

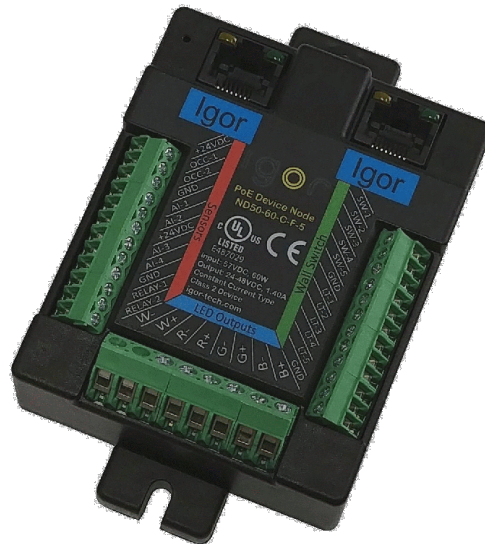
Igor® PoE Device Node – Max

Model: ND50-60-C-F-5

Igor Network and Device Nodes provide the data connectivity and power distribution architecture to create a fully functioning PoE lighting control system. The Igor Gateway software communicates bi-directionally with the nodes to control lighting for each space, as well as to receive signals from sensors and other devices to improve occupant comfort and optimize energy savings.

Device Nodes

Device Nodes extend the functionality and reach of the Igor solution. They allow multiple nodes to be linked together in a daisy chain from each Network Node via typical Ethernet patch cables. Additional LED fixtures and sensors can be connected without the need for multiple cable runs back to the data closet. This results in optimal power utilization and reduces the overall installed system cost by using fewer switch ports and network switches.



Product Specifications

Specifications subject to change without notice.

Item	Model: ND50-60-C-F-5	Igor PoE Device Node—Max
Electrical	Igor Bus Interface	Low voltage power and data interface with auto-discovery of downstream devices for connecting multiple nodes in daisy-chain configuration
	Input Voltage	48-57VDC
	Peak Operating Power	60W max
	Nominal Standby Power	2.0W
	Igor Bus Connections	Unshielded female RJ45 jacks for use with CAT5e/6 cable to Igor Network or Device Nodes
	Node Power Monitoring	Node energy data is automatically sampled every minute and stored in the Igor Cloud Portal. Accuracy: $\pm 3\%$
	Device Type	Class 2 electrical device
LED Driver Outputs	Output Channel	Four independent channels with flexible configuration options for controlling up to (4) individual white fixtures or up to (2) tunable-white fixtures
	Driver Design	Constant current LED driver design, programmable in 10mA increments from 100mA to 1750mA. (Also see the " Operating Window " figure, page 5.)
	Dimming	Full Range dimming control from 1% to 100% in increments as fine as 0.01%. Multiple dimming modes, including Analog CCR (constant current reduction), PWM, and Hybrid (CCR and PWM) mode.
	Output Voltage Range	12-48VDC
	Rated Output Power	53W max
	Protection	Short circuit and open circuit protection
	Connections	Screw terminals, accept 14-26 AWG conductors. Tightening torque: 2.0-3.5 in-lbs. (0.35-0.4 Nm) Luminaire LED engine circuits MUST be isolated; MUST NOT have an electrical path to Ground or to the luminaire housing. Common anode and common cathode circuit designs are not supported by this node model's LED drivers.
Sensor I/O Connections	Power Supply	Two +24VDC terminals for powering external sensors, 500mA total capacity
	Occupancy Sensor Inputs	OCC-1 for dry-contact sensor signals and OCC-2 for 24VDC Active-Hi sensor signals
	Analog Sensor Inputs	Four 0-10VDC analog sensor inputs

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Sensor I/O Connections (Cont.)	Relay Control Outputs	Two relay control outputs for actuating one (1) latching relay or two (2) electromechanical relays (24VDC coils, 115mA max.)
	Connections	Screw terminals, accept 16-26 AWG conductors. Tightening torque: 2.0-2.2 in-lbs. (0.23-0.25 Nm)
Wall Switch Connections	Switch Inputs	Five (5) momentary dry contact pushbutton inputs
	Pilot Light Outputs	Five (5) pilot light outputs, rated for 24VDC@7.5mA each
	Connections	Screw terminals, accept 16-26 AWG conductors. Tightening torque: 2.0-2.2 in-lbs. (0.23-0.25 Nm)
Offline Mode (Control Persistence)	If network data communication is lost between the Network node and the Igor Gateway server for a period of time >150 seconds, the node daisy-chain (1 to 5 nodes) will enter "Offline Mode" and the following will apply:	<ul style="list-style-type: none"> Configured LED driver outputs in the node daisy-chain will update to the user-defined Offline Mode dimming level. Default 20% (adj). If any nodes in the associated daisy-chain are configured for a wall control, then all lights on the daisy-chain will be dimmed via that wall control. If any nodes in the associated daisy-chain are configured for a motion sensor, then on/off control of all lights in the daisy-chain will be commanded by the occupancy/vacancy status of that motion sensor.
Environment	For indoor use only	
	IP Rating	IP20
	Sound Rating	<24dB Class A
	Maximum Case Temp.	85°C
	Operating Temperature	0°C to 70°C
	Operating Humidity	10% to 80% RH non-condensing
	Storage Temperature	-20°C to 85°C
	Storage Humidity	5% to 95% RH non-condensing
Safety & EMC	Safety Standards	UL 2108, CAN/CSA C22.2 No. 9 UL 1598C, CAN/CSA C22.2 No. 250.0-08, CSA B-79A UL 2043, Suitable for Use in Air Handling Spaces (Plenum Rated)
	Flicker	Compliance with IEEE 1789-2015 Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers. (Also see the " Flicker-Free LED Lighting Control " description, page 4.)
	EMC Emissions	Compliance to EN 55015:2013

Item	Model: ND50-60-C-F-5	Igor PoE Device Node—Max
Safety & EMC (Cont.)	EMC Immunity	Compliance to EN 61547:2009
	FCC	Compliance to Title 47 Part 15 Subpart B Section 15.109
	EU	RoHS Compliant
Other	Dimensions - Overall	4.54" (90mm) Length x 2.87" (73mm) Width x 1.10" (28mm) Height
	Dimensions - Mounting Tabs Removed	3.54" (90mm) Length x 2.87" (73mm) Width x 1.10" (28mm) Height
		View Rev. 5.0 Node Dimensions , page 7.
	Rated Lifetime	50,000+ hours
Origin	Made in USA	

Flicker-Free LED Lighting Control

IEEE 1789-2015 contains the IEEE Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers and essentially sets the standard for flicker-free lighting. Flicker can be caused by PWM dimming of the light source, including LEDs. Igor PoE Node LED drivers can be programmed for multiple dimming modes, including PWM dimming. Igor drivers implement their PWM dimming mode at a frequency of 1250Hz, which is within the IEEE 1789-2015 standard's "Recommended Operating Area."

Other Igor driver dimming modes include Analog CCR (Constant Current Reduction) dimming, which doesn't cause any flicker of the light source; and Hybrid dimming mode, which utilizes both Analog CCR and PWM dimming. In Hybrid mode, Analog CCR dimming is used at dimming levels >10% and PWM is used at levels <10% to offer very precise low level lighting control and smooth fade on/fade off functionality.

Operating Window

Figure 1 below shows the recommended output voltage and current ranges for the Igor Network and Device Nodes based on the specified node ambient temperatures. Driver performance cannot be guaranteed outside the operating window.

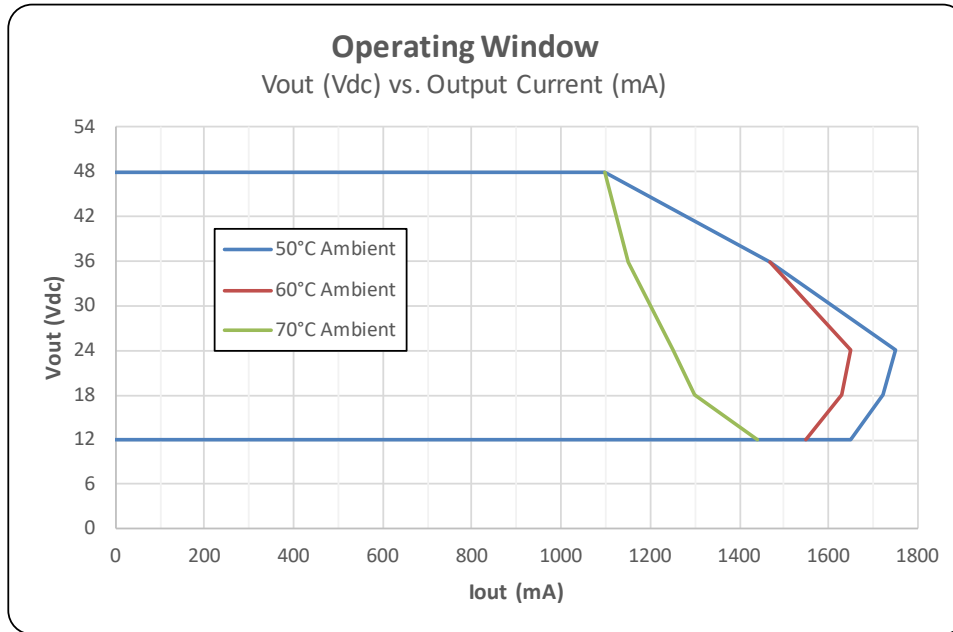


Figure 1

Typical Driver Efficiency vs. Load Level

Figure 2 below shows typical driver efficiency values for the full range of supported load voltages.

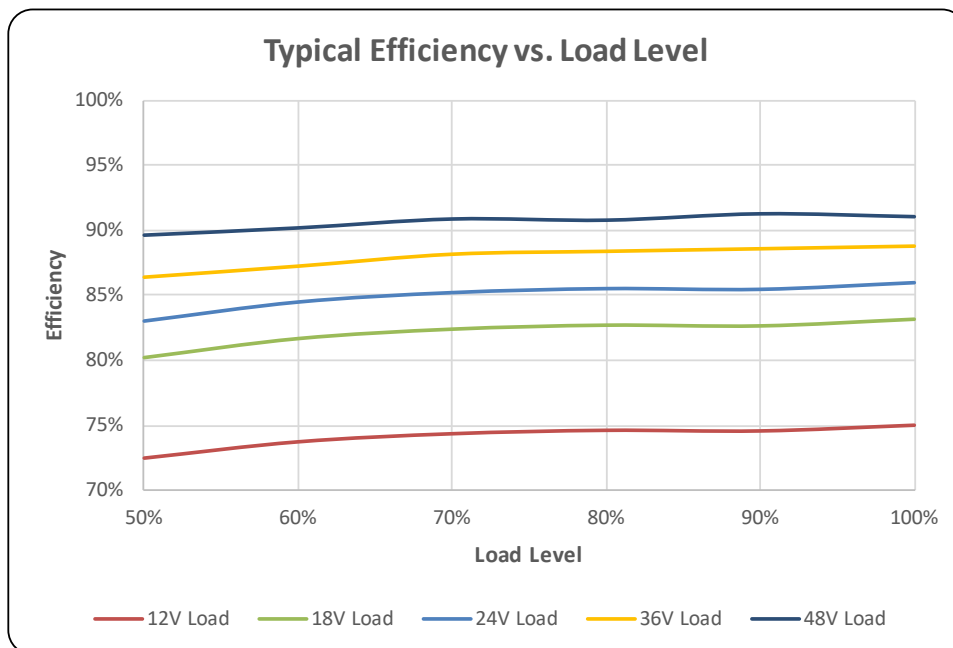


Figure 2

Output Current vs. Load Voltage

Figure 3 below shows the maximum recommended output current settings based on load voltage and ambient temperature.

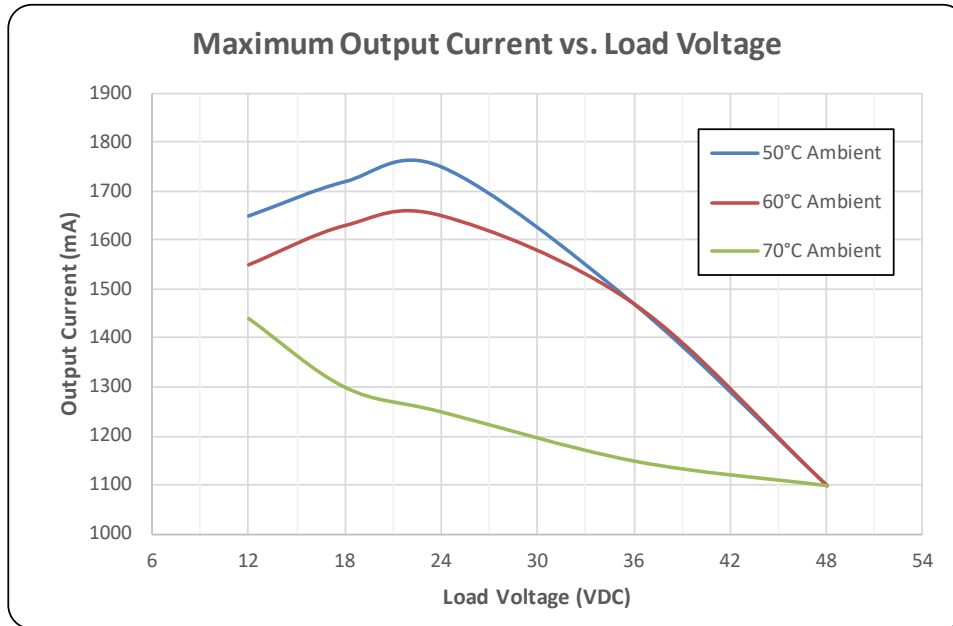


Figure 3

Output Power vs. Load Voltage

Figure 4 below shows the maximum recommended output power levels based on load voltage and ambient temperature.

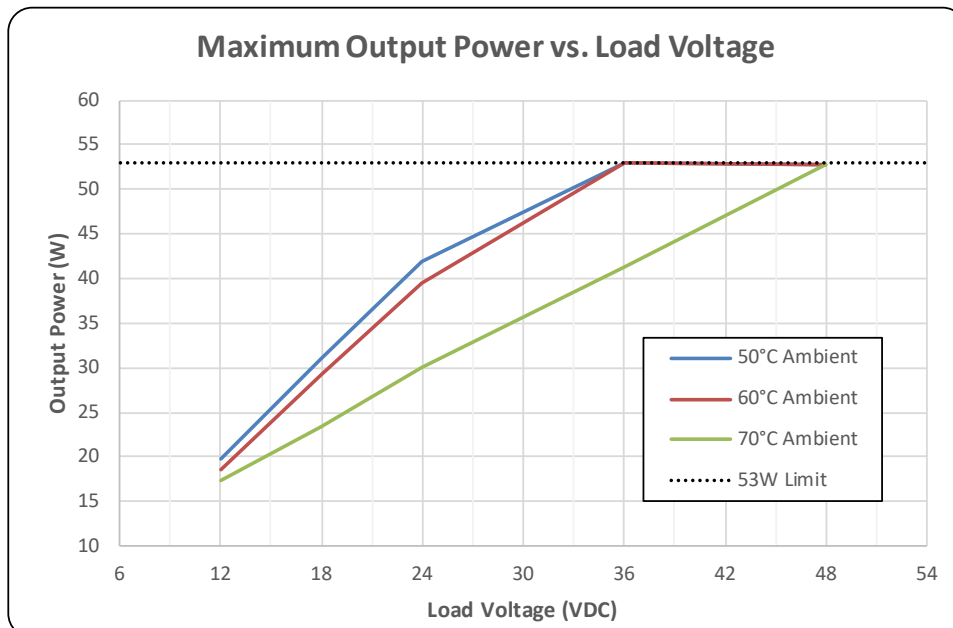
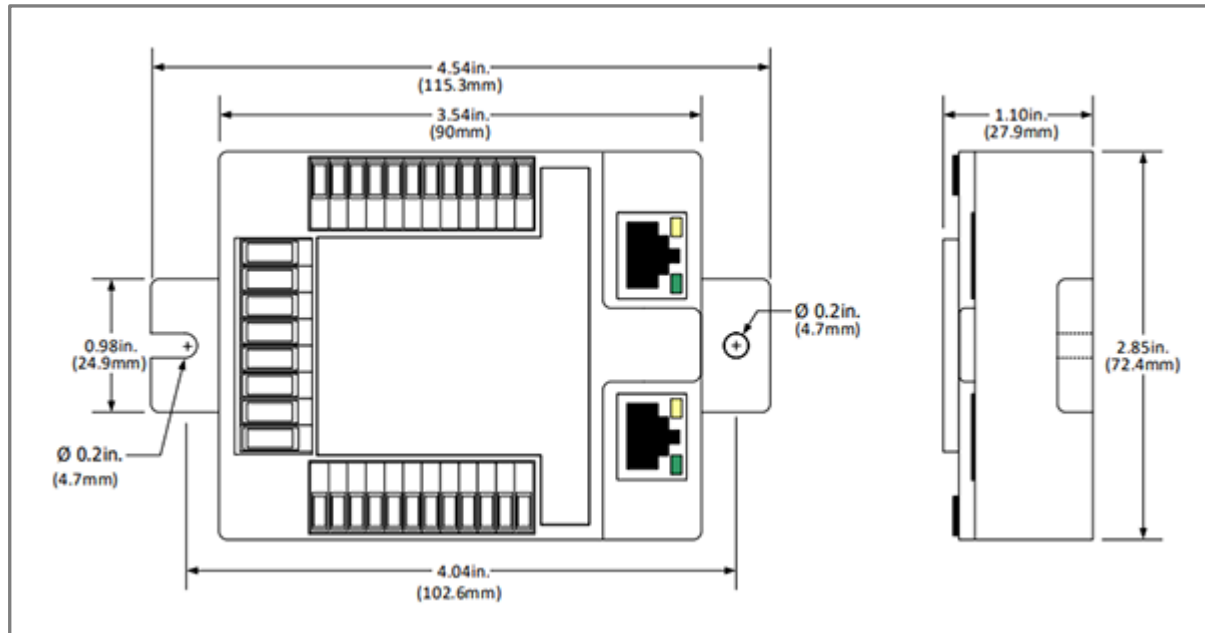


Figure 4

Rev. 5.0 Node Dimensions



Remote Mounting

Applications that call for remote mounting of the Igor Nodes separate from the LED fixture are acceptable. Please follow the maximum wiring distances listed in Table A below when selecting an appropriate cable wire gauge.

		AWG Wire Size						
		12	14	16	18	20	22	
Output Current (mA)	350	900	566	356	224	141	89	Max Cable Length (ft)
	500	630	396	249	157	99	62	
	700	450	283	178	112	70	44	
	1000	315	198	125	78	49	31	
	1100	286	180	113	71	45	28	
	1400	225	141	89	56	35	22	
	1750	180	113	71	45	28	18	

Table A. Max cable length (ft.) between node and LED fixture (based on 1V drop)

END.