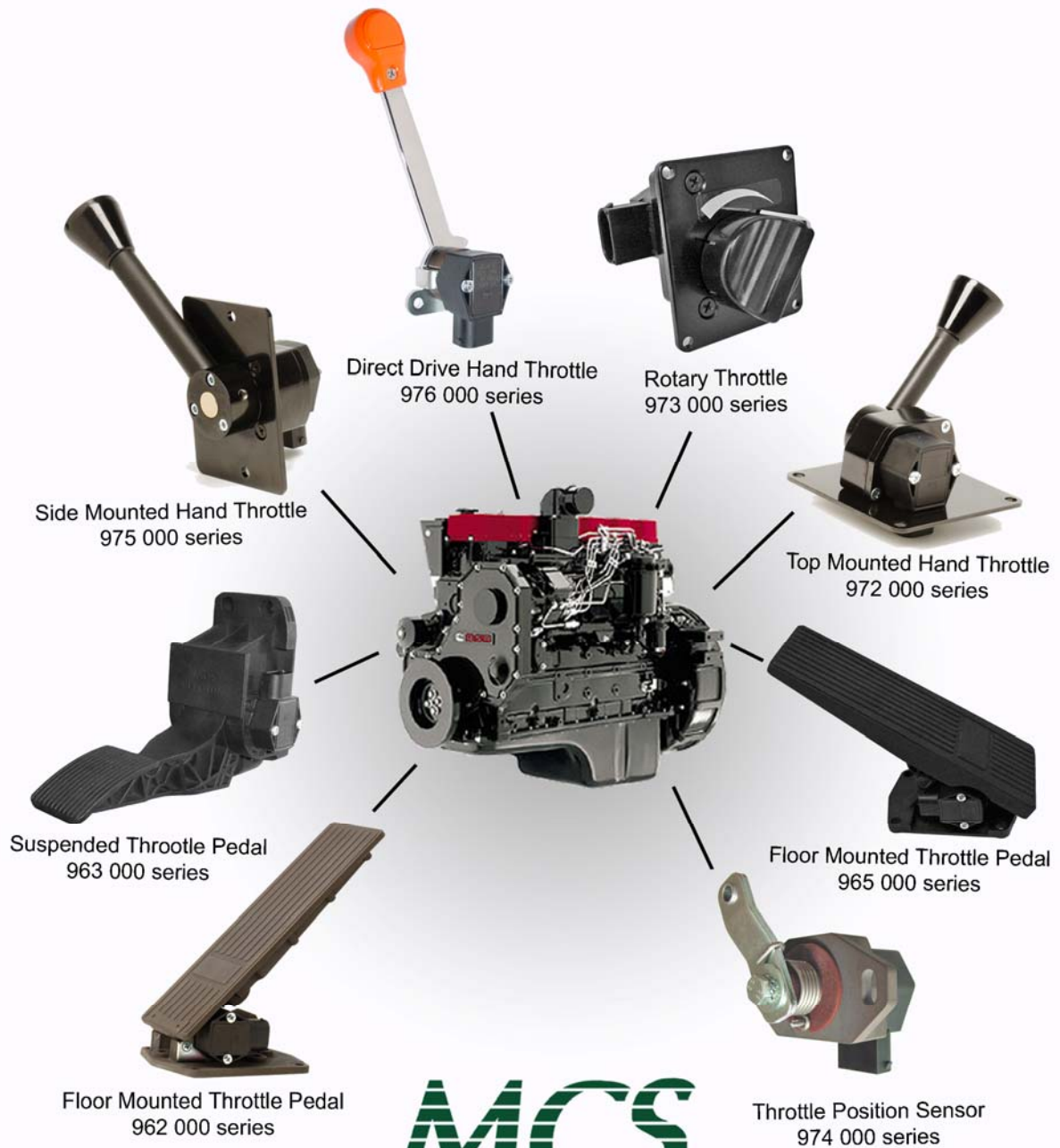


# **MCS** Dual Analogue Electronic Throttle Controls for **CUMMINS** Engines



# **MCS**

***We make your engine run***

	<b>ELECTRONIC THROTTLE CONTROLS</b>	<b>CUMMINS</b> Dual Analogue <b>APPLICATION</b>	Page 2 of 10  V6.0
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## **Technical description:**

The **MCS**<sup>®</sup> Electronic Dual Analogue Throttle Controls have been developed to match the signal required to operate the **CUMMINS Modules CM850 / CM871 / CM876 / CM2150 / CM2180** according to **CUMMINS Engineering Standard CES14616**. The signal generated by the Throttle Controls will allow a smooth and precise engine speed control.

The **Hall Effect Sensor** fitted on the Throttle Control has two galvanic separated **programmable** (from 0.05V to 4.95V) output signals.

The **MCS**<sup>®</sup> Electronic Dual Analogue Throttle Controls can be connected directly to the **CUMMINS Modules CM850 / CM871 / CM876 / CM2150 / CM2180**.

The **MCS**<sup>®</sup> 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. Heavy Duty Electronic Throttle Pedal



- 2 Analogue output signals
- 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 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:

#### Dual Analogue Hall Effect Sensor

Current consumption	< 8mA / channel
Supply (Vs)	5V DC / channel
Analogue Output	Signal proportional to pedal travel angle (+/- 1% Linearity)
Output current	Max 1 mA / channel
Output channel # 1 ( APS1 )	Analogue signal according to <b>CES14616</b>
Output channel # 2 ( APS2 )	Analogue signal according to <b>CES14616</b>

### Throttle Pedal part numbers:


MCS Part number	Pedal angle	MCS drawing number*
962 145 P2 01	45°	501 715
962 135 P2 01	35°	501 714
962 130 P2 01	30°	501 701

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

REMOTE Throttle Floor Mounted Pedal available upon request.

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

## 2. Electronic Suspended Throttle Pedal

	<ul style="list-style-type: none"> <li>➤ 2 Analogue output signals</li> <li>➤ Fitted with Hall Effect Sensor</li> <li>➤ Two built-in return springs</li> <li>➤ Protection classification : IP 69K</li> <li>➤ Material: PA66 GF30</li> <li>➤ Magnetic kick down with optional kick down signal available in option</li> <li>➤ <b>CE</b> certified</li> <li>➤ Complies with FMVSS 124</li> </ul>
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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:

#### Dual Analogue Hall Effect Sensor

Current consumption	< 8mA / channel
Supply (Vs)	5V DC / channel
Analogue Output	Signal proportional to pedal travel angle (+/- 1% Linearity)
Output current	Max 1 mA / channel
Output channel # 1 ( APS1 )	Analogue signal according to <b>CES14616</b>
Output channel # 2 ( APS2 )	Analogue signal according to <b>CES14616</b>

### Throttle Pedal part numbers:


MCS Part number	Pedal angle	MCS drawing number*
Available upon request	15°	-

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

REMOTE Throttle Suspended Pedal available upon request.

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

### 3. Medium Duty Electronic Throttle Pedal

	<ul style="list-style-type: none"> <li>➤ 2 Analogue output signals</li> <li>➤ Fitted with Hall Effect Sensor</li> <li>➤ Two built-in return springs</li> <li>➤ Angle options : 30°, 35° or 45°</li> <li>➤ Protection classification : IP 69K</li> <li>➤ Material: PA66 GF30</li> <li>➤ Long or short treadle plate available</li> <li>➤ Magnetic kick down with optional kick down signal available in option</li> <li>➤ <b>CE</b> certified</li> <li>➤ Complies with FMVSS 124</li> </ul>
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#### Mechanical specification:

Pedal angle in rest position	45°, 35° or 30°
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 66
Connector	AMP – 6 pins – waterproof

#### Electrical specification:

#### Dual Analogue Hall Effect Sensor

Current consumption	< 8mA / channel
Supply (Vs)	5V DC / channel
Analogue Output	Signal proportional to pedal travel angle (+/- 1% Linearity)
Output current	Max 1 mA / channel
Output channel # 1 ( APS1 )	Analogue signal according to <b>CES14616</b>
Output channel # 2 ( APS2 )	Analogue signal according to <b>CES14616</b>

#### 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.

REMOTE Throttle Floor Mounted Pedal available upon request.

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

### 4. Electronic Hand Throttle

	<ul style="list-style-type: none"> <li>➤ 2 Analogue output signals</li> <li>➤ Fitted with Hall Effect Sensor</li> <li>➤ Adjustable actuating force</li> <li>➤ Travel angle : 90°</li> <li>➤ Protection classification : IP 66</li> <li>➤ Allows engine constant RPM at selected rate through lever position</li> <li>➤ Easy to use in combination with Throttle Pedal or Throttle Position Sensor</li> <li>➤ Very convenient whenever engine is operated from more than one station</li> <li>➤ <b>CE</b> certified</li> </ul>
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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:

#### Dual Analogue Hall Effect Sensor

Current consumption	< 8mA / channel
Supply (Vs)	5V DC / channel
Analogue Output	Signal proportional to lever travel angle (+/- 1% Linearity)
Output current	Max 1 mA / channel
Output channel # 1 ( APS1 )	Analogue signal according to <b>CES14616</b>
Output channel # 2 ( APS2 )	Analogue signal according to <b>CES14616</b>


#### Hand Throttle part numbers:

Signal type	MCS Part number	Travel angle	MCS drawing nr*
<b>Throttle Dual Analog signal</b>	972 190 P2 01	90°	501 711
<b>Remote Throttle Single Analog signal</b>	972 190 P1 13	90°	503 444

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

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

## 5. Electronic Rotary Control

	<ul style="list-style-type: none"> <li>➤ 2 Analogue output signals</li> <li>➤ Fitted with Hall Effect Sensor</li> <li>➤ Adjustable actuating force</li> <li>➤ Travel angle : 90°</li> <li>➤ Protection classification : IP 66</li> <li>➤ Allows engine constant RPM at selected rate through knob position</li> <li>➤ Easy to use in combination with Throttle Pedal or Throttle Position Sensor</li> <li>➤ Very convenient whenever engine is operated from more than one station</li> <li>➤ <b>CE</b> certified</li> </ul>
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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:

#### Dual Analogue Hall Effect Sensor

Current consumption	< 8mA / channel
Supply (Vs)	5V DC / channel
Analogue Output	Signal proportional to knob travel angle (+/- 1% Linearity)
Output current	Max 1 mA / channel
Output channel # 1 ( APS1 )	Analogue signal according to <b>CES14616</b>
Output channel # 2 ( APS2 )	Analogue signal according to <b>CES14616</b>


### Rotary Control part numbers:

Signal type	MCS Part number	Travel angle	MCS drawing nr*
<b>Throttle Dual Analog signal</b>	973 190 P2 52	90°	503 441
<b>Remote Throttle Single Analog signal</b>	973 190 P1 56	90°	503 445

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

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

## 6. Throttle Position Sensor

	<ul style="list-style-type: none"> <li>➤ 2 Analogue output signals</li> <li>➤ Fitted with Hall Effect Sensor</li> <li>➤ One return spring: 20N Idle – 25N Full +/-2N</li> <li>➤ Travel angle : 42°</li> <li>➤ Protection classification : IP69K</li> <li>➤ Easy to be fitted on an existing pedal cable or linkage</li> <li>➤ Very convenient whenever engine is operated from more than one station</li> <li>➤ One additional external return spring required on throttle mechanism in order to be FMVSS 124 compatible</li> <li>➤ <b>CE</b> certified</li> </ul>
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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:

#### Dual Analogue Hall Effect Sensor

Current consumption	< 8mA / channel
Supply (Vs)	5V DC / channel
Analogue Output	Signal proportional to lever travel angle (+/- 1% Linearity)
Output current	Max 1 mA / channel
Output channel # 1 ( APS1 )	Analogue signal according to <b>CES14616</b>
Output channel # 2 ( APS2 )	Analogue signal according to <b>CES14616</b>

### Throttle Position Sensor part numbers:

Signal type	MCS Part number	Travel angle	MCS drawing nr*
<b>Throttle Dual Analog signal</b>	974 145 P2 51	42°	503 442
<b>Remote Throttle Single Analog signal</b>	974 145 P1 51	42°	503 447

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

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

## 7. Electronic Side Mounted Hand Throttle



- 2 Analogue output signals
- 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

### 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:

#### Dual Analogue Hall Effect Sensor

Current consumption	< 8mA / channel
Supply (Vs)	5V DC / channel
Analogue Output	Signal proportional to lever travel angle (+/- 1% Linearity)
Output current	Max 1 mA / channel
Output channel # 1 ( APS1 )	Analogue signal according to <b>CES14616</b>
Output channel # 2 ( APS2 )	Analogue signal according to <b>CES14616</b>


### Side Mounted Hand Throttle part numbers:

Signal type	MCS Part number	Travel angle	MCS drawing nr*
<b>Throttle Dual Analog signal</b>	975 190 P2 01	90°	503 149
<b>Remote Throttle Single Analog signal</b>	975 190 P1 01	90°	503 349

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

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

## 8. Direct Drive Hand Throttle

	<ul style="list-style-type: none"> <li>➤ 2 Analogue output signals</li> <li>➤ Fitted with Hall Effect Sensor</li> <li>➤ Travel angle : 45°</li> <li>➤ Protection classification : IP 66</li> <li>➤ Allows engine constant RPM at selected rate through lever position</li> <li>➤ Easy to use in combination with Throttle Pedal or Throttle Position Sensor</li> <li>➤ Very convenient whenever engine is operated from more than one station</li> <li>➤ <b>CE</b> certified</li> </ul>
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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:

#### Dual Analogue Hall Effect Sensor

Current consumption	< 8mA / channel
Supply (Vs)	5V DC / channel
Analogue Output	Signal proportional to lever travel angle (+/- 1% Linearity)
Output current	Max 1 mA / channel
Output channel # 1 ( APS1 )	Analogue signal according to <b>CES14616</b>
Output channel # 2 ( APS2 )	Analogue signal according to <b>CES14616</b>

### Direct Drive Hand Throttle part numbers:

Signal type	MCS Part number	Travel angle	MCS drawing nr*
<b>Throttle Dual Analog signal</b>	976 145 P2 04	45°	503 443
<b>Remote Throttle Single Analog signal</b>	976 145 P1 02	45°	503 446

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

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