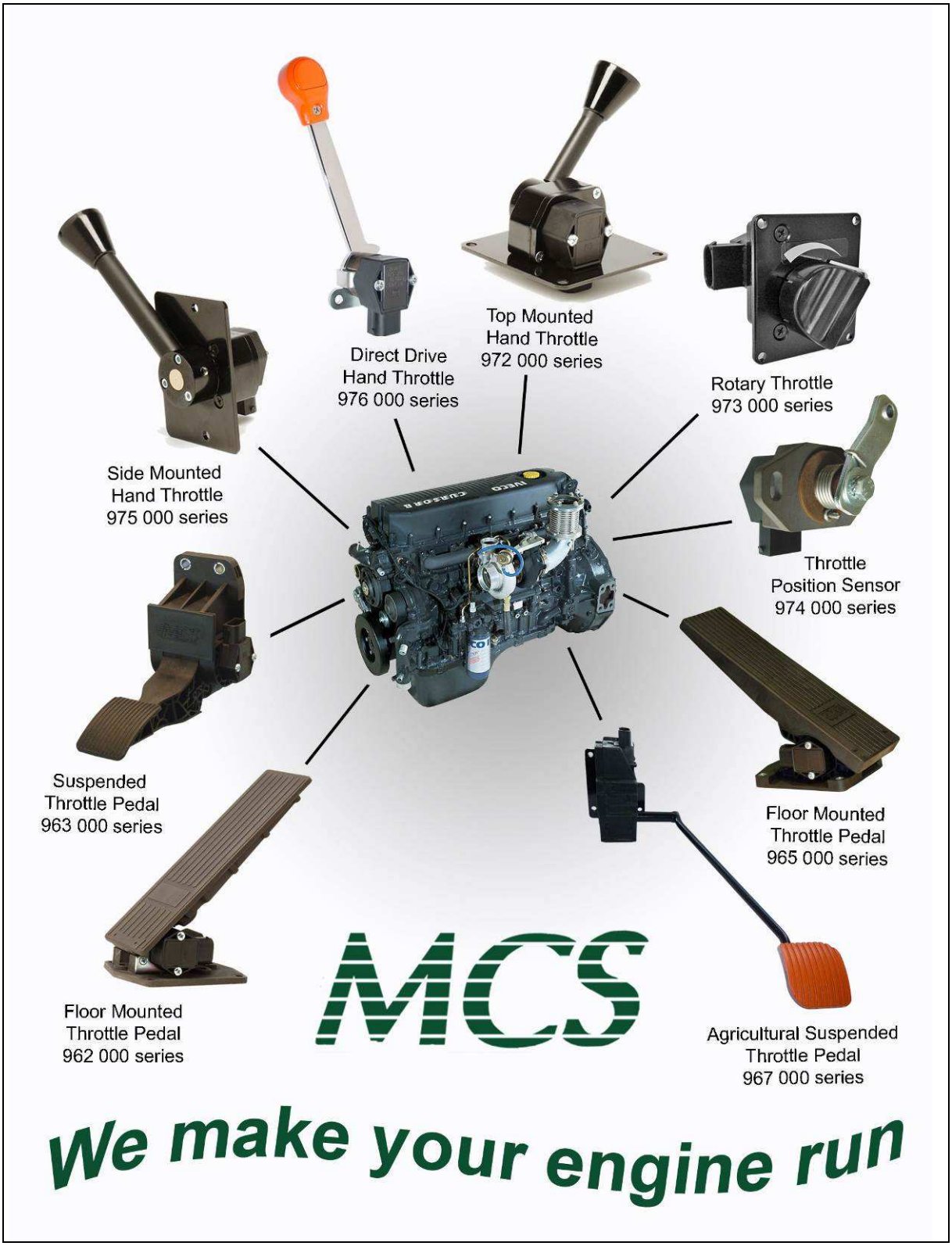
MCS Analogue + IVS
Electronic Throttle Controls for **IVECO** Engines



Technical description :

The MCS® Electronic Analogue Throttle Controls have been developed to match the signal required to operate the **IVECO** Engine Management System. The signal generated by the Throttle Control will allow a smooth and precise engine speed control.

The **Hall Effect Sensor**, fitted on the Throttle Control has two galvanic separated output signals. The sensor **analogue** output **signal is programmable**. So is the **IVS**, which is delivered by the second output channel of the sensor.

For **BOSCH EDC7/EDC16/MS6.4** Engine Management System, both analogue and IVS signals are factory preset according to **IVECO** Engineering Standards.

The MCS® Electronic Analogue Throttle Controls can be connected directly to the **BOSCH EDC7/EDC16/MS6.4**Engine Management System

Optional wire harness according to customer specification (length and connector models) is available upon request.

Please don’t hesitate to contact our factory if you need any assistance about your application.

1.Electronic Heavy Duty Throttle Pedal

- Output signals: 0,4V – 4,0V +/- 0,05V + IVS
- Fitted with Hall Effect Sensor
- Two built-in return springs
- Additional return spring built in the Sensor
- Angle options : 30°, 35° or 45°
- Protection classification : IP 66
- Die cast aluminium treadle and mounting plates
- Kick down virtual feedback and kick down signal available in option
- CE certified / Complies with 72/245/EEC
- Complies with FMVSS 124

Mechanical specification:

Pedal angle in rest position	45°, 35° or 30°
Pedal travel angle	22°
Return springs	2
Storage temperature	– 40°C to + 95°C
Operating temperature	– 40°C to + 85°C
Protection classification (sealing)	IP 66
Connector	AMP – 6 pins – waterproof

Electrical specification:

Analogue Sensor – 1 signal 0,4V - 4,0V + IVS

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V

Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

Throttle Pedal part numbers:

MCS Part number	Pedal angle	MCS drawing number*
962 145 01	45°	501 177
962 135 01	35°	501 231
962 130 14	30°	501 566

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Throttle Pedals with options such as twin sensors, kick down, swivel arm, wire harness or connectors are available upon request.
A **35° Throttle Pedal with kick down** is available from **IVECO** under **IVECO part number # 801 002 227 (MCS part # 962 135 05 KC – MCS drawing # 501 308)**.

2.Electronic Suspended Throttle Pedal

- Output signals: 0,4V – 4,0V +/- 0,05V
- Fitted with Hall Effect Sensor
- Two built-in return springs
- Protection classification : IP 69K
- Material: PA66 GF30
- Magnetic kick down with optional kick down signal available in option
- CE certified / Complies with 72/245/EEC
- Complies with FMVSS 124

Mechanical specification:

Pedal angle in rest position	15°
Pedal travel angle	24°
Return springs	2
Storage temperature	– 40℃ to + 95°C
Operating temperature	– 40℃ to + 85°C
Protection classification (sealing)	IP 69K
Connector	AMP – 6 pins – waterproof

Electrical specification: **Analogue Sensor – 1 signal 0,4V - 4,0V + IVS**

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V
Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

Throttle Pedal part numbers:

MCS Part number	Pedal angle	MCS drawing number*
963 115 08	15°	503 907

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Throttle Pedals with options such as twin sensors, kick down, swivel arm, wire harness or connectors are available upon request.

3.Electronic Floor Mounted Throttle Pedal

- Output signals: 0,4V – 4,0V +/- 0,05V
- Fitted with Hall Effect Sensor
- Two built-in return springs
- Angle options : 30°, 35° or 45°
- Protection classification : IP 69K
- Material: PA66 GF30
- Long or short treadle plate available
- Magnetic kick down with optional kick down signal available in option
- CE certified / Complies with 72/245/EEC
- Complies with FMVSS 124

Mechanical specification:

Pedal angle in rest position	45°, 35° or 30°
Pedal travel angle	22°
Return springs	2
Storage temperature	– 40°C to + 95°C
Operating temperature	– 40°C to + 85°C
Protection classification (sealing)	IP 69K
Connector	AMP – 6 pins – waterproof

Electrical specification: **Analogue Sensor – 1 signal 0,4V - 4,0V + IVS**

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V

Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

Throttle Pedal part numbers:

MCS Part number	Pedal angle	MCS drawing number*
Available upon request	45°	-
Available upon request	35°	-
Available upon request	30°	-

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Throttle Pedals with options such as kick down, swivel arm, wire harness or connectors are available upon request.

4.Electronic Agricultural Throttle Pedal

- Output signals: 0,4V – 4,0V +/- 0,05V
- Fitted with Hall Effect Sensor
- Two built-in return springs
- Travel angle : max 20°
- Protection classification : IP 69K
- Material: PA66 GF30 / Steel
- Mounting plate and pedal arm are customizable
- Pedal pad design and color are customizable
- Pedal full position reached on cabin floor
- CE certified / Complies with 72/245/EEC
- Complies with FMVSS 124

Mechanical specification:

Pedal angle in < rest position>	customizable
Pedal travel angle	Max 20°
Return springs	2
Storage temperature	– 40℃ to + 95°C
Operating temperature	– 40℃ to + 85°C
Protection classification (sealing)	IP 69K
Connector	AMP – 6 pins – waterproof

Electrical specification: **Analogue Sensor – 1 signal 0,4V - 4,0V + IVS**

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V

Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

Throttle Pedal part numbers:

MCS Part number	Pedal angle	MCS drawing number*
Available upon request	-	-

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Throttle Pedals with options such as customized mounting plate, customized pedal arm, customized pedal pad, swivel arm, wire harness or connectors are available upon request.

5.Electronic Hand Throttle

- Output signals: 0,4V – 4,0V +/- 0,05V + IVS
- Fitted with Hall Effect Sensor
- Adjustable actuating force
- Travel angle : 90°
- Protection classification : IP 66
- Allows engine constant RPM at selected rate through lever position
- Easy to use in combination with Throttle Pedal or Throttle Position Sensor
- Very convenient whenever engine is operated from more than one station
- CE certified / Complies with 72/245/EEC

Mechanical specification:

Travel angle – Idle to full throttle -	90°
Actuating force	adjustable
Return spring	none
Storage temperature	– 40℃ to + 95°C
Operating temperature	– 40℃ to + 85°C
Protection classification (sealing)	IP 66
Connector	AMP - 6 pins - waterproof

Electrical specification: **Analogue Sensor – 1 signal 0,4V - 4,0V + IVS**

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V

Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

Hand Throttle part number:

MCS Part number	Travel angle	MCS drawing number*
972 190 04	90°	501 387

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Hand Throttle with options such as wire harness or connectors are available upon request.

6.Electronic Rotary Control

- Output signals: 0,4V – 4,0V +/- 0,05V + IVS
- Fitted with Hall Effect Sensor
- Adjustable actuating force
- Travel angle : 90°
- Protection classification : IP 66
- Allows engine constant RPM at selected rate through knob position
- Easy to use in combination with Throttle Pedal or Throttle Position Sensor
- Very convenient whenever engine is operated from more than one station
- CE certified / Complies with 72/245/EEC

Mechanical specification:

Travel angle – Idle to full throttle -	90°
Actuating force	adjustable
Return spring	none
Storage temperature	– 40℃ to + 95°C
Operating temperature	– 40℃ to + 85°C
Protection classification (sealing)	IP 66
Connector	AMP – 6 pins - waterproof

Electrical specification: **Analogue Sensor – 1 signal 0,4V - 4,0V + IVS**

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V

Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

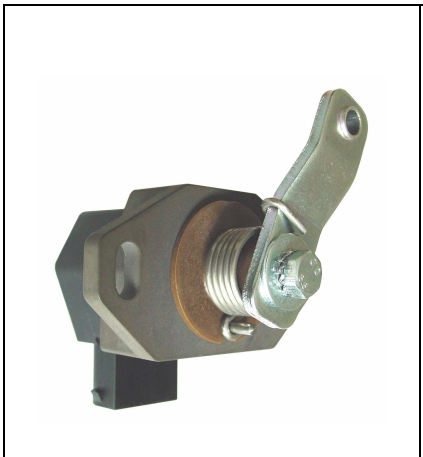
Rotary Control part number:

MCS Part number	Travel angle	MCS drawing number*
973 190 54	90°	503 749

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Rotary Control with options such as wire harness or connectors are available upon request.

7.Electronic Throttle Position Sensor



- Output signals: 0,4V – 4,0V +/- 0,05V + IVS
- Fitted with Hall Effect Sensor
- One return spring: 20N Idle – 25N Full +/-2N
- Travel angle : 42°
- Protection classification : IP69K
- Easy to be fitted on an existing pedal cable or linkage
- Very convenient whenever engine is operated from more than one station
- One additional external return spring required on throttle mechanism in order to be FMVSS 124 compatible
- CE certified / Complies with 72/245/EEC

Mechanical specification:

Travel angle – Idle to full throttle -	42°
Return spring	1
Storage temperature	– 40℃ to + 95°C
Operating temperature	– 40℃ to + 85°C
Protection classification (sealing)	IP69K
Connector	AMP – 6 pins - waterproof

Electrical specification: **Analogue Sensor – 1 signal 0,4V - 4,0V + IVS**

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V

Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

Throttle Position Sensor part number:

MCS Part number	Travel angle	MCS drawing number*
974 145 55	42°	503 615

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Throttle Position Sensor with options such as wire harness or connectors are available upon request.

8.Electronic Side Mounted Hand Throttle

- Output signals: 0,4V – 4,0V +/- 0,05V + IVS
- Fitted with Hall Effect Sensor
- Adjustable actuating force
- Travel angle : 90°
- Protection classification : IP 66
- Allows engine constant RPM at selected rate through lever position
- Easy to use in combination with Throttle Pedal or Throttle Position Sensor
- Very convenient whenever engine is operated from more than one station
- CE certified / Complies with 72/245/EEC

Mechanical specification:

Travel angle – Idle to full throttle -	90°
Actuating force	adjustable
Return spring	none
Storage temperature	– 40℃ to + 95°C
Operating temperature	– 40℃ to + 85°C
Protection classification (sealing)	IP 66
Connector	AMP – 6 pins - waterproof

Electrical specification: **Analogue Sensor – 1 signal 0,4V - 4,0V + IVS**

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V

Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

Side Mounted Hand Throttle part number:

MCS Part number	Travel angle	MCS drawing number*
975 190 05	90°	504 132

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Side Mounted Hand Throttle with options such as wire harness or connectors are available upon request.

9.Electronic Direct Drive Hand Throttle

- Output signals: 0,4V – 4,0V +/- 0,05V + IVS
- Fitted with Hall Effect Sensor
- Travel angle : 45°
- Protection classification : IP 66
- Allows engine constant RPM at selected rate through lever position
- Easy to use in combination with Throttle Pedal or Throttle Position Sensor
- Very convenient whenever engine is operated from more than one station
- CE certified / Complies with 72/245/EEC

Mechanical specification:

Travel angle – Idle to full throttle -	45°
Return spring	none
Storage temperature	– 40℃ to + 95°C
Operating temperature	– 40℃ to + 85°C
Protection classification (sealing)	IP 66
Connector	AMP - 6 pins - waterproof

Electrical specification: **Analogue Sensor – 1 signal 0,4V - 4,0V + IVS**

Analogue channel	Current consumption	< 7,5mA
	Power source (Vs)	5V DC
	Output current	Max 1mA
	Output signal value	Idle position: **0.4V** – Full position: **4.0V** +/- 0.05V

Switch channel	Current consumption	< 10mA
	Power source (Vs)	Between 8V and 36V DC
	Idle validation switch	Idle: **OPEN** – After switch point: **GROUNDED**
	Output current	Max 10mA

Direct Drive Hand Throttle part number:

MCS Part number	Travel angle	MCS drawing number*
976 145 08	45°	504 144

* MCS reserves the right to update drawings at any time without notice.

Technical spec sheets and part numbers of Analogue Direct Drive Hand Throttles with options such as wire harness or connectors are available upon request.

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