

# Consumption meter type SF-586a for compressed air and gases

for nominal width DN15 to DN3000



Calorimetric flow meter, utilising the heat dissipation principle

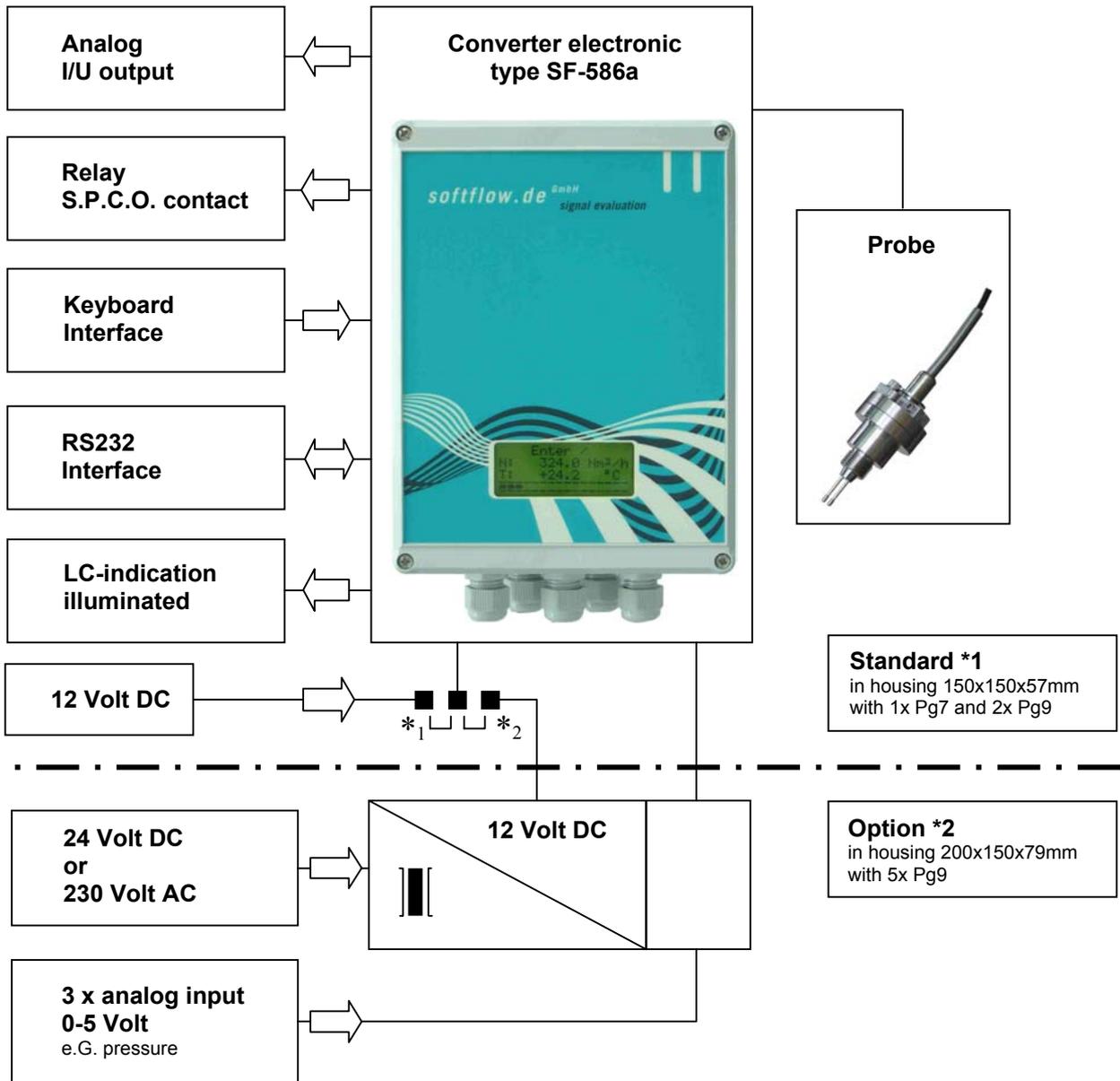
## Features

- No moving parts
- High sensitiveness in low flow ranges
- Wide measuring ranges allow the detection of leakage and increases in consumption
- Measuring of mass flow independent of pressure and temperature variations
- Parallel measurement of the temperature of the medium
- High accuracy
- Multiple signal outputs for standard model,  
(Indication, set points, analog output, pulse output, RS232-interface)
- Operates in any position
- Easy installation and maintenance

## Applications

- Record of compressed air consumption by department or individual equipment
- Determine of losses from leakage
- Optimise control of multiple air compressors to increase efficiency
- Control of compressor's efficiency factor
- Air input control in vitalizing basins of waste water treatment plants
- Ventilation control in buildings
- Nitrogen consumption measuring

## System overview



## Performance

The compressed air and gas consumption meter consists of a probe with clamp coupling and a separate computer assisted converter electronics contained in a plastics housing for simple wall mounting.

The probe is mounted into the pipe via a connecting socket with G $\frac{1}{2}$  female thread.

For the installation the following options are available:

- clamp coupling *without ball valve*, suitable for installing in different pipe sizes, mounting while pipe is pressure less.
- clamp coupling with *ball valve and safety mounting unit*, suitable for installing in different pipe sizes, mounting while pipe is under pressure.

## Options

Unit with indication of actual flow rate (standard volume flow, mass flow), totalizer and output signal 0-10V, or 0/4-20mA proportional to flow, bidirectional interface RS232, pulse output (< 30x per minute) or set point.

Manufacturer sets the following as the customer requested:

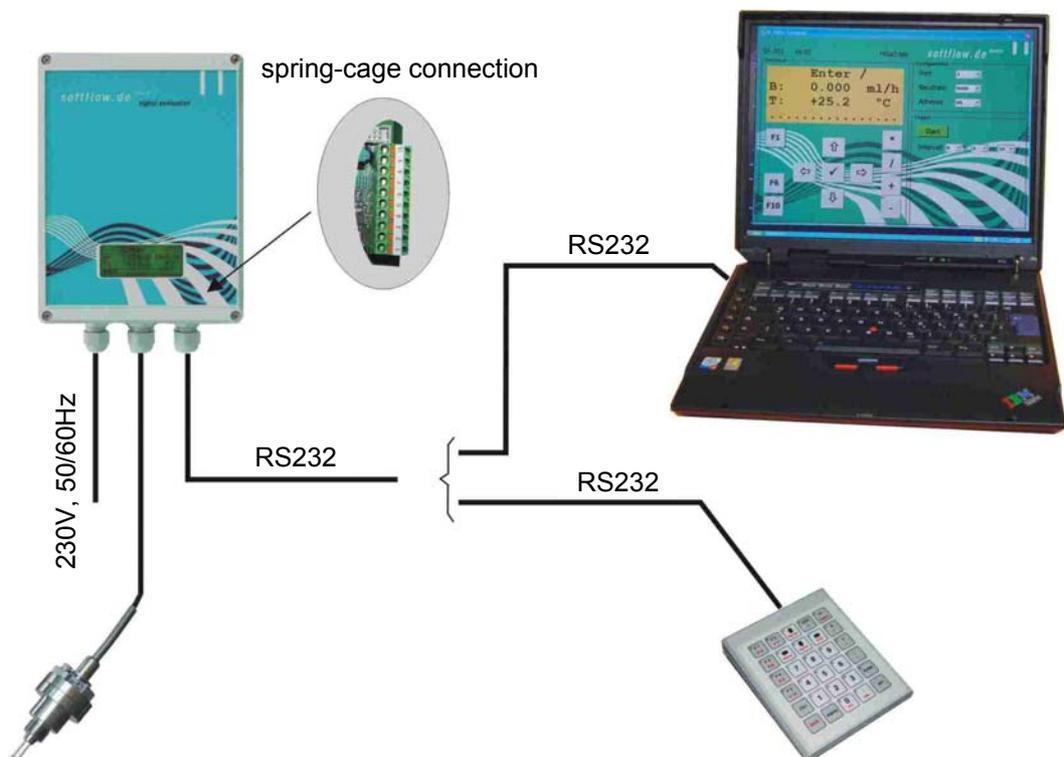
Inner diameter of pipe, sensor surface, standard density, indication of actual flow rate in terms of standard volume or mass volume, totalized flow in terms of standard volume or mass volume, output signal (max. value), pulses, set point, baud rate, address, mean value creation, off-set, min. quantity suppression.

If a keyboard is supplied the customer can set the above values as well as starting, stopping and resetting the totalizer. Analog and pulse output as well as set point can be coordinated to each measured value via keyboard.

All measured values and configuration can be transferred by a PC using the RS232-interface.

The software for the PC and a cable with length of 1,5m is part of delivery.

## Electrical connection



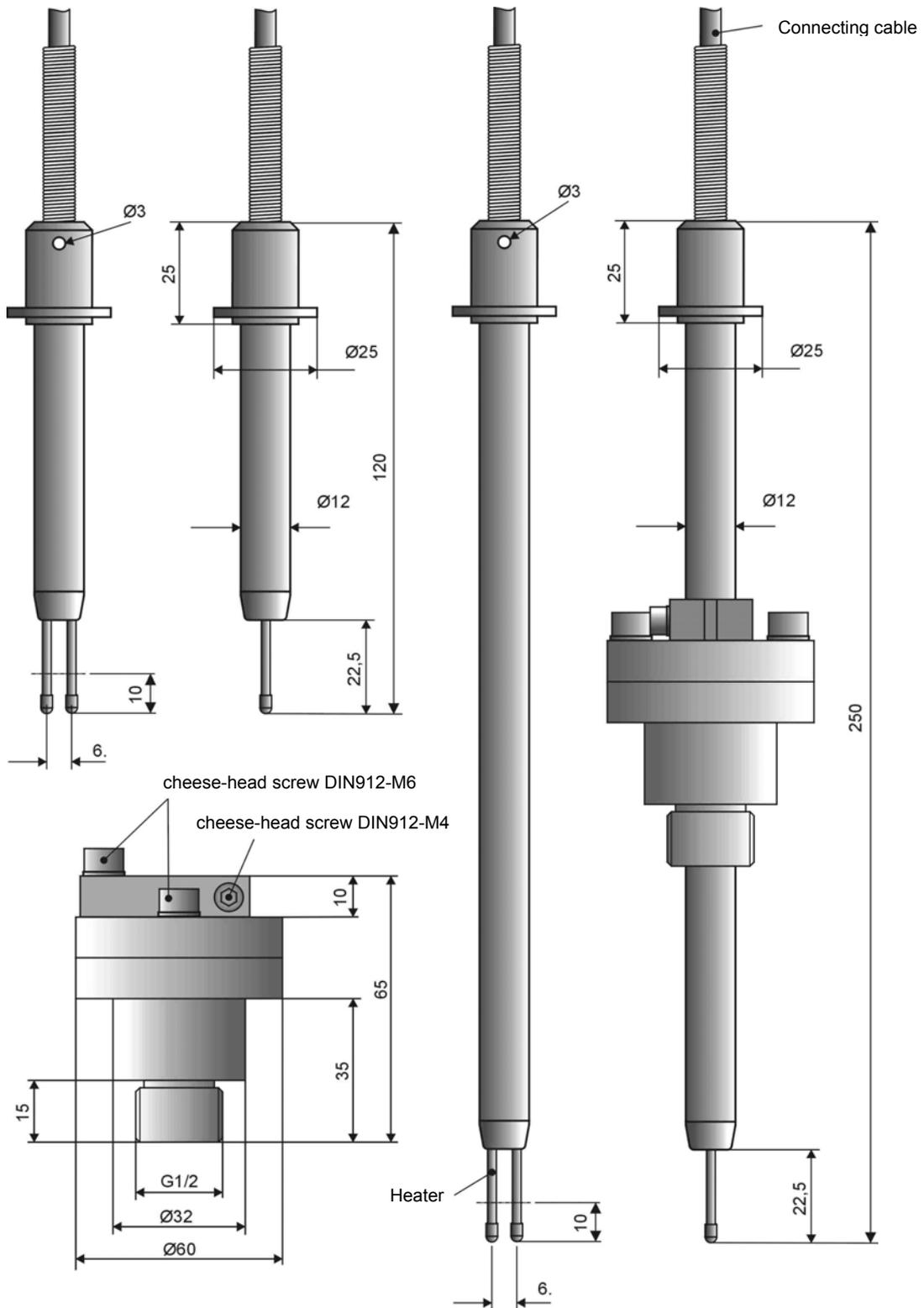
## Technical data of the probe

<i>Operating Principle</i>	heat dissipation principle, primary signal proportional to mass flow (moisture must be avoided)
<i>Medium</i>	compressed air, dry (normal density 0°C/1,013bar a)
<i>Measuring Range</i>	0.6-60m/s (with reference to normal conditions)
<i>Accuracy</i>	< +/-2% of measured value from > 5m/s, < +/-0,1m/s if below 5m/s
<i>Repeatability</i>	+/-1% from the measured value
<i>Warming up time</i>	about 5 minutes after switching on
<i>Operating pressure</i>	max. 16bar absolute, higher values on request
<i>Operating temperature</i>	-40°C to +100°C / 0°C to +130°C / -50°C to +200°C (to be specified with order)
<i>Surrounding temperature</i>	0 to 60°C
<i>Installation position</i>	any
<i>Steadying distance</i>	30 x nom. pipe bore upstream, 10 x nom. pipe bore downstream. The minimum steadying distance depends upon the application. Longer steadying distances have to be considered, if double elbows or partly closed valves have been installed in front of the unit. See also DIN 1952.
<i>Process connection</i>	welding socket with G½ female thread
<i>Pressure range</i>	PN16, higher values on request
<i>Wetted parts</i>	probe; welding socket, clamp coupling, ball valve (optional): stainless steel 1.4571 O-ring: VITON
<i>Protection class</i>	IP65
<i>Housing dimension</i>	see drawings of probe dimensions
<i>Connecting cable probe-converter</i>	length 5m (optional 10m)

### Measuring range limits (referred to air under normal conditions 0°C/1,013bar a) with inner diameter

15-25	32	40	50	65	80	100	200	300	3000	mm
100	170	260	410	700	1.000	1.700	6.800	15.200	1.500.000	Nm³/h

Probe dimensions (standard 120mm / 250mm)



## Technical data of the converter

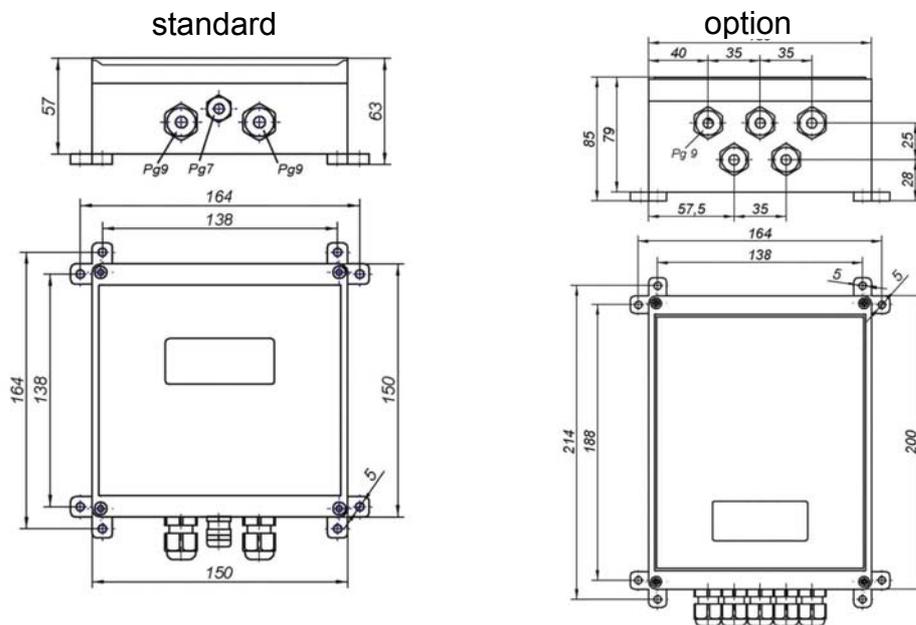
<i>Power supply</i>	12VDC +/- 2% not isolated optional: 115-230VAC, 18-36VDC, 9-18VDC isolated
<i>Consumption</i>	ca. 8VAC
<i>Surrounding temperature</i>	5-50 °C
<i>Housing dimensions</i>	see drawings of housing dimensions
<i>Weatherproof to DIN 40 050</i>	IP65
<i>Indication</i>	LCD-point-matrix display, 4 lines each 16 figures
<i>Indication values</i>	mass flow, consumption (totalizer) volume flow, consumption (totalizer), temperature [°C]
<i>Data storage</i>	by nvSRAM
<i>Output signals</i>	0-10VDC or 0/4-20mA proportional to flow* relay output (S.P.C.O. contact) free programmable as pulse output or set point** RS232, bidirectional ***
<i>Electrical connections</i>	spring-cage connection for all input and output signals (max.1,0mm <sup>2</sup> )
<i>Optional Accessories</i>	keyboard, numeric, 25 keys, in separate housing with connecting cable

\* voltage- or current signal via jumper free programmable;  
configuration at delivery 0-10V;  
0-20mA or 4-20mA free programmable via RS232.

\*\* relay output free programmable via RS232;  
pulse output max. 30 pulses/minute for full scale value.

\*\*\* internal terminal for PC-connection and internal connection for option keyboard.

## Housing dimensions



### Type key / specification for ordering SF-586a

For positions 1 to 4, 6 and 7 one option must be chosen.

Pos	Description	Order text	x	x	x	x	x	x	x	x
1	Type SF-586a with probe 120mm or 250mm of stainless steel with 5m connecting cable, with stainless steel clamp coupling, with terminal software and RS232 connecting cable.	586a								
2	<u>Without</u> ball valve, mounting to G½ fem. thread	KOH								
	<u>With</u> ball valve, mounting to G½ fem. thread	K								
3	Mounting to pipe sizes <u>up to DN300</u> (probe length SL=120mm or 250mm)	DN300 / SL								
	Mounting to pipe sizes <u>up to DN3000</u> (probe length SL=500mm or 800mm)	DN3000 / SL								
	Mounting to pipe sizes <u>up to DN3000</u> (probe length SL=1000mm)	DN3000 / SL								
4	Output 4–20mA	4–20mA								
	Output 0–20mA	0–20mA								
	Output 0–10V	0-10V								
5	Probe with 10m Kabel	L1								
	Other length (6-25m)	Lx								
6	Operating temperature –40°C to + 100°C	100°C								
	Operating temperature 0°C to +130°C	130°C								
	Operating temperature –50°C to +200°C	200°C								
7	Power supply 12VDC +/-2%*	12VDC-OPT								
	Power supply 24VDC (18 – 36VDC)**	24VDC								
	Power supply 12VDC (9 – 18VDC)**	12VDC								
	Power supply 115–230V 50/60Hz**	230VAC								
	Switching adapter 230VAC / 12VDC	NT-230VAC								
8	HALAR-coated probe and special safety mounting unit	HC								
9	Special safety mounting unit with ball valve	SMU								
10	Pressure sensor**	PS								
11	Special head protection	SHP								
12	Optocoupler pulse output**	OPK								
13	RS232 in housing**	RSH								
14	Temperature analog output 0/4-20mA**	TC								
15	Keyboard	MT								

\* not isolated, with housing 150 x 150 x 57mm

\*\* isolated, with housing 200 x 150 x 79mm

## Applications and industry

### **Air Flow Measurement**

- aeration flows : wastwater treatment
- combustion air: measuring in boilers, kilns, heaters
- air flow test: manufacturer of pumps, filters and equipment
- spray drying: food, bio-pharm, chemical
- soil remediation: agriculture, landfill und environmental
- heat treating: processing of metals
- drying air flow: manufacturing of cellulose and paper
- reheat air flow: power generation
- leakage measurement: in all industries
- exhaust air measurement: manufacturing of semiconductors

### **Compressed Air Flow Measurement**

- automation and process systems: in all industries
- pneumatic tools, painting: in all industries
- transport and handling systems: in all industries
- filling: packing industry
- PET-, PE-bottle: manufacturer of plastic container
- laboratory: pharmaceutical industry
- drilling, pipelines: oil and natural gas industry
- pressurizing gas lines: natural gas
- food and drug manufacturing and processing: food und pharmaceutical industry

### **Nitrogen Gas Flow Measurement**

- tank blanketing: bio-pharm, semiconductors, chemical industry
- gas purging: natural gas, refinery industry
- pressure transfer: storage vessels, in all industries
- cooling, freezing: refineries, food processing
- forming control: metal casting
- heat treatment: shield gas for steel and iron, metal industry
- tablet coating: pharmaceutical and food industry
- Inerting of liquid natural gas: tankers, transport vessels
- Drilling, processing: oil and natural gas industry

## Oxygen Gas Flow Measurement

- furnace combustion: Steel making, hazard material industry
- metal processing: steel and non-ferrous metal processing
- glas smelters: glas manufacturing and processing
- raw material for oxidation: chemical industry
- coal gasification: chemical feedstock production
- catalyst regeneration: oil refineries
- oxy-fuel furnaces: glas manufacturing, cellulose and paper
- bleaching agent: cellulose and paper
- biological treatment: wastewater treatment

## Carbon Dioxide Flow Measurement

- gas-shielded welding: metal industry
- casting mold hardening: metal industry
- dry-ice feed: manufacturing, building industry
- urea, methanol production: chemical industry
- oil extraction well priming: petroleum industry
- flash removal: rubber and plastic industry
- dry ice and CO<sub>2</sub>-coolant: food and beverage industry
- inert gas: food and pharmaceutical industry
- fertilizer processing: manufacturing of agricultural chemicals

## Exhaust and Waste Gas Flow Measurement

- vent lines: in all industries
- waste CO<sub>2</sub>: petrochemicals, chemical production
- SO<sub>2</sub> off gas: metals, chemicals, pharmaceuticals
- flare stacks, headers: oil platforms and refineries, chemical industry
- flue gas: power generation
- waste-to-energy gas: waste treatment systems, landfill, biogas plant
- waste flow mixing: incinerators, in all industries
- flare gas recovery: generation of electricity, steam, hot water
- gas disposal: cellulose and paper industry

## Contact



Managing Technology & Services

MTS Engineers Pvt. Ltd.

B/408, Wall Street-II, Opp. Orient Club, Near Gujarat College,  
Ellisbridge, Ahmedabad-380 006, Gujarat, INDIA.

T : +91 79 2640 0063 / 3016 0063 • F : +91 79 4004 7430

[www.mtsengrs.com](http://www.mtsengrs.com)

