

Data Sheet

PLUS+1[®] HMI Peripherals

HMK Modular CAN Keypads



Mobile Machine Management

PLUS+1[®] HMI Peripherals are an expansion of the Danfoss family of mobile machine management products.

Danfoss HMK Modular CAN Keypads bring machine design and operation to a new level by consolidating switch locations and simplifying wiring in a robust package.

Modern, Ergonomic and Rugged Design

The HMK keypads are optimized with relegendable button design for variation of button icons. The buttons backlight/indicator rings feature RGB LEDs, including pure white. This added flexibility allows the customer to modernize their machines by matching their brand and desired operator signals. Each button on HMK keypads is controllable via CAN messaging, with adjustable frequencies and light intensity.

Robust Design

The HMK features robust mechanical, electrical, and Ingress Protection specifications that meet the demands of mobile machine operation. It is suitable for installation in open and enclosed cabs.

Features

- Relegendable buttons
 - Standard and custom legends (no minimums, no set up fees)
- RGB LEDs for each button backlight/indicator ring
 - 256 step brightness control for each color, including pure white
 - Adjustable frequencies for visual effects (blink, pulse, spin, ripple)
 - Brightness LEDs, with adjustable intensity
- Install in open and enclosed cabs
- Rugged sealed IP 66 and IP 67 ratings
- Vertical or horizontal mount
- DEUTSCH, 4-pin connector
- Overload feedback on output drives to detect short circuit or over current events
- Large keypad selection
 - Two different button sizes, mini and large
 - Many button configurations to choose from to match application
- PLUS+1[®] Compliant
- CAN J1939

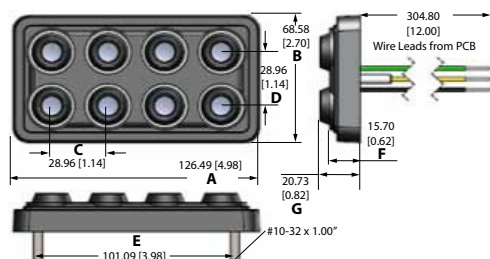
Options

- Finger guards to prevent accidental engagement or assist with blind operation
- Additional inputs (3) and outputs (6) on certain models

Comprehensive technical literature is online at www.danfoss.com



HMK-24 dimensions in mm [in]



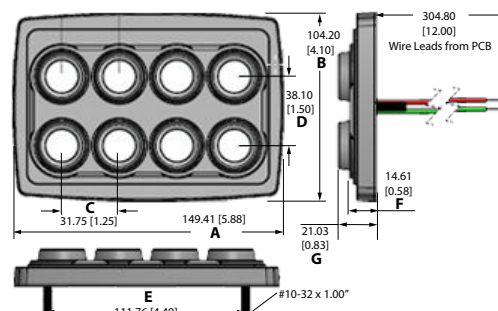
	A	B	C	D	E	F	G
HMK-15	55.45 [6.12]	39.62 [1.56]	28.96 [1.14]	N/A	135.89 [5.35]	15.70 [0.62]	20.73 [0.82]
HMK-22	68.58 [2.70]	68.58 [2.70]	28.96 [1.14]	28.96 [1.14]	43.18 [1.70]	15.70 [0.62]	20.73 [0.82]
HMK-23	97.54 [3.84]	68.58 [2.70]	28.96 [1.14]	28.96 [1.14]	72.14 [2.84]	15.70 [0.62]	20.73 [0.82]
HMK-24	126.49 [4.98]	68.58 [2.70]	28.96 [1.14]	28.96 [1.14]	101.09 [3.98]	15.70 [0.62]	20.73 [0.82]
HMK-26	185.17 [7.29]	76.45 [3.10]	28.96 [1.14]	33.00 [1.30]	136.00 [5.35]	15.70 [0.62]	20.73 [0.82]
HMK-28	242.32 [9.54]	68.58 [2.70]	28.96 [1.14]	28.96 [1.14]	216.92 [8.54]	15.70 [0.62]	20.73 [0.82]
HMK-35	149.86 [5.90]	99.6 [3.90]	28.96 [1.14]	28.96 [1.14]	91.44 [3.60]	15.70 [0.62]	20.73 [0.82]

Specifications

Characteristics

Processor	ARM Cortex M3, 32 bit, 120 MHz
RAM	64 kB
EEPROM	32 kB
Supply voltage	9 to 36 V _{DC}
Connector	DEUTSCH DTM-4
IP rating (with mating connector attached)	IP66 and IP67
Operating temperature	-40°C to +85°C [-40°F to 185°F]
Storage temperature	-40°C to +85°C [-40°F to 185°F]
Weight	0.159 kg [0.351 lb]
Vibration/Shock	IEC 60068-2-64 (7.67g) /2-27 (50g)
EMI/RFI rating	100 V/M
Humidity	IEC 60068-2-78, 60068-2-30
Transients	ISO 7637/1, 2, 3
Button cycle life	1 million cycles

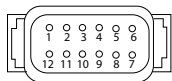
HMK-24L dimensions in mm [in]



	A	B	C	D	E	F	G
HMK-22L	99.00 [3.90]	99.00 [3.90]	41.50 [1.63]	41.50 [1.63]	43.18 [1.70]	15.93 [0.63]	21.03 [0.83]
HMK-24L	149.41 [5.88]	104.20 [4.10]	31.75 [1.25]	38.10 [1.50]	111.76 [4.40]	14.61 [0.58]	21.03 [0.83]

Main connector pin assignments
DEUTSCH DT04-4 pin connector


Pin	Function
1	Power ground -
2	Power supply +
3	CAN Hi
4	CAN Lo

12 pin connector pin assignments
DEUTSCH 12 pin connector


Pin	Function
1	Output 1
2	Output 2
3	Output 3
4	Output 4
5	Output 5
6	Output 6
7	Input 1
8	Input 2
9	Input 3
10	NC
11	NC
12	NC

Ordering information
Model variants

Part number	Model number	Description
11212987	HMK-15-00-0-0-00	1x5, 5 Mini Buttons, No Inserts
TBD	HMK-15-00-0-1-00	1x5, 5 Mini Buttons Blank Inserts
11212988	HMK-22M-00-0-0-00	2x2, 4 Mini Buttons, No Inserts
TBD	HMK-22M-00-0-1-00	2x2, 4 Mini Buttons, Blank Inserts
11212989	HMK-22L-00-0-0-00	2x2, 4 Large Buttons, No Inserts
TBD	HMK-22L-00-0-1-00	2x2, 4 Large Buttons, Blank Inserts
TBD	HMK-22L-00-1-0-00	2x2, 4 Large Buttons, No Inserts, I/Os
TBD	HMK-22L-00-1-1-00	2x2, 4 Large Buttons, Blank Insert, I/Os
TBD	HMK-23M-00-0-0-00	2x3, 6 Mini Buttons, No Inserts
TBD	HMK-23M-00-0-1-00	2x3, 6 Mini Buttons, Blank Inserts
11212990	HMK-24M-00-0-0-00	2x4, 8 Mini Buttons, No Inserts
TBD	HMK-24M-00-0-1-00	2x4, 8 Mini Buttons, Blank Inserts
11212991	HMK-24L-00-0-0-00	2x4, 8 Large Buttons, No Inserts
TBD	HMK-24L-00-0-1-00	2x4, 8 Large Buttons, Blank Inserts
TBD	HMK-24L-00-1-0-00	2x4, 8 Large Buttons, No Inserts, I/Os
TBD	HMK-24L-00-1-1-00	2x4, 8 Large Buttons, Blank Inserts, I/Os
11213002	HMK-26-00-0-0-00	2x6, 12 Mini Buttons, No Inserts
TBD	HMK-26-00-0-1-00	2x6, 12 Mini Buttons, Blank Inserts
TBD	HMK-26-00-1-0-00	2x6, 12 Mini Buttons, No Inserts, I/Os
TBD	HMK-26-00-1-1-00	2x6, 12 Mini Buttons, Blank Inserts. I/Os
TBD	HMK-28M-00-0-0-00	2x8, 16 Mini Buttons, No Inserts
TBD	HMK-28M-00-0-1-00	2x8, 16 Mini Buttons, Blank Inserts
11213003	HMK-35-00-0-0-00	3x5, 15 Mini Buttons, No Inserts
TBD	HMK-35-00-0-1-00	3x5, 15 Mini Buttons, Blank Inserts

Model code key

A	B	C	D	E	F	G
HMK						

A—Model name	Description
HMK	HMK Modular CAN Keypad, PLUS+1 [®] Device

B—Button configuration	Description
15M	1x5, 5 Mini Buttons, RGB LEDs
22M	2x2, 4 Mini Buttons, RGB LEDs
22L	2x2, 4 Large Buttons, RGB LEDs
23M	2x3, 6 Mini Buttons, No Inserts
24M	2x4, 8 Mini Buttons, RGB LEDs
24L	2x4, 4 Large Buttons, RGB LEDs
26M	2x6, 12 Mini Buttons, RGB LEDs
28M	2x8, 16 Mini Buttons, Blank Inserts
35M	3x5, 15 Mini Buttons, RGB LEDs

C—PCBA / Special features	Description
00	HMK, CAN J1939, Version 0

D—Connectors	Description
0	DEUTSCH, 4-pin Connector (CAN)
1	DEUTSCH, 4-pin (CAN); DEUTSCH 12-pin (6 Outputs, 3 Inputs) Available for HMK 22L/24L/26M

E—Button graphics inserts	Description
0	No Disc Inserts
1	Blank Disc Inserts
2	Demo (1) Graphics Inserts
8	ISO/ Standard Graphics Inserts
9	Customized Graphics Inserts

F—Finger guards	Description
00	No Finger Guard
M1	Mini Insert, 1 Finger Guard (HMK-22M, 23M, 24M, 26M, 28M)
M2	Mini Insert, 2 Finger Guards (HMK-22M, 23M, 24M, 26M, 28M)
M3	Mini Insert, 3 Finger Guards (HMK- 24M, 23M, 26M, 28M)
M4	Mini Insert, 4 Finger Guards (HMK-24M, 26M, 28M)
M5	Mini Insert, 5 Finger Guards (HMK-26M, 28M)
M6	Mini Insert, 6 Finger Guards (HMK-26M, 28M)
L1	Large Inserts, 1 Finger Guard (HMK-22L, 24L)
L2	Large Inserts, 2 Finger Guards (HMK-22L, 24L)
L3	Large Inserts, 3 Finger Guards (HMK-24L)
L4	Large Inserts, 4 Finger Guards (HMK-24L)

G—TBD	Description
TBD	TBD

Related products

Description	Part number
DEUTSCH, 4 PIN Connector Kit	11028348
DEUTSCH 12-pin Connector Kit	10102025
Finger Guard	TBD
1x5 Bezel	TBD
2x2 Bezel	TBD
2x3 Bezel	TBD
2x4 Bezel	TBD
2x6 Bezel	TBD
2x8 Bezel	TBD
3x5 Bezel	TBD
2x2 Large Key Bezel	TBD
2x4 Large Key Bezel	TBD