Universal Electronics

The Comfort Tide Family Introduction

March 2022

Universal Electronics – Proprietary & Confidential ©2021

Universal Electronics

Our Technology & Solution

TIDE Comfort Family

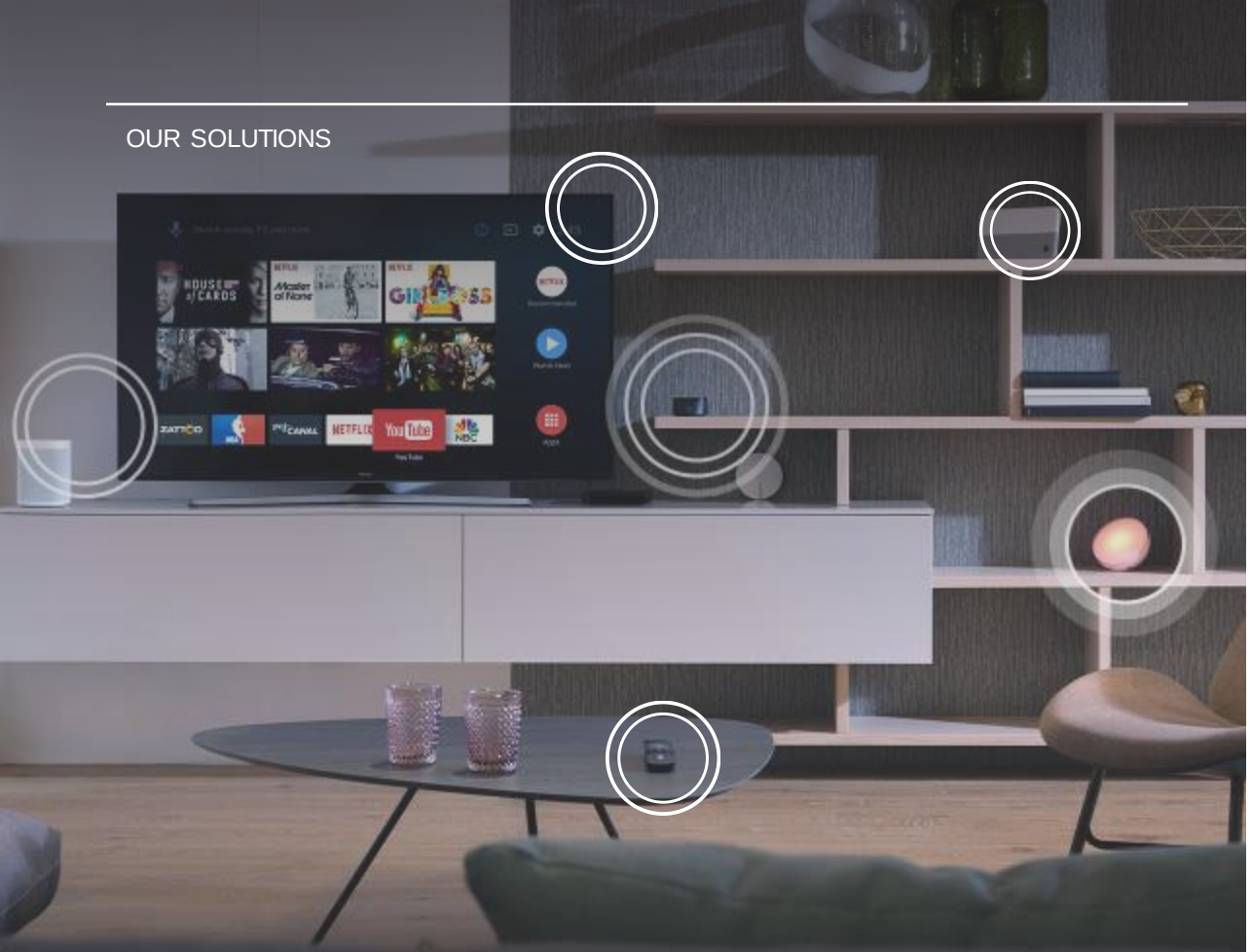
- TIDE Dial

- TIDE Touch

- TIDE Bridge

System Diagrams

Universal Electronics – Proprietary & Confidential ©2022



UEI at a glance

Market Share Leader

- More than three decades of experience designing and developing wireless entertainment and home control solutions
- Worldwide leader in the growing market for entertainment (voice) remote controls
- Broad portfolio of connected sensing and control solutions for the home

Focus on Technology and Product Innovation

- Industry-leading QuickSet software controls entertainment and smart home devices
- Over 580 issued and pending patents

Global Scale

- Vertically integrated across design, development, software and manufacturing
- R&D teams in California, China, India and Taiwan
- Globally diversified manufacturing in China, Mexico, Brazil and Vietnam
- 3,800 employees worldwide

Fortune 100 Customer Base

- Technology licensing with leading consumer electronics and security brands
- Development partner for world's largest video and telecom service providers

Strong Financial Performance

- Consistent revenue and earnings growth

Universal Electronics – Proprietary & Confidential ©2022

- Home Entertainment
- Connected Home

Video Service Providers

Consumer Electronics

Retail

Security and Automation

Climate Control

Home Appliances

Hospitality

Leader in HVAC and AC Control

- Over 20 years of experience as OEM, ODM and technology solutions provider to leading HVAC brands including Daikin, Fujitsu, Toshiba Carrier, Trane and Panasonic
- Design and manufacture more than 12 million HVAC controllers to leading HVAC brands globally
- Acquired RCS Technology in 2017, a leading designer and manufacturer of energy management and control products
- Offerings include programmable communicating thermostats, advanced HVAC controls, and energy monitoring and control devices for residential, light commercial and hospitality markets

Climate control

Universal Electronics – Proprietary & Confidential ©2022

RF System Design Expertise

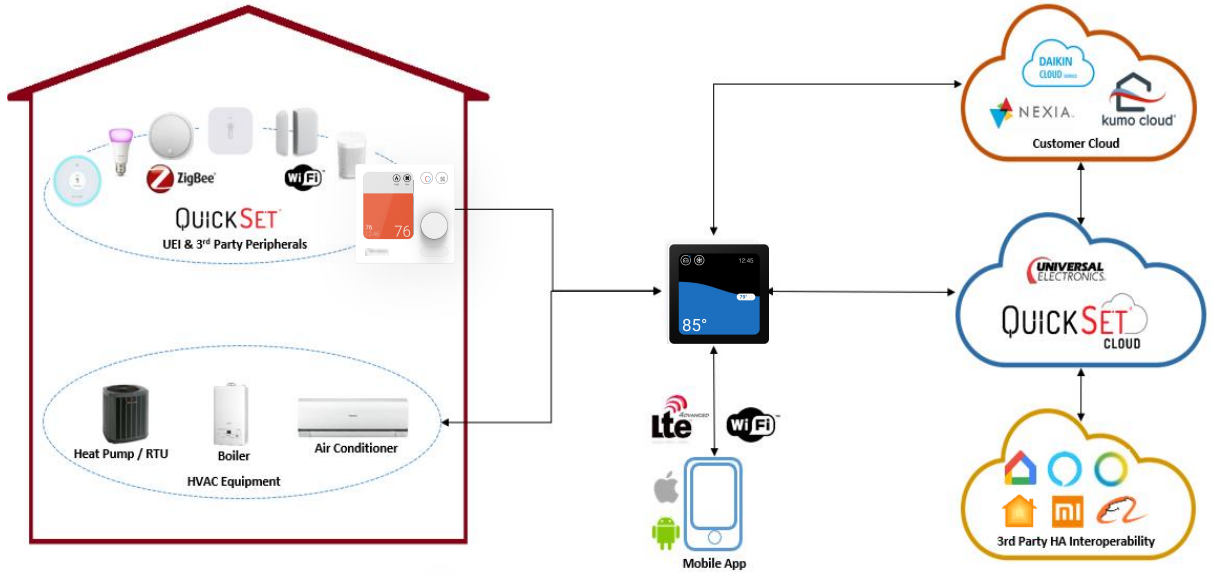
- Turnkey design and development for end-to-end solutions leveraging in-house silicon, firmware, embedded and cloud software and services
- Expertise in design and development of wireless control systems, optimized for low power, multi-protocol and voice applications
- Over 900 specialists in RF, acoustic, electrical mechanical, cloud, software and application engineering

Wireless silicon chips, electronics and firmware

Universal Electronics – Proprietary & Confidential ©2022

Interoperable with full range of sensors and IoT devices

- Discover, Identify and Control for a full range of sensors including third-party sensors and IoT devices via our Works with QuickSet program
- Interoperable with wide range of cloud platforms including QuickSet Cloud, customer cloud and the most popular third-party home automation ecosystems like Apple HomeKit
- Virtual Agent by nevo.ai provides complete support framework for connected devices, including guided setup and onboarding, feature discovery and troubleshooting



Interoperability

TIDE Comfort Family

Universal Electronics – Proprietary & Confidential ©2022

Comfort Architecture

The Comfort Architecture

- Cloud native smart thermostat architecture & interoperability
- Designed with QuickSet Widget, multi-radio, multi-color display, multi-onboard sensors, multi-external sensor/IoT device via Works with QuickSet
- Virtual Agent built-in to address ongoing support needs for connected product, for installer and user on compatibility check, self-installation support, onboarding, feature discovery and trouble shooting
- This architecture designed for HVAC OEM and hospitality customer design new custom thermostat design based upon infrastructure build around QuickSet Widget

Product Line

UEI TIDE UI

Patent pending user friendly UI to maximize energy conservation and conveying expected thermal response

UEI TIDE Dial and UEI TIDE Touch natively support TIDE UI

TIDE Bridge allows users bringing TIDE UI and sensor capability anywhere you want where it matters the most

UEI TIDE Dial

Smart Thermostat w/2.8" color display with dial knob, Wi-Fi, BLE, Zigbee and matter with temperature/humidity, proximity, occupancy, CO2 and other 3rd party IAQ sensor and IoT devices

Brand new generation of occupancy sensing technology to optimize comfort and saving energy

UEI TIDE Touch

Smart Thermostat w/4.0" full color touch display, Wi-Fi, BLE, Zigbee and matter with temperature/humidity, proximity, CO2 and other 3rd party IQA sensor and IoT devices, such as Blind and Light Switch.

Optimal multi-zone control interface and audio feedback/announcement

UEI TIDE Bridge

Wireless bridge and voltage translator with universal modular pack, Accessory for thermostat line

Reimagine climate control by allowing user to locate thermostat, user interface and sensor input where you care most

Multi-voltage HVAC system support (24VAC, 16VDC, 230VAC, 277VAC) and can integrate with an HVADC system anywhere in the world

Universal Modular Pack

Backside of thermostat for power and physical wiring interface to HAVC system, interchangeable within the Comfort Family

24VAC, 16VDC, 5VDC, 230VAC, 277VAC, Tabletop w/AC adapter, 4xAAA battery and more to come.

Customizable for application specific needs such as RS-485 (Modbus, BAC-Net), Analog interface and HVAC Proprietary Protocol

Universal Electronics – Proprietary & Confidential ©2022

Overview

Cloud Native Architecture & Interoperability

Single Chip Architecture For Wireless & Application

Multi-sensor capable via on-board options and wireless sensors

Multiple Color Display Interface

Virtual Assistant & Agent by nevo.ai

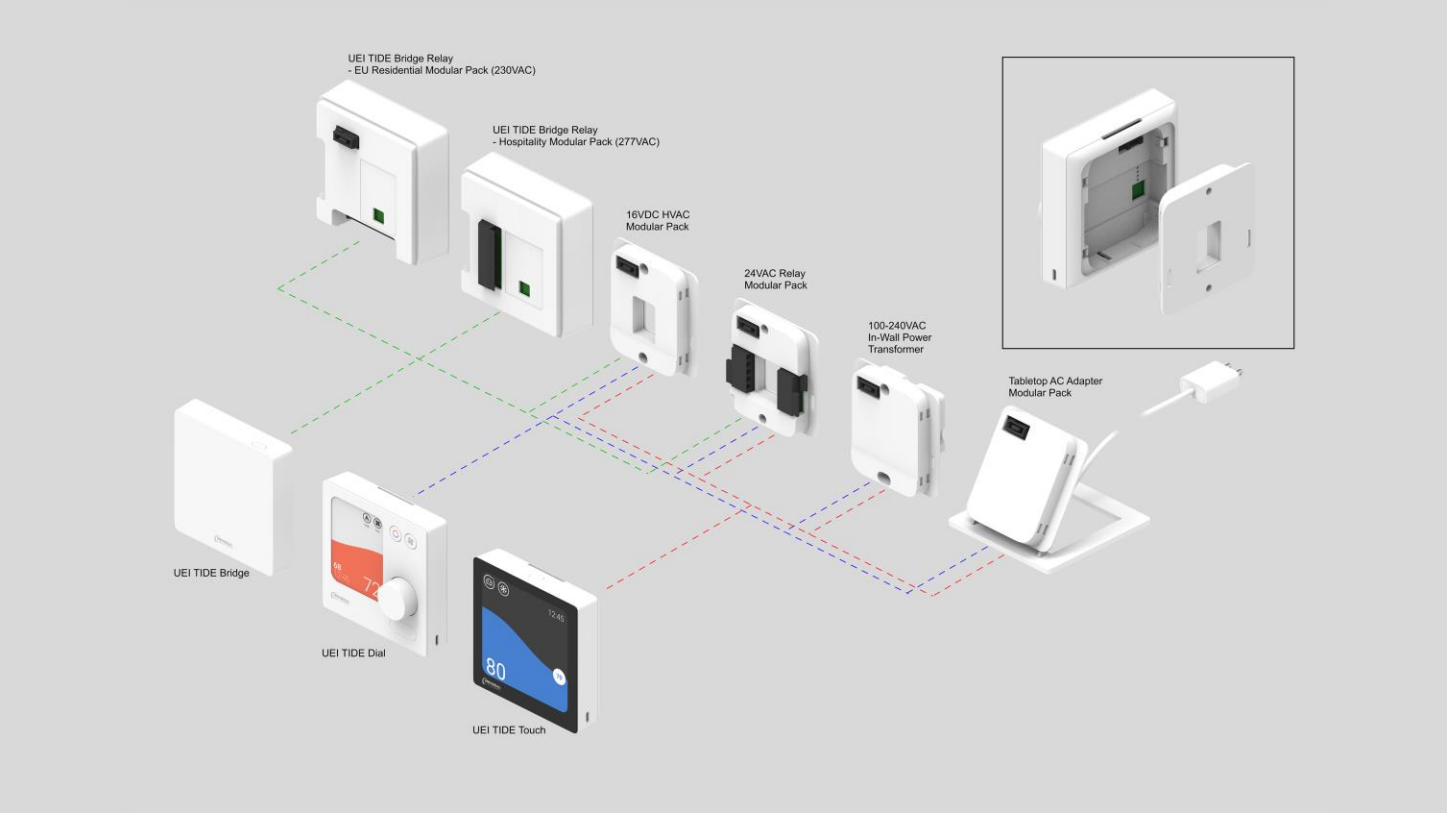
Works With QuickSet

Powered by QuickSet

Modular Design

Universal Modular Pack - Interchangeable within The Comfort Product Line

- 24VAC with 10 terminal + 7 Relay
  - 5 x 2 Spring Terminal (16-24AWG)
  - 95% market coverage in North America
  - Standard furnace, heat pump, Dual Fuel, Humidifier, Dehumidifier
- 16VDC with HVAC Proprietary
  - Mitsubishi CN105
  - Daikin P1/P2
- 100-240VAC Tabletop Adapter
- 100-240VAC In-wall Power Transformer
- 4 x AAA Battery Pack
  - Wall Mount
    Tabletop (sharing same tabletop w/AC adapter)
- 100-277VAC Relay
  - European Boiler System



Universal Electronics – Proprietary & Confidential ©2022

Platform Architecture

Wireless Thermostat & Wall Mount Remote Controller for Residential & Commercial AC

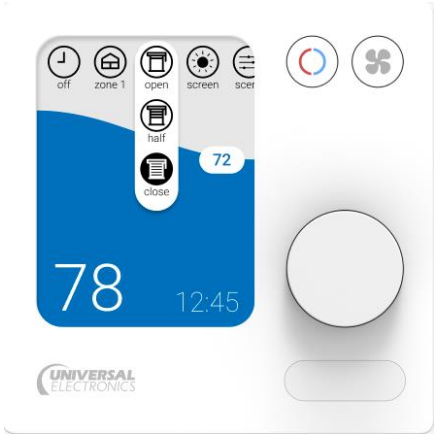
- Wireless
- Multiple display interfaces
- Multiple onboard sensors: Temperature, Humidity, Proximity, Occupancy & CO2
- Analog Wired Sensor interface
- HVAC Proprietary Protocols

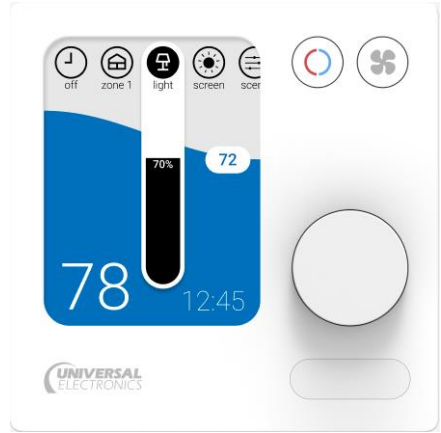
Universal Electronics – Proprietary & Confidential ©2022

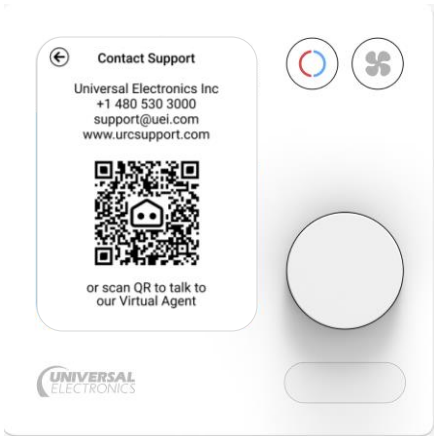
Adaptive UI & Dynamic Configuration

Future Proof Design – Re-Configure UI after product release

- IoT Device Control
  - Powered by QuickSet
  - Optimized UI to control Blind, Lighting etc..
- Installer Contact Information
  - Dynamically configure thermostat in the field by installer at time of installation
  - URL, vCard, email







Universal Electronics – Proprietary & Confidential ©2022

Powered by QuickSet

QuickSet enables device discovery and control

- Addresses both consumers' needs as well as manufacturers' challenges
- Ensures a product is compatible with what consumers have in their home – current control systems whether it be an existing hub, smart speaker, or automation platform as well as those Powered by QuickSet
- Over half a billion Powered by QuickSet devices shipped 225 billion+ transactions run rate yearly and growing

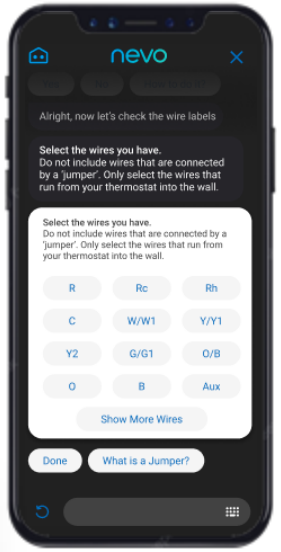
Virtual Assistant

Messaging/Control Framework

Allowing interaction with user during and after installation

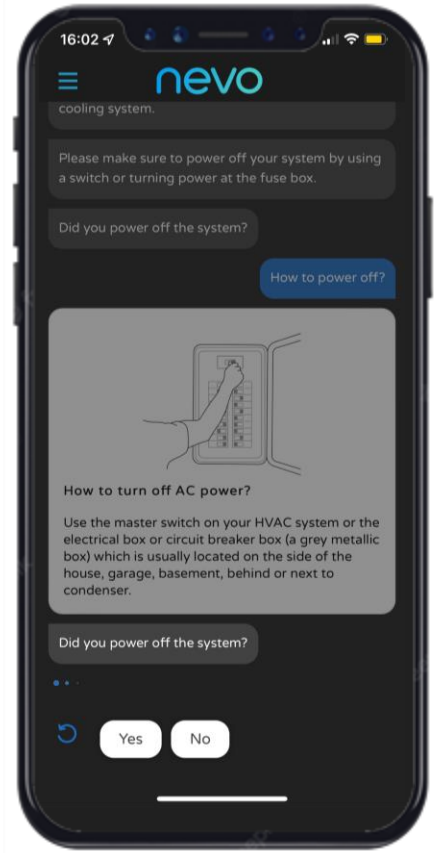
- MyNevo Apps integrate Virtual Agent by nevo.ai
  - Compatibility Checker
  - Physical Installation Support
  - Wi-Fi onboarding
  - Tutorial

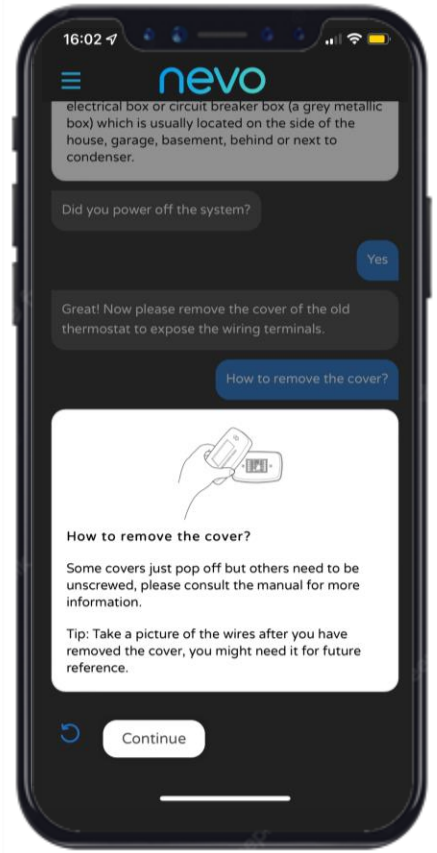
- Virtual Agent Integrated with thermostat
  - Remote control application launcher on mobile device browser
    - No App to download – No login required
  - Reminders – Filter Change, High Humidity, etc.
  - CO2 Alert for ventilation
  - Error/Warning (Network Issue, Sensor Battery Low)

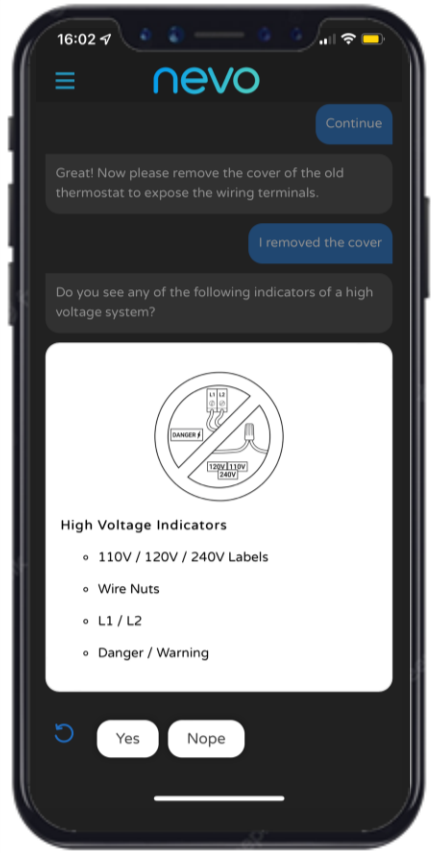


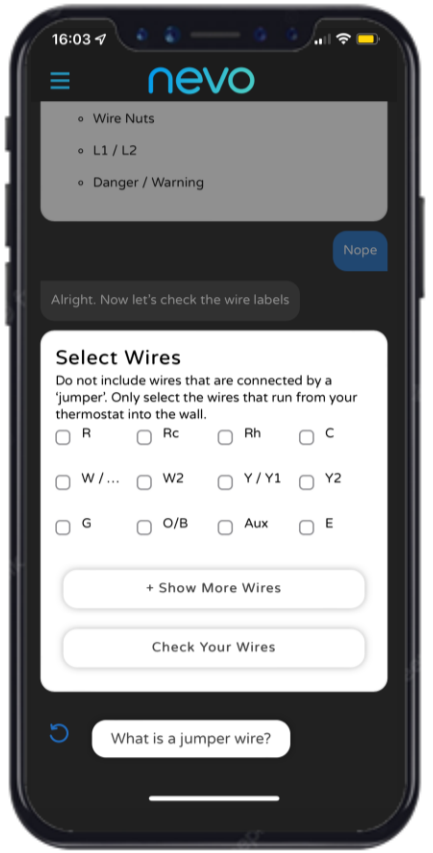
Compatibility Checker

Pre-/Post Sales Assistant for self-installation



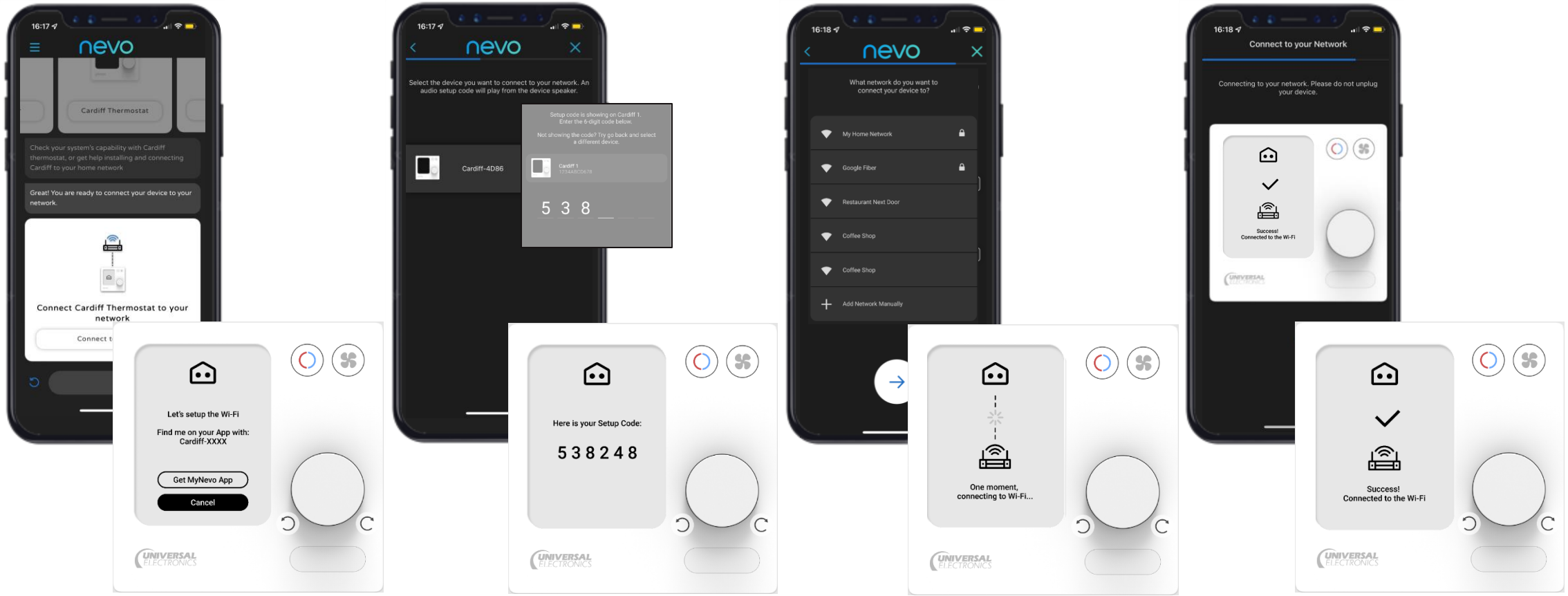






Wi-Fi Onboarding

Secure & Reliable onboarding assistance



TIDE Comfort Family Product Line:

TIDE DIAL

Future Proof Platform:
Adaptive UI & Dynamic Configuration

Simplified Installation:
Virtual Agent by nevo.ai

Intuitive TIDE UI:
Easy to understand past & future energy usage

Presence Detection:
True Occupancy Awareness

Modular Design: Easy to install & Customizable for multi-channel/region

Intuitive & Familiar Control with Dial Knob

A
AUTO
LOW
83
80
67
08:32
Key

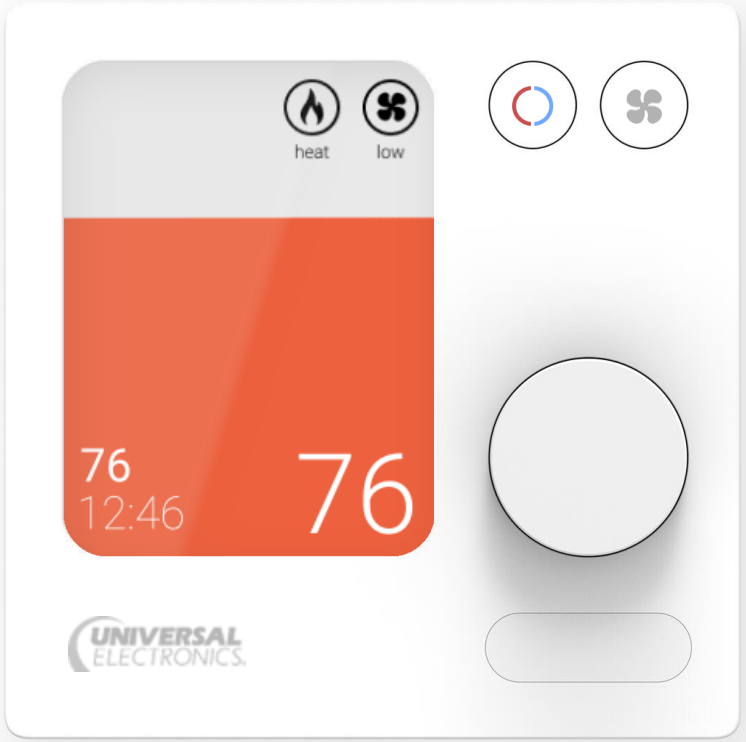
Proprietary and confidential. Copyright UEI 2022

A
auto
low
83
80
08:47

Technical Summary

Built on QuickSet Widget

- Dimensions: 86 x 86 x 23.3 [mm]
- Display: 2.8” 262K Color TFT IPS, 240-by- 320-pixel resolution
- Intuitive and Familiar Controls
  - Dial Knob for temp adjustment
  - Direct Functional Keys (Mode, Fan)
- Onboard Sensors: Temperature, Humidity, Proximity, Occupancy, CO2
- Wireless Connectivity
- Energy Savings



TIDE Comfort Family Product Line:

TIDE TOUCH

Future Proof Platform: Adaptive UI & Dynamic Configuration

Simplified Installation: Virtual Agent by nevo.ai

Intuitive TIDE UI: Easy to understand past & future energy usage

Stunning Full Color Touch Display

Modular Design: Easy to install & Customizable for multi-channel/region

Virtual Assistant maintains customer relationship

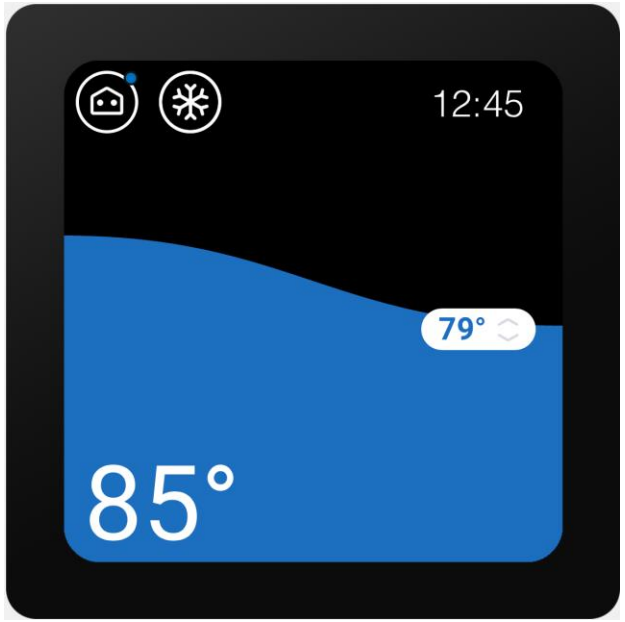
10:15
74
80

10:15
74
80

10:15
74
80

Technical Summary

Crystal Clear Display with User Friendly TIDE Touch Interface



- Dimensions: 86 x 86 x 23.3 [mm]
- Display: 4.0” Full Color TFT IPS, 480-by-480-pixel resolution at 170dpi
- Intuitive & Familiar Control: Touch Optimized TIDE UI
- Onboard Sensors: Temperature, Humidity, Proximity, CO2
- Audio Feedback/Announcement
- Wireless Connectivity
- Energy Savings

Universal Electronics – Proprietary & Confidential ©2022

TIDE Comfort Family Product Line:

TIDE BRIDGE

- Zigbee Wireless Adapter for HVAC system
- Simple Setup
- Retrofitting existing 24VAC thermostat for high voltage system
- Installer Friendly: Single Key for Zigbee Pairing w/LED feedback
- Modular Design: Compatible with Terminal Board from Comfort Product Line
- Multi Region Support: 100VAC to 277VAC

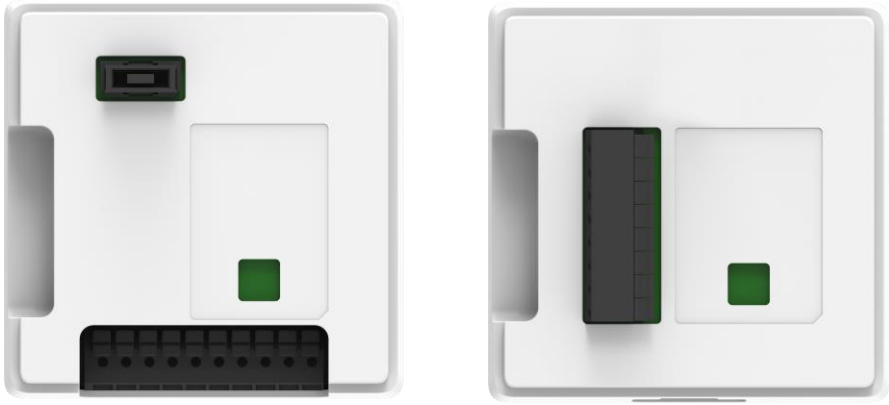
Proprietary and confidential. Copyright UEI 2021

Technical Summary

Zigbee Cover & High Voltage Relay Pack

TIDE Bridge is…

- Zigbee wireless cover for HVAC system
- Modular design – compatible with other Comfort product line (e.g. TIDE DIAL, TIDE TOUCH)
- Relay pack for 230VAC or 277VAC to 24VDC to retrofit existing UEI/RCS thermostats
- Relay pack for 230VAC or 277VAC to Zigbee wireless connection
- Wireless multi-zones control (up to 10 nodes)



Universal Electronics – Proprietary & Confidential ©2022

System Diagram

TIDE Comfort Family

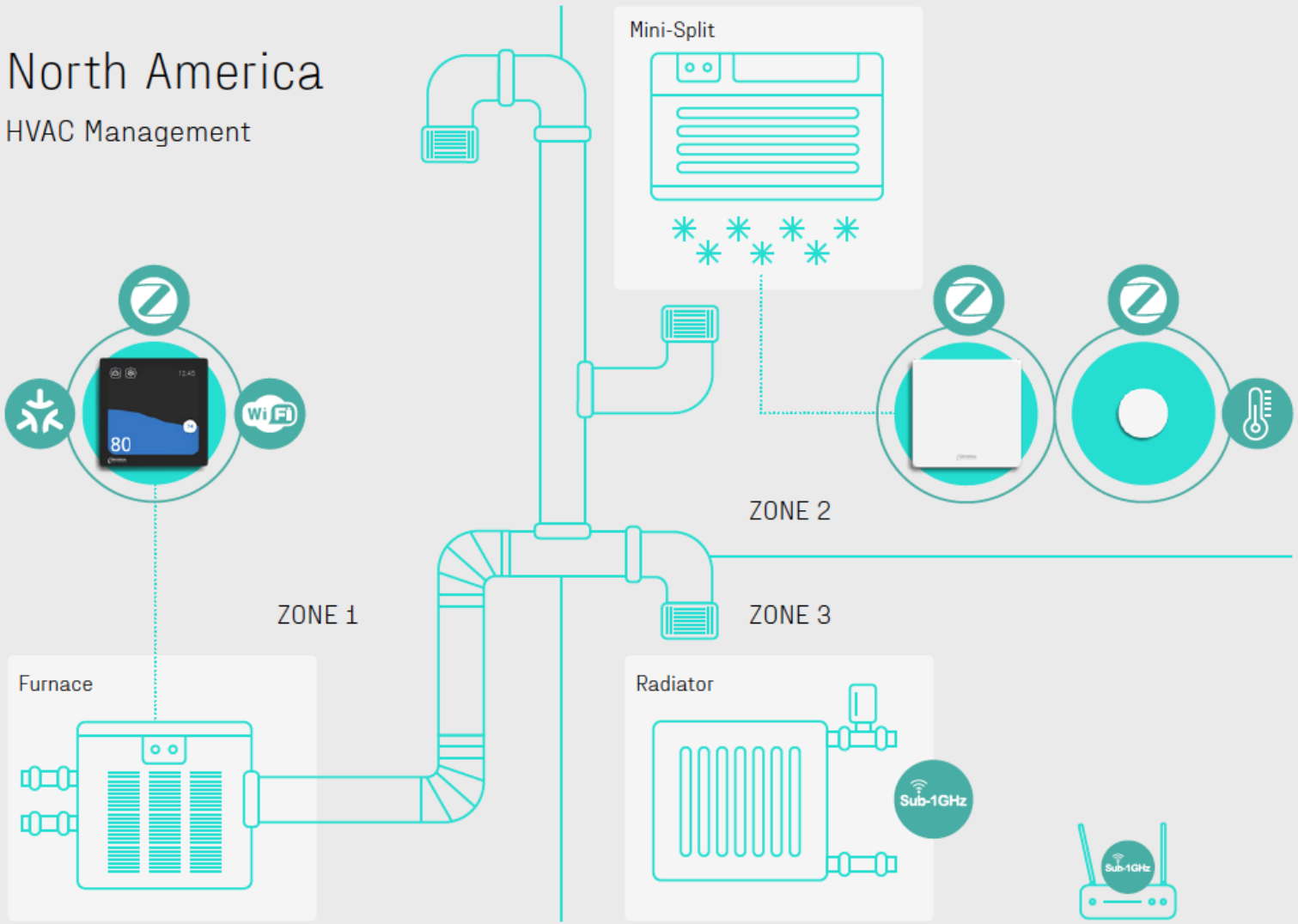
Universal Electronics – Proprietary & Confidential ©2022

Multizone

Mini-split Tide BRIDGE and Tide TOUCH + Wireless sensor

North America

HVAC Management



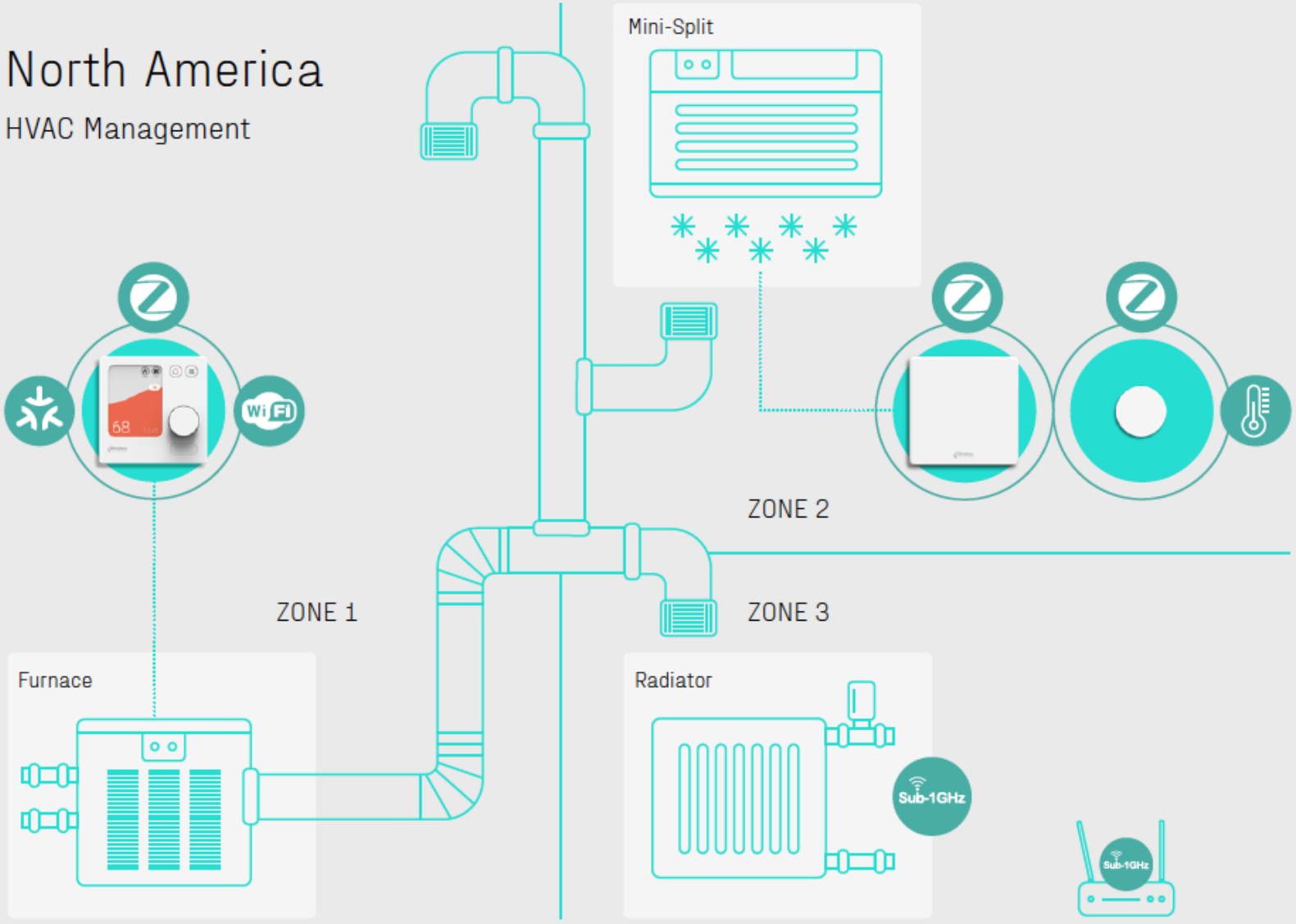
UNIVERSAL ELECTRONICS

Multizone

Mini-split Tide BRIDGE and Tide DAIL + Wireless sensor

North America

HVAC Management



UNIVERSAL ELECTRONICS

Thank you!

UNIVERSAL ELECTRONICS®