EPN-110DN

4921240126I

Electronic potentiometers, ANSI code 18

Data sheet

DEIF Improve Tomorrow

DEIF

-power in control

CE

DATA SHEET

Electronic potentiometers, EPN-110DN

ANSI code 18

- Control of electronic governors
- Setting of integrating time
- Adjustment of output signal
- Offset adjustment
- LED indication for activated input
- 35 mm DIN rail or base mounting

DEIF A/S · Frisenborgvej 33 · DK-7800 Skive
Tel.: +45 9614 9614 · Fax: +45 9614 9615
info@deif.com · www.deif.com

Document no.: 4921240126I

Application

The electronic potentiometer type EPN-110DN forms part of a complete DEIF series of relays for protection and control of generators, and is applicable to both marine and land-based installations.

The EPN-110DN is type-approved by major classification societies and is an electronic unit to replace normal motor potentiometers.

The potentiometer converts the relay output of a PI step controller - for example one of the DEIF load sharing units type LSU.. or one of the DEIF synchronisers type FAS.., or any other type of PI step controller provided with relay outputs - to a control voltage for the speed governor/AVR.

Measuring principle

The EPN-110DN is provided with three inputs:

"▲" (frequency or voltage increase)
"▼" (frequency or voltage decrease)
"RES" (reset of the unit).

Note: During power-up, the potentiometer is automatically reset.

On activation of one of the inputs "▲" and " ▼", the analogue output of the potentiometer to the speed governor/the AVR is changed correspondingly.

The EPN-110DN is furthermore provided with an offset adjustment for change of the point where the control loop starts and to which the unit returns after reset. Both the output signal, the rate of change of this (the integrating time) and the offset are set on potentiometers on the front of the EPN-110DN.

Outputs/settings

The EPN-110DN is equipped with two LED indicators on the front of the unit, which are lit when their input ("▲" and "▼" respectively) has been activated.

To ensure that the EPN-110DN can be connected to all common electronic speed governors and AVRs, the analogue output of the EPN-110DN has been designed as a current generator shunted by a 500 Ω potentiometer.

Output signal
Potentiometer "OUTPUT" (0 to ±1 V DC x 1, x 5 or x 10)

The maximum and minimum change of the frequency/voltage of the connected speed governor/AVR, controlled by the EPN-110DN.

The range ("x 1", "x 5" or "x 10") is selected by means of two DIP switches accessible from the front of the relay.

A special output 0 to 5 to 10 V DC is available for interfacing between a DEIF synchroniser type FAS-115DG and a var load sharing unit type LSU-122DG, applied for voltage adaption to obtain simultaneous synchronisation of all generators of a plant to the busbar.

Integrating time
Potentiometer "TIME" (2.5 s to 25 s x 1 or x 10)

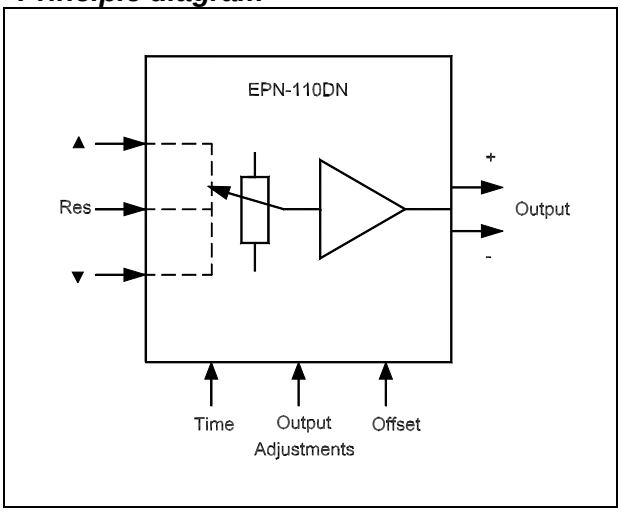
How quickly the output integrates from the minimum to the maximum setting (or vice versa). This setting thus determines how quickly for example a load sharing will be carried out.

The range ("x 1" or "x 10") is selected by means of a DIP switch accessible from the front of the relay.

Offset
Potentiometer "OFFSET" (-25 to 0 to 25 % of output)

The point where the control loop starts. This setting determines for example to which frequency the generator should be reset instantaneously during power-up or on activation of the reset input.

Principle diagram



Technical specifications

Relay input: Potential-free relay contacts
Open contact: 15 V DC
Closed contact: 4 mA

Analogue output: 0 to ±1 V DC (DIP switches set to “x1")

or:
0 to ±5 V DC (DIP switches set to “x5")

or:
0 to ±10 V DC (DIP switches set to ”x10”)

UL/cUL Listed: +/-10 V DC

Output resistance: 0 to 500 Ω potentiometer

Offset adjustment: -25 to 0 to 25 % of output

Ripple: Max. 5 mV RMS

Resolution: 5 mV DC (12-bit D/A converter)

Response time: <100 ms, input to output

Temperature: -25 to 70 °C (-13 to 158 °F) (operating)
UL/cUL Listed:
Max. surrounding air temp.
60 °C/140 °F

Temperature drift: Set points:
Max. ±0.2 % of full scale per
10 °C/50 °F

Galv. separation: 3250 V - 50 Hz - 1 min.

Supply voltage to other circuits

None between inputs and DC output

Supply voltage (U_n): 57.7-63.5-100-110-127-200-220-230-240-380-400-415-440-450-480-660-690 V AC ±20 % (max. 3.5 VA)

24-48-110-220 V DC -25/+30 % (max. 2 W)

UL/cUL Listed:
Only 24 V DC and 110 V AC

DC supply must be from a class 2 power source

Climate: HSE, to DIN 40040

EMC: To IEC/EN 61000-6-1/2/3/4

Connections: Max. 4.0 mm² (single-stranded)
Max. 2.5 mm² (multi-stranded)

Materials: All plastic parts are self-extinguishing to UL94 (V1)

Protection: Case: IP40. Terminals: IP20, to IEC 529 and EN 60529

Type approval: The Uni-line components are approved by the major classification societies. For current approvals see www.deif.com or contact DEIF A/S.

UL markings: UL Listed only on request

UL Listing will be lost if the product is re-customised outside DEIF DK's production plant

Wiring:
Use 60/75 °C (140/167 °F) copper conductors only

Wire size:
AWG 12-16 or equivalent

Installation:
To be installed in accordance with the NEC (US) or the CEC (Canada)

Settings

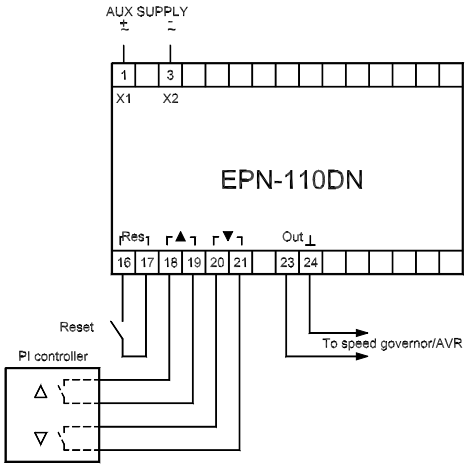
Setting of	Range
Integrating time:	2.5 s to 25 s or 25 to 250 s
Output:	-1 to 0 to 1 V DC, -5 to 0 to 5 V DC or -10 to 0 to 10 V DC
Offset:	-25 to 0 to 25 % of output

Indication

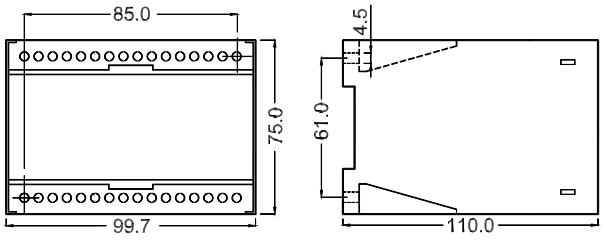
LED	Light
"▲" (Increase)	Yellow, when relay is activated
"▼" (Decrease)	

The relay is furthermore equipped with a green LED marked "POWER" for indication of power ON. Once the relay has been mounted and adjusted, the transparent front cover may be sealed to prevent unwanted change of the setting.

Connections/dimensions (in mm)



Note: Terminal nos. 16, 18 and 20 are internally connected to each other.



Weight: Approx. 0.650 kg

Available variants

Item no.	Variant no.	Variant description
2913110020	01	EPN-110DN - DC supply
2913110020	02	EPN-110DN - AC supply

Order specifications

Variants:

Mandatory information					Additional options to the standard variant
Item no.	**Type**	**Variant no.**	**Output**	**Supply voltage**	**Option**

Example:

Mandatory information					Additional options to the standard variant
Item no.	**Type**	**Variant no.**	**Output**	**Supply voltage**	**Option**
2913110020-01	EPN-110DN	01	-5 to 0 to 5 V DC	24 V DC	No options available

Due to our continuous development we reserve the right to supply equipment which may vary from the described.

DEIF A/S, *Frisenborgvej 33*
DK-7800 Skive, Denmark

Tel.: +45 9614 9614, Fax: +45 9614 9615
E-mail: deif@deif.com, URL: www.deif.com