Part No.236-13860-2

Electronic
Control and Monitoring Device
for LINCOLN Progressive Centralized Lubrication Systems

Pump with Intermittent
Low-Level Control

LINCOLN GmbH ∗ Postfach 1263 ∗ D-69183 Walldorf ∗ Tx 466088 ∗ Fax 06227/33259 ∗ Tel 06227/330

- **Electronic Control and Monitoring Device for LINCOLN Progressive Centralized Lubrication Systems**

- **General**

– The device is designed for the automatic control and monitoring of progressive centralized lubrication systems.

– The lubrication pause (*pause time*) can be adjusted as a time-dependent or pulse-dependent factor.

– The running time (*operating time*) of the central lubrication pump can be adjusted as a time-dependent or pulse-dependent factor.
In the case of time-dependent operating time, the operating time is adjusted on the control device.
In the case of system-dependent operating time, the operating time is determined by an initiator which is fitted to a lubricant metering device for monitoring the movement of a metering device piston.
In such a case, the operating time is defined as follows:
1 operating cycle of the initiator on the SSV metering device = operating time (pump running time).

– The monitoring also takes place via the initiator fitted to the progressive metering device. If no signal is given by the initiator after expiration of a time (*monitoring time*) adjusted on the control device, the central lubrication pump is switched off automatically at the end of the monitoring time and there follows a fault signal.

– Elapsed pause times or pulses keep stored even in the case of a power failure (time or pulse accumulation).

– The storage of all data is made without battery (maintenance-free). The storage time is not limited.

– All inputs and outputs are monitored by LED, which facilitates troubleshooting.

– A sealable cover on the adjusting elements (front plate) prevents from inadvertent use.

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- **Functions**

– Pause time adjustable from : 1 minute to 160 hours
1 pulse to 16 000 pulses

– Changing-over from time-dependent to system-dependent operating time.

– Operating time adjustable from: 1 minute to 160 minutes

– Monitoring time adjustable from: 1 minute to 160 minutes
Monitoring of the progressive metering device only in the case of system-dependent adjustment of the operating time.

– Pushbutton for additional lubrication and fault reset on the device and externally.

– Pressure monitoring of the supply pump.

– Monitoring of the lubricant minimum level in the reservoir (low-level control)

- **Description of Operation**

– After the supply voltage has been applied, the green LED ***POWER*** lights up.

– After the control voltage (VCC) has been applied to input E1 ***RUN,*** the adjusted pause time runs or the pre-set number of pulses is executed, with the yellow LED „RUN“ lighting up. The operating times or pulses of machines or groups of machines are added by the PSG-02 until the pre-set pause time or number of pulses is reached. Then the operating time (pump operating time) elapses.
The activation from the machine control must be made via a potential free contact at input E1 ***RUN*** .

– The monitoring relay (connection 35, 36, 38) picks up, the green LED ***READY*** lights up. Contact 35, 38 is closed (signal ready for operation).

– After expiration of the pause time or execution of the pre-set number of pulses, the pump control relay (connection 15-16,27-28) picks up, the green LED ***PUMP*** lights up, the central lubrication pump is put into operation, the operating time starts.

– In the case of time-dependent adjustment, the operating time ***TIME*** pre-set on the control device now expires.

– In the case of system-dependent adjustment of the operating time ***MONITORING***, the operating time pre-set on the control device now expires.

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- **Note:**
  The monitoring should be adjusted in such a way that it is somewhat longer than the real pump running time until the pump is switched off via the monitored metering device (STOP TIME).

– After expiration of the operating time pre-set on the control device or after the signal of the initiator on the progressive metering device the pump control relay drops out, the green LED ***PUMP*** is extinguished, the central lubrication pump is switched off.

– The monitoring time is set back.

– If, in the case of a system-dependent adjustment of the operating time, no check-back signal is given from the initiator of the progressive metering device within the monitoring time pre-set on the control device, the pump control relay is switched off automatically after expiration of the monitoring time.

– The monitoring relay (connection 35, 36, 38) picks up, the green LED ***READY*** is extinguished.
Contact (connection 35, 36) is closed (fault signal).

– A present fault signal remains stored even in the case of power failure.

– If the level control (low-level control, yellow LED ***LEVEL*** is flashing) of the grease reservoir is activated during the pump operating time, the monitoring relay picks up after 6 pulses, the green LED ***READY*** is extinguished. The operating time continues to run normally. When the operating time is finished, the central lubrication pump does no longer start automatically. It can be switched on again via the pushbutton for additional lubrication/fault reset ***RESET*** during the pause time.

– If the central lubrication pump is equipped with an overpressure switch, this must be connected to input E2 *>**PRESS*** as a NC contact. If an overpressure occurs during the operating time, the yellow LED *>**PRESS*** is extinguished, the pump control relay picks up (connection 15 -16), the central lubrication pump is switched off. When the pressure drops, the control relay is then switched on again after 5 seconds. The pressure switch has no influence on the monitoring relay.

– Input E5 ***ENABLE*** can be used, in connection with a primary control, for releasing a lubrication cycle. One impulse is sufficient for the release of this lubrication cycle. In the case of normal operation the input must be linked with the supply voltage (VCC). The yellow LED ***ENABLE*** lights up.

– Via an external switch fitted to E4 ***RESET*** the system can be switched to operate in continuous lubrication mode (continuous voltage on E4). A short signal releases a lubrication cycle and cancels any present fault signal. The LED ***RESET*** lights if the system operates in the continuous lubrication mode.

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- **Inputs**

– E1 ***"RUN"*** Input for releasing time or pulse accumulation.
Yellow LED „RUN“ lights during the operating time or pulse.

– E2 ***">PRESS"*** Input for the pressure switch fitted to the pump. In the case of pumps without pressure switch the input must be linked with VCC. If the LED „>PRESS“ is lighting, the pressure lies in the right range. LED „>PRESS“ OFF: Pressure exceeding maximum - Pump is switched off automatically.

– E3 ***"MONITORING"*** Input for initiator on progressive metering device.
LED „ON“-“OFF“ - the monitored metering device is in operation.

– E4 ***"RESET"*** Input for fault reset and additional lubrication/continuous lubrication.
LED is lighting permanently = continuous lubrication

– E5 ***"ENABLE"*** Input for releasing a lubrication cycle via a primary control. If there is no primary control, this input must be linked with VCC. If the LED „ENABLE“ does not light, no lubrication cycle can be released.

– E6 ***"LEVEL"*** Input for grease reservoir with intermittent low-level control

- **Note:**
The inputs „PRESS“ , „ENABLE“ must either be used for their designed function or they must be linked with the internal supply voltage VCC .
This results from the broken-wire interlock of these inputs.

- **Outputs**

– A1 ***"PUMP"*** (connection 15-16) Output for primary control (e.g. interlock)

– A1 ***"PUMP"*** (connection 27-28) Output for the activation of the supply pump. This output should only be used for the activation of an auxiliary contact (refer to technical data).

– A2 ***"READY"*** (connection 35,36,38) Output for the activation of an alarm device/signal ready for operation . LED „**ON**“ ready for operation, LED „**OFF**“ fault.

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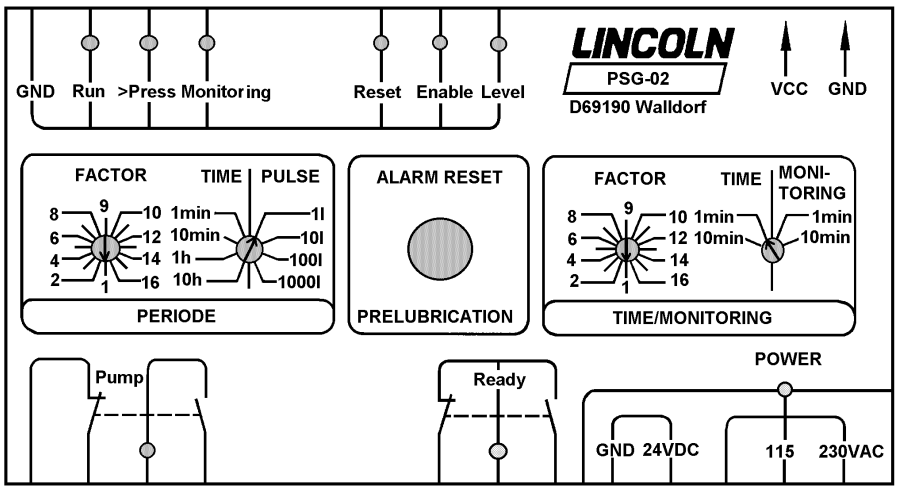
- **Adjustments**

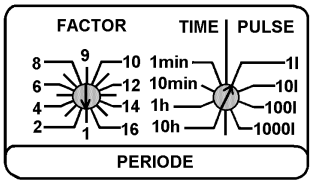
  The functions and times are adjusted on the front plate on the respective rotary switches by means of a small screw driver.

- **Note:**
  When adjusting the rotary switches it may occur that they snap into positions which have no marking. In such a case the control device will not be able to be put into operation.

- **Front plate**

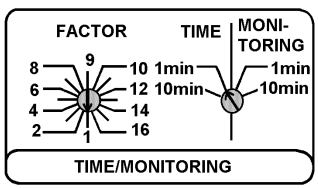


- **Adjustment of the time-/system-dependent lubrication pause**



„TIME“ Time-dependent lubrication pause
„PULSE“ Pulse-dependent lubrication pause
Example of adjustment :
TIME = 10 min
FACTOR = 3
Lubrication pause = 30 minutes

- **Adjustment of the time-/system-dependent lubrication time**



„TIME“ Time-dependent lubrication time
without monitoring of the metering device
„MONITORING“ System-dependent lubrication time
with monitoring of the metering device
Example of adjustment:
TIME = 1min
FACTOR = 5
Lubrication time = 5 minutes

Technical Data

Supply voltage	24 V DC (20....30V) 115 V AC ± 10% or 230 V AC ± 10%
Current consumption	approx. 200mA
Connection	Screw terminal with clamping range 0.5 ...4 mm^2
Degree of protection	Terminals IP 20 Device IP 40
Humidity	≤ 90%, not condensating
Ambient temperature	Operation : 0°C...+ 55°C; storage : -25°C...+75°C
Dimensions	100 (W) X 75 (H) X 110 (D)

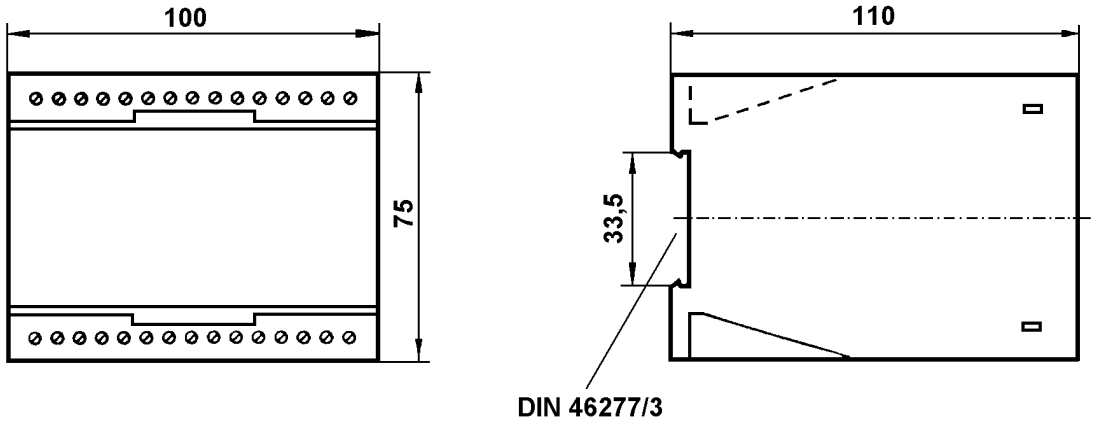
Input section	
Number of inputs	6;E1...E6
Nominal data	Input voltage 24 V DC, Input current typ. 10 mA
Operating level	Input signal "1" = High;+18...+30 V DC Input signal "0" = Low;...+5,5 V DC; (Input current <2,5 mA)
Input frequency	max. 25 Hz; pulse duration min. 100 ms
Signal display	E1...E7 : LED (yellow) light at input signal "1"
Connection	Screw terminals with clamping range 0,5...4 mm^2

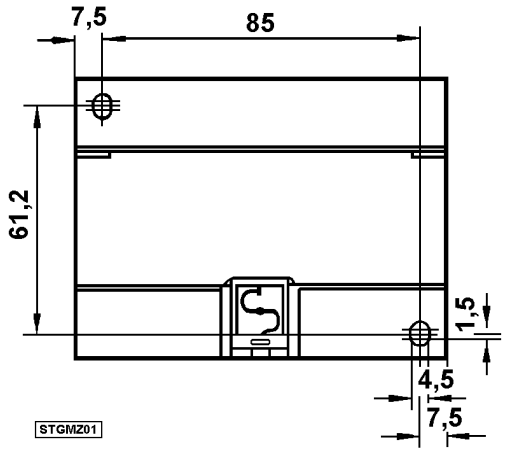
Input power supply (sensor technology)	
Output voltage	24 V DC nominal , (20...30 V DC)
Output current	max. 100mA
Connection	Screw terminals with clamping range 0,5...4 mm^2

Output section	
Number of outputs	2;A1...A2
Type of output	Relays; Output A1 : 1 change-over contact (1 NO, 1 NC, isolated) Output A2 : 1 change-over contact
Nominal data	Switching voltage : 12...45 V DC; 12...250 V AC Switched current : max. 2 A DC; max. 2A AC; min. 100 mA Operating cycles : 100 000
Suppresser circuit	Metal-oxide varistor 0.4 W; residual current at 250 V AC : < 3 mA
Signal display	LED (green) light at output signal "1"
Connection	Screw terminals with clamping range 0,5...4 mm^2

Technical Data

- **Dimension drawing**





- **To notice before installing the device**

ATTENTION ! When installing the device take care - for thermal reasons (max. ambient temperature + 55°C) - that a space of min. 1 cm is kept between the side walls of the device and the other devices installed next to it.

- **Warning**

WARNING Hazardous voltage with 115 V AC or 230 V AC !!!
May lead to death, injury or material damage !!!
When the parts are under supply voltage, they are in operation !!!
Always cut the supply voltage before you install or disassemble any part or make any modification on the device !!!

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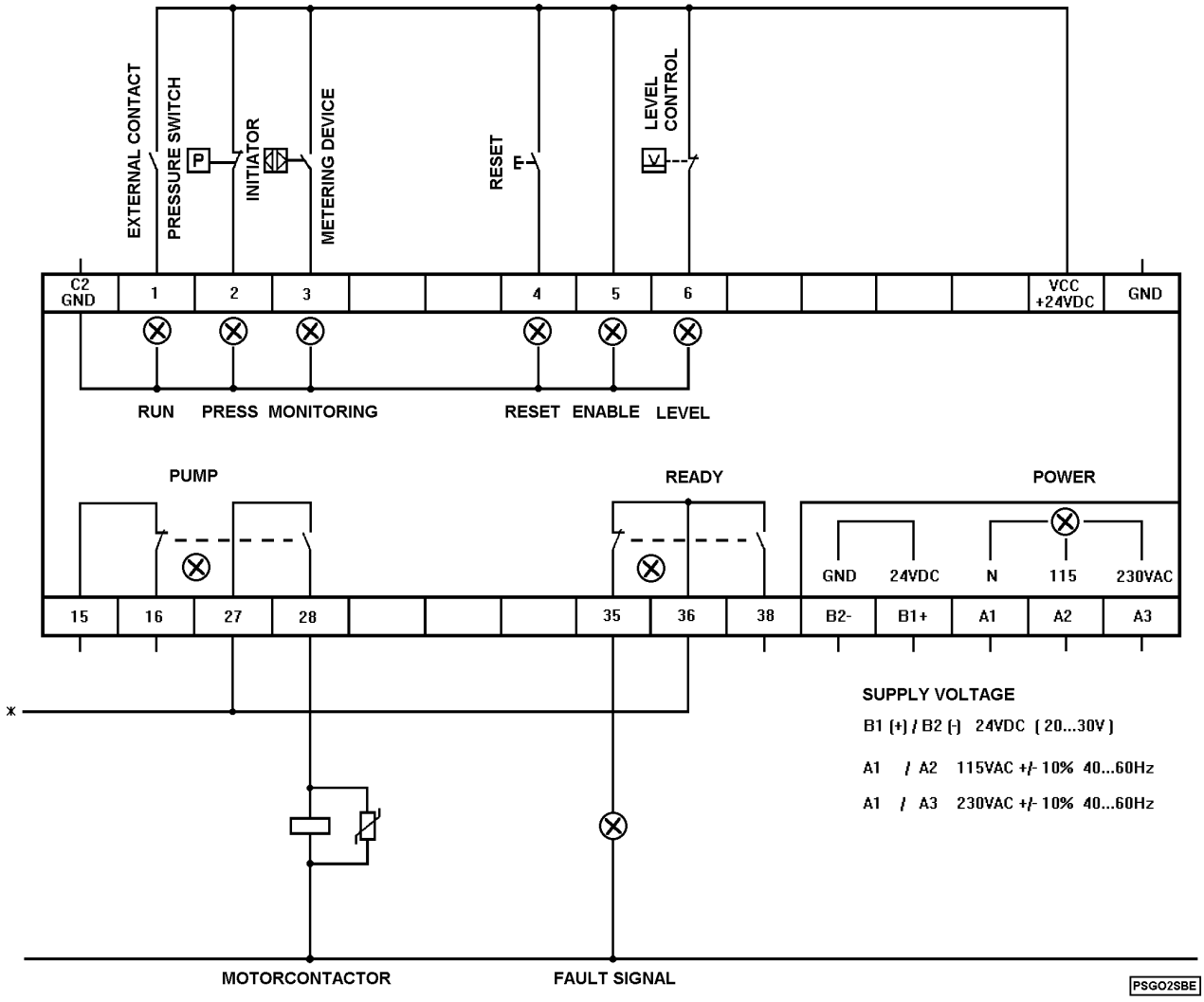
- **Connection Diagram**



∗ **Note :**

If the voltage < 230 Volt, the auxiliary contacts, contacts and relays which are connected externally to the control device must be equipped with a suppresser circuit (varistor, diode).