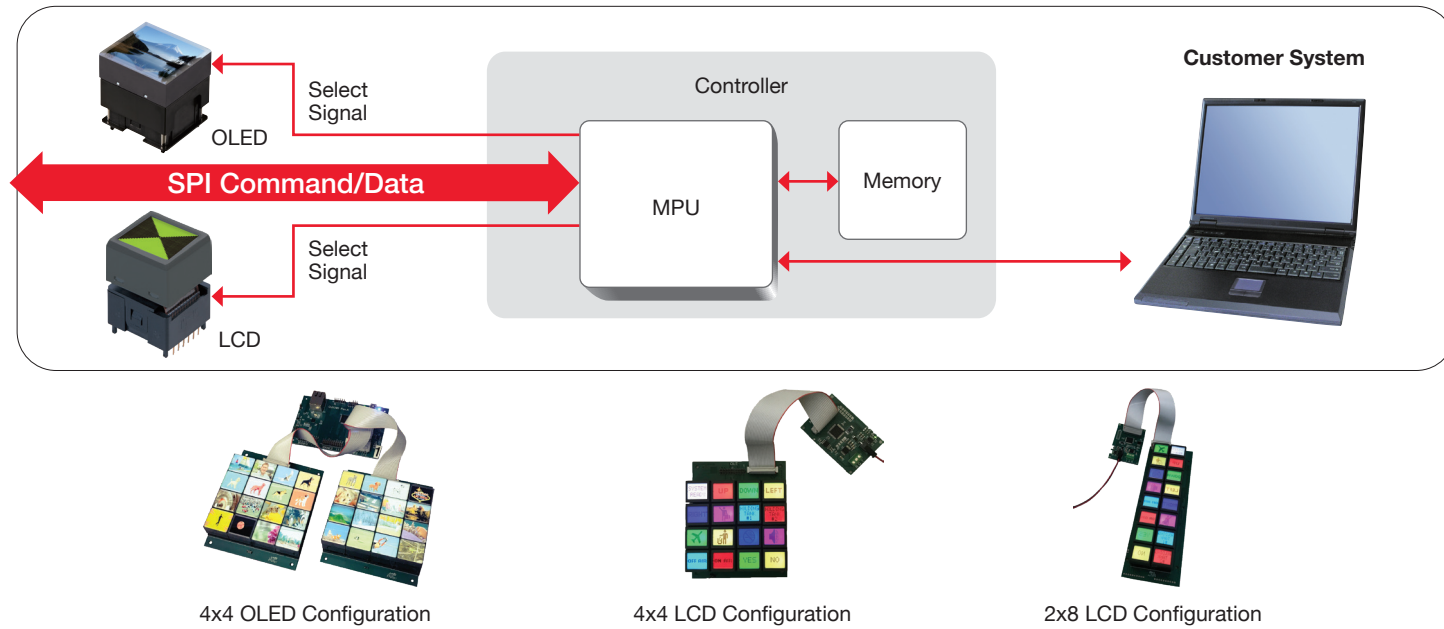# NKK
SWITCHES

SMARTDISPLAY™

Innovative | Efficient | Brilliant

SMARTDISPLAY

NKK provides comprehensive, full-service solutions, ranging from software design and assembly to ongoing application support. Our skilled engineers offer individualized support to meet each customer's unique specifications.

Typical Design Solution

SPI Command/Data

OLED
Select Signal
LCD
Select Signal

Controller
MPU
Memory

Customer System

4x4 OLED Configuration   4x4 LCD Configuration   2x8 LCD Configuration
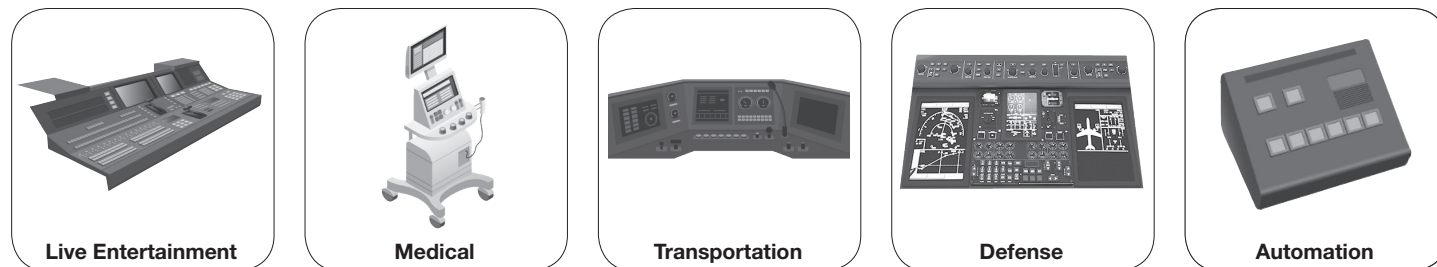
Available Resources

- System Design
- Software Design and Programming
- Circuit and Board Design
- Assembly
- Value Added Services
- Ongoing Application Support

SYSTEM DESIGN

SOFTWARE DESIGN AND PROGRAMMING

ONGOING APPLICATION SUPPORT

NKK Complete Solution Services

CIRCUIT AND BOARD DESIGN

VALUE ADDED SERVICES

ASSEMBLY

Applications

Live Entertainment   Medical   Transportation   Defense   Automation

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SMARTDISPLAY

SmartDisplay™ products combine a graphic OLED or LCD display with an electromechanical switch. Designed as a space-saving, dynamic, multi-function programmable device, SmartDisplay improves the user experience by simplifying the HMI design.

Features

- Fully programmable, HMI solution
- Integrates easily with embedded systems
- Capable of running full motion video
- Tactile feel

The SmartDisplay is a device that enables designers to create clear solutions in complex decision-making environments using intuitive and programmable custom menus. NKK offers the industry's most extensive selection of off-the-shelf OLED and LCD programmable switches.

As demand increases for greater functionality, space conservation and long-term ROI, the use of traditional switches may not be an optimal solution. OLED and LCD programmable devices streamline control panels, utilizing less space and rendering an unprecedented amount of flexibility.

It's not just smart – it's brilliant!

Product Overview

OLED Frameless Pushbutton

OLED Frameless Pushbutton

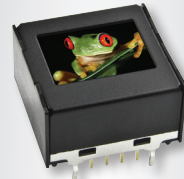|	
Part Number	ISF15ACP4
Outer Dimensions	23.13 x 20.59 x 23.0mm
Description	SPST • Momentary ON • Gold Contacts • Straight PC Terminals
Display	Color OLED Display Module • 65,536 Colors • 50,000 Hours @ 40%
Pixel Format H x V	96RGB x 64 • 0.222 x 0.293mm
Viewing Area H x V	Display: 21.28 x 18.74mm (0.838" x 0.738")
Switch Specifications	100mA @ 12V DC; 200 milliohms maximum @ 20mV 10mA
Switch Life	1,000,000 Operations
Temperature Ranges	Operating: –20° ~ +70°C (–4° ~ –158°F) Storage: –30° ~ +80°C (–22° ~ –176°F)
Total Travel	1.8mm (0.071")
Features	Low Energy Consumption • Borderless Design Viewing Angle 180° • Tactile Touch • Vibrant Colors Tiling multiple Frameless Pushbuttons creates seamless display
Design & Support Tools	**IS-ENG-KIT-7-FF/FS** Engineering Development Kit **Socket AT9704-085L**

OLED Pushbutton

Part Number	ISC15ANP4
Outer Dimensions	23.13 x 20.59 x 23.0mm
Description	SPST • Momentary ON • Gold Contacts • Straight PC Terminals
Display	Color OLED Display Module • 65,536 Colors 30,000 / 60,000 Hours @ 40%
Pixel Format H x V	64RGB x 48 • 0.210 x 0.200mm
Viewing Area H x V	Display: 15.5 x 11.6mm (0.610" x 0.457")
Switch Specifications	100mA @ 12V DC; 200 milliohms maximum @ 20mV 10mA
Switch Life	3,000,000 Operations
Temperature Ranges	Operating: –20° ~ +70°C (–4° ~ –158°F) Storage: –30° ~ +80°C (–22° ~ –176°F)
Total Travel	4.5mm (0.177")
Features	Low Energy Consumption • Viewing Angle 180° • Vibrant Colors
Design & Support Tools	**IS-ENG-KIT-7-FS/DS** Engineering Development Kits **Socket AT9704-085L**

**OLED
Pushbutton**

OLED Display

Part Number	ISC01P
Outer Dimensions	17.8 x 17.2 x 9.9mm
Description	Straight PC Terminals
Display	Color OLED Display Module • 65,536 Colors 30,000 / 60,000 Hours @ 40%
Pixel Format H x V	52RGB x 36 • 0.210 x 0.220mm
Viewing Area H x V	Display: 12.9 x 9.9mm (0.508" x 0.390")
Temperature Ranges	Operating: –20° ~ +70°C (–4° ~ –158°F) Storage: –30° ~ +80°C (–22° ~ –176°F)
Features	Low Energy Consumption • Viewing Angle 180° • Vibrant Colors
Design & Support Tools	**IS-ENG-KIT-7-DS** Engineering Development Kit **Socket AT9704-085M**

**OLED
Display**

OLED Rocker

Part Number	IS18WWC1W
Outer Dimensions	37.9 x 50.7 x 20.2mm
Description	SP3T • Rocker (ON) (ON) (ON) • Pushbutton Normally OFF
Display	Monochrome OLED • White / Black • 52,000 Hours @ 40%
Pixel Format H x V	96 x 64 • 0.200 x 0.207mm
Viewing Area H x V	Display: 19.16 x 13.22mm (0.754" x 0.520")
Switch Specifications	3VA maximum DC; 200 milliohms maximum
Switch Life	1,000,000 Operations
Ingress Protection	IP64
Temperature Ranges	Operating: –20° ~ +70°C (–4°F ~ +158°F) Storage: –25° ~ +80°C (–13° ~ +176°F)
Total Travel	1.3 ± 0.5mm (0.051" ± 0.020") at Center of Cap 1.8 ± 0.6mm (0.071" ± 0.024") at Top & Bottom
Features	Short 14.6mm (0.575") Behind Panel • Low Profile • Viewing Angle 180° Three-Switch Functionality: Scroll, Select and Menu Exceptional Contrast
Design & Support Tools	**IS-ENG-KIT-8-R** Engineering Development Kit **AT715 Connector Cable** 500.0mm (19.685"), 2 12SUR-32S Connectors

**OLED
Rocker**

**64 x 32 Pushbutton
Standard Travel**

Wide View LCD Pushbutton • Standard Travel

Part Number	IS15EBFP4RGB-09YN
Outer Dimensions	23.13 x 20.59 x 23.0mm
Description	SPST • Momentary ON • Gold Contacts • Straight PC Terminals
Display	LCD with RGB Backlight
Pixel Format H x V	64 x 32 • 0.259 x 0.365mm
Viewing Area H x V	17.0 x 13.0mm (0.669" x 0.512")
Switch Specifications	100mA @ 12V DC; 200 milliohms maximum @ 20mV 10mA
Switch Life	1,000,000 Operations
Temperature Ranges	Operating: –15° ~ +50°C (+5° ~ +122°F) Storage: –20° ~ +60°C (–4° ~ +140°F)
Total Travel	1.8mm (0.071")
Features	One Supply Voltage • Sunlight Readable Display Low Energy Consumption • Controllable in Three Software Commands Tactile Touch
Design & Support Tools	**IS-ENG-KIT-6-CH/DH/SH** Engineering Development Kits **Socket AT9704-065F**

**64 x 32 Pushbutton
Long Travel**

Wide View LCD Pushbutton • Long Travel

Part Number	IS15EBFP4RGB
Outer Dimensions	23.13 x 20.59 x 23.0mm
Description	SPST • Momentary ON • Gold Contacts • Straight PC Terminals
Display	LCD with RGB Backlight
Pixel Format H x V	64 x 32 • 0.259 x 0.365mm
Viewing Area H x V	17.0 x 13.0mm (0.669" x 0.512")
Switch Specifications	100mA @ 12V DC; 200 milliohms maximum @ 20mV 10mA
Switch Life	3,000,000 Operations
Temperature Ranges	Operating: –15° ~ +50°C (+5° ~ +122°F) Storage: –20° ~ +60°C (–4° ~ +140°F)
Total Travel	4.5mm (0.177")
Features	One Supply Voltage • Sunlight Readable Display Low Energy Consumption • Controllable in Three Software Commands
Design & Support Tools	**IS-ENG-KIT-6-SH** Engineering Development Kit **Socket AT9704-085K**

SMART**DISPLAY**

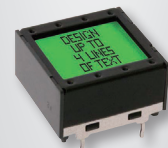### Wide View LCD Compact Pushbutton

Part Number	IS15ESBFP4RGB
Outer Dimensions	19.0 x 18.0 x 23.0mm
Description	SPST • Momentary ON • Gold Contacts • Straight PC Terminals
Display	LCD with RGB Backlight
Pixel Format H x V	64 x 32 • 0.220 x 0.305mm
Viewing Area H x V	14.5 x 11.8mm (0.571" x 0.465")
Switch Specifications	100mA @ 12V DC; 200 milliohms maximum @ 20mV 10mA
Switch Life	1,000,000 Operations
Temperature Ranges	Operating: −15° ~ +50°C (+5° ~ +122°F) Storage: −20° ~ +60°C (−4° ~ +140°F)
Total Travel	1.8mm (0.071")
Features	One Supply Voltage • Sunlight Readable Display Low Energy Consumption • Controllable in Three Software Commands Tactile Touch
Design & Support Tools	**IS-ENG-KIT-6-CH** Engineering Development Kit **Socket AT9704-065F**

64 x 32
Compact Pushbutton

Wide View LCD Display

Part Number	IS01EBFRGB
Outer Dimensions	17.8 x 17.2 x 9.9mm
Description	Straight PC Terminals
Display	LCD with RGB Backlight
Pixel Format H x V	64 x 32 • 0.220 x 0.305mm
Viewing Area H x V	14.4 x 11.8mm (0.567" x 0.465")
Temperature Ranges	Operating: −15° ~ +50°C (+5° ~ +122°F) Storage: −20° ~ +60°C (−4° ~ +140°F)
Features	One Supply Voltage • Sunlight Readable Display Low Energy Consumption • Controllable in Three Software Commands
Design & Support Tools	**IS-ENG-KIT-6-DH** Engineering Development Kit

64 x 32
Display

Wide View LCD Pushbuttons
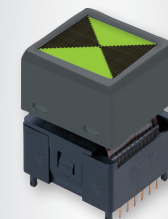
Part Numbers	IS15BBFP4RGB for RGB; IS15BAFP4CF for Red / Green
Outer Dimensions	23.13 x 20.59 x 23.0mm
Description	SPST • Momentary ON • Gold Contacts • Straight PC Terminals
Display	LCD with RGB or Red / Green Backlight
Pixel Format H x V	36 x 24 • 0.460 x 0.515mm
Viewing Area H x V	17.0 x 13.0mm (0.669" x 0.512")
Switch Specifications	100mA @ 12V DC; 200 milliohms maximum @ 20mV 10mA
Switch Life	1,000,000 Operations
Temperature Ranges	Operating: −20° ~ +60°C (−4° ~ +140°F) Storage: −30° ~ +70°C (−22° ~ +158°F)
Total Travel	1.8mm (0.071")
Features	Daisy Chain Capability • Sunlight Readable Display User Controlled Backlight • Low Energy Consumption • Tactile Touch
Design & Support Tools	**IS-ENG-KIT-5-SC/BC** Engineering Development Kits **Socket AT9704-065E**

36 x 24
Pushbutton

Wide View LCD Compact Pushbuttons
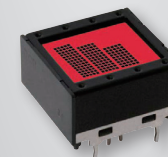
Part Numbers	IS15BSBFP4RGB for RGB; IS15BSAFP4CF for Red / Green
Outer Dimensions	19.0 x 18.0 x 23.0mm
Description	SPST • Momentary ON • Gold Contacts • Straight PC Terminals
Display	LCD with RGB or Red / Green
Pixel Format H x V	36 x 24 • 0.391 x 0.465mm
Viewing Area H x V	14.5 x 11.8mm (0.571" x 0.465")
Switch Specifications	100mA @ 12V DC; 200 milliohms maximum @ 20mV 10mA
Switch Life	1,000,000 Operations
Temperature Ranges	Operating: −20° ~ +60°C (−4° ~ +140°F) Storage: −30° ~ +70°C (−22° ~ +158°F)
Total Travel	1.8mm (0.071")
Features	Daisy Chain Capability • Sunlight Readable Display User Controlled Backlight • Low Energy Consumption • Tactile Touch
Design & Support Tools	**IS-ENG-KIT-5-SC/BC** Engineering Development Kits **Socket AT9704-065F**

36 x 24
Compact Pushbutton

Wide View LCD Displays

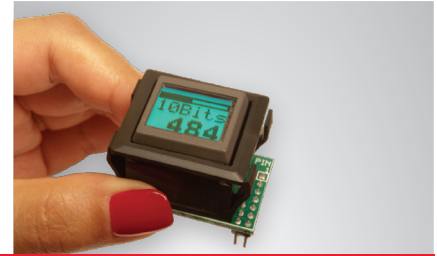|	
Part Numbers	IS01BBFRGB for RGB
Outer Dimensions	17.8 x 17.2 x 9.9mm
Description	Straight PC Terminals
Display	LCD with RGB Backlight
Pixel Format H x V	36 x 24 • 0.391 x 0.465mm
Viewing Area H x V	14.4 x 11.8mm (0.567" x 0.465")
Temperature Ranges	Operating: −20° ~ +60°C (−4° ~ +140°F) Storage: −30° ~ +70°C (−22° ~ +158°F)
Features	Daisy Chain Capability • Sunlight Readable Display User Controlled Backlight • Low Energy Consumption
Design & Support Tools	**IS-ENG-KIT-5-DC** Engineering Development Kit

36 x 24
Display

SMARTDISPLAY

IS0108 Single Switch Solution

The Single Switch Solution is the smallest panel-mount display and controller on the market.

- Incorporates SmartDisplay with a microprocessor and I/O for real-world control functions.
- Each control program customized with user protocol by NKK.

Engineering Development Kits

Engineering Development Kits empower engineers to learn, evaluate and rapidly prototype SmartDisplay products.

- Preprogrammed for basic operation, stand-alone or real-time
- Communication via USB
- 7 pin I/O auxiliary port to interface with external devices
- Onboard memory for saving images and other data
- **Engineering Kits Communicator -** Free communication software download: https://www.nkkswitches.com/download-software
- **Engineering Kits Source Code -** C firmware Source Code download: https://www.nkkswitches.com/download-software
- **Engineering Kits Schematics -** Schematics are provided in each Engineering Kit User Manual: https://www.nkkswitches.com/programmables
- Support documents for SmartDisplay products, including Application Notes: https://www.nkkswitches.com/support

Controllers & Accessories

Subsystems
Numerous controllers and subsystems are available for the SmartDisplay product line. Contact NKK Switches for the expertise and skills that will assist in bringing your design to life.

SmartDisplay Tools
Power supplies, serial communications cables, controllers, connectors, charge pumps, ribbon cables and adaptors are available from NKK.

Sockets
NKK offers a variety of sockets compatible with the SmartDisplay LCD and OLED products that permit switches to be plugged in after automated processing, and enable easy field replacement.

Splashproof Overlay
Provides protection to SmartDisplay applications requiring safety against environmental elements such as dust and projected water. IP65 rated with appropriate installation and supporting bezel. Assorted sizes available.

Contact NKK for product demonstration
1.877.2.BUY.NKK or
customerservice@nkkswitches.com