WEIDMANN CONTROLS, INSTRUMENTATION, AND MONITORS

THE INDUSTRY STANDARD

WEIDMANN

PRODUCT APPLICATIONS

Power and distribution transformers are required by Electrical Industry Standards Organizations to be equipped with controls, instruments and monitors that either: 1) determine and/or report on the conditions of installed transformers, or 2) provide means of dealing with potential operating safety issues.

Since the year 2000, we have been responding to the standard and specialized requirements of worldwide transformer manufacturing customers. These customers have invested in the design, manufacturing and testing processes used to provide these Industry Standard devices which monitor and electronically report on key operating parameters.

Weidmann personnel look forward to discussing and applying the Weidmann Portfolio of controls, instruments and monitors for your requirements.

The application of controls, instruments and monitors, using Weidmann products, is the responsibility of the electrical apparatus manufacturer.

PRODUCT TESTING

The factory testing of controls, instruments and monitors is conducted on each and every Weidmann product, subject to accepted Industry Standards. Weidmann acknowledge the relationship between the control of raw materials, purchased components, as well as the machining and processes used in the manufacturing of all products. Weidmann recognize that successful execution of these control processes not only defines the final appearance, but also the long-term performance of these devices. Therefore, changes in materials, components and processes that may affect appearance and performance are closely followed and documented, and accompanied by the appropriate notification and retesting.

PRODUCT TECHNOLOGY

The selection and application of controls, instruments and monitors to power and distribution transformers can be a complex issue. On one hand there are Industry Standards that must be complied with; on the other hand there is an increasing pressure on the long-term reliability and safety of installed electrical equipment. The influence of Industry Standards has significantly contributed to the operating efficiency and safety of installed electrical equipment. Some of these demands are fulfilled by periodic maintenance and testing of the dielectric fluids, others are being fulfilled by a wide variety of specialized monitors supplied by Weidmann.

Since the design and manufacture of specialized monitors is directly related to advances in, and applications of, continuous improvements in sensors and electronic signal processing, Weidmann personnel welcome discussions about your specific requirements.

TABLE OF CONTENTS

PRODUCT APPLICATION INDEX

FOR MEDIUM AND LARGE POWER TRANSFORMERS

LIQUID LEVEL INDICATORS

Designed to measure liquid level inside the tank. The gauge is weatherproof and can be used in harsh climates (-50 to + 80˚C). This product does not require maintenance.

PRESSURE VACUUM INDICATORS

Provides pressure or vacuum measure for distribution and power transformer tanks. This product can be enhanced with pressure and vacuum micro-switches. Internal components are made of corrosion resistant materials and can be used for indoor and outdoor applications. The product scale ranges from -100 to +100 kPa (-12 to +12 psi) with 3% full scale accuracy.

TEMPERATURE INDICATORS

This product is available with different dial range and language options.

Liquid temperature range: 0 to 120 ˚C and 0 to 160 ˚C. Dial language options in English, Spanish or Bilingual. Other languages could be provided by special request.

W-0132 2A
Liquid Level Indicator 2-Switch

W-0320 A1 2A
Vacuum and Pressure Indicator
with Thermal Box

W-0256 2A
Liquid Temperature Gauge
0-120 with 2-switches

FOR MEDIUM AND LARGE POWER TRANSFORMERS

LIQUID LEVEL INDICATORS

Liquid level indicators with micro-switches are designed to measure the liquid level inside transformer tanks. Our indicators include control and alarm circuits for a safe and efficient transformer operation. These indicators are weatherproof, can be used in extreme climates and require no maintenance.

MICRO-SWITCHES

Indicators have a micro-switch adjusted to operate at minimum (MIN) level. Customized models with two micro-switches for maximum (MAX) and minimum (MIN) liquid levels are available by special request. Micro-switches are activated when liquid reaches its specified highest or lowest level.

These indicators can be manufactured with a radial or axial float specific to customer requirements. The center bolt options are 3.125" and 4".

For SCADA models, electronic circuits are added to convert the liquid level value into a 4-25 mA output analog signal.

Dial language options in English, Spanish or Bilingual. Other languages could be provided by special request.

W-0107 Liquid Level Indicator

W-0132 2A Liquid Level Indicator 2-Switch

FOR MEDIUM AND LARGE POWER TRANSFORMERS

DIRECT MOUNT TEMPERATURE INDICATORS

Bi-metal temperature indicators are designed to measure liquid or winding temperature and include control, alarm, and trip micro-switches for secure and efficient transformer operation.

Bi-metal temperature indicators are available in dial ranges:
0 to 120 ˚C 0 to 160 ˚C 0 to 180 ˚C
(Scale in F can be provided by special request)

Micro-switches are activated when the set alarm temperature is reached. This instrument is available with 1, 2, 3, or 4 micro-switches.

SCADA Output:
For SCADA models, electronic circuits are added to convert the temperature value into a commutable 4-20 / 0-1 mA analog output, or RTD output. These instruments are manufactured to operate in any environment and guarantee accuracy and repeatability within ±2% full scale.

Dial language options in English, Spanish or Bilingual. Other languages could be provided by special request.

W-0211 T
Temperature Indicator
without switches

CAPILLARY TEMPERATURE INDICATORS

Remote temperature indicators with capillary tube are designed to measure liquid or winding temperature of the transformer. They include control, alarm and trip micro-switches necessary for secure and efficient transformer operation.

Capillary temperature indicators are available in dial ranges:
0 to 120 ˚C 0 to 160 ˚C 0 to 180 ˚C
(Scale in F can be provided by special request)

Micro-switches are activated when the set alarm temperature is reached. This instrument is available with 1, 2, 3, 4, or 5 micro-switches.

Capillary length:
Stainless steel enclosed capillary tube length is available in 3,658 mm (144”) or 8,000 mm (314”).

W-0291 4EPC8
Capillalry Temperature Gauge

FOR MEDIUM AND LARGE POWER TRANSFORMERS

THERMAL IMAGES

Thermal imaging is used in combination with winding temperature indicator in liquid filled power transformers. It simulates winding temperature using a heat resistance connected to the secondary CT of the transformer.

Thermowell options:

- One thermowell for winding temperature (with or without feeding cables).
- Two or three thermowells with any combination of liquid and winding temperature.

Calibration options:

- Calibration resistance is mounted inside the thermal image or in the control cabinet of the transformer.
- Balancing transformer for current calibration.

PRESSURE RELIEF DEVICE (PRD)

Pressure relief device (PRD) releases pressure generated inside the transformer in the event of internal short circuit. Please review our PRD product option sheets on pages 15 and 16 for more information on available models.

W-0851 1CS
Thermal Winding Protector

W-0871 WLW
Thermal Winding Protector
with 2-wells

W-0510 TCB
Pressure Relief Device for Power Transformers

W-0570 uu
Pressure Relief Device with Integral Direction Shield

W-0592 A
Rapid Pressure Rise Relay

FOR MEDIUM AND LARGE POWER TRANSFORMERS

SUDDEN PRESSURE RELAYS (SPR)

A sudden pressure relay (SPR) is designed to respond to a sudden increase of pressure caused by an internal fault of the transformer. It has a micro-switch which can be connected to the breaker trip to reduce the damage to the transformer tank.

Mechanical SPR are used in combination with a seal-in relay to maintain alarm, and trip circuits active when momentary contact of SPR operates. This condition will remain in place until the reset button is pressed to return the device to its initial condition. A red LED light will stay on until the seal-in relay is in alarm or trip condition.

Electronic SPR respond to a slow pressure rise and has a SCADA switchable output (0-1 mA or 4-20 mA) for remote monitoring of the transformer tank. It also includes an additional relay activated by a certain pressure level which can be adjusted by the user.

ACCUMULATED GAS INDICATORS

Accumulated gas indicator with micro-switch and SCADA output is designed to measure gas volume exchange between the instrument casing and the inside of the transformer. Presence of gas indicates the possibility of transformer failure. Gas volume scale is 0 – 450 cm3 and the micro-switch is adjusted to produce an alarm at a value of 200 cm3.

BLOCK CONNECTORS

These accessories are used to connect internal electrical devices of a transformer with the external control system. It is weatherproof and requires no maintenance. Our block connectors are manufactured with epoxy resin to withstand temperatures from -20 ˚C to +100 ˚C. Temperature range increases from - 55 ˚C to +155 ˚C if APG process is applied. Every stud or terminal on each block connector side has a numeric identification.

This accessory is available in different models and number of studs.

FLOW INDICATORS

This product has one micro-switch and the vane can be adjusted according to flow direction. Vane size can be designed for tubes ranging in diameter from 1.5" to 8".

W-0550 2ZCJ
Medium Pressure Relay Device

Accumulated Gas Indicator

Block Connectors

W-0153 A
Flow Indicator with one switch

SMART GAUGE SYSTEM

The smart gauge system represents the natural evolution of temperature gauges as they exist today on most transformers. A temperature gauge, combined with capability to act as data miniconcentrator for other key sensors, makes the product ideal for monitoring pad mount, network and other smaller power transformers critical to operation in both industrial and utility sectors.

CORE FUNCTION

The smart gauge system provides a cost-effective method for temperature monitoring of liquid-filled transformers. This smart gauge replaces your existing analog liquid temperature gauge, an important advantage of the smart gauge system is that it displays both liquid and winding temperatures. The maximum recorded temperatures are stored in non-volatile memory and displayed on the same dial by pressing a button.

In its base configuration the smart gauge system provides calculated transformer hot spot and transformer loss of life per IEEE and IEC mathematical models; connection to a thermowell installed temperature probe and to a load current sensors is required.

EXTENDED FUNCTIONALITY

Communication

The smart gauge system provides analog inputs, dry contact outputs, and DNP3 communication to SCADA. It can also be equipped with a wireless modem or a radio transmitter.

Data concentrator

The smart gauge system advanced model can be equipped with up to four analog inputs, thus making possible the signal acquisition from a variety of small sensors such as moisture, pressure, hydrogen, even tap changer oil temperature. These signals are then transferred – along with temperatures and transformer loss of life – to SCADA.

The smart gauge system is a cost effective, yet very efficient monitoring solution, easily deployable and offering the key information that operation and maintenance groups need.

Alarming and cooling system control

Where necessary the smart gauge system relays can be used to activate cooling stages and provide alarm and trip functions. Each relay can be configured individually to set the activation temperature values for liquid or winding temperature. The relays can also be configured in "fail safe" mode so they will start the cooling system in the case of loss of power or malfunction of the instrument.

The instrument includes a test feature that automatically simulates a temperature increase to simplify testing the relay settings.

LED DISPLAY

The smart gauge system advanced model has is equipped with a daylight viewable LED display, providing visibility under high luminosity conditions, where most digital displays usually cannot be easily seen. The device also provides digital features with the standard look and feel of an industry standard analog gauge. The capillary tube/mechanical display shows temperature even when the transformer is de-energized. The basic model displays temperature for up to one hour after transformer is de-energized.

SPECIFICATIONS

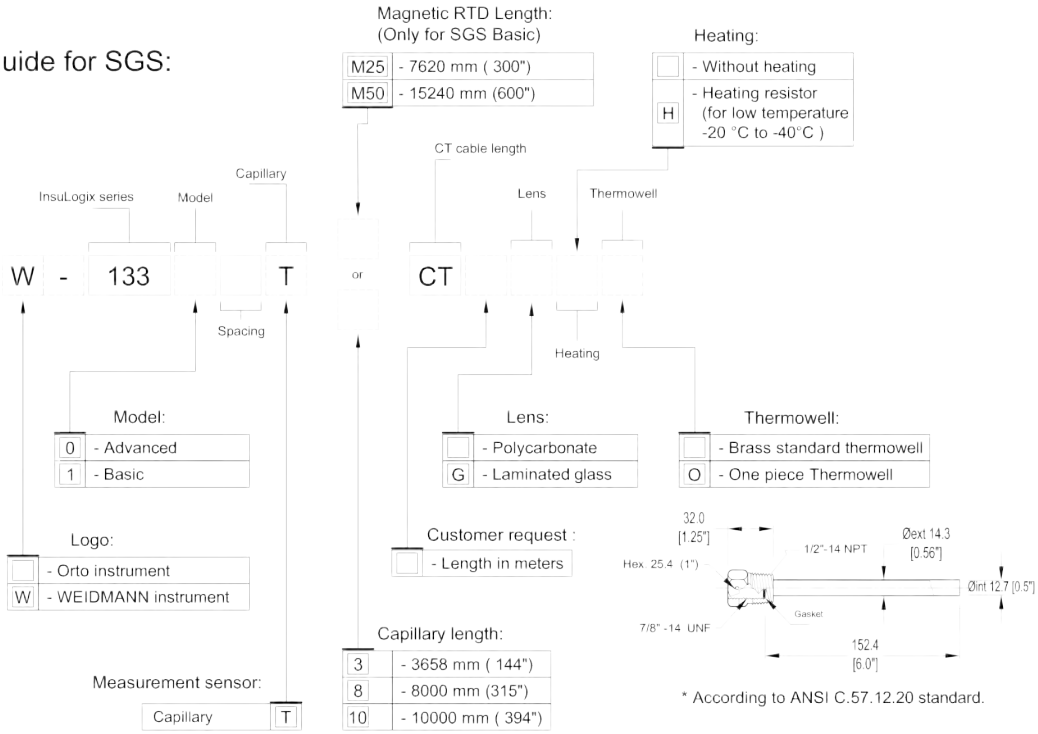
Application	Use	Measured / Calculated Variables	Inputs/Outputs	Display	Communication
BASIC Online temperature monitor	Outdoor NEMA 4 IP 66	▪ 1 RTD liquid temperature sensor ▪ 1 split core CT load current sensor ▪ 2 calculated variables: – Winding Temperature – Transformer Loss of Life	OUTPUT Five Relays: (10 A / 125 VAC) (6 A / 250 VAC) (5A / 30 VDC)	Gauge type display for liquid and winding temperature Gray needle: liquid temperature White needle: winding temperature (Press button to view Max Values)	Serial RS485 or Fiber Optic DNP3.0 MODBUS
ADVANCED Online temperature monitor	Outdoor NEMA 4 IP 66	▪ 1 Capillary type liquid temperature sensor ▪ 1 split core CT load current sensor ▪ H2 and Moisture Inputs ▪ 2 calculated variables: – Winding Temperature – Transformer Loss of Life	INPUT 4 Analog 4-20mA or 0-1mA OUTPUT Five Relays: (10 A / 125 VAC) (6 A / 250 VAC) (5A / 30 VDC)	Gauge type display for liquid Oil Temperature LED display for Hot Spot, Load Current, Loss of Life, Moisture, H2	Serial RS485 DNP3.0

PRODUCT OPTIONS SELECTION SHEETS

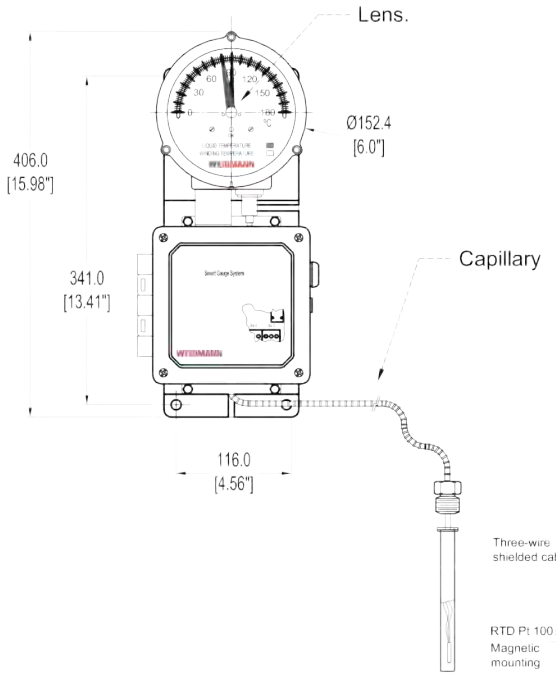
SMART GAUGE SYSTEM

1330 SERIES

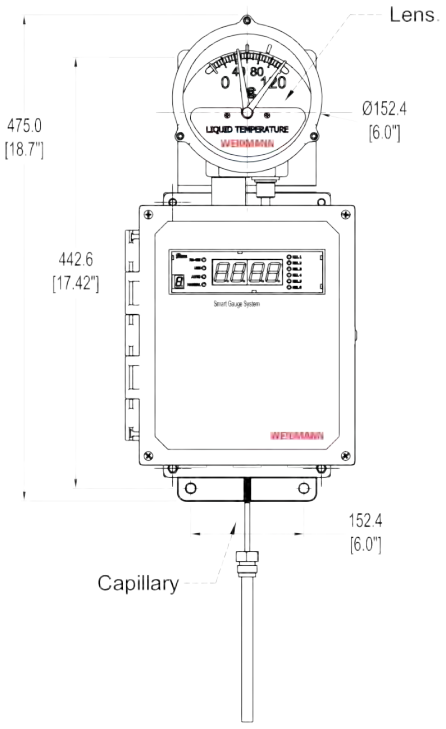
Selection guide for SGS:



Basic model: (0 to 180 °C)



Advanced model: (0 to 120 °C)



GEOMAGNETIC INDUCED CURRENT SENSOR

The geomagnetic induced current sensor measures the value of direct current (quasi DC) in transformer windings created by geomagnetic disturbances.

OPERATION

The geomagnetic induced current sensor measures DC current indicating a geomagnetic induced current event is occurring due to a solar flare or similar geomagnetic disturbance. The sensor provides a 4-20 mA output, proportional to the measured value of current.

INSTALLATION

The geomagnetic induced current sensor consists of a clamp-on current sensor and interface box. The clamp-on CT is clamped on the transformer ground cable at a convenient location (see Figure 1). The Interface box can be mounted in or near the control cabinet.

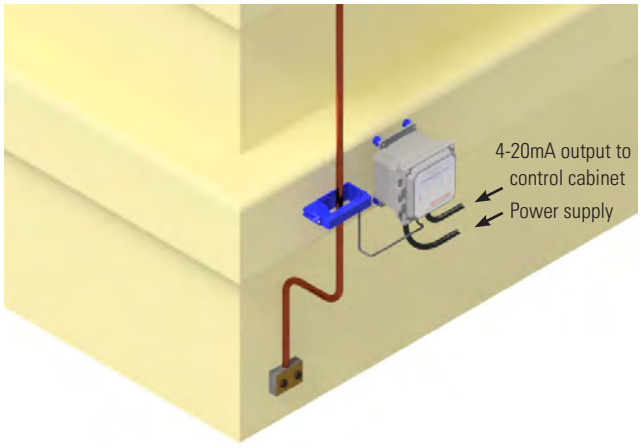


Figure 1

Technical Specifications

Product Type	Geomagnetic Induced Current Sensor
Current Range	+/- 50 ADC or +/- 500 ADC
Power Supply	85-264 VAC, 120-370 VDC
Analog Output	4-20 mA
Accuracy	± 3 %
Environment	Outdoor use, NEMA 4X, IP66
Operating Temperature	-25 to 85 °C (standard model) -50 to 85 °C (special order)
Storage Temperature	-40 to 100 °C

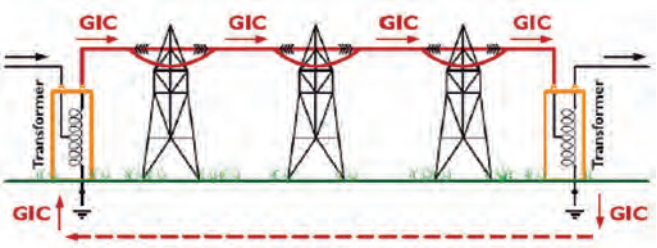
MAINTENANCE

The geomagnetic induced current sensor does not require any calibration or configuration and is a maintenance-free product.

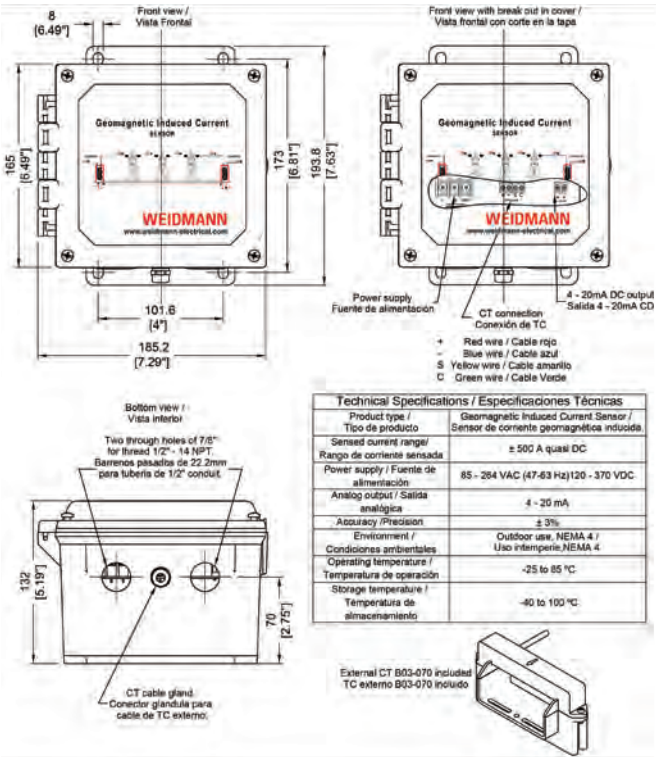
OPTIONS

A temperature hot spot detection, power quality monitoring, and temperature monitoring is available to create a continuous monitoring solution. The geomagnetic induced current sensor is customizable and offers options to meet your specific needs.

Electromagnetic radiation induces an electric current

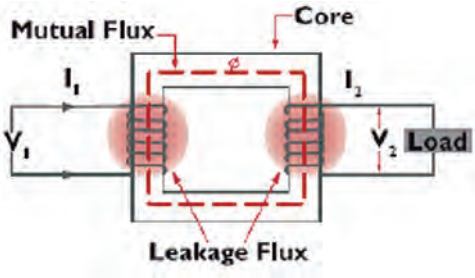


The electromagnetic radiation from the Sun, induces an electric current (quasi DC) in the transmission line, which passes through the coils of the transformer.



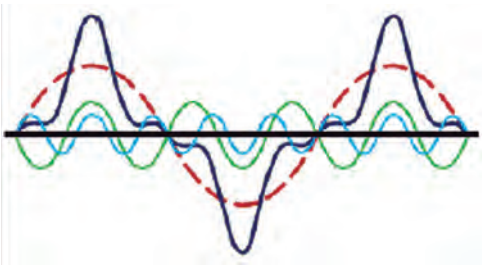
Technical Specifications / Especificaciones Técnicas	
Product type / Tipo de producto	Geomagnetic Induced Current Sensor / Sensor de corriente geomagnética inducida.
Sensed current range/ Rango de corriente sensada	± 500 A quasi DC
Power supply / Fuente de alimentación	85 - 264 VAC (47-63 Hz)120 - 370 VDC
Analog output / Salida analógica	4 - 20 mA
Accuracy /Precision	± 3%
Environment / Condiciones ambientales	Outdoor use, NEMA 4 / Uso intemperie,NEMA 4
Operating temperature / Temperatura de operación	-25 to 85 °C
Storage temperature / Temperatura de almacenamiento	-40 to 100 °C

Magnetic flux in a transformer



The geomagnetic current flowing through the coils of the transformer, saturates the core increasing the leakage flux which heats the metal parts (coils, metal fittings, tank, etc.).

Core Saturation-Harmonics



Core saturation produces harmonics due to the increased demand of excitation current. The value of reactive power increases as well, and may lead to a breaker trip.

RETROFITTABLE FAULT MONITOR FOR POLE TOP TRANSFORMERS AND VOLTAGE REGULATORS

It is estimated that in the USA alone, tens of millions pole top transformers are not equipped with internal fault visual indicators, thus putting in danger the lives of personnel maintaining the distribution network. The retofittable fault monitor is the only retrofittable pole top transformer fault detector designed to help the linemen determine if the transformer has an internal fault.

DEVICE CHARACTERISTICS

The primary function of the retrofittable fault monitor is to provide a visible external indication when arcing occurs inside the transformer tank. The device's red indicator serves as confirmation that a fault has occurred within the transformer, and the unit should not be re-energized for safety reasons. The retrofittable fault monitor is sensitive enough to detect a pressure increase due to internal low energy arcing which can result from partial discharge, or high energy arcing resulting from short circuits between phases or between phase and ground.

The retrofittable fault monitor will never activate during transformer testing, transport, or installation; and comes equipped with a pressure relief valve for release of internal tank pressure manually or automatically.

ROUTINE TESTS

The retrofittable fault monitor operates with a bellows mechanism resistant to vibration and temperatures. Each device is individually tested with five consecutive tests at three different pressure rates: 1.5, 5, and 14 psi/sec. Test certificates are available with each release upon request.

SENSITIVITY

Wide Calibration: For low energy arcs the flag triggers with any slow and progressive increase of the internal pressure of the transformer.

Reduced Calibration: This type of calibration is immune to pressure increases due to temperature variation. Flag will not trigger as a result of low energy arcs.

APPLICATION

The retrofittable fault monitor can be used on pole-mount, pad mount distribution transformers and voltage regulators. For voltage regulators application the retrofittable fault monitor will be calibrated at 4.5 psi.

Retrofittable Fault Monitor Overpressure Indicator

INTEGRATION WITH SCADA

For operations that need information on pole top transformer health transmitted in real time into the SCADA, Weidmann has developed a solution consisting of a wireless transmitter connected to the retrofittable fault monitor. The retrofittable fault monitor status can be transmitted to SCADA via modem or a radio transmitter. Moreover, where necessary, the transmitter can also transfer information such as transformer temperature and load. In the latter case, temperature and current additional sensors are required. Such solutions are recommended for pole top transformers located in highly populated areas and/or feeding critical buildings such as hospitals, schools, and government institutions. Contact Weidmann for more information on the integrated solution.

SPECIFICATIONS

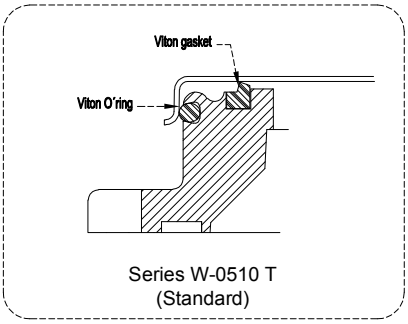
Operating Pressures	- Valve Operation = 10 psi - Valve Reseal = 7 psi - Flag Operation = 9 psi (wide calibration) - Flag Operation = 11 psi (reduced calibration)
Weight	0.395 kg
Use	Outdoors (thermoplastic, flame retardant with UV protection)
Operating Temperature	-40 to 85 °C
Storing Temperature	-20 to 100 °C

* Patent # US 10,345,367 BI

PRODUCT OPTIONS SELECTION SHEETS

PRESSURE RELIEF DEVICES

SERIES W-0510 T (PRD)



Series W-0510 T
(Standard)

W	-	0	5			-		T										

PRD Calibration | Number of control switches | Connector, terminal box and switch type | Semaphore | Special characteristics

04 ± 1 psi	0	4
05 ± 1 psi	0	5
06 ± 1 psi	0	6
07 ± 1 psi	0	7
08 ± 1 psi	0	8
09 ± 1 psi	0	9
10 ± 1 psi	1	0
11 ± 1 psi	1	1
12 ± 1 psi	1	2
13 ± 1 psi	1	3
15 ± 1 psi	1	5
17 ± 1 psi	1	7
20 ± 1 psi	2	0

	Standard
Q	For C5M environments

	Without mounting gasket (Standard)
J	Mounting gasket, between transformer tank and PRD (Viton)
L	Mounting gasket (Neoprene)
M	Mounting gasket (Nitrile)

	Yellow color indicator (Standard)
I	Blue color indicator

	Cover: Zinc plated and painted (Standard)
H	Cover: Hot dip galvanized and painted
P	Cover: Stainless steel and painted

	Springs : Stainless Steel (AISI 304) painted (standard)

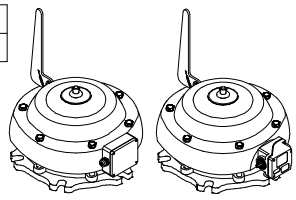
	Gasket and O-ring : Viton (-29°C to +204°C) Standard
K	Gasket and O-ring : Neoprene for low temperature (-54°C to +149°C)

	Sealed female plug with cable SOW/SOOW # 16 AWG (Standard)
G	Female plug with 1/2" thread for conduit tube, cable SOW/SOOW # 16 AWG
F	Female plug with 1/2" thread for conduit tube, cable flying leads # 16 AWG, TEW 105 °C

	Without semaphore (Standard)
B	With yellow aluminium semaphore

One switch	
Two simultaneously operating switches	2

Without control switches	S	
Switch 15 A 125/250 Vac, SPDT, sealed box and female connector, 8 pins (Standard)	C	
Switch 15 A 125/250 Vac, SPDT, sealed box and female connector, 9 pins (ANSI style)	A	
Switch 15 A 125/250 Vac, SPDT, and terminal box NEMA 4, IP 56, with gland connector PG-16	G	C
Switch 10 A /125 Vdc/ Vac, SPDT,and terminal box NEMA 4, IP 56, with gland connector PG-16	G	D
If you require AUTO-RESET mechanism select C, A, GC or GD option and after put letter "R"		R



Pressure Relief Device

Indicator type

Fluid	Color indicator
Mineral Oil	Yellow (Standard)
Silicone	Blue

Semaphore

None (Standard)
Yellow - aluminum

Note:
If you need semaphore please specify the color in your purchase order.

Environments

Outdoors	Zinc plated cover and stainless steel springs, painted (grey color ASA 70) (Standard)
Corrosive	Stainless steel cover and springs painted (grey color ASA 70) Cover with hot dip galvanized and springs in stainless steel painted (grey color ASA 70)

Switch type

Sealed terminal box	15 A 125/250 Vac, SPDT, Terminal box and gland connector PG-16
Sealed terminal box	10 A 125 Vdc/ Vac, SPDT, Terminal box and gland connector PG-16
Quick disconnect assy.	15 A 125/250 Vac, SPDT, Female connector 8 pines (Standard)
Quick disconnect assy.	15 A 125/250 Vac, SPDT, Female connector 9 pines (ANSI style)
Without switches	

Connector type

Sealed female plug with cable SOW/SOOW # 16 AWG (Standard)
Female plug with 1/2" thread for conduit tube connection, cable SOW/SOOW # 16 AWG
Female plug with 1/2" thread for conduit tube connection, cable flying leads # 16 AWG, TEW 105 °C

Mounting gasket

None supplied (Standard)
One supplied

Length of cable or flying leads

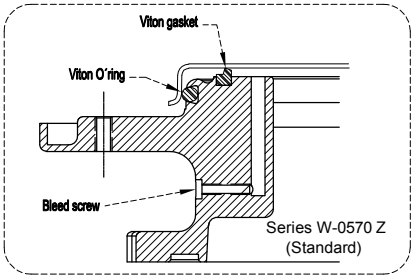
Standard cable length 1 meter (39.4")	
	Length: (Inches)

Example: W-0512 - 2TGCBPJ

PRD calibrated at 12 ± 1 psi, two control switches 15A 125/250Vac, terminal box NEMA 4, IP 56, with gland connector PG-16, yellow aluminium semaphore, stainless steel cover and springs painted (grey color ASA 70) with one mounting gasket.

PRESSURE RELIEF DEVICES

SERIES W-0570 Z (PRD)



W	-	0	5			-		Z								

PRD Calibration | Number of control switches | Connector, terminal box and switch type | Semaphore | Special characteristics

04 ± 1 psi	6	4
05 ± 1 psi	6	5
06 ± 1 psi	6	6
07 ± 1 psi	6	7
08 ± 1 psi	6	8
09 ± 1 psi	6	9
10 ± 1 psi	7	0
11 ± 1 psi	7	1
12 ± 1 psi	7	2
15 ± 1 psi	7	5
17 ± 1 psi	7	7
20 ± 1 psi	8	0

	Polyester powder paint ASA 61 (Standard)
Q	For C5M enviroments,

	Without flange conection (Standard)
P	Aluminium flange for pipe connection (6 in)
V	Aluminium flange for pipe connection (7.91in)

	Without mounting gasket (Standard)
J	Mounting gasket, between transformer tank and PRD (Viton)
L	Mounting gasket (Neoprene)
M	Mounting gasket (Nitrile)
R	Mounting gasket (Fluorosilicone FVMQ)

	Yellow color indicator (Standard)
I	Blue color indicator

	Gasket and O´ring: Viton (-29ºC to +204ºC) Standard
K	Gasket and O´ring: Neoprene for low temperature (-54ºC to +149ºC)
T	Gasket and O´ring: Fluorosilicone FVMQ for low temperature (-62ºC to +232ºC)

	Sealed female plug with cable SO/SOW/SOOW #16 AWG (Standard)
G	Female plug with 1/2" thread for conduit tube, cable SO/SOW/SOOW # 16 AWG
F	Female plug with 1/2" thread for conduit tube, cable flying leads # 16 AWG, TEW 105ºC
U	Female plug with 3/4" thread for conduit tube, cable flying leads # 16 AWG, TEW 105ºC

	Without semaphore (Standard)
B	With yellow or blue aluminium semaphore

One switch	
Two simultaneously operating switches	2
Three simultaneously operating switches	3
Four simultaneously operating switches	4

Without control switches	S	
Switch 15 A 125/250 VAC, SPDT, with female connector, 8 pins (Standard)	C	
Switch 15 A 125/250 VAC, SPDT, with female connector, 9 pins (ANSI style)	A	
Switch 10 A / 125V DC / VAC, SPDT, with female connector, 8 pins (Standard)	C	D
Switch 10 A / 125V DC / VAC, SPDT, with female connector, 9 pins (ANSI style)	A	D
Switch 15 A 125/250 VAC, SPDT,with gland connector PG-16	G	C
Switch 10 A / 125V DC / VAC, SPDT, with gland connector PG-16	G	D

Semaphore

None (Standard)
Yellow-Aluminium
Blue-Aluminium

Note:
If you need semaphore please specify the color in your purchase order.

Indicator Type

Fluid	Color Indicator
Mineral Oil	Yellow (Standard)
Silicone	Blue

Aluminium flange

None supplied (Standard)
Supplied (Optional)

Switch Type

15 A 125/250 VAC y VDC, With gland connector PG16.
10 A 125 VDC/VAC y VDC, With gland connection PG16.
Quick disconnect assy. 15 A 125/250 Vac, CPDT, Female connector 8 pines (Standard)
Quick disconnect assy. 15 A 125/250 Vac, SPDT, Female connector 9 pines (ANSI style)
Without switches

Connector type

Sealed female plug with cable SOOW #16 AWG
Female plug with 1/2" thread for conduit tube connection, cable SOOW # 16 AWG
Female plug with 1/2" thead for conduit tube connection, cable flying leads # 16 AWG, TEW 105ºC

Cable length or flying leads

Standard cable length 1 meter (39.4")	
	Length: (inches)

Thred options

1/2"-14 NPS
3/4"-14 NPS
PG 13.5
PG 16
M- 25 x 1.5
M- 20 x 1.5
1 5/16"-18UNEF

Mounting gasket

None supplied (Standard)
One supplied (Optional)

TEMPERATURE INDICATOR WITH BIMETAL AND SWITCHES FOR CONTROLS

SERIES 0250-0260

Selection guide for Bimetal Thermometer:

Series:
0255 A
0255 Pt

A	- 9 pins ANSI connector for 1 to 3 Sw. - 12 pins ANSI connector for 4 Sw.
F	- 8 pins ANSI connector for 1 and 2 Sw.
Pt	- 9 and 12 pin ANSI connector for 1, 2 and 3 Sw with RTD Pt100 Ohms.

Type of Instrument

Number of switches

Thermometer | Model | Environment | Thermowell

W - 0 2 [ ] [ ] [ ] [ ] or [ ] [ ] [ ]

Spacing

Special features according to customer.

External Wiring:

H	- SOOW. All-weather protection from -40°C to 90°C. Abrasion resistance. Environmentally safe. Conductors #16 AWG 600V. UL, ROHS y MSHA approved for flame resistant.
I	- SEOOW. All-weather protection from -50°C to 105°C. Abrasion resistance. Environmentally safe. Conductors #16 AWG 600V. UL, ROHS y MSHA approved for flame resistant.
J	- Flying Leads #16 AWG. UL1015 /1030 y CSA-TEW 105°C.

Thread connector type:

1	- 1/2-14 NPT
2	- 3/4-14 NPT
3	- PG 13.5
4	- PG 16
5	- PG 21

Customer:

[ ]	Standard type instrument
--	- Special calibrations - Cable length

Temperature Range:

Ø114.0 mm [4.5"]	4
0-120 °C.	5
0-160 °C 0-180 °C	6

Diameter and Inscription Language:

	5.5"	6.0"
Spanish	0	5
English	1	6
English, Fixed nipple 3/8-18 NPT	2	7
Bilingual	3	8
Bilingual		9

Optional Thermowell:

[ ]	Without thermowell
U	B02-019 Brass thermowell; Internal 7/8-14 UNF thread, External 1/2-14 NPT thread
V	B02-041 Brass thermowell; Internal 3/8-18 NPT thread, External 1/2-14 NPT thread
W	B02-501 Stainless steel thermowell; Int. 7/8-14 UNF thread, Ext. 1/2-14 NPT thread
X	B02-347 Brass thermowell; Internal 7/8-14 UNF thread; External 3/4-14 NPT thread
Y	B02-473 Brass thermowell;Int.7/8-14 UNF thread; Ext.1/2 NPT thread,11.35" length
Z	B02-556 Stainless steel thermowell; Int.7/8-14 UNF thread, Ext. 3/4 NPT. 288.5mm length

Environmental conditions where it will be installed:

[ ]	Temperature Indicator NEMA 4 / IP66 grade. Working temperature -20 to +100°C. (Standard)
L	Temperature Indicator NEMA 4 / IP66 grade. Working temperature -20 to 100°C with connector output oriented 90 °
M	Temperature Indicator NEMA 4x / IP66 grade. Ambient temperature from -20 to 100 °C. - Tempered glass lens with UV protection. - Powder paint for marine environment C5M specification. - Materials in stainless steel AISI 316.
S	Temperature Indicator NEMA 6P / IP68 grade. Ambient temperature from -20 to 100 °C. Prolonged dives 24 hours to 1.8 m.
C	Temperature Indicator NEMA 4 / IP66 grade. Ambient temperature from -50 to 100 °C. - Seals in silicone material. - Cable type SEOOW.

Number of switches:

0 Sw	T
1 Sw type SPDT.	1
2 Sw type SPDT.	2
3 Sw type SPDT.	3
4 Sw type SPDT.	4

Connection box style:

K	- (2x) Hole for ½" Conduit (Ø22.2 mm). Standard
N	- (2x) 1/2-14 NPS Thread
O	- (2x) 3/4-14 NPS Thread
P	- PG 16
Q	- PG 21
R	- 1.0" NPS (30.16 mm)

Mounting the junction box:

6	- With coupling
7	- Cable type SOOW
8	- With hose

Instrument with cabinet:

G	- NEMA 4x grade enclosure with optional connectors and connection board from 1 to 4 microswitch.
EPC	- NEMA 4x grade enclosure with optional connectors, connection board from 1 to 4 microswitch and switchable SCADA output 0-1 mA / 4-20 mA
Pt	- NEMA 4x grade enclosure with optional connectors, connection board from 1 to 4 microswitch, ohmic output with RTD type Pt100Ω.

Series:
0255 G
0255 EPC
0255 Pt

TEMPERATURE INDICATOR WITH CAPILLARY SYSTEM AND SWITCHES FOR CONTROLS

SERIES 0290

Selection guide for
Capillary Thermometer
(Remote Temperature Indicator)

Series:
0290 A, 0290 Pt.

A	- 9 pins ANSI connector for 1 to 3 Sw. - 12 pins ANSI connector for 4 Sw.
F	- 8 pins ANSI connector for 1 and 2 Sw.
Pt	- 9 and 12 pin ANSI connector for 1, 2 and 3 Sw with RTD Pt100 Ohms.

External Wiring:

H	- SOOW. All-weather protection from -40°C to 90°C. Abrasion resistance Environmentally safe. Conductors #16 AWG 600V. UL, ROHS y MSHA approved for flame resistant.
I	- SEOOW. All-weather protection from -50°C to 105°C. Abrasion resistance. Environmentally safe. Conductors #16 AWG 600V. UL, ROHS y MSHA approved for flame resistant.
J	- Flying Leads #16 AWG. UL1015 /1030 y CSA-TEW. -40 to +105°C.

Capillary length:

3	- 3658 mm (144")
8	- 8000 mm (315")
10	- 10000 mm (394")

Type of instrument
Number of switches
Capillary series
Thermometer
Model
W - 0 2 9
Spacing
or
Capillary length
Thermowell
Environment
Special features according to customer.

Customer:

	Standard type instrument
–	- Special calibrations - Cable length

Temperature of:	Mounted on:	Range	Language	
Winding	Thermal plate	0 - 160 °C	Spanish	0
			English	1
			Bilingual	2
		0 - 180 °C	Spanish	3
			English	4
			Bilingual	5
Liquid	Thermowell	0 - 120 °C	Spanish	6
			English	7
			Bilingual	8
Liquid	Thermowell	0 - 160 °C	English	9

Optional Thermowell:

	Without Thermowell
U	B02-019 Brass thermowell; Internal 7/8-14 UNF thread, External 1/2-14 NPT thread
V	B02-041 Brass thermowell; Internal 3/8-18 NPT thread, External 1/2-14 NPT thread
W	B02-501 Stainless steel thermowell; Int. 7/8-14 UNF thread, Ext. 1/2-14 NPT thread
X	B02-347 Brass thermowell; Internal 7/8-14 UNF thread; External 3/4-14 NPT thread
Y	B02-473 Brass thermowell;Int.7/8-14 UNF thread; Ext.1/2 NPT thread,11.35" length
Z	B02-556 Stainless steel thermowell; Int.7/8-14 UNF thread, Ext. 3/4 NPT. 288.5mm length

Environmental conditions where it will be installed:

	Temperature Indicator NEMA 4 / IP66 grade. Working temperature -20°C to +100°C. (Standard)
L	Temperature Indicator NEMA 4 / IP66 grade. Working temperature -20°C to 100°C with connector output oriented 90°
M	Temperature Indicator NEMA 4x / IP66 grade. Ambient temperature from -20°C to +100 °C. - Tempered glass lens with UV protection. - Powder paint for marine environment C5M specification. - Materials in stainless steel AISI 316.
C	Temperature Indicator NEMA 4 / IP66 grade. Ambient temperature from -50°C to +100 °C. - Seals in silicone material.

Number of switches:

0 Sw	T
1 Sw type SPDT.	1
2 Sw type SPDT.	2
3 Sw type SPDT.	3
4 Sw type SPDT.	4
5 Sw type SPDT.	5

Connection box style:

K	- (2x) Hole for ½" Conduit (Ø22.2 mm). Standard
N	- (2x) 1/2-14 NPS Thread.
O	- (2x) 3/4-14 NPS Thread
P	- PG 16
Q	- PG 21
R	- 1.0" NPS (30.16 mm)

Series:
0290 G
0290 EPC
0290 Pt.

Instrument with cabinet:

G	- NEMA 4x grade enclosure with optional connectors and connection board from 1 to 5 microswitches.
EPC	- NEMA 4x grade enclosure with optional connectors, connection board from 1 to 5 microswitches and switchable SCADA output 0-1 mA / 4-20 mA
Pt	- NEMA 4x grade enclosure with optional connectors, connection board from 1 to 5 microswitches, ohmic output with RTD type Pt100Ω.

Series
0290 G.

LIQUID LEVEL INDICATORS

SERIES W-0100 A

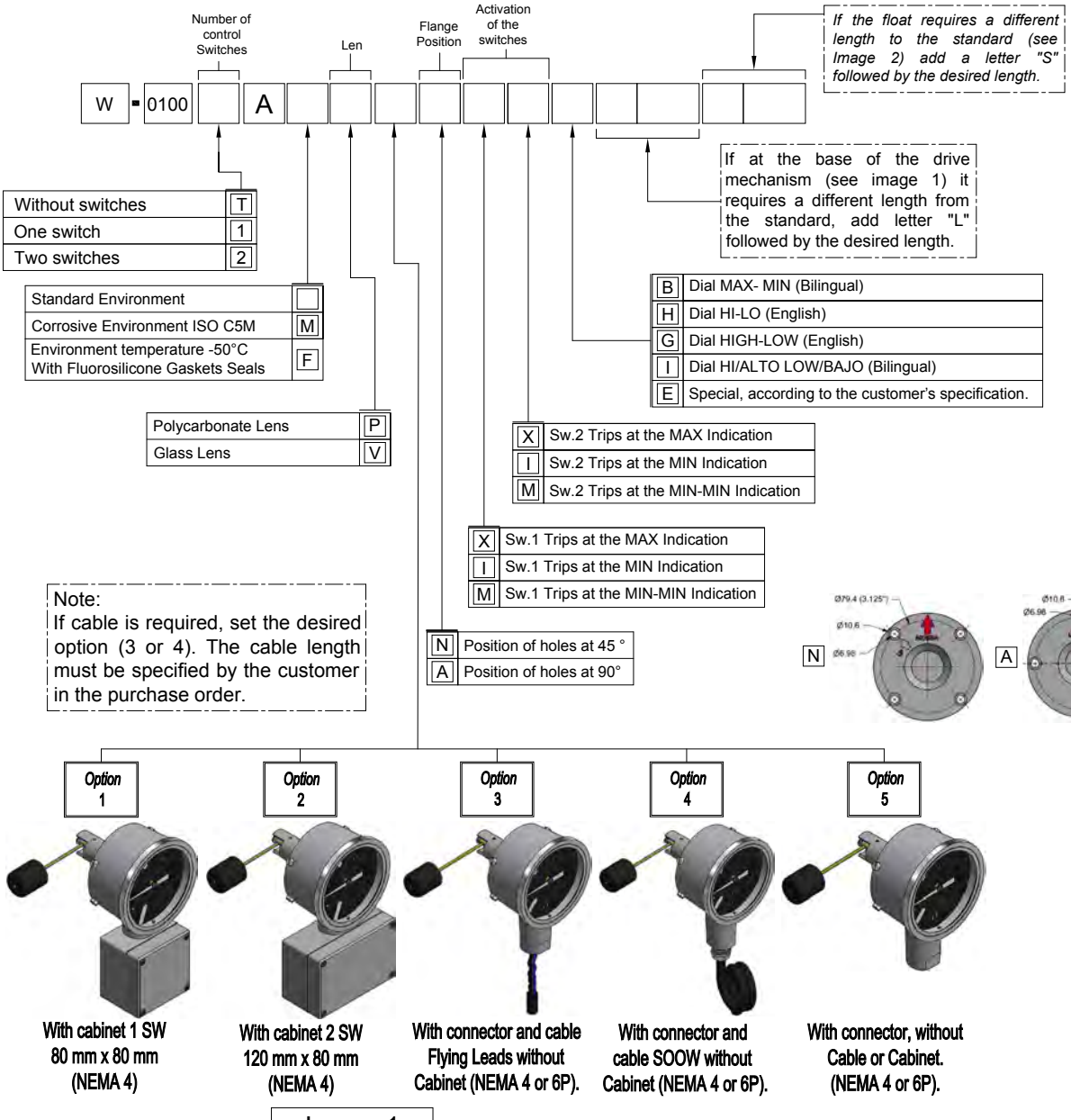


Image 1

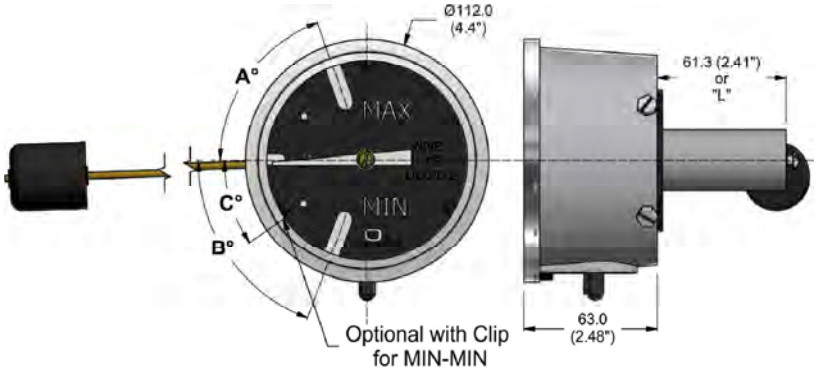
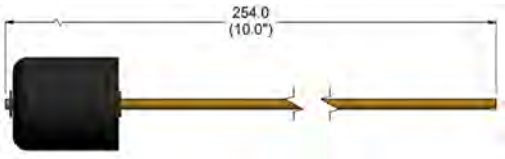


Image 2

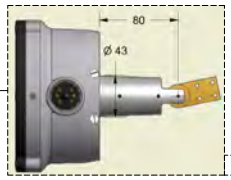


°A	°B	°C

The degrees must be specified in the purchase order.

LIQUID LEVEL INDICATORS

SERIES W-0100 XR / W-0100 XREP



If at the base of the drive mechanism (see image 1) it requires a different length from the standard, add letter "L" followed by the desired length.

Image 1

W - 0100 [ ] XR [ ] [ ] [ ] [ ] - [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Number of control Switches | SCADA Output | Gear Relation | Type of Float | Len | Flange Position | Activation of the switches

B	Dial MAX- MIN (Bilingual)
H	Dial HI-LO (English)
G	Dial HIGH-LOW (English)
I	Dial HI/ALTO LOW/BAJO (Bilingual)
E	Special, according to the customer's specification.

Without switches	T
One switch	1
Two switches	2
Three switches	3
Four switches	4

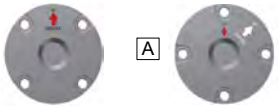
X	Sw.2 Trips at the MAX Indication
I	Sw.2 Trips at the MIN Indication
M	Sw.2 Trips at the MIN-MIN Indication

X	Sw.1 Trips at the MAX Indication
I	Sw.1 Trips at the MIN Indication
M	Sw.1 Trips at the MIN-MIN Indication

Note:
If you require 3 or 4 switches, add letters X, I, or M, according to the requirement.

Without SCADA Output (Leave Blank)		
With electonic output without source	E	
With SCADA Output 4-20mA	E	P
With SCADA Output 0-1mA	C	P

N	Position of holes at 45 °
A	Position of holes at 90°



P	Polycarbonate Lens
V	Glass Lens
T	Tempered Glass Lens With UV Protection

The float can pass through a diameter of 50.8mm (2 ") or 84.0mm (3 5/16")

Standard Environment		
Corrosive Environment ISO C5M	M	
Submersible Without SCADA output	S	
Environment temperature -50°C With Fluorosilicone Gaskets Seals	F	

2	The float can pass through a diameter of 2 in.
3	The float can pass through a diameter of 3 5/16 in.
4	Special Float

D	Gear Relation 2 : 1
C	Gear Relation 4 : 1

Gear Relation 2 : 1 or 4: 1

Option 1

With Polyester cabinet 152 mm x 152 mm stuck to the base (NEMA 6P).

Option 2

With Polyester cabinet 152 mm x 152 mm and cable SOOW (NEMA 6P).

Option 3

With cabinet 1 SW Without SCADA Output 80 mm x 80 mm (NEMA 4)

Option 4

With cabinet 2 SW Without SCADA Output 120 mm x 80 mm (NEMA 4)

Option 5

With cabinet 3 SW Without SCADA Output 160 mm x 80 mm (NEMA 4)

Option 6

With connector and cable Flying Leads without Cabinet (NEMA 4 or 6P).

Option 7

With connector, without Cable or Cabinet. (NEMA 4 or 6P).

Note:
If cable is required, set the desired option (2, 6 or 8). The cable length must be specified by the customer in the purchase order.

Option 8

With connector and cable SOOW without Cabinet (NEMA 4 or 6P).

°A	°B	°C	°D	°E	°F	°G

The degrees must be specified in the purchase order.

The length of the float must be specified in the purchase order

LIQUID LEVEL INDICATORS

SERIES W-0133 A

If the float requires a different length to the standard (see Image 2) add a letter "S" followed by the desired length.

Number of control Switches	SCADA Output	Position of the base	Len	Activation of the switches
W - 0133	A		-	

If at the base of the drive mechanism (see image 1) it requires a different length from the standard, add letter "L" followed by the desired length.

Without switches	T
One switch	1
Two switches	2
Three switches	3
Four switches	4

B	Dial MAX- MIN (Bilingual)
H	Dial HI-LO (English)
G	Dial HIGH-LOW (English)
I	Dial HI/ALTO LOW/BAJO (Bilingual)
E	Special, according to the customer's specification.

X	Sw.2 Trips at the MAX Indication
I	Sw.2 Trips at the MIN Indication
M	Sw.2 Trips at the MIN-MIN Indication

Note:
If you require 3 or 4 switches, add letters X, I, or M, according to the requirement.

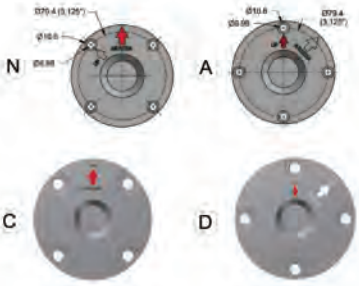
X	Sw.1 Trips at the MAX Indication
I	Sw.1 Trips at the MIN Indication
M	Sw.1 Trips at the MIN-MIN Indication

Without SCADA Output (Leave Blank)		
With electonic output without source	E	
With SCADA Output 4-20mA	E	P
With SCADA Output 0-1mA	C	P

P	Polycarbonate Lens
V	Glass Lens
T	Tempered Glass Lens With UV Protection

Standard Environment	
Corrosive Environment ISO C5M	M
Submersible Without SCADA output	S
Environment temperature -60°C With Fluorosilicone Gaskets Seals	Y

N	Position of holes at 45 ° on a 3,125" dia.b.c.
A	Position of holes at 90° on a 3,125" dia.b.c.
C	Position of holes at 45 ° on a 4,0" dia.b.c.
D	Position of holes at 90° on a 4,0" dia.b.c.



Note:
If cable is required, set the desired option (2, 6 or 8). The cable length must be specified by the customer in the purchase order.

Image 1

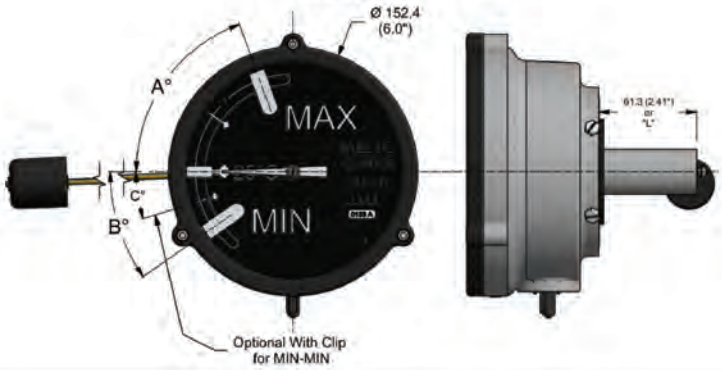
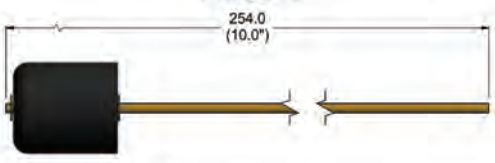


Image 2



°A °B °C

The degrees must be specified in the purchase order.

FLOW INDICATORS
SERIES W-0150 A

Number of control Switches

Len

Specify Ø of Pipe (See Image 1)

According to the diameter of the pipe that needs to be considered the flow speed (see image 2), if the required flow is different add the letter "X" followed by the desired flow in gallons per minute.

W - 0150 - A

If at the base of the drive mechanism (see image 1) it requires a different length from the standard, add letter "L" followed by the desired length.

One Switch	1
Two Switches	2

Standard Environment	
Corrosive Environment ISO C5M	M
Environment temperature -60°C With Fluorosilicone Gaskets Seals	Y

Polycarbonate Lens	P
Glass Lens	V

E	Dial CON FLUJO/SIN FLUJO (Spanish)
I	Dial PUMP ON/ PUMP OFF (English)
B	Dial PUMP ON (CON FLUJO) / PUMP OFF (SIN FLUJO) Bilingual
W	Dial PUMP ON (CON FLUJO) / PUMP OFF (SIN FLUJO) Bilingual for Water

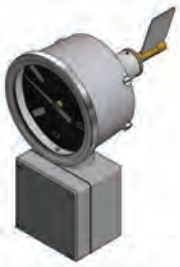
E

I

B

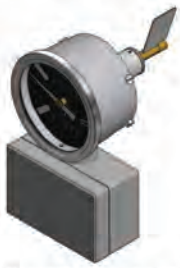
W

Option 1



With cabinet B01-584 80mm x 80mm (NEMA 4)

Option 2



With cabinet B01-585 120mm x 80mm (NEMA 4)

Option 3

With connector and cable Flying Leads without Cabinet. (NEMA 4 or 6P).

Option 4

With connector and cable SOOW without Cabinet. (NEMA 4 or 6P).

Option 5

With connector, without Cable or Cabinet. (NEMA 4 or 6P).

Note 1:
If cable is required, set the desired option (3 or 4). The cable length must be specified by the customer in the purchase order.

Image 1

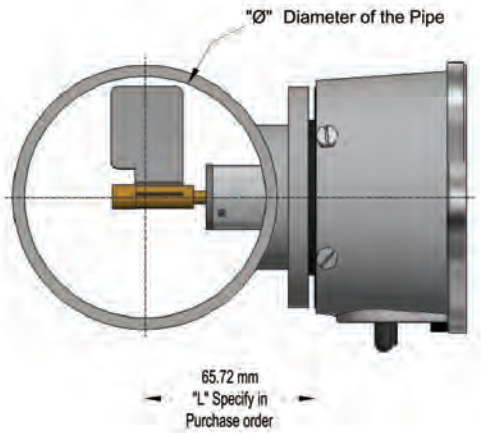


Image 2

Flow Indicator series 0150 A (operating range)

Tube diameter	Area		Velocity(min) = 60 meter/minute		Velocity(max) = 200 meter/minute	
inch (mm)	inch2	(m2)	Q (galons per minute)	Q (cubic meter per second)	Q (galons per minute)	Q (cubic meter per second)
1 1/2" (38.1)	1.7672	0.0011	18.07	0.0011	60.24	0.0038
2" (50.8)	3.1416	0.0020	32.13	0.0020	107.09	0.0068
3" (76.2)	7.0686	0.0046	72.28	0.0046	240.95	0.0152
4" (101.6)	12.5664	0.0081	128.50	0.0081	428.35	0.0270
6" (152.4)	28.2744	0.0182	289.13	0.0182	963.78	0.0608
8" (203.2)	50.2656	0.0324	514.02	0.0324	1,713.39	0.1081
11.81"(300)	109.3591	0.07069	1,120.40	0.0707	3,734.66	0.2356

PRESSURE/VACUUM GAUGE

SERIES W-0300 T

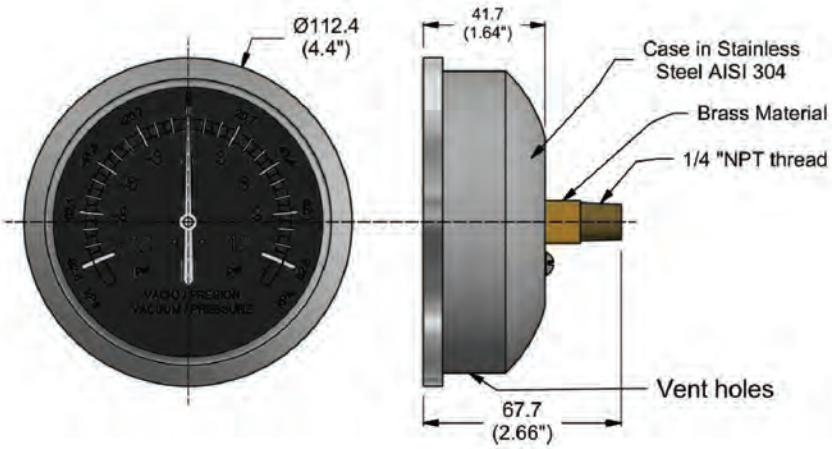
W - 03 [ ] [ ] T

Brass Material (Image 1)	0	5	Dial Pressure/Vacuum Gauge -100 kPa to +100 kPa
Stainless Steel Material (Image 2)	1	6	Dial Pressure/Vacuum Gauge -12 psi to +12 psi

5

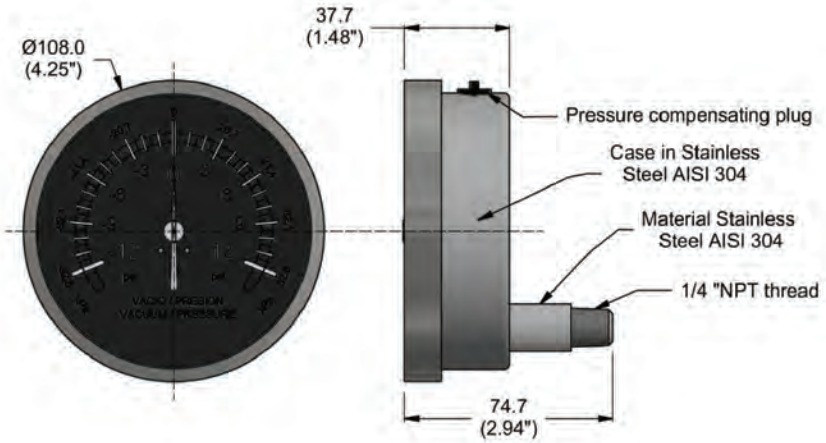
6

Image 1



Example W-0306 T

Image 2



Example W-0316 T

Rev. 06.26

Weidmann Electrical Technology AG
Rapperswil, Switzerland
T +41 55 221 41 11

Weidmann Electrical Technology Inc.
St. Johnsbury VT, USA
T +1 802 748 8106

Weidmann Electrical Insulating Systems Co. Ltd.
Shanghai, China
T +86 21 3463 7680

www.weidmann-electrical.com