

Application Notes

1. Scope

These application notes are a guide to applying the G123-819 Ramp. They cover the following process:

- Determine the ramp rate required for your application.
- Configure your PLC or other command generator device for the required command and ramp setting voltages.
- Draw your wiring diagram.
- Install and commission your system.

These application notes do not cover aspects, such as hydraulic design, actuator selection and closed loop design.

2. Description

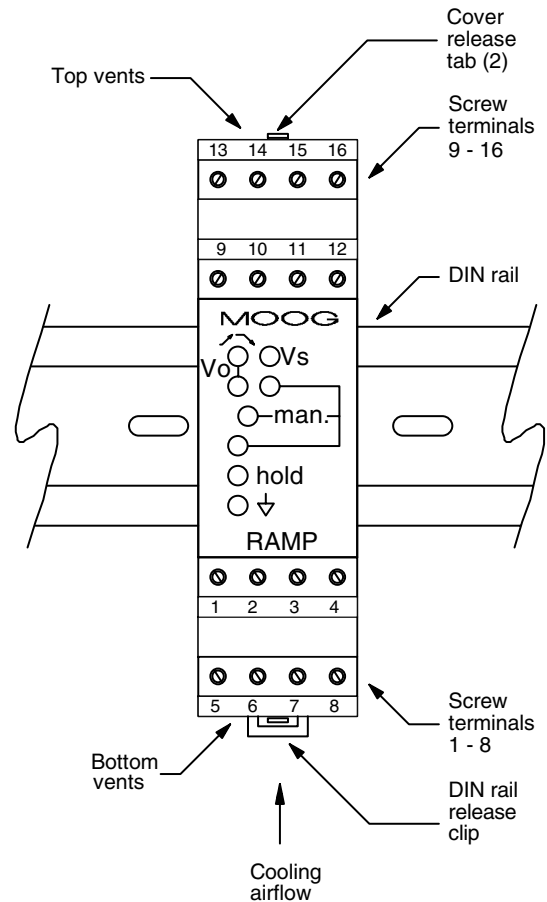
The G123-819 is an analog signal processing circuit primarily intended to set the ramp rate of a step input command signal, for a closed loop control system. Typical applications are to limit the maximum velocity in a position servo or acceleration in a velocity servo. The "ramp rate" is set by an external analog input signal of +1V to +10V, a higher voltage producing a faster ramp.

A "hold" control input stops the ramp and freezes the output signal. This feature is useful as a system stop, a de-bugging tool or a motion-profiling tool. When the hold input is removed, the output continues to ramp from its present value.

A "manual" control input enables a front panel trimpot to set the ramp rate, the externally connected signal being ignored when manual is selected.

When external ramp rate mode is selected but there is no ramp setting signal connected, the module defaults to 50% ramp rate, which is 20V/S.

Refer also to data sheet G123-819.



3. Installation

3.1 Placement

A horizontal DIN rail, mounted on the vertical rear surface of an industrial steel enclosure, is the intended method of mounting. The rail release clip of the G123-819 should face down, so the front panel and terminal identifications are readable and so the internal electronics receive a cooling airflow. An important consideration for the placement of the module is electro-magnetic interference (EMI) from other equipment in the enclosure. For instance, VF and AC servo drives can produce high levels of EMI. Always check the electro-magnetic compatibility (EMC) compliance of other equipment before placing the G123-819 close by.

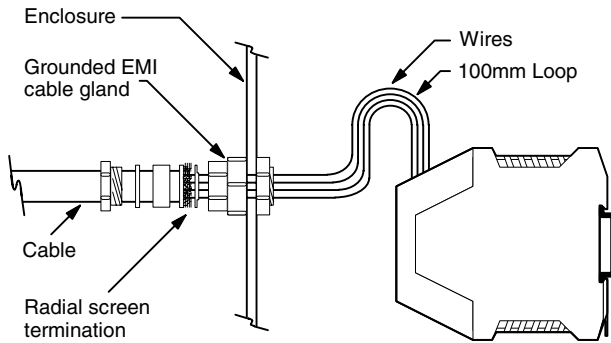
3.2 Cooling

Vents in the top and bottom sides of the G123-819 case provide cooling for the electronics inside. These vents should be left clear. It is important to ensure that equipment below does not produce hot exhaust air that heats up the G123-819.

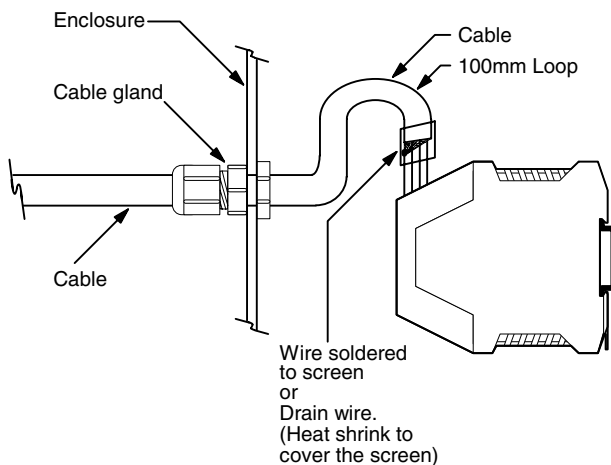
3.3 Wiring

The use of crimp “boot lace ferrules” is recommended for the screw terminals. Allow sufficient cable length so the circuit card can be withdrawn from its case with the wires still connected. This enables fault finding on the circuit card to be done while the card is still connected and operating. An extra 100mm for cables going outside the enclosure, as well as for wires connecting to adjacent DIN rail units, is adequate. See section 6 for instructions on withdrawing the circuit card from its case.

Terminal identification is on the block-wiring diagram on page 3.



Preferred wiring



Alternative wiring

3.4 EMC

The G123-819 emits radiation well below the level specified in its CE mark test. Therefore, no special precautions are required for suppression of emissions. However, immunity from external interfering radiation is dependent on careful wiring techniques. The accepted method is to radially terminate the cable screens, in an appropriate grounded cable gland, at the point of entry into the industrial steel enclosure. If this is not possible, chassis ground screw terminals are provided on the G123-819. Exposed wires should be kept to a minimum length. Connect the screens at both ends of the cable to chassis ground.

4. Power supply

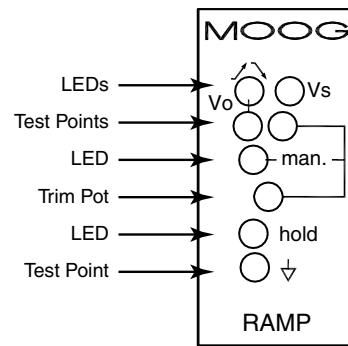
24V nominal, 22 to 28V

40mA @ 24V with all LEDs illuminated and no output load.

If an unregulated supply is used, the bottom of the ripple waveform is not to fall below 22V.

It is recommended that the M205, 250mA T (slow blow) fuse, supplied with the unit, be placed in series with the +24V input to protect the electronic circuit. There is a spare fuse in the cover of the fuse holder. Replacement fuses should be compliant with IEC 127-2 sheet 3.

5. Set-up



5.1 External ramp rate

The externally applied ramp rate control voltage has a range of +1 to +10V. Indeterminate operation will result from applying a ramp rate voltage outside this range. The minimum setting of +1V corresponds to a ramp rate of 4V/S. The maximum setting of +10V corresponds to 40V/S.

If no external voltage is connected, the G123-819 defaults to 20V/S ramp rate.

5.2 Manual ramp rate

The front panel “man” trimpot is the only user set-up adjustment on the G123-819. It sets the ramp rate when manual control is selected and its voltage setting can be measured on the “man” test point on the front panel. It has the same scaling factor as the external input and has the same permissible range of +1 to +10V.

5.3 Hold

When hold is selected, the output ramping stops and the output voltage is held at the value it was when the hold input was selected. Be aware that the output voltage will slowly rise (go positive) at a worst case rate of +15mV per minute and this limits the maximum time hold can be applied. When the hold input is de-selected, the ramping continues from the present value.

6. Withdrawing the circuit card from its case

To withdraw the circuit card from its case, push one tab in with a pen or screwdriver while gently pulling on the top cover on that side. The cover will release approximately 1mm. Repeat on the other side and withdraw the cover and circuit card until the required measurement points are exposed. The rigidity of the connecting wires will hold the circuit card in position while measurements are made.

7. Specifications

Signal output: 0 to $\pm 10V$

$\pm 10mA$ max.

Output creep rate in hold: +15mV per minute max.

Signal input: 0 to $\pm 10V$

$R_{in} = 100k\Omega$ connected to 0V

Ramp rate input: +1 to +10V

$R_{in} = 67k\Omega$ connected to +5V

+1V = 4V/S

+10V = 40V/S

Default = 20V/S

Front panel indicators: V_s , internal supply – green

Ramp active, positive – red
negative – green

Man, manual selected – amber

Hold, hold selected – amber

Front panel test points: V_o , output, 0 to $\pm 10V$

Man. ramp rate, +1 to +10V

\downarrow 0V reference

Front panel trimpot: Man. ramp rate

FCW = 40V/S

FCCW = 4V/S

Man. and hold inputs: Relay, +24V nominal, 21 to 28V

6mA @ 24V

Supply: 24V nominal, 22 to 28V

40mA @ 24V, all LED's illuminated and no output load.

Recommended supply protection: M205, 250mA T (slow blow) fuse compliant with IEC 127-2 sheet 3

Mounting: DIN rail, IP 20

Temperature: 0 to +40°C

Dimensions: 100W x 108H x 22.5D

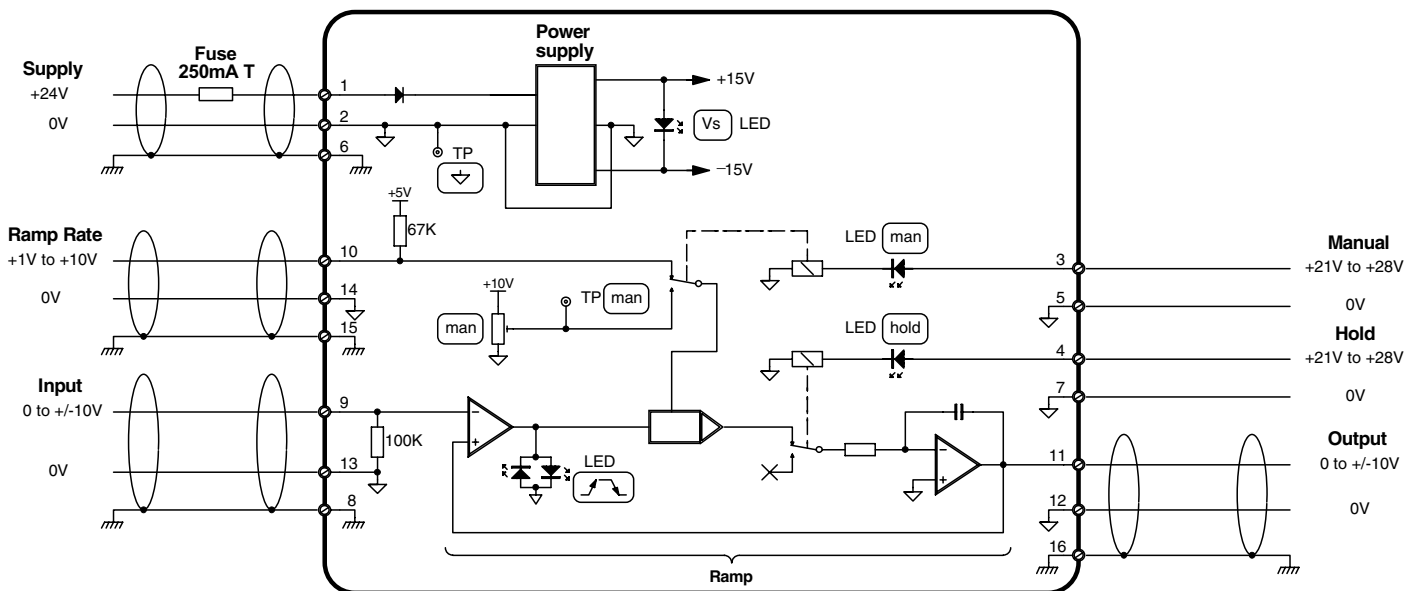
Weight: 126g

CE mark: EN61000-6-3 emission

EN61000-6-2 immunity

C tick: EN61000-6-3 emission

8. Block-wiring diagram



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Internet Data

For a detailed Data Sheet and the latest version of these Application Notes, please refer to the Moog website www.moog.com/dinmodules

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