



**Electronic Control System
EHC35, 0-5 V**

**ICM4 Coordinate
Lever Unit**

*Catalogue HY17-8358/UK
January, 2002*



Applications

The ICM4 coordinate lever (joystick) unit is designed to control two or three double-acting, proportional functions. The third function is actuated by means of a toggle switch in the lever handle. The lever can be supplied with different types of handle to suit the application and environment. The ICM4 gives great advantages in applications that demand high productivity and precision. In such applications, it should be mounted in the armrest of the operator's seat for best operating comfort.

IPS mode

Together with the **IPS302** control unit, the ICM4 is primarily intended to control Parker PVE102, PVC102 and PVC25 remote control valves, which in turn control mobile directional valves or variable displacement pumps, proportionally by means of hydraulic pilot pressure. In principle though, the ICM4 can be used in any application where a lever movement is required to be converted – via the IPS302 – into a proportional electric, pulse-width modulated signal.

0-5 volt, single mode

The lever unit can also be supplied with a 0 to 5 volt output (0.5 – 4.5 volts) and used directly as an alternative for most potentiometer-based levers. As such, it is intended for use with other control systems that have 0 to 5 volt analog inputs, e.g. the Parker IQAN system. If the lever is connected to a non-Parker system, however, it is important that the system should interpret 0 volts as an error. In the event of a fault in the ICM4 lever, the output signal goes to 0 volts, not to 2.5 volts. When connected to the IQAN system, the lever must be supplied with power externally (5-36 volts) via a 1 A fuse.

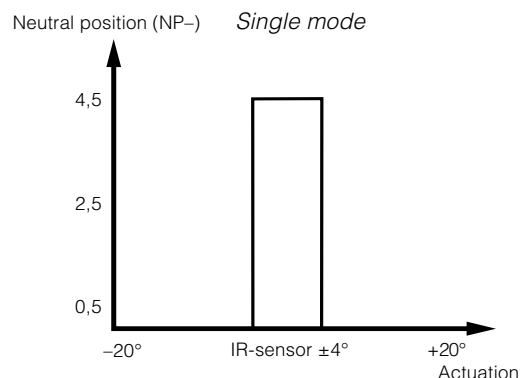
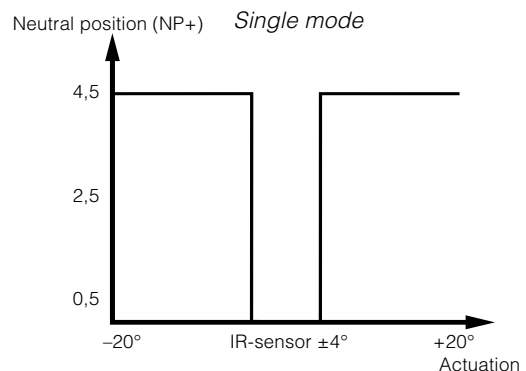
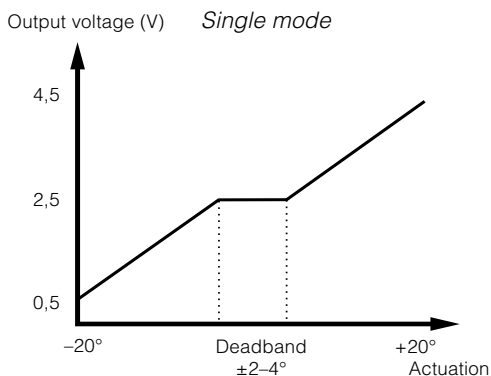
More information about electrical and mechanical installation can be found in the installation instructions for IPS mode, printed matter No. 9129 8300-29, or for single mode, printed matter No. 9129 8323-02.

Construction and function

The ICM4 contains contactless sensors that have a very long service life. The lever centre consists of a cardan system of impact-resistant acetal plastic, with stainless-steel shafts. The lever is centred by two torsion springs. The bellows are of die cast chloroprene. The under part of the lever is shrouded in a protective casing of stainless steel. The lever unit is equipped with an optical neutral-position breaker that breaks the entire control circuit within $\pm 4^\circ$ of the neutral position (X and Y), and within $\pm 3^\circ$ for the toggle switch (Z). This applies to the IPS mode only. For single mode, the deadband around the neutral position can be specified (see ordering key). The internal neutral-position breaker is then bypassed, but its signal (NP+, NP-) can be used to provide an extra safety function (see graph).

The lever is delivered with a 2-metre cable, which is connected by means of a Molex connector in the bottom of the protective casing.

The ICM4 can be supplied with stroke limiters of different types to reduce the control ranges if required (see ordering key).



Characteristics

The lever units are lightweight with small installation dimensions and have low, well-adapted actuating forces. They are available with different types of handle and stroke limiters. This enables machine manufacturers to create ergonomic cab environments with great focus on functional detail. With the levers mounted in the armrests, fingertip operation can be effected while sitting comfortably with good support for the entire body. Armrest mounted levers and fingertip control also reduce the mechanical feedback from a vibrating machine to its control system.

ICM4 levers are tested in accordance with EC Machinery Directive 89/336/EEC and therefore meet the requirements for CE marking.

Technical data

Ambient temperature range for function	-30 °C to +70 °C
Approved test	CE marked
Supply voltage, IPS mode	Via IPS302
Supply voltage, single mode, external (lever equipped with 1 A fuse)	5 to 36 volts
Output voltage, single mode	0.5 – 4.5 volts
Neutral position, single mode	2.5 volts
Current consumption, single mode, 5 V supply	approx. 175 mA
Current consumption, single mode, 12 V supply	approx. 80 mA
Current consumption, single mode, 24 V supply	approx. 50 mA
Load resistor	Min 60 Ohm
Load capacitor	Max 0.1 µF
Start-up time	250 ms
Lever force in neutral position, XY direction	0.09 Nm
Lever force fully actuated, XY direction	0.2 Nm
Actuation force, toggle, Z direction	0.02 Nm
Lever movement, full actuation, X or Y	$\pm 20^\circ$
Lever movement at start signal, XY, IPS mode	$\pm 4^\circ$
Linearity	2%
Resolution	0.5%
Protection rating, above flange, A-handle	IP65
Protection rating, above flange, B-handle	IP44
Protection rating, above flange, C-, D-handle (lever recommended for mounting in cabs)	IP43
Protection rating, below flange	IP20
Round cable, 8 x 0.25 mm ²	2 m
Weight	approx. 0.4 kg

See also installation instructions for IPS mode, printed matter No. 9129 8300-29, or for single mode, 9129 8323-02.

Ordering code

(Example)

ICM4 3 7 - CW / / 2

Code	Number of functions
2	2 double-acting functions for handle types A or B
3	3 double-acting functions for handle types C or D

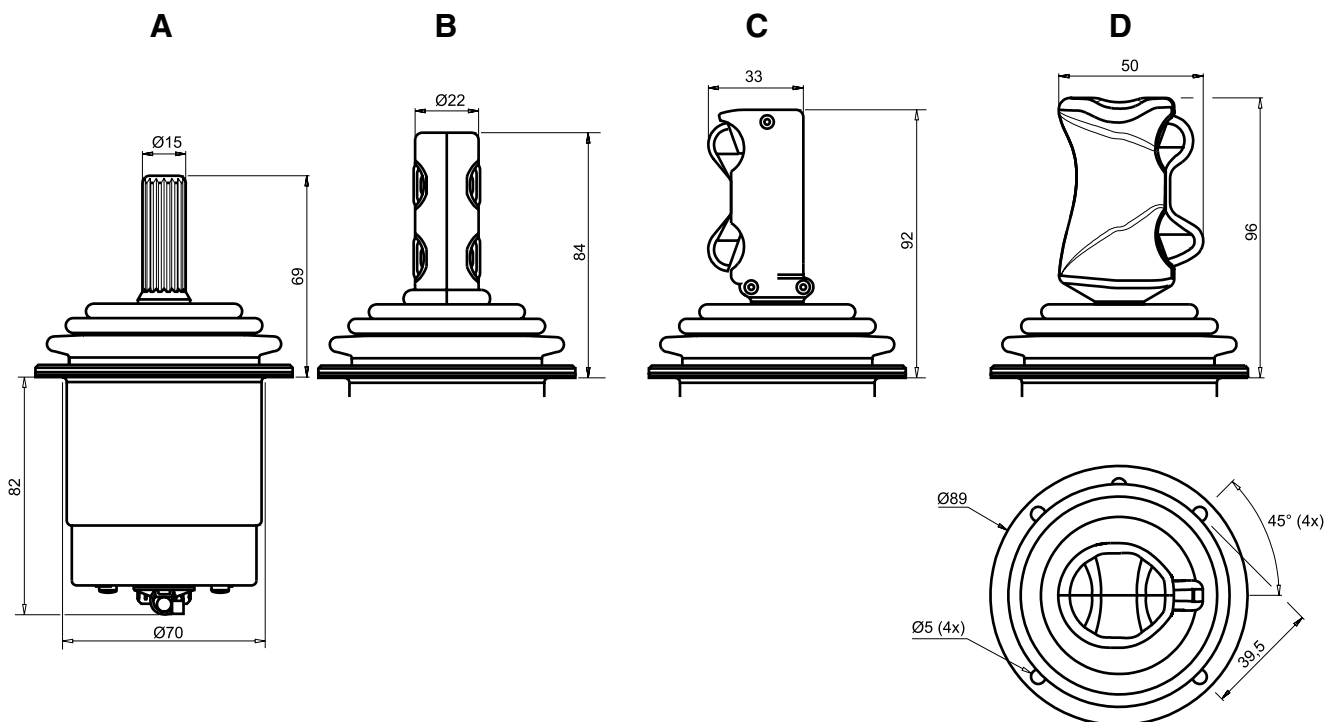
Code	Output signal
5	Analog, IPS mode
7	Analog, single mode 0-5 volts

Code	Handle/orientation
A	Straight handle Ø15 mm.
B	Straight handle Ø22 mm.
C-	Handle with toggle switch for proportional control of third function (Z).
D-	Handle with toggle switch for proportional control of third function (Z).
-E	Handle turned east, C and D.
-W	Handle turned west, C and D.
-N	Handle turned north, C and D.
-S	Handle turned south, C and D.

Code	12 or 24 volt
12	For 12 volt system, IPS mode
24	For 24 volt system, IPS mode
/	Single mode, 0-5 volt output voltage

Code	Deadband
/	IPS mode (Output signal code 5 only)
2, 3, 4	Deadband in ° (Output signal code 7 only) 2° is standard

Code	Stroke arrester, prevents actuation in one or more directions
/	Standard
X	Blocks diagonal actuation
LX	Blocks actuation along Y-axis
LY	Blocks actuation along X-axis
DX-	Blocks X- only
DX+	Blocks X+ only
DY-	Blocks Y- only
DY+	Blocks Y+ only





Subject to alteration without prior notice. The diagrams in the catalog show typical curves only. While the contents of the catalog are updated continuously, the validity of the information given should always be confirmed. Technical information in the catalog is applicable at an oil viscosity of 30 mm²/s and temperature of 50 °C. For more detailed information, please contact Parker.

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