

Remote Tank Monitoring

Media Tank Management with Media 6 and Media LOGI-X



Application

Media 6 digital transmitter and Media LOGI-X form together the automatic tank monitoring system, Media Tank Management, for tank level management.

The Media Tank Management transmits information about content levels in tanks at separate locations via a telephone line to a central control station.

Liquids, gases and vapors are all suitable as process media commonly used in the energy sector, food and beverage industry as well as the chemical and pharmaceutical industry.

The design of Media 6 devices makes the remote tank monitoring system particularly suitable for process media used in cryogenic service.

For liquid gas supply, the current liquid level in each tank as well as information about consumption trends of each customer are used to plan and optimize supplies. Media Tank Management with Media LOGI-X delivers real-time data.

Media Tank Management is designed as a modular system.

Combined with Media 6 Digital Transmitters functioning as liquid level sensors, the Media LOGI-Compact hardware and the Media LOGI-Base software can record the liquid level of up to four storage tanks at separate locations in the basic version. The data are then transmitted to a central control station where they are displayed and analyzed.

The LOGI-Master hardware with LOGI-Bus modules - instead of LOGI-Compact - record the level signals of up to 120 measurement points.

Special features

- Modular design
- PC connection
- Central collection and analysis of data
- Graphical display of tank volume
- Event control for four limit values per sensor (2 x max./2 x min. limit values)
- Alarm receivers: four programmable telephone numbers
- Easy start-up

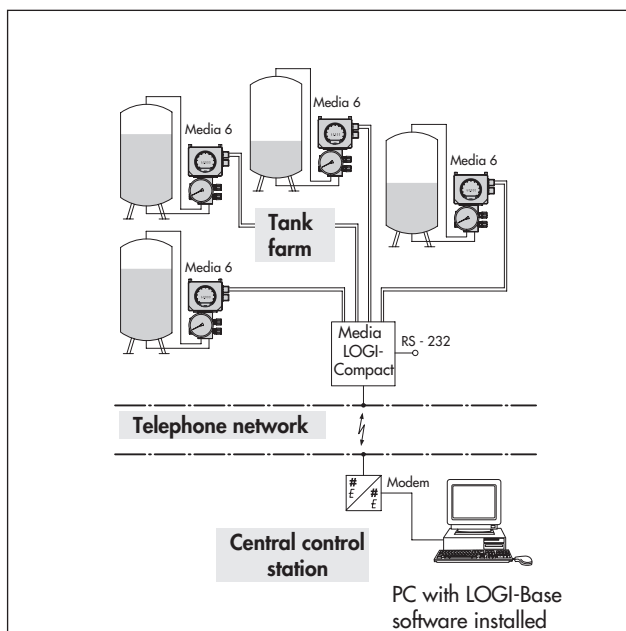


Fig. 1 · Remote tank monitoring with Type 5027 Media LOGI-Compact and Type 5017 Media LOGI-Base

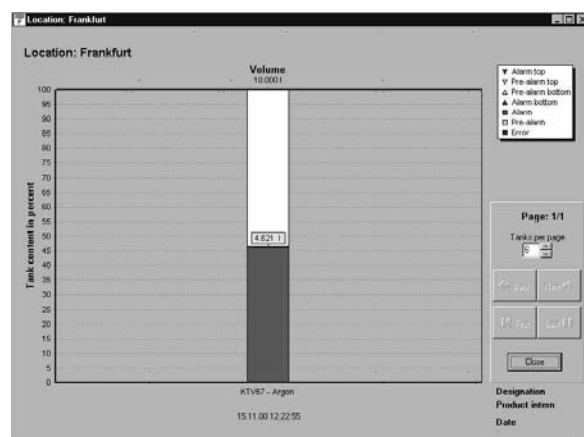


Fig. 2 · Liquid level of a storage tank; shown using Type 5017 Media LOGI-Base software

Principle of operation

The Media Tank Management LOGI-X is designed according to the modular principle. Which type of LOGI module should be used, depends on the number of sensors (e.g. Media 6) that are to be connected.

The basic version of the Media Tank Management consists of:

- **Media 6** digital transmitter functioning as a sensor to continuously measure the liquid level in storage tanks on site,
- **Media LOGI-Compact** for connecting a maximum of four sensors and with a modem (V.22) to transmit data over a telephone line; with RS-232 interface for local PC connection,
- **Media LOGI-Base** software including a database, visualising system and operator interface at the central control station.

Extendable for connection of up to 120 Media 6 devices using:

- **Media LOGI-Master**; manages up to 30 **Media LOGI-Bus modules**. Each module can connect up to four sensors to the LOGI-Master.

The LOGI- Compact is the ideal solution for tank farms with a maximum of **four** liquid level sensors.

The level of the storage tanks recorded by the Media 6 sensors are collected by the LOGI-Compact and transmitted via the integrated modem to the central PC. The LOGI-Base software analyzes the data and prepares graphs showing the tank levels.

The LOGI-Compact can be programmed on site by a PC connected directly at the RS-232 interface or by PC at the central control station.

Two max. limit switches and two min. limit switches can be set per input signal. A maximum four telephone numbers can be programmed that are automatically dialed in case of alarm.

With the LOGI-Master module, in place of the LOGI-Compact, a maximum of 30 LOGI-Bus modules can be connected in parallel. Each module has four connections which allows a maximum of the data of 120 sensors to be processed.

Terminal assignment

The LOGI-X modules are available as separate units or pre-wired and ready installed in steel cabinets with integrated power supply units.

The LOGI-X modules must be mounted on a weather-protected top-hat rails when mounted separately.

Fig. 4 shows the terminal assignment of the LOGI-Compact.

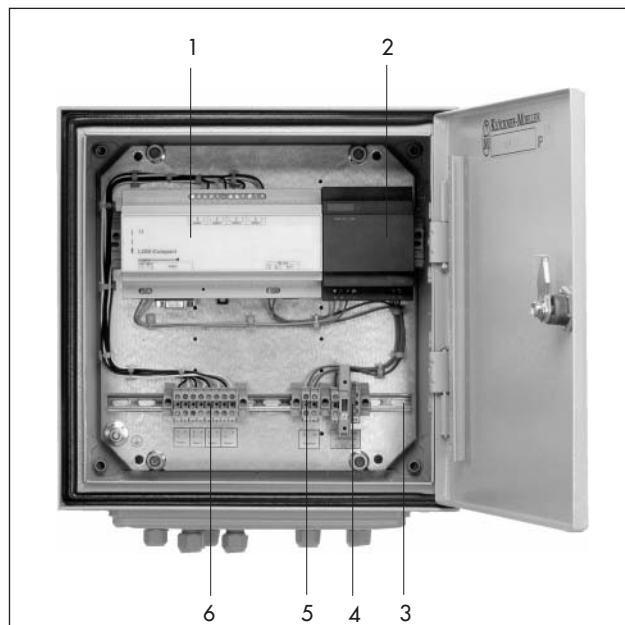


Fig. 3 · Type 5027 Media LOGI-Compact , installed in a cabinet

Steel cabinet,
Cabinet cable entries,
Degree of protection IP 55
Dimensions 300 x 300 x 200 mm

- 1 Type 5027 LOGI-Compact module
- 2 Power supply unit
- 3 Top-hat rail
- 4 Mains connection 230 V~
- 5 Telephone connection
- 6 Analog inputs 1 to 4 for sensor connection

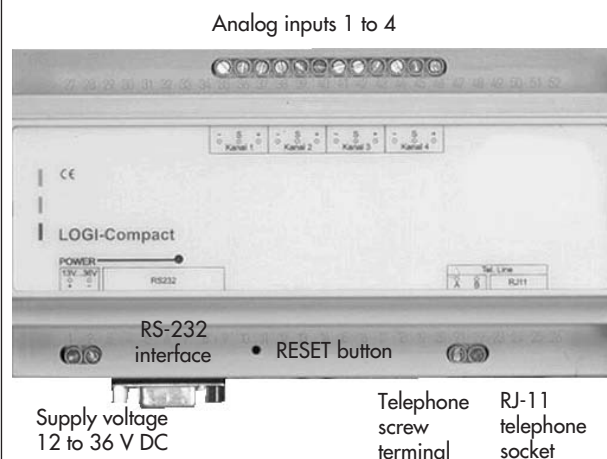


Fig. 4 · Type 5027 Media LOGI-Compact, connections

Media LOGI-Compact

The module connects the modem to the telephone line for one to four sensors with voltage or current interface. When used with Media Tank Management, the sensors are Media 6 digital transmitters.

Special features

- Integrated modem (V.22)
- Integrated RS-232 interface
- Programmable min./max. limits
- Inputs for four sensors with voltage or current interface, independently configurable of each other

Device version

The LOGI-Compact consists of:

- Electronics with A/D converter and modem
- Terminals
- Telephone socket
- SUB-D plug
- Plastic housing

Media LOGI-Base

LOGI-Base is the software for operating LOGI-X. It is database, visualising system and operator interface for managing tank levels in tank farms.

The software is used to record all the relevant data¹⁾ about the connected tanks and its contents, plus alarm values to ensure a minimum level. Polling is possible at all times; a programmable polling schedule enables automatic polling to take place at certain times. The tank information includes the customer name, location, product name and tank contents in any unit of measurement.

Special features

- Database management for customer and tank data with LOGI-Compact or LOGI-Master
- Variable polling intervals for automatically calling LOGI-X remote sites with connected sensors
- Display of tank levels
- Alarm function linked to limit values
- Limit alarms to alert four pre-selected telephone numbers
- Event priority call (incoming call has priority)
- Password assignment
- Format dBase or ASCII used for data export

¹⁾ In principle, physical variables, such as pressure and temperature, that can be converted into a voltage or current signal can be processed and managed by Media LOGI-Base.

Table 1 · Technical data

Media LOGI-Compact	
Supply voltage Power consumption	13 to 36 V_ 160 mA (for every connected sensor with +20 mA passive current output)
Signal input (depending on setting)	0 to 10 V ($R_i = 100 \text{ kOhm}$) or 0 to 20 mA ($R_L = 50 \text{ Ohm}$)
Resolution	10 bit
Measuring error	Max. 2% of the measuring range
Modem interface	V.22
Device interface	RS-232
Degree of protection	IP 20
Perm. ambient temperature range	-20 to +70 °C
Modem, integrated	
Dial mode	DTMF
Transmission	V.22
Connection for analog telephone line	Western RJ-11 or screw terminals
Dimensions	
LOGI-Compact module	157 x 86 x 58 mm

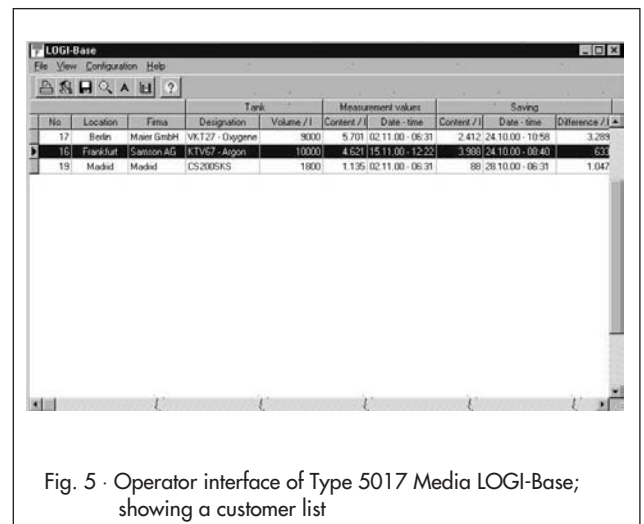


Fig. 5 · Operator interface of Type 5017 Media LOGI-Base; showing a customer list

Hardware requirements

Standard PC with following minimum requirements: 486 DX 66 MHz (Pentium II Processor recommended), 16 MB RAM, >20 MB free hard disk memory, CD-ROM drive, serial interface, graphics card with 4 MB memory and a resolution of 1280 x 1024 pixels, monitor with a resolution of 1024 x 768 pixels, keyboard and mouse

Software requirements

Operating system: Windows 95, Windows 98 or Windows NT

Media LOGI-Master and Media LOGI-Bus

Both modules are required - in place of the LOGI-Compact - for managing more than four sensors.

Media LOGI-Master is the heart of a network for managing up to 30 LOGI-Bus modules.

LOGI-Master communicates with the LOGI-Bus modules and links the integrated modem to the central control station.

Each module can accept up to four analog input signals, which means a maximum of 120 input signals can be managed.

The analog measuring signals of a sensor are digitalized in the LOGI-Bus and converted into a protocol that can be read by the LOGI-Master.

The LOGI-Bus modules of a LOGI-X network are addressed via a coding switch on start-up.

LOGI-Master

Special features

- Integrated modem (V.22)
- Dial mode: DTMF
- Options for connecting analog telephone line: Western RJ-11 or screw terminals
- Integrated RS-232 interface
- Programmable min./max. limits
- Event control for limit
- DC-isolated RS-485 bus interface, two-wire connection
- Management of max. 30 LOGI-Bus modules
- Max. 1,200 m bus branch length

The LOGI-Master consists of:

- Electronics with bus master function
- Modem (V.22)
- Terminals
- Telephone socket
- SUB-D plug
- Plastic housing

LOGI-Bus

Special features

- Inputs for four sensors with voltage or current interface, independently configurable of each other
- Parallel connection of 30 LOGI-Bus modules
- Two-wire bus connection to all LOGI-X components
- Max. 1,200 m bus branch length

The LOGI-Bus consists of:

- Electronics with A/D converter and bus protocol function
- Terminals
- Coding switch for bus address
- Plastic housing

Table 2 · Technical data

Media LOGI-Master	
Supply voltage Power consumption	13 to 36 V ₋ 160 mA (for every sensor connected with passive +20 mA current output)
Device interface	RS-232
Degree of protection	IP 20
Perm. ambient temperature range	-20 to +70 °C
Function	
Event control	4 limits per sensor
Alarm message sent	4 programmable telephone numbers
Programming	Via LOGI-Base in a PC on site or at central control station
Modem, integrated	
Dial mode	DTMF
Transmission	V.22
Connection for analog telephone line	Western RJ-11 or screw terminals
Bus interface	
Two-wire connection	DC-isolated RS-485, half duplex transmission
Cable length	Max. 1200 m
Participants	Max. 30 LOGI-Bus
Dimensions	
LOGI-Master module	86 x 157 x 60 mm

Table 3 · Technical data

Media LOGI-Bus	
Supply voltage Power consumption	13 to 36 V DC 160 mA (for every sensor connected with passive +20 mA current output)
Signal input (depending on setting)	0 to 10 V ($R_i = 100 \text{ k}\Omega$) or 0 to 20 mA ($R_L = 50 \text{ }\Omega$)
Resolution	10 bit
Bus interface	RS-485, DC-isolated, half duplex transmission
Cable length	Max. 1200 m
Participants	Max. 30 LOGI-Bus per LOGI-Master
Perm. ambient temperature range	-20 to +70 °C
Degree of protection	IP 20
Dimensions	
LOGI-Bus module	86 x 105 x 60 mm

Specifications subject to change without notice.

