

SECTION 16560 (26 55 00)

AUTOMATED ENTERTAINMENT LED LUMINAIRIES

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\*\* NOTE TO SPECIFIER \*\* ETC Inc.; lighting and rigging products.

This section is based on the products of ETC Inc., which is located at:

3031 Pleasant View Rd. P. O. Box 620979

Middleton, WI 53562-0979

Phone: 608-831-4116

Email: \_\_\_\_\_\_\_\_

Web: <https://www.etcconnect.com/>

[[Click Here](https://www.arcat.com/arcatcos/cos43/arc43555.html?pids=213241%20213242%20213243%20213244%20213245%20213246%20213247%20213248%20213249%20213250%20213251%20213252%20213253%20213254%20213139%20213133%20213134%20213135%20213136%20213137%20213138%20212143%20212144%20213272%20213273%20213274%20213275%20213276%20213277%20213278%20213279%20213280%20213281%20213282%20213283%20213284%20213285%20213286%20213287%20213288%20213289%20213290%20213291%20213292%20213293%20213294%20213295%20213296%20213297%20213298%20213299%20213300%20213301%20213302%20213303%20213304%20213305%20213306%20213307%20213308%20213309%20213310%20213311%20213312%20213313%20213314%20213315%20213316%20213317%20213318%20213319%20213320%20213321%20213322%20213323%20213324%20213325%20213326%20213327%20213328%20213329%20213330%20213331%20213332%20213333%20213334%20213335%20213336%20213337%20213359%20213360%20213338%20213339%20213340%20213341%20213342%20213343%20213344%20213345%20213346%20213347%20213348%20213349%20213350%20213351%20213352%20213353%20213354%20213355%20213356%20213357%20213358%20213270%20213269%20213268%20213255%20213256%20213257%20213258%20213259%20213260%20213261%20213262%20213263%20213264%20213265%20213266%20213129%20213271%20213130%20213131%20212155%20212156%20213107%20213108%20213109%20213110%20213111%20213112%20213113%20213114%20213115%20213116%20213117%20213118%20213119%20213120%20213121%20213122%20213123%20213124%20213125%20213126%20213127%20213128%20213217%20213218%20213219%20213220%20213221%20213222%20213223%20213224%20213225%20213226%20213227%20213228%20213229%20213230%20213231%20213232%20213233%20213234%20213235%20213236%20213237%20213238%20213239%20213240%20212162%20212163%20212722%20212723%20212724%20212725%20212726%20212727%20212728%20212729%20212730%20212731%20212732%20212733%20212734%20212694%20212695%20212696%20212697%20212698%20212699%20212700%20212701%20212702%20212703%20212704%20212705%20212706%20212707%20212708%20212709)] for additional information.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Automated Entertainment LED luminaires (High End Systems Ministar)
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 06100 - Rough Carpentry for blocking in frame walls required to anchor casework.
		2. Division 16 - Electrical for power wiring.
		3. Division 11 - Specialty Equipment - Theatrical Equipment
		4. Division 16 - Audiovisual Systems
	1. SUBMITTALS
		1. Submit under provisions of Section 01300.
		2. Product Data:
			1. Manufacturer's data sheets on each product to be used.
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern, and color.
		2. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
		2. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
		3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
		4. Standards Compliance: Luminaire testing is by nationally recognized third-party labs.
	2. PRE-INSTALLATION CONFERENCE
		1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
	3. DELIVERY, STORAGE, AND HANDLING
		1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
		2. Protect from damage due to weather, excessive temperature, and construction operations.
	4. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
	5. WARRANTY
		1. Manufacturer’s standard limited warranty unless indicated otherwise.
			1. Unless Specified Otherwise: Fixtures: 2 years. LED Arrays: 5 years.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: ETC Inc., which is located at: 3031 Pleasant View Rd., P. O. Box 620979; Middleton, WI 53562-0979; Phone: 608-831-4116; Email: \_\_\_\_\_\_\_; Web: https://www.etcconnect.com.

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01600.
			1. Warranty Unless Specified Otherwise: Fixture: 2 years. LED Array: 5 years.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete Basis of Design options not required.

* 1. AUTOMATED ENTERTAINMENT LUMINAIRES (HIGH END SYSTEMS MINISTAR)
		1. Basis of Design: High End Systems Ministar as manufactured by ETC Inc. An automated LED projector with DMX control of intensity, color, patterns, zoom, focus, prisms, position, and more. Color control via two sets of dichroic filters. User-friendly control interface. Power supply, cooling, and electronics; integral to each unit.
			1. Standards Compliance:
				1. Listed: cETLus, UL1573, and C22.2 C22. No.166.
				2. Compliance: CE, UKCA, and USITT DMX-512A

\*\* NOTE TO SPECIFIER \*\* Delete model not required.

* + - 1. Source: LED Details:
				1. Model: High End Systems Ministar: Max Lumens 9,700. 300W. >70 CRI. 7000 K

Engine color temperatures are subject to +/- 500 K engine tolerance

* + - 1. Colors: Utilize subtractive color mixing via dual fixed color wheels with 7 discrete color segments on each
				1. Dedicated Color Macro channel with sorted color combinations for 60 different colors utilizing color wheels
			2. Dimming: 16-bit high-resolution dimming.
				1. Dimming Curves: Optimized for smooth dimming over longer timed fades.
				2. LED Control: Compatible with broadcast equipment in the following ways:

PWM Control of LED Levels: Imperceptible to video cameras and related equipment.

PWM Rates: Adjustable at fixture and via control channel to avoid visible interference to video cameras and related equipment.

* + - 1. Control Interface: USITT DMX 512A compatible via In and Thru 5-pin XLR connectors. ArtNet and sACN compatible via In and Thru RJ45 connectors.
				1. Compatible with ANSI RDM E1.20. Functions accessible via RDM protocol for modification from suitably equipped control console
				2. UI for status reports and configuration changes. 6-button user-interface
				3. Single input Control profile with 31 channels
			2. Electrical: Internal Power Supply: 100 to 240 V 50/60 Hz.
				1. Input Method: Neutrik powerCON True1 in. Requires power from a non-dimmable source.
				2. Wattage Maximum: Ministar: 450 W
			3. LED System: Comply with all relevant patents.
			4. Longevity: LM-80 results to be no less than 20,000 hours L70 rating.
			5. Thermal:
				1. Operating Temperature: 14 to 104 degrees F.
				2. Cooling Fan: Speed control via a DMX channel to be possible.
				3. Fan Speed Software: Permits fixtures override DMX fan speed setting to prevent heat damage to fixture.
				4. Temperature Sensors Monitor: Legible LCD multi-line backlit display.
			6. Physical: IP Rating: IP-20.
				1. Housing: Steel and aluminum frame with molded plastic covers.
				2. Colors: Black, white, or custom
			7. Optical:

Mechanical Optical zoom from 6.8 to 48 degrees.

* + - 1. Gobo wheels
				1. Model: High End Systems Ministar, Dual Gobo Wheels

One Rotating with six patterns plus open

One Fixed with nine patterns plus open

* + - 1. Prism: Rotating five-facet star.
			2. Diffusion: Medium Diffusion with linear insertion
			3. Pan and Tilt: 540/630-degree pan, 256-degree tilt.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly constructed and prepared.
		2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Clean surfaces thoroughly prior to installation.
		2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
	3. INSTALLATION
		1. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
	4. FIELD QUALITY CONTROL
		1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection, or construction. Delete if not required.

* + 1. Manufacturer’s Services: Coordinate manufacturer’s services in accordance with appropriate sections in Division 01.
	1. CLEANING AND PROTECTION
		1. Clean products in accordance with the manufacturers recommendations.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION