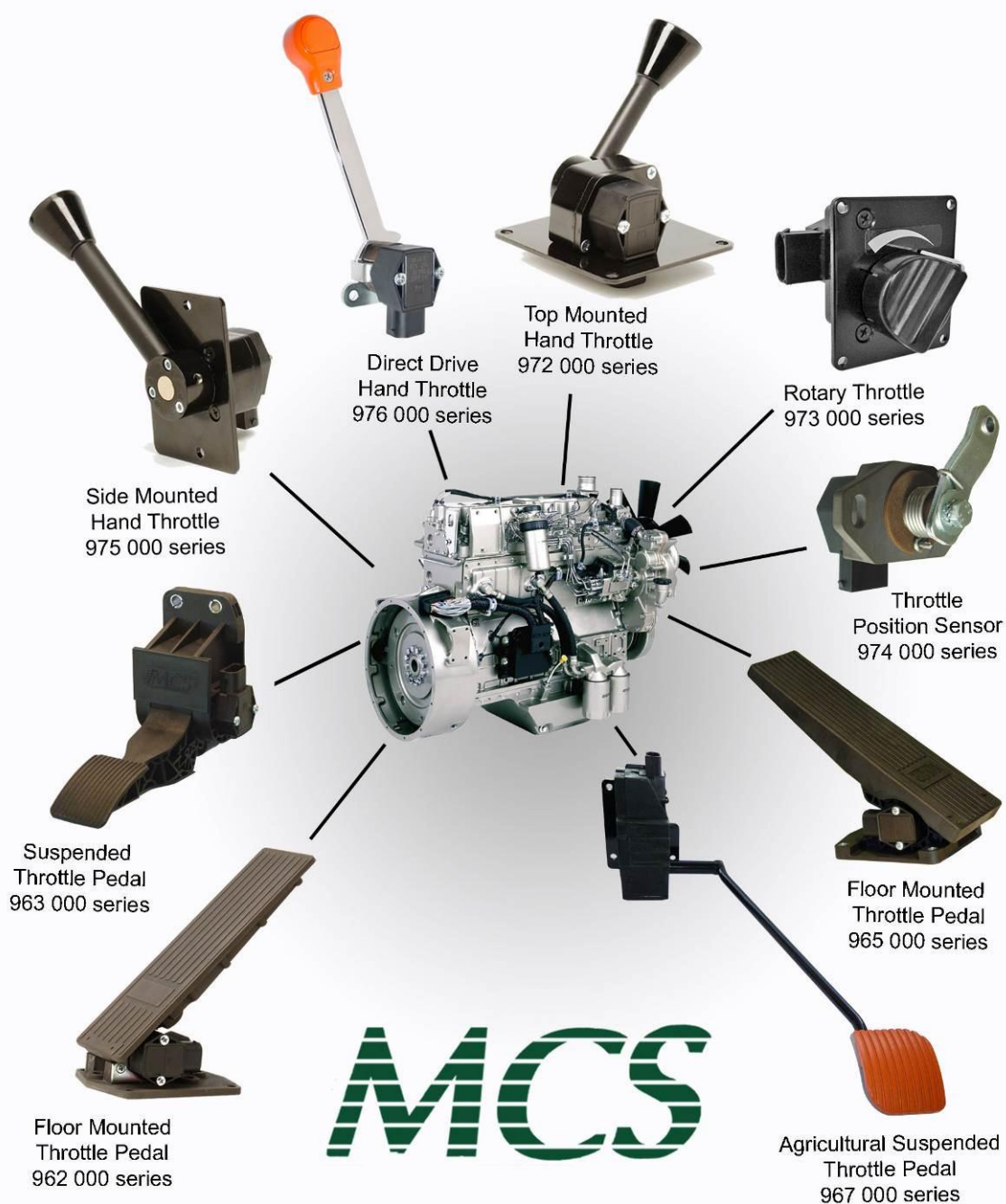



# **MCS Digital (PWM)**

## Electronic Throttle Controls for **PERKINS 1100C, 1100D & 1204E Series**



***We make your engine run***

	<b>ELECTRONIC THROTTLE CONTROLS</b>	<b>PERKINS PWM</b>	Page 2 of 11  V3
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## **Technical description:**

The **MCS**<sup>®</sup> Electronic Digital Throttle Controls have been developed to match the signal required to operate the **PERKINS** Engines 1100C, 1100D and 1200E 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 PWM** signal or **two PWM** signals which could be parallel or redundant.

The frequency of each PWM output signal is **programmable** between 200Hz and 500Hz. Nevertheless the frequency is factory preset. The duty cycle of each PWM output signal is **programmable** between 5% and 95%.


For **PERKINS** Engines 1100C, 1100D and 1200E Management System, the sensor is factory preset with **one single PWM 500Hz** output signal.

The **MCS**<sup>®</sup> Electronic Digital Throttle Controls can be connected directly to the **PERKINS** Engines 1100C, 1100D and 1200E 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

	<ul style="list-style-type: none"> <li>➤ Digital output signal: PWM 500Hz</li> <li>➤ Fitted with Hall Effect Sensor</li> <li>➤ Two built-in return springs</li> <li>➤ Additional return spring built in the Sensor</li> <li>➤ Angle options : 30°, 35° or 45°</li> <li>➤ Protection classification : IP 66</li> <li>➤ Die cast aluminium treadle and mounting plates</li> <li>➤ Kick down virtual feedback and kick down signal available in option</li> <li>➤ <b>CE</b> certified / Complies with 72/245/EEC</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	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:**

#### **PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °


### **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 Digital Throttle Pedals with options such as twin sensors, kick down, swivel arm, twin PWM output, wire harness or connectors are available upon request.

## **2.Electronic Suspended Throttle Pedal**

	<ul style="list-style-type: none"> <li>➤ Digital output signal: PWM 500Hz</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 / Complies with 72/245/EEC</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:**

#### **PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °


### **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 Digital Throttle Pedals with options such as twin sensors, kick down, swivel arm, twin PWM output, wire harness or connectors are available upon request.

### **3.Electronic Floor Mounted Throttle Pedal**

	<ul style="list-style-type: none"> <li>➤ Digital output signal: PWM 500Hz</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 / Complies with 72/245/EEC</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	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:**

#### **PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °


#### **Throttle Pedal part numbers:**

MCS Part number	Pedal angle	MCS drawing number*
Available upon request	45°	-
965 235 L101	35°	503 898
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 wide mounting base, short treadle plate, kick down, swivel arm, wire harness or connectors are available upon request.

## 4. Electronic Agricultural Throttle Pedal

	<ul style="list-style-type: none"> <li>➤ Digital output signal: PWM 500Hz</li> <li>➤ Fitted with Hall Effect Sensor</li> <li>➤ Two built-in return springs</li> <li>➤ Travel angle : max 20°</li> <li>➤ Protection classification : IP 69K</li> <li>➤ Material: PA66 GF30 / Steel</li> <li>➤ Mounting plate and pedal arm are customizable</li> <li>➤ Pedal pad design and color are customizable</li> <li>➤ Pedal full position reached on cabin floor</li> <li>➤ <b>CE</b> certified / Complies with 72/245/EEC</li> <li>➤ Complies with FMVSS 124</li> </ul>
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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:**

#### **PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °

### **Throttle Pedal part numbers:**


MCS Part number	Pedal angle	MCS drawing number*
967 217 L101	17°	504 294

\* 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"> <li>➤ Digital output signal: PWM 500Hz</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 / Complies with 72/245/EEC</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:**

#### **PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °


### **Hand Throttle part number:**

MCS Part number	Travel angle	MCS drawing number*
Available upon request	90°	-

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

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

## **6. Electronic Rotary Control**

	<ul style="list-style-type: none"> <li>➤ Digital output signal: PWM 500Hz</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 / Complies with 72/245/EEC</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:**

#### **PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °

### **Rotary Control part number:**


MCS Part number	Travel angle	MCS drawing number*
973 290 L151	90°	504 293

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

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



## 7. Electronic Throttle Position Sensor

	<ul style="list-style-type: none"> <li>➤ Digital output signal: PWM 500Hz</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 / Complies with 72/245/EEC</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:**

#### **PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °


### **Throttle Position Sensor part number:**

MCS Part number	Travel angle	MCS drawing number*
974 145 L152	42°	504 511

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

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

## **8. Electronic Side Mounted Hand Throttle**

	<ul style="list-style-type: none"> <li>➤ Digital output signal: PWM 500Hz</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 / Complies with 72/245/EEC</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:**

**PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °


### **Side Mounted Hand Throttle part number:**

MCS Part number	Travel angle	MCS drawing number*
975 290 L101	90°	504 163

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

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

## **9. Electronic Direct Drive Hand Throttle**

	<ul style="list-style-type: none"> <li>➤ Digital output signal: PWM 500Hz</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 / Complies with 72/245/EEC</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:**

**PWM - 500Hz Sensor – 1 channel**

Current consumption	< 11 mA / channel
Power source (Vs)	5V DC
Output current	Max. 8mA
Output channel # 1:	Idle: <b>15%</b> +/-1% – Full Throttle: <b>85%</b> +/-1%
Output channel # 2	not activated
Frequency	<b>500Hz</b> +/-20% - set for <b>PERKINS</b> Engine Mgt. System
Relative Linearity	+/- 1%
Resolution	0.5 °

### **Direct Drive Hand Throttle part number:**

MCS Part number	Travel angle	MCS drawing number*
Available upon request	45°	-

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

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

**MOBILE CONTROL SYSTEMS S.A.**

Rue du Lusambo, 34A

B-1190 Brussels

BELGIUM

Tel. : +32-2-345.18.10

Fax : +32-2-343.94.23

Email : [info@mcs-belgium.com](mailto:info@mcs-belgium.com)

Web : [www.mcs-belgium.com](http://www.mcs-belgium.com)