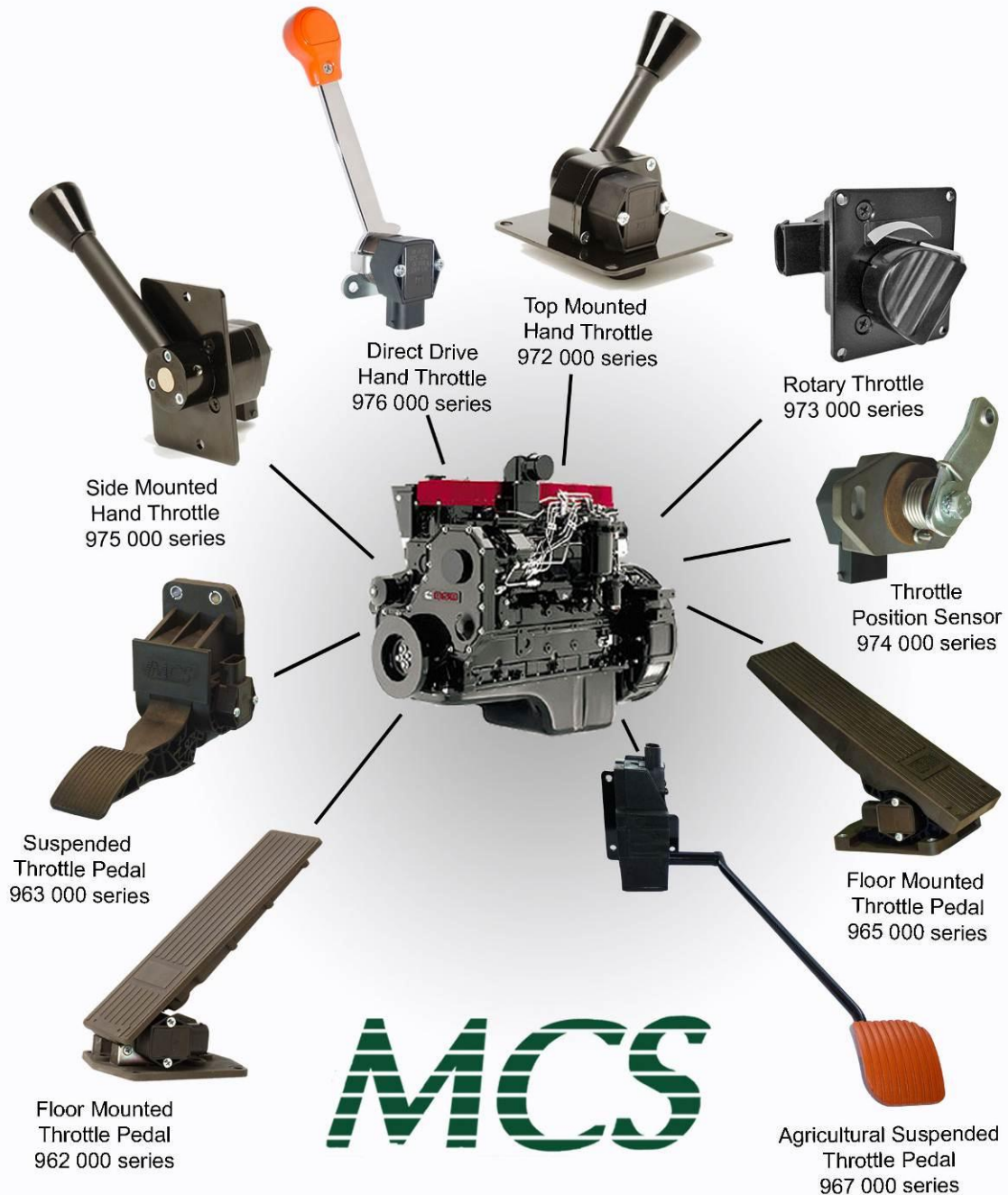


MCS Analogue + IVS Electronic Throttle Controls for **CUMMINS** Engines



We make your engine run

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Technical description:

The **MCS**[®] Electronic Analogue + IVS Throttle Controls have been developed to match the signal required to operate the **CUMMINS Modules CM400, CM500 and CM800 series**, according to **CUMMINS Engineering Standard CES14118**. The signals generated by the Throttle Controls will allow a smooth and precise engine speed control.

Depending upon the application, different **Hall Effect Sensors** can be fitted on the Throttle Controls:

1. Single Analogue: **Hall Effect Sensors** with **programmable analogue** output signal.
2. Analogue + Idle Validation Switch (IVS): **Hall Effect Sensor** fitted with two galvanic separated output signals. Channel 1: **programmable analogue** output signal; Channel 2: **programmable Idle Validation Switch (IVS)**.

For **CUMMINS** Modules, both analogue and IVS signals are factory preset according to **CUMMINS Engineering Standards CES14118**.

The **MCS**[®] Electronic Analogue Throttle Controls can be connected directly to the **CUMMINS** Modules.

The **MCS**[®] Electronic Throttle Controls are also configurable to match the signal required by the **CUMMINS Remote Throttles** applications.

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



- 1 Analogue output signal
- 1 Idle Validation Switch (active or not active)
- 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:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel : **Single analogue sensor and Analogue + IVS sensor**

Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel : **Analogue + IVS sensor only**

Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Throttle Pedal part numbers:

Hall Effect Sensor type	MCS Part number	Pedal angle	MCS drawing number*
Single Analogue	962 145 P109	45°	501810
	962 135 P104	35°	501 772
	962 130 P102	30°	501 774
Analogue + IVS	962 345 01	45°	503 436
	962 335 01	35°	503 435
	962 330 02	30°	503 434

* 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, twin sensors, swivel arm, wire harness or connectors are available upon request.

2. Electronic Suspended Throttle Pedal

	<ul style="list-style-type: none"> ➤ 1 Analogue output signal ➤ 1 Idle Validation Switch (active or not active) ➤ 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
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Mechanical specification:

Pedal angle in rest position	15°
Pedal travel angle	24°
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:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel :	Single analogue sensor and Analogue + IVS sensor
Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel :	Analogue + IVS sensor only
Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Throttle Pedal part numbers:

Hall Effect Sensor type	MCS Part number	Pedal angle	MCS drawing number*
Single Analogue	963 115 P104	15°	504 247
Analogue + IVS	963 315 01	15°	503 581

* 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, twin sensors, swivel arm, wire harness or connectors are available upon request.

3. Electronic Floor Mounted Throttle Pedal

	<ul style="list-style-type: none"> ➤ 1 Analogue output signal ➤ 1 Idle Validation Switch (active or not active) ➤ 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
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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:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel :	Single analogue sensor and Analogue + IVS sensor
Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel :	Analogue + IVS sensor only
Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Throttle Pedal part numbers:

Hall Effect Sensor type	MCS Part number	Pedal angle	MCS drawing number*
Single Analogue	Upon request	45°	-
	Upon request	35°	-
	Upon request	30°	-
Analogue + IVS	965 345 01	45°	503 625
	Upon request	35°	-
	965 330 01	30°	503 832

* 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

	<ul style="list-style-type: none"> ➤ 1 Analogue output signal ➤ 1 Idle Validation Switch (active or not active) ➤ 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
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Mechanical specification:

Pedal angle in < rest position>	customizable
Pedal travel angle	Max 20°
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:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel :	Single analogue sensor and Analogue + IVS sensor
Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel :	Analogue + IVS sensor only
Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Throttle Pedal part numbers:

Hall Effect Sensor type	MCS Part number	Pedal angle	MCS drawing number*
Single Analogue	Upon request	20°	-
Analogue + IVS	Upon request	20°	-

* 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

	<ul style="list-style-type: none"> ➤ 1 Analogue output signal ➤ 1 Idle Validation Switch (active or not active) ➤ 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
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Mechanical specification:

Travel angle – Idle to full throttle -	90°
Actuating force	adjustable
Return spring	none
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:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel :	Single analogue sensor and Analogue + IVS sensor
Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel :	Analogue + IVS sensor only
Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Hand Throttle part numbers:

Hall Effect Sensor type	MCS Part number	Travel angle	MCS drawing number*
Single Analogue	972 190 P112	90°	503 415
Analogue + IVS	972 390 01	90°	501 301

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

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

6. Electronic Rotary Control

	<ul style="list-style-type: none"> ➤ 1 Analogue output signal ➤ 1 Idle Validation Switch (active or not active) ➤ 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
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Mechanical specification:

Travel angle – Idle to full throttle -	90°
Actuating force	adjustable
Return spring	none
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:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel :	Single analogue sensor and Analogue + IVS sensor
Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel :	Analogue + IVS sensor only
Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Rotary Control part numbers:

Hall Effect Sensor type	MCS Part number	Travel angle	MCS drawing number*
Single Analogue	973 190 P158	90°	503 660
Analogue + IVS	973 390 55	90°	503 409

* 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

	<ul style="list-style-type: none"> ➤ 1 Analogue output signal ➤ 1 Idle Validation Switch (active or not active) ➤ 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
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Mechanical specification:

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

Electrical specification:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel :	Single analogue sensor and Analogue + IVS sensor
Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel :	Analogue + IVS sensor only
Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Throttle Position Sensor part numbers:

Hall Effect Sensor type	MCS Part number	Travel angle	MCS drawing number*
Single Analogue	974 145 P153	42°	503 827
Analogue + IVS	974 345 51	42°	503 537

* 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

	<ul style="list-style-type: none"> ➤ 1 Analogue output signal ➤ 1 Idle Validation Switch (active or not active) ➤ 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
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Mechanical specification:

Travel angle – Idle to full throttle -	90°
Actuating force	adjustable
Return spring	none
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:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel :	Single analogue sensor and Analogue + IVS sensor
Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel :	Analogue + IVS sensor only
Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Side Mounted Hand Throttle part numbers:

Hall Effect Sensor type	MCS Part number	Travel angle	MCS drawing number*
Single Analogue	975 190 P 105	90°	503 497
Analogue + IVS	975 390 01	90°	503 133

* 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

	<ul style="list-style-type: none"> ➤ 1 Analogue output signal ➤ 1 Idle Validation Switch (active or not active) ➤ 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
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Mechanical specification:

Travel angle – Idle to full throttle -	45°
Return spring	none
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:

Single Analogue and Analogue + IVS (Idle Validation Switch) Hall Effect Sensors

Analogue channel : **Single analogue sensor and Analogue + IVS sensor**

Current consumption	< 7,5mA
Supply (Vs)	5V DC
Output current	Max 1 mA
Output signal	Analogue signal according to CES14118

Switch channel : **Analogue + IVS sensor only**

Current consumption	< 10 mA
Supply (Vs)	Between 8V and 36V DC
Output signal	IVS signals according to CES14118
Output current	Max 1mA

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Direct Drive Hand Throttle part numbers:

Hall Effect Sensor type	MCS Part number	Travel angle	MCS drawing number*
Single Analogue	Upon request	45°	-
Analogue + IVS	976 345 03	45°	503 413

* 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.