The MAIN Scoring NET switch has to be installed in the middle of the Scoring Network. For example, in a 8 lanes installation the MAIN Scoring NET switch has to be installed between the lane 4 and the lane 5.



Do **NOT** run any scoring system cable in the pinspotter conduits for any reason. Keep the scoring system cables far away from any power cable.

T.20.083 – 4HD/5HD-HUB installed on XLi pinspotters with safety kit



With XLi pinspotters with the safety kit, always install the 4HD/5HD-HUB unit and all other devices to the panel located at the end of the aisle present between each pair of pinspotters, as shown in the details A and B. In this example the 4HD/5HD HUB units and the other devices has been installed on the left or the pair of XLi pinspotters.

The MAIN Scoring NET switch has to be installed in the middle of the Scoring Network. For example, in a 8 lanes installation the MAIN Scoring NET switch has to be installed between the lane 4 and the lane 5.



Do **NOT** run any scoring system cable in the pinspotter conduits for any reason. Keep the scoring system cables far away from any power cable.



5.2 Centers with up to 12 lanes

If the bowling center has up to 12 lanes just one network switch for the scoring network is needed.

When MMS digital, TCS or Q-COM systems are purchased, QubicaAMF will supply additional switches and the scoring network will have different configurations.

Please refer to the correct sub-section for the desired configuration.

5.2.1 Centers with up to 12 lanes with single channel video server.

One 8-port network switch will be supplied by QubicaAMF for this configuration.

The connections for the main scoring network switch are:

- 1 port for the home-run cable;
- 1 port for the single channel video server;
- 6 ports for the 4HD/5HD-HUB units.

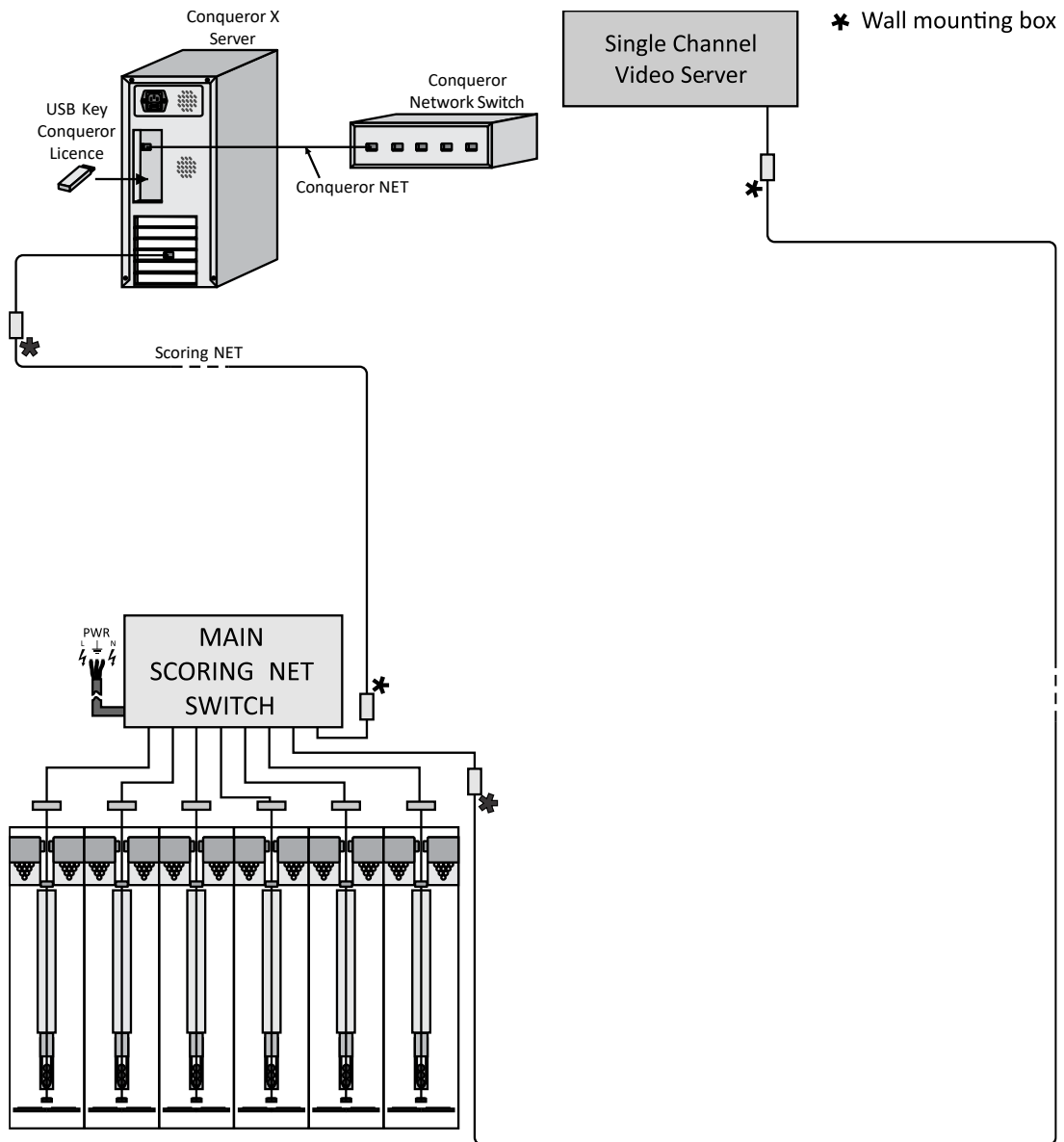
The 4HD/5HD-HUB units must be connected to the main scoring network switch via standard patch network cables. Refer to **T.20.096** for the correct patch cables' lengths.

The single channel video server, if present, must be connected to the main scoring network switch using a Cat.5e solid network cable.

The second network card of the Conqueror X server must be connected to the main scoring network switch using a Cat.5e solid network cable.

This configuration is described in **T.20.091**.

T.20.091 – BES X scoring network with: up to 12 lanes and single channel video server



5.2.2 Centers with up to 12 lanes, MMS or TCS or Q-COM and single channel video server.

Two 8-port network switches will be supplied by QubicaAMF for this configuration.

The connections for the main scoring network switch are:

- 1 port for the home-run cable;
- 1 port for the slave scoring network switch;
- 6 ports for MMS or Q-DAC units.

The connections for the slave scoring network switch are:

- 1 port for the main scoring network switch;
- 1 port for the single channel video server;
- 6 ports for 4HD/5HD-HUB units.

The 4HD/5HD-HUB units must be connected to the slave scoring network switch via standard patch network cables. Refer to **T.20.096** for the correct patch cables' lengths.

The single channel video server, if present, must be connected to the slave scoring network switch using a Cat.5e solid network cable.

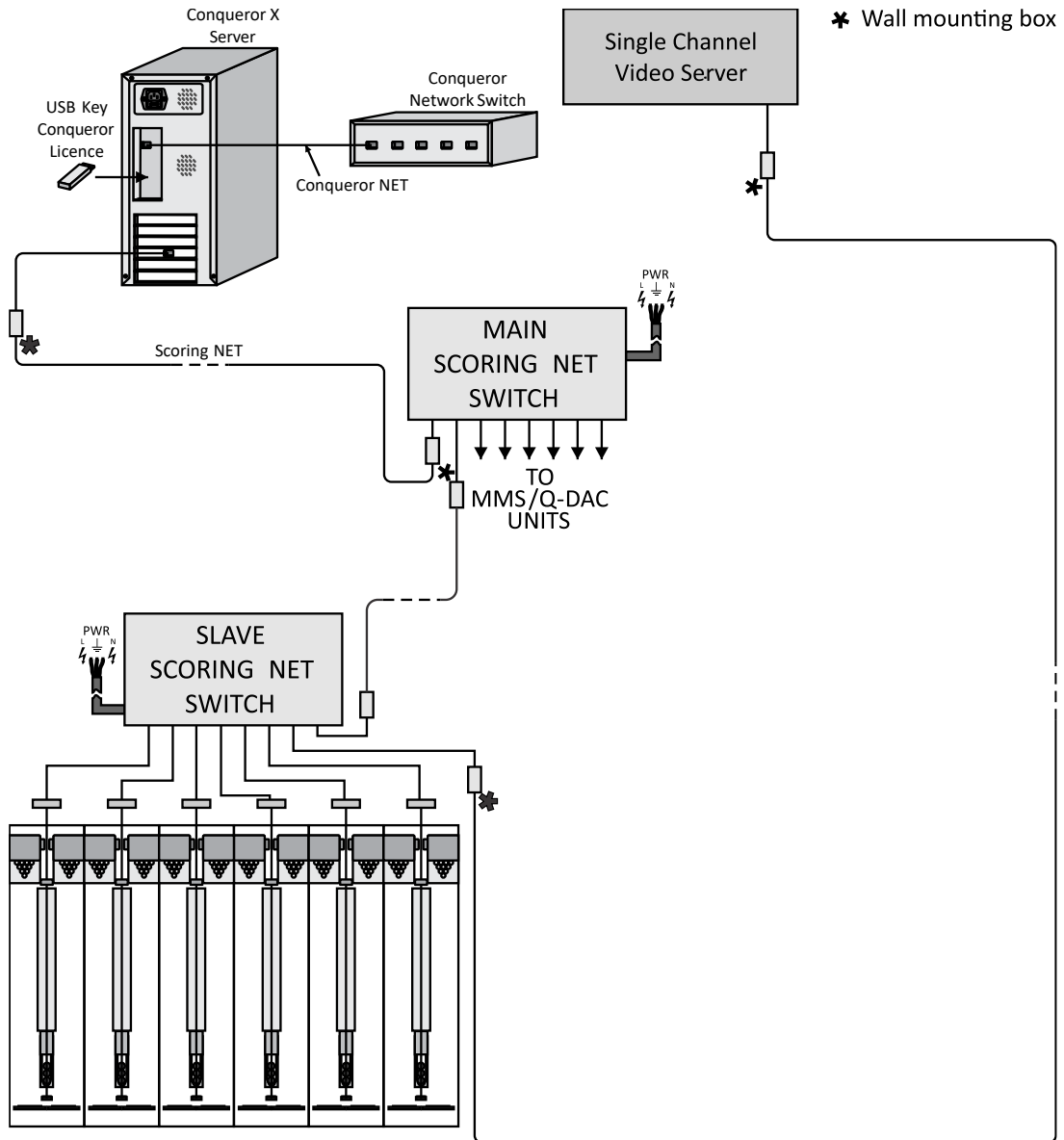
The slave scoring network switches must be connected to the main scoring network switch using the provided network cable.

The second network card of the Conqueror X server must be connected to the main scoring network switch using a Cat.5e solid network cable.

The MMS or Q-DAC units must be connected directly to the main scoring network switch using the provided network cable.

This configuration is described in the Table **T.20.092**.

T.20.092 – BES X scoring network with: up to 12 lanes, MMS or TCS or Q-COM and single channel video server



5.2.3 Centers with up to 12 lanes, MMS, TCS, Q-COM and single channel video server.

Three 8-port network switches will be supplied by QubicaAMF for this configuration.

The connections for the main scoring network switch are:

- 1 port for the home-run cable;
- 1 port for the slave scoring network switch;
- 1 port for the MMS and Q-DAC switch.

The connections for the slave scoring network switch are:

- 1 port for the main scoring network switch;
- 1 port for the single channel video server;
- 6 ports for 4HD/5HD-HUB units.

The connections for the MMS and Q-DAC switch are:

- 1 port for the main scoring network switch;
- 7 ports for MMS and Q-DAC units.

The 4HD/5HD-HUB units must be connected to the slave scoring network switch via standard patch network cables. Refer to **T.20.096** for the correct patch cables' lengths.

The single channel video server, if present, must be connected to the slave scoring network switch using a Cat.5e solid network cable.

The slave scoring network switch must be connected to the main scoring network switch using the provided network cable.

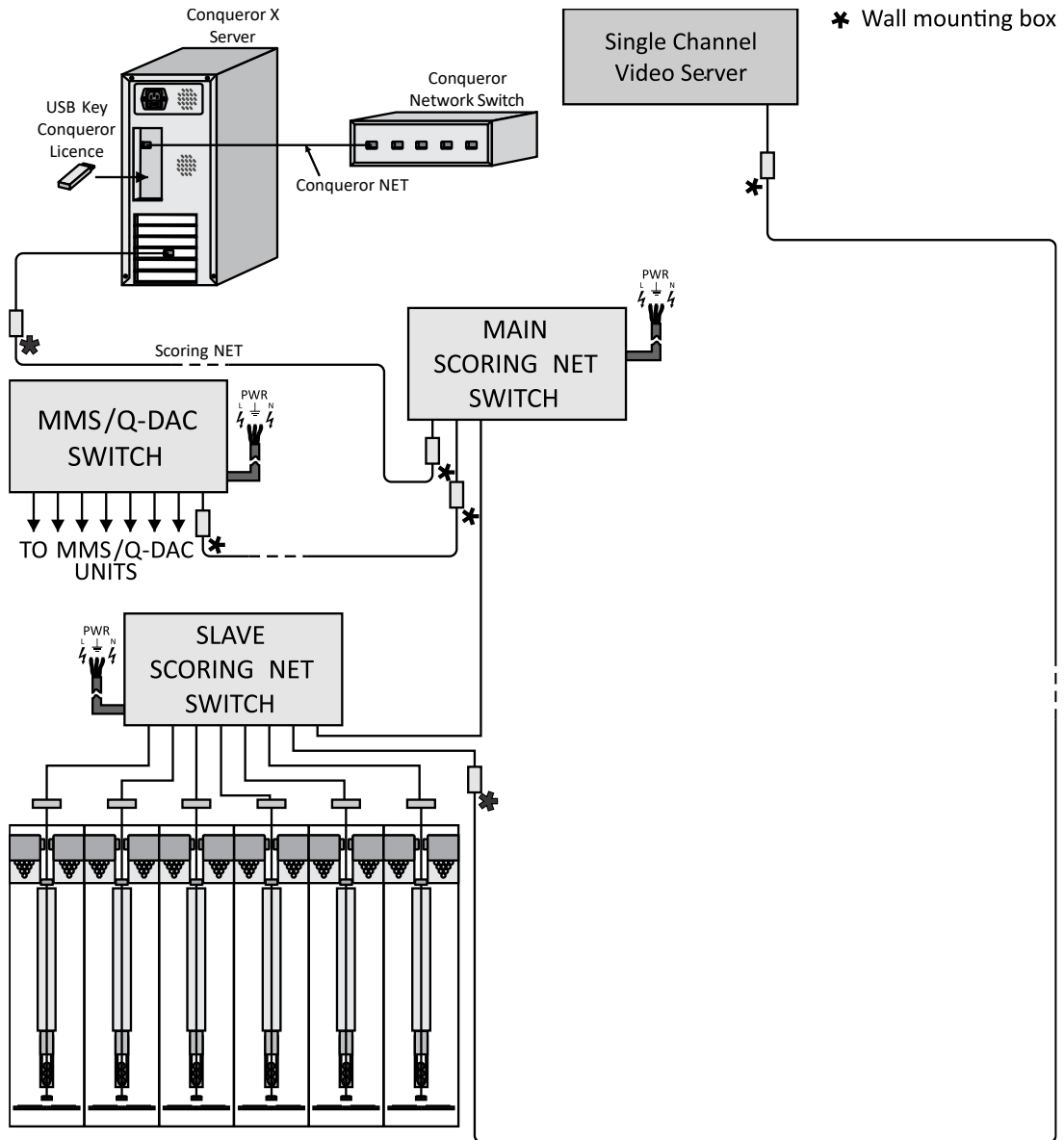
The second network card of the Conqueror X server must be connected to the main scoring network switch using a Cat.5e solid network cable.

The MMS and the Q-DAC units must be connected to the MMS and Q-DAC switch.

The MMS and Q-DAC switch must be connected to the main scoring network switch using the provided network cable.

This configuration is described in the Table **T.20.093**.

T.20.093 – BES X scoring network with: up to 12 lanes, MMS, TCS, Q-COM and single channel video server



5.3 Centers with more than 12 lanes and up to 68 lanes or split-house

If the bowling center has more than 12 lanes and up to 68 lanes, or if the lanes are divided into two or more groups, additional scoring network switches that act as slaves are needed.

The lanes' groups must be equally balanced in homogeneous groups. QubicaAMF supplies the additional switches and the network cables.

All of the network switches supplied by QubicaAMF for these configurations have 8 network ports.

The connections for the main scoring network switch are:

- 1 port for the home-run cable;
- 1 port for the MMS switch;
- 1 port for the Q-DAC switch;
- 5 ports for the slave scoring network switches.

Always connect the Single channel video server to a slave scoring network switch, so the slave switch where the Single channel video server is connected must never exceed the number of 12 lanes (six 4HD/5HD-HUB units) connected, while the maximum number of lanes for the other four slave switches is 14 (seven 4HD/5HD-HUB units) connected. All these restrictions impose a limit of 68 lanes.

When multiple switches are involved it is mandatory not to connect any 4HD/5HD-HUB directly to the main scoring network switch. Between each 4HD/5HD-HUB and the Front Desk PC there must always be the same number of switches, and these switches must never exceed two in number (refer to Table **T.20.094**).

The 4HD/5HD-HUB units must be connected to the slave scoring network switch via standard patch network cables. Refer to **T.20.096** for the correct patch cables' lengths.

If the customer purchases only the lanes, then buys the MMS Digital system, TCS, Q-COM or single channel video server at a later time after the installation has been made and these rules have not been followed, it will result in a complete rewiring of the scoring network.

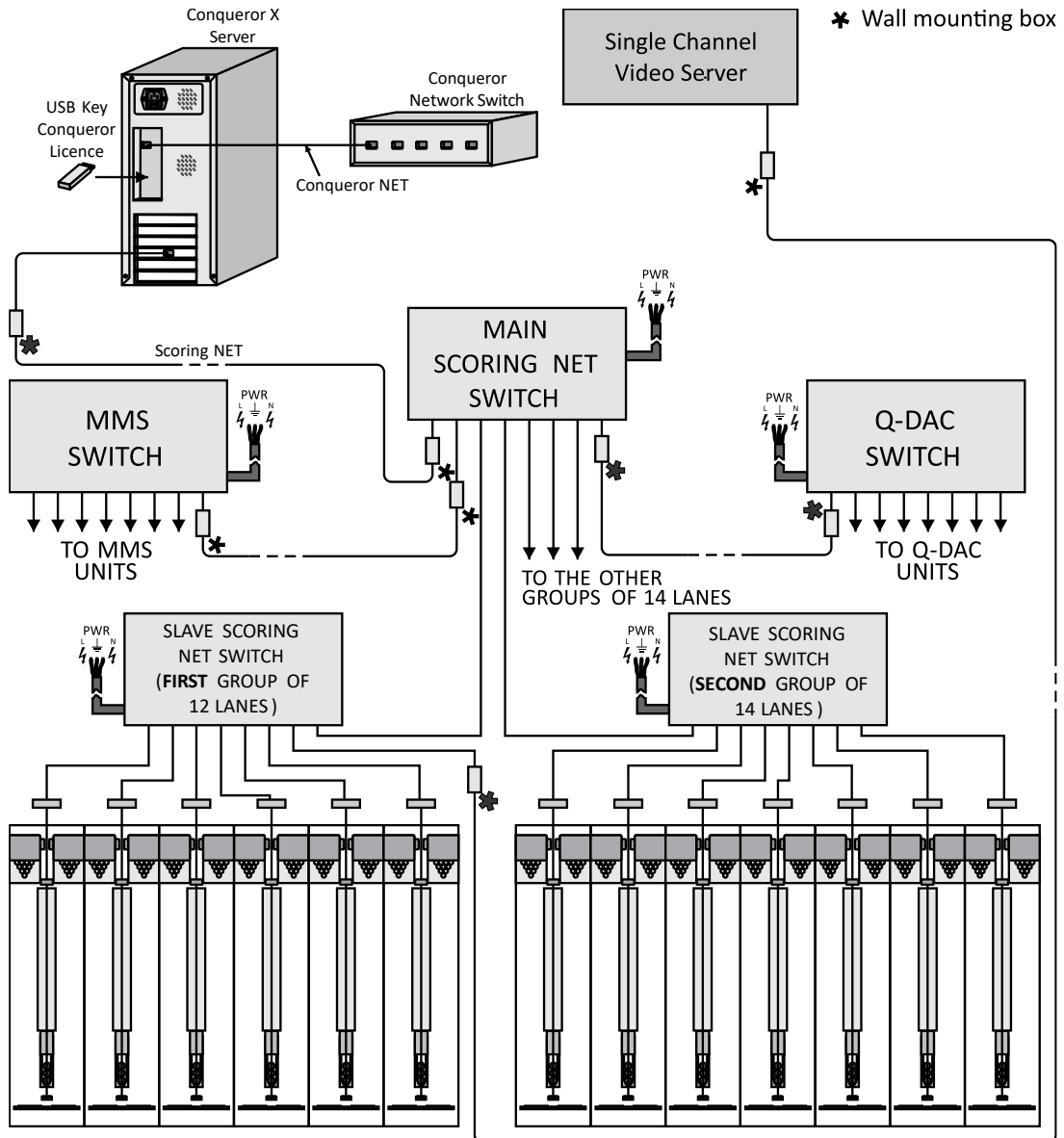
Example: a bowling center with 34 lanes is split into three sub-centers, two with 14 lanes and the other with 6 lanes. QubicaAMF supplies the main scoring network switch, the three additional switches, two kits of cables for a 14-lane center, one kit for a 6-lane center, three 50 feet – 30m. patch network cables (one for each additional network switch), one Cat.5e 300 feet – 100m solid cable coil and two Cat.5e wall mounting boxes.

The slave switches must be connected to the main scoring network switch in UPLINK mode. UPLINK mode is automatically set in switches supplied by QubicaAMF, other switches may need a manual setting.

QubicaAMF recommends the installation of a cable conduit along the whole length of the curtain wall to accommodate the network cables.



T.20.094 – BES X scoring network for centers with more than 12 lanes and up to 68 lanes



5.4 Centers with more than 68 lanes or split-house

If the bowling center has more than 68 lanes additional scoring network switches that act as slaves are needed.

QubicaAMF will supply one 16-port network switch to be used as main scoring network switch in the place of an 8-port network switch.

The lanes' groups must be equally balanced in homogeneous groups. QubicaAMF supplies the additional switches and the network cables.

The connections for the main scoring network switch are:

- 1 port for the home-run cable;
- 1 port for the MMS switch;
- 1 port for the Q-DAC switch;
- 13 ports for the slave scoring network switches.

Always connect the Single channel video server to a slave scoring network switch, so the slave switch where the Single channel video server is connected must never exceed the number of 12 lanes (six 4HD/5HD-HUB units) connected, while the maximum number of lanes for the other four slave switches is 14 (seven 4HD/5HD-HUB units) connected.

When multiple switches are involved it is mandatory not to connect any 4HD/5HD-HUB directly to the main scoring network switch. Between each 4HD/5HD-HUB and the Front Desk PC there must always be the same number of switches, and these switches must never exceed two in number (refer to **T.20.095**).

The 4HD/5HD-HUB units must be connected to the slave scoring network switch via standard patch network cables. Refer to **T.20.096** for the correct patch cables' lengths.

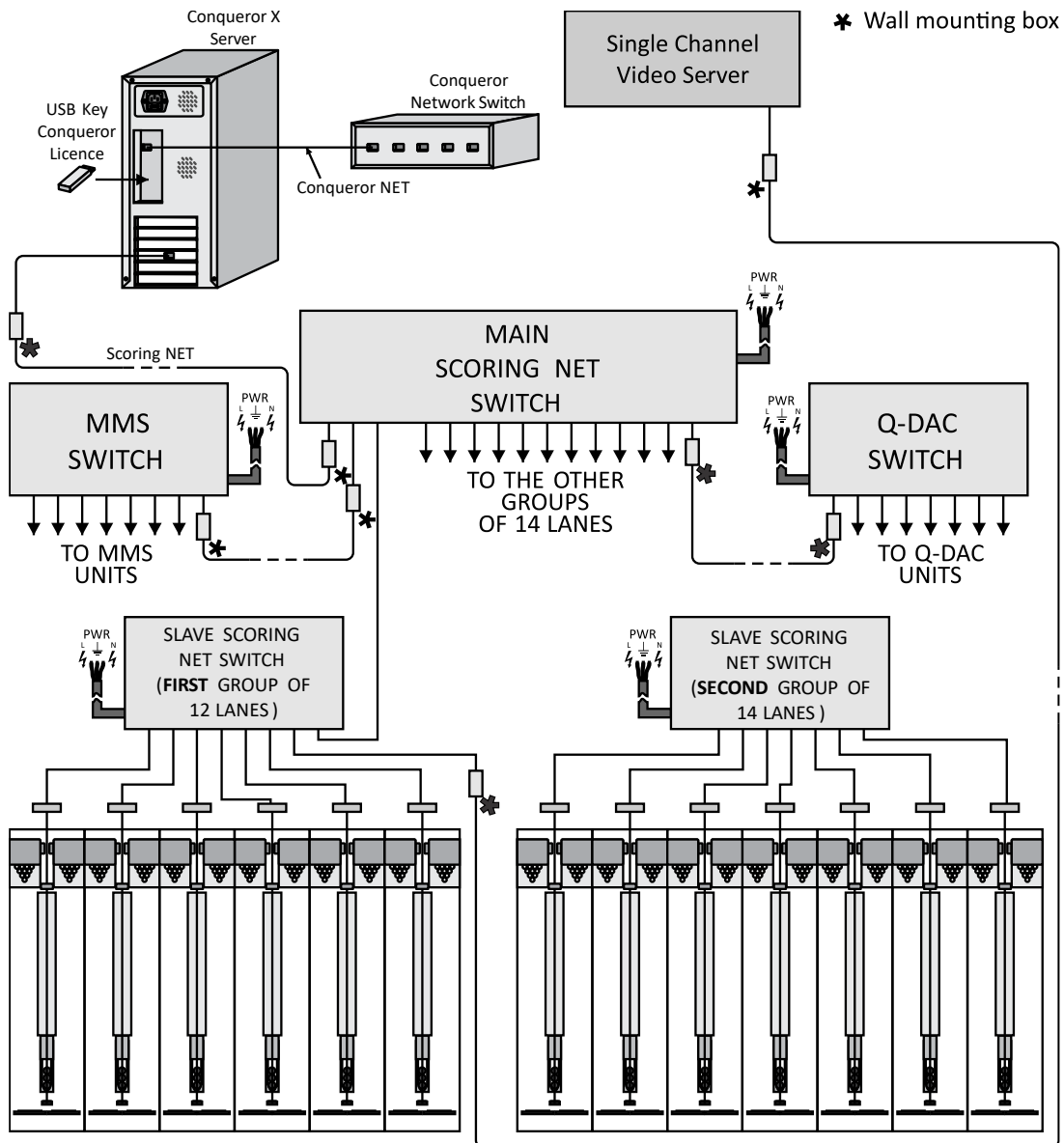
Example: a bowling center with 100 lanes. QubicaAMF supplies the main scoring network switch (16-port network switch), the eight additional switches, one kit of cables for a 12-lane center, six kits of cables for a 14-lane center and one kit for a 2-lane center, the cables needed to connect the slave scoring network switches to the main scoring network switch (one 50 feet – 30m. patch network cable for each slave scoring network switch), one Cat.5e 300 feet – 100m solid cable coil and two Cat.5e wall mounting boxes for the main scoring network, the MMS and Q-DAC switches, and the Single channel video server.

The slave switches must be connected to the main scoring network switch in UPLINK mode. UPLINK mode is automatically set in switches supplied by QubicaAMF, other switches may need a manual setting.

QubicaAMF recommends the installation of a cable conduit along the whole length of the curtain wall to accommodate the network and the audio-video cables.



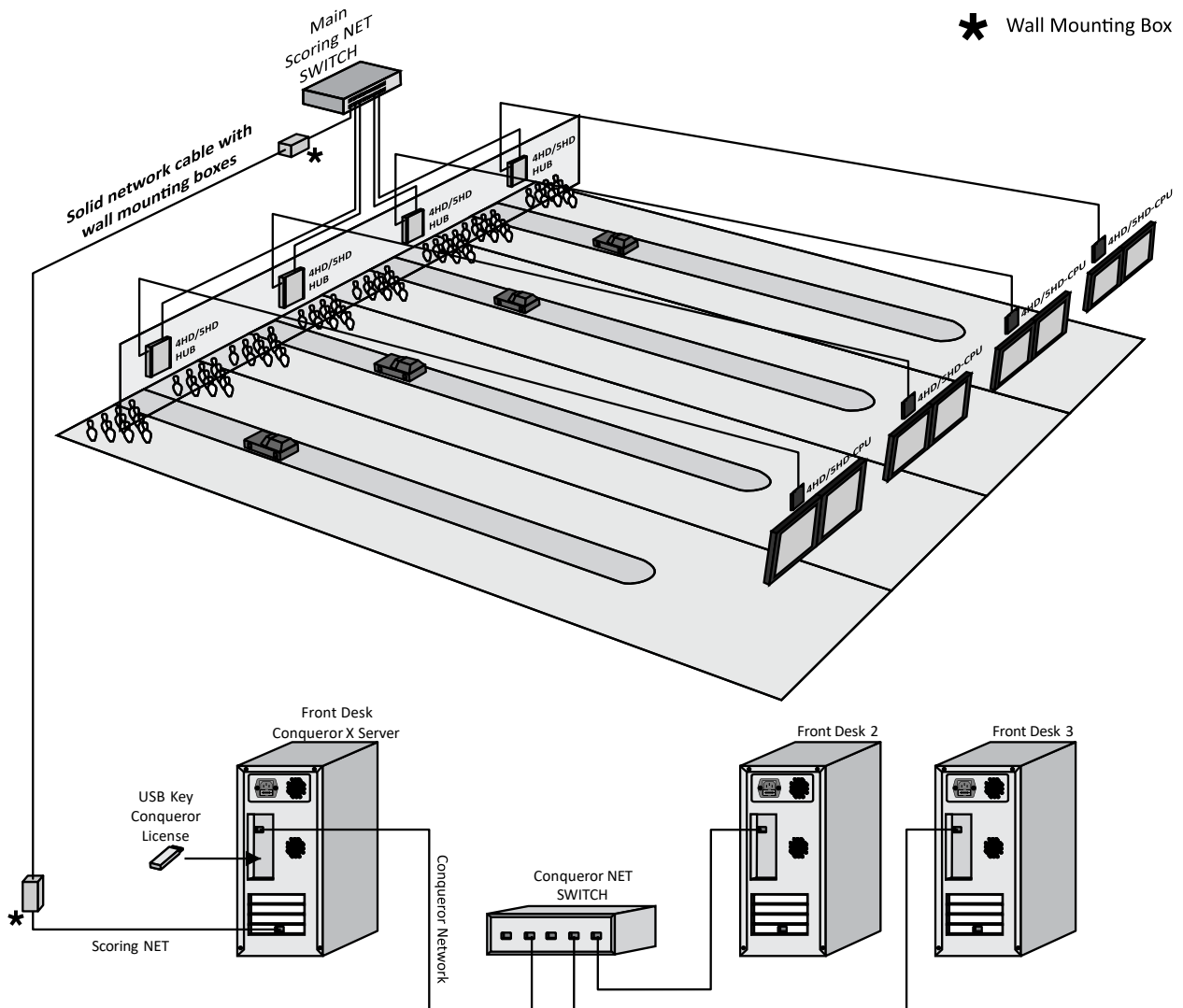
T.20.095 – BES X scoring network for centers with more than 68 lanes



5.5 Scoring Network IP addresses

IP ADDRESSES	DESCRIPTION
192.168.216.1 (255.255.248.0)	Conqueror X Server (Subnet Mask)
192.168.216.101 – 192.168.216.198	4HD/5HD-CPU's
192.168.216.201	Video Server
192.168.216.229	Effect Server unit
192.168.216.230 – 192.168.216.239	MMS units
192.168.216.240 - 192.168.216.249	Q-DAC units
192.168.217.101 – 192.168.217.198	4HD/5HD-HUBS
192.168.218.101 – 192.168.218.198	HyperServer units
192.168.219.101 – 192.168.219.198	ODD consoles
192.168.220.101 – 192.168.220.198	EVEN consoles

T.20.081 – BES X connection to front desk



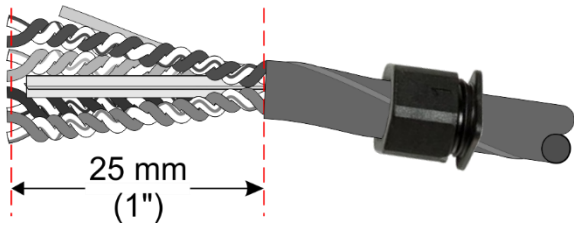
T.40.042 – Standard CAT6 cable



THIS DRAWING IS INDICATIVE ONLY.
 ALWAYS check the color sequence on the instructions attached to the CAT6
 plugs for **T568B** wiring

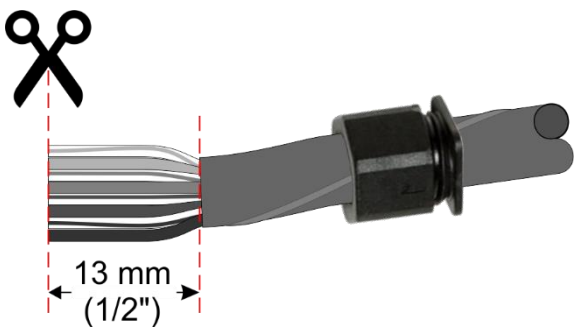
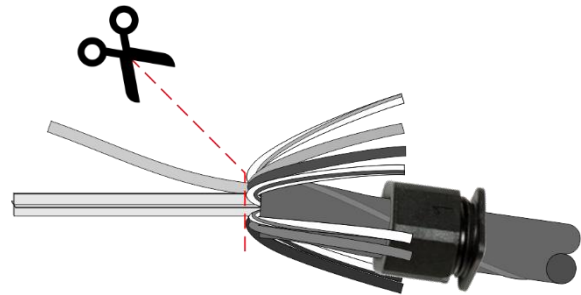


- Insert the cable end into the protection end.



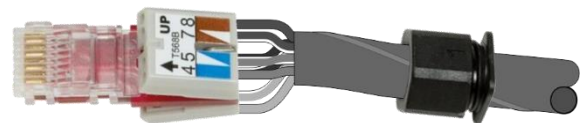
- Strip off approximately 25 mm (1") of the cable jacket.

- Untwist each pair and straighten the wires. Then cut the plastic X-shaped divider and the nylon wire.



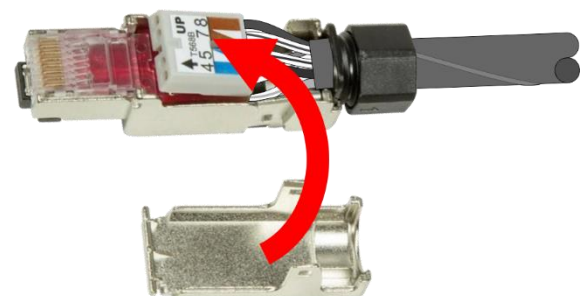
- Cut all the wires at a perfect 90-degree angle, at 13 mm (1/2") from the cable jacket.

- Insert the wires into the plug. Please refer to the colors specified on the plug (or in the instructions attached to the plugs) for **T568B** wiring.



- Insert the plug into the metal cover.

- Close the metal cover.

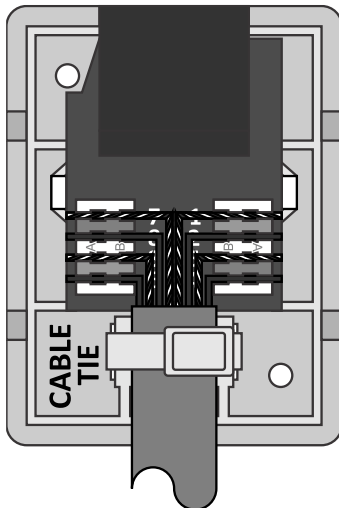


T.40.012 – Cat.5e Wall Mounting Box standard network cable



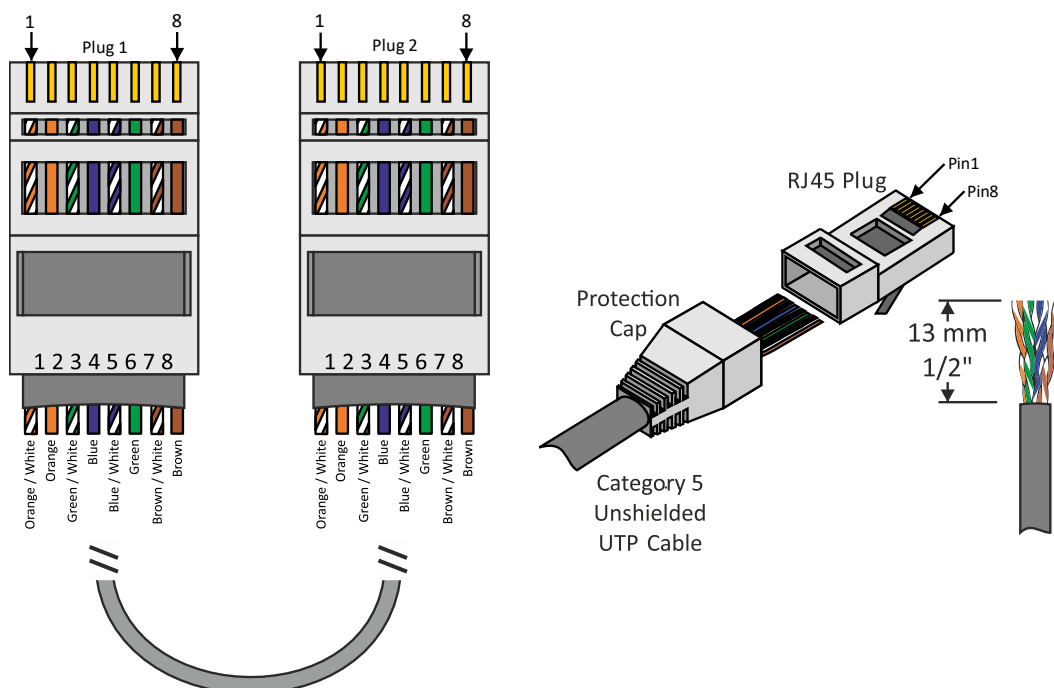
THIS DRAWING IS INDICATIVE.

ALWAYS check the color sequence on the instructions attached to the wall mounting box for **T568B** wiring



- Strip approximately 30mm of the cable jacket and separate into 4 pairs.
- Follow the directions on the IDC color-coding to position T568B wiring and insert the wires into each slot.
- Use the impact tool to crimp and connect the wires.
- Use a cable tie to hold the cable jacket in position and to avoid the cable falling off or pulling away.
- Fix the Cat.5 Wall Mounting Box to the wall.

T.40.008 – Standard Network Cables



- Skin off the cable jacket approximately 25mm (1").
- Untwist each pair and straighten the wires.
- Put the protection caps on the cable
- Place the wires in the right order. For a Standard cable wire both ends as Plug 1.
- Cut all the wires at a perfect 90 degrees angle, at 13mm (1/2") from the cable jacket.
- Insert the wires into the plug.
- Crimp the plug.



6 LCOM line

LCOM is the network that connects the 4HD/5HD-HUB units to: QubicaAMF pinspotter interfaces, camera assembly, Bumper Control units or other LCOM controlled devices (such as XLMP or EDC).

The LCOM network runs through a four-wire cable, with two wires carrying the power and two wires carrying the bi-directional communication signal.

QubicaAMF supplies 60ft – 20m of LCOM cable for each pair of lanes, enough for a standard installation.

Every LCOM device is exclusively powered through the LCOM line.

The source for the LCOM line on each pair of lanes is the C1 connector on the 4HD/5HD-HUB unit.

The pin out for this connector is:

- **+**: +18 Volts unregulated;
- **B**: Communication –;
- **A**: Communication +;
- **-**: Common.

The recommended size for LCOM wires is AWG 18 - 0.75mm².

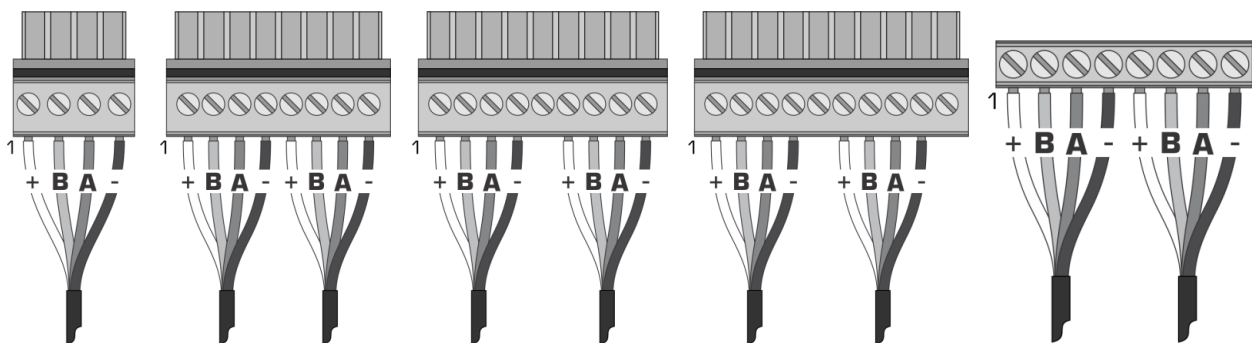
The LCOM power line is protected from a short-circuit by an AUTO-FUSE mounted inside the 4HD/5HD-HUB unit.

The LCOM communication is protected from electrostatic discharge by special devices mounted on all LCOM electronic boards.

Bad wiring during installation may break some protection devices.

6.1 LCOM wiring

The correct wiring for each LCOM device is done by keeping the Phoenix connector in your hand, as shown in the picture below. The pin number 1 is the first starting from the left.



6.2 Replacement of LCOM devices

The following procedure is to be carried out when disconnecting or replacing LCOM devices.

1. The main power supply to the 4HD/5HD-HUB must first be isolated (turned off) before attempting to make any disconnection on the LCOM line.

- Failure to carry out this action may result in major damage to one or more of the LCOM devices.
2. Care must be taken to make note of the wiring sequence on the four-conductor cable, as it is imperative that these wires are connected to the replacement device in the same way.
If, for any reason, you are unsure how to do a re-connection, check the LCOM line starting from the 4HD/5HD-HUB C1 - LCOM connector.
 3. Reconnect the main voltage to the 4HD/5HD-HUB only after you are absolutely sure that the correct connections have been made.

6.3 Solving problems on the LCOM line

Introduction

As the four wires constituting the LCOM network are shared by all the devices connected to it, a fault in any one of the devices can cause the malfunction of the entire LCOM network. This situation is initially detected by the 4HD/5HD-CPU during the lane boot-up and an error code is displayed on the monitors of both lanes.

In order to determine the cause of the problem, which could be due to: a bad connection, a damaged electronic board, or a damaged cable, the following tests can be done.

Power wires

The 4HD/5HD-HUB C1 - LCOM connector supplies the power to all the LCOM electronic devices. The first wire on top is the positive power, while the fourth wire on the bottom is the negative; this pair of wires is also called LCOM power wires.

LCOM power check

Use a multimeter to check the LCOM power voltage on all the LCOM connections; its value should be at least 16 VDC but no more than 23 VDC (the optimal voltage is around 18-19 VDC).

Look at the status of the indicators listed below (only some of the following boards may be present in the LCOM network you are testing):

- The camera assembly display should have some segments or dot on.
- The Pinsetter Interface with the power on should have some LEDs blinking or on.

The result of the above-mentioned operations should be one of the following:

1. If both the voltage and the status LEDs are OK, the problem is associated with the communication wires of the LCOM network.
2. If the power is present only on certain connectors, it is evident that there is a problem within the cables or connections to the affected device(s) since the power source is the 4HD/5HD-HUB, the problem should be easily detected.
3. If the power voltage is OK everywhere, but one of the device indicators is off, then in this case the board with the indicator off is probably broken. Switch the 4HD/5HD-HUB off, replace the broken board and switch the 4HD/5HD-HUB back on again. If you still have LCOM problems, repeat all the above tests again.
4. If the whole LCOM power fails, the possible causes are:
 - The 4HD/5HD-HUB LCOM power supply section is broken;
 - The LCOM power wires are shorted.

As the LCOM power supply is protected by an AUTO-FUSE located inside the 4HD/5HD-HUB, a short circuit to the power wires causes the 'blowing' of this AUTO-FUSE and the power supply on the LCOM network is shut down.

In order to understand if this is the problem, you must unplug the LCOM from the 4HD/5HD-HUB and wait for 1 minute to let the AUTO-FUSE reset, thus restoring the LCOM power.



Now check the voltage directly on the C1 - LCOM male connector being very careful not to short the connector's pins!!!

If the voltage between the 1st and 4th pin is not around 18-20 VDC, then the failed device is either the 4HD/5HD-HUB or the problem is a short circuit on the LCOM power wires.

NOTE: A short circuit on the female connector giving power to the camera assembly can cause an overload on the LCOM power supply. In this case, the AUTO-FUSE intervenes after a few seconds (or minutes) depending on the intensity of the overload. In this situation, the origin of the failure can be very difficult to find. It must be remembered that the duration of an overload of this kind can cause unrecoverable damage to the AUTO-FUSE.

LCOM communication wires

When the LCOM problems do not originate from the power wires, first of all it is necessary to check the communication wires in order to verify that they are not shorted or broken. It is only after this has been done that the following steps must be followed:

1. Turn the 4HD/5HD-HUB off.
2. Unplug the C1 - LCOM connector from the 4HD/5HD-HUB.
3. Turn the 4HD/5HD-HUB on again and wait for the LCOM error code to appear on screen.
4. Then, being extremely careful not to cause a short circuit, measure the voltage between the 2nd (-) and 3rd (+) pins of the C1 male connector. The value must be between 0.30 and 0.75 VDC. If not, the problem is in the 4HD/5HD-HUB itself.
5. Measure the voltage between the 2nd (+) and 4th (-) pins. The value must be between 2.0 and 2.3VDC. If not, the problem is in the 4HD/5HD-HUB itself.
6. Measure the voltage between the 3rd (+) and 4th (-) pins. The value must be between 2.7 and 2.9 VDC. If not, the problem is in the 4HD/5HD-HUB itself.
7. Turn the 4HD/5HD-HUB off.
8. Insert the C1 - LCOM connector again. A short discharge normally occurs in this case and it is due to 4HD/5HD-HUB internal capacitors.
9. Turn the 4HD/5HD-HUB on again and wait for the LCOM error code to appear on screen.
10. Measure the voltage between the 2nd (-) and 3rd (+) pins directly on the C1 connector. The value must be between 0.25 and 0.45 VDC. If not, step 14 must be followed.
11. Measure the voltage between the 2nd (+) and 4th (-) pins directly on the C1 connector. The value must be between 2.2 and 2.4 VDC. If not, step 14 must be followed.
12. Measure the voltage between the 3rd (+) and 4th (-) pins directly on the C1 connector. The value must be between 2.5 and 2.8 VDC. If not, step 14 must be followed.
13. At this stage, the only way to find the defective switch is to check each LCOM device by moving them one-by-one on to another pair of lanes.
14. The following test must be done only if one of the procedures in steps 10, 11 and 12 has not been successful.

If the wires have already been carefully checked, it is recommended to disconnect the devices connected to the LCOM one-by-one in order to find the one causing the defect. The suggested order of procedures is the following (only some of the subsequent boards may be present in the LCOM network you are testing):

- a. Turn the 4HD/5HD-HUB off and disconnect the camera assembly from the LCOM (it is enough to disconnect the 2nd and 3rd wires). Turn the 4HD/5HD-HUB on and wait for the error code to appear on screen. Then, leaving C1 plugged into the 4HD/5HD-HUB, check the voltages as stated in steps 11 and 12. If these voltages are OK, switch off the 4HD/5HD-HUB and retry the whole system by replacing the camera board (or the whole camera assembly).
- b. Turn the 4HD/5HD-HUB off and disconnect the Pinspotter Interface from the LCOM (it is enough to disconnect the 2nd and 3rd wires). Turn the 4HD/5HD-HUB on and wait for the error code to appear on screen. Then, leaving C1 plugged on the 4HD/5HD-HUB, check the voltages as stated in steps 11 and 12. If these voltages are OK, switch off the 4HD/5HD-HUB, replace the Pinspotter Interface and repeat the previous procedures.



If, after the disconnection of all electronic components from the LCOM line, the voltages on C1 are still not on the range indicated in steps 11 and 12, the problem is definitely caused by the wires.

NOTE: a problem with the LCOM cable (i.e. short circuit) can affect the entire scoring system and cause the pair of lanes to reboot.



7 Overhead monitors

7.1 Preface

The overhead monitors (or lane monitors) are installed in the Ball Return area.

The 4HD/5HD-CPU is the graphic engine of the BES X system, that can provide up to two independent video outputs for the scoring system, but they can control (monitor ON/OFF, channel change, etc. only on supported monitors) on up to three monitors (two for the scoring system and one with an independent video signal). The 4HD/5HD-CPU unit must be fixed to a vertical surface near the overhead monitors (please refer to the “**BES X Pre-installation manual**” for further information). This unit communicates and takes power from the 4HD/5HD-HUB (located on the back of the curtain wall) through the network cable connected to the L1 connector and it is connected to the overhead monitor through the HDMI connectors.

The 4HD/5HD-CPU must be fixed to the monitor frame with the L1 connector facing upwards. QubicaAMF monitor frames are designed to have this unit fixed on to them. If, for any reason, it is not possible to fix the 4HD/5HD-CPU unit to the monitor frame (i.e. the monitor frame is not supplied by QubicaAMF) the 4HD/5HD-CPU must be fixed to a vertical surface **NEAR** the overhead monitors, in an area that ensures correct air circulation around the unit, always with the L1 connector facing upwards. **NEVER** install, for any reason, this unit in a horizontal position as it will result in major damage to the 4HD/5HD-CPU unit itself.

7.2 Monitor requirements

The image resolution provided by the 4HD/5HD-CPU is 1280x720.

In order to correctly visualize the image on the screen we strongly suggest using monitors with the “Just Scan” (or “Screen Fit”) option present. The “Just Scan” (or “Screen Fit”) picture mode is a function that allows the image to fit the screen exactly without overlapping the sides of the screen.

If the “Just Scan” (or “Screen Fit”) capability is not present on the monitor, QubicaAMF will not assume any responsibility for an incorrect visualization of the image. In this case, we strongly recommend testing the QubicaAMF equipment with the chosen monitor before the purchase.

In order to control the monitors from Conqueror X when the monitors support commands via the HDMI connector, it is only necessary to connect the HDMI cable between the 4HD/5HD-CPU and the monitor.

If the purchased monitors do not support commands via the HDMI connector, the HDMI connection between the 4HD/5HD-CPU and the monitor is not enough, so use the 288401007 cable to connect the “CTRL” output of the 4HD/5HD-CPU to the serial control (male DB-9 connector) on the rear of the monitors or the 610325206 cable connected to the “CTRL” output of the 4HD/5HD-CPU and fixed over the infrared receiver of the monitor.

IMPORTANT NOTES:

1. For monitors supplied by QubicaAMF, always set the ID of each monitor to 1 in order to control it directly from a Conqueror X computer.
2. Not all the monitors can be controlled from Conqueror X. Please contact QubicaAMF Technical Support department for further information.
3. Always disable the power saving or automatic switch-off option on each monitor to avoid the monitor turning off.



7.3 How to enable the “Just Scan” (or “Screen Fit”) and “HDMI-CEC” capabilities on monitors supplied by QubicaAMF

When using monitors supplied by QubicaAMF, follow one of the procedures listed below that depend on the brand / model of the monitors, in order to enable the “Just Scan” (or “Screen Fit”) capability.

ACCUVISION MONITORS Gen.3 and Gen.4:

How to enable the control “HDMI-CEC”:

- Enter the main menu of the monitor by pressing once the “Menu” button on the remote control.
- Once the main menu screen has appeared on the monitor, press in a fast sequence the following buttons on the remote control: “Menu”, “9”, “6”, “3”, “2”.
- Navigate to the “TV Control” setting and press “OK” on the remote control.
- Set the control “HDMI-CEC” (this setting lets the control commands to be executed through the HDMI cable).
- Once finished, press many times the “Menu” button on the remote control to exit from the menu.

ACCUVISION MONITORS Gen.2, Gen.3 and Gen.4:

How to enable the “JUST SCAN” option:






If the image displayed on the monitor is larger than the monitor screen, follow this procedure in order to have a correct aspect ratio:

- Press once the “Menu” button on the remote control.
- Enter the main menu of the monitor by pressing once the “Menu” button on the remote control.
- Once the main menu screen has appeared on the monitor, press in a fast sequence the following buttons on the remote control: “Menu”, “9”, “6”, “3”, “2”.
- Navigate to the sub menu “Aspect Ratio”.
- Select “Just Scan” and press “OK” on the remote control.
- Once finished, press many times the “Menu” button on the remote control to exit from the menu.

SAMSUNG MX SERIES MONITORS:

How to enable the “JUST SCAN” (or “Screen Fit”) option:

If the image displayed on the monitor is larger than the monitor screen, follow this procedure in order to have a correct aspect ratio:







- Enter the main menu of the monitor by pressing once the “Menu” () button on the remote control.
- Navigate to the “Picture” menu, using the arrow buttons and press the “Enter” () button on the remote control.
- Navigate to the “Size” sub menu and press the “Enter” () button on the remote control.
- Select the “Just Scan” (or “Screen Fit”) option and press the “Enter” () button on the remote control.
- Once finished, press many times the “Exit” () button on the remote control to exit from the menu.



SAMSUNG MD SERIES MONITORS:

How to enable the “JUST SCAN” (or “Screen Fit”) option:

If the image displayed on the monitor is larger than the monitor screen, follow this procedure in order to have a correct aspect ratio:

- Enter the main menu of the monitor by pressing once the “Menu” () button on the remote control.
- Navigate to the “Picture” menu, using the arrow buttons and press the “Enter” () button on the remote control.
- Navigate to the “Screen Adjustment” sub menu and press the “Enter” () button on the remote control.
- Navigate to the “Picture Size” sub menu and press the “Enter” () button on the remote control.
- Select the “Just Scan” (or “Screen Fit”) option and press the “OK” () button on the remote control.
- Once finished, press many times the “Exit” () button on the remote control to exit from the menu.

LG 32LM549C, 32LY330C-ZA, 32LY340C-ZA, 42LY330C-ZA, 47LY330C-ZA MONITORS:

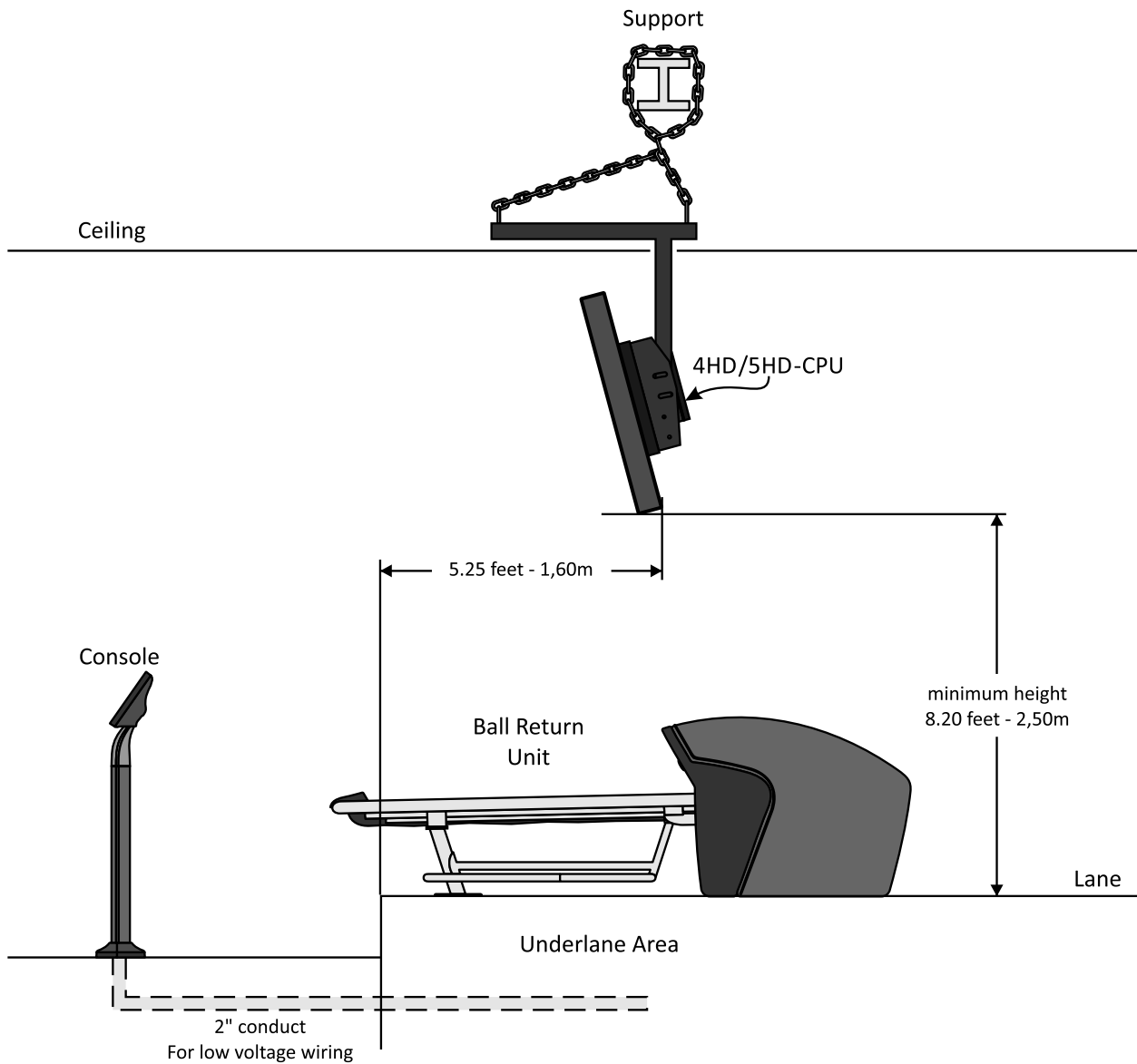
How to enable the “JUST SCAN” (or “Screen Fit”) option:

If the image displayed on the monitor is larger than the monitor screen, follow this procedure in order to have a correct aspect ratio:

- Enter the main menu of the monitor by pressing once the “Settings” button on the remote control.
- Navigate to the “Picture” menu, using the arrow buttons and press the “OK” button on the remote control.
- Navigate to the “Aspect ratio” sub menu and press the “OK” button on the remote control.
- Select the “Just Scan” (or “Screen Fit”) option and press the “OK” button on the remote control.
- Once finished, press many times the “Exit” button on the remote control to exit from the menu.



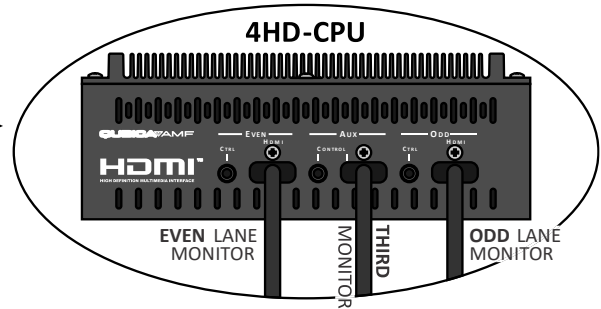
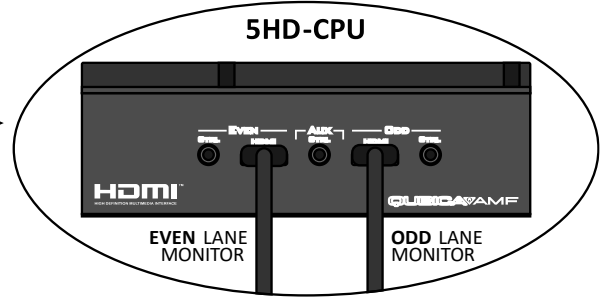
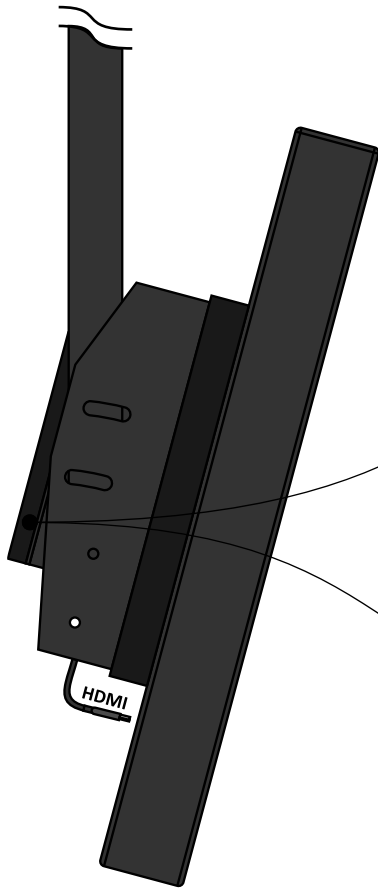
T.00.064 – Monitor position



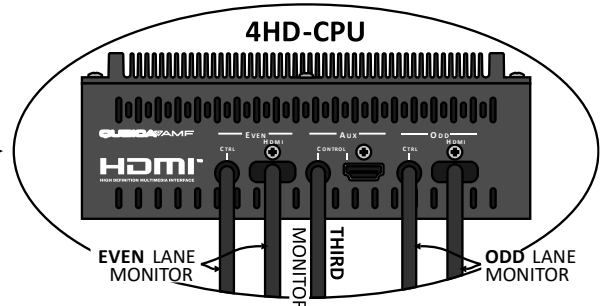
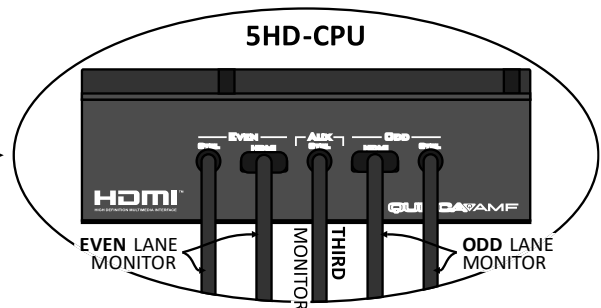
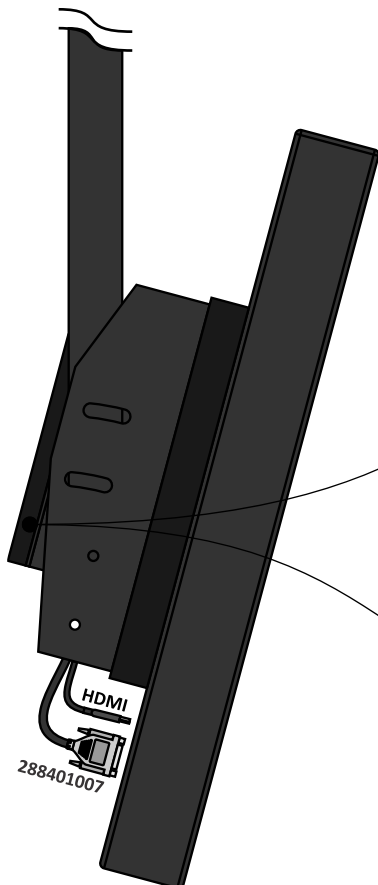
T.00.065 – 4HD/5HD-CPU monitor connection

AccuVision monitors only.

4HD/5HD-CPU connection in the case that the monitors support control through the HDMI connector.

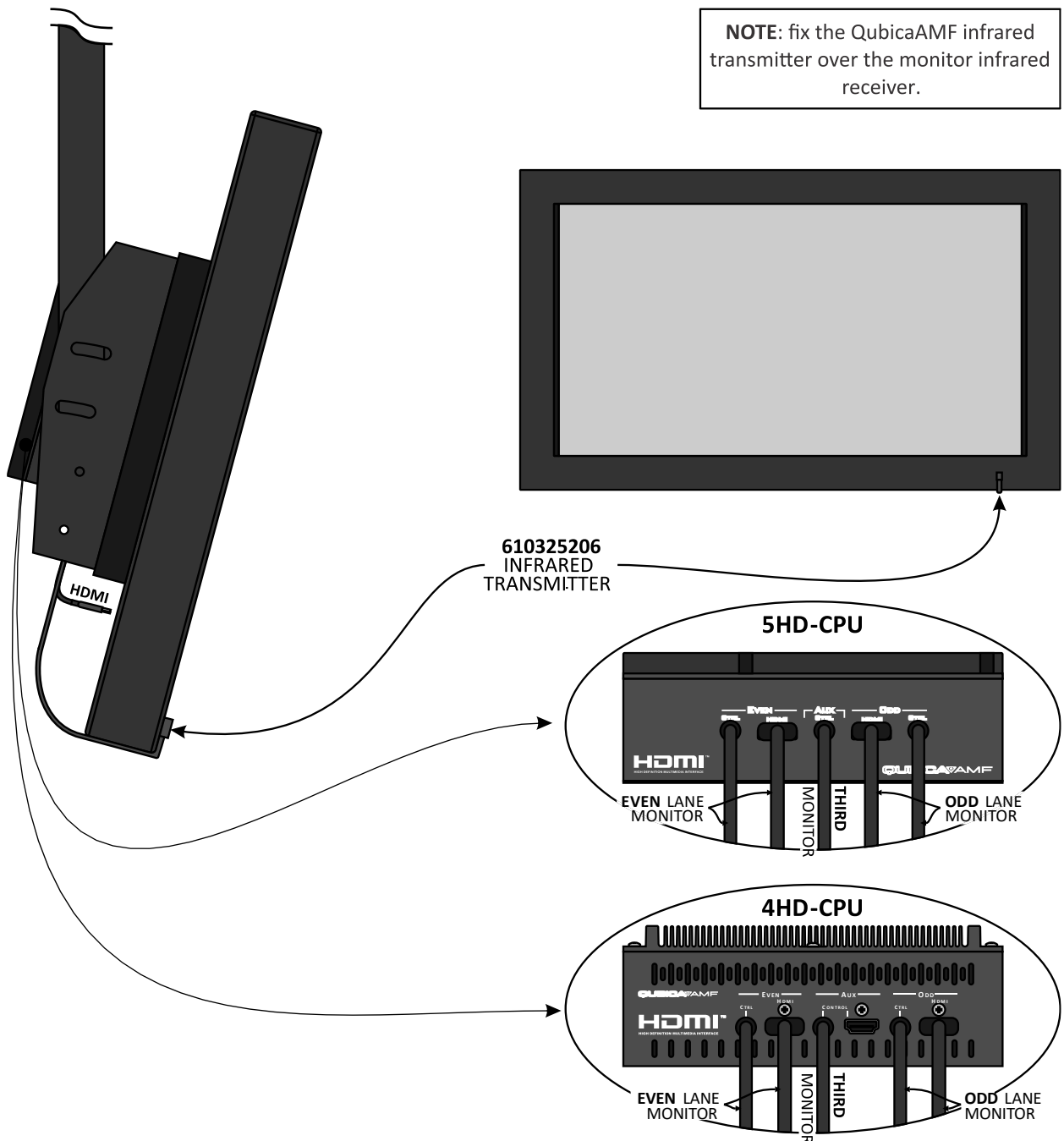


4HD/5HD-CPU connection in the case that the monitors does **NOT** support control through the HDMI connector.



T.00.069 – 610325206 infrared transmitter

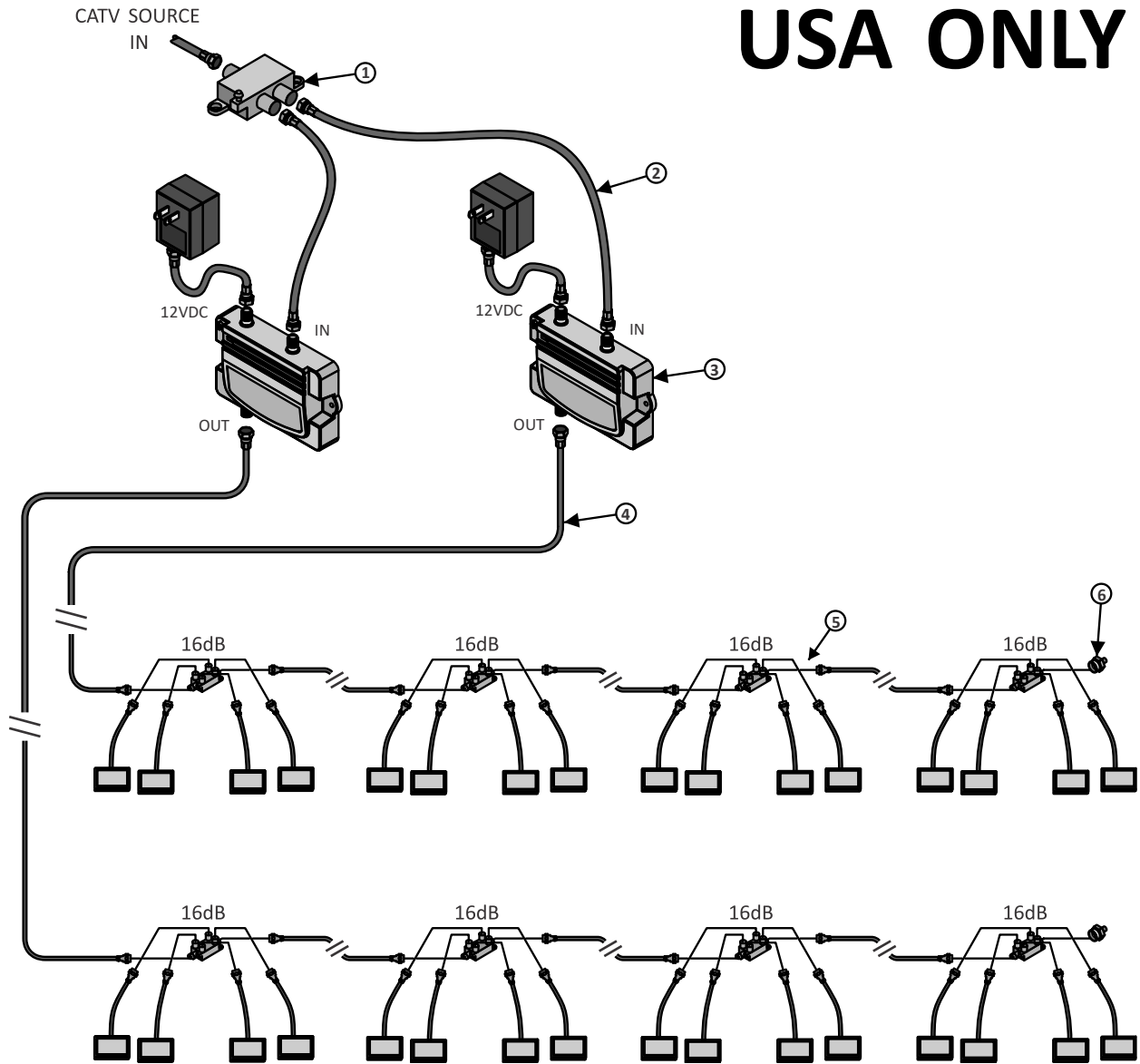
NOTE: fix the QubicaAMF infrared transmitter over the monitor infrared receiver.



8 TV signal wiring

T.00.011 – Cable television installation, TV displays

USA ONLY



PARTS LIST

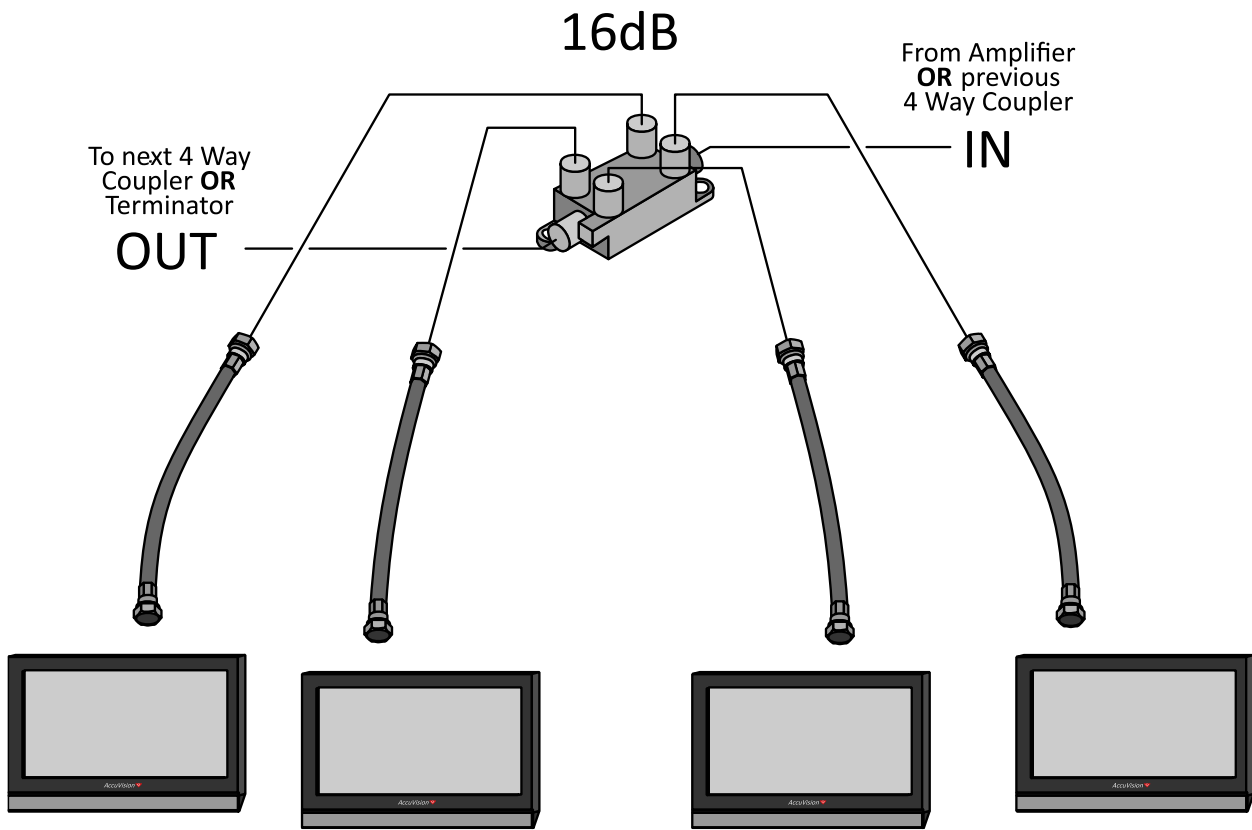
#	P/N	DESCRIPTION
1	756104006	CATV splitter, 2WAY
2	286002511	Cable assy, CATV 2 ft.
3	756101018	Amplifier, RF broadband
4	286002509	Cable assy, CATV 150 ft.
5	286002542	Cable TV 4 lane cable kit (note 5)
6	756103004	Terminators

INSTALLATION INSTRUCTIONS

1. All unused inputs or output of taps, splitters or amplifiers must be terminated.
2. On the CATV directional coupler, observe the direction of the signal flow. "IN" should always "FACE" the amplifier.
3. Position the amplifier in the end of the circuit as drawn.
4. If greater than 16 lanes are ordered, a second amplifier and 2-way splitter must be ordered. This configuration is designed for a maximum of 16 lane pairs.
5. The 289002540 kit comes with four 15 ft. drops, one 30 ft. extension, and one 4-way coupler. One kit is given every 2 lane pairs.
6. Mount amplifier above the overhead monitors, attach CATV cable to TV.



T.00.012 – Cable television installation, detail of four lanes



9 Front Desk

9.1 Installation Notes

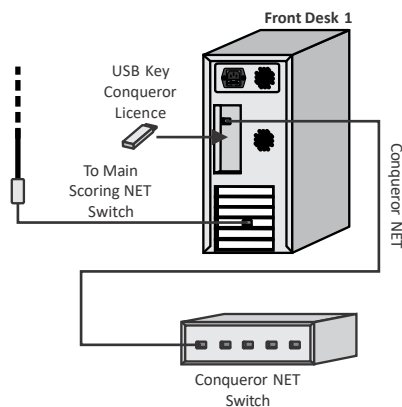
The Front Desk 1 (or Separate Server if present) is the PC to which the Scoring Network (Scoring NET) is connected. In this manual, we will refer to it as the Conqueror X server for simplicity.

The Conqueror X server is equipped with a second network card, as are all other computers supplied by QubicaAMF. Only the Conqueror X server is connected to the Scoring Network (Scoring NET).

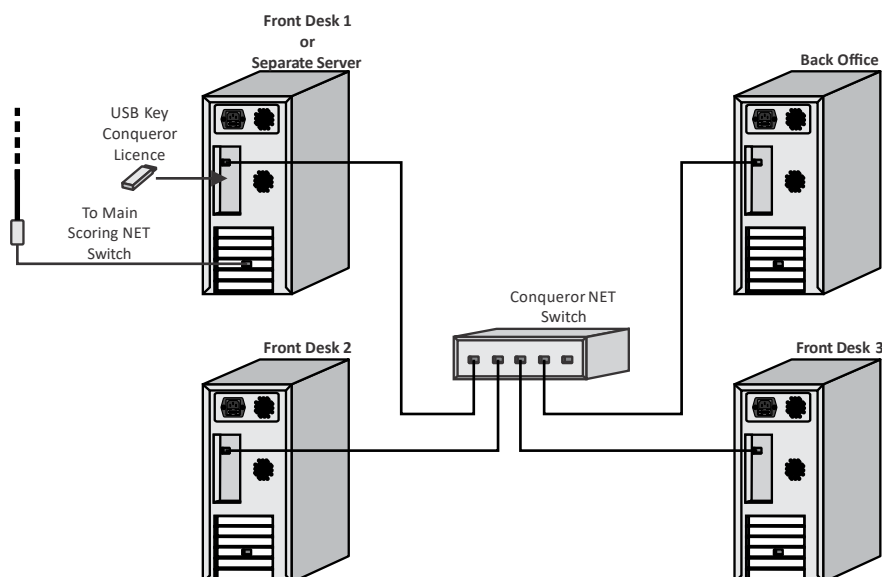
The Scoring Network (Scoring NET) is kept separated from the PC network (Conqueror NET) and it has a different IP address matrix. For standard installations, the PC network (Conqueror NET) standard IP address matrix (starting from Conqueror Pro version 6) is **192.168.71.xxx**, while the address matrix for the Scoring Network (Scoring NET) is **192.168.216.xxx**.

NOTE: The second network card on the computers different from the Conqueror X server is to be used only in the case that it is necessary to convert one of these computers into a Conqueror X server computer.

SINGLE FRONT DESK COMPUTER INSTALLATION



MULTIPLE FRONT DESK COMPUTERS INSTALLATION



9.2 Conqueror X Residential Edition installation

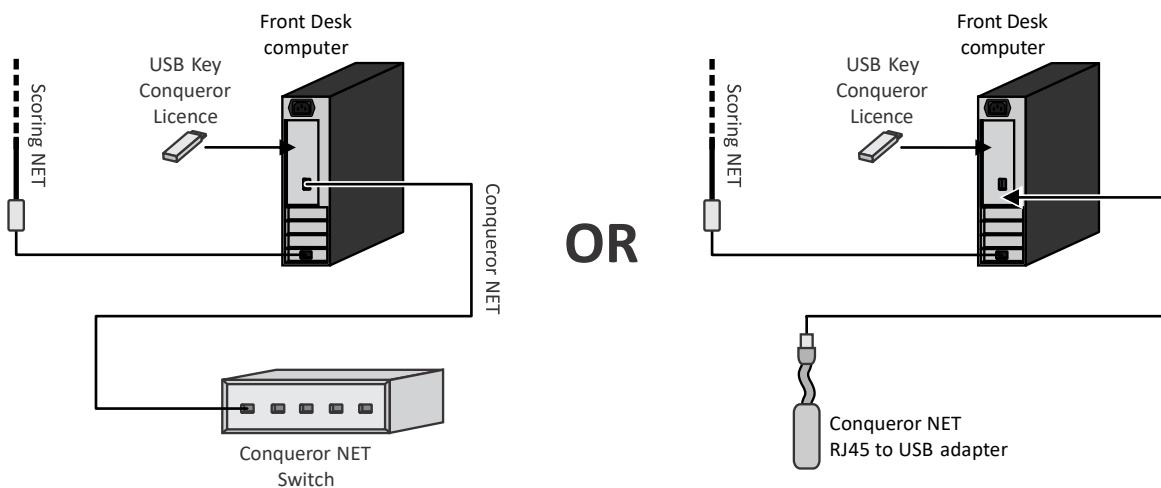
Conqueror X Residential Edition is a special Conqueror X version targeted to residential installations.

The hardware installation for the on-lane equipment is exactly the same as the installation for a normal BES X installation.

The Scoring Network (Scoring NET) is kept separated from the PC network (Conqueror NET) and it has a different IP address matrix. For standard installations, the Conqueror NET standard IP address matrix is **192.168.71.xxx**, while the address matrix for the Scoring NET is **192.168.216.xxx**.

The Front Desk computer can be equipped with a second network card, or alternatively QubicaAMF will provide a “RJ45 to USB” adapter used for the Conqueror NET connection.

IMPORTANT NOTE: ONLY connect the “RJ45 to USB” adapter to the USB port specified on the label attached to the computer.



9.3 Lanes Control Box Service

The Lanes Control Box Service (also called the Matrix Configuration service or MxServer) is the program that manages the allocation of IP addresses to the 4HD/5HD-CPU units each time they boot-up.



To setup the lane control box service you must open the SYSTEM tab under the icon **SETUP / General / Center Setup** in Conqueror X.

Insert the IP address of the Conqueror Server computer where the Lanes Control Box Service is installed into the **BES server IP address** field. The IP should be 192.168.71.1 (in the case of a front desk computer that acts as the Server) or 192.168.71.99 (in the case of a Separate Server).

Insert the IP address of the second network card of the Conqueror X computer where the Lanes Control Box Service is installed into the **BES lane subnet address** field. The IP should always be 192.168.216.1.

WARNING: You can have only one Lanes Control Box Service running per Bowling Center.

If these two IP addresses are not set, then Conqueror will display an error each time the system boots-up.



Save

In order to apply any change on this screen press **SAVE** and Conqueror X will restart.



10 Single channel video server

10.1 288201089 wiring

The 288201089 single channel video server unit is the hardware needed to broadcast a video signal from a single source to the BES X system. The video signal is broadcast in 720x576 (Standard Definition) for a PAL video signal and 720x480 (Standard Definition) for a NTSC video signal.

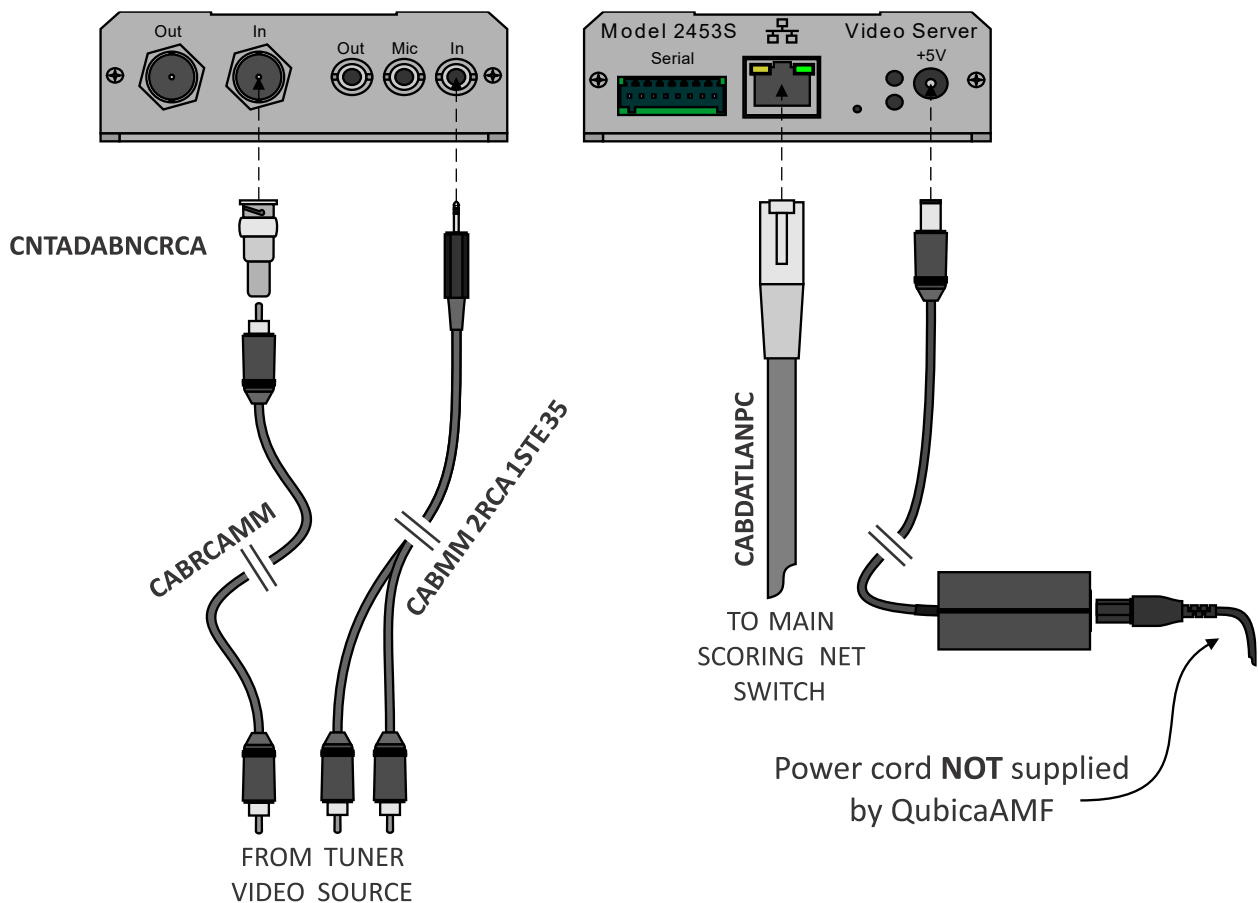
The 288201089 unit has a Static IP address pre-assigned by QubicaAMF.

The default IP address of the 288201089 unit is:

- *IP Address:* 192.168.216.201;
- *Subnet Mask:* 255.255.248.0.

NOTE: the 288201089 unit must be the only video server unit installed in the center.

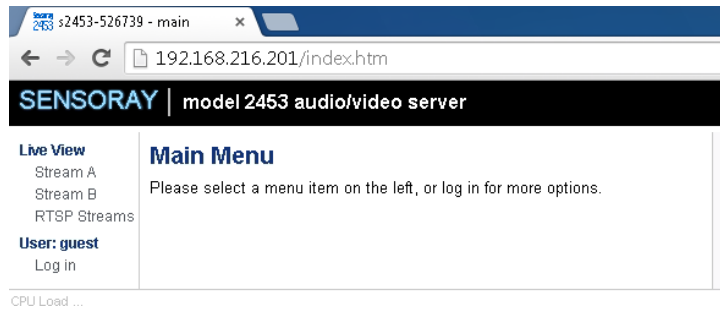
T.90.247 – 288201089 single channel video server



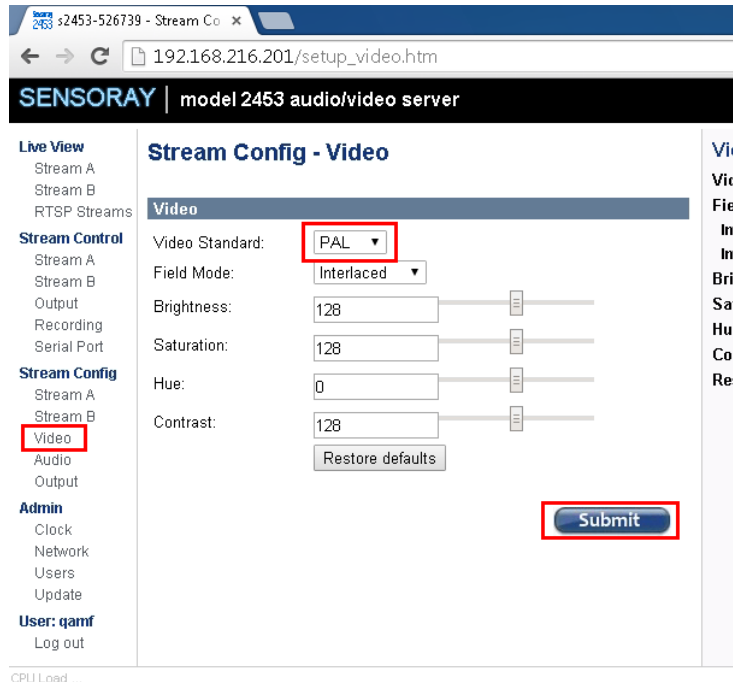
10.1.1 How to change the video standard from NTSC to PAL with 288201089

The 288201089 video server is preconfigured to broadcast an NTSC video signal. If it is necessary to change the video standard from NTSC to PAL, follow this procedure:

- Once the 288201089 video server has been correctly installed and is up and running, open a web browser (i.e. Internet Explorer) page on a Conqueror X computer and insert the 192.168.216.201 IP address into the address bar.
- In the menu on the left, click on “Log in”:



- Insert the following credentials in order to log in:
 - User Name: **qamf**
 - Password: **qamf**
- In the menu on the left, click on “Video” under “Stream Config”, select “PAL” as “Video Standard” and click on “Submit”.



- In the menu on the left, click on “Output” under “Stream Config”, select “PAL” as “Video Standard” and click on “Submit”.

The screenshot shows the 'Output Stream Configuration' page for a SENSORAY model 2453 audio/video server. The left sidebar contains a menu with 'Output' highlighted under 'Stream Config'. The main content area has three sections: 'Stream' (Format: H.264 VES), 'Video' (Video Standard: PAL), and 'OSD' (Enable: Off, Message: empty, X Position: 0, Y Position: 0, Date Display: MM-DD-YYYY, Time Seconds Display: Whole, Background: Black). A 'Submit' button is located at the bottom right of the main content area.

- In the menu on the left, click on “Stream A” under “Stream Config”, select “720x576” as “Resolution” and click on “Submit”.

The screenshot shows the 'Stream A Configuration' page for a SENSORAY model 2453 audio/video server. The left sidebar contains a menu with 'Stream A' highlighted under 'Stream Config'. The main content area has three sections: 'Stream' (Format: H.264+AAC MPEG-TS), 'Video' (Resolution: 720x576, Frame Rate: 25, Bit Rate: 1500000, GOP Size: 30, Aspect Ratio: None, Transform: None), and 'OSD' (Enable: Off, Message: empty, X Position: 0, Y Position: 0, Date Display: MM-DD-YYYY, Seconds Display: Whole, Background: Black). A 'Submit' button is located at the bottom right of the main content area.

- Reboot the video server.



10.2 288201034 wiring

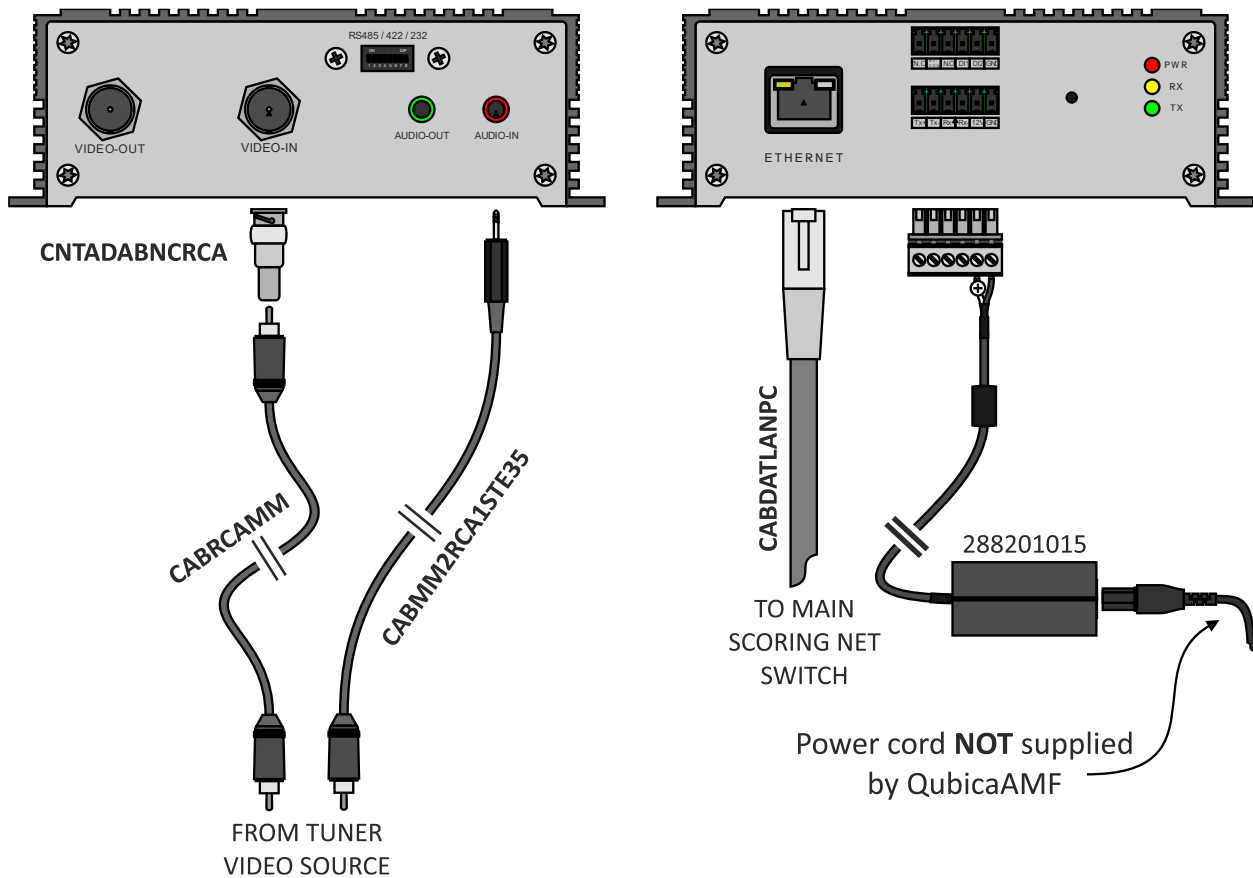
The 288201034 single channel video server unit is the hardware needed to broadcast a video signal from a single source to the 4HD/5HD-HUB units. The video signal is broadcasted in 720x576 (Standard Definition) for a PAL video signal and in 720x480 (Standard Definition) for a NTSC video signal.

The 288201034 unit has a Static IP address pre-assigned by QubicaAMF.

The default IP address of the 288201034 unit is:

- *IP Address:* 192.168.216.201;
- *Subnet Mask:* 255.255.248.0.

T.90.211 – 288201034 single channel video server



10.3 Single channel video server Conqueror X setup

Once the Single channel video server has been correctly installed, it must be configured in ConquerorX to function properly along with the BES X scoring system.

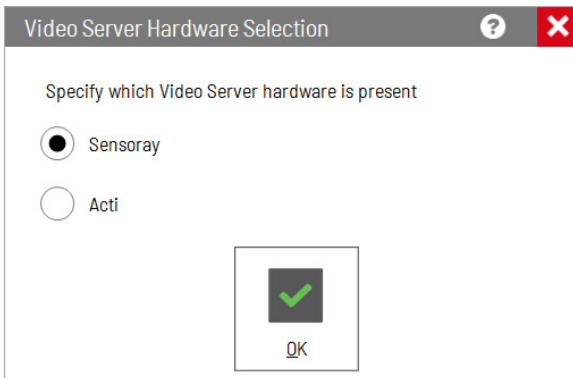


Navigate through the Conqueror X main menu and select **SETUP / General / Center Setup**



In the **Score** tab click on **Video Server**

Video Server



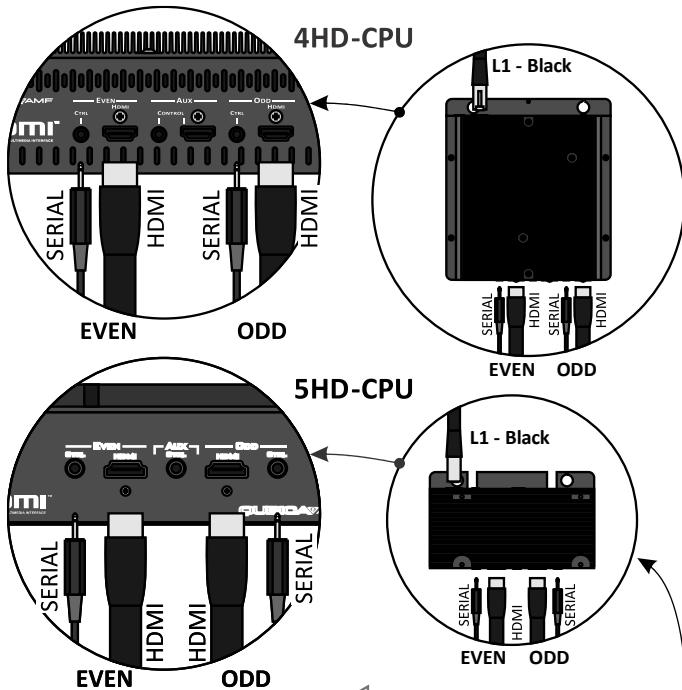
Select the hardware installed for the video server:

- Sensoray, P/N: 288201089;
- Acti, P/N: 288201034.

And click on **OK**.



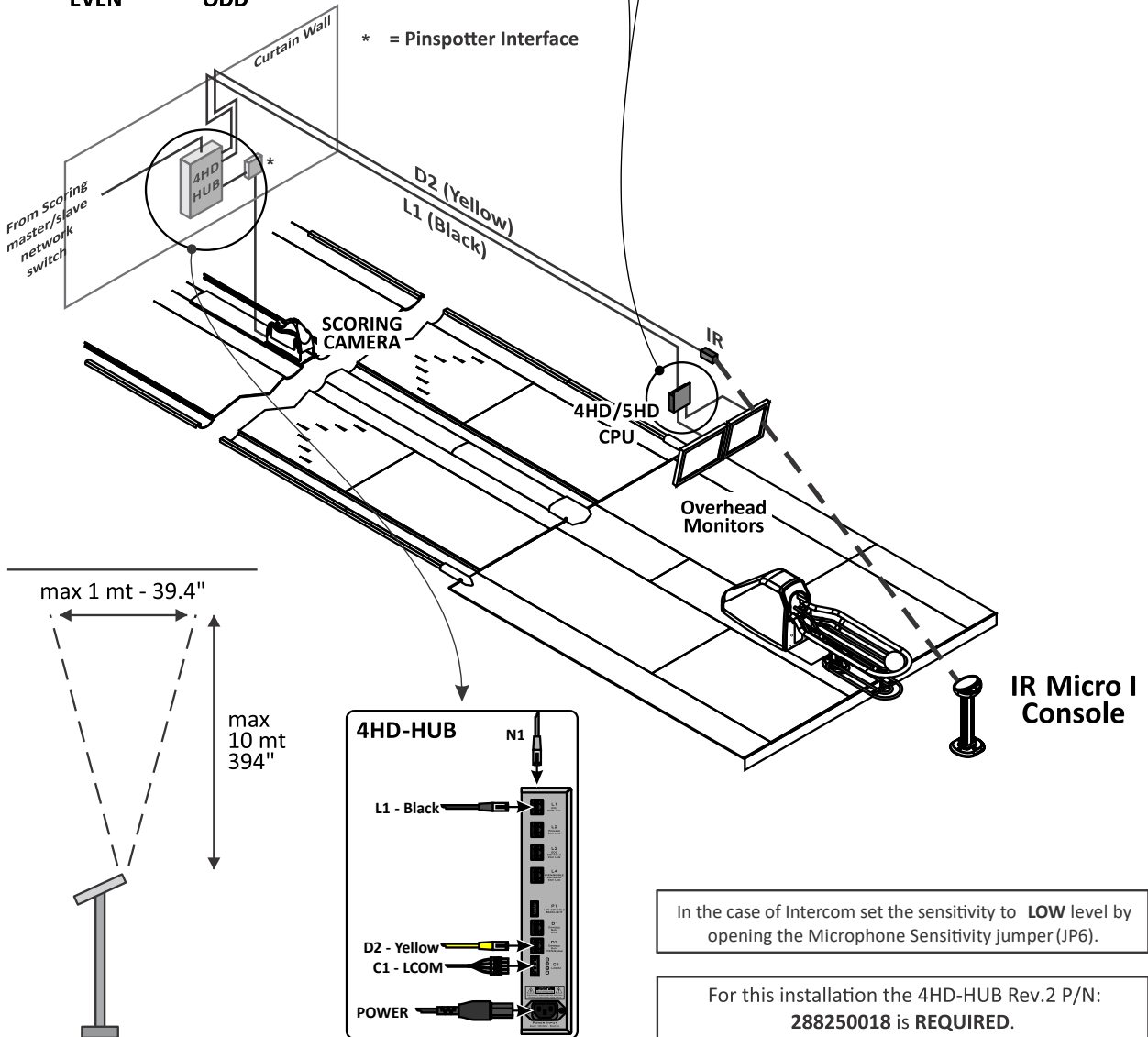
T.10.032 – 2 overhead monitors IR Micro I console



L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

QIT-RDB
DIP-switch settings

	ON	OFF	
1	ON	OFF	Power
2	EVEN	ODD	Lane pair
3	1 KEYB	2 KEYB	Micro/Fly
4	LEFT	RIGHT	Lane

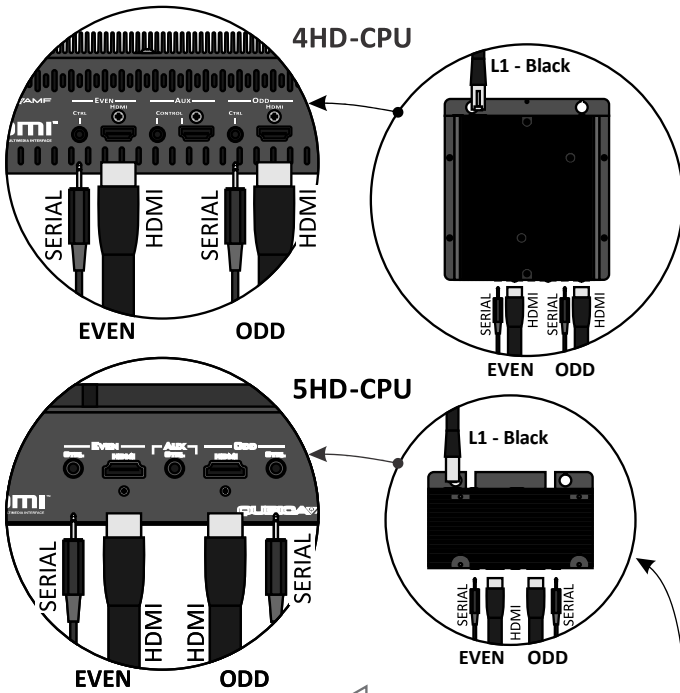


In the case of Intercom set the sensitivity to **LOW** level by opening the Microphone Sensitivity jumper (JP6).

For this installation the 4HD-HUB Rev.2 P/N: **288250018** is **REQUIRED**.



T.10.033 – 2 overhead monitors IR Micro II console



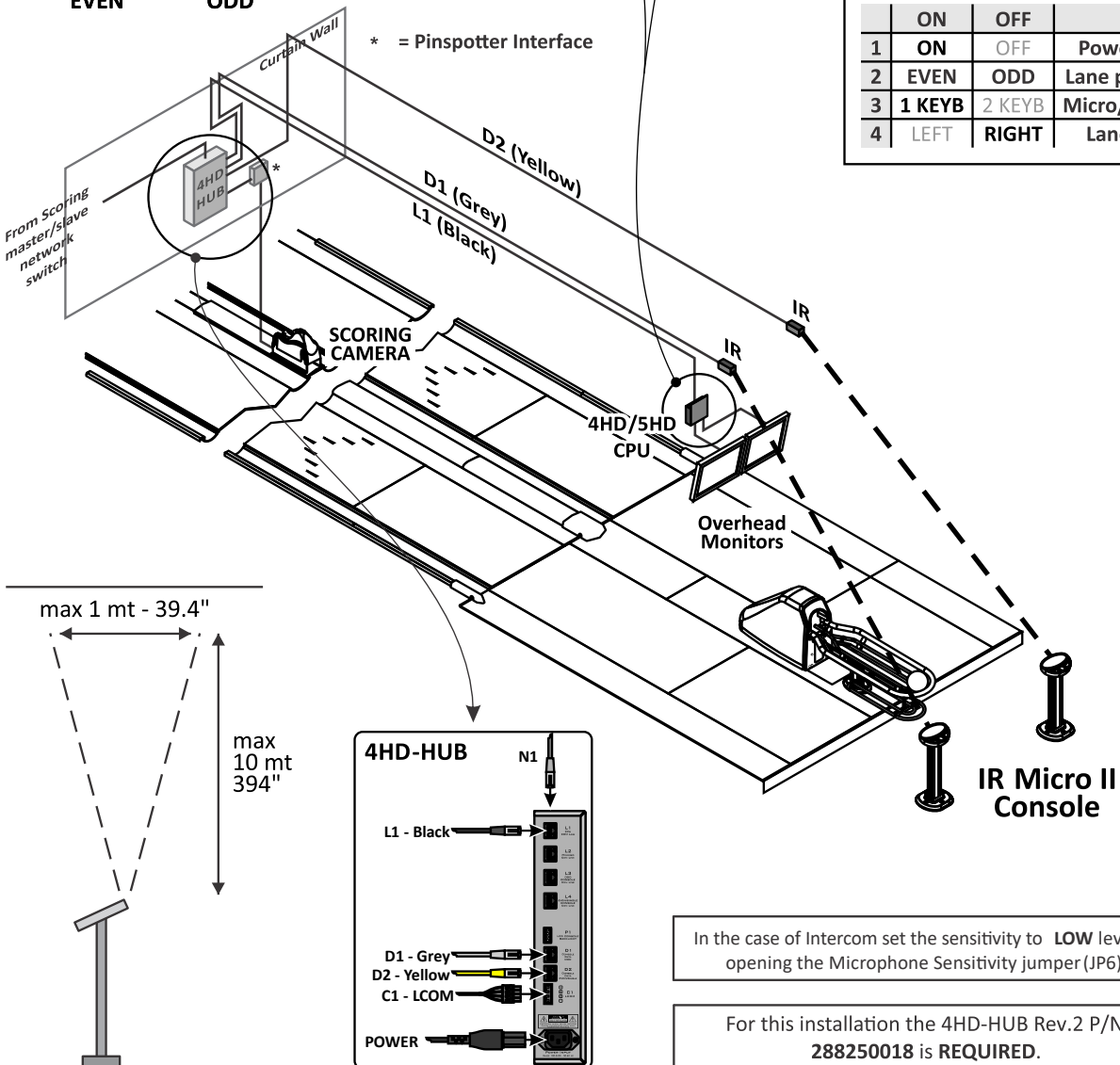
L1 connection: When for the L1 connection a cable longer than 38 m (125 ft) is needed, use the cable supplied with the 610325427 kit. Cut the cable at the desired length and install the plugs as specified in **T.40.042**.

ODD CONSOLE QIT-RDB
DIP-switch settings

	ON	OFF	
1	ON	OFF	Power
2	EVEN	ODD	Lane pair
3	1 KEYB	2 KEYB	Micro/Fly
4	LEFT	RIGHT	Lane

EVEN CONSOLE QIT-RDB
DIP-switch settings

	ON	OFF	
1	ON	OFF	Power
2	EVEN	ODD	Lane pair
3	1 KEYB	2 KEYB	Micro/Fly
4	LEFT	RIGHT	Lane

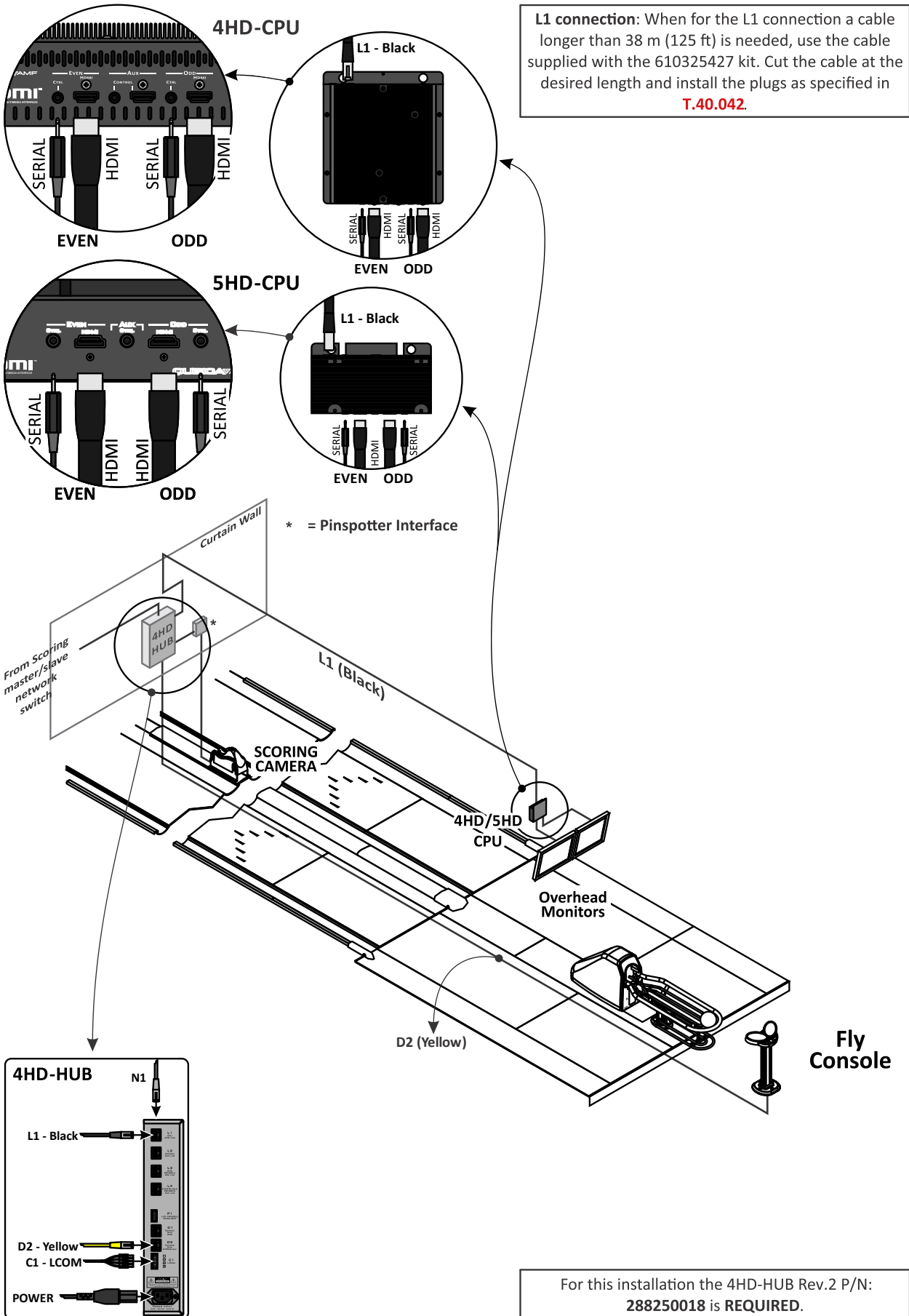


In the case of Intercom set the sensitivity to **LOW** level by opening the Microphone Sensitivity jumper (JP6).

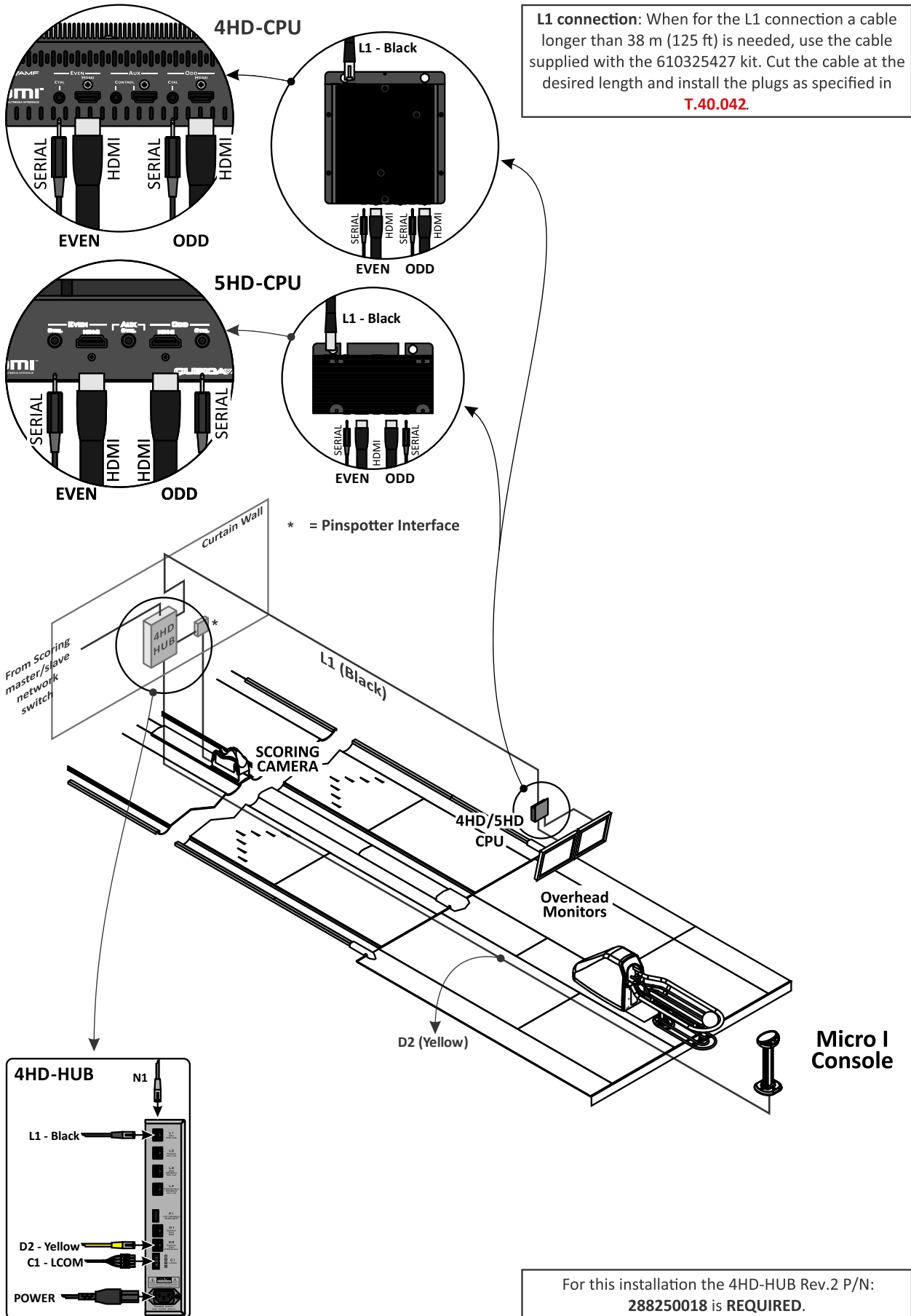
For this installation the 4HD-HUB Rev.2 P/N: **288250018** is **REQUIRED**.



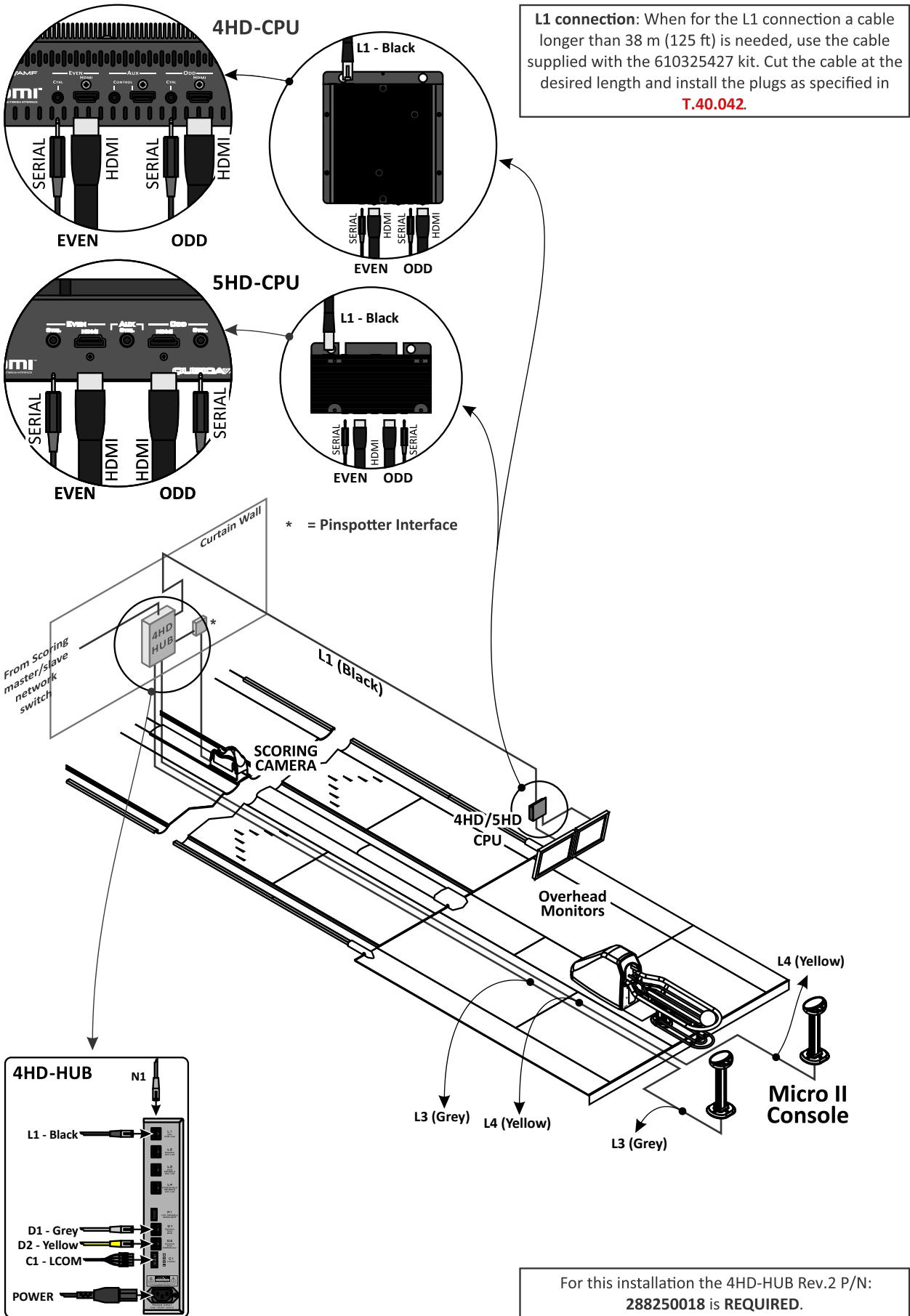
T.10.034 – 2 overhead monitors Fly console



T.10.035 – 2 overhead monitors Micro I console



T.10.036 – 2 overhead monitors Micro II console



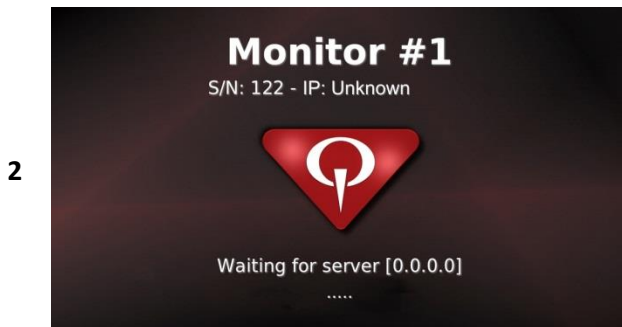
12 System first start-up

The 4HD/5HD-CPU unit is addressed from the Conqueror X LANE SETUP section. Insert the serial number of each 4HD/5HD-CPU into the Conqueror X LANE SETUP section (serial numbers can be read on the lane monitors during the boot-up of the lanes).


Once the hardware of the BES X system has been correctly installed, as described above in this manual, follow these steps in order to configure Conqueror X with the new scoring system.


For a new installation follow this procedure:

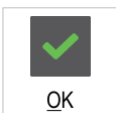
- 1 Turn on the 4HD/5HD-HUB units, plugging the power cord to the power source.



The following image will appear on the monitor, please take note of the SERIAL NUMBER (S/N).

- 3  On a front desk computer, navigate through the Conqueror X main menu and select: **SETUP / Lane Setup / Lane Setup**.

- 4  In the Lane Setup screen, select the lane where the serial number of the 4HD/5HD-CPU unit must be set up and click on **Modify**.

- 5  Insert the serial number of the 4HD/5HD-CPU. Set also the number of the monitors, the pinsetter interface, the keyboard type and all other desired options (refer to the "**Lane setup parameters screen brief description**" par. for a brief description of each parameter); click on **OK** when finished.

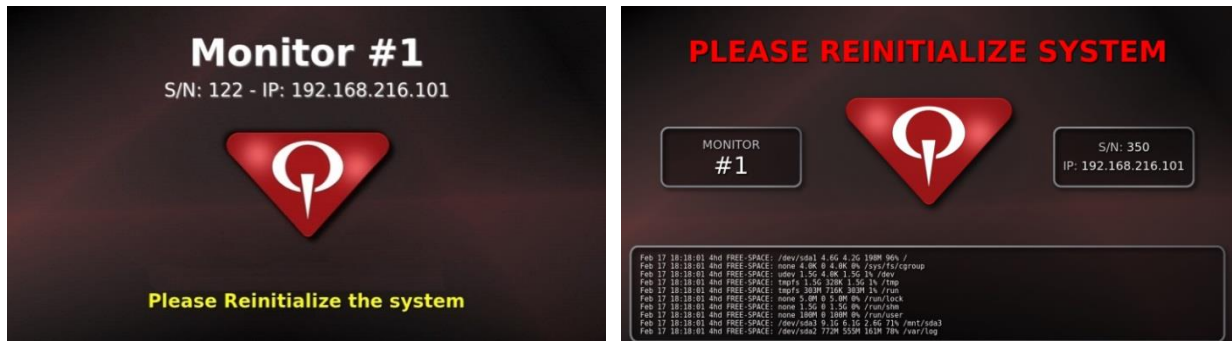
- 6 Repeat the procedure from step 4 for each pair of installed lanes.


- 7  Click on **Save** on the LANE SETUP screen and Conqueror X will restart.

- 8 Each lane will reboot within five minutes.


9 Wait until the following image appears on the lane monitors.

NOTE: Depending on which version of Conqueror Pro/X has been installed in the center, the image visualized on the lane monitors could vary.




10  Navigate through the Conqueror X main menu and select: **SETUP / Lane Setup / Upload to Lanes.**

11  Click on the **Lanes selected** box.

12  In the screen that appears, select all the lanes that must be reinitialized and click **OK**.

13  On the **Upload to Lanes** screen click on **Reinitialize**.

14  Click on **Yes** when the Warning message appears.

15 The Reinitialize procedure will now start.

IMPORTANT: This procedure will take more than an hour to finish. **DO NOT** switch off the BES X system during the Reinitialization process.

16 The ODD lane overhead monitors will turn off (or display a black screen, or the message “no signal”, depending on the model of the monitor) while the monitor on the EVEN lane will display different text rows. The last text row on the even lane monitor will be “system halted”.

17 Within five minutes (from the appearance of the “system halted” message), each pair of lanes will restart automatically, or each pair of lanes can be restarted manually by unplugging and plugging back the power cord of the 4HD/5HD-HUB.


18 The Reinitialization process will continue after this restart.


19 The system will boot-up after the Reinitialization process has finished.


20 If the error number **203** appears on the lane monitors, the problem could be due to incorrect pinspotter parameters.





- 21 In any case (whether if the lane stops in error 203 or if the lane boots-up correctly), set up the correct pinsetter parameters in Conqueror X.


- 22  Navigate through the Conqueror X main menu and select: **SETUP / Lane Setup / Pinspotter and Camera.**

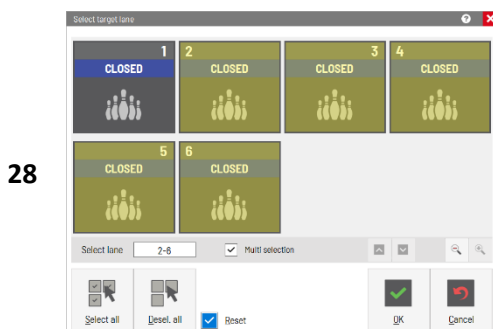
- 23  In the **Select the destination lane** window, choose the first lane where you must load the parameters and press **OK**.

- 24  Press **Defaults** in order to load the standard values.

- 25  Once the default values have been loaded, press **Send** to load them on to the 4HD/5HD-CPU.

- 26  Press **No** when prompted to Reset the Lane Control Box.

- 27  Press **Copy to** in order to load the values on all the lanes that have the same pinspotter and interface type.

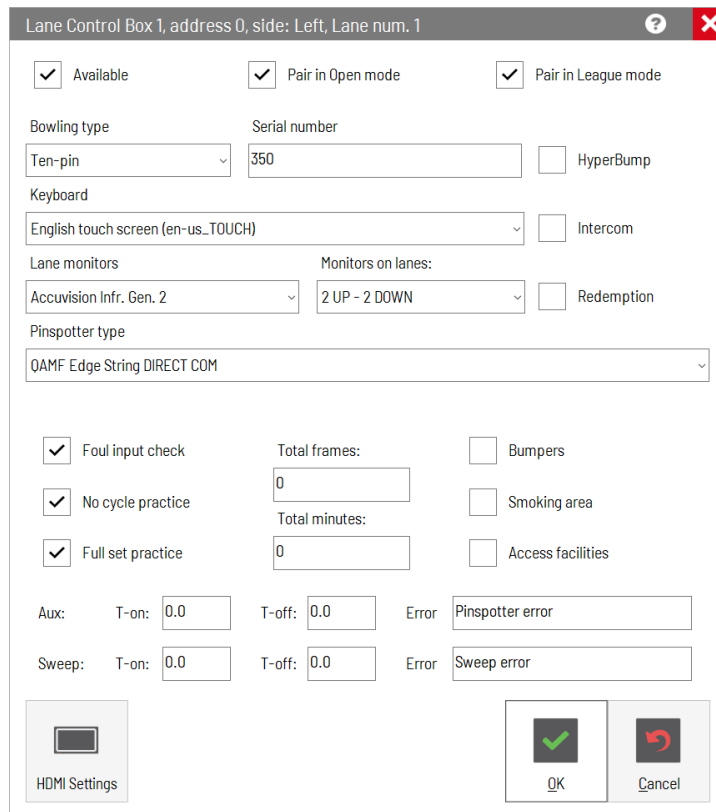


Select the target lanes, enable the **Reset** option and press **OK**.

- 29 The system will reboot after the parameters have been uploaded.
- 30 If SuperTouch LCD monitors have been installed, they will start to load the programs.
- 31 During the load programs procedure, an image with a blue background will be displayed on the SuperTouch monitors. This means that the procedure is in progress. If an error occurs, an image with a red background will be displayed and the procedure will stop. If the procedure ends correctly, an image with a green background will be displayed on the SuperTouch monitors, then the system will reboot after a few seconds.
- 32 Once all the lanes are up and running, upload the animations to the lanes. Please refer to the section **How to Upload animations to the 4HD/5HD-CPU units.**



12.1 Lane setup parameters screen – brief description



Available: uncheck this option if the lane is not available (when the 4HD/5HD-CPU serves a single lane instead of a pair of lanes).

Pair in Open mode: allow the lane to be opened in pair mode from the all lane screen.

Pair in League mode: allow the lane to be opened in pair mode from the league software.

Bowling type: specify the bowling type for the lane (Ten-pin, Five-pin, Duckpin, Candlepin, Highway-66).

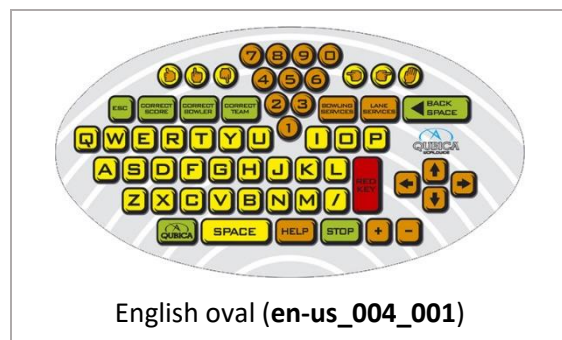
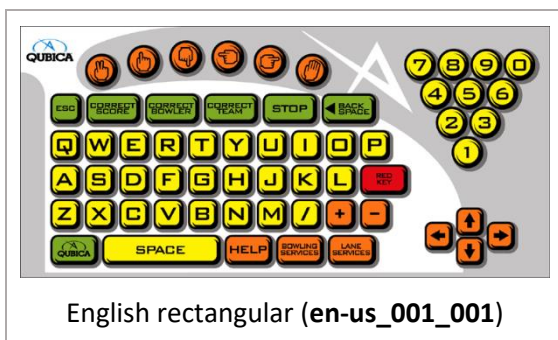
Serial number: insert here the serial number of the 4HD/5HD-CPU operating on this pair of lanes (or lane).

HyperBump: enables the HyperBumpers on this lane. **NOTE:** Check (enable) this option **ONLY** if a HyperBumper system has been purchased and installed.

Keyboard: select the specific model of keyboard console installed on this lane.

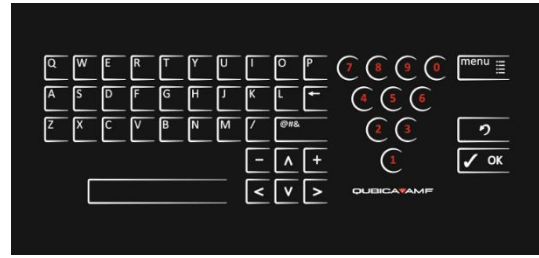
The available models are:

NONE: no consoles are installed on the lanes;





Universal 2008 (en-us_008_001)



en-us_009_001:
 Universal 2012, Chinese 2012 Backlight,
 Eastern Europe 2012 Backlight, Vietnamese
 2012 Backlight, Korean 2012 Backlight.



Japanese rectangular (ja_002_001)



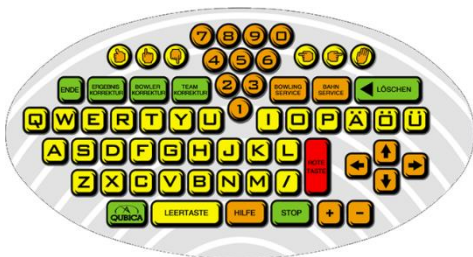
Japanese oval (ja_005_001)



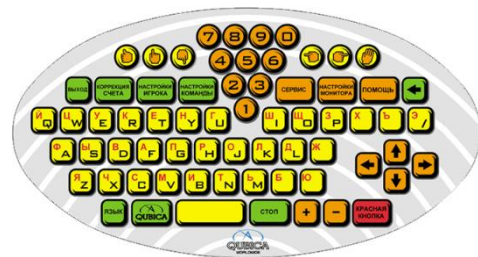
Japanese 2008 (ja_008_003)



Japanese 2012 Backlight (ja_009_003)



German oval (de-de_006_001)



Russian oval (ru_007_001)

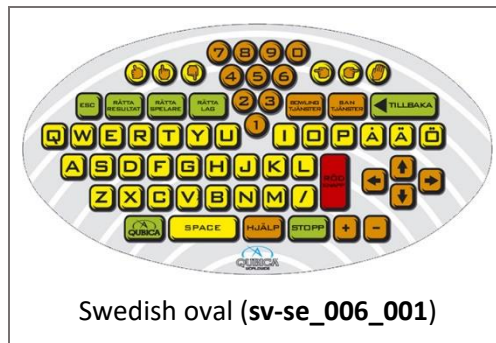


Russian 2008 (ru_008_002)



Russian 2012 Backlight (ru_009_002)





- SuperTouch console with English language **en-us_TOUCH**: Chinese touch screen, Eastern Europe touch screen, English touch screen, Korean touch screen, Vietnamese touch screen.
- Japanese touch screen (**ja_TOUCH**): SuperTouch console with Japanese language.
- German touch screen (**de-de_TOUCH**): SuperTouch console with German language.
- Russian touch screen (**ru_TOUCH**): SuperTouch console with Russian language.

Intercom: enables the intercom on this lane. **NOTE:** Check (enable) this option **ONLY** if a Q-COM system has been purchased and installed.

Lane monitors: specify the model of the overhead monitors connected to the serial control cable or IR control cable to the 4HD/5HD-CPU. Select QUBICA STANDARD if the monitor is not supported.

Monitors on lanes: specify how many overhead monitors (“UP” monitors) and how many touch screen monitors (“DOWN” monitors) are present on the pair of lanes:

- 2 UP: two overhead monitors and no SuperTouch console.
- 2 UP – 1 DOWN: two overhead monitors and one SuperTouch console per pair of lanes.
- 2 UP – 2 DOWN: two overhead monitors and one SuperTouch console per lane.
- 3 UP: three overhead monitors and no SuperTouch console.
- 3 UP – 1 DOWN: three overhead monitors and one SuperTouch console per pair of lanes.
- 3 UP – 2 DOWN: three overhead monitors and one SuperTouch console per lane.
- 2 DOWN: no overhead monitors present and one SuperTouch console per lane.

Redemption: enables the Redemption.

Pinspotter type: specify the pinspotter model and the pinspotter interface installed on this lane.

Foul input check, No cycle practice, Full set practice: these checkboxes enables the options in the Lane Options menu.

Total frames, Total minutes: these are counters for the lane usage.

Bumpers, Smoking area, Access facilities: specific information for the reservation module.

Aux and Sweep: TCS setup parameter.

HDMI Settings button:

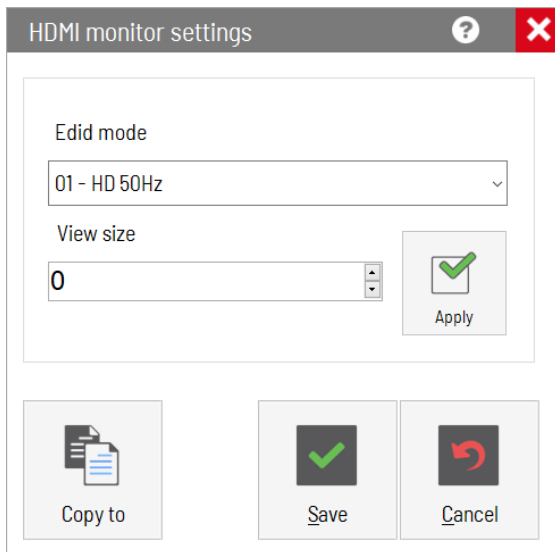
This button must be used in two cases when:

1. the monitor connected to the 4HD/5HD-CPU will not show any image, and “NOT SUPPORTED”, “NOT AVAILABLE” or a similar message is shown on the monitor. This occurs as not all monitors support all of the HDMI video resolutions. In order to fix this issue, you can use the EDID mode option explained below.



- the monitor connected to the 4HD/5HD-CPU will show an image, but it does not properly fit on the screen and there is no option to adjust the image shown on the monitor. In order to fix this issue, you can use the “View size” option explained below.

Once you click on the HDMI Settings button you will see the following window where you have two options:



Edid mode: this menu will give you the possibility to select four different modes for the HDMI video output, these are:

- 01 - HD 50 Hz;
- 02 - HD 60 Hz;
- 03 - HD Scaled 50 Hz;
- 04 - HD Scaled 60 Hz.

By default, the mode is set to 01 - HD 50Hz, but as explained above in the case that the monitor shows you the message “not supported”, you can try to change it to another mode, save it and restart the pair of lanes to see if you get the image displayed.

THE SUGGESTED RESOLUTIONS ARE 01 - HD 50Hz or 02 - HD 60Hz.

Every time you make a change you must restart the lanes to apply the change. You can restart the lane from the upload to lanes screen by clicking on **Reset**.

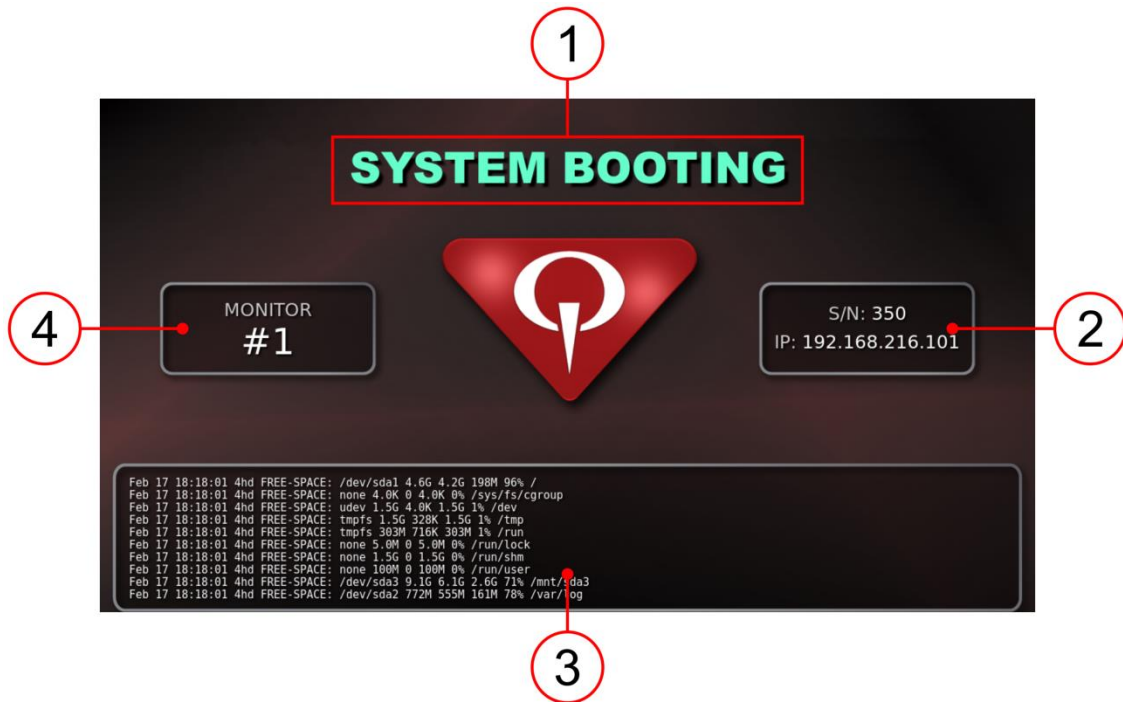
View size: This option gives you the possibility to resize the image in the case where the monitor does not have any auto resize option (that we require for compliance with our system, normally called “just scan” or “screen fit” but this name may change with different monitor brands). The view size value must be in a range from 0 to 200. Click on **Apply** to apply the changes in real time after any changes. This functionality does not require a restart of the lanes.



13 System boot-up sequence

13.1 Boot-up screen description

During the boot-up of the system, the following image is displayed (note that this image is only an example and may vary):

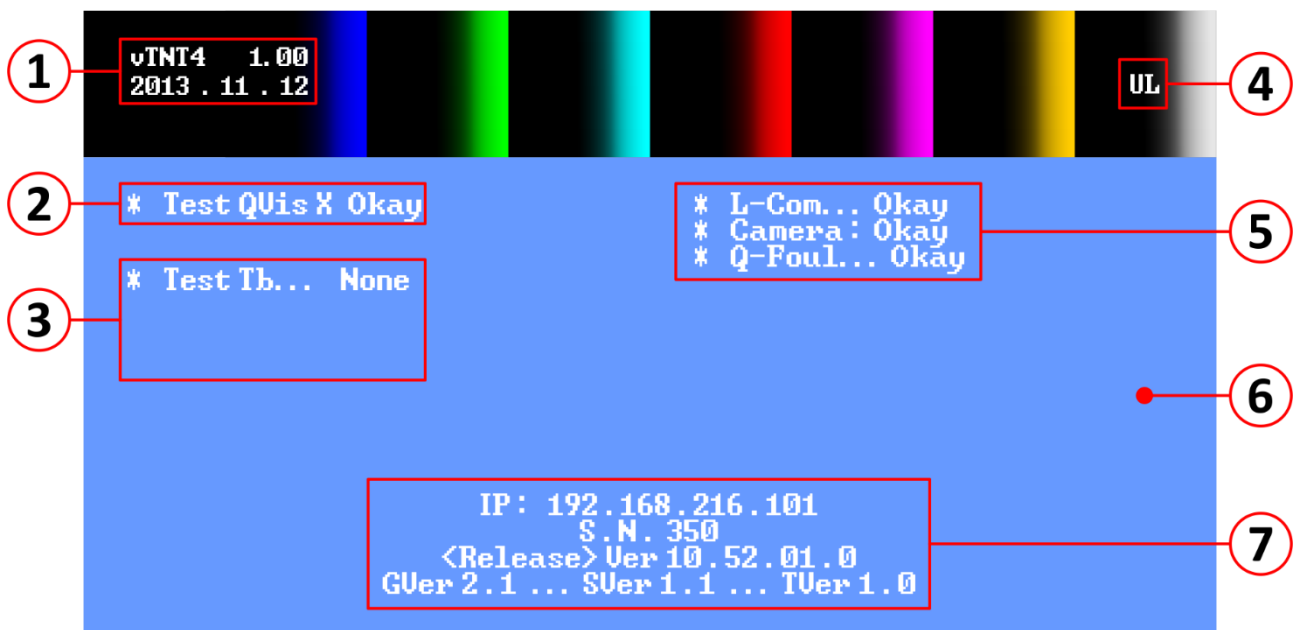


This is an example of the boot-up screen that is displayed on the lane monitors during the boot-up sequence of the BES X system.

1. The boot-up process information ("system booting", "please reinitialize the system", etc.) is shown in this part of the screen;
2. The serial number (S/N) of the 4HD/5HD-CPU and the IP address assigned to that unit is shown in this square.
3. The operations performed by the system during the boot-up process are shown in this area.
4. The monitor number is shown in this area. **NOTE:** this is NOT the lane number, but the number for the monitor of that pair of lanes, so the monitor on the odd lane is always 1 and the monitor on the even lane is always 2.



After this process, the boot-up of the system is not completed and, if the system does not request a reinitialize or a program upload, the screen changes as shown in the following image:



1. vTNT software version/date.
2. L-COM main device test. The L-COM main device test result will be displayed in this row. If the particular device works properly, the result of this test will be "Okay", alternatively an error code will be displayed and the entire boot of the 4HD/5HD-CPU will stop. Each main device will be displayed with a different code:
 - *Test QVis-X*: Q-Vision camera connected to an AMF XL/XLi series pinspotter.
 - *Test QVis-Q*: Q-Vision camera connected to an AMF non-XL/XLi series pinspotter.
 - *Test FBox*: this test will be displayed under the *Test QVis-Q* row only if an F-Box pinspotter interface has been installed and configured.
 - *Test QAll-X*: this test will be displayed if an M-Vision camera with an ALL/XL pinspotter interface has been installed with AMF XL/XLi series pinspotters.
 - *Test TV*: This test will be displayed under the *Test QAll-X* row to test the presence of the M-Vision camera.
 - *Test TV*: This test will be displayed if a T-Vision camera with F-Box or Six pinspotter interface has been installed.
 - *Test FBox*: this test will be displayed under the *Test TV* row only if a T-Vision camera with an F-Box pinspotter interface has been installed and configured.
 - *Test QAll-o*: QBK-Corde pinspotter interface (string machine interface).
 - *Test QAll-m*: ALL pinspotter interface for Mendes MM2001, ME90 or Qubica MAG3IT, TMS pinspotters.
 - *Test QAll-s*: ALL-GS pinspotter interface for Brunswick GS series pinsetters (not NEXGEN).
 - *Test QAll-g*: ALL pinspotter interface for Brunswick GS X NEXGEN series pinsetters.
3. Optional devices test area: the optional devices (SuperTouch consoles, EasyKey consoles, HyperServer, Effects Server, etc.) test results will be displayed in this area. Only the devices configured in Conqueror X will be displayed. If the device works properly, the result of its test will be "Okay", alternatively an error code will be displayed and the entire boot of the 4HD/5HD-CPU will stop. Each different type of terminal board is displayed with a different code:
 - *Test 4HD (or 5HD)-TB on L4*: 1 wired console with keypad is connected to the L4 port of the 4HD/5HD-HUB unit (one per pair).
 - **ONLY WITH 4HD-HUB REV.2:** *Test Tb on D2*: 1 wired console with keypad is connected to the D2 port of the 4HD-HUB Rev.2 unit (one per pair).



- **ONLY WITH 4HD-HUB REV.2:** *Test TbQir on D2:* 1 infrared receiver is connected to the D2 port of the 4HD-HUB Rev.2 unit.
 - **ONLY WITH 4HD-HUB REV.2:** *Test TbQir on D1 & on D2:* 2 infrared receivers are connected to the D1 and to the D2 port of the 4HD-HUB Rev.2 unit.
4. Monitor video output:
 - *UL:* Upper Left (odd lane).
 - *UR:* Upper Right (even lane).
 5. If the device works properly, the result of its test will be “Okay”, alternatively an error code is displayed, and the entire boot of the 4HD/5HD-CPU will stop.
 - *L-COM:* test of the entire L-COM line integrity.
 - *Camera:* test of the connection between the camera and the camera board.
 - *Q-Foul:* Q-Foul (or Radaray on AMF XL/XLi series pinspotters) device is connected to the system.
 - *M-I/O:* an EDC unit is connected to the L-COM.
 6. The background color of this part of the screen indicates if the 4HD/5HD-CPU unit is able to communicate with the front desk. The background color can be as follows:
 - **Red:** The 4HD/5HD-CPU unit does not have a valid IP address, so it is not able to communicate with the front desk.
 - **Blue:** The 4HD/5HD-CPU unit is able to communicate with the front desk.
 7. Additional information regarding the 4HD/5HD-CPU software is displayed in this area:
 - First row: IP address assigned to the 4HD/5HD-CPU unit.
 - Second row: Serial number of the 4HD/5HD-CPU unit.
 - Third row: Version of the scoring software.
 - Fourth row:
 - *GVer:* Grids version.
 - *Sver:* Spare finder version
 - *TVer:* TNC (animations) versions

13.2 Error list

All these errors are displayed on the affected pair of lanes icons as **BOOT XXX** (where “XXX” indicate the error number).

ERROR	SOURCE	SOLUTION
4HD-HUB initialization errors:		
From 160 to 163	VTNT does not communicate with the 4HD/5HD-HUB unit	Manually restart the 4HD/5HD-HUB.
164	4HD-CPU for “MMS only” used for scoring system	The 4HD-CPU is either a wrong unit (for MMS only) or it is faulty. The unit MUST be replaced.
65535	Missing file in the CPU internal memory	Manually restart the 4HD/5HD-HUB.



Console errors:

151	One EasyKey console has been installed with the 286002819 speaker cable, while the other EasyKey console has been installed with the 286002824 speaker cable.	
190	No communication with the SuperTouch console.	The SuperTouch console has not been detected during the startup of the VTNT.
From 191 to 198	Console program check fail	Upload programs to the lanes.
199	Console detected but not entering in Run mode	This error can appear when the SuperTouch has been replaced or when the console has been detected but it did not enter in Run state. Reinitialize to the lanes.

TV / Q-Vis / Q-All errors:

200	No communication with the master LCOM device	Manually restart the 4HD/5HD-HUB.
200/1	Unexpected communication character	If the problem persists try to upload programs to the lanes. In the case that the problem has not been solved please refer to the “Solving problems on the LCOM line” procedure.
200/2	Wrong character communicating with the master LCOM device	
200/3	The master LCOM device seems okay	Manually restart the 4HD/5HD-HUB.
200/4	Six seems okay	If the problem persists try to upload programs to the lanes.
200/5	Six communication fail	In the case that the problem has not been solved please refer to the “Solving problems on the LCOM line” procedure.
201	Wrong char on master LCOM device Bin file	
202	Master LCOM device communication failure	



203	Camera Fail Check. If there is a camera on each lane, the problem is with the camera of the Left lane	The T-Vision / Q-Vision board is not able to work with the camera. Usually the problem is in the wiring between the board and the camera. If the problem persists contact QubicaAMF authorized support.
204	Check Camera Lane Right Fail	
205	Master LCOM device communication failure	Manually restart the 4HD/5HD-HUB.
205/XX	Master LCOM device may not be properly programmed	If the problem persists try to upload programs to the lanes. In the case that the problem has not been solved please refer to the “Solving problems on the LCOM line” procedure.
206	Wrong header on master LCOM device Bin file	
208	Impossible to communicate with F-Box	The lane configuration requires an F-Box (enhanced pinsetter interface), but it is impossible to communicate with it. In the case that the F-Box is not present, check the Pinsetter Parameters.
209	Old F-Box version (Version 1.0)	The microprocessor in the F-Box has an old version loaded on it and the lane cannot be configured to handle the strike signal.
210	T-Vision hardware not compatible	Internal errors that must be reported to QubicaAMF. Restart the 4HD/5HD-HUB to restart the program manually.
211	F-Box strike time not valid	Check pinsetter and camera parameters on both the lanes of the pair.
Hyper Server errors:		
300	The Conqueror X Server cannot detect the presence of the Hyper Server.	Check the power cable. Check the connection between the Hyper Server unit and the 4HD/5HD-HUB. Restart the affected pair of lanes by powering off and back on the HyperServer and the 5HD-HUB units. If the problem persists, please contact QubicaAMF Technical Support.
From 301 to 305	The firmware of the Hyper Server unit is corrupted.	Check if the folder “C:/QDesk/Score/Hyper/bin/” is present and NOT empty on the Conqueror X server. If so, reinitialize the affected pair of lanes. If the problem persists, please contact QubicaAMF Technical Support.



From 306 to 310	The programs present on the Hyper Server are corrupted.	Upload the programs to the affected pair of lanes. If the problem persists, reinitialize the affected pair of lanes. If the problem persists, please contact QubicaAMF Technical Support.
EDGE String errors:		
320	The Conqueror X Server is not able to get a reply from the EDGE String chassis.	Check if the EDGE pinspotter is switched on. Check the connection of the chassis with the Conqueror X Server. If the problem persists, please contact QubicaAMF Technical Support.
L-COM test errors:		
212	The 4HD/5HD-CPU is not able to get a reply from the main L-COM device	Manually restart the 4HD/5HD-HUB.
Runtime errors:		
All the following errors are scoring software errors and must be reported to QubicaAMF.		
900	Internal Error	Manually restart the 4HD/5HD-HUB.
901	NexOS Version Error	
902	Internal Error on score initialize	Manually restart the 4HD/5HD-HUB.
903	Internal Error	
904	Internal Error on video initialize	
905	Internal Error on score initialize	
906	Internal Error on score malloc	
907	Internal Error on score exception	

14 How to

14.1 How to turn on/off the pair of lanes

QubicaAMF recommends turning off the scoring system every night to save power.

14.1.1 Turning ON the system.

This is the procedure to follow in order to turn on the system in the morning for BES X Scoring systems:

- Turn on Front Desk 1;
If a separate server is present it should already be ON;
- Turn on overhead monitors;
- Wait until the Front Desk1 boots-up completely (note that in the case of Conqueror X backups, you should wait until the backup process has been completed) then turn on the 4HD/5HD-HUB units;
- Turn on all other Conqueror X Front Desks / Terminals.
- In the case of LCD monitors controlled from the Front Desk (AccuVision, etc.) turn on the monitors from the Special Functions on the Front Desk.

14.1.2 Turning OFF the system.

This is the procedure to follow in order to turn off the system at night for BES X Scoring systems:

- In the case of LCD monitors controlled from the Front Desk (AccuVision, etc.) turn off the monitors from the Special Functions on the Front Desk.
- Close the Conqueror X application on all the terminals;
- Turn off Front Desk1;
NOTE: if a separate server is present, or in the case you purchase a web-booking system the Conqueror X server computer should be always kept on;
- Turn off all the other Front Desks;
- Turn off the 4HD/5HD-HUB units from the Electronic sub-panel breakers;
- Turn off Overhead Monitors from the Electronic sub-panel breakers.

14.1.3 How to boot the BES X system in emergency (in the case of a Conqueror X server PC crash)

If the Conqueror X server is down and there are either no other Conqueror X licensed computers available (i.e. if it is not possible to convert a Front Desk 2, 3, etc., or convert the Back Office into a Conqueror X server) it is possible to reboot lanes in emergency.


To boot the BES X system in emergency:

- Keep the Conqueror X server turned off or disconnect the network cable from the Scoring NET network card (the secondary network card).
- Reset (turn off and on) all the 4HD/5HD-HUB units by unplugging the power units;
- The 4HD/5HD-CPU units boot without IP address, displaying a RED background on the lane monitors.

In emergency the lanes can be opened using either the lane consoles keypads (EasyKey) or LCD touch screens (SuperTouch).



14.1.4 How to open a lane from an EasyKey bowler terminal.

To open a lane in emergency from an EasyKey bowler terminal, press the  button and follow the sign-in procedure explained in the “**BES X user interface Manual – EasyKey**”.

14.1.5 How to open a lane from a SuperTouch bowler terminal.

To open a lane in emergency from a SuperTouch bowler terminal, touch the screen and follow the sign-in procedure explained in the “**BES X user interface Manual – SuperTouch**”.

14.2 How to upload programs or reinitialize the system

The program loading process requires a variable amount of time. The time is dependent on the changes being made to the current lane software.

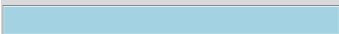
When sending the programs to the 4HD/5HD-CPU, Conqueror X displays the status of the loading of the programs process divided into several steps. At the end of the process Conqueror X displays the success or the failure of the program upload process.



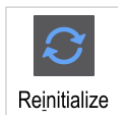
Navigate through the Conqueror X main menu and select:
SETUP / Lane Setup / Upload to Lanes.

ERASE MEMORY: If this option is selected, the game will be erased during the upload or reinitialize process.

Lanes selected

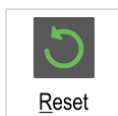


LANES SELECTED: Clicking on this field will open a window where it is possible to select the lanes.



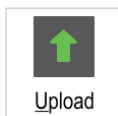
Reinitialize

REINITIALIZE: Perform a Reinitialize procedure. This process will reload the whole system on the selected lane pair. This procedure will take more than an hour to finish. **DO NOT** switch off the BES X system during this process.



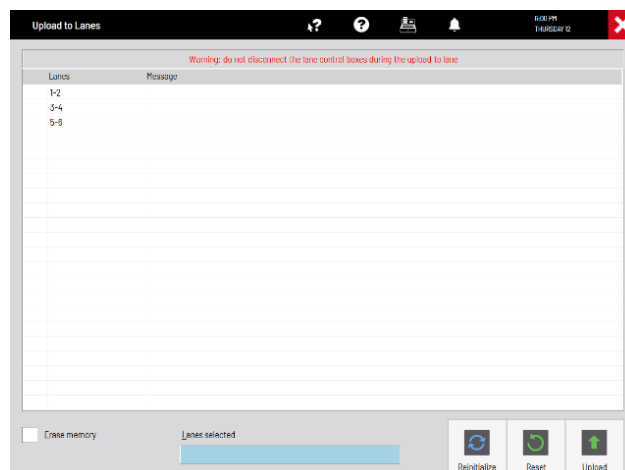
Reset

RESET: The selected lanes will be reset.



Upload

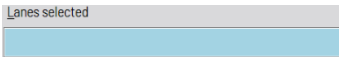
UPLOAD: Upload programs to the selected lanes.



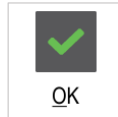
14.3 How to upload animations to the 4HD/5HD-CPU units



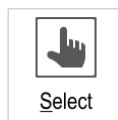
Navigate through the Conqueror X main menu and select: **SETUP / Lane Setup / Upload Animation.**



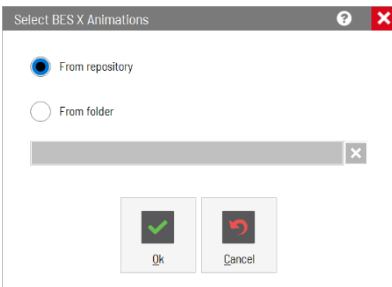
Click on the **Lanes selected** box.



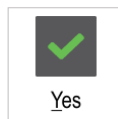
In the screen that appears, select all the lanes where the animations must be uploaded and click **OK**.



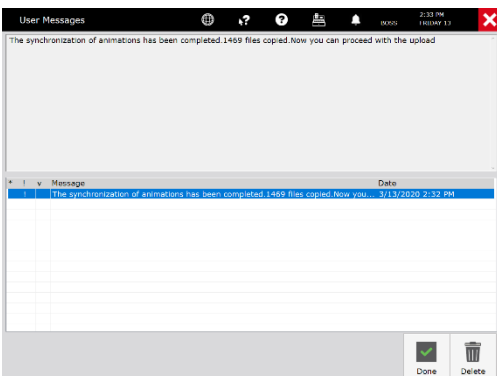
Click on **Select**.



In the **Select BES X Animations** select **From repository** and click **OK**.



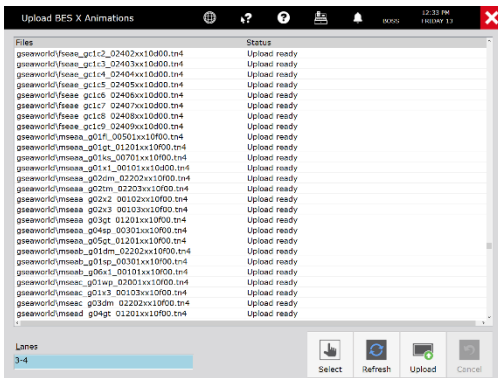
Click on **Yes** when the Warning message appears.



Now the download of the animations will start.

Once the download process has finished a user message will appear reporting the completion of the process. Click on **Done**.

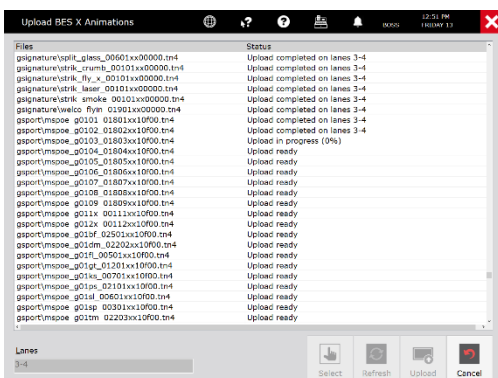




Open the **Upload animations** screen by clicking on the icon on the left of the screen (or navigate through the Conqueror X main menu and select: **SETUP / Lane Setup / Upload Animation**, if the upload animations screen has been previously closed).



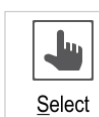
Click on **Upload**.



The upload animations process will start.

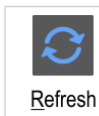
14.3.1 Upload Animations buttons brief description

SELECT: this function will open a selection screen called **Select BES X Animations** and gives the user two choices:



- **From repository:** this process will synchronize the animations present in the Internet Update system with the animations present on the QubicaAMF servers. When this operations finishes, or if for any reason it is not possible to connect to the QubicaAMF servers, the animations present in the Internet Update system will be copied to a temporary folder of the Conqueror X server, ready to be uploaded on the lanes.
- **From folder:** This function allows the animations in any path on any Conqueror X client to be imported into the temporary folder on the Conqueror X server. Select the path by clicking on the blue field.

Click on **OK** once the choice has been made



REFRESH: this function refreshes the Upload Animation screen showing only the files present in the temporary folder of the Conqueror X server.



UPLOAD: This function sends the animations present in the temporary folder on the Conqueror X server to the lanes. Once an animation file is uploaded successfully, it will be automatically deleted from the Conqueror X server.



14.4 How to configure the speaker and microphone for the Virtual Waiter in Windows

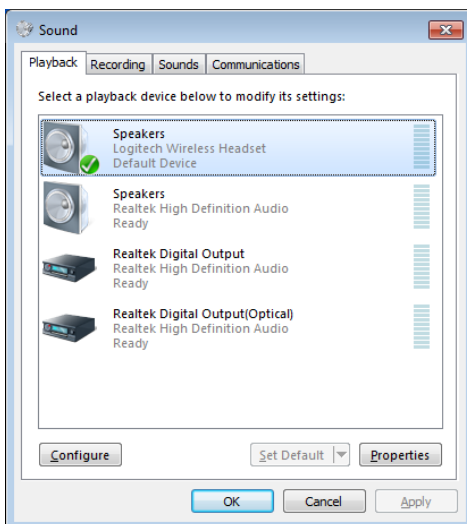
In order for the Virtual Waiter feature to function properly, it is necessary that the hardware device used for the playback of sound is set as the Default device and the desired audio input device is the only audio input device enabled and set as Default. All of these configurations must be performed in the “Sound” application in the Control Panel of Windows.

Example:

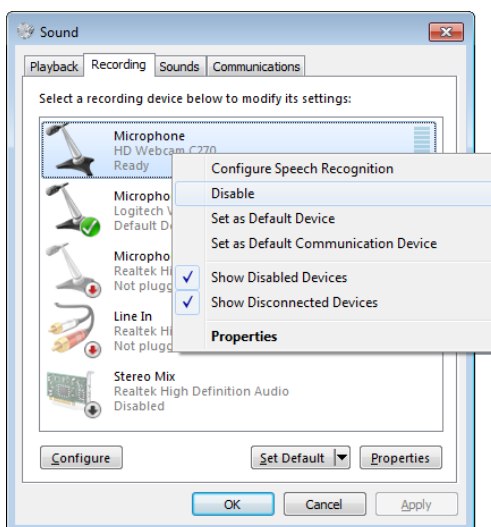
Connect and install the wireless headset on the computer as specified by the manufacturer’s instructions.

Once the headset is correctly installed, follow this procedure:

Open **Sound** by clicking the Start button, clicking Control Panel and then Sound;

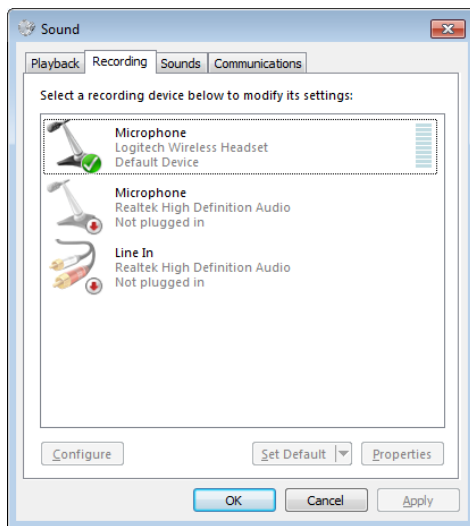


In the Playback tab, select the Speakers of the installed headset (in this example we used the Logitech Wireless Headset) and click on the “Set Default” button.



In the Recording tab, select the Microphone of the webcam (in this example we used the Logitech HD Webcam C270), right-click on it and then select “Disable”.





Select the Microphone of the installed headset (in this example we used the Logitech Wireless Headset) and click on the “Set Default” button.

Click on “OK” once you have finished to close the Sound window.



14.5 How to clean a SuperTouch or an EasyKey console

- Exercise care when cleaning the surfaces as the exteriors of a console can be easily scratched.
 - Take the following steps when cleaning.
 - The following images are for reference only. Real-life situations may differ from what is shown in the images.
- 1 - Power off the pair of lanes by disconnecting the power cord from the 4HD/5HD-HUB or by turning off the breaker.
 - When disconnecting the power cord from the socket: hold the power cable by the plug and do not touch the cable with wet hands. Otherwise, an electric shock may result.
 - Unless specifically instructed, **avoid using any of the following chemicals** or products containing these chemicals as they will cause permanent damage to some console surfaces:
 - Any chlorine-based cleaner such as bleach;
 - Peroxides (including hydrogen peroxide);
 - Solvents such as Acetone, paint thinner, Benzene, Methylene Chloride or Toluene;
 - Ammonia-based products (like many glass cleaners);
 - Ethyl Alcohol.



- 2 - Wipe the surface of the console or keypad with a microfiber cloth moistened with a 70% Isopropyl Alcohol solution or use a disinfecting wipe. The cloth should be damp, but not dripping wet.



- 3 - **DO NOT** spray water, detergent or any other liquid directly on to the console.



- 4 - **DO NOT** allow liquids to get inside the unit as this may cause major damages to the console and void the manufacturer warranty.



- 5 - Wet a soft and dry cloth in water and wring thoroughly to clean the exterior of the console.



- 6 - **DO NOT** excessively wipe or use a material other than a microfiber cloth. This could potentially cause damage to the console surfaces.

- 7 - Power on the pair of lanes when cleaning is finished.



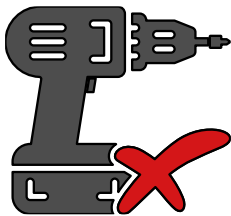
14.6 How to replace the SuperTouch cable cover (P/N: 288100019)

Starting from the SuperTouch LCD console rev. 3 (P/N: **288150027**), a new plastic console cover has been developed and used in place of the old one.

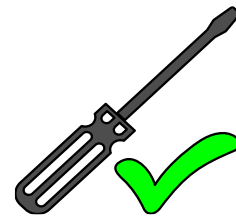
The 289X15140 cable cover used with the new plastic cover, is different from the old 289X15117 cover (out of production), but it has been designed to be simply adjusted and fully replaces the old cover.

IF YOU DO NOT ADJUST THE 288100019 CABLE COVER WHEN IS NECESSARY, IT WILL NOT FIT INTO ITS HOUSING ON THE PLASTIC COVER AND IT WILL BREAK IRREPARABLY DURING THE TIGHTENING OF THE SCREWS.

Follow the procedure described in these instructions to correctly adjust the 288100019 cable cover when it is required.



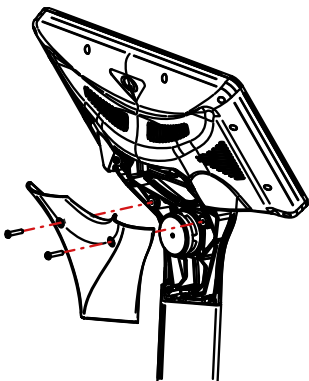
IMPORTANT
NEVER use an electric screwer.
 Perform all the operations using the proper screwdriver.



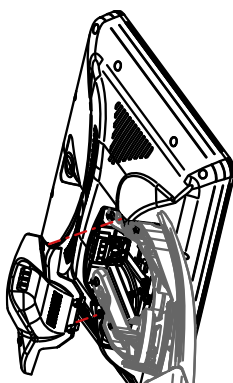
14.6.1 How to understand when to adjust the 288100019 cable cover

When the 288100019 spare part kit will be mounted on a SuperTouch console with P/N **288150027** or higher, **NO ADJUSTMENT IS REQUIRED.**

If you are not sure which type of SuperTouch you have installed in your bowling center, follow these steps:



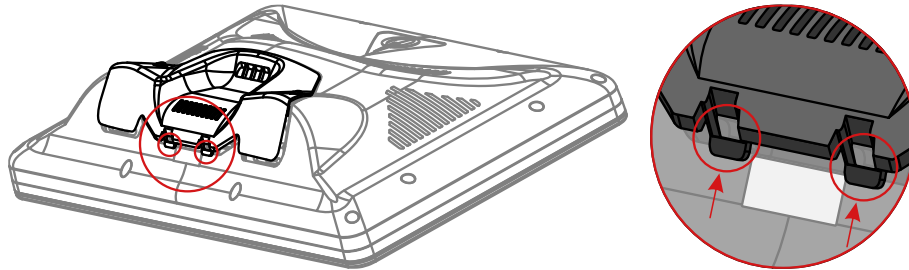
Unmount the "V-Support back" from the console stand.



Position the 288100019 cable cover.
IMPORTANT: do **NOT** force the cable cover.

Now check how the cable cover fits in its housing. If the 288100019:

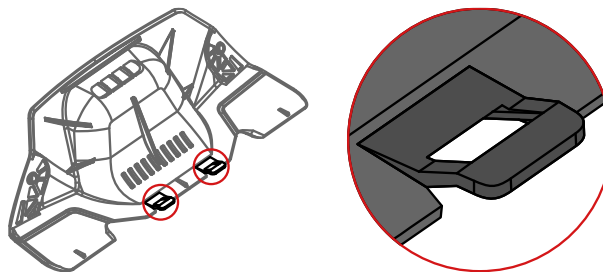
- **FITS** perfectly in its housing: the cover does NOT need any adjustment; tighten the screws and mount the “V-Support back” previously removed from the console stand.
- Does **NOT** fit into its housing and there are two plastic teeth preventing the cover from easily closing the compartment: the cable cover **MUST** be adjusted.



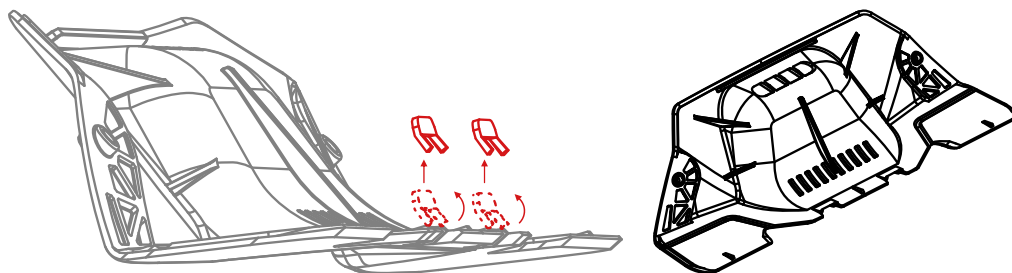
14.6.2 How to adjust the 288100019 cable cover

Insert the two (2) cable cover screws (P/N: 289X06238) in the holes present on the cable cover and block them using the two (2) supplied O-Rings (P/N: 289X06142).

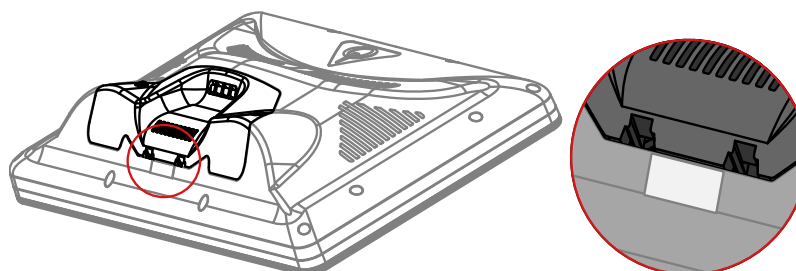
Locate the two plastic teeth on the internal side of the 289X15140 cover.



Remove both teeth from the cover using a wire-cutter or by bending them upwards.



Now the cable cover will fit perfectly into its housing and will easily close the compartment.



Put the cable cover in position, tighten the cable cover screws and mount the “V-Support back” that was previously removed.

15 BES X Dual Mode

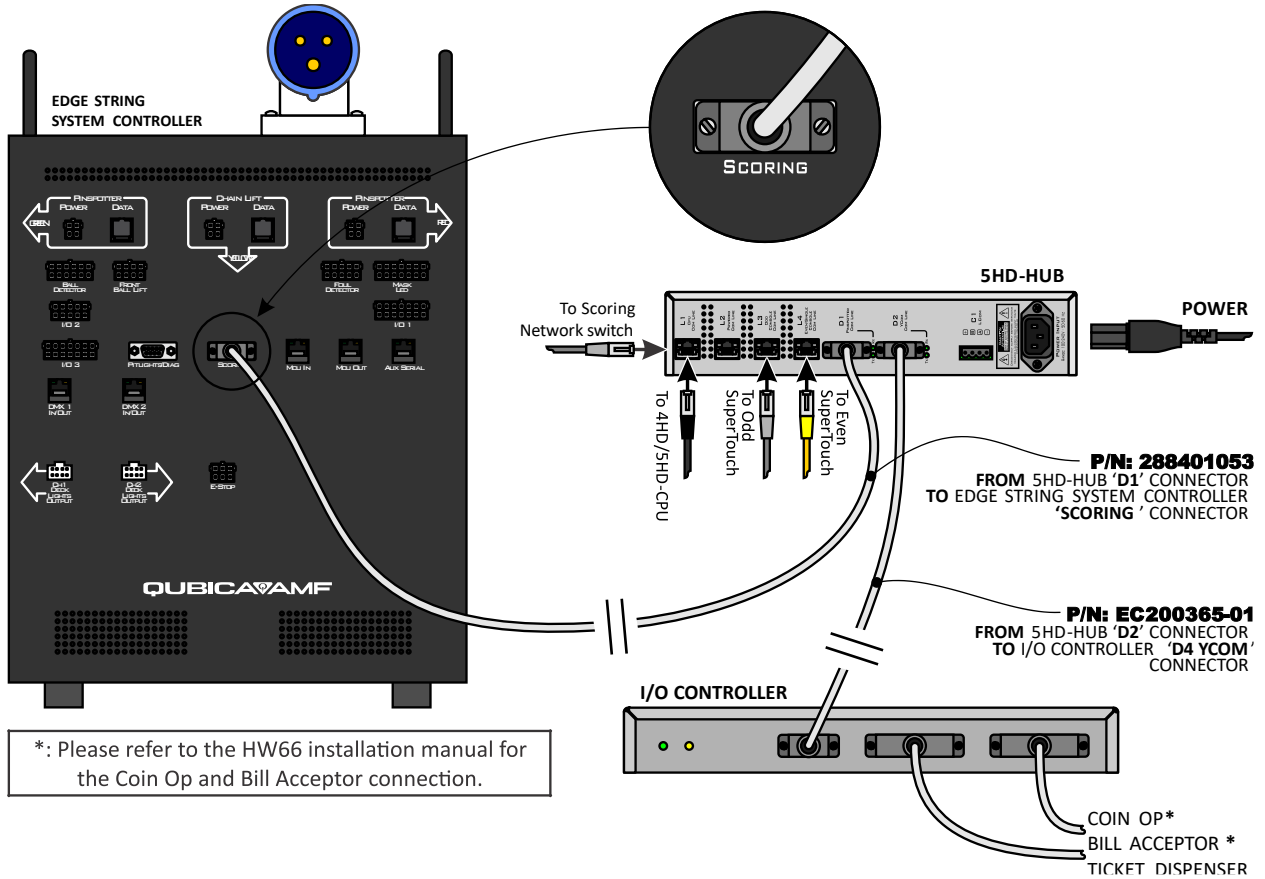
15.1 Introduction

In this section we will only describe the installation of the extra devices needed to interface the BES X system with Highway-66 and Duckpin, both with TMS or EDGE String pinspotters, as the installation of the BES X units is similar to a standard scoring installation and the connections between the different units are the same.

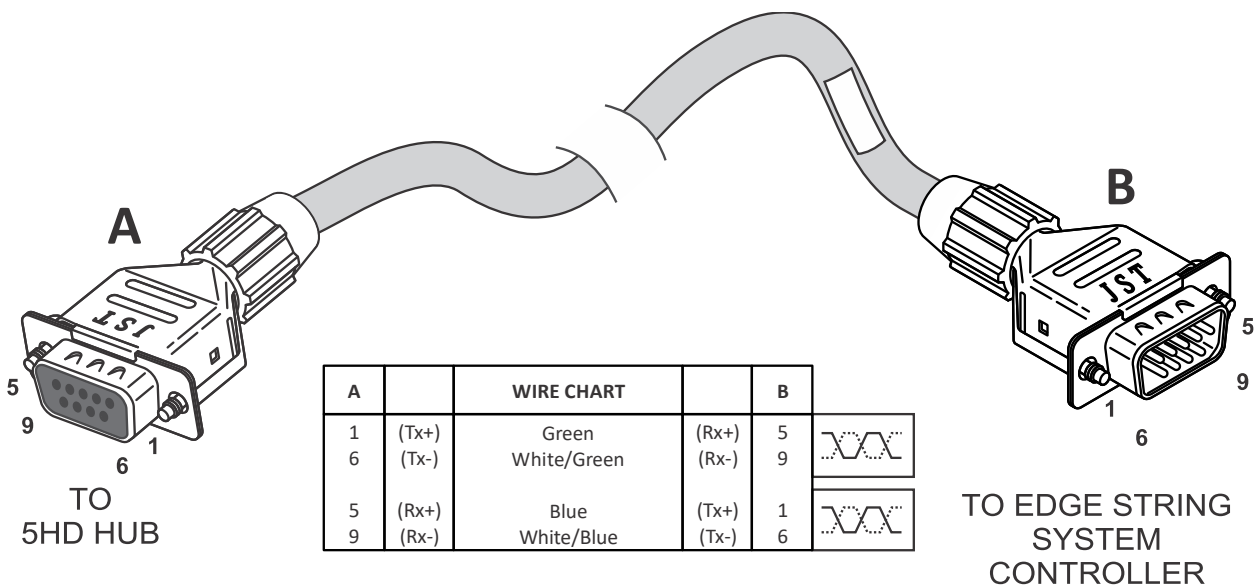


15.2 EDGE String installation

T.90.311 – 5HD-HUB connection with EDGE String for Highway66 or Duckpin

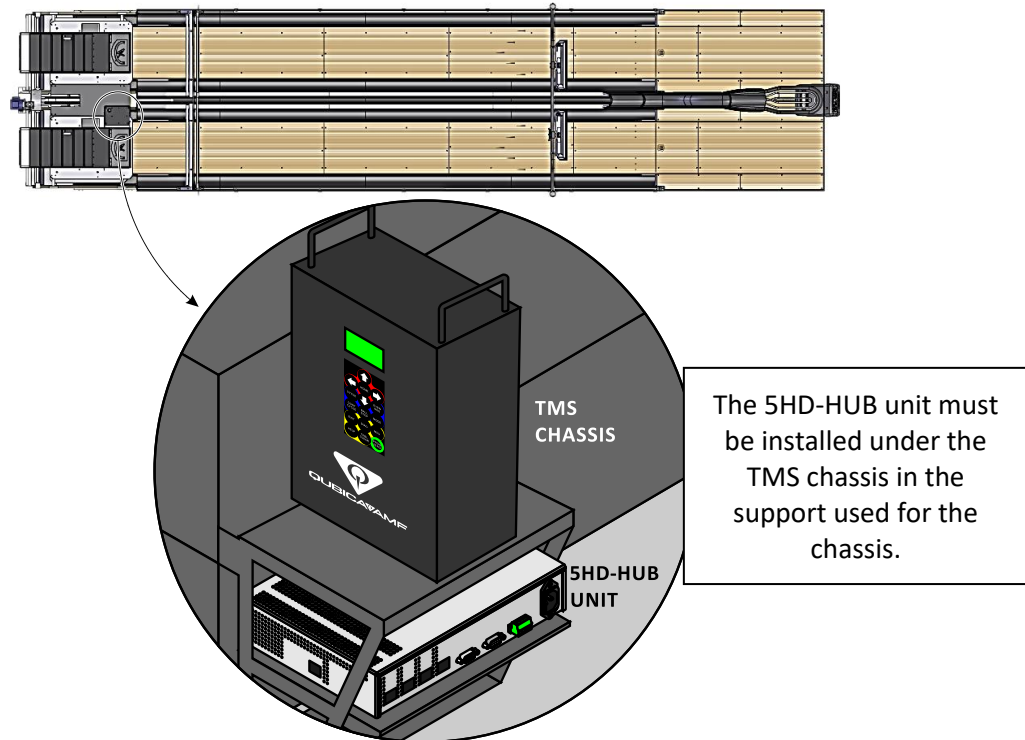


T.40.041 – 288401053

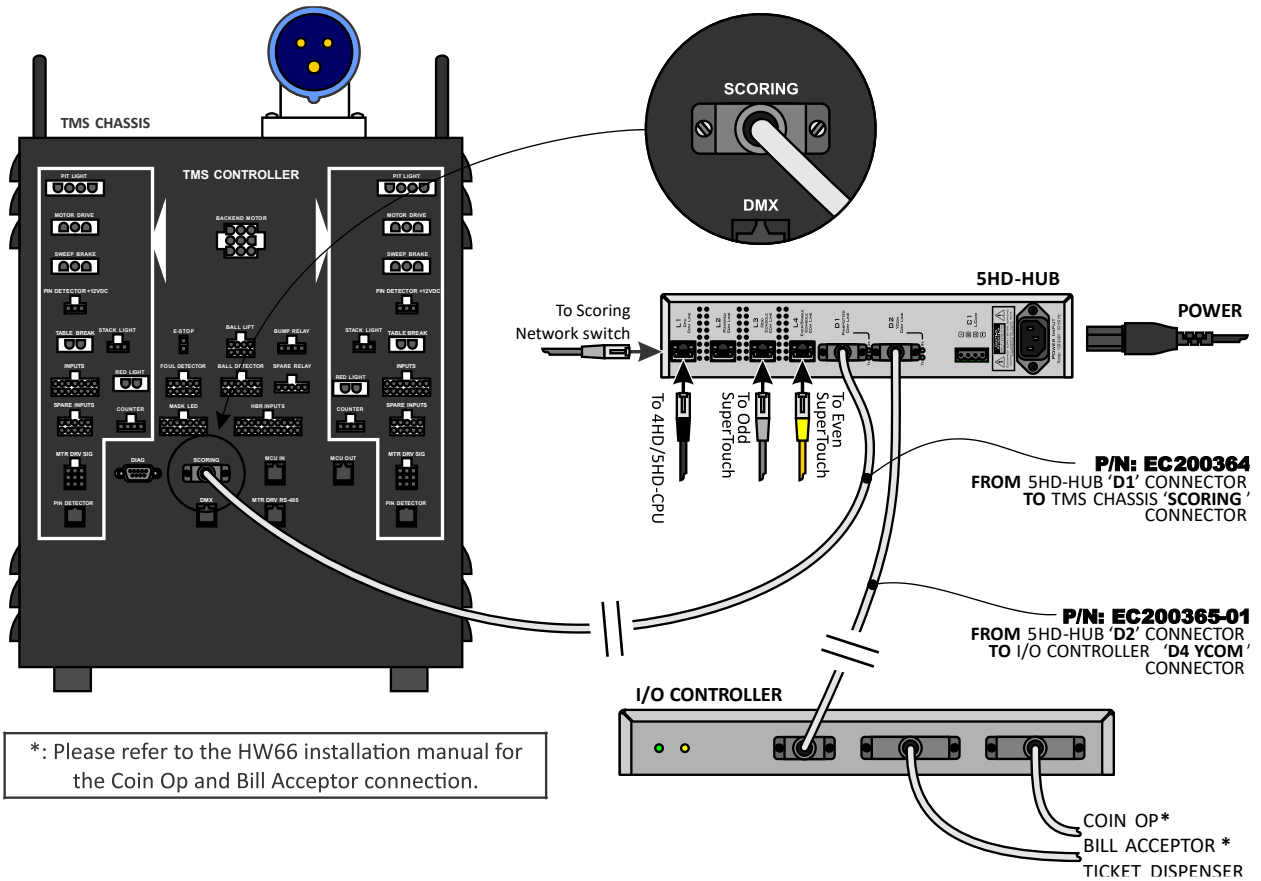


15.3 TMS Installation

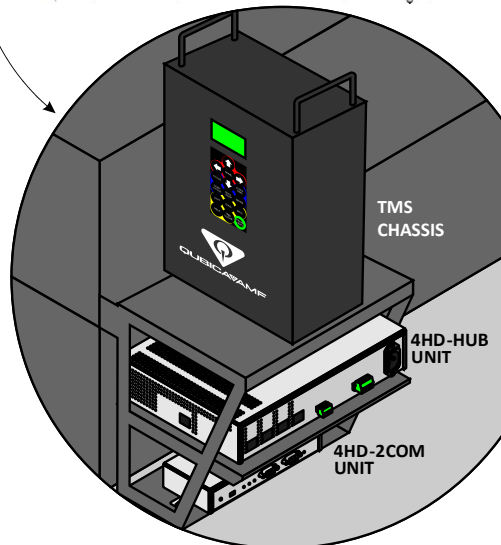
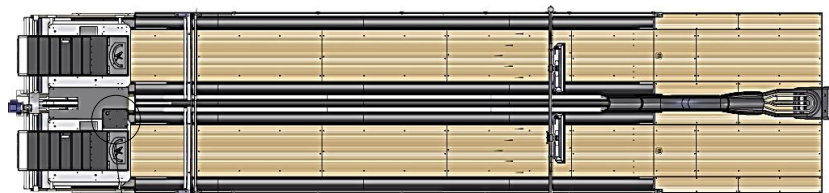
T.90.262 – Typical layout with 5HD-HUB



T.90.263 – 5HD-HUB connection with Highway66 or Duckpin



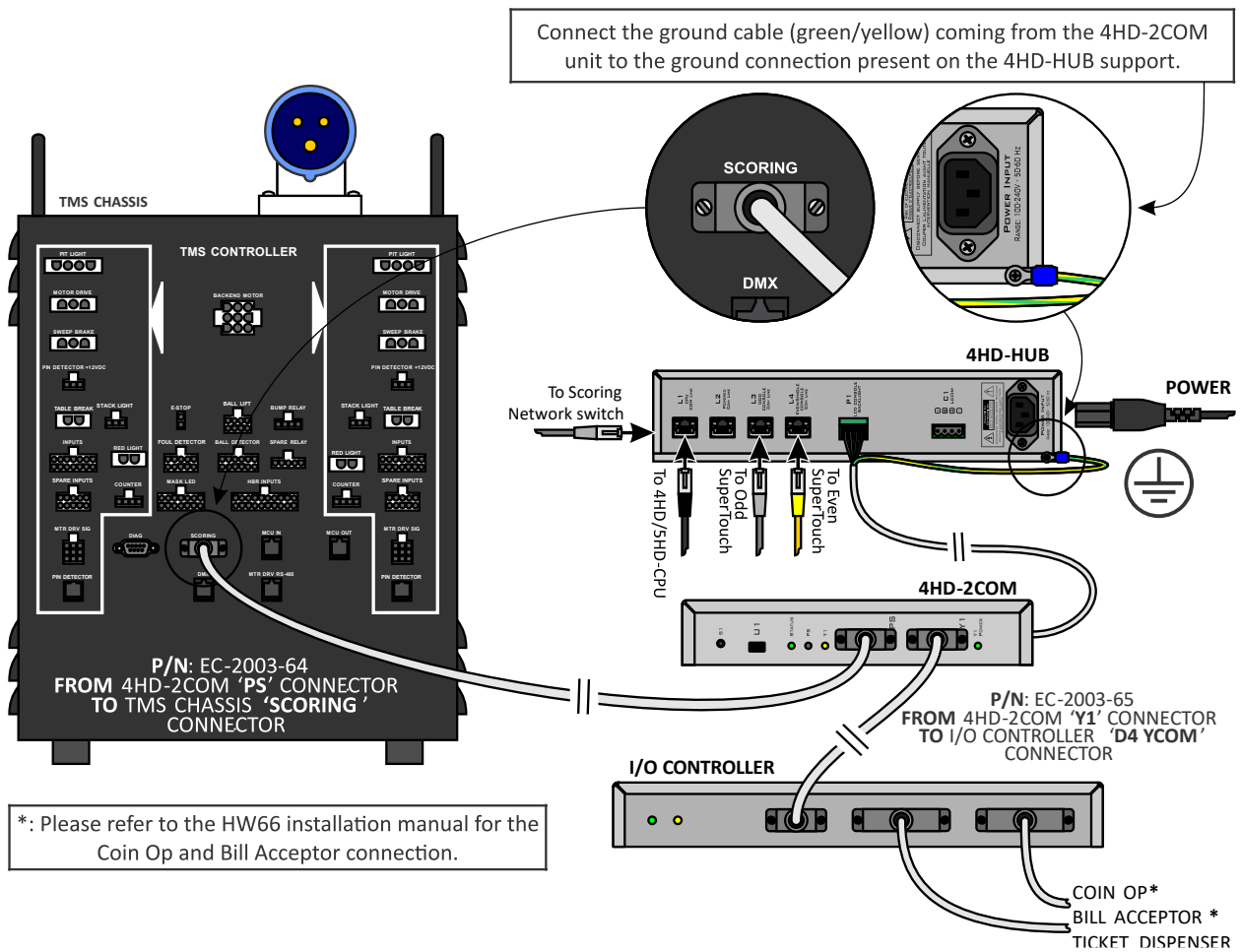
T.90.250 – Typical layout with 4HD-HUB and 4HD-2COM units for Highway66



The 4HD-HUB unit must be installed under the TMS chassis in the support used for the chassis and the 4HD-2COM unit must be installed under the 4HD-HUB unit. Please refer to the Table T.90.251 for the connections for the 4HD-2COM unit.



T.90.251 – 4HD-HUB and 4HD-2COM units connections

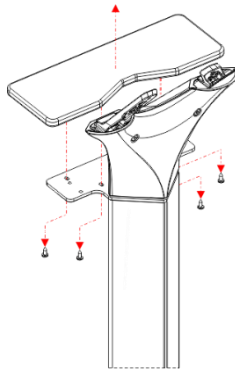


15.4 How to install the card reader device on the console pedestal

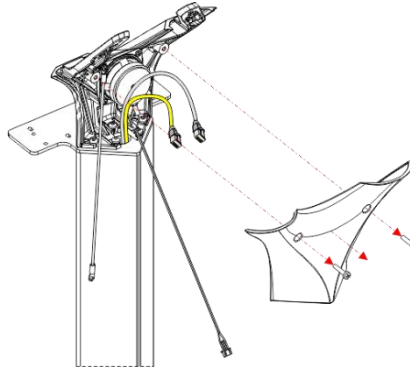
15.4.1 How to replace the old table plate with the card reader plate on a pedestal

1. Make sure that the lane pair is completely turned off.
2. Open the cable cover located on the rear of the SuperTouch console, disconnect the LAN cable(s) and remove it from the pedestal.
3. Remove the table from the original plate by unscrewing the four (4) retaining screws.

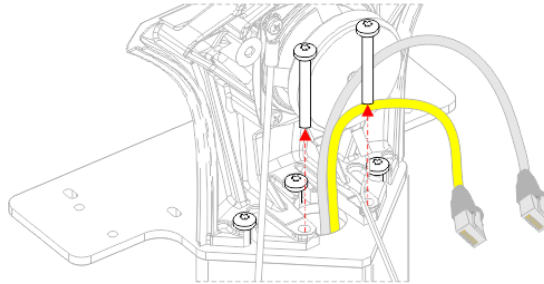




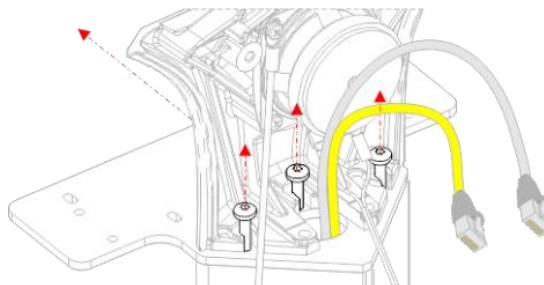
4. Remove the V-Support back (P/N: **286002852**) by unscrewing the two (2) retaining screws.



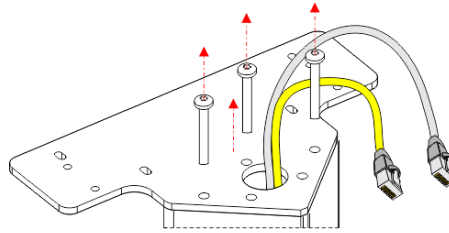
5. Completely remove the two (2) rear retaining screws from the V-Support.



6. Loosen the three (3) remaining retaining screws then slide the V-Support to remove it from the pedestal.

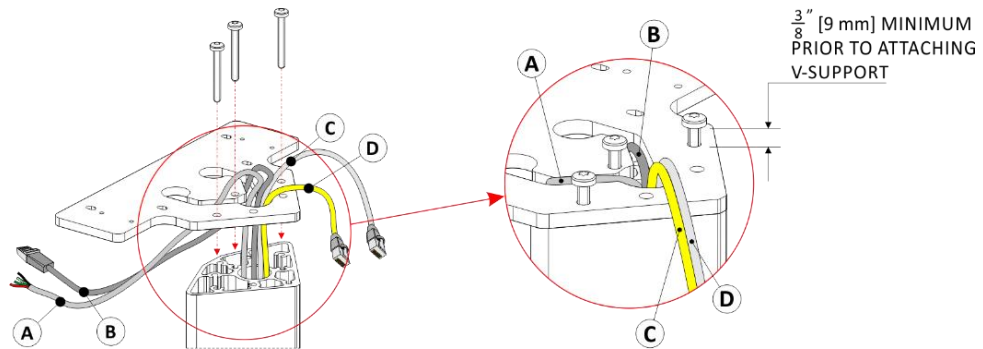


7. Remove the three (3) remaining retaining screws, finally remove the original table plate and scrap it.

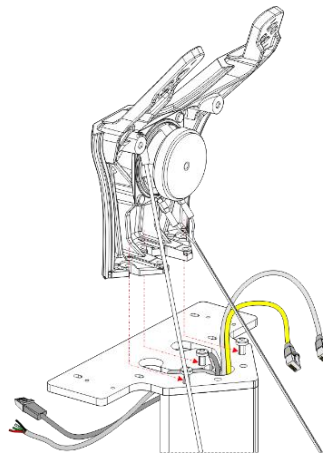


8. Pass the 4-pin cable ("A") and the cable of the card reader network interface ("B") through the pedestal. Pass all the cables through the hole in the card reader plate. Pass the "A" and "B" cables under the card reader plate through the slots. Fix the plate to the pedestal using three (3) screws as shown in the image below.

IMPORTANT: Do not fully tighten the screws, keep them lifted from the plate by at least $\frac{3}{8}$ " [9 mm].

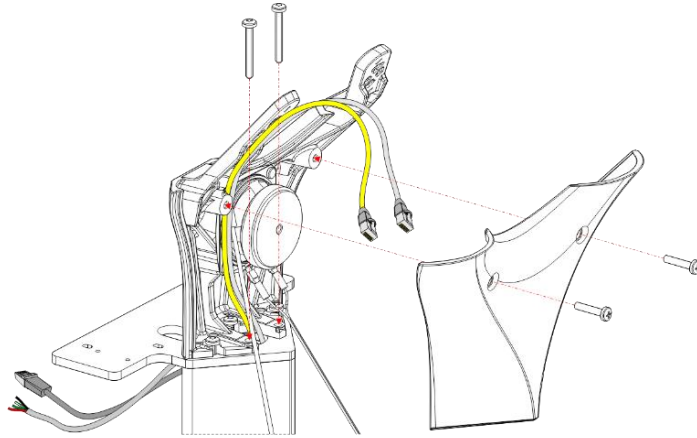


9. Place the V-Support front on the card reader plate and slide it under the three (3) retaining screws. Take care not to pinch any wires or cables.

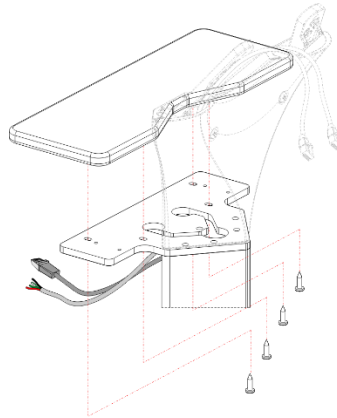


15.4.2 How to install the card reader on the pedestal

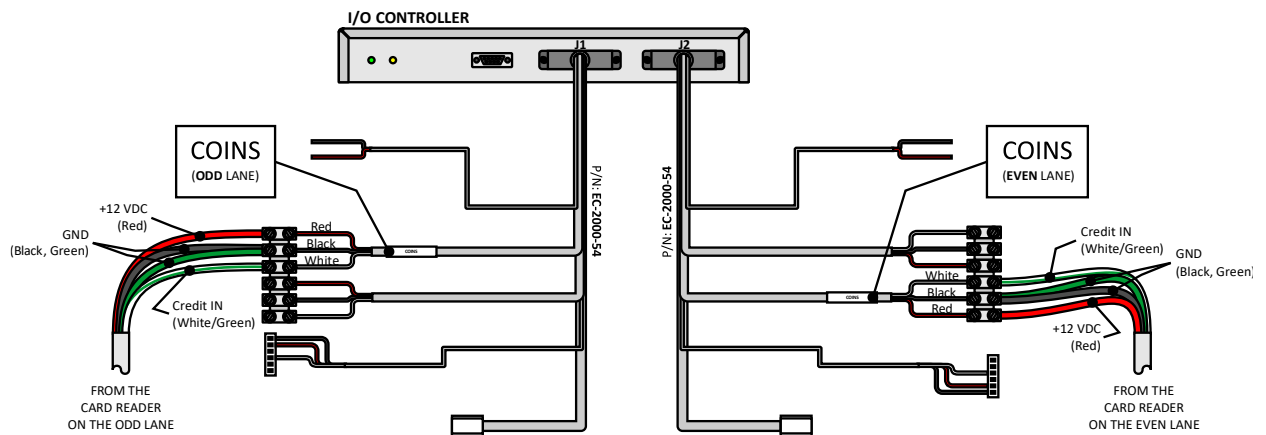
1. (Re)Install the two (2) remaining screws. Tight the five (5) retaining screws. (Re)Install the V-Support back, running the console cables through one of the arms of the V-Support. Take care not to pinch any wires or cables.



2. Fix the table to the card reader plate (P/N: **286002877**), using four (4) PHPTS 8 X 0.63 ZN TYA screws (P/N: **822430100**).



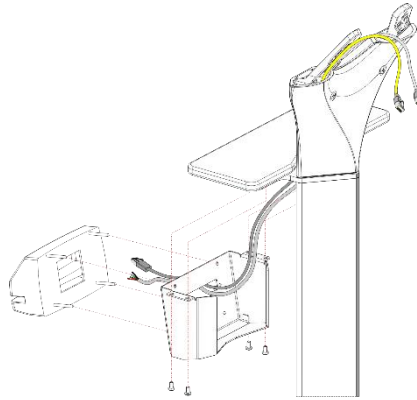
3. Connect the network cable to the ethernet interface of the card reader. Connect the supplied 4-pin cable to the "EC-2003-54" cable connected to the CTRL I/O interface, following the sequence specified in the table below. Connect the card reader of the odd lane to the cable connected to J1 and the card reader of the even lane to the cable connected to J2.



4-pin cable wire color	EC-2003-54	
	"Coins" cable	Signal
Red	Red	+12 VDC
White / Green	White	Credit in
Black	Black	GND
Green		



4. Mount the card reader to the enclosure (P/N: **060060037**). Connect the network cable and the 4-pin cable to the card reader respecting the specified color sequence. Fix the card reader enclosure (P/N: **060060037**) to the card reader plate using four (4) PHPMS M4-.7 X 8 ZN screws (P/N: **863040087**).



5. (Re)Install the (EasyKey or SuperTouch) console(s) to the V-Support, connect the cable(s), close the console's cable cover and turn on the lane pair.

15.5 Software setup

Follow the procedure described in the section **System first start-up** of this manual, but apply the following modifications to the Lane Setup parameters (in Conqueror X):

15.5.1 Dual Mode Conqueror X Lane Setup

In this sub-section, we will only describe the parameters used for a correct setup of a Dual Mode installation. Refer to the section **Lane setup parameters screen brief description** for further information.

Bowling type: select Highway 66.

Serial number: Insert here the serial number of the 4HD/5HD-CPU operating on this pair of lanes (or lane).

Keyboard: Select one of the following:

- SuperTouch console with English language **en-us_TOUCH**: Chinese touch screen, Eastern Europe touch screen, English touch screen, Korean touch screen, Vietnamese touch screen.
- Japanese touch screen (**ja_TOUCH**): SuperTouch console with Japanese language.
- German touch screen (**de-de_TOUCH**): SuperTouch console with German language.
- Russian touch screen (**ru_TOUCH**): SuperTouch console with Russian language.

Lane monitors: Specify the model of the overhead monitors connected to the serial control cable or IR control cable to the 4HD/5HD-CPU. Select "QUBICA STANDARD" if the monitor is not supported.

Monitors on lanes: Always select "2 UP – 2 DOWN" (two overhead monitors and one SuperTouch console per lane).

Redemption: Enables the Redemption.

Pinspotter type: this field cannot be modified and is preset to "QAMF TMS HW66 DIRECT COM".



16 Replacements

16.1 How to replace the 4HD/5HD-HUB unit

Turn off the faulty 4HD/5HD-HUB by unplugging the power cord from the 4HD/5HD-HUB unit itself;

Disconnect and remove the faulty 4HD/5HD-HUB unit from the wall support;

Position and connect the new 4HD/5HD-HUB in the same way as the old one.

Check that all the cables are connected;

Turn on the new 4HD/5HD-HUB.

16.2 How to replace the 4HD/5HD-CPU unit

Turn off the pair of lanes where the faulty 4HD/5HD-CPU is installed by unplugging the power cord from the 4HD/5HD-HUB unit.

Disconnect and remove the faulty 4HD/5HD-CPU;

Connect the new 4HD/5HD-CPU in the same way as the old one. Check that all the cables are connected;

Turn on the pair of lanes by plugging in the power cord to the 4HD/5HD-HUB unit;

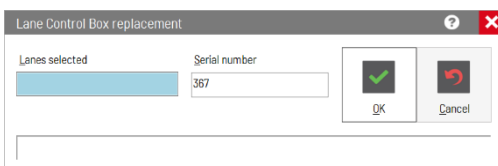
Wait until the boot-up image is displayed on the lane monitors;

Read the serial number written on the lane monitors;

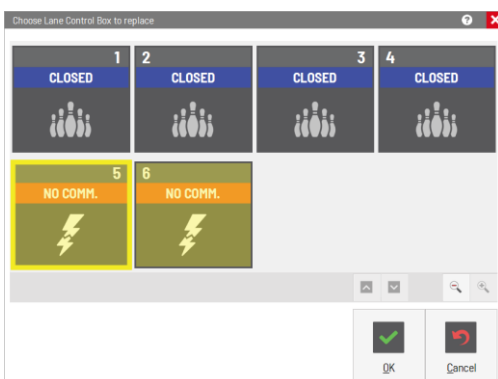
Enter Conqueror X with a user allowed to access the Lane Control Box Replacement;



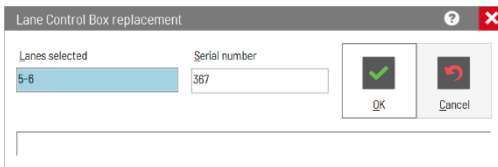
Enter Conqueror X with a user allowed to access the Lane Control Box Replacement, navigate through the main menu and select: **SETUP / Lane Setup / Lane Control Box Replacement**.



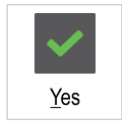
Insert the serial number, retrieved from the lane monitors, inside the Lane Control Box Replacement window and, if necessary, click on the **Lanes Selected** field.



Select the destination lanes of the 4HD/5HD-CPU and press **OK**.



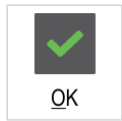
Click **OK**.



Click on **Yes** when the Warning message appears.

Wait for Conqueror X to process the request;

NOTE: This procedure will take almost an hour to finish. DO NOT switch off the BES X system during this process.



When the whole process is complete, a confirmation message (Lane control box replaced) will appear. Press **OK**.

Refer to the par. **How to upload animations to the 4HD/5HD-CPU units** to correctly upload the animations to the new 4HD/5HD-CPU.

16.3 How to replace an EasyKey console

Turn off the 4HD/5HD-HUB by unplugging the power cord from the 4HD/5HD-HUB unit to turn off the pair of lanes where the faulty EasyKey console is installed;

Disconnect and remove the faulty EasyKey console from the pedestal;

Fix and connect the new EasyKey console in the same way as the old one;

Check that all the cables are connected;

Turn on the new 4HD/5HD-HUB.

16.4 How to replace a SuperTouch console

Turn off the 4HD/5HD-HUB by unplugging the power cord from the 4HD/5HD-HUB unit to turn off the pair of lanes where the faulty SuperTouch console is installed;

Disconnect and remove the faulty SuperTouch console from the pedestal;

Fix and connect the new SuperTouch console in the same way as the old one;

Check that all the cables are connected;

Turn on the new 4HD/5HD-HUB.

Wait until **Test LCD R Error 199** or **Test LCD L Error 199** appears on the overhead monitors, or when the lane boots-up properly.

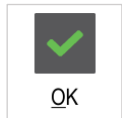


Navigate through the Conqueror X main menu and select:
SETUP / Lane Setup / Upload to Lanes.

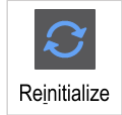


Lanes selected

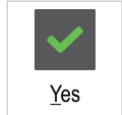
Click on the **Lanes selected** box.



In the screen that appears, select **ONLY** the pair of lanes where the SuperTouch console has been replaced and click **OK**.



On the **Upload to Lanes** screen click on **Reinitialize**.



Click on **Yes** when the Warning message appears.

The Reinitialize procedure will now start.

IMPORTANT: This procedure will take more than an hour to finish. **DO NOT** switch off the BES X system during the Reinitialization process.

The system will reboot when the Reinitialization process has finished.



17 Parts



4HD-HUB: **288250014**
4HD-HUB Rev.2: **288250018**



4HD-HUB Rev.3: **288250021**



5HD-HUB: **288250025**
5HD-HUB Rev.2: **288250025-01**



4HD-CPU Rev.2: **288250017**
4HD-CPU Rev.3: **288250020**



5HD-CPU: **288250023**



EasyKey Rev.3 INT: **288150038**
EasyKey Rev.3 RU: **288150039**
EasyKey Rev.3 JAP: **288150040**
EasyKey Rev.2 INT: **288150032**
EasyKey Rev.2 RU: **288150033**
EasyKey Rev.2 JAP: **288150034**
EasyKey INT: **288150021**
EasyKey RU: **288150022**
EasyKey JA: **288150023**



SuperTouch: **288150024**
SuperTouch Ver.2: **288150026**
SuperTouch Rev.3: **288150027**
SuperTouch Rev.4: **288150028**
SuperTouch Rev.4.1: **288150031**
SuperTouch Rev.5: **288150029**

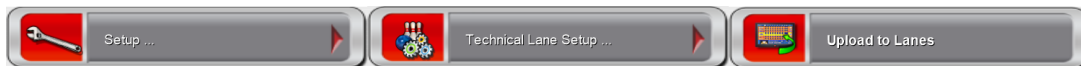
18 Conqueror Pro procedures

18.1 How to upload programs or reinitialize the system

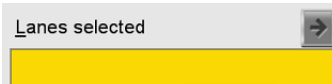
The program loading process requires a variable amount of time. The time is dependent on the changes being made to the current lane software.

When sending the programs to the 4HD/5HD-CPU, Conqueror Pro displays the status of the loading of the programs process divided into several steps. At the end of the process Conqueror Pro displays the success or the failure of the program upload process.

Navigate through the Conqueror Pro main menu and select: **Setup / Technical Lane Setup / Upload to lanes.**



ERASE MEMORY: If this option is selected, the game will be erased and all the software in the internal memory will be reloaded, so if this option is selected the uploading programs process will take longer.



LANES SELECTED: Clicking on this field will open a window where it is possible to select the lanes.



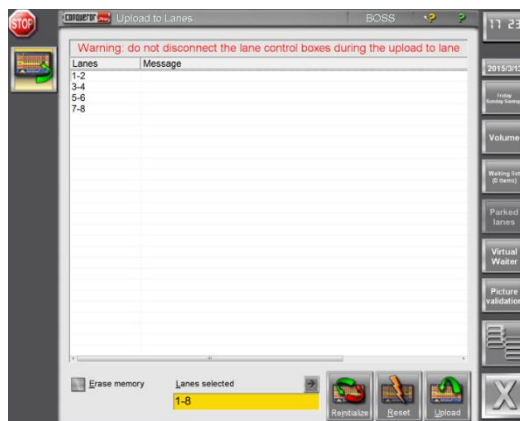
REINITIALIZE: Perform a Reinitialize procedure. This process will reload the whole system on the selected lane pair. This procedure will take more than an hour to finish. **DO NOT** switch off the BES X system during this process.



RESET: The selected lanes will be reset.

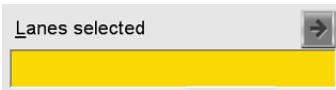


UPLOAD: Upload programs to the selected lanes.



18.2 How to upload animations to the 4HD/5HD-CPU units

Navigate through the Conqueror Pro main menu and select: **Setup / Technical Setup / Upload Animation**.

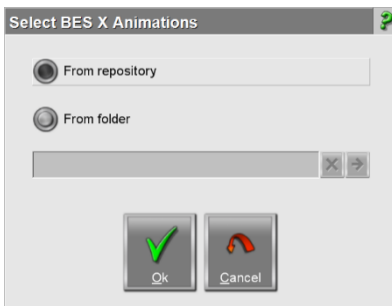


Click on the **Lanes selected** box.

In the screen that appears, select all the lanes where the animations must be uploaded and click **OK**.

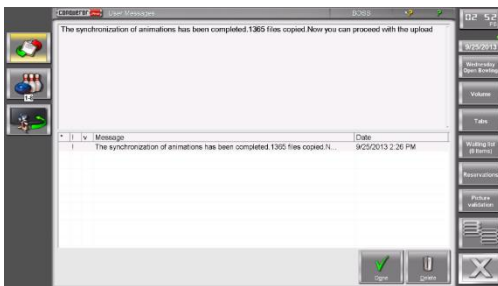


Click on **Select**.



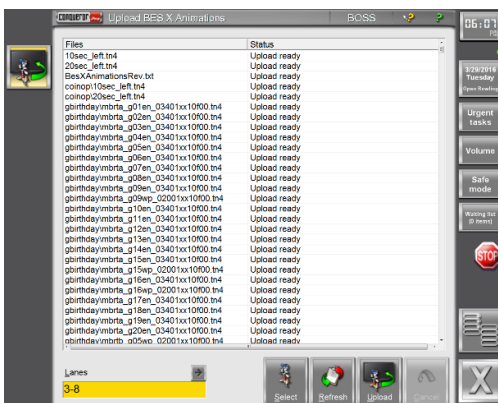
In the **Select BES X Animations** select **From repository** and click **OK**.

Click on **Yes** when the Warning message appears.



Now the download of the animations will start.

Once the download process has finished a user message will appear reporting the completion of the process. Click on **Done**.

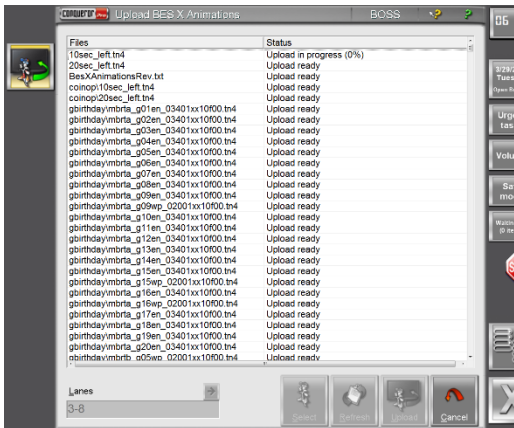


Open the **Upload animations** screen by clicking on the icon on the left of the screen (or navigate through the Conqueror X main menu and select: **SETUP / Lane Setup / Upload Animation**, if the upload animations screen has been previously closed).





Click on **Upload**.

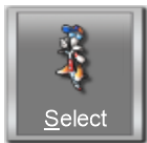


The upload animations process will start.

18.2.1 Upload Animations buttons brief description

Select: this function will open a selection screen called **Select BES X Animations** and gives the user two choices:

- **From repository:** this process will synchronize the animations present in the **Internet Update** system with the animations present on the QubicaAMF servers.
When this operations finishes, or if for any reason it is not possible to connect to the QubicaAMF servers, the animations present in the **Internet Update** system will be copied to a temporary folder of the Conqueror Pro server, ready to be uploaded on the lanes.
- **From folder:** This function allows the animations in any path on any Conqueror Pro client to be imported into the temporary folder on the Conqueror Pro server. Select the path by clicking on the yellow field.



Click on **Ok** once the desired choice has been made.



Refresh: this function refreshes the Upload Animation screen showing only the files present in the temporary folder of the Conqueror Pro server.



Upload: This function sends the animations present in the temporary folder on the Conqueror Pro server to the lanes. Once an animation file is uploaded successfully, it will be automatically deleted from the Conqueror Pro server.



18.3 How to replace the 4HD/5HD-CPU unit

Turn off the pair of lanes where the faulty 4HD/5HD-CPU is installed by unplugging the power cord from the 4HD/5HD-HUB unit.

Disconnect and remove the faulty 4HD/5HD-CPU;

Connect the new 4HD/5HD-CPU in the same way as the old one. Check that all the cables are connected;

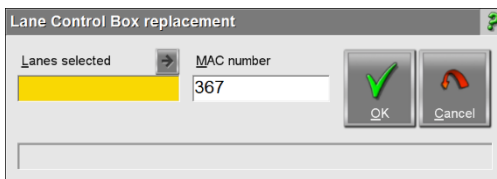
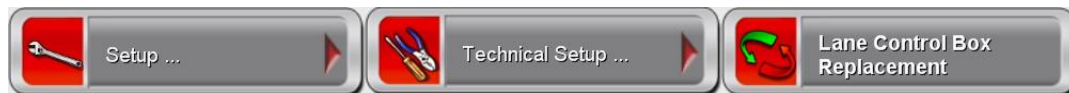
Turn on the pair of lanes by plugging in the power cord to the 4HD/5HD-HUB unit;

Wait until the boot-up image is displayed on the lane monitors;

Read the serial number written on the lane monitors;

Enter Conqueror Pro with a user allowed to access the Lane Control Box Replacement;

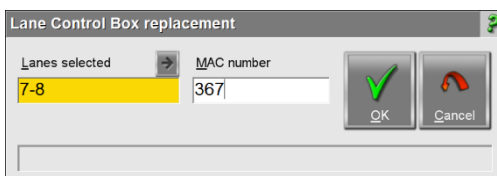
Enter Conqueror Pro with a user allowed to access the Lane Control Box Replacement, navigate through the main menu and select: **Setup / Technical Setup / Lane Control Box Replacement**.



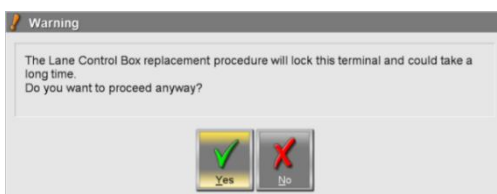
Insert the serial number, retrieved from the lane monitors, inside the Lane Control Box Replacement window and, if necessary, click on the **Lanes Selected** field.



Select the destination lanes of the 4HD/5HD-CPU and press **OK**.



Click **OK**.

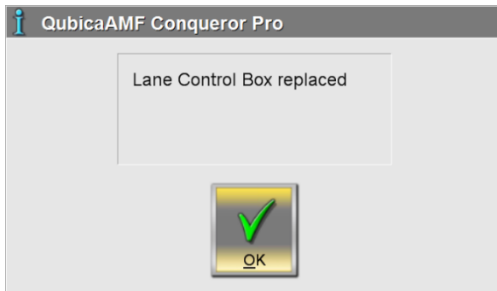
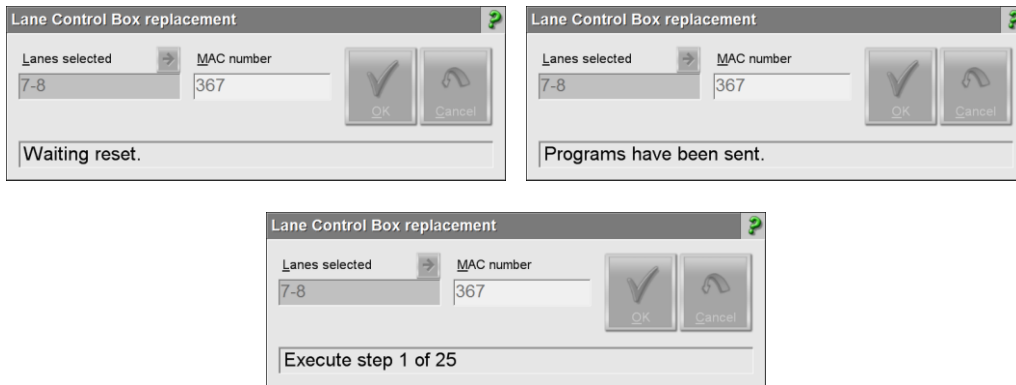


Click on **Yes** when the Warning message appears.

Wait for Conqueror Pro to process the request;



NOTE: This procedure will take almost an hour to finish. DO NOT switch off the BES X system during this process.



When the whole process is complete, a confirmation message (Lane Control Box replaced) will appear. Press **OK**.

Refer to the par. **How to upload animations to the 4HD/5HD-CPU units** to correctly upload the animations to the new 4HD/5HD-CPU.



18.4 How to replace a SuperTouch console

Turn off the 4HD/5HD-HUB by unplugging the power cord from the 4HD/5HD-HUB unit to turn off the pair of lanes where the faulty SuperTouch console is installed;

Disconnect and remove the faulty SuperTouch console from the pedestal;

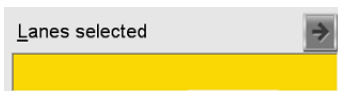
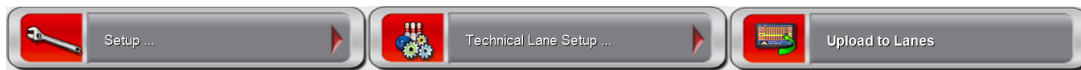
Fix and connect the new SuperTouch console in the same way as the old one;

Check that all the cables are connected;

Turn on the new 4HD/5HD-HUB.

Wait until **Test LCD R Error 199** or **Test LCD L Error 199** appears on the overhead monitors, or when the lane boots-up properly.

Navigate through the Conqueror Pro main menu and select: **Setup / Technical Lane Setup / Upload to lanes.**

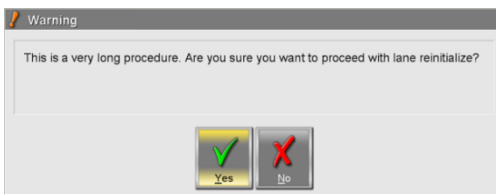


Click on the **Lanes selected** box.

In the screen that appears, select **ONLY** the pair of lanes where the SuperTouch console has been replaced and click **OK**.



On the **Upload to Lanes** screen click on **Reinitialize**.



Click on **Yes** when the Warning message appears.

The Reinitialize procedure will now start.

IMPORTANT: This procedure will take more than an hour to finish. **DO NOT** switch off the BES X system during the Reinitialization process.

The system will reboot when the Reinitialization process has finished.

