

PRESENTATION

This module regulates the current drawn by the solenoid valve according to a forward speed or a potentiometer on front side.

The proportional solenoid aperture of each valve is between a minimum and a maximum threshold defined by two potentiometers incorporated on the rear side.

The aperture is maximum when the frequency of the forward speed sensor signal is equal to the value indicated by the four encoder wheels integrated on the rear side.

The aperture is minimum when the frequency of the forward speed sensor signal is equal to 0.

The front panel potentiometer adjusts the aperture and provides the exactly desired flow rate.

A digital input allows to control the proportional valve by the potentiometer on the front side without considering the forward speed sensor signal.

A blinking red LED indicates that module is working well.

The display shows the position of the potentiometer and all 10 s, accumulated operating time of the valve.



APPLICATION

- Spreading slurry or fertilizer in a field according to the tractor's forward speed.
- Installation of asphalt pavement.

PERFORMANCES

- Power Supply: 9VDC to 32VDC.
- Regulation of circulating current in the solenoid valve, therefore the valve's aperture is independent of the supply voltage and the oil temperature.
- Accept proportional solenoid valves 12VDC and 24VDC (from 0 to 3A).
- 3 digital inputs:
 - Speed sensor signal (from 0.1Hz to 1.5KHz), PNP sensor kind.
 - Automatique or manuel mode.
 - Forced shutdown of the flow.
- 1 setpoint potentiometer on the front panel and 2 potentiometers on the rear side (MIN and MAX).
- By adjusting the MIN and MAX, the whole range of front side potentiometer is useful.
- 4 encoder wheels for the maximum speed sensor frequency setting on the rear side.
- Protection against overvoltage, short circuit and reverse polarity.
- Intégration of a counter accumulated operating time of the valve.
- Plug-type connector: minifit 8 points.
- Fixing the front panel by the potentiometer barrel.



FULFILS THE STANDARDS

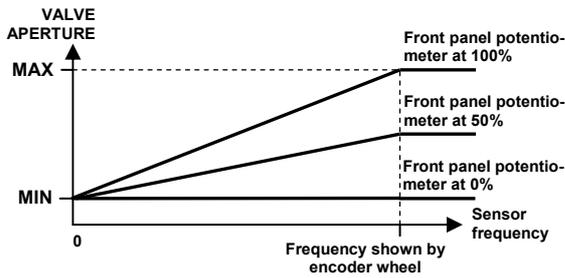
- CE mark compliant with 2014/30/UE
- E mark (ECE R10.05) N° 10R-05-13766 compliant with 2009/19/EC
- EMC ISO11452-4
- ESD ISO61000-4-2
- Immunity: ISO7637-2
- Protection: IP66/67
- Vibration-shock: EN60068-2-32;-27;-64;-29
- Supply voltage: 9V à 32V ASAE EP 455-§5.10.1
- Operating temperature: -40, +85°C ASAE EP 455-§5.1.1 et EN60068-2-1;-2;-14;-30;-78
- REACH (1907/2006) and RoHS (2011/65/EU)

Ref: WAAB2201 FLOW RATE PROPORTIONAL TO FORWARD SPEED OR MANUAL POTENTIOMETER WITH DISPLAY FOR 1 PWM PROPORTIONAL SOLENOID VALVE

Data sheet DSENWAAB2201 – september 2016 - Revised : no revised

AUTO WORKING. (DPA)

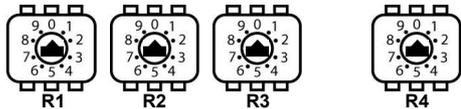
Do not shunt MODE input with +ALIM to be in auto mode



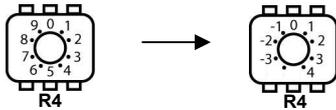
Formule : To set the frequency (F) on encoder wheel, the maximum vehicle working speed (VM in Km/h), the vehicle wheel diameter (DR in meter) and number of sensor pulse (NB) for one wheel rotation must be known.

$$F = \frac{VM \times NB}{3,6 \times DR \times \pi}$$

Display the maximum signal sensor frequency on 4 encoder wheel :



The first three encoder wheel (R1 to R3) respectively indicate hundred, ten and unit of frequency value. The last encoder wheel (R4) indicate the ten power (positive and negative) :



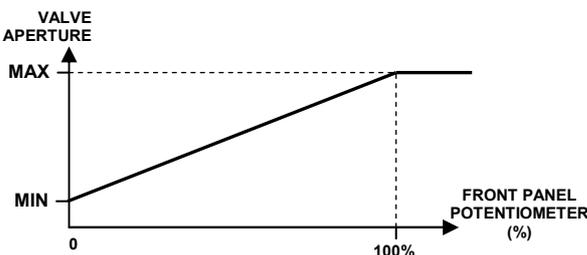
123 Hz : R1 on position 1, R2 on position 2, R3 on position 3, R4 on position 0 : $123 \times 10^0 = 123 \text{ Hz}$

1460 Hz : R1 on position 1, R2 on position 4, R3 on position 6, R4 on position 1 : $146 \times 10^1 = 1460 \text{ Hz}$

45.6 Hz : R1 on position 4, R2 on position 5, R3 on position 6, R4 on position 9 : $456 \times 10^{-1} = 45.6 \text{ Hz}$

MANUAL WORKING

Shunt MODE input with +ALIM to be in auto mode



MIN AND MAX SETTING

Position in manual mode to set the MIN and MAX current.

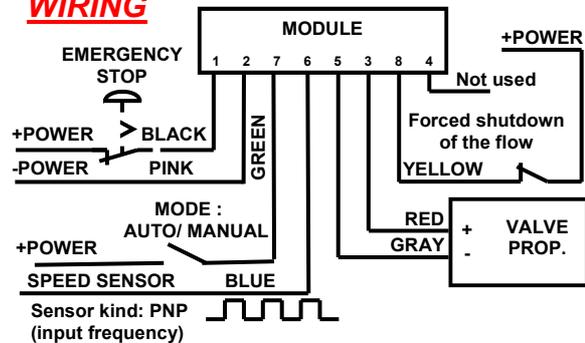
Aperture setting MIN : Set the front panel potentiometer to 0 (Stop when potentiometer turn in reverse clockwise). Set minimal aperture with MIN potentiometer on the rear panel.

Aperture setting MAX : Set the setpoint potentiomètre in max stop. (Stop when potentiometer turn in clockwise). Set maximal aperture with MAX potentiometer on the rear panel.

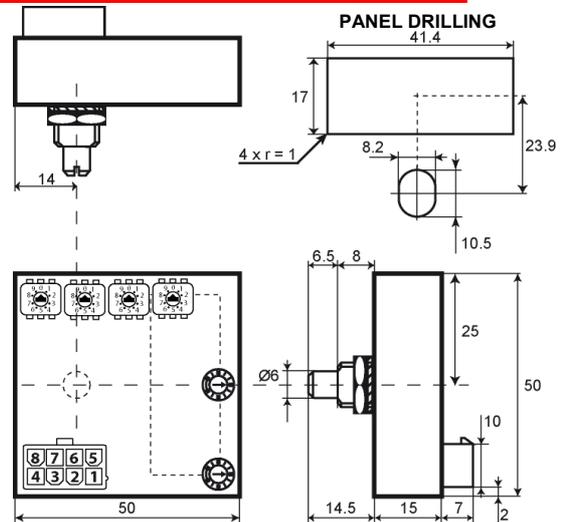
FEATURES

	Value		Unit
	MIN	MAX	
Supply voltage	9	32	VDC
Consumption without valve	1	2	mA
Operating temperature	-40	+85	°C
Storage temperature	-40	+90	°C
Valve current supply	0	3	A
Drift current between -25°C and +70°C	0	+/-0.5	%FS
Drift current between 9V and 32V	0	+/-0.5	%FS
Gradient setting	0	10	s
PWM frequency	125		Hz
weight	57		g

WIRING



MECHANICAL DESIGN (in mm)



SUPPLIED ACCESSORIES



1 button to turn the potentiometer (diameter : 28mm, height : 19mm).



1 strand of six wires (1 mm² 48SVAU, length 1000mm) with : minifit female 6 points connector one side, nude wire other side.

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AFFICHAGE

Display show position of the potentiometer on the front panel (from 0 to 100 from the minimum position to the maximum position).

In addition, the display shows every 10 s the counter accumulated operating time of the valve. The unit is minute.

The internal precision of the counter is 1 s. The value of this counter is stored for continue to count after a power failure.

When the counter equal to 10000, it's reset to 0 and continue to count normally. There is no reset of this timer.

Flow rate proportional to forward speed mode:

Once the input "STOP FORCE FLOW" is inactive AND the forward speed is not nule, the counter counts.

Manual mode:

Once the input "STOP FORCE FLOW" is inactive, the counter counts.

Running red light indicator :

If the valve is opened, the light indicator blinks :

If 2 flashes: PWM duty cycle < 5%.

If 4 flashes : PWM duty cycle > 95%.

If 6 flashes: Valve shorted.

If 7 flashes: Valve not connected.

Tracability label description : (example)

V02bf → 02: Software Version, bf: Hardware Version

Ref: NGDF7536 → Product reference

Ser: 1611-0003CW → tracability

16: Year, 11: Month, 0003: serial N°, CW: operator

BUILDING IN SAFETY

All brands and all types of electronic modules can fail. Thus the necessary protection against the serious consequences of module failure should always be built into the system. For each application, an assessment should be made for the consequences of electronic module failure and uncontrolled or blocked movements.

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