

Electronic Control  
Equipment

**MINIGRAL+**  
**MINIGAM+**

**B BERNARD**

# General presentation

The **MINIGAM / MINIGRAL** electronic boards have been designed to control low power single phase **BERNARD** actuators.

This new board has the possibility to control actuators with torque switches, both for **On/Off** and **Class III** modulating application, without a local control.

This board is available in 2 versions : a simple On/Off commands version, named **MINIGRAL+**, and an analog command version, named **MINIGAM+**.

Those boards are designed to equip single phase actuators (115/230 V - 50Hz/60Hz), with small motors (power less than 300 W) and are located inside the main housing of the actuator, **without any additional box**.

Standard features are :

- Stop on travel limit switches,
- Stop on torque limit switches (memorizes actions of the torque) when applicable,
- Selection to close Clockwise or Counter clockwise.

It offers the advantage of a compact product with simplified wiring : **4 wires are sufficient** for basic operating.

The actuator status are shown by **LEDS** on the electronic board : Green LED for Open command, Red LED for Close command and Yellow LED when a torque switch is tripped.

2

## Options

### ● Fault monitoring relay

A fault monitoring relay detects all malfunctions or unavailability and communicates this information remotely. The relay is normally energized and reset in case of fault.

The detected faults are:

- Power supply failure
- Blown fuse
- Thermal motor protection tripped
- Torque limit switch tripped

Contact rating specification

*8 A 250 Vac; 8 A 125 Vac; 8 A 30 Vdc*

### ● Supply for a heater

- Remote position signal, with a potentiometer, for **MINIGRAL+** (always included with **MINIGAM+**)

## Technical specifications

- Complete solid state power control integrated in the electronic board.
- Terminals with cage clamp of 2,5 mm<sup>2</sup> cross section.
- Temperature acceptance -20°C to +70°C.
- Control board fuse protected
- Thermal motor protection

# MINIGRAL+

The **MINIGRAL+** is designed for the ON/OFF command of actuators. It can be installed inside both On/Off and Class III modulating actuators.

It allows you to command and supply power with only 4 wires :

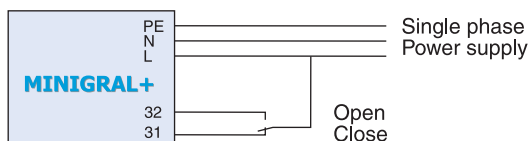
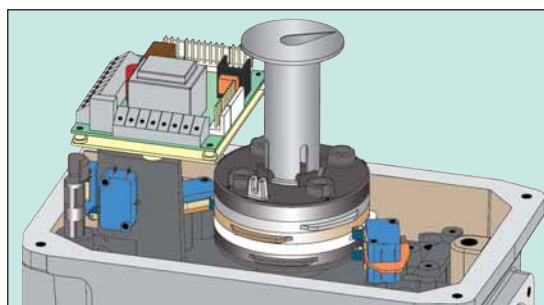
- 2 for single phase power
- 1 for open command
- 1 for close command

The On-Off commands are fully isolated with optocoupler. They are not self-holding, so the actuator continues to function as long as the signal is maintained and it stops when released.

## MINIGRAL+ specifications

- On/Off or Class III applications
- Current command
 

230 V AC	12 mA
115 V AC	6 mA



- Standard wiring diagram :
  - S59700/00** : actuator with torque limit device
  - S59750/00** : actuator without torque limit device

# MINIGAM+

The **MINIGAM+** is designed for the analog command of actuators. It can be installed inside Class III modulating actuators.

In combination with a potentiometer, **MINIGAM+** allows an accurate positioning (<2%), with a settable dead band. The input signal can be :

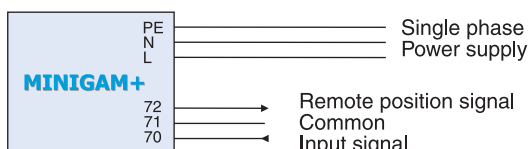
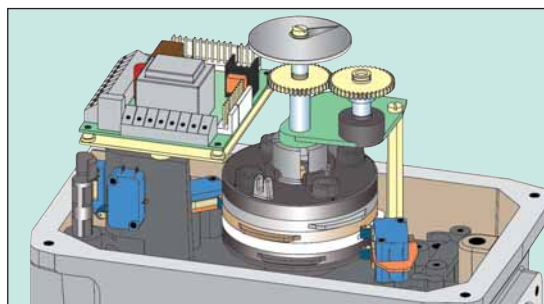
- 4-20 mA      standard configuration
- 0-20 mA      configuration by switch
- 0-10 V        configuration by switch

**MINIGAM+** offers a position signal that is in accordance with the input signal. Both signals are connected to a common potential.

## MINIGAM+ specifications

- Class III applications
- Position sensor by precision potentiometer
- Positioning precision better than 2%
- Input impedance
 

4-20 mA	260 Ω
0-20 mA	260 Ω
0-10 V	10 KΩ



- Position signal load
 

4-20 mA	300 Ohm max.
0-20 mA	300 Ohm max.
0-10 V	5 kOhm min.
- Standard wiring diagram :
  - S56700/00** : actuator with torque limit device
  - S56750/00** : actuator without torque limit device

**Direct Quarter-Turn**   **IP 67**

Max Torque Nm	Permanent Torque Nm	Type	Operating time 90°/sec
60	60	OA6	6
100	60	OA8	6
100	60	OAP	35 / 60
150	80	OA15	15 / 25
200	140	AS18	5
250	140	ASP	30 / 60
300	140	AS25	10
600	400	AS50	30 / 60
800	400	AS80	30 / 60
1000	700	AS100	30 / 45 / 80
1000	750	BS100	30
1200	750	BS100	60
1500	750	BS150	60
2500	1700	AS200	70 / 105 / 185
4000	3000	AS400	125 / 185

**Direct Quarter-Turn**   **IP 67**

Max Torque Nm	Permanent Torque Nm	Type	Operating time 90°/sec
60	60	OA6	5
100	60	OA8	5
100	60	OAP	30 / 50
150	80	OA15	13 / 21
250	140	ASP	15
250	140	ASP	25 / 50
600	400	AS50	25
1000	700	AS100	63
1200	750	BS100	50
2500	1700	AS200	150

**Direct Quarter-Turn**   **IP 67**

Max Torque Nm	Permanent Torque Nm	Type	Operating time 90°/sec
80	60	OAP	35 / 60
150	80	OA15	25
250	140	ASP	30 / 60
500	250	AS50	30 / 60
800	500	AS100	30
1000	600	AS100	45 / 80
1000	600	BS100	30 / 60
2000	1200	AS200	70
2500	1700	AS200	105 / 185
3000	2000	AS400	125

**Direct Quarter-Turn**   **IP 67**

Max Torque Nm	Permanent Torque Nm	Type	Operating time 90°/sec
80	60	OAP	30 / 50
150	80	OA15	25
250	140	ASP	25 / 50
500	250	AS50	25
1000	600	BS100	50
1000	600	AS100	63
2500	1700	AS200	150

**Direct Quarter-Turn**   **EEEx d**

Max Torque Nm	Permanent Torque Nm	Type	Operating time 90°/sec
180	140	UX18	5
250	140	UX25	10
250	140	UXP	43
600	400	UX50	30 / 60
800	400	UX80	30 / 60

**Direct Quarter-Turn**   **EEEx d**

Max Torque Nm	Permanent Torque Nm	Type	Operating time 90°/sec
300	140	UXP	43
600	400	UX50	30
600	400	UX50	60

**Multiturn**   **IP 67**

Max Torque Nm	Permanent Torque Nm	Type	Speed rpm
60	50	SRA6	26
60	50	SRA6	17
60	50	SRA6	10
160	120	SRC	9
160	120	SRC	6

**Multiturn**   **IP 67**

Max Torque Nm	Permanent Torque Nm	Type	Speed rpm
60	50	SRA6	12

**Multiturn**   **IP 67**

Max Torque Nm	Permanent Torque Nm	Type	Speed rpm
50	40	SRA6	26
60	40	SRA6	17
60	40	SRA6	10
130	80	SRC	9

**Multiturn**   **IP 67**

Max Torque Nm	Permanent Torque Nm	Type	Speed rpm
60	40	SRA6	12