



# SIGMA

RF LEVEL SWITCH



WORLDWIDE LEADING



Suitable for any working condition.  
Suitable for all Materials,  
No Maintenance required,  
No Moving Parts,  
Easy Installation



## Level Switch Purposes

SIGMA RF Level Switches are designed to detect the presence of different materials accrue in the surroundings of the probe's position. Materials can be any fluids, semi- fluids, powders solids and granules, conductive or non-conductive.

The probe may be installed in free air or closed vessels. Vessels may be metallic or non-metallic pipes or reservoirs.

**Any material sticking to it does not affect the function of the sensing unit.**

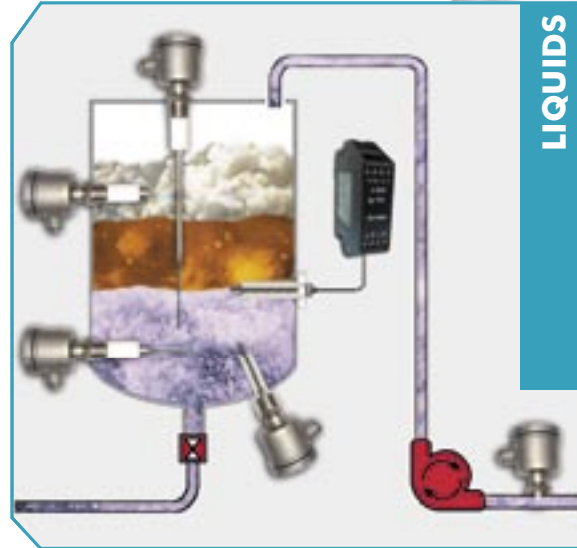
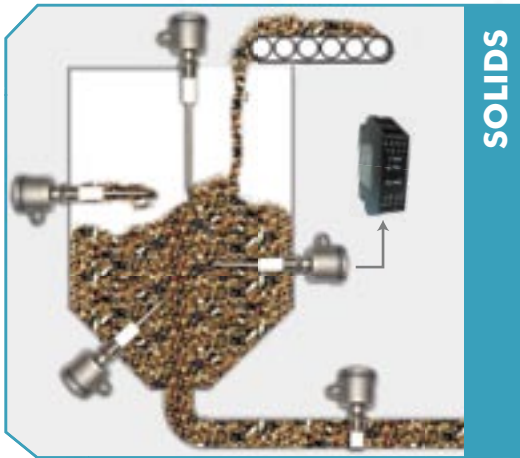
- To indicate the presence of material at a fixed place.
- To enable material in container to reach a predetermined level.
- To guarantee a lower level.
- To keep material within 2 fixed levels (liquid in tanks, material in bins etc.).
- To prevent pumps from dry-running.
- Overflow protection in water pools, liquid containing (e.g. beer) tanks etc.

## Operating principles:

- SIGMA operates on the basis of RF absorption measurement in the probe environment.
- The electronic unit generates a continuous sinusoidal wave applied to the probe, creating a field around it.
- RF environment absorption changes (electrical loss) around the probe, are reflected on changes of the generator supply current.
- Such a change, when converted to voltage, is the data compared to reference voltage.

## Advantages:

- No moving parts.
- Not affected by sticking materials (**glue, pigments, paints, pulps etc.**)
  - Not affected by density and flexibility of the material.
  - Not affected by static electricity.
  - Suitable for any working condition.
  - Suitable for all Materials.



## Material Samples:

- Pigments for the color industry.
- Paints in containers and industrial processes.
- Glues and adhesives on watery and non watery basis (such as in paper industry, laminates, gluing metal films on plastic).
- Various chemicals in industrial processes and storage tanks.
- Cement, flour, etc. (in tanks and tankers).
- Level of stones, sand, lime and aggregates in silos at quarries and in ready- concrete plants.
- Fly-ash and settled ash.
- Plastic raw material.
- Control of level in oil (mineral and organic) - in tanks and tankers.

## Special Applications:

- Very corrosive materials (bromines and compounds, hydrochloric acid, chlorine, etc).
- Materials in high temperature up to 900°C, (reactors, and furnaces).
- Pharmaceutical process
- Distinguish intrusion of oil in water / water in oil
- Liquid – liquid interface separation.
- Keep water contents in material (such as water content in margarine).
- Control of condense water.
- Foam detection and differentiation of foam from liquid.
- Very Light materials.



# Types of SIGMA RF Level Switch Units



## SIGMA 807

- For non conductive materials (Powders, grains, oil...) or for conductive liquids when the probe is fully coated (Corrosive materials, food industry).
- Insensitive to adherence.
- Static electric protection.

Heavy duty (S.S case)  
Ambient temp. -20c°~80c°  
Connection- M5 thread

Supply voltage – 24VAC/DC  
Power consumption – 1W (max)  
Output relay (SPDT) - 1A(max) 240VAC  
Response time – 0.1sec  
Vibration resist. (relay) – 10G 10 to 500 Hz

Dielectric figure > 1.6 εr  
Sensitivity – 0.5pf  
Sensitivity adjustment – 2kΩ  
Minimum distance between sensors: 200mm

Size – 40mmx40mm  
Weight – 100gr

Typical Materials: Chemicals, Salt, Glues, Diluted paint, Detergents, Treated water, Organic / non-organic oil, Flour, Corn, Grains, Sugar, Gypsum, Minerals, Fly ash, Plastic raw materials, Sodium Hydroxide.

## SIGMA 902

- For conductive liquids.
- Interface separation.
- Insensitive to foam and Adherence.

Heavy duty (S.S case)  
Ambient temp. -20c°~80c°  
Connection- M5 thread

Supply voltage – 24VAC/DC  
Power consumption – 1W (max)  
Output relay (SPDT)- 1A(max) 240VAC  
Response time – 0.1sec  
Vibration resistance (relay) – 10G 10 to 500 Hz

Conductivity figures > 100μs  
Sensitivity adjustment – 2kΩ  
Hysteresis – 1 mm

Size – 40mmx40mm  
Weight – 100gr

Typical Materials:

Solutions, Glues, Detergents, Milk & Milk products, Juices, Mud, Foam, Water in oil, Chemicals, paints.

## SIGMA 909

For low conductive liquids (Grounding is not necessary).

Heavy duty (S.S case)  
Ambient temp. -20c°~80c°  
Connection- M5 thread

Supply voltage – 24VAC/DC  
Power consumption – 1W (max)  
Output relay (SPDT)- 1A(max) 240VAC  
Response time – 0.1sec  
Vibration resistance (relay) – 10G 10 to 500 Hz

Conductivity figure > 40μs  
Sensitivity adjustment – 2kΩ  
Hysteresis – 3mm

Size – 40mmx40mm  
Weight – 100gr

Typical Applications: Conductive liquids in non-grounded vessels.

## SIGMA 12/D

For conductive liquids  
Without adjustment  
One level or Min / Max level control (selection via a switch).

Low cost (P.V.C case)  
Ambient temp. -10c°~60c°  
Connection- M5 screw

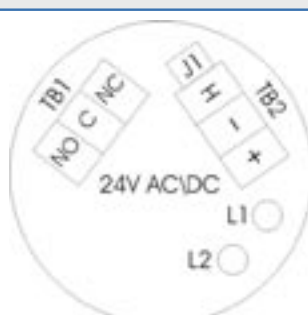
Supply voltage – 24Vac/dc  
Power consumption – 1W (max)  
Output relay (SPDT) - 1A(max) 240VAC  
Response time – 0.1sec  
Vibration resistance (relay) – 10G 10 to 500 Hz

Conductivity figure > 100μs  
Sensitivity adjustment – Non  
Hysteresis – 1 mm  
Distance between sensors- 1mm

Size – 40mmx40mm  
Weight – 60gr



SIGMA-807/902/909



SIGMA-12

## SIGMA 807R

Remote unit  
Connect to din rail control box  
S-Box.

For non conductive materials, (powders, grains, oil...)  
Or for conductive liquids when  
The probe is fully coated.  
Insensitive to adherence.  
Static electric protection.

Heavy duty (S.S case).  
Ambient temp. -20c°~80c°  
Connection- M5 thread

Connection to control box:  
Twin cable 0.5Ø (min)  
Distance - 1km  
Voltage between control box - 10-18 V DC

Dielectric figure > 1.6 εr  
Sensitivity – 0.5pf  
Sensitivity adjustment – 2kΩ  
Distance between sensors-200mm

Size – 30mmx40mm  
Weight –80gr

## SIGMA 902R

Remote unit  
Connect to din rail control box  
S-Box.

For conductive liquids  
(and interface separation)  
Insensitive to foam and adherence

Heavy duty (S.S case)  
Ambient temp. -20c°~80c°  
Connection- M5 thread

Connection to control box:  
Twin cable 0.5Ø (min)  
Distance 1km  
Voltage between control box - 10-18 V DC

Conductivity figure > 100μs  
Sensitivity adjustment – 2kΩ  
Hysteresis – 1mm  
Distance between sensors- 1mm

Size – 30mmx40mm  
Weight –80gr

## SIGMA 909R

Remote unit  
Connect to din rail control box  
S-Box.

For low conductive liquids  
(grounding is not necessary)

Heavy duty (S.S case)  
Ambient temp. -20c°~80c°  
Connection- M5 thread

Connection to control box:  
Twin cable 0.5Ø (min)  
Distance 1km  
Voltage between control box - 10-18 V DC

Conductivity figure > 40μs  
Sensitivity adjustment – 2kΩ  
Hysteresis – 3mm  
Distance between sensors- 10mm

Size – 30mmx40mm  
Weight –80gr

## S-BOX

Din rail control box

For single remote unit.

Supply voltage – 24VAC/DC, 240VAC.

Power consumption – 1W (max)

Output relay (SPDT) – 5A (max) 240VAC

Response time – 0.1sec

Vibration resistance (relay) – 10G

10 to 500 Hz

Connection to sensing unit:  
Twin cable – 0.5Ø (min)  
Distance – 1km  
Voltage between sensing unit –  
10-18 V DC

Size –22.5x92x99

## S-BOX 12

Din rail control box (includes electronics  
parts in one unit) that located up to 10m  
from the probe (tank/vessel etc.).

For clean conductive liquids.  
For single level or Min / Max system  
(selection via a switch).  
Connected to one or two remote probes.

Supply voltage – 24VAC/DC, 240VAC.  
Power consumption – 1W (max)  
Output relay (SPDT) – 5A (max) 240VAC  
Response time – 0.1sec  
Vibration resistance (relay) – 10G  
10 to 500 Hz

Connection to sensing unit:  
Twin cable – 0.5Ø (min)  
Distance – 1km  
Voltage between sensing unit – 10-18 V DC

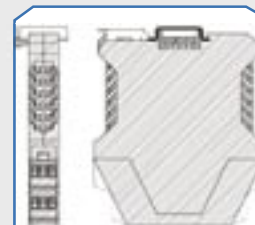
Size –22.5x92x99



**Sigma 807R-902R**

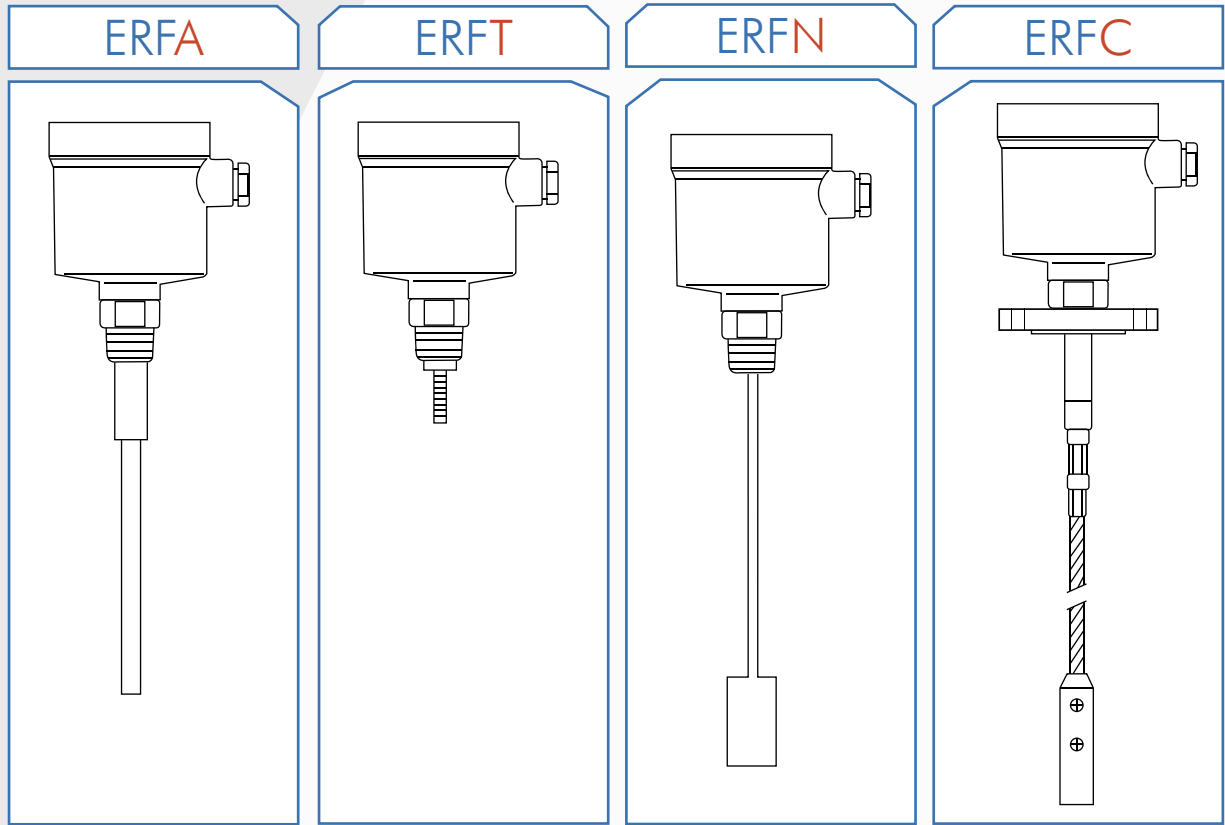


**S-BOX**

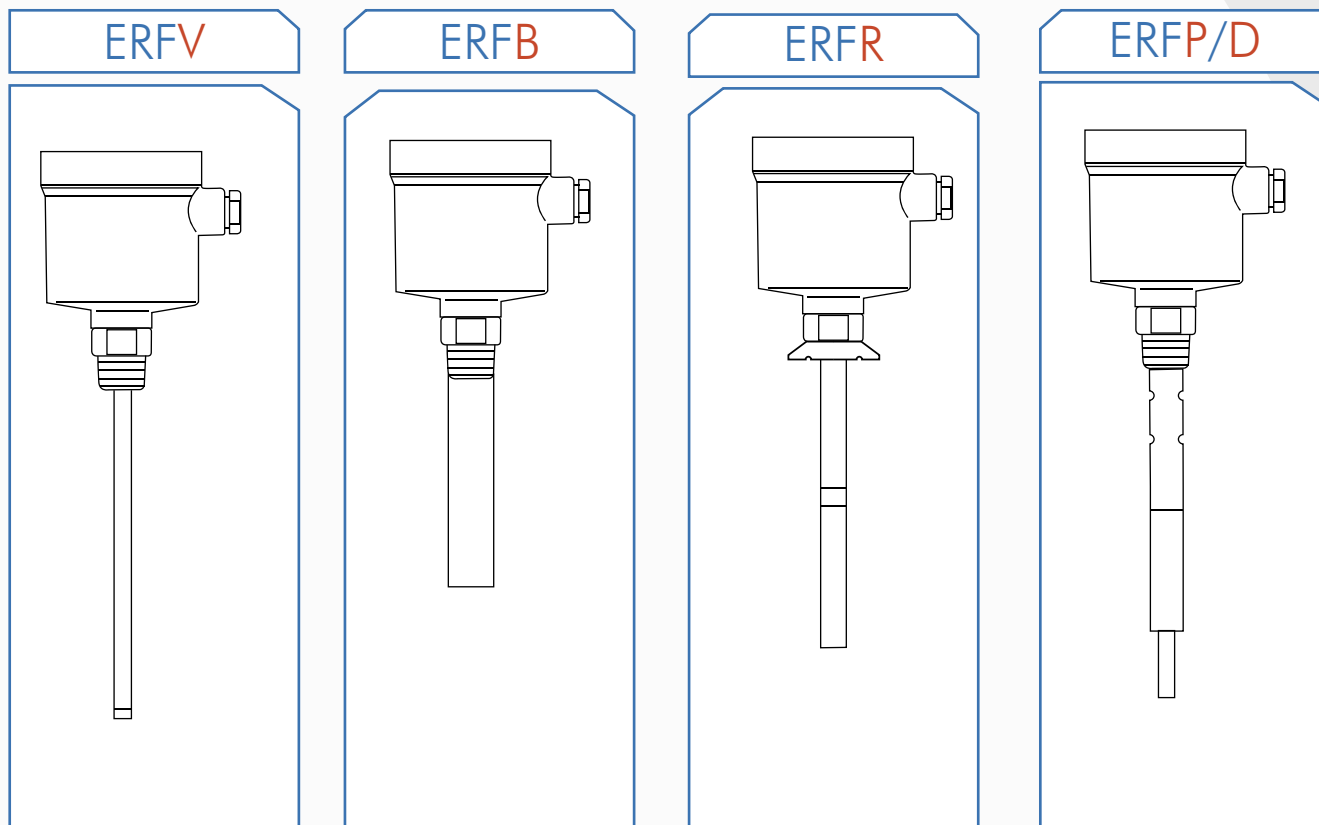


**S-BOX**

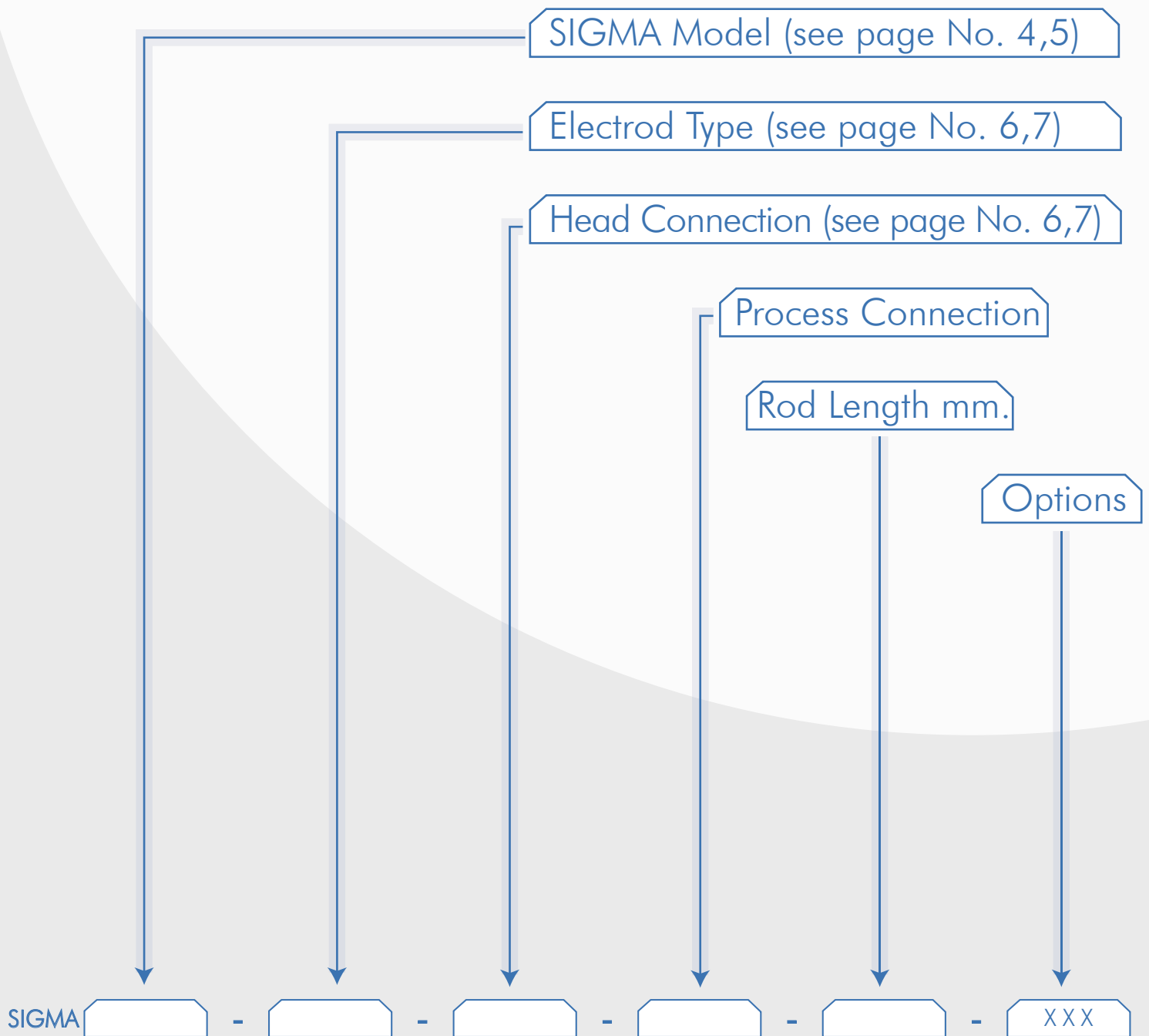
# Electrodes



|                          |  |   |                                |                                |
|--------------------------|--|---|--------------------------------|--------------------------------|
| Electrode figure         | Standard rod   | Threaded tip  | Blade                          | Flexible Cable                 |
| Functions Application    | Standard for Non conductive or conductive materials              | Standard for Non conductive or conductive materials | For very light Powders         | For long deep Detection        |
| Body material            | S.St 316 +PTFE<br>Option: other material                         | S.St 316 +PTFE<br>Option: P.V.C low cost            | S.St 316 +PTFE                 | S.St 316 +PTFE<br>Up to 6m     |
| Process Connection       | Above 1"<br>Threaded or Flange                                   | Above 1"<br>Threaded or Flange                      | Above 1"<br>Threaded or Flange | Above 1"<br>Threaded or Flange |
| Head connection          | Aluminum (code 0), S.ST 316 (5), PP (3), CAST IRON (2), EEXD (4) |   |                                |                                |
| Protection               | IP 65/67   | IP 65/67  | IP 65/67                       | IP 65/67                       |
| Compatibility with Sigma | 807/807R<br>902/902R<br>12                                       | 807/807R<br>902/902R<br>12                          | 807/807R                       | 807/807R<br>902/902R<br>12     |



|  |  |                                      |  |
|--|--|--------------------------------------|--|
| Fully Coated Rod(welded)   | Heavy Duty Fully Coated                | Standard for Sanitary Uses           | Standard for Conductive Liquids        |
| For aggressive materials Top Mounting                            | For aggressive materials Side Mounting | For food, pharmaceutical             | High Pressure min & or max system      |
| PP, P.V.C, PTFE.(welded)   | PP, P.V.C, PTFE. up to 200mm           | S.St 316 +PTFE                       | S.St 316 +PTFE                         |
| Above 1/2" Threaded or Flange                                    | Above 1" Threaded or Flange            | Above 1" Threaded or Flange Triclamp | Above 1/2" Threaded or Flange Triclamp |
| Aluminum (code 0), S.ST 316 (5), PP (3), CAST IRON (2), EEXD (4) |  |                                      |  |
| IP 65/67   | IP 65/67                               | IP 65/67                             | IP 65/67                               |
| 807/807R   | 807/807R                               | 807/807R<br>902/902R                 | 902/902R<br>909/909R<br>12/12D         |



Note: When SIGMA remote unit is been chosen S-BOX (control box) is required

