CANlink 713 / 714 Linux Displays

Winner of the **2023 OEM Off-Highway's Top New Products award - Operator Cab category,** the CL-713 5" and CL-714 7" CAN bus displays feature vibrant color and an economical minimalistic design for an updated look and feel and offer programming options such Crank, Qt and CODESYS.

IP67 sealed

Touchscreen with gloves & in rain

Ultra-wide viewing angles

Shock & Vibration Resistant

Sunlight readable

-40C to +65C

Built Tough

Made for harsh environments, these displays offer an updated interface and can be mounted in the cab or outside your vehicle.

Modern Technology

Sunlight readable color LCD display with 800x480 resolution and optional PCAP touchscreen or pushbuttons for easy navigation and control.

Value + Function

Featuring a premium edge-to-edge glass design at an economical price point. Configured with optional I/O the display can help reduce the cost of the overall control architecture.

HED® Intelligent Vehicle Controls

HED specializes in the design, manufacture, and application of innovative controls and telematics systems for on- and off-highway OEMs. We provide a complete line of controllers, displays, keypads, and telematics solutions.

CANlink 713 / 714 Display | Specifications

COMPUTING CORE	
Overview	Cortex-A7 ARM Processor running at 800 MHz
CPU	Cortex A7 @ 800 MHz (single-core)
Graphics Acceleration	Pixel Processing Pipeline (PXP) to support 2D image processing
Flash	8GB eMMC Flash
RAM	512MB DDR3 RAM

DISPLAY	
Type	IPS TFT with >85° viewing angles in all directions
Cover Lens	Hardened Glass with AR coating
Optical Bonding	LCD Optically bonded to hardened AR glass lens for enhanced sunlight readability
Size & Resolution	5" & 7", 800x480 pixel resolution, 16:9 aspect ratio
Color Depth	24-bit, 16.7 million
Contrast Ratio	1000:1 (typ)
Brightness	CL-713: 800 cd/m2 (nits) CL-714: 1000 cd/m2 (nits)
Dimming	Standard in 0.1% increments 0-100%
Ambient Light Sensor	Standard, available for automatic dimming

HMI	
Touch Screen	Optional Projected Capacitive (PCAP). Calibrated for use with heavy gloves and wet environments.

ELECTRICAL	
Operating Voltage	6 - 32 VDC
Key Switch	Standard for Start/Shutdown, Suspend/Resume
Inputs	up to 11 inputs *(see page 3 for details)*
Outputs	up to 4 outputs *(see page 3 for details)*
Conducted Transient Immunity	ISO 7637-2, Pulse 1, 2a, 2b, 3a, 3b
Starting Profile	ISO 16750-2, Section 4.6.3
Load Dump	ISO 16750-2, Section 4.6.4, 40V clamped

MECHANICAL	
Housing Material	ABS Plastic with Aluminum Heatsink (on back cover)
Installation	Panel or RAM mount (see dimensional drawings)
Connectors	1x 18-pin Deutsch DT for Power, CAN, I/O 4x M12 for USB-A, 4-Wire Ethernet, Video 1, Video 2
Dimensions (mm)	CL-713 (Buttons): 146.8 x 142.4 x 42.6 CL-713 (No-Buttons): 146.8 x 110.2 X 42.6 CL-714 (Buttons): 193.3 x 169.7 x 46.0 CL-714 (No-Buttons): 193.3 x 137.7 x 46.0
Weight (g)	CL-713 (Buttons): 1.10 lbs CL-713 (No-Buttons): 0.95 lbs CL-714 (Buttons): 2.00 lbs CL-714 (No-Buttons): 1.75 lbs

INTERFACES	
CAN	2x CAN ports
USB	1x USB OTG (capable of supplying up to 500mA to device)
Ethernet	1x Ethernet 10/100 Base-T
Wi-Fi	Optional Dual-band Wi-Fi 802.11
Bluetooth	Optional Bluetooth 2.1+EDR + BLE 5.2
Video	2x Analog Video Inputs, NTSC or PAL (1x active at a time)

OPERATING SYSTEM	
System	Custom Linux system
Kernel	Linux Kernel 5.4 (Long Term Support) u-boot 2022.02.1 Buildroot: 2020.08.1
BSP	Available to create a custom Linux image
Bootup Time	Cold boot ~10-16 seconds

ENVIRONMENTAL SPECIFICATIONS	
IP Class	IP67
EMC Conformity	FCC Part 15 (b) and ISED Canada. 2014/30/EU – CE Mark Radiated Emissions: ISO 13766-1, EN 13309, ISO 14982 Conducted Emissions: CISPR 25, Section 6.3 (Voltage Method) Radiated Immunity: ISO 11452-2 Conducted Immunity: ISO 11452-4 (BCI method), 20-200MHz at 100mA ESD: ISO 10605, IEC 61000-4-2
Vibrations	IEC 60068-2-64 Random Vibration Test VII Test: Random Vibe, Freq. Range: 10-2000Hz, Level: 57.9m/s2 per Figure 11 / Table 12 Duration/axis: 8hrs (32Hrs total exposure)
Shock	IEC 60068-2-27 Mechanical Shock Level: 500 m/s2- 6ms, Shape: Half-sinusoidal # Pulses: 100 per direction/axis (600 total shock pulses) Level: 500 m/s2- 11ms, Shape: Half-sinusoidal # Pulses: 6,000 per direction/axis (18,000 total shock pulses)
Temperature Range	Operating:-40C to +65C Storage: -40C to +80C

SOFTWARE FRAMEWORK & TOOLS	
Development Environment	Virtual machine or Native Linux
Programming	Supported languages include C++, C (GCC Compiler), QML, JavaScript, Python, HTML5, Rust
UI Frameworks	The Container based environment allows for easy selection of your desired UI development tool if it is not one of our currently offered solutions: * Qt 5.15 * Crank 7.x * CODESYS 3.5 * Web framework support (contact HED for details)
CAN Networking	Configurable for J1939 and CANopen networks

CANlink 713 / 714 Display | Pinouts

CONNECTOR A - 18 PIN DEUTSCH		
	Base Configuration	**Full IO Configuration**
Pin 1	Output DOUT(-)(0.5A) / PWM(-)(0.5A)	Output DOUT(+)(2A) / PWM(+)/ECC/(+)(2A) / Input STB/STG
Pin 2	N/A	Output DOUT(+)(2A) / PWM(+)/ECC/(+)(2A) / Input STB/STG
Pin 3	N/A	Output DOUT(+)(2A) / PWM(+)/ECC/(+)(2A) / Input STB/STG
Pin 4	N/A	Output DOUT(+)(2A) / PWM(+)/ECC/(+)(2A) / Input STB/STG
Pin 5	Battery (-)	Battery(-)
Pin 6	Unswitched Battery (+) / Input Battery Voltage	Unswitched Battery(+)** / Input Battery Voltage
Pin 7	CAN1-H	CAN1-H
Pin 8	CAN1-L	CAN1-L
Pin 9	N/A	Input STB/STG/VTD(0-5.8V)/FREQ/PWM/Encoder(1A) / RTD(0-500ohm)
Pin 10	N/A	Input STB/STG/VTD(0-5.8V)/FREQ/PWM/Encoder(1B) / RTD(0-2Kohm)
Pin 11	Input STB Wake-up (Key Switch)	Input STB Wake-Up (Key Switch)
Pin 12	Input STB/STG/VTD (0-5.8V)	Input STB/STG/VTD(0-5.8V)
Pin 13	CAN2-L	CAN2-L
Pin 14	CAN2-H	CAN2-H
Pin 15	N/A	Input STB/STG/VTD(0-5.8V)/FREQ/PWM/Encoder(2A) / RTD(0-500ohm)
Pin 16	N/A	Input STB/STG/VTD(0-5.8V)/FREQ/PWM/Encoder(2B) / RTD(0-2Kohm)
Pin 17	N/A	5VDC Sensor Supply Ground / Input Supply Ground Voltage / Input STB/STG/VTD(0-5.8V)
Pin 18	N/A	5VDC Sensor Supply (250mA) / Input Supply Voltage / Input STB/STG/VTD(0-5.8V)

**Unswitched vehicle battery must be connected for controlled shutdown to properly store any data to memory, and for Sleep and Wake-Up to function properly.

WIRE ETHERNET CONNECTOR: M12 (D-Key)	
Pin 1	TXP
Pin 2	RXP
Pin 3	TXN
Pin 4	RXN

USB OTC CONNECTOR: M12 (A-Key)	
Pin 1	USB (Power)
Pin 2	USB (DM)
Pin 3	USB (DP)
Pin 4	USB (Ground)
Pin 5	USB (OTG)

MATING CONNECTOR - DEUTSCH	
DEUTSCH	DT16-18SA-K004
Socket	(16-18) AWG-0462-201-16141 (14-16) AWG-0462-209-16141
Sealing Plug	Non-locking: 114017 Locking: 0413-217-1605
Note: Unused pins required to be sealed to maintain module sealing	

VIDEO CONNECTOR: M12 (B-Key)	
Pin 1	Video #1 Signal
Pin 2	Video #1 Ground
Pin 3	+Battery (s/w controlled)
Pin 4	Ground

VIDEO CONNECTOR: M12 (B-Key)	
Pin 1	Video #2 Signal
Pin 2	Video #2 Ground
Pin 3	+Battery (s/w controlled)
Pin 4	Ground

MATING CONNECTOR - M12
RAMCO M12 4 & 8 pin Female (for USB, Video) or generic

Part Number Configuration Options

CL-GGG-TTT-FF-XYZ

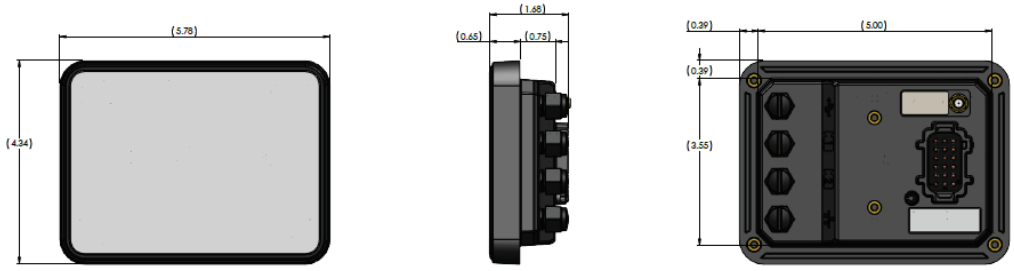
	(GGG) Size		(TTT) I/O Configuration				(FF) Programming				(X) Buttons		(Y) Touchscreen		(Z) WiFi/Bluetooth	
PART NUMBER	**713**	**714**		**101**	**102**	**103**	**60**	**70**	**80**	**A0**	**0**	**1**	**0**	**1**	**1**	**3**
Description	5”	7”	*Inputs*	1	≤ 11	≤ 11	Open	Crank	CODESYS	Qt	No	Yes	No	Yes	No	Yes
			Outputs	1 (sinking)	4 (sourcing)	4 (sourcing)										
			5VDC Sensor Supply	0	1	1										
			Video Inputs	0	0	2										

CANlink 713 / 714 Display | Dimensions

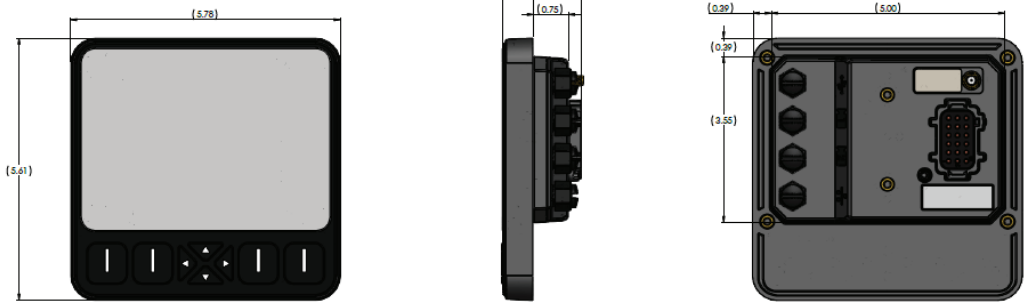
CL-713 Dimensions + Mounting Details

CL-713-100-XX-0XX NO-BUTTON VERSION

NOTE: THE WIDTH, DEPTH, AND HOLE PATTERNS ARE THE SAME FOR BOTH VERSIONS OF THE DISPLAY.



CL-713-100-XX-1XX BUTTON VERSION



Mounting Details:

- Use size M4-07 fasteners in all locations (6X)
- Torque to 20-27 in-lbs
- Fasteners should have max depth of 5.5mm (0.216”)
- Recommend using a thread locking patch
- Do **not** use liquid thread locker

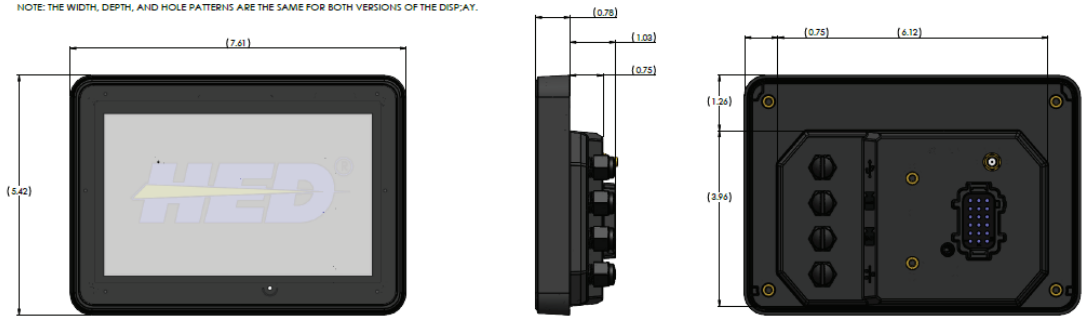
RAM Mount Option:

- National Products, Inc.
- www.rammount.com
- Part Number: RAM-B-238U

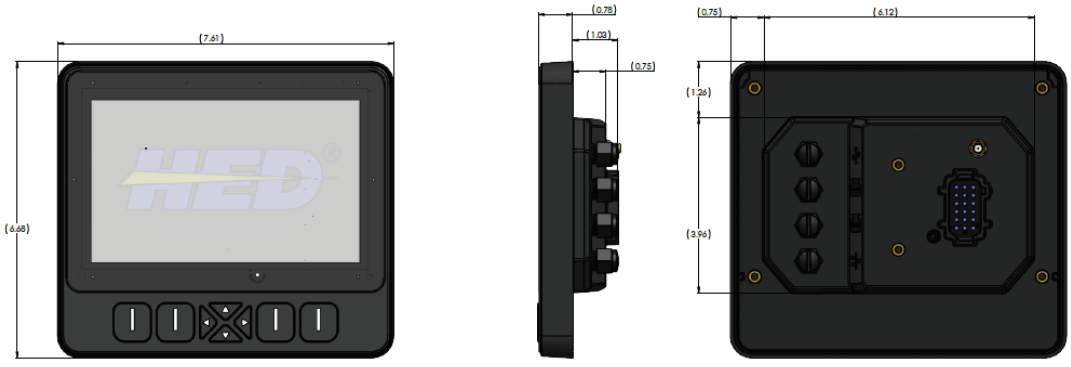
CL-714 Dimensions + Mounting Details

CL-714-100-XX-0XX NO-BUTTON VERSION

NOTE: THE WIDTH, DEPTH, AND HOLE PATTERNS ARE THE SAME FOR BOTH VERSIONS OF THE DISPLAY.



CL-714-100-XX-1XX BUTTON VERSION



Mounting Details:

- Use size M4-07 fasteners in all locations (6X)
- Torque to 20-27 in-lbs
- Fasteners should have max depth of 5.5mm (0.216”)
- Recommend using a thread locking patch
- Do **not** use liquid thread locker

RAM Mount Option:

- National Products, Inc.
- www.rammount.com
- Part Number: RAM-B-238U