Ogauge®

Manual

PRESSURE GAUGE | SWITCH | TRANSMITTER | DATALOGGER

Bulletin No. KA230601

Contents

1. Construction and Function of Ogauge

Ogauge pressure gauge is a pathbreaking device, which combines several functions in instrumentation in one single device. It is a pressure gauge, switch, a transmitter and also a datalogger. The gauge operates on an input supply voltage of 18 to 32 VDC. A regulated supply of 24VDC will give best results. Several ranges from 100 mbar to 600 bar can be offered. Differential ranges and special wetted parts also can be offered.

With its integrated pressure measurement cell, a full coloured OLED display and 4 switching outputs, the Ogauge offers the user all the advantages of a modern electronic pressure switch, gauge and a transmitter.

4 switching points and switch-back points can be adjusted very simply and independently of one another using the onboard capacitive touch keypad. Programming is also possible through a mobile application for android and iOS devices. Key parameters can be changed remotely from a web application, if IoT is enabled by an authorised person.

For optimum integration in monitoring systems (e.g. with PLC), two analogue outputs (voltage and current) are also provided. The values of these outputs and zero and span can be independantly programmed.

Additionally, with the IoT option, telemetry and event data like relay switching and status can be monitered remotely provided a fairly fast, uninterrupted internet connection is available where the device is installed. This opens up significant possibilities of historic data interpretation and even AI to improve processes, diagnostics, automating service calls, predicting failures, claim settlement for insurance to name just a few.

The eletronic boards are housed in a Stainless Steel enclosure.

2. IOT

IOT or internet of things, opens up huge possibilities in automation, and improving processes, saving costs, predicting failures, automating service requests to name just a few. Ogauges are equipped with this feature.

All Ogauges can be linked to a dashboard. A login name and password is given to the owner of the gauge. Administration of the gauge is possible using this login and password remotely.

The dashboard login gives the user a lot of information on telemetry data with timestamp, as also the event data. With the dashboard, many additional functions can be handled, like triggering an email when a relay is operated, which can then be integrated into the customer's ERP for further action. The trend analysis of the telemetry data will also give a lot of insights into the operations where the Ogauges are used.

3. Pin Configuration and wiring

The electrical connection must be carried out by a qualified electrician according to the relevant regulations of the country concerned. When connecting the analogue output, screened lines must always be used.

A 19 pin MIL connector is provided at the back of the Oguage.

A suitable cable can be selected by the customer. Recommended is Belden part no. **12P1.0YCY / or equivalent**, considering full 5A relay contact current. The table 2.1 below shows the core allocation for various signals in the 19-pin exterior connector. It is a subjective allocation of cores, as which conductor pair is called as "1" and which as "2" is left to the Page 4 of 12 Bulletin no. A230527 applicator's discretion. But once a conductor pair is chosen, then the individual conductors in that pair should be assigned signals as per the recommendation given in the table 4.1 - ensuring not to split the signal pair.

The applicator can choose a cable with more number of conductor pairs and keep some cores/pairs as 'dummy' to increase isolation between signals.

Based on the actual current taken through the relay contacts, the applicator may also choose lower cross-section of conductors down to 0.34 sq mm for cable lengths 1 to 45 mtr, or downto 0.25 sq mm for cable length less than 1 mtr. In any case, even if available, cross section of 0.14 sq mm is not recommended.

Table 3.1

Pin no.	1 (A)	2 (B)	3 (C)	4 (D)	5 (E)	6 (F)	7 (G)	8 (H)	9 (J)	10 (K)	11 (L)
Signal	GND	+24 VDC	Iout +	Iout -	Vout +	Vout -	COM1	NO1	NC1	COM2	NO2
Cable Core	1-1	1-2	2-1	2-2	3-1	3-2	4-1	5-1	5-2	6-1	7-1

Pin no.	12 (M)	13 (N)	14 (P)	15 (R)	16 (S)	17 (T)	18 (U)	19 (V)
Signal	NC2	COM3	NO3	NC3	COM4	NO4	NC4	EARTH
Cable Core	7-2	8-1	9-1	9-2	10-1	11-1	11-2	4-2, 6-2, 8-2, 10-2

Additional assembly notes which have been shown to reduce the effect of electromagnetic interference:

- Make line connections as short as possible.
- Use screened lines.
- The cable screening must be fitted by qualified personnel subject to the ambient conditions and with the aim of suppressing interference.
- Direct proximity to connecting lines of user units or electrical or electronic units causing interference must be avoided as far as possible.

4. Unpacking and Registration

Every Ogauge has to be registered to help users keep uptodate with updated firmware, assistance in the event the passwords are forgotten. Registration of Ogauge can be done through a mobile application (android or iOS) which needs to be downloaded on a smartphone from the appstore or google playstore. Please follow the procedure given in 4a, 4b and 4c below.

For security purposes, in allowing the configuration of the Ogauge, three roles have primarily been defined, namely Administrator (admin), Operator and Viewer. Each role has differentrights allotted to it when it comes to the gauge operation and control. These rights are controlled by :

- a 4 digit pin when using the keypad on the guage
- a password when using the mobile app and
- login / password when using a dashboard in cloud

What each role can and cannot do is summarised below :

Table 3.1

Role ➡	Viewer		User		Admin
Menu option ⬇	Can edit	Can view	Can view	Can edit	Can edit
Mode	No	Yes	Yes	No	Yes
Switch settings	No	Yes	Yes	Yes	Yes
Sector settings	No	Yes	Yes	Yes	Yes
Transmitter settings	No	Yes	Yes	Yes	Yes
Time & Date	No	Yes	Yes	Yes	Yes
Data & Log	No	Yes	Yes	Yes	Yes
Settings	No	Yes	Yes	Yes	Yes
Calibration	No	No	No	No	Yes

While configuration and alteration of key parameters is possible from the gauge keyboard, the mobile application and also the server dashboard, some parameters and functions like calibration can only be done from the mobile application by the Administrator.

4a. Downloading the App

The Ogauge uses a role-based system for maintaining and managing access to the device. The device can be accessed locally by a touchpad or via a mobile app or desktop. For security purposes, the gauge can be accessed through the touchpad using a 4 digit Pin or through mobile or desktop using an alphanumeric Password, which has to be set during registration. It is required for users to register their official e-mail address in order to be able to operate the gauge.

The mobile app for both IOS and Android devices can be downloaded on the respective app stores by searching for the app titled “Ogauge” or by simply scanning the following QR code:

For Android

For IOS

4b. Email Registration

Before beginning the registration process, make sure that power supply has been provided to the Ogauge. When the Ogauge has started, you will be shown a QR code on the Ogauge screen.

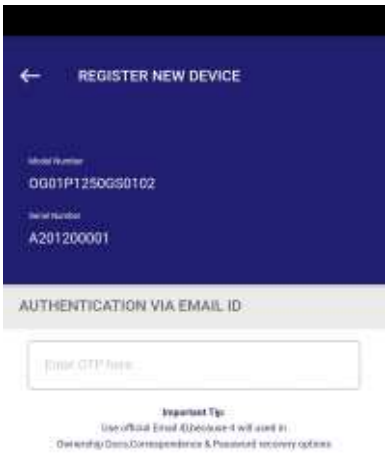
The steps for registering your Ogauge are as follows:

- Download the Ogauge app from the respective app store of your mobile.
- Open the app and tap the screen to continue, accept the required permissions.
- Tap the scan button as seen on the app's front menu.
- Scan the QR code that is displayed on the Ogauge screen.

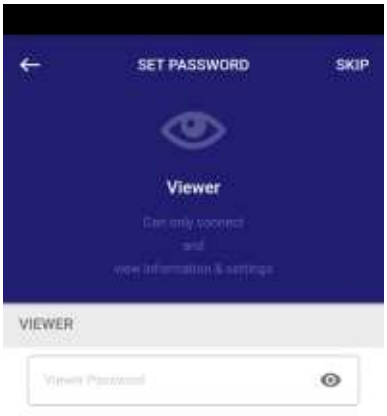
- The app will then ask you to register your e-mail address.

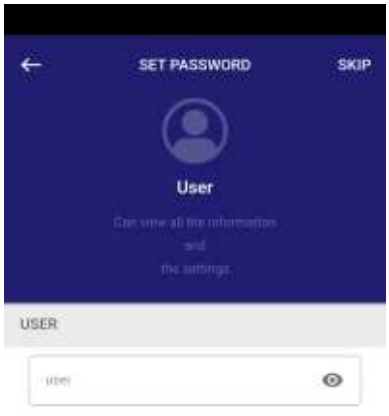
⚠ Use your official Email address as it will be used in Ownership documents and Password recovery options.

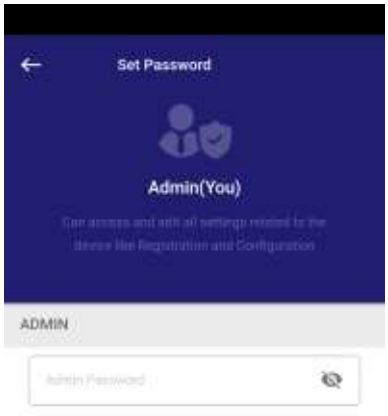
- After entering the e-mail address, you will be sent a One-Time-Pin (OTP) on the same e-mail address. Enter the received pin in the app.



- The app will then ask you to set the passwords for the Viewer, User and Admin modes. These passwords can be used to access the Ogauge on the mobile app or on desktop.

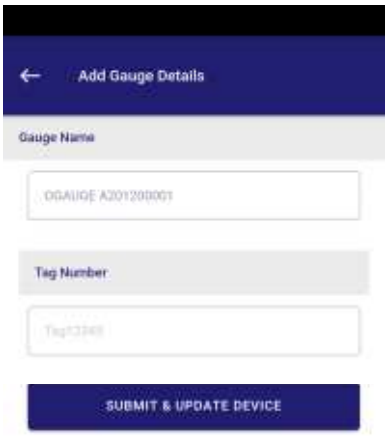




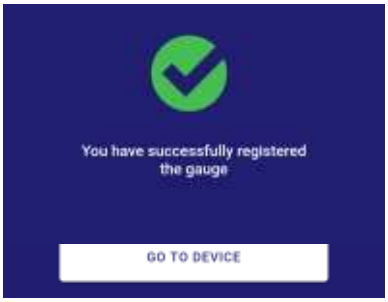


- After passwords are successfully set, you will then have to set a Pin to access the gauge. These pins can be used to access the Ogauge locally via touchpad.

- Add the details of your respective gauge, the gauge name should appear automatically on the app. Leave the Tag Number section blank and press the “Save and Update” button.



- Finally, press the “Go To Device” button. The Ogauge will now restart.



Upon successful registration, you will receive a follow-up email confirming the Ogauge registration.

Note: If the process is interrupted for any reason, you may have to retry registering the Ogauge after 5 minutes.

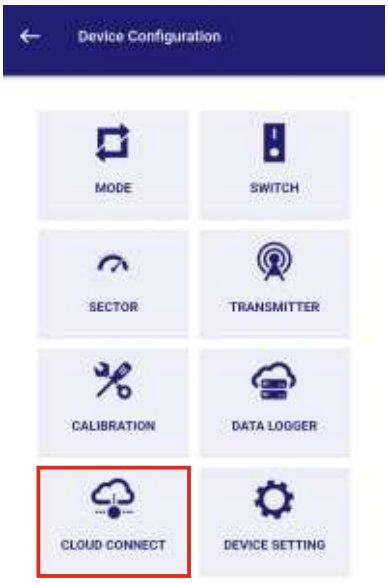
4c. Connecting Ogauge to a Router

The steps for enabling the connection from your Ogauge to a Router are as follows:

• Start the Ogauge App and tap the screen to continue.

- Press the “Refresh” button as seen on the top right corner of the screen.
- Tap on the serial number of your Ogauge in order to pair the gauge with the mobile Bluetooth.

- Go to the “Device Configuration” section of the app and press the Cloud Connect button.
- Enter the password set for the “Admin” role, as only this role can configure Cloud Connect on the Ogauge.



Note: The steps to connect your mobile to the network will vary according to your mobile device type. The instructions for both Android and IOS devices are mentioned below:

For Android Devices:

The following steps are to be used to connect to the network on Android devices:

- Press the Refresh button as seen on the“Available Networks” screen.
- Select the router to which you wish to connect the Ogauge.
- After selecting the router, enter the router password.

For IOS Devices*:

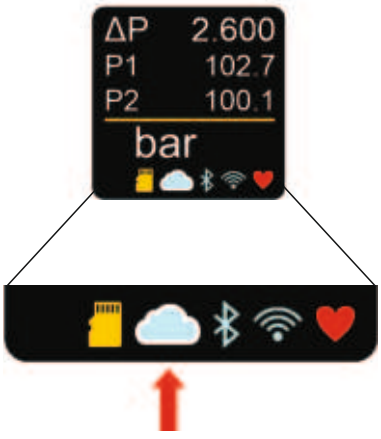
The following steps are to be used to connect to the network on IOS devices:

- In the Wi-Fi settings menu, go to the “Add Network” section.
- Enter the network name and respective pin or password.
- If the entered details are correct, the mobile should successfully connect to the network.

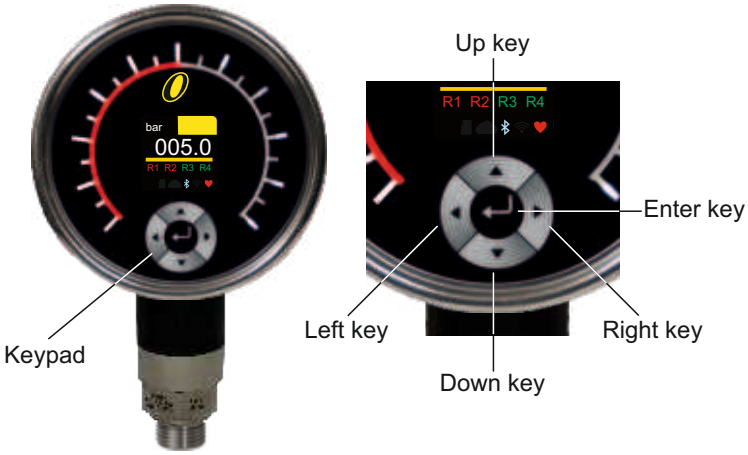
- Type in the “Admin” role password which you have previously set during Email Registration and press Enter.

After successfully completing this process, you will see a message that reads as “Wi-Fi Router changed and Ogauge will restart”.

Once the Ogauge has restarted, you will see a blue cloud icon with a white border, showing that the connection is successful.



5. Operating keys on the keypad

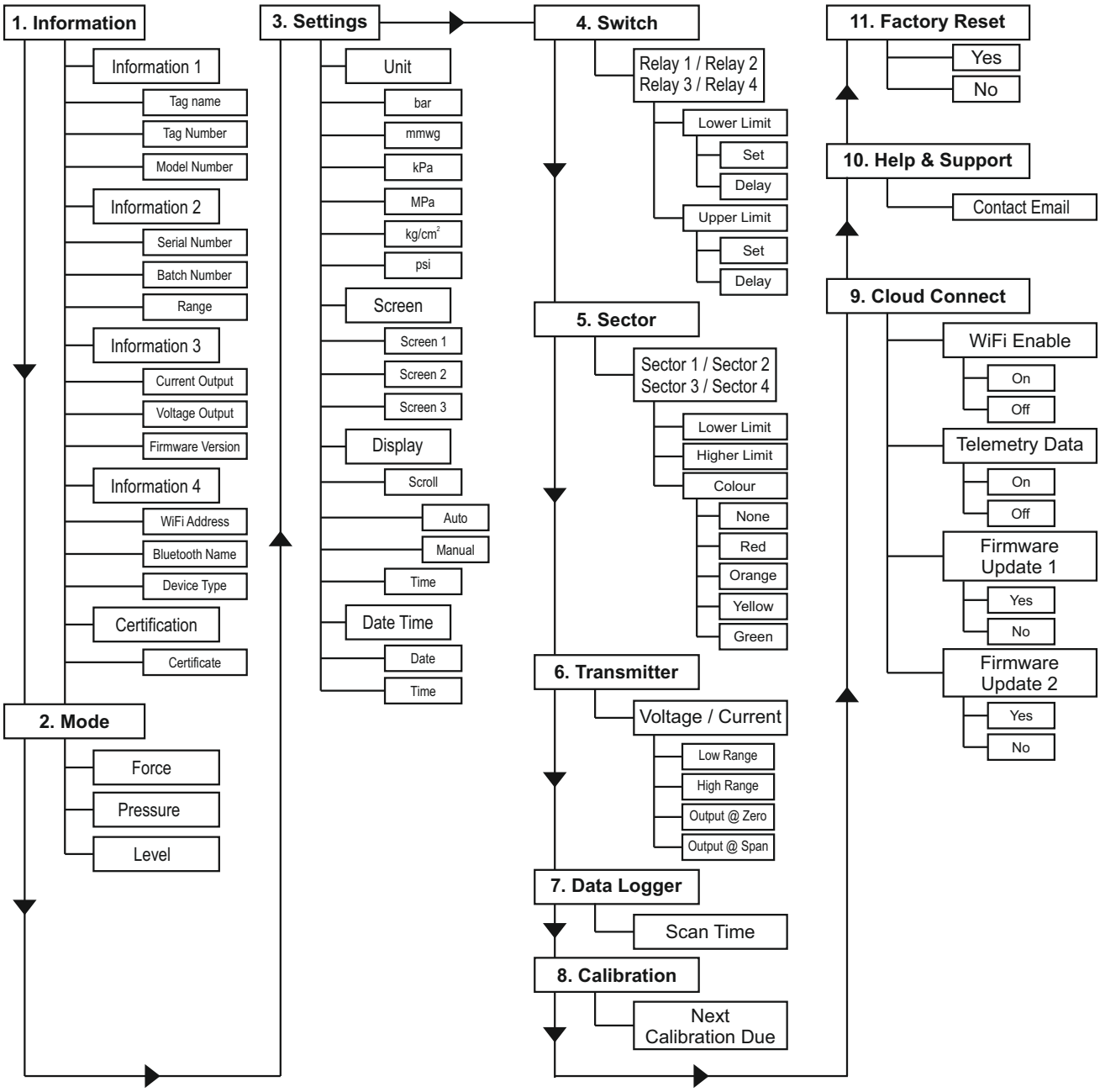


Some basic configuration of the gauge is possible from the keypad provided on the gauge.

Pressing the <Enter> key for a few seconds will prompt the user to select a role and enter the associated pin. If it matches the one stored in the gauge, further configuration according to the role will be allowed.

Navigation of the menu is possible by using the up, down, left and right keys shown in the image alongside.

Following tree should be used as a guide for accessing / configuring the gauge from keypad

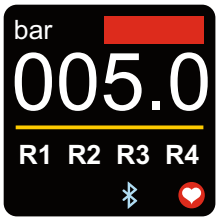


By using the Right Key, it is possible to skip to the display, wherever you are in the configuration tree.

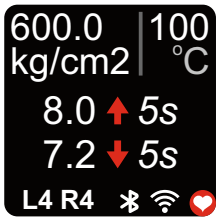
6. Digital display

For easy information access, three types of screens can be set up on the gauge :

Screen 1



Screen 2



Screen 3
Scrolling possible

While the colour rich, informative OLED display will give basic information of the process parameters, the mobile application is very effective in monitoring or knowing the process parameters and also all the settings of any Ogauge. Gauges are often installed at a height or in remote, not so easily accessible, places. The mobile app comes to the rescue in such cases. Move anywhere within a radius of 20 feet (6 meters) and pair the smartphone (with Ogauge app installed on it) with the Ogauge. Only one Ogauge can be paired at any one time. All information about this gauge including it's configuration will be available on the screen of the smartphone. Based on the users role, changing the configuration of the gauge is also possible.

The selected mode of operation of the Ogauge will decide the display units on the screen of the gauge. A pressure gauge can be used in different modes like Pressure, Force or Level (in open tanks). A differential pressure gauge can be used in differential pressure mode, level mode (for open tanks and also pressurised tanks).

An Ogauge with device type pressure can also be used in hydraulic presses to display force. The Ram diameter of the press on which it has been installed will have to be keyed in during setting up the mode. Display units will be Force units in this case. It is important to choose an appropriate gauge based on the hydraulic press / cylinder it has to be installed on.

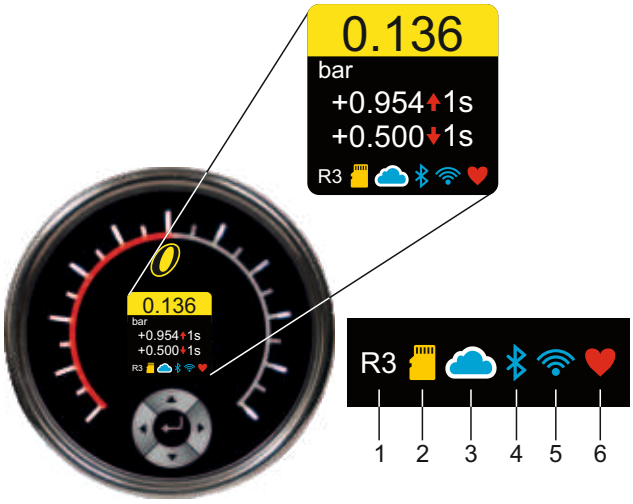
An Ogauge with device type pressure can be used to measure, monitor and control liquid level in tanks open to atmosphere. Level units will be displayed in this case. The inputs needed will be specific gravity of the liquid, tank orientation and related inputs based on tank orientation.

Ogauges for differential pressure are available in coplanar and noncoplanar styles. In coplanar gauges, both the pressures are displayed on the gauge. Based on the type of sensor selected, the media temperature is also displayed on the gauge.

The status of the relay can be seen in Screen 2. When the upper limit is crossed by the display parameter and time delay lapsed, the relay changes state. This is indicated by a change in colour of relay number on the screen to red. When the relay resets, it return to it's original colour white.

Screen 3 gives additional information about the upper and lower limits of each of the relays alongwith the delay that has been set for each relay at respective units. A coloured arrow alongside helps in identifying the relay number very easily. The scroll time of the screen helps in seeing settings of each of the four relays. Scrolling setting can be manual or auto.

The Ogauge also has facility to set sectors within a range. Lower limit and upper limit of each of the sectors can be defined within a range. When the display parameter is within these limits, the colour associated with that sector, is displayed on the screen. Overlapping of sectors is not possible.



The following symbols at their respective places show the presence or absence of relative connections .

✓ 1. Shows Relay number for which data is displayed on screen (present only when Screen 3 is selected)

✓ 2. Shows device has detected onboard storage device

✓ 3. Shows device is connected to the cloud server for telemetry data and allows remote configuration.

- The white border shows settings can be done via dashboard server.
- Blue cloud indicates telemetry data is being posted to the server.

✓ 4. Shows mobile is paired to the Ogauge

✓ 5. Shows WiFi is on

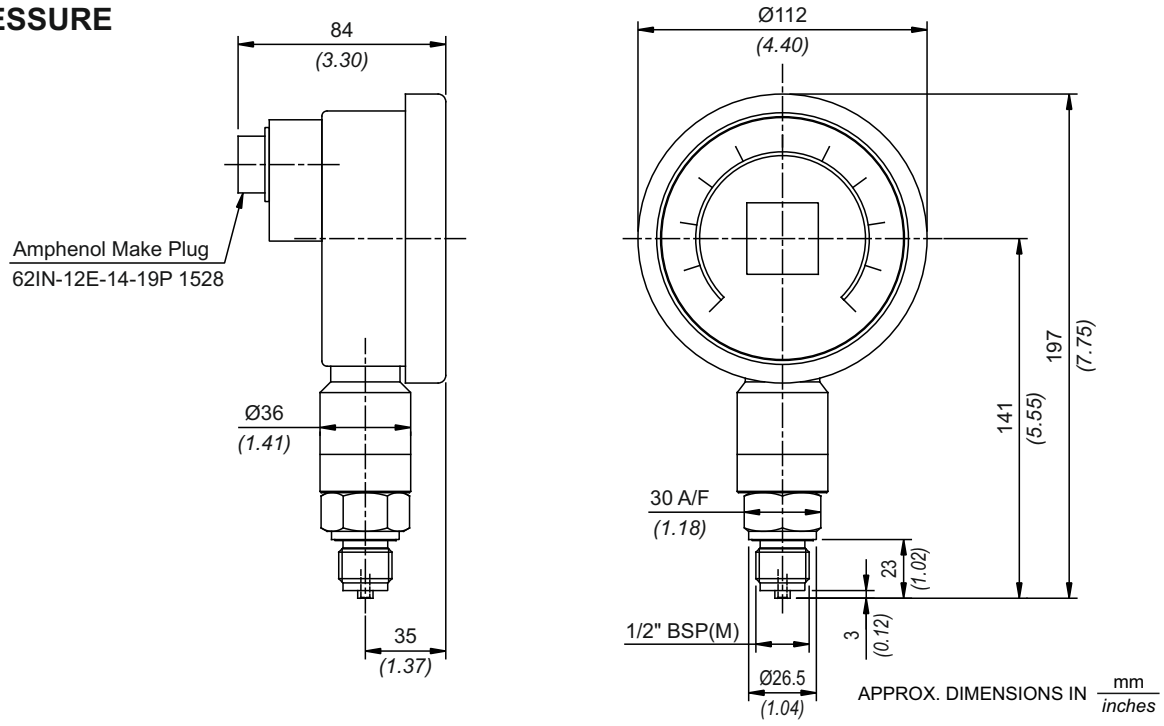
✓ 6. Shows device is working

7. Dimensions

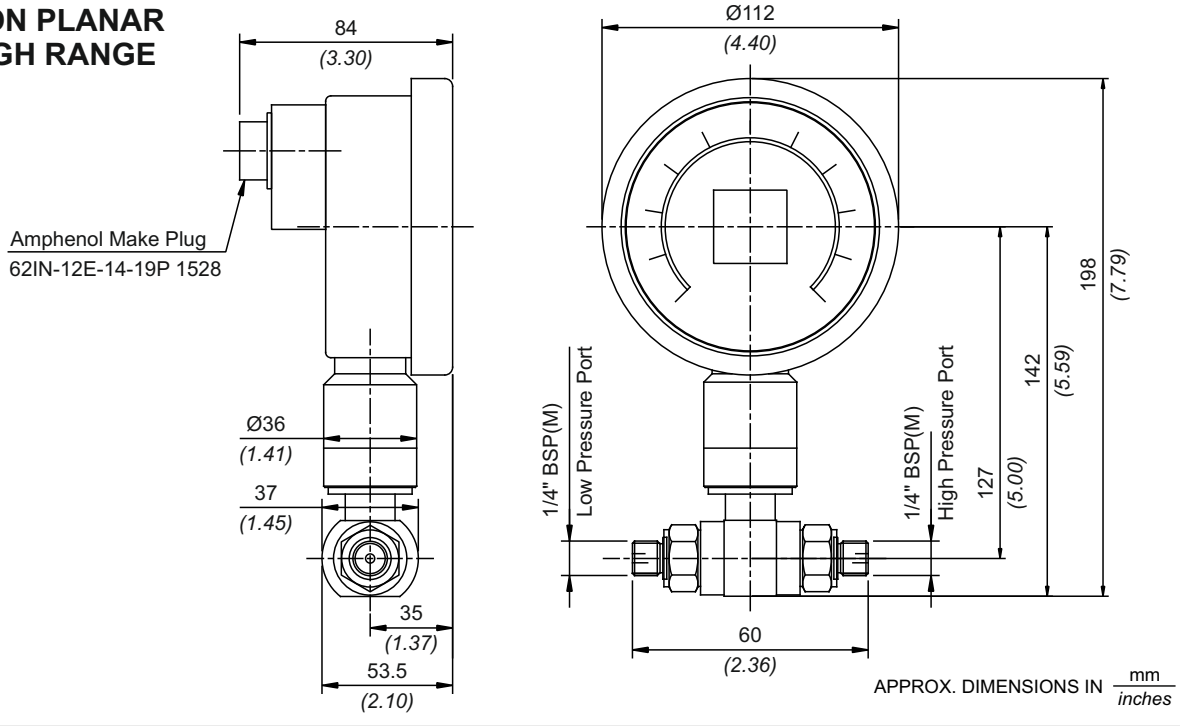
Below you will find an installation drawing of a typical popular Ogauge. There will be various variations depending on the sensors connected. Please consult sales office for installation drawing of your particular order.

INSTALLATION DRAWINGS

PRESSURE



NON PLANAR HIGH RANGE



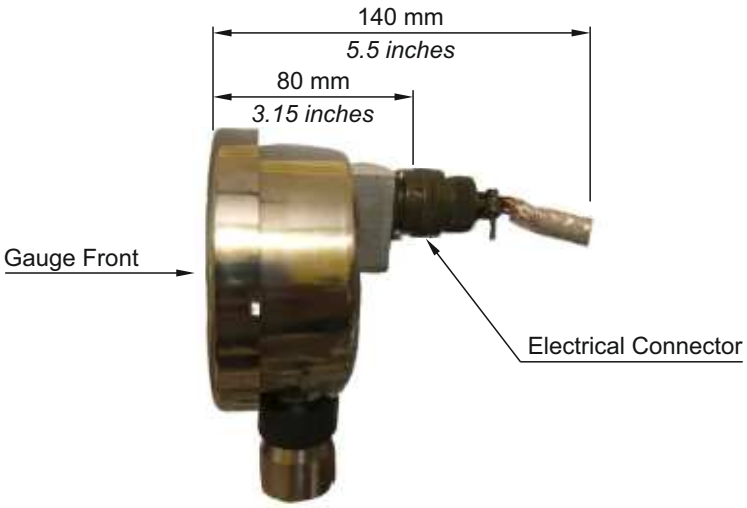
7.1 Labels

Following basic information will be printed on the back of the Ogauge:

- Model Number : XXXXXXXXXXXX
- Serial Number : A2004123456789
- Supply voltage :18 – 32 VDC
- Pin configuration for wiring.

8. Mounting

Ogauge can be mounted just as any pressure gauge with a bottom connection. Try to ensure a location free of vibration and shock. Try and avoid mounting it in direct sunlight. The electrical connector is at the back of the gauge. Sufficient space should be spared as the connector assembly and the cable will protrude at the back of the gauge. An L connector can be used to save space where the cable approaches from the direction of the pressure port.



7.1 Decommissioning

Please depressurise the system before dismantling / removing the pressure gauge. Isolate the electrical supply and only then decouple the pressure gauge from the system. Not following this procedure may result in damage to surrounding installation, serious injury to personnel nearby or even death.

7.2 Disposal

- Dispose off / scrap the separated, segregated individual parts /materials in compliance with the laws in force in the country of use.
- Special care must be taken in order to dispose off - parts containing Hazardous Substances & Chemicals

9. Output Function

Oguage offers by default 4 relay outputs and two analogue outputs.

9.1 Relay Outputs

Ogauge has four onboard hard hermetically sealed relays rated at 5A, 250 VAC / DC . Each of these can be used to drive loads within the current and voltage limits.

The cutin and cutoff points of each of these relays can be programmed independantly at site, with or without the pressure being applied to the Ogauge.

A time delay can be applied at each of the upper and lower limit, making it easy to adapt Ogauge to a lot of applications where momentary rise / fall in process parameter value creates false alarms.

A manual reset can be applied to each of the relays on the upper limit. The relay will not reset even if the display parameter falls below the lower limit, when the manual reset is set to on. A person has to physically go to the gauge and reset the relay.

All upper and lower limits of the relays need to be within the zero and FSR (full scale range) of the Ogauge. Response time of relays is typically less than 20 ms.

9.2 Analogue Outputs

Ogauge has two analogue outputs, namely one current and one voltage output. Both the outputs can be independantly programmed with individual zero and span values. Most popular outputs like 4 – 20 mA, 0 – 10 VDC are provided but custom outputs are also possible. Even reverse outputs like 20 to 0 mA or 5 to 0 VDC can also be programmed.

10. Trouble shooting

Ogauges are robust sealed units. Not much can be done on field if faults develop. Only recourse is to return the units for analysis and rectification. Before returning the Ogauge, please try procedure below at 10.3 (Configuration Reset and Manual Restart).

10.1 Safety Instructions

Please always adhere to the maximum pressure the gauge can be subjected to. The maximum pressure (Pmax) the gauge can be subjected to is inscribed on the sensor. Additionally, the bargraph will start flashing if the Pmax is exceeded. If the gauge is in powersave mode, the display will flash the letters "Overpressure" till the pressure is not brought within safe limits.

Important Note : As of now, Ogauge is NOT to be used in POTENTIALLY EXPLOSIVE ENVIRONMENTS.

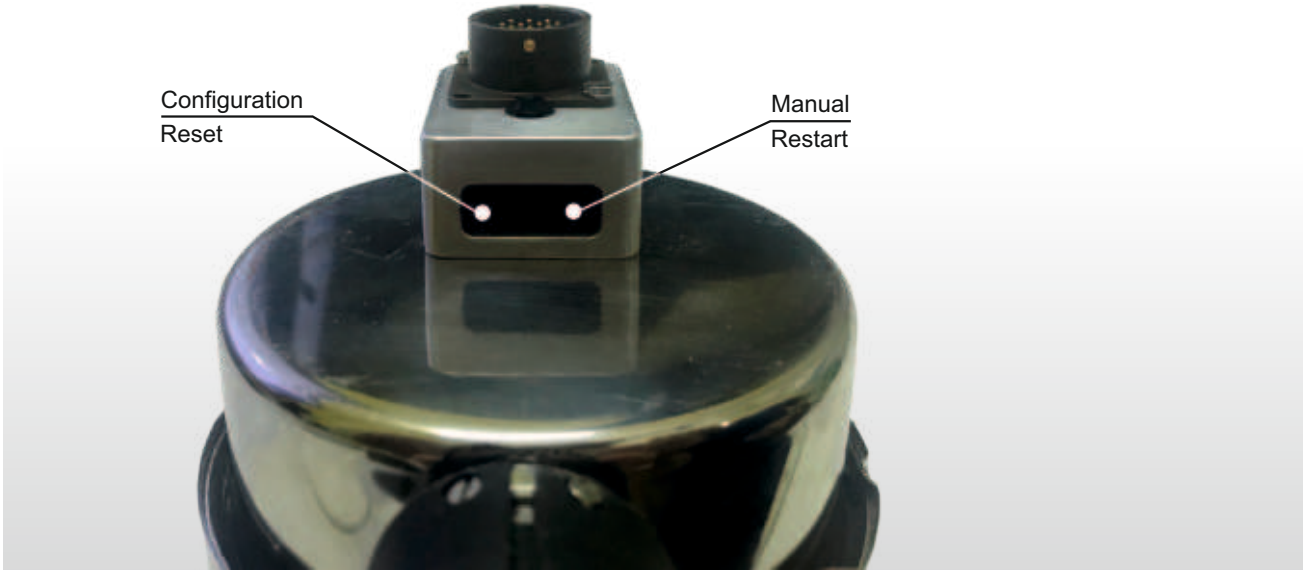
10.2 Configuration Reset and Manual Restart

In the unlikely event of an Ogauge not responding, there is a provision to restart the gauge manually. Pressing the Manual Restart switch even momentarily will restart the gauge.

The configuration of the device can be reset to factory settings by pressing the Configuration Reset switch for at least 10 seconds during booting. Press the Configuration Reset Switch, and switch on power. Hold it for at least 10 seconds after the power is switched on. The switch will be inoperative after booting.

Please use both these options only when needed. The location of these two switches is shown in the following figure.

Caution : Before pressing manual restart switch, please ensure devices connected to the relays and current and voltage outputs from the Ogauge to PLC / DCS are isolated.



11. Accessories

Only the 19 pin connector is given alongwith the gauge as a standard accessory.

However, it is possible to supply, gauge cocks, manifold valves, diaphragm seals fitted to the gauge, apart from snubbers etc.

12. Warranty:

1. The product is warranted against defect in specified material and workmanship under specified normal service conditions for 12 months after being placed in service but not more than 18 months from the date of shipment , provided item is returned free to our works at PUNE.
2. Kaustubha Udyog will be relieved of it's obligation if any arbitary attempt to rectify has been undertaken by purhcaser / user. This warranty does not cover normal wear and tear or damage due to corrosion or erosion.
3. The foregoing is in lieu of all other expressed and implied warranties (except of title), including those of merchantability and fitness for a particular purpose.
4. Kaustubha Udyog collects data about Ogauges and it's registered owner's email addresses, to help users of Ogauges. Typically this data is used to let registered users know their forgotten passwords, updates to the firmware, updates to the mobile application used to configure Ogauge , and any similar notifications. Actual process data where Ogauges are used is not accessed by Kaustubha Udyog or it's employees/ associates (unless absolutely neccessary [but with prior approval]). The dashboard access given to admins of Ogauges allows them to download process data. It is advisable they download it from time to time. All process data stored in the cloud application and it's backup is the Ogauge owners' responsibility and Kaustubha Udyog cannot be held liable for it's loss or breach of security.

13. Limitations of Liability:

You expressly understand and agree that Kaustubha Udyog shall not be liable to you for:

(a) Any direct, indirect, incidental, special consequential or exemplary damages which may be incurred by you, however caused and under any theory of liability. This shall include, but not be limited to, any losses of profit (whether incurred directly or indirectly), any losses of goodwill or business reputation, any losses of data suffered, cost of procurement of substitute goods or services, or other intangible losses;

(b) Any loss or damages which may be incurred by you, including but not limited to losses or damages as a result of:

  (i) Any changes which Kaustubha Udyog may make to the services, or for any permanent or temporary cessation in the provision of the services (or any features within the services);

  (ii) The deletion of, corruption of, or failure to store, any content and other communications data maintained or transmitted by or through your use of the services;

  (iii) Your failure to provide Kaustubha Udyog with accurate account information;

  (iv) Your failure to keep your password or account details secure and confidential.

(c) You agree that Kaustubha Udyog shall, in no event, be liable for any consquential, incidental, indirect, special,punitive, or other losses or damages whatsoever or for loss of business profits, business interruption, computer failure, loss of business informations, or other losses arising out of or caused by your use of or inability to use the service, even if Kaustubha Udyog has been advised of the posibility of such damage including damages caused by errors, omissions, interruptions, defects, failures of performances, unauthorised use, delay in operation or transmission, line failures, computer viruses, worms, Trojan horses or any other harms. In no event shalll Kaustubha Udyog's entire liability to you in respect of any service whether direct or indirect, exceed the fees paid by you towards such service.

(d) Kaustubha Udyog's liability in respect of defective part is limited to making good by replacement, or repair defects, to be determined by Kaustubha Udyog. This is provided the purchaser has given immediate written notice upon discovery of such defects, but within the time specified above. The replaced / repaired parts will be supplied exworks.

(e) Kaustubha Udyog's liability is limited to making good the part or parts which are defective and excludes any and every other obligation for loss or damage, direct or consequential.

(f) Although Kaustubha Udyog provide application assistance, either through our literature or personally, it is the responsibility of the customer to determine the suitablity of the product in the application. Customer's interpretation and implementation of application suggestions and recommendations by Kaustubha Udyog, general or specific, transmitted verbally or in writing, published or unpublished, is strictly at the buyer's own risk.

The limitations on Kaustubha Udyog's liability to you mentioned above shall apply whether or not Kaustubha Udyog has been advised of or should have been aware of the possibility of any such losses arising.

14. General Legal Terms:

This Agreement shall be governed, interpreted and enforced in accordance with the prevailing Laws of India. Any dispute arising out of or in relation to this Agreement shall be referred to Arbitration by a sole Arbitrator to be decided and appointed with the mutual consent of both the parties. In case of failure of both the parties to arrive on an agreement of appointment of sole arbitrator within one month of arising of any disputes and notice of such disputes is communicated by one party to the other party, such disputes or difference shall be referred to sole Arbitrator to be appointed by Honorable High Court as per the provisions of Arbitration and Conciliation Act 1996. The Arbitration shall be governed by the Arbitration and Conciliation Act, 1996. Each party shall pay and bear its own cost of Arbitration. The Arbitration shall be held in the city of Pune. Any waiver by Parties of a breach by the other Party of any provision of this Agreement shall be limited to the particular breach and shall not operate in any way in respect of any future breach by the other Party, and no delay on the part of any Party to act upon a breach shall be deemed a waiver of that breach.

You and Kaustubha Udyog agree to submit to the exclusive jurisdiction of the courts located within Pune (Maharashtra, INDIA) to resolve any legal matter arising from the Terms. Notwithstanding this, you agree that Kaustubha Udyog shall still be allowed to apply for injunctive remedies (or an equivalent type of urgent legal relief) in any jurisdiction.

Laws of India will govern all disputes arising out of or relating to these terms, service-specific additional terms, or any related services, regardless of conflict of laws / rules. These disputes will be resolved exclusively in the courts of Pune (Maharashtra, INDIA) and you and Kaustubha Udyog consent to personal jurisdiction in those courts.

We may update these terms and service-specific additional terms (1) to reflect changes in our services or how we do business — for example, when we add new services, features, technologies, pricing, or benefits (or remove old ones) or (2) for legal, regulatory, or security reasons.

If we materially change these terms or service-specific additional terms, we'll provide you with reasonable advance notice and the opportunity to review the changes, except when we launch a new service or feature. If you don't agree to the new terms, you should remove your content and stop using the services. You can also unclaim device to end your relationship with us at any time.

PERSONAL INJURY:

DO NOT USE this products as safety or emergency stop devices, or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

Note : *As efforts are made constantly to improve both design and method of manufacture, the apparatus supplied may differ in detail from illustration and data printed. Please check the specifications while ordering*

Certificate No.: **FM 72815**

Kaustubha Udyog

AN ISO9001:2015 COMPANY

S. No. 36/1/1, Sinhgad Road, Vadgaon Khurd, Near Lokmat Press, Pune 411 041 INDIA
Tel. : +91-(0) 20-24393577 / 24393877
Telefax : +91-(0) 20-24393577 / 25460486
Email : support@ogauge.io