PT. INDUSTIRA
SWITCHGEAR & CONTROLGEAR MANUFACTURER

INDUSBOARD ESP 700

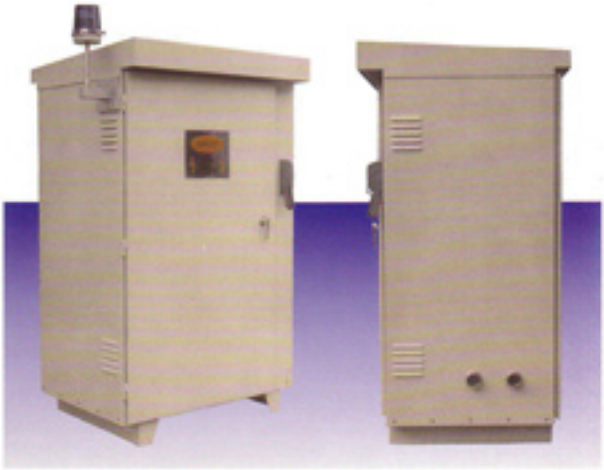
MV SWITCHBOARD UP TO 700 HP
for Electric Submersible Pump
Factory-Assembled, Standard NEMA / ANSI / IEEE

INDUSTIRA®

Contents :

Overview .....

SAFE, RELIABLE, COMPACT, MAINTENANCE FREE & NEMA / ANSI / IEEE STANDARDS BASIS



The switchboard is a so-called factory-assembled and outdoor metal-enclose switchgear, assembled under rigorous quality control and passed the careful verification tests, it is designed to accommodate high performance disconnecting switch, fuse and vacuum contactor. The switchboard itself conforms to NEMA and ANSI and all primary components used therein are in accordance with the relevant NEMA / ANSI standards.

An improved design of 730 to 3600 volt operating capacity, eliminating costly controller changes and expanding the switchboard's use

The modern production process has been introduced for the manufacture of main components, primarily in sheet-metal forming, the technique of joining frameworks, and surface protection
We inform various operators of the fact that our switchboard technology assures an enormously wide range of applications and the highest possible operational reliability.

Cubicle .....

The cubicle framework is constructed of pre-fabricated steel plates which are bolted / welded together to form a rigid enclosure. The cubicle construction is fully metal-enclose and free standing out door design as defined in NEMA / ANSI

Inside of the switchboard cubicle, there is second door for separating high voltage and low voltage compartments. The second door is equipped with locking device

For the low voltage compartment, ventilation is made on the left and the right side

The standard degree of protection for the cubicle is 3R, as defined in NEMA

Other standard features include

- Internal door with lock
- Receptacle
- Earthing conductor within the cubicle
- Front door with lock
- Cable gland

Components .....

The components contained in the switchboard are manufactured and tested in accordance with their relevant standard specifications.

DISCONNECTING SWITCH

Disconnecting switch has been designed and factory tested, disconnecting switch mounted on rear side of the high voltage compartment

FUSE

Fuse is mounted on the rear side of the high voltage compartment on the bottom of disconnecting switch and functioning for short circuit protection.

VACUUM CONTACTOR

Vacuum contactor has designed and type tested in accordance with NEMA, ANSI and IEEE standard. The contactor is mounted on the floor of the high voltage compartment bottom of fuse

CONTROL TRANSFORMER

Control transformer is mounted on the floor of the high voltage compartment

POTENTIAL TRANSFORMER

Potential transformer is mounted on the floor of the high voltage compartment

LIGHTNING ARRESTER

Lightning arrester is mounted on the left side of the disconnecting switch on the rear of the high voltage compartment.

CONTROLLER

For safety purpose / avoiding mechanical impact, the controller is installed on the second door in the low voltage compartment.

The motor controller offers you :

- Extended submersible pump run lives
- Protection from a wide variety of downhole problems
- Easy and inexpensive installations
- High reliability, even in hostile environments
- Simple operation, even for inexperienced operators
- Better data, to help you make better decisions

Protection

The motor controller protects your submersible pump from a wide variety of problems :

Protection from downhole problems	**Protection from power problems**
Overload	Overvoltage
Underload	Undervoltage
Current unbalance	Voltage unbalance
Excessive starts	Wrong phase rotation

METER RECORDING

The ammeters record the value of an a-c current respectively on a circular paper. A moving measuring element responds to the changes of the electrical input and then positions the recording pen on the chart accordingly. This device provides accurately the working status of the motor, such as underload, overload, shutdown etc, for 24 hours, 7 days a week.

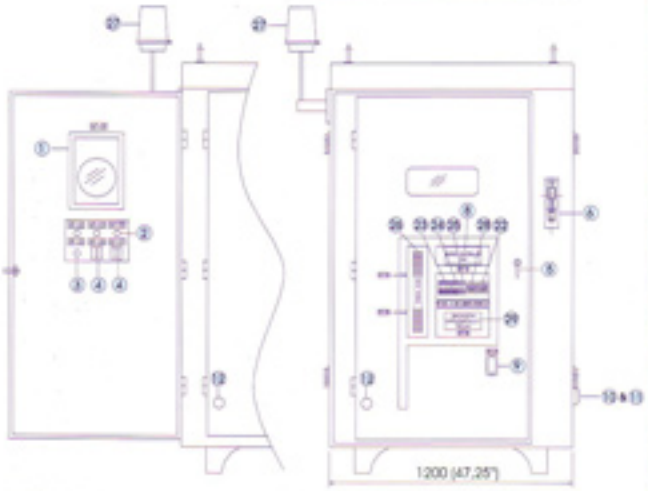
Interlocking System .....

The switchboard has safety features, those are :

1. Prevents the disconnecting switch from being opened or closed unless all line contactors are opened
2. Prevents the opening of the second door when the disconnecting switch is closed
3. Prevents the disconnecting switch from being closed when the second door of the controller switchboard is opened

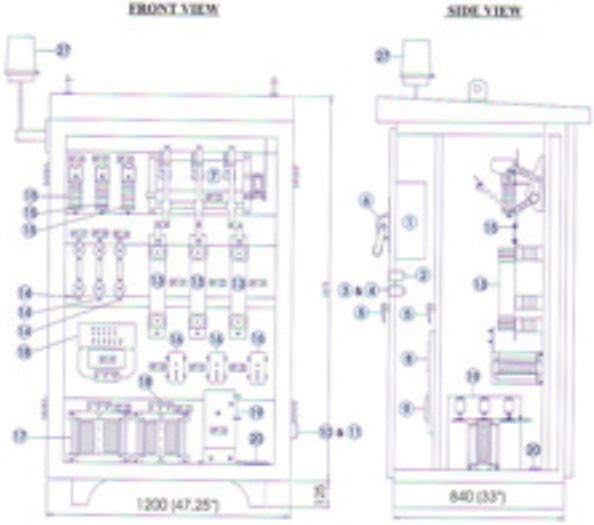
Arrangement .....

INSIDE VIEW OF THE FIRST DOOR **FRONT VIEW OF THE SECOND DOOR**



LEGEND :

① Recording ammeter
② Indicator light
③ Push button
④ Selector switch
⑤ Door handle
⑥ Load break switch handle C / w interlock (Rain tight)
⑦ Load break switch
⑧ Motor controller
⑨ Receptacle
⑩ Incoming cable gland
⑪ Outgoing cable gland
⑫ Cable entrance for control
⑬ Power fuse
⑭ PT. Fuse
⑮ Lightning arrester
⑯ CT (Current transformer)
⑰ Control power transformer 2kVA
⑱ Instrument transformer 750VA
⑲ Main vacuum contactor
⑳ Ground terminal
㉒ 3 Pole magnetic contactor
㉓ Control fuse 25A
㉔ Control fuse 10A
㉕ Control fuse 6A
㉖ Terminal Block
㉗ Beacon light
㉘ 3 Pole contactor relay
㉙ Backspin / ground fault relay



Erection & Maintenance .....

ERECTION

The switchboard is assembled together, wired up, tested, and delivered complete with motor controller.
The cable connecting space of the switchboard is designed so that commercial cables, suitable for the rated feeder current, can be employed to connect the switchboard.

MAINTENANCE

The switchboard is safe and simple to maintain, if work has to be carried out on particular parts of the switchboard, these parts should, of course, first be switched off.