

# **MCS** Analogue Electronic Throttle Controls for **DEUTZ** Engines



# **MCS**

***We make your engine run***

	<b>ELECTRONIC THROTTLE CONTROLS</b>	<b>DEUTZ Analogue APPLICATION</b>	Page 2 of 10  V7.0
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## **Technical description:**

The **MCS**<sup>®</sup> Electronic Analogue Throttle Controls have been developed to match the signal required to operate the **DEUTZ EMR2** Engine Management System. 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 output signals. Depending upon setting, the sensor can deliver one single analogue signal or two analogue signals. The second analogue signal is nevertheless not activated for applications on **DEUTZ EMR2** engines.

The output values of the two analogue channels are **programmable** and hence can be adapted to the customer's specification.

For the **DEUTZ EMR2** Engine Management System, the sensor is factory preset with **one single analogue (0,5V-4,5V)** output signal.

The **MCS**<sup>®</sup> Electronic Analogue Throttle Control can be connected directly to the **DEUTZ** engine **ECU**.

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



- Analogue output signal: 0,5V – 4,5V +/- 0,05V
- 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:

#### Analogue Sensor – 1 Channel 0,5V - 4,5V

Current consumption	< 8 mA per channel
Power source (Vs)	5 Volt DC
Output current	Max. 1 mA
Channel # 1 : output value	<b>0,5V (idle) – 4,5V (full throttle) set for DEUTZ EMR2</b>
Channel # 2 : output value	Not activated. Analogue signal, PWM signal, IVS or Kick-Down signal available in option.
Resolution	5 mV


### Throttle Pedal part numbers:

MCS Part number	Pedal angle	MCS drawing number*
962 145 P1 01	45°	501 722
962 135 P1 01	35°	501 723
962 130 P1 01	30°	501 741

\* 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.

## 2. Electronic Suspended Throttle Pedal

	<ul style="list-style-type: none"> <li>➤ Analogue output signal: 0,5V – 4,5V +/- 0,05V</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:

#### Analogue Sensor – 1 Channel 0,5V - 4,5V

Current consumption	< 8 mA per channel
Power source (Vs)	5 Volt DC
Output current	Max. 1 mA
Channel # 1 : output value	<b>0,5V</b> (idle) – <b>4,5V</b> (full throttle) <b>set for DEUTZ EMR2</b>
Channel # 2 : output value	Not activated. Analogue signal, PWM signal, IVS or Kick-Down signal available in option.
Resolution	5 mV


### 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.

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. Medium Duty Electronic Throttle Pedal

	<ul style="list-style-type: none"> <li>➤ Analogue output signal: 0,5V – 4,5V +/- 0,05V</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 69K
Connector	AMP – 6 pins – waterproof

#### Electrical specification:

#### Analogue Sensor – 1 Channel 0,5V - 4,5V

Current consumption	< 8 mA per channel
Power source (Vs)	5 Volt DC
Output current	Max. 1 mA
Channel # 1 : output value	<b>0,5V (idle) – 4,5V (full throttle) set for DEUTZ EMR2</b>
Channel # 2 : output value	Not activated. Analogue signal, PWM signal, IVS or Kick-Down signal available in option.
Resolution	5 mV

#### 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 Hand Throttle



- Analogue output signal: 0,5V – 4,5V +/- 0,05V
- 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:

#### Analogue Sensor – 1 Channel 0,5V - 4,5V

Current consumption	< 8 mA per channel
Power source (Vs)	5 Volt DC
Output current	Max. 1 mA
Channel # 1 : output value	<b>0,5V</b> (idle) – <b>4,5V</b> (full throttle) <b>set for DEUTZ EMR2</b>
Channel # 2 : output value	Not activated. Analogue signal, PWM signal or IVS available in option.
Resolution	5 mV

### Hand Throttle part number:

MCS Part number	Travel angle	MCS drawing number*
972 190 N1 01	90°	501 619

\* 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.

## 5. Electronic Rotary Control



- Analogue output signal: 0,5V – 4,5V +/- 0,05V
- 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

### 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:

#### **Analogue Sensor – 1 Channel 0,5V - 4,5V**

Current consumption	< 8 mA per channel
Power source (Vs)	5 Volt DC
Output current	Max. 1 mA
Channel # 1 : output value	<b>0,5V</b> (idle) – <b>4,5V</b> (full throttle) <b>set for DEUTZ EMR2</b>
Channel # 2 : output value	Not activated. Analogue signal, PWM signal or IVS available in option.
Resolution	5 mV

### Rotary Control part number:

MCS Part number	Travel angle	MCS drawing number*
973 190 N1 51	90°	503 302

\* 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.

## 6. Throttle Position Sensor



- Analogue output signal: 0,5V – 4,5V +/- 0,05V
- 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

### 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:

#### **Analogue Sensor – 1 Channel 0,5V - 4,5V**

Current consumption	< 8 mA per channel
Power source (Vs)	5 Volt DC
Output current	Max. 1 mA
Channel # 1 : output value	<b>0,5V</b> (idle) – <b>4,5V</b> (full throttle) <b>set for DEUTZ EMR2</b>
Channel # 2 : output value	Not activated. Analogue signal, PWM signal or IVS available in option.
Resolution	5 mV

### Throttle Position Sensor part number:

MCS Part number	Travel angle	MCS drawing number*
974 145 N1 51	42°	503 508

\* 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.

## 7. Electronic Side Mounted Hand Throttle



- Analogue output signal: 0,5V – 4,5V +/- 0,05V
- 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:

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

### Electrical specification:

#### **Analogue Sensor – 1 Channel 0,5V - 4,5V**

Current consumption	< 8 mA per channel
Power source (Vs)	5 Volt DC
Output current	Max. 1 mA
Channel # 1 : output value	<b>0,5V</b> (idle) – <b>4,5V</b> (full throttle) <b>set for DEUTZ EMR2</b>
Channel # 2 : output value	Not activated. Analogue signal, PWM signal or IVS available in option.
Resolution	5 mV

### Side Mounted Hand Throttle part number:

<b>MCS Part number</b>	<b>Travel angle</b>	<b>MCS drawing number*</b>
975 190 N1 02	90°	503 127

\* 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.

## 8. Direct Drive Hand Throttle



- Analogue output signal: 0,5V – 4,5V +/- 0,05V
- 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

### 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:

#### **Analogue Sensor – 1 Channel 0,5V - 4,5V**

Current consumption	< 8 mA per channel
Power source (Vs)	5 Volt DC
Output current	Max. 1 mA
Channel # 1 : output value	<b>0,5V (idle) – 4,5V (full throttle) set for DEUTZ EMR2</b>
Channel # 2 : output value	Not activated. Analogue signal, PWM signal or IVS available in option.
Resolution	5 mV

### Direct Drive Hand Throttle part number:

MCS Part number	Travel angle	MCS drawing number*
976 145 N1 03	45°	503 296

\* 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.