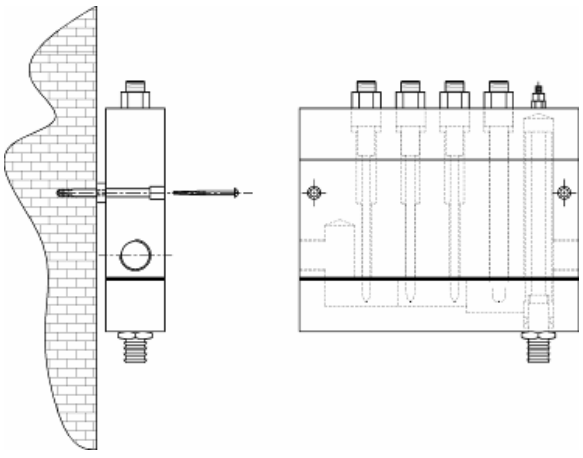
603 + μP

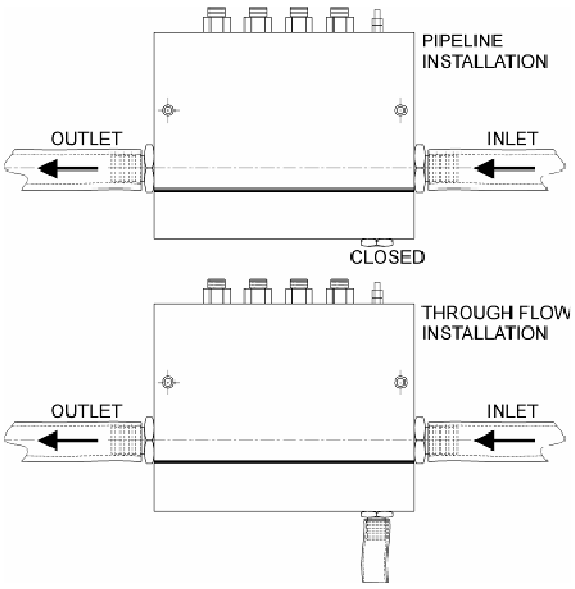
Analyser of release agents for pressure die-casting

This analyser, composed of a 603 cell and a μP transmitter, has been designed for measure and control of release agents used for pressure die-casting. The 603 cell is made of a polypropylene chamber that houses the measuring electrode, the counter electrode, the reference electrode, the optional temperature sensor for measurement thermo compensation and the system for automatic sample flow rate adjustment. The electrodes are directly immersed into the sample that flows in the chamber with a constant flow rate, controlled by the cell itself; the electrodes are kept clean and active by the movement of the sample itself. Mod.μP indicator/transmitter/controller is a microprocessor based instrument, fully programmable, suitable for panel mounting and outdoor installation. Instrument configuration is easily performed via display and keyboard and calibration is automatic. Measure and temperature are indicated on a 5 digit red LED display. Typical application of this analyser is measure and control of the concentration of the various releasing agents used in die-casting.

Advantages

- **Small dimensions, sturdy execution**
- **Remarkable linearity and repeatability**
- **High immunity to interferences**
- **No drift**
- **Very little maintenance requirements**
- **Flexibility: programmable instrument, 4 digital outputs, analogue output 4÷20 mA or 0÷10 V, galvanically isolated**
- **Three electrodes polarographic cell**
- **Self-adjusted sample flow rate**
- **Self-diagnostic capability**
- **Temperature compensation through dedicated programmable algorithms**
- **The instrument is available for panel mounting and for outdoor installations**





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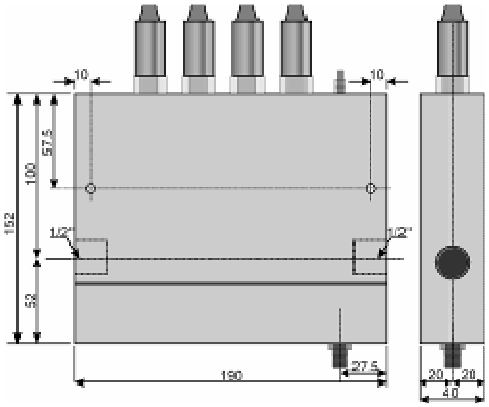
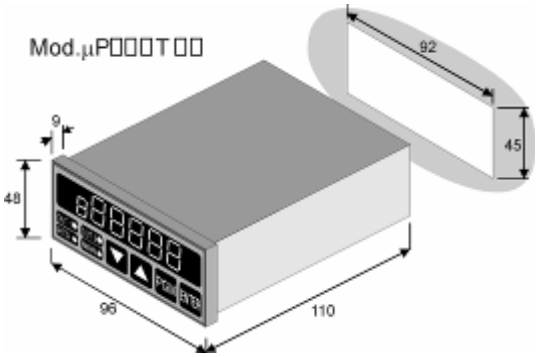
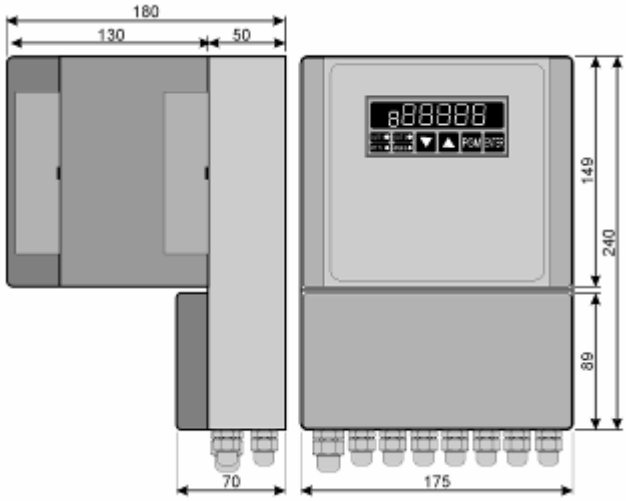
Operating principle and realization

The analyser includes a cell and an electronic unit.
Mod.603 cell includes three electrodes: measuring electrode, counter electrode and reference electrode. The counter electrode imposes a fixed potential to the measuring electrode where the release agent reacts. The reaction of the release agent at the measuring electrode causes a current flow that is proportional to the concentration of this substance in the sample. The polarization voltage impressed across measuring electrode and counter electrode makes the cell selective to various release agents. The cell is absolutely free of unwanted effects like corrosion of the electrodes: noises due to these phenomena are so forth completely avoided. The cell is made of a polypropylene chamber that houses the counter electrode (C), the reference electrode (R) and the working electrode (W) combined in a single rod (R/W), the optional temperature sensor and the system for the automatic adjustment of the sample flow rate. The special hydraulic design inside the cell assures high precision of the measure by keeping constant the flow rate of the sample inside the cell with no regard to the process sample flow rate. The electrodes are kept active and clean by the action of the sample flow itself, thank to the measuring chamber design. A solution ground contact prevents any interference in the measure due to stray currents in the sample solution.
Mod.µP is a microprocessor based instrument that can be directly connected to the 603 sensor and to the pertinent temperature sensing element. The measure is compensated for temperature variations, displayed in engineering units and retransmitted on a 4÷20 mA or 0÷10 V analogue output that can be freely associated to any interval inside the measuring range.
The instrument provides 4 digital outputs that can be configured as NC or NO via software and can be programmed as low alarm, high alarm, alarm with hysteresis or windows alarm.
The 4 digital outputs are from relays.
Two digital inputs are available, one for digital hold of the measure, and one for the input of an external alarm (e.g. level switch, temperature switch etc.)
The instrument is sturdy and compact and is available in the version for outdoor mounting, included in an IP65 housing, and for panel mounting included into a plastic case, 48 x 96 mm, IP 54 protection degree, and for panel mounting included into a plastic case, 48 x 96 mm, IP 54 protection degree, c/w a transparent front cover.

Outline dimensions







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Installation, Maintenance and Calibration

The cell is designed to be wall mounted through two screws ∅5 x 50mm; process connections are ½". The cell may be installed either in through flow arrangement, with automatic sample flow rate adjustment system or directly in line (max.allowed pressure 2 bar). The special hydraulic design inside the cell allows to assure measure accuracy keeping the flow rate inside the chamber of the electrodes constant with no regard to sample flow rate variations at the inlet of the cell (sample flow rate adjustment system): if this system is enabled there is no need for adjusting the flow rate that enters the cell (that must however be higher than 60 l/h). On the other hand if the sample flow rate adjusting system is disabled the sample flow rate to the cell must either be higher than 280 l/h or must be fixed to a very constant value (inside the limits 60 to 280 l/h).

Mod.603 cell only requires a periodic cleaning of the electrodes and measuring cell, that can be easily operated dismounting the cell bottom (4 fixing screws); to clean the electrodes only stop the sample flow rate, unscrew the electrodes from their housings, clean the sensitive end of each electrode with soft paper.

For cell conditioning it is enough to allow the process fluid flow through the cell for at least 30 minutes.

Order code breakdown

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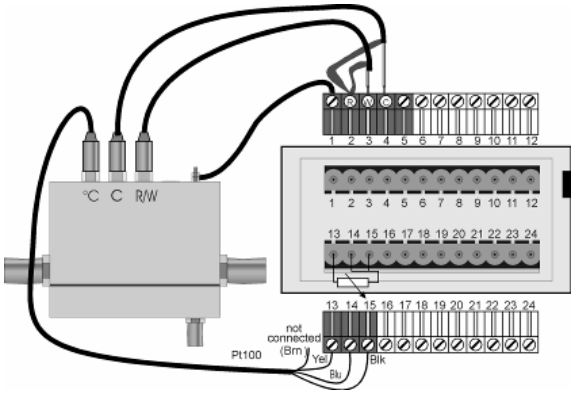
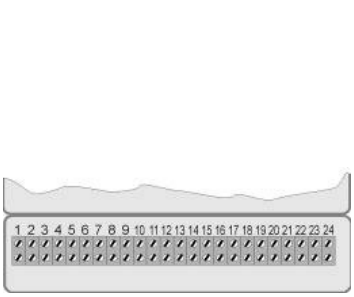
Analyser for selective measures of release agents used in pressure die-casting	603 + µP

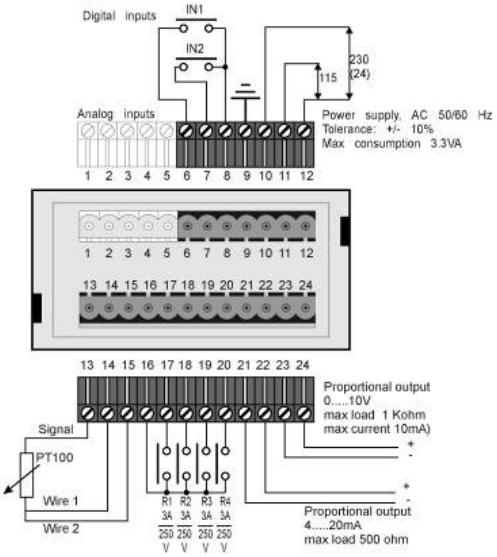
Spare parts

Combined R/W electrode (measure + reference) for Mod.603/B cell Mod.201/GEL-Au-d6-PG
Counter electrode C for Mod.603/B cell Mod.201/SL-Au-d6-PG
Cable for the connection of the electrodes to the instrument, 5 m Mod.CV/S7-5
Optional temperature sensor Mod.Pt/L-d6-PG
Cable for the connection of the temperature sensor to the instrument, 5 m Mod.CV/405-S7-5

Wirings







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Technical Specifications

Cell, 603

Body material: ..... PP
Electrodes: ..... noble metal
Operating temperature limits: ..... 5 to 80°C (PP)
Storage temperature limits: ..... –10 to +60 °C
Accuracy : .....±5% f.s.
Max distance cell/transmitter: .....5 m
Connection cable: ..... coaxial cables, 5 m, included in the supply
Process connections: .....½"
Sample flow rate: ..... when the sample flow rate is higher of 280 l/h sample flow rate variations
..... have no influence on the measure;
..... if the sample flow rate is lower than 280 l/h either enable the flow rate adjusting system of the cell
..... or keep the sample flow rate to the cell constant. Minimum sample flow rate is in any case 60 l/h
Operating pressure: .....max 2 bar
Max. salt concentration : ..... 100 g/l of chlorides
Max.allowed sample hardness: ..... 10°f; above this value a frequent electrodes cleaning may be required
Response time: ..... 60" for increasing measures (to reach 90%of final value)
..... 90" for decreasing measure (to reach 90% of final value)
Dimensions: ..... w.190 x h.160 x d.40 mm
Fixing holes:.....∅ 5,5 mm, 170 mm distance between centres

Transmitter, μP

Housing Mod.μP□□T□□□ (panel mtg):.....Noryl, IP 54 protection, 48 x 96X100 mm. Inst.space: 45 x 92 mm
Housing Mod.μP□□T□□□S (panel mtg), with transparent front cover: .....
.....Noryl, IP 54 protection, 48 x 96X100 mm. Inst.space: 45 x 92 mm; polycarbonate transparent front cover
Housing Mod.μP□□T□□□IP (outdoor install.):ABS, IP 65 prot.degree; dimensions 175x2400x180 (wxhxd) mm
Input signal: ..... from 603 sensor and from pertinent temperature sensor, Pt100.
Digital inputs: ..... 2, from NPN static contact or from voltage free contact,
..... max.voltage 18 V; max. closure current 4 mA;
..... In standard functionality mode: IN1 : Digital hold of reading (freezing);
..... IN2: alarm from external equipment (level switch, pressure switch, temperature switch etc.).
.....If present, the alarm is locally indicated through LED "WASH/AL" flashing
Display: .....red LED, h 12.5 mm, 5 digit and algebraic sign, programmable decimal point, selectable range
Digital outputs: ..... 4 alarm set points, output from relays, SP, 3A – 250 V, resistive load.
..... The alarms can be configured as low alarm, high alarm, window alarm, alarm with hysteresis.
.....Each set-point has programmable differential.
Analogue output: proportional to analysis; 4÷20 mA or 0÷10 V through pertinent connection to terminal board.
.....4÷20 mA: max.load 500 Ω;
..... 0÷10 V: load resistance must be ≥1 kΩ, max.current 10 mA. Galvanic isolated outputs.
.....Output signal can be freely associated to any interval inside the measuring range.
Analogue output accuracy and linearity:..... Accuracy: 0.01 %; Linearity: 0.0025 %
Measuring range:.....0÷100% concentration of release agent
Measure intervals associated to analogue output:freely selectable inside the limits 0 and 100 % release agent
Integration (smoothing): ..... programmable
Power supply: .....Mod.μP□□T1□□□□ : 24 Vac, ±10%, 50/60 Hz, maximum consumption 3.3 VA
.....Mod.μP□□T2□□□□ : 115 Vac, ±10%, 50/60 Hz, maximum consumption 3.3 VA
.....Mod.μP□□T3□□□□ : 230 Vac, ±10%, 50/60 Hz, maximum consumption 3.3 VA
..... Mod.μP□□T4□□□□ : 24 Vdc, ±10%, maximum consumption 3.3 VA
Data storage: ..... E^2prom stores data also during power shut off
CE compliance:..... according to pertinent rules (93/68CEE – electromagnetic compatibility; low voltage)
Electrical classification:..... for safe area installation
Ambient temperature limits during operation:.....0 ÷ 50 °C
Storage temperature limits:.....0 ÷ 60 °C