NexusConnect

End-User Guide

Professional HVAC Control System Design Platform with AI Model Integration

Version 1.0.0 | AutomataNexus, LLC

Generated: December 25, 2025

NexusConnect End-User Guide

Professional HVAC Control System Design Platform

Version 2.0.0
AutomataNexus, LLC
Comprehensive Interactive User Manual

> **Major Update**: Now includes comprehensive Floor Plan Designer documentation with 2D/3D design capabilities, NexusConnectBridge integration, and enhanced UI navigation.

Table of Contents

Getting Started

System Requirements

Minimum Requirements: - **Operating System**: Windows 10, macOS 10.15, or Linux Ubuntu 18.04+ - **Browser**: Chrome 90+, Firefox 88+, Safari 14+, Edge 90+ - **RAM**: 4GB minimum, 8GB recommended - **Storage**: 1GB available space - **Internet**: Broadband connection (10 Mbps minimum)

Recommended Requirements: - **RAM**: 16GB for optimal performance - **Graphics**: Dedicated GPU for 3D visualization - **Display**: 1920×1080 minimum resolution - **Internet**: 25 Mbps for real-time collaboration

Accessing NexusConnect

1. **Open your web browser** and navigate to: `https://nexusconnect-anc-j67aj6.automatacontrols.com`
2. **Bookmark the URL** for quick access
3. **Wait for the application to load** - you'll see the NexusConnect logo with spinning animation

User Registration & Login

First-Time Registration

1. **Click "Create Account"** on the login screen
2. **Fill in your information:**
3. **Username**: Choose a unique identifier (3-20 characters)
4. **Email**: Valid email address for account verification
5. **Password**: Minimum 8 characters with mixed case and numbers
6. **Confirm Password**: Re-enter your password
7. **Click "Create Account"** button
8. **Check your email** for verification (if required)
9. **Return to login screen** and sign in

Signing In

1. **Enter your username** and password
2. **Check "Remember me for 30 days"** if desired (optional)
3. **Click "Sign In"**
4. **Wait for authentication** - you'll see a success message

Password Visibility Toggle

- **Click the eye icon** next to password fields to show/hide password text
- **Use Tab key** to navigate between fields efficiently

Interface Overview

Upon successful login, you'll see the **Mode Selection** screen:

Mode Selection Screen

- **Control Mode**: Traditional HVAC schematic design
- **AI Model Mode**: Machine learning and data science tools
- **Choose your primary workflow** - you can switch modes anytime

Main Interface Layout (Control Mode)

Top Bar - Toolbar:

```
[File] [Edit] [View] [Config] [Logic] [Generate Logic] [AI Model] [?]
```

Left Panel - Component Library: - Expandable categories of HVAC components - Search functionality - Drag-and-drop interface

Center - Canvas: - Main design area - Grid background for alignment - Zoom and pan controls

Right Panel - Properties: - Component configuration - Project information - Wire specifications

Bottom - Footer: - Application status - User information - Version details

---

Application Modes

Control Mode

Purpose: Design professional HVAC control schematics **Best For**: - Control engineers - HVAC technicians - Building automation professionals - Electrical designers

Key Features: - IEEE-compliant component symbols - Smart wire routing - Electrical validation - Professional drawing standards

AI Model Mode

Purpose: Create and train machine learning models for HVAC systems **Best For**: - Data scientists - Research engineers - Facility managers - Performance analysts

Key Features: - Visual neural network design - 72 curated HVAC datasets - 3D model visualization - Jupyter notebook generation

Floor Plan Designer

Purpose: Design building layouts with integrated HVAC systems **Best For**: - Architects - MEP engineers - Building designers - Facility planners

Key Features: - Interactive 2D/3D floor plan design - 202-component NexusConnectBridge library (95 2D SVG + 107 3D GLB) - Advanced wall drawing tools - Equipment placement and sizing - Piping and ductwork routing - Layer-based design management - AI-assisted design with NexusForge - Real-time 3D visualization - Professional rendering and export

Switching Between Modes

Navigation Buttons (Recommended)

Enhanced UI Navigation: Each mode now includes direct navigation buttons:

From Floor Plan Designer: - **AI Model** button: Switch to AI Model Mode - **Control** button: Switch to Control Mode

From AI Model Mode: - **Floor Plan** button: Switch to Floor Plan Designer

From Control Mode:
- **Floor Plan** button: Switch to Floor Plan Designer

Traditional Mode Toggle

1. **Click the mode toggle** in the top toolbar
2. **Select your desired mode** from the dropdown
3. **Confirm the switch** - your work is automatically saved
4. **Wait for interface reload** - mode-specific tools will appear

> **Tip**: Use the navigation buttons for faster switching between related design tasks!

Floor Plan Designer - Building Layout Design

Overview {#floor-plan-overview}

The Floor Plan Designer is a powerful building layout design tool that integrates seamlessly with the NexusConnectBridge Component Library. Design professional floor plans with accurate HVAC equipment placement, piping, and ductwork routing.

Key Capabilities: - **2D Design Mode**: Traditional architectural floor plan design - **3D Visualization**: Real-time isometric 3D rendering - **Hybrid Mode**: 2D design with 3D component previews - **Component Integration**: Access to 202 professional HVAC components - **AI Assistance**: NexusForge intelligent design suggestions

2D Floor Plan Design

Getting Started

1. **Access Floor Plan Designer**
2. Click "Floor Plan" from the main menu
3. Or use the navigation buttons in Control/AI Model modes
4. **Interface Layout** `[Toolbar: AI Model | Control | Save | Export | NexusForge | 2D View] [Left Panel: Component Library Tabs - Standard | 3D] [Center: Canvas with Grid | Zoom Controls | Layer Panel] [Right Panel: NexusForge Chat (toggle)]`

Canvas Operations

Navigation: - **Pan**: Click and drag on empty canvas - **Zoom**: Mouse wheel or +/- buttons - **Grid Toggle**: Click grid button in toolbar - **Reset View**: Double-click on empty canvas

Basic Tools: - **Select Tool**: Click to select components/walls - **Wall Tool**: Draw building walls and partitions
- **Room Tool**: Add rooms and spaces - **Equipment Tools**: Place HVAC components

Wall Drawing Tools

Interactive Wall Drawing

The advanced wall drawing system provides professional architectural drafting capabilities:

1. **Start Drawing**
2. Select the Wall tool from toolbar
3. Click anywhere on canvas to start first point
4. **Interactive Preview**
5. Move mouse to see grey dotted line preview
6. Line shows exact wall placement before confirmation
7. **Complete Wall**
8. Click second point to finish wall
9. Wall automatically snaps to grid if enabled
10. **Continuous Drawing**
11. After placing a wall, start next wall from endpoint
12. Create complex floor plans efficiently
13. **Branch Walls**
14. Click on any existing wall to start new wall from that point
15. Create T-junctions and complex layouts easily
16. **Cancel Drawing**
17. Press **ESC** key to exit wall drawing mode
18. Returns to select tool automatically

Wall Types: - **Exterior**: Heavy structural walls - **Interior**: Standard room dividers
- **Partition**: Lightweight dividers

Wall Properties: - **Thickness**: 4-12 inches - **Height**: Automatic (8-12 feet) - **Material**: Drywall, concrete, etc.

Room Management

Creating Rooms

1. **Add New Room**
2. Select Room tool from toolbar
3. Click on canvas to place room rectangle
4. Drag corners to resize
5. **Room Properties**
6. **Name**: Descriptive room names
7. **Type**: Office, Mechanical, Storage, etc.
8. **Color**: Visual identification
9. **HVAC Zone**: Assignment to control zones
10. **Empty Room Policy**
11. All rooms start empty by default
12. No pre-filled equipment or furniture
13. User manually places all equipment

Room Types Available

- **Office**: Standard workspace areas
- **Conference Room**: Meeting spaces
- **Mechanical Room**: Equipment areas
- **Storage**: Storage spaces
- **Restroom**: Bathroom facilities
- **Kitchen**: Food service areas
- **Lobby**: Reception and waiting areas
- **Hallway**: Circulation spaces
- **Server Room**: IT equipment areas
- **Laboratory**: Specialized workspaces

Equipment Placement

NexusConnectBridge Component Integration

The Floor Plan Designer integrates with the complete NexusConnectBridge Component Library:

Library Statistics: - **Total Components**: 202 professional HVAC components - **2D SVG Components**: 95 high-quality vector graphics - **3D GLB Models**: 107 detailed 3D models - **Categories**: Structure, HVAC, Piping, Valves, Sensors, Controls

Placing Equipment

1. **Access Component Library**
2. Left panel shows two tabs: "Standard" and "3D"
3. Search by name or browse by category
4. **Component Selection**
5. Click component in library to select
6. Preview shows 2D/3D availability indicators
7. **Placement**
8. Click on canvas to place equipment
9. Component automatically resizes to appropriate scale
10. **Visual Indicators**
11. **Green dot + "2D"**: Component uses NexusConnectBridge SVG
12. **Green dot + "3D"**: Component has 3D GLB model available
13. **Standard colors**: Default representation

Equipment Categories

HVAC Equipment: - Air Handling Units (AHU) - Variable Air Volume (VAV) boxes - Fans and blowers - Chillers and cooling towers - Boilers and heat exchangers - Pumps and circulation equipment

Control Components: - Temperature sensors - Humidity sensors - Pressure sensors - Thermostats - BMS controllers - Control panels

Safety & Monitoring: - Smoke detectors - Fire dampers - Emergency controls - Monitoring equipment

Equipment Management

Selection and Editing: - **Select**: Click component to highlight with blue border - **Move**: Drag selected component to new position - **Rotate**: Use rotation tool or properties panel - **Delete**: Select component and press **Delete** or **Backspace** - **Properties**: Right-click for component properties

Keyboard Controls: - **Delete/Backspace**: Remove selected component - **ESC**: Clear selection and cancel operations - **Ctrl+Z**: Undo last action - **Ctrl+Y**: Redo action

3D Visualization

3D View Mode

Access professional 3D rendering by clicking the "3D View" button in the toolbar.

3D Rendering Features: - **Isometric Projection**: Professional architectural 3D view - **Real-time Rendering**: Instant updates as you design - **Component Integration**: Shows actual 3D GLB models from NexusConnectBridge - **Depth and Shadows**: Realistic lighting and depth perception

3D Components Display

3D Equipment Rendering: - Loads actual 3D GLB models from component library - Proper scaling and positioning - Material and texture rendering - Connection point visualization

3D Room Volumes: - Shows room height and 3D space - Wall extrusion with proper thickness - Ceiling and floor surfaces - Lighting and shadow effects

3D Navigation: - **Pan**: Mouse drag to move view - **Zoom**: Mouse wheel to zoom in/out - **Reset**: ESC to return to 2D view

Hybrid Mode

3D Overlay Features: - 2D floor plan as base layer - 3D equipment shadows and indicators - Height visualization lines - Component availability indicators

Piping & Ductwork

Piping System Design

1. **Select Piping Tool**
2. Click Piping button in toolbar
3. Piping controls panel appears
4. **Piping Configuration**

5. **Pipe Size**: 0.5" to 24" diameter
6. **Material**: Steel, copper, PVC, stainless, PEX
7. **Type**: Supply, return, steam, condensate
8. **Insulation**: Insulated or bare pipe
9. **Drawing Piping**
10. Click to start pipe route
11. Click additional points to create route
12. Right-click to complete pipe run
13. **Connection Management**
14. Automatic connection to equipment
15. Connection point validation
16. Flow direction indicators

Ductwork System Design

1. **Select Ductwork Tool**
2. Click Ductwork button in toolbar
3. Ductwork controls panel appears
4. **Ductwork Configuration**
5. **Width**: 6" to 48"
6. **Height**: 4" to 24"
7. **Material**: Galvanized steel, aluminum, fiberglass, flexible
8. **Type**: Supply, return, exhaust, intake
9. **Drawing Ductwork**
10. Click to start duct route
11. Visual rectangular duct representation
12. Automatic sizing and transitions
13. **3D Ductwork Visualization**
14. Rectangular duct cross-sections in 3D
15. Proper routing around obstacles
16. Connection fittings and transitions

Layer Management

Layer Visibility Controls

Access layer controls via the Layers button in toolbar.

Available Layers: - **Building Structure** - Floors - Walls
- Rooms - **HVAC Systems** - HVAC Equipment - Piping - Ductwork - **Controls & Sensors** - Sensors - Thermostats - Controllers - Connections

Layer Operations: - **Show/Hide**: Toggle individual layers - **Show All**: Make all layers visible - **Hide All**: Hide all layers for clean view

Performance Optimization

Large Project Management: - Hide unused layers for better performance - Focus on specific systems during design - Use layer isolation for complex projects

Keyboard Shortcuts {#floor-plan-keyboard-shortcuts}

Drawing Tools

- **S**: Select tool
- **W**: Wall drawing tool
- **R**: Room tool
- **E**: Equipment tool
- **P**: Piping tool
- **D**: Ductwork tool

Navigation

- **Space + Drag**: Pan canvas
- **Ctrl + Mouse Wheel**: Zoom in/out
- **Ctrl + 0**: Fit to screen
- **G**: Toggle grid visibility

Selection and Editing

- **Delete/Backspace**: Remove selected items
- **ESC**: Clear selection, cancel operation

- **Ctrl + A**: Select all
- **Ctrl + Z**: Undo
- **Ctrl + Y**: Redo

View Controls

- **1**: 2D view mode
- **3**: 3D view mode
- **H**: Hybrid view mode
- **L**: Toggle layer panel
- **F**: Full screen mode

Project Management

- **Ctrl + S**: Save project
- **Ctrl + O**: Open project
- **Ctrl + N**: New project
- **Ctrl + E**: Export project

NexusForge AI Integration

AI-Assisted Design

The Floor Plan Designer integrates with NexusForge AI for intelligent design assistance.

NexusForge Capabilities: - **Layout Optimization**: Suggest efficient floor plan layouts - **Equipment Sizing**: Recommend proper equipment for spaces - **Energy Analysis**: Analyze HVAC load requirements - **Code Compliance**: Check building code compliance - **Design Validation**: Verify system compatibility

Using NexusForge Chat

1. **Open Chat Panel**
2. Click "NexusForge Chat" button in toolbar
3. Chat panel slides in from right side
4. **Design Assistance Commands**
5. "Create a small office layout"

6. "Add an AHU to the mechanical room"
7. "Optimize the HVAC routing"
8. "Check energy efficiency"
9. **AI Responses**
10. Intelligent design modifications
11. Equipment recommendations
12. Layout optimizations
13. Professional guidance

AI-Powered Features

Smart Placement: - Automatic equipment positioning - Optimal equipment sizing - Zone-based equipment assignment

Layout Generation: - Template-based floor plans - Industry-standard layouts - Custom space planning

System Integration: - Compatible equipment selection - Proper connection routing - Load balancing recommendations

Export and Integration

Export Options

2D Exports: - **PDF**: Professional architectural drawings - **DWG**: AutoCAD format for further editing - **SVG**: Scalable vector graphics - **PNG**: High-resolution images

3D Exports: - **3D Model**: GLB format for 3D viewers - **Rendered Images**: Photorealistic renders - **VR/AR**: Virtual reality walkthrough files

Integration with Other Modes

Floor Plan → Control Mode: - Equipment list transfer - Component specifications - Electrical requirements - Control point mapping

Floor Plan → AI Model: - Building parameters - Equipment specifications - Energy modeling data - Performance metrics

Best Practices

Professional Design Workflow

1. **Start with Building Shell**
2. Draw exterior walls first
3. Add interior walls and partitions
4. Define rooms and spaces
5. **HVAC System Design**
6. Place major equipment (AHU, chillers)
7. Add distribution equipment (VAV boxes)
8. Route main ductwork and piping
9. Add terminal equipment
10. **Controls Integration**
11. Place sensors and controllers
12. Define control zones
13. Map control connections
14. **Validation and Review**
15. Check 3D visualization
16. Verify equipment accessibility
17. Review system integration
18. Export final drawings

Performance Tips

Optimize Performance: - Use layers to manage complex designs - Hide unnecessary elements during design - Save frequently for large projects - Use grid snapping for precision

Quality Control: - Regular 3D view checks - Equipment clearance verification - System compatibility validation - Professional drawing standards

Control Mode - HVAC Schematic Design

Component Library

Accessing Components

1. **Expand categories** by clicking the arrow icons:
2. **Controllers**: PLCs, DDC controllers, smart thermostats
3. **Sensors**: Temperature, humidity, pressure, flow
4. **Actuators**: Damper actuators, valve actuators
5. **Equipment**: AHUs, chillers, boilers, pumps, fans
6. **Electrical**: Relays, contactors, transformers
7. **Safety**: Emergency stops, fire dampers
8. **Use the search box** to quickly find components:
9. Type component names or part numbers
10. Search by manufacturer or model
11. Use keywords like "temperature" or "valve"

Adding Components to Canvas

Method 1: Drag and Drop 1. **Select a component** from the library 2. **Drag it** to the desired location on canvas 3. **Drop it** - the component will snap to grid

Method 2: Double-Click 1. **Double-click a component** in the library 2. **Click on the canvas** where you want to place it 3. **Press Esc** to exit placement mode

Component Properties

After placing a component: 1. **Click to select** the component (blue outline appears) 2. **View properties** in the right panel: - **Tag/Designation**: Unique identifier (e.g., TE-101) - **Description**: Component function description - **Manufacturer**: Equipment manufacturer - **Model Number**: Specific part number - **I/O Points**: Input/output configuration - **Wiring**: Terminal connections

Canvas Operations

Navigation

- **Zoom In**: Scroll up or Ctrl/Cmd + Plus

- **Zoom Out**: Scroll down or Ctrl/Cmd + Minus
- **Pan**: Click and drag empty space
- **Fit to Screen**: Double-click empty space

Selection

- **Single Select**: Click on component
- **Multi-Select**: Ctrl/Cmd + Click multiple components
- **Area Select**: Drag rectangle around components
- **Select All**: Ctrl/Cmd + A

Moving Components

1. **Select component(s)** you want to move
2. **Drag to new location** - components snap to grid
3. **Use arrow keys** for precise positioning
4. **Hold Shift + arrow keys** for larger movements

Copying and Pasting

1. **Select components** to copy
2. **Press Ctrl/Cmd + C** to copy
3. **Press Ctrl/Cmd + V** to paste
4. **Move copied components** to desired location

Deleting Components

- **Select components** to delete
- **Press Delete key** or **Backspace**
- **Confirm deletion** in popup dialog

Wire Routing

Creating Wires

Method 1: Wire Tool 1. **Select wire tool** from toolbar 2. **Click starting terminal** on first component 3. **Click ending terminal** on second component 4. **Wire is automatically routed** with smart pathfinding

Method 2: Drag Connection 1. **Hover over component terminal** until connection point appears 2. **Click and drag** to target terminal 3. **Release** when target is highlighted

Wire Properties

1. **Select a wire** by clicking on it
2. **Configure properties** in right panel:
3. **Wire Type**: Control, power, signal, network
4. **Conductor Size**: AWG sizing (14, 12, 10, etc.)
5. **Insulation**: THW, THWN, XHHW
6. **Color Code**: Standard electrical colors
7. **Cable Type**: Individual wires or multi-conductor cable
8. **Voltage Rating**: 24V, 120V, 208V, 480V

Wire Routing Options

- **Automatic Routing**: Smart pathfinding avoids obstacles
- **Manual Routing**: Click to add waypoints for custom paths
- **Orthogonal**: Right-angle routing for professional appearance
- **Direct**: Straight-line connections

Wire Labels

1. **Double-click on wire** to add label
2. **Enter wire designation** (e.g., W1, Control-1, 24VAC)
3. **Position label** by dragging
4. **Configure label properties**: font, size, color

Properties Configuration

Component Configuration

Basic Properties: - **Tag**: Unique component identifier - **Description**: Functional description - **Location**: Physical location in building

Electrical Properties: - **Voltage**: Operating voltage (24VAC, 120VAC, etc.) - **Current**: Operating current - **Power**: Power consumption - **I/O Type**: Analog input, digital output, etc.

Physical Properties: - **Manufacturer**: Equipment manufacturer - **Model**: Specific model number - **Part Number**: Exact part number for procurement - **Specifications**: Technical specifications

Validation Features

The system automatically validates: - **Electrical compatibility** between connected components - **Voltage mismatches** (warnings for incompatible voltages) - **Current overloads** (alerts for excessive current draw) - **I/O type compatibility** (analog vs. digital matching)

Project Information

Title Block Configuration

1. **Click "Project Information"** in properties panel
2. **Fill in required fields:**

Company Information: - **Company Name**: Your organization name - **Address**: Company address - **Phone/Email**: Contact information

Project Details: - **Project Name**: Descriptive project name - **Project Location**: Building/facility location - **Project Number**: Internal project reference - **Contract Number**: Contract reference if applicable

Drawing Information: - **Drawing Title**: Specific drawing description - **Drawing Number**: Unique drawing identifier - **Sheet Number**: Current sheet (e.g., "1 of 3") - **Revision**: Drawing revision letter/number - **Scale**: Drawing scale (e.g., "NTS" - Not to Scale)

Personnel: - **Drawn By**: Designer/engineer name - **Checked By**: Reviewer name - **Approved By**: Approval authority - **Date**: Creation/revision date

BMS Integration Workflow

Uploading BMS Configuration

Preparing Configuration Files

Supported Formats: - **HTML files** containing BAS (Building Automation System) data - **Exported from**: Johnson Controls, Honeywell, Schneider Electric, Tridium - **File size limit**: 50MB maximum

Upload Process

1. **Click "Config" button** in the toolbar
2. **Select "Upload BMS Configuration"**
3. **Choose your HTML file** from file browser
4. **Wait for validation** - system checks file format and content
5. **Review parsing results** - system extracts:
6. I/O points and addresses
7. Controller information
8. System sequences
9. Equipment specifications

Validation Messages

Success Messages: - ✅ "BMS configuration parsed successfully" - ✅ "Found X controllers, Y points" - ✅ "Ready for schematic generation"

Warning Messages: - ⚠ "Some data could not be parsed" - ⚠ "Missing equipment specifications" - ⚠ "Non-standard format detected"

Error Messages: - × "Invalid file format" - × "File size exceeds limit" - × "Corrupted or empty file"

Uploading Control Logic

Preparing Logic Files

Supported Formats: - **JavaScript (.js)** files containing control logic - **Production-ready** logic with proper syntax - **Commented code** for better understanding

Content Examples: - PID control algorithms - Sequencing logic - Safety interlocks - Alarm conditions - Scheduling routines

Upload Process

1. **Click "Logic" button** in the toolbar
2. **Select "Upload Control Logic"**
3. **Choose your JavaScript file**
4. **Wait for syntax validation**
5. **Review logic analysis**:
6. Function definitions found
7. Variable declarations
8. Control loops identified
9. Safety checks detected

Automatic Schematic Generation

Triggering Generation

Automatic Trigger: - When both config AND logic files are uploaded - System automatically starts schematic generation - Progress indicator shows generation status

Manual Trigger: 1. **Click "Generate Schematic"** button 2. **Confirm generation** in popup dialog 3. **Wait for completion** (typically 10-30 seconds)

Generation Process

Phase 1: Analysis (2-5 seconds) - Parsing BMS configuration data - Analyzing control logic structure - Identifying equipment relationships

Phase 2: Component Placement (5-15 seconds) - Creating component instances - Applying IEEE standard symbols - Calculating optimal layout

Phase 3: Wire Routing (3-10 seconds) - Connecting related components - Routing wires with smart pathfinding - Applying electrical standards

Phase 4: Finalization (1-3 seconds) - Adding labels and designations - Generating title block - Performing final validation

Generated Elements

Components Created: - Controllers (with correct model numbers) - Sensors (with proper I/O assignments) - Actuators (with control signals) - Equipment (AHUs, pumps, etc.) - Safety devices (as specified in logic)

Connections Made: - Power supply wiring - Control signal routing - Communication networks - Safety interlock chains

Labels Applied: - Component tags (TE-1, UC-1, etc.) - Wire designations - System identifiers - Professional nomenclature

Logic Generation

Accessing Logic Generator

1. **Click "Generate Logic" button** in toolbar
2. **Select equipment type** from the modal:
3. Air Handling Unit (AHU)
4. Variable Air Volume (VAV)
5. Chiller
6. Boiler
7. Cooling Tower
8. Dedicated Outdoor Air System (DOAS)
9. Pump
10. Greenhouse Control
11. Steam Boiler

Equipment Configuration

For Air Handling Units: - **Supply fan control**: VFD or constant speed - **Return/exhaust fan**: Optional configuration - **Heating coil**: Hot water, steam, or electric - **Cooling coil**: Chilled water or DX - **Economizer**: Optional free cooling - **Filters**: Pressure monitoring - **Safety features**: Fire/smoke dampers

For VAV Terminals: - **Airflow control**: Pressure independent - **Reheat**: Hot water or electric - **Damper control**: Actuator type - **Occupancy**: Scheduled or sensor-based - **Setpoint reset**: Temperature compensation

Generated Logic Features

Control Algorithms: - **PID Control**: Tuned parameters for equipment type - **Sequencing**: Staged equipment operation - **Optimization**: Energy efficiency algorithms - **Safety**: Comprehensive safety interlocks

Code Quality: - **Professional Standards**: Industry best practices - **Documentation**: Comprehensive commenting - **Error Handling**: Robust error management - **Maintainability**: Clear variable naming

Output Format: - **JavaScript file**: Ready for implementation - **Commented code**: Explanation of logic - **Configuration**: Equipment-specific settings - **Test procedures**: Commissioning guidelines

---

AI Model Mode - Machine Learning Integration

AI Model Canvas

Interface Overview

Layout: - **Left Panel**: AI component library - **Center Canvas**: Visual model design area - **Right Panel**: Model properties and configuration - **Bottom Panel**: Dataset integration and training controls

AI Components

Input Layers: - **Data Input**: Time series, sensor data - **Feature Input**: Engineered features - **Image Input**: Thermal imaging, visual data

Processing Layers: - **Dense Layers**: Fully connected neurons - **LSTM**: Long Short-Term Memory for sequences - **CNN**: Convolutional layers for patterns - **GRU**: Gated Recurrent Units - **Attention**: Transformer attention mechanisms

Output Layers: - **Classification**: Categorical predictions - **Regression**: Continuous value prediction - **Time Series**: Future value forecasting - **Anomaly Detection**: Fault identification

Creating AI Models

1. **Select input layer** from component library
2. **Drag to canvas** and configure input dimensions
3. **Add processing layers** by connecting components

4. **Configure layer parameters**:
5. Number of neurons/units
6. Activation functions
7. Dropout rates
8. Regularization
9. **Add output layer** with appropriate activation
10. **Connect all layers** in logical sequence
11. **Validate model architecture**

Dataset Integration

HVAC Dataset Library

72 Curated Datasets Available:

Fault Detection Datasets (24): - SHIFDR Michigan Buildings (500MB) - LBNL Complete FDD System (500MB) - LBNL Chiller Plant (1.14GB) - ASHRAE RP-1043 Chiller Data (49MB) - Multi-Building FDD Collection - Industrial Boiler Operations (11MB)

Building Reference Datasets (18): - DOE Commercial Reference Buildings - Warehouse operational data - Hospital HVAC systems - Office building performance - School energy systems

Performance Analytics (12): - Equipment efficiency analysis - Energy optimization studies - Comfort analysis datasets - Retrofit performance data

Dataset Selection Process

1. **Click "Import Dataset"** in AI Model mode
2. **Browse dataset categories**:
3. Fault Detection
4. Building Reference
5. Performance Analytics
6. Energy Efficiency
7. Simulation Data
8. Research Data
9. **Filter by criteria**:
10. Equipment type (AHU, chiller, boiler)

11. Data size and duration
12. Source organization
13. Data quality rating
14. **Preview dataset information**:
15. Data description and specifications
16. Download size and format
17. Source URL and documentation
18. Sample data preview
19. **Select and download** chosen datasets

Data Preprocessing

Automatic Preprocessing: - Missing value handling - Outlier detection and treatment - Data normalization/standardization - Feature engineering suggestions

Manual Configuration: - Custom preprocessing pipelines - Feature selection tools - Data transformation options - Quality assessment metrics

Model Training Setup

Training Configuration

Basic Parameters: - **Learning Rate**: 0.001 (default, adjustable) - **Batch Size**: 32, 64, 128, 256 options - **Epochs**: Number of training iterations - **Validation Split**: Percentage for validation (20% default)

Advanced Options: - **Optimizer**: Adam, SGD, RMSprop - **Loss Function**: MSE, MAE, Cross-entropy - **Metrics**: Accuracy, F1-score, RMSE - **Early Stopping**: Prevent overfitting - **Learning Rate Scheduling**: Adaptive rates

Training Monitoring

Real-Time Metrics: - Training and validation loss - Accuracy progression - Learning rate evolution - Training time estimation

Visualizations: - Loss curves (training vs validation) - Metric progression charts - Confusion matrices (classification) - Feature importance plots

Model Export Options

Format Options: - **TensorFlow SavedModel**: For TensorFlow deployment - **ONNX**: Cross-platform compatibility - **PyTorch**: Native PyTorch format - **Jupyter Notebook**: Complete training pipeline

3D Visualization

Neural Network 3D View

Features: - **Interactive 3D rendering** of neural network architecture - **Layer visualization** with neuron representations - **Connection mapping** showing weight strengths - **Animation** of data flow through network

Controls: - **Rotate**: Click and drag to rotate view - **Zoom**: Scroll or pinch to zoom in/out - **Pan**: Right-click and drag to pan - **Reset View**: Double-click to reset camera

Data Flow Animation

1. **Click "Animate Data Flow"** button
2. **Select input data** for visualization
3. **Watch data propagate** through layers
4. **Observe activations** in real-time
5. **Analyze output generation** process

BMS-to-AI Workflow

Creating AI Models from BMS Data

Workflow Overview

The BMS-to-AI workflow creates machine learning models specifically designed for your BMS data:

```
BMS Config Upload → Logic Analysis → AI Model Creation → Dataset Selection → Training Setup
```

Accessing BMS-to-AI

1. **Upload BMS configuration** and logic files first
2. **Click "AI Model" button** in toolbar
3. **Select "Create AI Model from BMS"**
4. **Choose your model purpose** from options

Purpose Selection

Available AI Model Purposes

1. Control Optimization - **Purpose**: Optimize HVAC control parameters - **Input**: Setpoints, schedules, equipment status - **Output**: Optimized control parameters - **Applications**: Energy savings, comfort improvement

2. Fault Detection & Diagnostics (FDD) - **Purpose**: Identify equipment malfunctions - **Input**: Sensor readings, equipment status - **Output**: Fault probability, fault type - **Applications**: Predictive maintenance, system reliability

3. Alarm Management - **Purpose**: Intelligent alarm filtering and prioritization - **Input**: Alarm history, system status - **Output**: Alarm severity, root cause analysis - **Applications**: Reduced false alarms, faster response

4. Performance Monitoring - **Purpose**: Track and analyze equipment performance - **Input**: Operational data, efficiency metrics - **Output**: Performance indicators, trends - **Applications**: Efficiency tracking, benchmarking

5. Energy Optimization - **Purpose**: Minimize energy consumption - **Input**: Energy usage, weather, occupancy - **Output**: Optimal operating strategies - **Applications**: Cost reduction, sustainability

6. Sequence Optimization - **Purpose**: Optimize equipment sequencing - **Input**: Equipment status, load conditions - **Output**: Optimal start/stop sequences - **Applications**: Equipment life extension, efficiency

Dataset Recommendations

Automatic Recommendations

Based on your selected purpose and uploaded BMS data:

For Fault Detection Models: - LBNL Complete FDD System - SHIFDR Michigan Buildings - Multi-Building FDD Collection - ASHRAE RP-1043 Chiller Data

For Control Optimization: - DOE Reference Building Data - Performance Analytics Datasets - Energy Efficiency Collections

For Performance Monitoring: - Industrial Boiler Operations - Equipment Performance Studies - Efficiency Analysis Datasets

Smart Matching Algorithm

The system analyzes your BMS configuration and recommends datasets based on: - **Equipment types** present in your system - **System size** and complexity - **Building type** and usage - **Geographic location** and climate - **Data availability** and quality

Training Notebook Generation

Automatic Generation

1. **Complete purpose selection** and dataset selection
2. **Click "Generate Training Notebook"**
3. **System creates** comprehensive Jupyter notebook with:
4. Data loading and preprocessing code
5. Model architecture based on your BMS
6. Training pipeline configuration
7. Evaluation and validation metrics
8. Deployment instructions

Notebook Contents

Section 1: Data Setup

```
<h1 id="automatic-data-loading-from-selected-datasets">Automatic data loading from selected datas
<h1 id="preprocessing-pipeline-configuration">Preprocessing pipeline configuration</h1>
<h1 id="feature-engineering-for-your-specific-bms">Feature engineering for your specific BMS</h1>
```

Section 2: Model Architecture

```
<h1 id="neural-network-design-based-on-your-equipment">Neural network design based on your equipm
<h1 id="layer-configuration-optimized-for-hvac-data">Layer configuration optimized for HVAC data<
<h1 id="custom-loss-functions-for-hvac-applications">Custom loss functions for HVAC applications<
```

Section 3: Training Pipeline

```
<h1 id="training-loop-with-monitoring">Training loop with monitoring</h1>
<h1 id="validation-and-testing-procedures">Validation and testing procedures</h1>
<h1 id="hyperparameter-optimization">Hyperparameter optimization</h1>
```

Section 4: Evaluation

```
<h1 id="performance-metrics-calculation">Performance metrics calculation</h1>
<h1 id="visualization-of-results">Visualization of results</h1>
<h1 id="model-interpretation-tools">Model interpretation tools</h1>
```

Section 5: Deployment

```
<h1 id="model-export-for-production">Model export for production</h1>
<h1 id="integration-with-bms-systems">Integration with BMS systems</h1>
<h1 id="realtime-inference-setup">Real-time inference setup</h1>
```

Google Colab Integration

1. **Notebook automatically configured** for Google Colab
2. **One-click deployment** to Colab environment
3. **GPU training enabled** for faster model training
4. **Automatic result synchronization** back to NexusConnect

Project Management

Creating New Projects

Starting a New Project

1. **Click "File" menu** in toolbar
2. **Select "New Project"**
3. **Choose project template**:
4. **Blank Project**: Start from scratch
5. **BMS Integration**: Pre-configured for BMS workflow
6. **AI Model Project**: Set up for machine learning
7. **Template Library**: Industry-specific templates
8. **Configure project settings**:
9. Project name and description
10. Default components and libraries
11. Drawing standards and preferences
12. Team collaboration settings

Project Templates

Commercial HVAC Templates: - Office Building Controls - Hospital HVAC Systems - School Energy Management - Retail Store Controls - Warehouse Management

Industrial Templates: - Manufacturing Plant Controls - Data Center Cooling - Food Processing Facilities - Pharmaceutical Clean Rooms - Chemical Plant Controls

Saving and Loading

Auto-Save Feature

- **Automatic saving** every 2 minutes
- **Version history** maintained
- **Conflict resolution** for multiple users
- **Save status indicator** in toolbar

Manual Save Operations

Save Project: 1. **Press Ctrl/Cmd + S** or click File → Save 2. **Enter save description** (optional) 3. **Choose save location** (local or cloud)

Save As: 1. **Click File → Save As** 2. **Enter new project name** 3. **Select destination folder** 4. **Configure sharing settings**

Export Options: - **PDF Export**: Professional drawings - **DWG Export**: AutoCAD compatibility - **SVG Export**: Scalable vector graphics - **PNG/JPG Export**: Raster images - **JSON Export**: Raw project data

Loading Projects

Recent Projects: - **Quick access** from File menu - **Thumbnail previews** of project content - **Last modified** dates and times - **Collaboration status** indicators

Browse Projects: 1. **Click File → Open** 2. **Navigate to project folder** 3. **Preview project details** 4. **Open selected project**

Google Drive Integration

Setting Up Google Drive

1. **Click "Connect Google Drive"** in File menu
2. **Authenticate with Google** account
3. **Grant permissions** for file access
4. **Select sync folder** for NexusConnect projects

Cloud Sync Features

Automatic Synchronization: - **Real-time sync** of project changes - **Conflict resolution** for simultaneous edits - **Version history** in Google Drive - **Offline access** with sync on reconnect

Team Collaboration: - **Share projects** with team members - **Real-time collaboration** on schematics - **Comment and review** system - **Access control** and permissions

Sync Status Indicators

- ☁ **Cloud synced**: Project is up to date in cloud
- 🔄 **Syncing**: Changes are being uploaded
- ⚠ **Sync conflict**: Manual resolution required

- 📴 **Offline**: No internet connection

Project Export

Export Formats

Professional Drawings (PDF): - **High-resolution output** (300 DPI minimum) - **Professional title blocks** with company branding - **IEEE standard symbols** and nomenclature - **Layered PDF** for selective printing

CAD Integration (DWG): - **AutoCAD compatibility** (versions 2018-2024) - **Proper layer organization** - **Block definitions** for components - **Dimension and annotation preservation**

Web Formats: - **Interactive SVG**: Zoomable vector graphics - **HTML5 Canvas**: Web-based viewing - **3D Models**: WebGL for 3D components

Export Settings

Quality Options: - **Print Quality**: 300 DPI for professional printing - **Web Quality**: 150 DPI for digital sharing - **Draft Quality**: 72 DPI for quick review

Content Selection: - **All Layers**: Complete project export - **Visible Layers**: Only currently visible content - **Selected Components**: Export specific elements - **Custom Sheets**: Multi-page export options

---

Advanced Features

Component Builder

Creating Custom Components

1. **Access Component Builder** from Tools menu
2. **Start with base template** or create from scratch
3. **Design component symbol**:
4. Draw using vector tools
5. Add terminal connection points

6. Configure symbol properties
7. Apply IEEE standards
8. **Configure component properties**:
9. Electrical characteristics
10. Physical dimensions
11. Manufacturer information
12. Part numbers and specifications

Symbol Design Tools

Drawing Tools: - **Line Tool**: Create symbol outlines - **Circle/Rectangle**: Basic shapes - **Arc Tool**: Curved elements - **Text Tool**: Component labels - **Dimension Tool**: Size annotations

Connection Points: - **Input Terminals**: Signal inputs - **Output Terminals**: Signal outputs - **Power Connections**: Electrical supply - **Communication**: Network connections

Component Library Management

Organization: - **Custom Categories**: Create your own categories - **Tagging System**: Add searchable tags - **Version Control**: Track component revisions - **Sharing**: Export/import component libraries

Template System

Using Project Templates

Template Categories: - **Industry Standards**: IEEE, NEMA, IEC templates - **Equipment Types**: AHU, chiller, boiler templates - **Building Types**: Office, hospital, school layouts - **System Types**: Controls, safety, monitoring

Creating Custom Templates

1. **Design your standard layout**
2. **Save as template** from File menu
3. **Configure template properties**:
4. Template name and description
5. Default components included
6. Standard wire types and colors
7. Title block configuration

8. **Share with team** or organization

Electrical Validation

Real-Time Validation

Automatic Checks: - **Voltage compatibility**: Warns of voltage mismatches - **Current capacity**: Alerts for overloaded circuits - **Wire sizing**: Suggests proper conductor sizes - **Protection**: Validates fuse and breaker ratings

Safety Validation: - **Grounding**: Ensures proper grounding connections - **GFCI Requirements**: Identifies GFCI-required circuits - **Arc Fault**: Validates arc fault protection - **Emergency Shutdown**: Verifies safety shutoffs

Validation Reports

Error Report: - Lists all electrical violations - Provides correction recommendations - Links to relevant code sections - Severity ratings (critical, warning, info)

Compliance Report: - Confirms standards compliance - Documents validation timestamps - Includes engineer approval - Ready for submittal

Professional Standards Compliance

Supported Standards

Electrical Standards: - **NEC (National Electrical Code)**: US electrical standards - **IEEE Standards**: Professional symbols and practices - **IEC Standards**: International electrical standards - **NEMA Standards**: Enclosure and component standards

HVAC Standards: - **ASHRAE Standards**: HVAC design and operation - **SMACNA Standards**: Sheet metal and air conditioning - **NEBB Standards**: Testing and balancing - **AABC Standards**: Commissioning procedures

Compliance Features

Symbol Libraries: - IEEE-compliant electrical symbols - ASHRAE-standard HVAC symbols - Manufacturer-specific components - Custom symbol validation

Drawing Standards: - Professional line weights and styles - Standard text fonts and sizes - Proper dimensioning practices - Title block requirements

Troubleshooting

Common Issues

Login Problems

Issue: Cannot log in to NexusConnect **Solutions:** 1. **Check internet connection** - ensure stable connection 2. **Clear browser cache** - delete cookies and cached data 3. **Try different browser** - Chrome, Firefox, Safari, Edge 4. **Check username/password** - ensure correct credentials 5. **Reset password** if forgotten 6. **Contact support** if issue persists

Issue: "Remember Me" not working **Solutions:** 1. **Enable cookies** in browser settings 2. **Check private/incognito mode** - doesn't save login 3. **Clear browser data** and re-login 4. **Update browser** to latest version

File Upload Issues

Issue: BMS configuration file won't upload **Solutions:** 1. **Check file format** - must be HTML format 2. **Verify file size** - maximum 50MB allowed 3. **Check file content** - ensure valid BAS data 4. **Try different file** to isolate issue 5. **Contact support** with file details

Issue: Control logic upload fails **Solutions:** 1. **Validate JavaScript syntax** - check for errors 2. **Remove special characters** in filename 3. **Ensure file encoding** is UTF-8 4. **Check file size** limitations 5. **Test with simple logic** file first

Performance Issues

Issue: Application running slowly **Solutions:** 1. **Check system requirements** - meet minimum specs 2. **Close other browser tabs** - free up memory 3. **Restart browser** - clear memory leaks 4. **Update graphics drivers** - especially for 3D features 5. **Check internet speed** - minimum 10 Mbps required

Issue: Canvas not responsive **Solutions:** 1. **Zoom out** to reduce rendering load 2. **Simplify project** - remove unnecessary components 3. **Clear browser cache** and reload 4. **Try different browser** for compatibility 5. **Update browser** to latest version

AI Model Issues

Issue: Dataset download fails **Solutions:** 1. **Check internet connection** stability 2. **Try smaller datasets** first 3. **Clear browser cache** and retry 4. **Check available storage** space 5. **Use different network** if possible

Issue: Model training not starting **Solutions:** 1. **Verify dataset selection** - at least one required 2. **Check model architecture** - ensure valid connections 3. **Validate training parameters** - reasonable values 4. **Try simpler model** first 5. **Check browser console** for error messages

Error Messages

Authentication Errors

Error: "Invalid username or password" - **Cause**: Incorrect login credentials - **Solution**: Verify username and password, reset if necessary

Error: "Session expired" - **Cause**: Login session timed out - **Solution**: Log in again, enable "Remember Me" option

Error: "Account locked" - **Cause**: Too many failed login attempts - **Solution**: Wait 15 minutes or contact support

File Upload Errors

Error: "File format not supported" - **Cause**: Wrong file type uploaded - **Solution**: Ensure HTML for config, JavaScript for logic

Error: "File too large" - **Cause**: File exceeds 50MB limit - **Solution**: Compress file or remove unnecessary data

Error: "Upload timeout" - **Cause**: Slow internet connection - **Solution**: Check connection speed, try again

Validation Errors

Error: "Voltage mismatch detected" - **Cause**: Components with incompatible voltages connected - **Solution**: Check component specifications, use compatible voltages

Error: "Wire gauge undersized" - **Cause**: Wire too small for current load - **Solution**: Increase wire gauge or reduce load

Error: "Missing ground connection" - **Cause**: Component requires grounding but none provided - **Solution**: Add proper grounding connection

Performance Tips

Browser Optimization

Chrome Settings: 1. **Enable hardware acceleration** in Settings → Advanced → System 2. **Increase memory allocation** for JavaScript 3. **Disable unnecessary extensions** that use memory 4. **Use Chrome's task manager** to monitor resource usage

Firefox Settings: 1. **Enable WebGL** in about:config 2. **Increase DOM worker threads** 3. **Clear cache regularly** 4. **Update to latest version**

Project Optimization

Large Projects: - **Use layers** to organize complex schematics - **Group related components** for easier management - **Minimize wire crossings** for clarity - **Use standard components** when possible

Memory Management: - **Close unused projects** to free memory - **Limit open browser tabs** - **Restart browser** periodically - **Clear temporary files**

Network Optimization

For Cloud Sync: - **Use wired connection** when possible - **Ensure stable internet** (minimum 10 Mbps) - **Avoid peak usage times** - **Monitor data usage** for large projects

Support Resources

Documentation

Online Help: - **User Manual**: Complete documentation - **Video Tutorials**: Step-by-step guides - **FAQ**: Frequently asked questions - **Release Notes**: Latest features and fixes

Community Support

User Forums: - **General Discussion**: Ask questions, share tips - **Technical Support**: Troubleshoot issues - **Feature Requests**: Suggest improvements - **User Contributions**: Share templates and components

Professional Support

Technical Support: - **Email**: support@automatanexus.com - **Phone**: 1-800-NEXUS-01 - **Hours**: Monday-Friday, 8 AM - 6 PM EST - **Response Time**: 24 hours for standard, 4 hours for priority

Training Services: - **Online Training**: Self-paced courses - **Live Webinars**: Interactive sessions - **On-Site Training**: Custom training at your location - **Certification**: Professional certification program

Appendices

Keyboard Shortcuts

General Navigation

Shortcut	Action
Ctrl/Cmd + N	New project
Ctrl/Cmd + O	Open project
Ctrl/Cmd + S	Save project
Ctrl/Cmd + Z	Undo
Ctrl/Cmd + Y	Redo
Ctrl/Cmd + A	Select all
Delete	Delete selected
Esc	Cancel current operation

Canvas Operations

Shortcut	Action
Space + Drag	Pan canvas
Scroll Wheel	Zoom in/out
Ctrl/Cmd + 0	Fit to screen
Ctrl/Cmd + 1	Actual size
G	Toggle grid
Ctrl/Cmd + D	Duplicate selection
Arrow Keys	Move selection
Shift + Arrow	Move selection (large steps)

Component Operations

Shortcut	Action
W	Wire tool
S	Select tool
T	Text tool
M	Move tool
R	Rotate selected
F	Flip horizontal
Shift + F	Flip vertical
Ctrl/Cmd + G	Group components
Ctrl/Cmd + Shift + G	Ungroup components

AI Model Mode

Shortcut	Action
Ctrl/Cmd + T	Train model
Ctrl/Cmd + E	Export model
Ctrl/Cmd + I	Import dataset
F5	Refresh 3D view
Ctrl/Cmd + M	Switch to model mode
Ctrl/Cmd + K	Switch to control mode

File Formats

Supported Import Formats

BMS Configuration: - **.html** - BAS system exports - **.xml** - Structured BAS data - **.csv** - Point lists and I/O data

Control Logic: - **.js** - JavaScript control logic - **.json** - Configuration data - **.txt** - Plain text logic

Graphics: - **.svg** - Scalable vector graphics - **.dwg** - AutoCAD drawings - **.dxf** - Drawing exchange format

Supported Export Formats

Professional Drawings: - **.pdf** - Professional documentation - **.svg** - Scalable web graphics - **.png** - High-resolution images - **.jpg** - Compressed images

CAD Formats: - **.dwg** - AutoCAD native format - **.dxf** - Universal CAD exchange - **.step** - 3D CAD format

Data Formats: - **.json** - Project data - **.csv** - Component lists - **.xml** - Structured data export

API Reference

Authentication API

Login:

```
POST /api/auth/login
{
  "username": "string",
  "password": "string"
}
```

Register:

```
POST /api/auth/register
{
  "username": "string",
  "email": "string",
  "password": "string"
}
```

Project API

Save Project:

```
POST /api/projects
{
  "name": "string",
  "data": "object",
  "description": "string"
}
```

Load Project:

```
GET /api/projects/{id}
```

BMS Integration API

Upload Configuration:

```
POST /api/bms/config
{
  "file": "multipart/form-data"
}
```

Generate Schematic:

```
POST /api/bms/generate-schematic
{
  "configId": "string",
  "logicId": "string"
}
```

Glossary

Technical Terms

AHU (Air Handling Unit) - Central air treatment equipment that conditions and circulates air

BAS (Building Automation System) - Computer-based control system for building mechanical and electrical equipment

BMS (Building Management System) - Comprehensive system for monitoring and controlling building systems

DDC (Direct Digital Control) - Microprocessor-based control system for HVAC equipment

FDD (Fault Detection and Diagnostics) - Automated system for identifying equipment problems

IEEE (Institute of Electrical and Electronics Engineers) - Professional organization that develops electrical standards

I/O (Input/Output) - Points where the control system interfaces with field devices

PID (Proportional-Integral-Derivative) - Control algorithm that adjusts output based on error

VAV (Variable Air Volume) - HVAC system that varies airflow rather than temperature

NexusConnect Terms

Canvas - Main design area where schematics are created

Component Library - Collection of available HVAC and electrical components

Properties Panel - Interface for configuring component and project settings

Smart Routing - Automatic wire routing that avoids obstacles

Title Block - Professional drawing border with project information

---

End of Guide

This comprehensive guide covers all aspects of using NexusConnect for professional HVAC control system design and AI model development. For additional support, please contact AutomataNexus technical support.

AutomataNexus, LLC
Professional HVAC Control Solutions

NexusConnect End-User Guide

Professional HVAC Control System Design Platform

Interactive User Manual with Table of Contents

For technical support: support@automatanexus.com | 1-800-NEXUS-01