DNV·GL

Certificate No:
**TAA00000R1**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Electrical Measuring and Protection Relay**

with type designation(s)
**MDP-REV**

Issued to
**Meiyo Electric Co. Ltd.**
**Shizuoka City, Shizuoka, Japan**

is found to comply with
**DNV GL rules for classification – Ships, offshore units, and high speed and light craft**

## Application :

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

**Location classes:**

| | |
|---|---|
| **Temperature** | **B** |
| **Humidity** | **B** |
| **Vibration** | **A** |
| **EMC** | **A** |
| **Enclosure** | **Required protection according to the rules shall be provided upon installation on board.** |

This Certificate is valid until **2021-07-09**.

Issued at **Høvik** on **2016-10-14**

for **DNV GL**

DNV GL local station: **Yokohama**

Approval Engineer: **Ståle Sneen**

**Odd Magne Nesvåg**
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.


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## Product description

Intelligent Speed Relay (Speed Switch)

Switchboard mounted compact digital speed relay with 7-segment display
Type designations: MDP-REVx, where
x = P01 for proximity switch;
x = T01 for TPL turbo charger;
x = M01 for MET turbo charger;
x = S01 for magnetic pick-up;
x = D for MEIYO PUG-AP pick-up.

Technical data

| | |
|---|---|
| Frequency measuring range: | 0…20kHz; |
| Input measuring range sine wave: | 0.7Vrms…100Vrms; |
| Input measuring range square wave: | Low level: 0.5V or less, high level 5…30V; |
| Measuring and detecting accuracy: | 0.05% +/-1digit (at full scale); |
| Current output range: | 4-20mA (max. 500Ω load resistance); |
| Pulse output: | 1Hz/RPM (f>60Hz); 0…15V (min. load resistance 5KΩ); |
| Relay contact output rating: | 100VAC @ 0.1A; |
| Failure output for sensor/CPU abnormal; | |
| Contact output response time: | less or equal to 0.3s; |
| Power supply: | 24VDC; |
| Software version: | 1.20. |

## Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

## Application/Limitation

Suitability and correct configuration to be demonstrated for the individual engine type.

## Type Approval documentation

## Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2015.

## Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

## Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE