High Accuracy, Versatile
Positive Displacement Flowmeter

ULTRA OVAL Type S

ULTRA OVAL with established reputation for accuracy and durability took a step forward again!

- Bar graph display enables intuitive confirmation of instantaneous flowrate!
- Easily viewable, large unit display!
- High-sensitivity touch sensor has been adopted! Operable with your gloves on, even in the rain!
- Predicts aging deterioration of the flowmeter body and notifies the maintenance timing!
- Detects disconnection of sensor wire and notifies sensor failure!

“Actual measurement type” with high reliability and high accuracy

[Measurement principle of OVAL flowmeter]

OVAL flowmeter consists of a body and a pair of oval shaped gears. Volumetric flow measurement is achieved by repeated measurement using a “measuring cup” and counting the continuous scoop of liquid one cup, two cups, three cups...

OVAL flowmeter is called as "Actual measurement type", since it does not "estimate" flowrates by detecting a physical phenomenon having correlation with flow, but actually measures flowrates using a "measuring cup".

We add value to the flow

OVAL Corporation
ULTRA OVAL uses oval gears at the heart of technology with established reputation for high accuracy and durability. 17 sizes are lined up to cover minute to large flowranges.

**Flowmeter Body**
The body and rotors are made of stainless steel (types 39-57). Special carbon has been adopted for the bushings as a standard.

**Flange**
Flange connections are JIS, ASME or JPI types.

**Rotor**
Oval gears with an established reputation enable measurement with high accuracy.

**Register**
Made of robust die-cast aluminum in conformity with the explosionproof and pressure-tight standards.

**MODE switch**
Display modes changed by touch operation.

**RESET switch**
Clears totalized values in the resettable total display mode.

Enlarged display! Easily viewable!

(Old model) — (New model)

Various functions added to make easier operations.

- Newly developed touch switch
  - Easy operation with gloves on!

- Various alarms with self-diagnosis function
  - Estimates wear status of body and announces maintenance timing.
  - Alarm in the event of sensor wire disconnection

- Specification with wireless printer system
  - Optimal package system that enables totalized flow log management and printing out vouchers using companion smartphone and mobile printer.
  - Optimum for truck loading and offloading applications.
  - ULTRA OVAL Type S (Specification with wireless printer system)

(Old model)

Mobile printer

(Under development)
Operation Lock function and its release method / Example of LCD

- When a non-operation state continues for over a minute, the “operation lock” works to prevent erroneous operation.
- Operation Lock is released by sliding your finger slowly from the MODE side to the RESET side as shown with the arrow in the figure below.

(1) Display of cumulative total
The figure shows that the cumulative total value is 12,345,678 L.

(2) Display of instantaneous flowrate (b1)
When b1 is displayed on the left corner of the LCD, it indicates the flowrate per hour. The figure shows that the flowrate per hour is 1,200 L/h.

(3) Display of instantaneous flowrate (b2)
When b2 is displayed on the left corner of the LCD, it indicates the flowrate per minute. The figure shows that the flowrate per minute is 20.00 L/min.

(4) Display of resettable total
When C is displayed on the left corner of the LCD, it indicates that it is in the Resettable Total Mode. When you touch “RESET” with your finger, the totalized value is reset and the accumulation starts from zero. However, the cumulative total values are stored independently during this mode. The figure shows that the total flowrate is 45,678 L.

Connection with receiver
ULTRA OVAL Type S is available in the following types: a battery type (without output) that requires no external power supply and an external power supply type (with pulse output and analog output).

Specifications of main body

<table>
<thead>
<tr>
<th>Item Capacity (nm)</th>
<th>Nominal diameter (mm)</th>
<th>Flow range (m³/h)</th>
<th>Material Type</th>
<th>Connection</th>
<th>Max operating pressure</th>
<th>Operating temp. range</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>10</td>
<td>±0.35% or ±0.15% of reading</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
<tr>
<td>41</td>
<td>10</td>
<td>±0.35% or ±0.15% of reading</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Low temp.: –60 to +60°C Standard: –10 to +120°C High temp. or jacket: 120 to 260°C</td>
</tr>
<tr>
<td>45</td>
<td>20</td>
<td>0.2 to 12L/h</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
<tr>
<td>50</td>
<td>20</td>
<td>0.03 to 2</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Low temp.: –60 to +60°C Standard: –10 to +120°C High temp. or jacket: 120 to 260°C</td>
</tr>
<tr>
<td>52</td>
<td>25</td>
<td>0.08 to 3</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
<tr>
<td>53</td>
<td>30</td>
<td>0.15 to 6</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Low temp.: –60 to +60°C Standard: –10 to +120°C High temp. or jacket: 120 to 260°C</td>
</tr>
<tr>
<td>55</td>
<td>40</td>
<td>0.26 to 14</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
<tr>
<td>56</td>
<td>50</td>
<td>0.6 to 24</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Low temp.: –60 to +60°C Standard: –10 to +120°C High temp. or jacket: 120 to 260°C</td>
</tr>
<tr>
<td>57</td>
<td>60</td>
<td>1.2 to 44</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
<tr>
<td>28</td>
<td>50</td>
<td>2 to 50</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Low temp.: –60 to +60°C Standard: –10 to +120°C High temp. or jacket: 120 to 260°C</td>
</tr>
<tr>
<td>29</td>
<td>80</td>
<td>4 to 90</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
<tr>
<td>60</td>
<td>100</td>
<td>5 to 150</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Low temp.: –60 to +60°C Standard: –10 to +120°C High temp. or jacket: 120 to 260°C</td>
</tr>
<tr>
<td>31</td>
<td>150</td>
<td>10 to 230</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
<tr>
<td>32</td>
<td>150</td>
<td>15 to 320</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Low temp.: –60 to +60°C Standard: –10 to +120°C High temp. or jacket: 120 to 260°C</td>
</tr>
<tr>
<td>33</td>
<td>200</td>
<td>20 to 450</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
<tr>
<td>34</td>
<td>250</td>
<td>30 to 700</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Low temp.: –60 to +60°C Standard: –10 to +120°C High temp. or jacket: 120 to 260°C</td>
</tr>
<tr>
<td>65</td>
<td>300</td>
<td>50 to 1000</td>
<td>Stainless steel</td>
<td>JIS or ASME/ Flange type</td>
<td>2.94MPa</td>
<td>Standard: –10 to +120°C</td>
</tr>
</tbody>
</table>

#1. Linearity ±0.35%, at 5mPas or higher.
#2. Different by a flange standard.
流率 (reference temperature)。适合所有石油贸易，配备有将非参考温度的流率转换为参考温度的功能，例如在需要测量特定温度下流率的情况下。此 ULTRA 注册器可用于各种应用。

- 自动将体积流率计算为校正函数。
- ULTRA 注册器，带有自动温度补偿功能。

<table>
<thead>
<tr>
<th>特性</th>
<th>描述</th>
</tr>
</thead>
<tbody>
<tr>
<td>简易开关 (LW74E)</td>
<td>简易开关 (LW76E)</td>
</tr>
<tr>
<td>气动双级开启和双级关闭</td>
<td>气动双级开启和双级关闭 (通过设置，可以更改为单级开启操作。)</td>
</tr>
<tr>
<td>设定方法</td>
<td>按键式 (LCD 显示器：6 位数字)</td>
</tr>
<tr>
<td>仪表</td>
<td>两种输出类型可以从各种脉冲信号和模拟信号中选择。</td>
</tr>
<tr>
<td>切换及复位操作</td>
<td>触摸传感器 (直接操作使用手指。)</td>
</tr>
<tr>
<td>电池使用寿命</td>
<td>大约 8 年 (电池在外部供电时不会消耗。)</td>
</tr>
<tr>
<td>环境温度</td>
<td>±20°C 至 ±60°C (从低温度中恢复。)</td>
</tr>
<tr>
<td>爆炸防护配置</td>
<td>IP66</td>
</tr>
<tr>
<td>前后检测功能</td>
<td>包含 (当反向流量减法功能选择时)</td>
</tr>
<tr>
<td>模式切换, 重置操作</td>
<td>触摸传感器 (直接操作使用手指。)</td>
</tr>
</tbody>
</table>

### Smart type register
- 更先进的过程操作已被实现与 “通信”!
- 与 Smart type register 不同，此注册器不仅提供测量信息，还包含其他各种参数的设置和自我诊断，例如包括瞬时流率的计算。此外，通过使用多路复用功能，最多可以连接 15 个传感器到通信单元 (EL2310)，同时简化维护。进一步，通过启用多功能多路复用功能，可以在远离现场的控制室对总和流率、瞬时流率等进行设置、校准和自诊断。

### ULTRA register with batch control function
- 联合高性能批次系统与智能通信的最高品质正排量流量计 ULTRA OVAL Type 39 to 65。
- 配备有自动温度校正功能。
- 可选单级或双级开启和关闭。
- 适用于 ULTRA OVAL 型号。

### ULTRA register with automatic temperature correction function
- 具有温度补偿功能。
- 可以将流率从一种温度转换为另一种温度。
- 这个 ULTRA 注册器可以用于需要流率测量的任何石油贸易等应用，例如，在石油贸易中，需要将流率转换为一种温度。

(1) 累积总和: 8 位数字
(2) 瞬时流率每小时: 5 位数字
(3) 瞬时流率每分钟: 5 位数字
(4) 可重置的总和: 7 位数字

NOTE 1: Bluetooth® 商标及标志是 Bluetooth SIG, Inc. 的注册商标，OVAL Corporation 通过许可使用这些标志。

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