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Section 6 page:

1. Technical Specifications

1.1 NX6300 controller

1.1.1 General

Supply voltage Power consumption Supply frequency Ambient temperature range	115/230 Vac +10%. -15% Max. 24 VA 50/60 Hz ±5% 0 to 60 °C (32 to 140°F)
Controller protection category	IP00 / NEMA 1 The controller must be situated in a PD1 or PD2 environment according to EN6730-1. Indoor application: The controller must be mounted in an IP40 / NEMA 3R enclosure. Outdoor application: The controller must be mounted in an IP54 / NEMA 3S enclosure
Mounting	DIN rail clip-on, or Screw hung on M4 screws set at 89.5mm centers.
Unit dimensions	Foot-print - 160mm x 90mm (6.3 in x 3.54) Depth in the panel 65mm. (2.56 in)
Weight	0.75 kg (1.65 lb.)
Cable Lengths	CANbus cable 100m (330 ft), all other connections 10m (33 ft) maximum.
Display options	On-board OLED NX6220/6330 OLED display NXTSD104 touchscreen display NXTSD007 touchscreen display

1.1.2 Valve actuator control

Type	CANbus actuators. A mixture of 3 actuators, limited to 4Nm (3 lb.), 10Nm (12 lb.) and 20Nm 20 lb.). *Note: Only 1 of the 20Nm size without a powered hub.*
Positioning accuracy Response time to positioning error	+/-0.1° 15s for ±1.0°, 1s for ±5.0°

1.1.3 Fan or Pump speed control

Selected as a build option:

Output type:	**Feedback type:**
PWM – 0 to 12V pulse output.	0 to 12V pulse scaled by option parameter. Accuracy ±0.1% (±0.2% per EN298).
OR	
0 to 10Vdc output. Minimum load impedance 5k ohms	0 to 12V pulses, scaled by option parameter Accuracy ±0.1% (±0.2% per EN298). OR 4-20mA feedback, for 0 - 50Hz/60Hz frequency Input impedance 150 ohms Accuracy ±0.4% (±0.5% per EN298).

1.1.4 Digital (Relay) Outputs (main unit and external display module)

Function:	**Rating:**
TB3 terminals. Ignition Fan Auxiliary Alarm Minimum current Maximum current (per output) Maximum voltage	 115/ 230 V ON-OFF relay. 2A ignition load. 115/ 230 V ON-OFF relay. 115/ 230 V ON-OFF relay. 115/ 230 V ON-OFF relay. 200mA 2A Resistive load. 250 Vac rms
TB2 terminals. Pilot Valve Main Valve 2 Main Valve 1 Minimum current Maximum current (per output) Maximum voltage	 115/ 230 V ON-OFF relay. 4A rated 115/ 230 V ON-OFF relay. 4A rated 115/ 230 V ON-OFF relay. 4A rated 200mA 4A Resistive load (0.6A Pilot Duty) 250 Vac rms

1.1.5 Digital Inputs

Low Voltage digital inputs 1 to 4. Maximum current	Low voltage (24 Vac), 0 V for OFF, 24 Vac for ON. Supply *must* be taken from the TB5 -11 or 12 terminals indicated in this manual. Less than 25 mA
High voltage inputs 5 & 6. Maximum current	Line voltage Digital, 0 V for OFF, 90-264 Vac for ON. Less than 25 mA
Burner select.	The Burner Select input interlocks the starting of the burner and provides power to the Pilot valve and Main Valve outputs. Supplying circuit must be able to carry sufficient current for all valves connected to the relay outputs and be fused at a maximum of 4 A, unless each output is fused at 4 A in which case the input fuse may be **8 A MAX**.

1.1.6 PT1000 Process input

Connections. Supply Maximum current Input accuracy (typical)	TB4-9 and TB4-10 Loop powered <1mA ± 1 °C (± 1°F)

1.1.7 4-20mA Process input

Connections Maximum current Maximum voltage Input accuracy (typical)	TB4-9, Loop powered or passive input. Less than 22 mA ± 3.3 V absolute maximum ± 1% of value.

1.1.8 Flame-Sensing Devices

Rectifying UV cell First safety time Response time to flame failure	The sensor and its installation must meet the requirements of EN298. Selectable 1 - 3 seconds, selectable
Photocell or Flame switch Minimum light resistance First safety time Response time to flame failure Continuous operation	The sensor and its installation must meet the requirements of EN298. 11 kΩ Selectable 1 - 3 seconds – selectable Only if set for a.c. response.
NX CANBus UV detector	Suitable for continuous operation (>24hrs) as defined by EN298.

1.1.9 Communications Interface

The communications interface cable is 2-wire RS485, plus ground. External termination may be required on multi-drop bus configurations.

The mode of communication is dependent upon the setting of option parameter 00.8.

Type:	**Data Construct:**
ComFire2 Bus – Opt. 00.8 = 0 (connects to NX3025 ProfiBus gateway). Modbus RTU Speed selectable by Opt. 00.8	9600 baud, 8-bit, no parity, 1 stop bit. 8-bit, no / even parity, 1 stop bit. 4800 / 9600 / 19200 / 38400 / 57600 / 115200 baud.

1.1.10 NX6087 Combustion Air Pressure sensor

Supply voltage	NX CANBus (24 Vac)
Electrical connection	M12 5-pin connector.
Pipe thread mounting dimensions	G 1/4" as main connection. 0
Working range (zero – span)	– 90 mbar (0 – 13 PSI)
Maximum working pressure	100 mbar for all applications 150
Burst pressure	mbar
Accuracy (as specified by EN1854:2010)	± 1.4% of value
Ambient temperature range	0 to 70 °C IP54
Protection category	
Dimensions	44 mm dia. x 85 mm long (excluding 12mm CANBus connector)
Weight	600 g

1.2 NX6094 and 6095 self-checking flame detectors

Supply voltage:	NX CANbus – 24 VAC
Electrical Connection:	M12 5-pin connector.
Ambient temperature range:	-20 to +60°C (-4 to 140 °F)
Control unit protection category:	IP65 / NEMA4.
Mounting system:	
NX6094	Clamp ring (provided) attached to the burner Maximum insertion depth - 155mm. (6.1 in) Maximum clamp screw torque – 0.3Nm
NX6095	1” BSPP threaded connection with integral air purge connection – $^{3}/_{8}$” BSPP. (BSSP is the only option however there is sufficient thread capacity to securely fasten to 1’ NPT pipe).
Dimensions:	
NX6094	Overall length 249mm (9.8 in) Sight tube 32mm(1.26 in) diameter x 197mm (7.8 in). Terminal control box 79 (3”) x 74 (2”) x 52mm (2")
NX6095	Overall length 115mm (6.1 in) Sight tube 38mm (1.5”) A/F x length 50mm (2”) Terminal control box 79 (3”) x 74 (2”) x 52mm (2")
Weight:	0.65 kg (1pd 7 oz)

1.3 NX6043 Gas Pressure Sensor

Supply voltage	NX CANBus (24 Vac)
Electrical connection	M12 5-pin connector. G
Pipe thread mounting dimensions	¼" P (½" NPT)
Working range (zero – span)	0 – 600 mbar (0 -8.7 PSI)
Maximum working pressure	600 mbar for all applications (8.7 PSI)
Burst pressure	>3 bar (44 PSI)
Accuracy (as specified by EN1854:2010)	± 0.6% of value
Ambient temperature range	-20 to 60 °C (-4 to 158 °F)
Protection category	IP54
Dimensions	44 mm dia. x 85 mm long (1.73 in dia. x 3.35 in long) (excluding 12mm (.5 in) CANBus connector)
Weight	600 g (1.3pd)

1.4 NX6044 Pressure Sensor

Supply voltage	CANBus (24 Vac)
Electrical connection	M12 5-pin connector
Pipe thread mounting dimensions	G ¼" P (½" NPT)
Working range (zero – span)	0 – 4 bar (0 – 58pd)
Maximum working pressure	4 bar (58 pd) (3 bar for S class applications)
Burst pressure	>12 bar (>174pd)
Accuracy (as specified by EN1854:2010)	± 0.6% of value
Ambient temperature range	-20 to 70 °C (-4 to 158 °F)
Protection category	IP54
Dimensions	44 mm dia. x 85 mm long (1.73 in dia. x 3.35 in long) (excluding 12mm (.5 in) CANBus connector)
Weight	600 g (1.3pd)

1.5 NX6045 Boiler Steam Pressure Sensor

Supply voltage	NX CANBus (24 Vac)
Electrical connection	M12 5-pin connector
Pipe thread mounting dimensions	G ¼" P (½" NPT)
Working range (zero – span)	0 – 25 bar (0 – 363 PSI)
Maximum working pressure	25 bar (20 bar S class)
Burst pressure	80 bar
Accuracy (as specified by EN1854:2010)	± 0.6% of value
Ambient temperature range	-20 to 70 °C (-4 to 158 °F)
Protection category	IP54
Dimensions	44 mm dia. x 85 mm long (excluding 12mm CANBus connector)
Weight	600 g (1.3pd)

1.6 NXC04, NXC12 and NXC20 Actuators

Type	24V asynchronous servo chassis.
Interface to NX6300 series.	CANBus.
Speed	30 seconds for 90 degrees rotation (50/60Hz).
Torque	NXC04 = 4 Nm (3 ft lbs.) NXC12 = 10 Nm (9 ft lbs.) NXC20 = 20 Nm (14.74 ft lbs.)
VA Rating	NXC04 = 3 VA NXC12 = 5 VA NXC20 = 10 VA
Protection Category	NXC04 = IP40 NXC12 = IP54
Accuracy (as specified by EN12067)	± 0.56°

1.7 NX6018 CANBus PSU and Hub

Supply voltage	120/230 Vac +10%. -15%
Max Power consumption	60 VA
Supply frequency	50/60 Hz ±5%
Ambient temperature range	0 to 60 °C (32 to 140 °F)
Controller protection category	IP20. The controller must be situated in a PD1 or PD2 environment according to EN6730-1. Indoor: Controller must be mounted in an IP40 enclosure Outdoor: Controller must be mounted in an IP54 enclosure
Mounting Attitude	Any.
Cable Lengths	Maximum CANbus cable 100m (330ft) (Sum of all cable lengths).
Unit dimensions	Footprint 176mm x 114mm, 95 mm deep.
Weight	1.3 kg (2.7 pd)

1.8 NXO2TRIM Oxygen Probe Interface

Supply voltage	NX CANBus (24 Vac)
Power consumption	Approximately 8 VA
Ambient temperature range	0 to 60 °C (32 to 140 °F)
Protection category	IP65 / NEMA4.
Unit dimensions	Footprint 160mm x 110mm, 75 mm deep (6.3in X 4.3in, 3in deep)
Weight	0.6 kg (1.4pd)
Interface to oxygen probe	Proprietary
Oxygen sensor heater supply	14 Vac nominal
Oxygen sensor heater set point	820 °C ±3 °C (1,508 °F ±3 °F)
Oxygen measurement accuracy	±1% of value.
Auxiliary Inputs:	
Type	4– 20mA.
Input impedance	220Ω
Pre-assignment	O2, CO
Flue gas temperature input:	
Type	Type-K thermocouple.
Measurement range	0-540 °C (1000 °F).
Flue temperature accuracy	± 2 °C (± 2 °F)

1.9 NX6083-x Flue Gas Oxygen probe

Type	NX proprietary
Ambient temperature range	0 to 70 °C (32 °F to 158 °F)
Protection category	IP20.
Maximum flue temperature	600 °C (1,112 °F)
Unit Weight	2.5 – 4.5 kg (5.5pd – 10pd) (Model dependent)
Oxygen Measurement	Zirconia oxide cell, Range 1 – 21% Oxygen. Response 5s Time constant 15s for 63% change.
Flue Gas Temperature Measurement	Type K thermocouple, 0-540 °C.(32 °F to 1,004 °F)
Calibration: Reference gas concentration Reference gas flow rate	 Ambient air at 20.9% O_2 300 cc/min
Filter and flame arrestor Filter pressure drop Filter replacement pressure	 4 – 7 micron sintered stainless steel. 50 – 100 mm water gauge. 120 mm water gauge.

1.10 NX6086 Ambient Air Temperature Sensor

Type	CANbus
Ambient temperature range	0 to 60 °C (32 °F to 140 °F)
Protection category	IP65.
Unit dimensions Weight	Footprint 63mm x 58mm, 36 mm deep 0.2 (2.5 in X 2.3in, 1.5in deep)
Temperature measurement accuracy	± 2 °C (± 2 °F)

1.11 Approvals

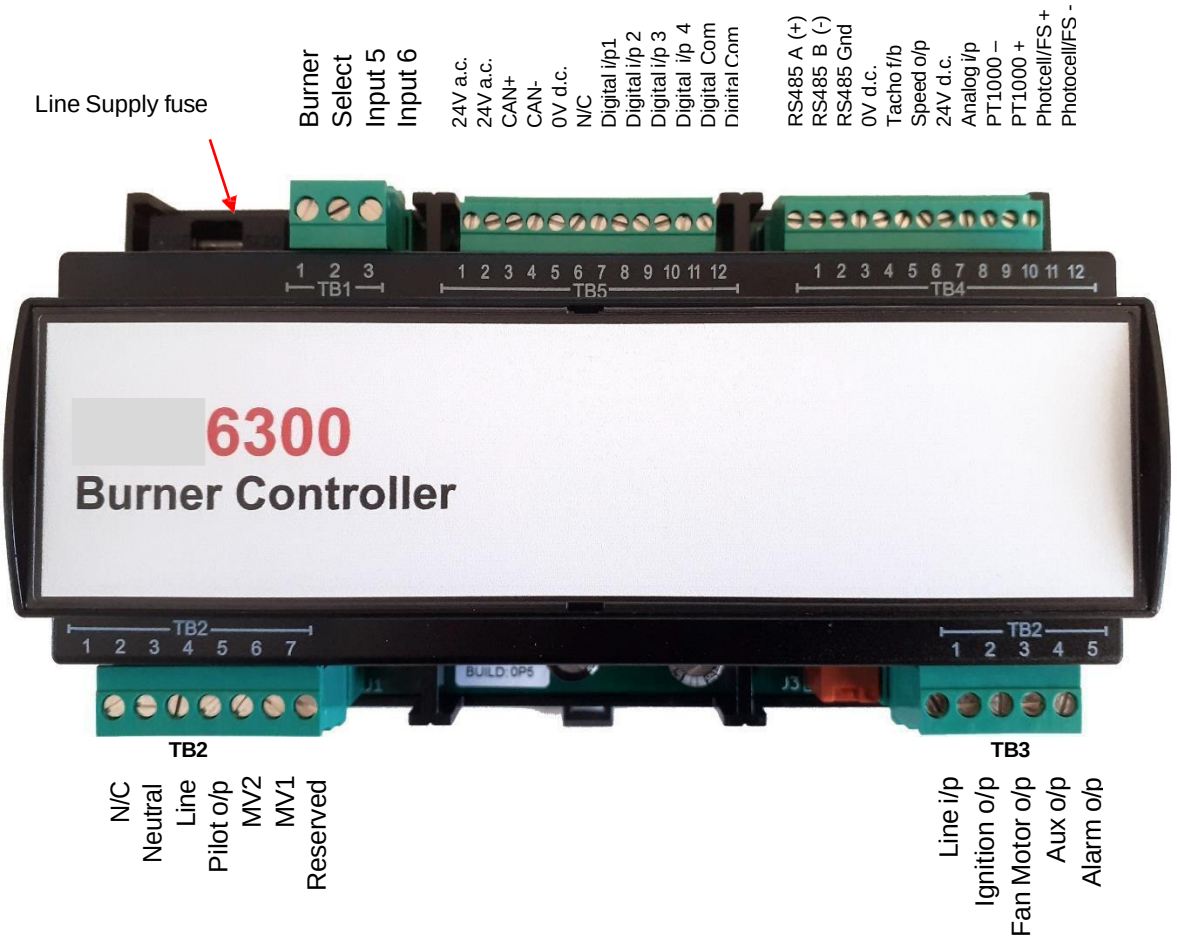
Classification in accordance with EN298:

Tested in accordance with the Gas Appliances Regulation (EU) 2016/426 - GAR, encompassing the following standards:

- EN14459:2007, Safety and control equipment for burners and fuel appliances for gaseous or liquid fuels - Control and regulation functions in electronic systems - Methods for classification and evaluation.
- EN298, Automatic gas burner control systems for gas burners and gas burning appliances with or without fans.
- EN60730-1, Automatic electrical controls for household and similar use.
- EN12067-2, Gas/air ratio controls for gas burners as gas burning appliances.
- EN1643:2014, Valve leak test systems.
- EN1854, Pressure sensing devices for gas burners and gas burning appliances.
- ANSIUL 462, Heat r
- UL 60730-2-5, 3rd Ed., Issue Date: 2014-01-30, Revision Date: 2019-09-30
- CSA E60730-1:15 - 5th Ed - Issued 1 Dec 2015 - Revised 1 Nov 2017

2. NX6300 Terminal Connections

These are the wiring terminal connections for the NX6300 controller.



Each terminal set has a removable block to make wiring a little easier. The terminal blocks must be pushed fully home to ensure reliable operation.

3. Section Update History

New version	Date		Changes in brief
V1pt4	10.29.23	RAL	North American version

——— End of Section 6 ——