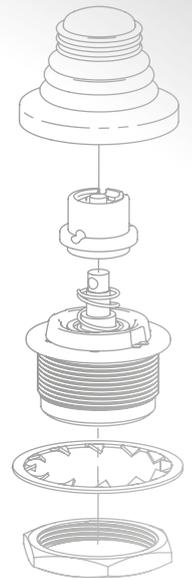
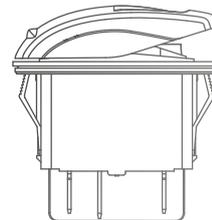
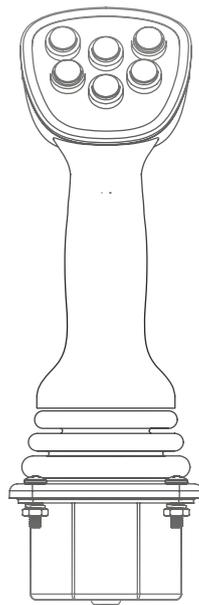
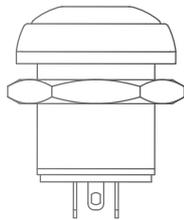




# CONSTRUCTION MACHINERY



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# APEM IN CONSTRUCTION MACHINERY

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APEM offers high-reliability Human Machine Interface (HMI) products for special vehicles.

With vertically integrated manufacturing, APEM guarantees an uncompromised reliability through its custom product development, manufacturing excellence and outstanding service.

APEM offers a very broad range of HMI components designed for the off-highway vehicles, including joysticks, switches and keypads.

FIELD PROVEN  
RELIABILITY

UNPARALLELED  
RANGE



**BUILD YOUR CUSTOM JOYSTICK  
WITH QUALIFIED, OFF-THE-SHELF COMPONENTS**

THE WIDEST RANGE OF HMI COMPONENTS

## XD SERIES

Shallow mounting depth < 60 mm  
Extremely robust, resists high axial load  
(1780 N - 400 lbf)



**IX SERIES**  
Compact and illuminated



**IM SERIES**  
Exceptional tactile feedback



**IA SERIES**  
Field proven reliability



**FNR SERIES**  
Robust and reliable



**HR SERIES**  
Versatile range



**CW SERIES**  
Compact



**TS SERIES**  
Miniature hall effect joysticks



**NV SERIES**  
"push to validate" switch based joystick

# OUR PRODUCTS



WHETHER IT'S A STANDARD PRODUCT OFFERING OR A CUSTOMIZED SOLUTION, LET APEM'S DECADES OF EXPERIENCE WORK FOR YOU

## JOYSTICK



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# XD SERIES

HALL EFFECT ROBUST JOYSTICK



## DESIGNED FOR CONSTRUCTION

- 10M cycles
- Extreme robustness
- Standard or custom handle
- Available with CAN bus J1939-71
- Shallow mounting depth
- IP67 above panel
- Up to 1780 N - 400 lbf horizontal load (depending on handle)
- SIL2 / PId capable



SERIES	MECHANICAL LIFECYCLES	AXIS	TECHNOLOGY	OUTPUT OPTIONS						MOUNTING OPTIONS	ABOVE PANEL SEALING
				Single	Dual	Analog	PWM	USB	CAN bus		
XD	10 million	1 to 2 axis	Hall effect	X	X				X	Drop-in or rear mounting	IP67

TOP APP: LOADER, EXCAVATOR, TELEHANDLER, MINING



# HJ SERIES

HALL EFFECT ROBUST JOYSTICK



HEAVY DUTY  
AND FIELD  
PROVEN

- 5M cycles
- Standard or custom handle
- CAN options available
- Up to IP69K
- Up to 180 Nm horizontal load (depending on handle)
- SIL2 / PId capable

SERIES	MECHANICAL LIFECYCLES	AXIS	TECHNOLOGY	OUTPUT OPTIONS						MOUNTING OPTIONS	ABOVE PANEL SEALING
				Single	Dual	Analog	PWM	USB	CAN bus		
HJ	5 million	1, 2, 3	Hall effect	X	X	X		X	X	Drop-in or rear mounting	IP69K

TOP APP : LOADER, DUMP TRUCK



# HF SERIES

SMALL HALL EFFECT JOYSTICK



AVAILABLE  
WITH CAN BUS

- 5M cycles
- Many outputs available, including CAN bus J1939
- Available with 1, 2 or 3 axis
- Very compact
- SIL2 / PId capable
- Up to IP67 above panel sealing

SERIES	MECHANICAL LIFECYCLES	AXIS	TECHNOLOGY	OUTPUT OPTIONS						MOUNTING OPTIONS	SEALING
				Single	Dual	Analog	PWM	USB	CAN bus		
HF	5 million	1, 2, 3	Hall effect	X	X	X		X	X	Drop-in or rear mounting	IP67

TOP APP : COMPACT VEHICLES, ROAD CONSTRUCTION, MINING



# 3000 SERIES

SMALL HALL EFFECT JOYSTICK



## EXTENDED LIFE CYCLES

- 10M cycles
- Available with 1, 2 or 3 axis
- Very compact
- SIL2 / PId capable

SERIES	MECHANICAL LIFECYCLES	AXIS	TECHNOLOGY	OUTPUT OPTIONS						MOUNTING OPTIONS	SEALING
				Single	Dual	Analog	PWM	USB	CAN bus		
3000	10 million	1, 2, 3	Hall effect	X	X	X	X			Drop-in or rear mounting	Up to IP65

TOP APP : LOADER, ROAD CONSTRUCTION



# HR SERIES

PROPORTIONAL THUMBWHEEL



## BROAD RANGE

- Up to 5M cycles
- Electronics sealed up to IP68
- Available with detents, friction, latching and 360° infinite wheel
- 7 colors and 4 shapes in standard
- Illumination of the body in option
- SIL2 / PId capable

SERIES	MECHANICAL LIFECYCLES	AXIS	TECHNOLOGY	OUTPUT OPTIONS						MOUNTING OPTIONS	SEALING
				Single	Dual	Analog	PWM	USB	CAN bus		
HR	5 million	1	Hall effect	X	X	X				Rear mounting	IP68

TOP APP: EXCAVATOR, TELEHANDLER, SKID STEER



# CW SERIES

MINIATURE PROPORTIONAL THUMBWHEEL



## MINIATURE

- Up to 3M cycles
- Snap-in mounting
- Custom actuator on request
- Spring to center

SERIES	MECHANICAL LIFECYCLES	AXIS	TECHNOLOGY	OUTPUT OPTIONS						MOUNTING OPTIONS	SEALING
				Single	Dual	Analog	PWM	USB	CAN bus		
CW	3 million	Single	Hall effect	X	X	X	X			Snap-in	-

TOP APP : EXCAVATOR, TELEHANDLER, LOADER



# TS SERIES

PROPORTIONAL MINI JOYSTICK



## FIELD PROVEN BROAD RANGE

- Hall effect sensing
- 1M cycle
- Similar in size and operation to "gamepad" controls, but in a rugged industrial package
- Wide range with multiple options available, including pushbutton function
- Easy to install
- SIL2/PId capable
- IP67/IP69K above panel sealing

SERIES	MECHANICAL LIFECYCLES	AXIS	TECHNOLOGY	OUTPUT OPTIONS						MOUNTING OPTIONS	SEALING
				Single	Dual	Analog	PWM	USB	CAN bus		
TS	1 million	1, 2	Hall effect	X	X	X	X	X		Drop-in or rear mounting	IP67 IP69K

TOP APP: TELEHANDLER, EXCAVATOR, LOADER



# NV SERIES

## NAVIGATOR SWITCH

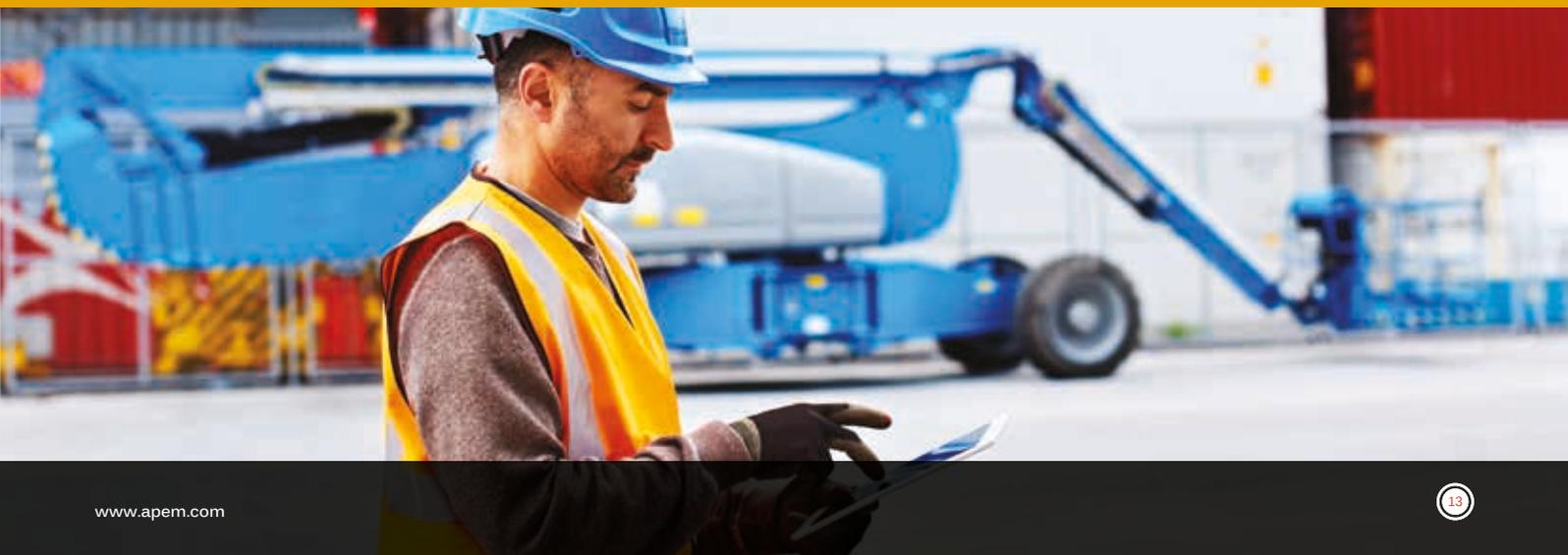


## USE IT AS DISPLAY CONTROLLER

- Compact momentary micro switching thumbstick
- Available with “push to validate” option, ideal for navigation in display menu
- Enhanced tactile feedback
- Easy integration in joystick handle
- Sealed up to IP69K

SERIES	MECHANICAL LIFECYCLES	AXIS	BUSHING DIMENSIONS	TECHNOLOGY	TERMINAL OPTIONS	MOUNTING OPTIONS	SEALING
NV	1 million	1,2	Ø16.2 mm (.637 in)	Switching	Wire leads or connector	Panel	IP69K

TOP APP: ROAD CONSTRUCTION, TELEHANDLER



# BH/BL SERIES

PROPORTIONAL PADDLE



BH



BL



STYLISH  
AND  
ROBUST

- Available in 2 heights
- Soft touch sculpted grip
- 5 color options
- Sealed up to IP67
- Custom actuator on request
- SIL2 / PLd capable

SERIES	MECHANICAL LIFECYCLES	AXIS	TECHNOLOGY	OUTPUT OPTIONS						MOUNTING OPTIONS	SEALING
				Single	Dual	Analog	PWM	USB	CAN bus		
BH/BL	10 million	Single	Hall effect	X	X	X	X			Drop-in	IP67

TOP APP : DUMP TRUCK, ROAD CONSTRUCTION



# FNR SERIES

## FNR ROCKER SWITCH



## FOR SAFETY CRITICAL FUNCTION

- 2 or 3 positions, momentary or maintained
- Sealed up to IP67
- 1 NO/NC in each direction
- Illumination with marking
- SIL2 / PId capable

SERIES	POLES	MAXIMUM RATINGS	BUSHING DIMENSIONS	TERMINAL OPTIONS	MOUNTING OPTIONS	SEALING
FNR	1 NO/NC	1A/24V	Ø20 mm (.787 in)	Flying leads, solder lugs	Panel	IP67

TOP APP : EXCAVATOR, LOADER, TELEHANDLER



# IA SERIES

DUSTPROOF PUSHBUTTON SWITCH



## THE REFERENCE IN THE CONSTRUCTION INDUSTRY

- Dustproof: Membrane on top with no gap between actuator and panel
- Frost, sand and hydrocarbon resistant
- Flush on panel
- Sealed up to IP67
- SIL2/PLd capable

SERIES	POLES	MAXIMUM RATINGS	BUSHING DIMENSIONS	TERMINAL OPTIONS	MOUNTING OPTIONS	SEALING
IA	1 NO/NC	2A 24VDC	Ø 16 mm (.629 in)	Flying leads	Panel	IP67

TOP APP : EXCAVATOR, LOADER, TELEHANDLER



# IX SERIES

## COMPACT PUSHBUTTON SWITCH



## THE NEXT STANDARD

- Compact
- Available with backlit marking
- Dustproof: Membrane on top with no gap between actuator and panel
- Frost, sand and hydrocarbon resistant
- Flush on panel
- Sealed up to IP67/IP69K
- SIL2/PId capable

SERIES	POLES	MAXIMUM RATINGS	BUSHING DIMENSIONS	TERMINAL OPTIONS	MOUNTING OPTIONS	SEALING
IX	2	2A 28VDC	Ø 12 mm (.472 in)	Solder lugs	Panel	IP67/IP69K

TOP APP : EXCAVATOR, LOADER, TELEHANDLER



# IM / IP / IS SERIES

COMPREHENSIVE PUSHBUTTON RANGE



IM



IP



IS

## EXTENSIVE COMPACT RANGE

- Compact
- Available with illumination
- Available with snap action and audible tactile feedback (IM)
- Marking in option
- Sealed up to IP67
- Momentary or latching
- Up to SIL2/PId capable

SERIES	POLES	MAXIMUM RATINGS	ILLUMINATED	BUSHING DIMENSIONS	MOUNTING OPTIONS	TERMINAL OPTIONS				SEALING
						PCB	Solder lugs	Quick-connect	Flying leads	
IM	1 NO/NC	(2A 250VAC)* 3A •28VDC		Ø 12 mm (.472 in)	Panel	x		x		IP67
IP momentary	1	(2A 250VAC)* 5A 28VDC	x	Ø 12 mm (.472 in)	Panel	x	x	x	x	IP67
IP latching	1	(2A 250VAC)* 4A 12VDC	x	Ø 12 mm (.472 in)	Panel	x	x	x	x	IP67
IS	1	(2A 250VAC)* 100mA 48VDC		Ø 12 mm (.472 in)	Panel	x	x	x		IP67

\* See applicable approvals

TOP APP: SKID STEER LOADER, GRADER, TELEHANDLER



# IHS / IHL SERIES

HALL EFFECT PUSHBUTTON RANGE



IHS



IHL

## HALL EFFECT TECHNOLOGY

- Long life: 5M cycles
- Hall effect technology
- Momentary (IHS) or proportional (IHL)
- Sealed up to IP67

SERIES	MAXIMUM RATINGS	BUSHING DIMENSIONS	MOUNTING OPTIONS	TERMINAL OPTIONS	SEALING
IHS	5mA 24VDC	Ø 12 mm (.472 in)	Panel	Flying leads	IP67
IHL	1,25mA 4,5VDC	Ø 12 mm (.472 in)	Panel	Flying leads	IP67

TOP APP : BACKHOE LOADER, EXCAVATOR



# KH / KL / KR SERIES

## ROCKER SWITCH



KR



KL



KH

## STRONG LOCKING MECHANISM

- Protected against accidental actuation (KH)
- Patented locking system for safety application (KL)
- Customised laser etched legends
- Illuminated versions
- Up to IP68/IP69K

SERIES	POLES	MAXIMUM RATINGS	BUSHING DIMENSIONS	MOUNTING OPTIONS	TERMINAL OPTIONS			SEALING	ILLUMINATION
					Solder lugs	Quick-connect	Screw		
KR	1, 2	20A 12VDC	36.8 x 21.08 mm	Panel	X	X	X	IP69K	X
KL	1, 2	10A 24VDC	36.8 x 21.08 mm	Panel	X	X	X	IP69K	X
KH	1, 2	10A 24VDC	36.8 x 21.08 mm	Panel	X	X	X	IP69K	X

TOP APP : DUMP TRUCK, LOADER



# 3500 / CT SERIES

HIGH PERFORMANCE TOGGLE SWITCH



## MARKET LEADER

- High current rating
- Very broad range: 5 finishes, 6 levers styles, 3 types of locking, 3 types of terminals...
- Sealed up to IP67/IP69K
- Available accessories: guard and boot

SERIES	APPROVALS	POLES	MAXIMUM RATINGS	BUSHING DIMENSIONS	MOUNTING OPTIONS	TERMINAL OPTIONS						SEALING
						Solder lugs	Quick-connect	Screw	PCB	Flying leads	Connector	
3500	CECC	1,2	15A 28VDC	Ø12.2 mm (.49 in)	Panel	x	x	x				IP67 IP69K
CT	UL	1,2	10A 125/250 VAC	Ø12.2 mm (.48 in)	Panel	x	x	x			x	IP67

TOP APP : PAVER, LOADER, MINING



# CW SERIES

MODULAR AND STYLISH PUSHBUTTON



## NEW INDUSTRIAL STYLE

- Stylish design
- Sealed up to IP67 with rubber boot option
- Illumination in option
- Selector switch available

SERIES	APPROVALS	POLES	SEALING	PANEL CUT OUT	TERMINAL	CONTACT TYPE	RATINGS
CW	UL, CE, CCC	Up to 6	IP65, up to IP67	Ø 22 mm (.866 in)	Screw	Modular product	Heavy duty (up to 10 Amps)

TOP APP : ROLLER, GRADER, PAVER



# MW SERIES

FOR DEMANDING ENVIRONMENTS



## DUSTPROOF

- Dustproof: no gap between actuator and panel
- Sealed up to IP66
- Selector switch available

SERIES	APPROVALS	POLES	SEALING	PANEL CUT OUT	TERMINAL	CONTACT TYPE	RATINGS
MW	CE, CCC	Up to 2	IP65 IP66	Ø 22 mm (.866 in)	Solder/tab or screw	Monobloc	Heavy duty (up to 10 Amps)

TOP APP : ROLLER, GRADER, PAVER



# ES SERIES

HEAVY DUTY METAL SAFETY SWITCH



## METAL SAFETY SWITCH

- Sealed up to IP65, IP67 & IP69K
- Compact body
- Complies with EN60947-5-1
- Impact resistant to IK10

SERIES	POLES	MAXIMUM RATINGS	BUSHING DIMENSIONS	TERMINAL OPTIONS		MOUNTING OPTIONS	SEALING
				Solder lugs	PCB		
ES	2, 3	1A 24VDC	Ø22.28 mm (.877 in)	x	x	Panel	IP65, IP67 & IP69K

TOP APP : ROAD CONSTRUCTION



# XA / XW SERIES

ROBUST EMERGENCY STOP



XA



XW

## "SAFE BREAK ACTION" TECHNOLOGY

- Exclusive safety technology ensuring that the machinery is stopped if actuator is broken
- Sealed up to IP67
- Compact behind panel
- Available with illumination
- Twist or pull to release

SERIES	SAFE BREAK TECHNOLOGY	PANEL CUT OUT	OPERATOR SIZES	NUMBER OF CONTACTS	TERMINAL CONNECTION	OPERATION	ILLUMINATION
XA	X	16 mm	Ø29 mm (1.141 in) Ø40 mm (1.574 in)	Up to 4 NC : 1,2,3,4 / NO : 0,1	Solder, PCB	Push to lock, pull or turn to reset	Option
XW	X	22 mm	Ø38 mm (1.496 in) Ø40 mm (1.574 in) Ø60 mm (2.362 in)	Up to 4 NC : 1,2,3,4 / NO : 0,1	Screw, solder, PCB	Push to lock, pull or turn to reset	Option

TOP APP : ROAD CONSTRUCTION



# LIMIT SWITCH

ROBUST SENSOR



DESIGNED  
FOR HEAVY  
DUTY

- High life time
- Dustproof
- Super robust
- NO/NC
- Long travel

## LIMIT SWITCH

Total sealing

Shock and vibration resistant

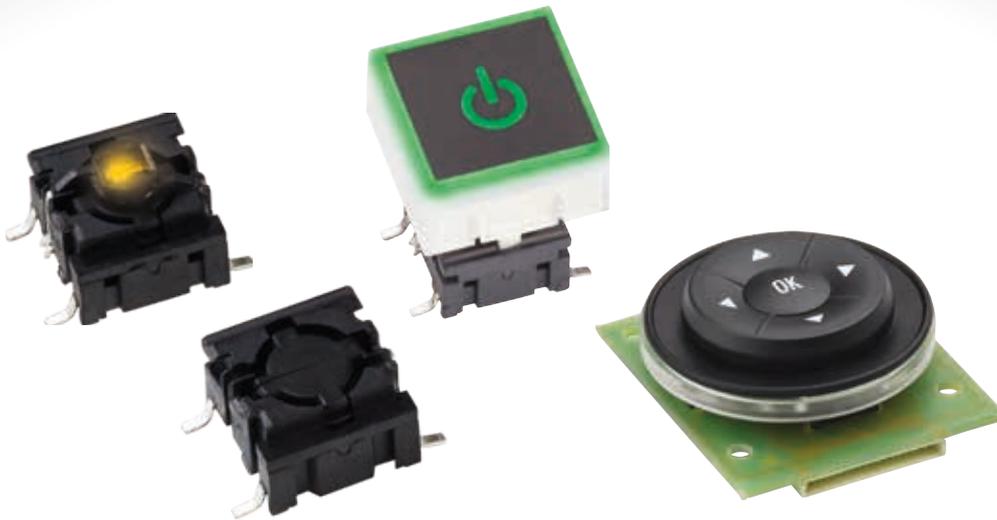
Design on request

TOP APP: EXCAVATOR, ROAD CONSTRUCTION



# MULTIMEC 5 SERIES

TACTILE PCB SWITCH



## LARGE SELECTION OF STANDARD ACCESSORIES

- 10 million activations
- Front panel sealing to IP67 depending on cap solutions
- Different haptic options
- Wide range of cap options

SERIES	POLES	MAXIMUM RATING	MOUNTING OPTIONS	SEALING	MECHANICAL LIFE
Multimec 5 series - 5E & 5G	Single pole / momentary	50mA - 24VDC	Trough hole or SMT mounting	IP67	10,000,000 operations

TOP APP: LOADER, TELEHANDLER



# Q SERIES

LED INDICATOR



**BROADEST  
RANGE IN THE  
MARKET**

- Sealed up to IP67
- Many sizes, colors, brightness, bezel types and finish
- Available with marking options
- Illumination with "Secret until lit" legend option

SERIES	PANEL CUT-OUTS	MAXIMUM RATINGS	BEZEL STYLES	BEZEL FINISHES	TERMINAL OPTIONS				TYPE OF ILLUMINATION	LED COLORS
					Solder lugs	Fastons	Pins	Wires		
Q	Ø6, 8, 12, 14, 16, 19, 22	2VDC -220VAC	Prominent, recessed & flushed	Bright, satin & black chrome	X	X	X	X	Fixed light, flashing bi-color, tri-color, night vision	5 standard colors, 5 super-bright colors

TOP APP: ROAD CONSTRUCTION, LOADER



# CAN BUS KEYBOARD

RUBBER KEYPADS



## CAN BUS KEYPAD WITH 6 CUSTOMIZABLE KEYS

- 1 million cycles
- Flush to panel
- Customizable keys
- Backlit pictograms
- SIL2/PID capable

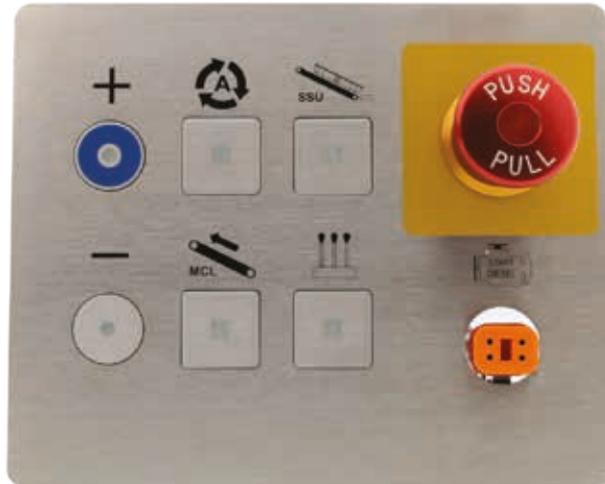
SERIES	Customization	Sealing	LIFE CYCLES	ELECTRONIC
CAN bus Keyboard	Logo, color backlight, color LEDs	IP65	1 million	CAN bus J1939

TOP APP : LOADER, GRADER, EXCAVATOR



# CUSTOM KEYBOARD

METAL AND RUBBER KEYBOARDS



## CUSTOMIZATION OPTIONS

- Rear or front panel mounting
- Backlighting
- IP67/IP69K sealing
- Up to SIL2/PId capable

### CUSTOM KEYBOARD

Integration possible of all APEM products

Design for outdoor and dusty environment

APEM Available Communication Protocols as a standard : CAN bus, RS485/422, USB

TOP APP : TELEHANDLER, LOADER



# CUSTOM CAPABILITIES

APEM  
FULLY CUSTOM

## CUSTOMER EXCLUSIVE CUSTOM PRODUCTS CO-DEVELOPED WITH CUSTOMERS

- ★ ON DEMAND ELECTRONICS & SOFTWARE INTEGRATION
- ★ INTEGRATION OF CAN BUS OR OTHER PROTOCOL AND SAFETY FEATURES ON DEMAND
- ★ SEALING UP TO IP69K, IP68



ROBUST CONTACTS AND RESISTANT MATERIALS FOR LONG LIFE EXPECTANCY

APEM EXCLUSIVE

APEM offers a large selection of part numbers consisting of switches, indicators, joysticks and keypads in different colors, markings, finishes, shapes and dimensions... creating an unlimited combination of possibilities.

### APEM develops complete interface solutions

combining components (switches, keypads, indicators, joysticks), standard electronic boards and programming.

An APEM team professional is happy to assist you in the development of these complete turnkey solutions meeting your specific requirements, with responsiveness and flexibility.



**APEM**  
an IDEC company

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