

ATM-Plus systems



The ATAL ATM-Plus monitoring systems are stand-alone modular 1 to 16 channel data recorders that can be configured completely according to your wishes. The basic unit has 16 free channel slots and can be extended via input modules. There is a choice from 33 different input modules, optical or non-optical isolated. The systems have been developed for stand-alone recording of such parameters as temperature (via Pt100, Pt1000, Ni1000

sensors and thermocouples), AC current, AC voltage, DC process signals (mA, Volt) and pulses (status or count). The ATM-Plus systems are characterized by their simple installation and the exceptionally user-friendly software. The ATM-Plus systems have a number of standard and unique features that will provide you with maximum ease of use. Automatic data transferral, network possibilities, trigger possibilities, GSM or other modem communication, real time graphic display and exchangeable input modules are standard provisions!

Data storage

The monitoring systems have a large memory capable for storage of 480,000 readings and can operate independently without a PC. The sample interval for taking readings can be set for each channel separately and can vary between 1x per second to 1x per 24 hours. It is also possible to save the data on a hard disk of a PC or laptop during registration. In order to do this the ATM-Plus must be coupled to a PC through the RS232 port, the RS485 port, the USB port, an Ethernet connection or a modem. The Windows® analysis software supplied with the system makes it possible for you to analyse all recorded data simply and if necessary prepare it in a form suitable for reports.

Features

- ▶ Any configurations possible from 1 to 16 channels, with choice from 33 input modules
- ▶ Memory for 480,000 readings, automatic download to PC possible
- ▶ High system accuracy from 16 bits analogue/digital converter
- ▶ Simple installation and configuration, the system is near enough "plug & play"
- ▶ Alarms possible - acoustic, visual, SMS and through relay outputs



ATM-03P

LCD displaying channel name and actual reading on two lines

Touch button menu control for display

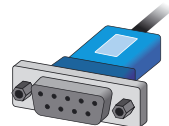
Indicator to show when operating

Indicator to show use of memory



Alarm indicator per channel

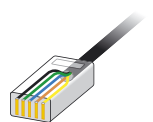
Communication interfaces



RS-232/485



USB



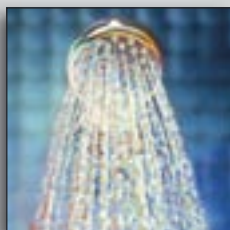
Ethernet



GSM

Applications

The ATM-Plus units can be used for very many different applications, both in a clean environment and a polluted industrial environment. They can even be used outdoors if the optional splash-proof housing is fitted. An overview of a number of common applications is given below.



Control of critical water temperature

Recording and monitoring of the critical water temperatures in the pipe network.



Horticulture

Recording of temperatures, relative humidity and carbon dioxide (CO₂), monitoring energy consumption.



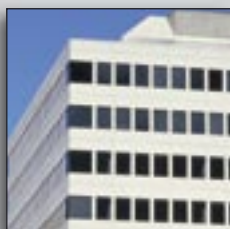
Cooling and freezing technology

Recording and monitoring of temperatures and pressures.



Research & Development

Recording and monitoring of processes, recording of various parameters in test equipment.



Building and energy management

Recording of comfort parameters including temperature, %RH, carbon dioxide (CO₂) and air velocity, control of air conditioning units, recording energy consumption.



Process industry

Recording of such parameters as pulse signals, pressures, temperatures, voltages and currents.



Food industry and supermarkets

Recording and monitoring of critical temperatures required by the HACCP regulations.



Laboratories and pharmacies

Recording temperatures, carbon dioxide (CO₂) and other critical temperatures required for the GLP or GMP regulations.

Recording

A name for each separate channel

16 process labels or names can be created per system that can be linked to a channel during the course of the process. An operator can select the required label by using the ATM-Plus function keys. The label selected is recorded as well as the actual reading.



Trigger input for external starting and stopping

For certain applications it is useful to start and stop the recording externally. This is in order to utilise the memory of the ATM-Plus unit as efficiently as possible. A digital input can be linked to any of the ATM-Plus inputs to function as a "start/stop" input. As soon as contact is made in the digital input the recording can be started or stopped.

It is also possible to activate a different sample interval if a digital input changes status. For example, it may be desirable to collect more readings if there is a failure.



Information on the LCD display

The ATM-03P and ATM-04P units have a LCD screen showing the actual readings of the various inputs. Function keys can be used to display all the readings in turn. There are also four LED's to show the status of the mains voltage and the memory (more than 75% used and 100% full). An acoustic signal is also given when these status reports are activated.

Wireless sensors

You can save considerably on the installation costs by making use of wireless temperature sensors! No more wires, no more need to penetrate walls and insulation materials. The ATM-Plus monitoring unit can be supplied with an external receiver suitable for receiving the radio signal from 1 to 16 temperature sensors. The sensors work in the 868 MHz frequency band and have a maximum range of 400m in the field. The sensors have a long-life lithium battery and can be supplied with an integrated or external temperature probe. You will find more information about these sensors on page 13.



Recording with certainty

If there is a power failure the recorder will stop collecting data. Up to the moment of the power failure the date and time of the failure as well as the readings taken will be stored the backup battery. After the power has been restored, the ATM units will automatically resume recording.



Alarms & Communication

Alarm functions

The ATM-03P and ATM-04P units have extensive provisions for sending an alarm. Four limiting conditions can be set independently in each channel, with hysteresis and rise and fall delay if required. An alarm is given both visually (LED 1 to 32) and acoustically (buzzer). The ATM-03P and ATM-04P units are fitted with relay contacts for sending an alarm through to a central alarm system or for operating a telephone dialer. The four alarm conditions per channel are particularly flexible in the ATM-04P. For example, two conditions can be used to control the relay outputs and two for sending an alarm per SMS.



Alarm by means of:

- ▶ Analogue or GSM modem
- ▶ SMS message
- ▶ Telephone dialer
- ▶ Buzzer (local)

Multiple ATM-Plus systems linked via RS485 or Ethernet network connection

If 16 channels from one ATM-Plus system are not sufficient for a particular monitoring project a RS485 or Ethernet network can be used to link multiple ATM-Plus systems together (with the exception of the ATM-02P). In this case each ATM-Plus unit is given a unique RS485 or IP address. If a RS485 network is used a RS232/485 converter must be installed on to the main PC. The maximum distance accessible using RS485 is 1 km.



GSM & SMS Communication



Communication via dial-up PSTN or GSM modem

Both an a dial-up PSTN and a GSM modem can be used for remote communication with an ATM-Plus unit. All functions, such as configuration settings, data transfer and even real time display of the actual readings can be accessed remotely. The GSM has the advantage that no fixed telephone line is required. The analogue modem has the advantage that the communication is faster (56k6). The modems supplied by ATAL have been extensively tested in practice so that you will be assured of maximum reliability.

Alarm via SMS message

All ATM-Plus systems can be fitted with a RS232 "SMS port" to which a GSM modem that has been approved by ATAL can be connected in order to send alarms via SMS messages. The ATM-Plus unit can send alarms to any 4 chosen mobile phone numbers. A PC can be linked to the RS232, RS485, USB or Ethernet ports of the ATM-Plus system which can be used independently of the "SMS port". It is also possible to make remote contact with the ATM-Plus unit in order to change settings, view real time readings and access data that has been stored.



Access actual readings via SMS messages

The system operator can send a SMS message "INFO" to the remote ATM-Plus system and then receive a SMS message back with the actual measurement data with the alarm and system status. In order to be able to do this, the ATM-Plus system must be connected to a GSM modem supporting SMS that has been approved by ATAL.

Characteristics and specifications of ATM-Plus

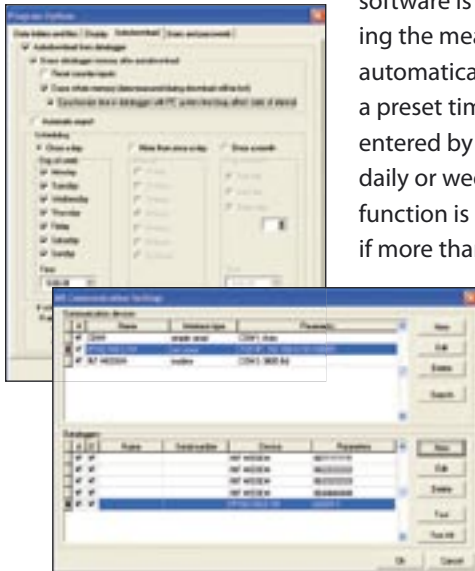
Transfer of data

Automatic transfer of data per project or for several projects

If the ATM-Plus system is linked via a serial (RS232 or RS485), USB, Ethernet or GSM modem connection, the ATM-Plus

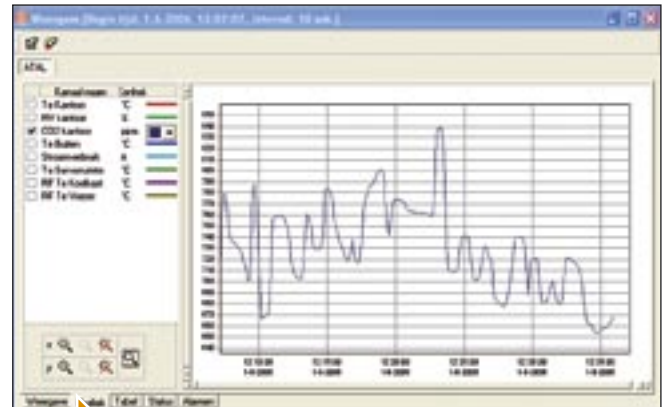
software is capable of storing the measurement data automatically according to a preset time schedule entered by the user (e.g. daily or weekly). This function is also available

if more than one ATM-Plus system is linked via a RS485 connection.



Real time 16 channel paperless recorder

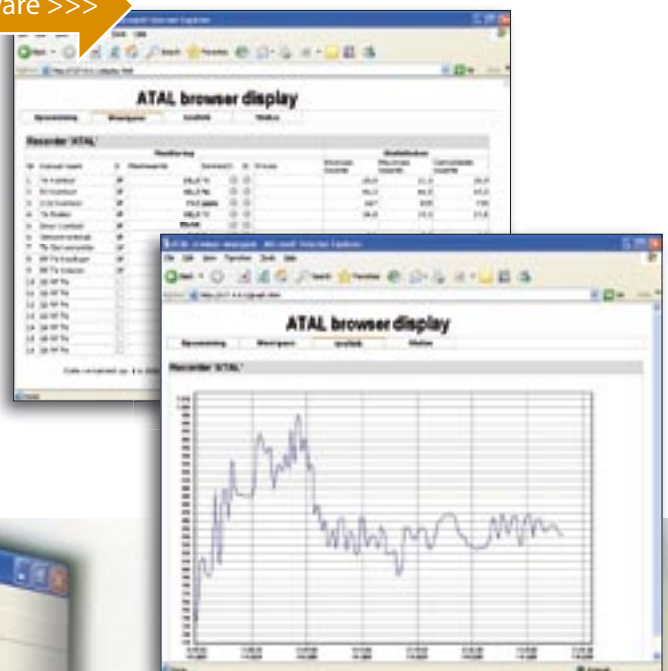
The ATM-Plus software has standard functions to monitor processes both graphically and numerically in real time. The numerical values and the alarm status are displayed on the left, whilst on the right the graphic progression of the activated input channels is presented. This "paperless recorder" function is exceptionally practical for monitoring brief processes such as tests and tuning. This function can also be used if the ATM-Plus system is linked via a modem.



See page 28 for information about the analysis software >>>

Real time display of HTML page

The actual measurement data from the ATM-Plus systems are now also available via HTML pages by using the web browser. Several user groups, for example the technical service department, the person responsible for quality assurance or the management, can use this function to follow critical processes simultaneously. The actual readings can be displayed via the web interface both in numerical and graphical form. Condition here is that the PC to which the ATM-Plus system is linked forms part of the company network, since this PC functions as web server.



Models



System models

The ATM-Plus monitoring systems are available as three different models. The differences between the systems are specified in the table below.

All ATM-Plus systems are available with 16 channels, so that a system can be configured that completely meets your monitoring need. A complete overview of all available input modules for the ATM-Plus systems is given on page 10.

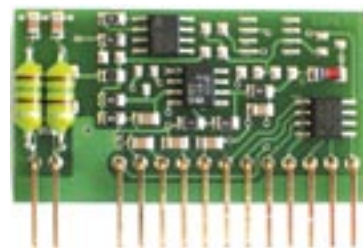
	ATM-02P	ATM-03P	ATM-04P
Data recording:	Yes	Yes	Yes
LCD display and 4 button operation:	—	Yes	Yes
Alarm - acoustic and visual:	—	Yes	Yes
Communication interface, standard:	RS-232	RS-232 RS-485 network interface	RS-232 RS-485 network interface
Communication interface, optional:	Built-in USB or Ethernet	Built-in USB or Ethernet, additional "SMS port"	Built-in USB or Ethernet, additional "SMS port"
Relay contact for external alarms:	—	1 (230VAC/6A)	16 (230VAC/6A)
Sizes (w x h x d):	220 x 180 x 90 mm	220 x 180 x 90 mm 220 x 320 x 90 mm - for thermocouple configuration	250 x 320 x 110 mm
Weight:	800 g	800 g	2000 g
Waterproof housing:	Optional	Optional	Optional

General specifications	
Material of housing:	Polycarbonate
Number of channels:	16 free input slots, configuration to choice
Operating conditions:	0 to 50 °C
Clock:	Real time clock
A/D conversion:	16 bits resolution
Sample interval:	Can be set in steps from 1 sec. to 24 hours
Capacity of memory :	Standard 2 MB (480,000 analogue readings)
Method of recording:	- Stop if full - first-in-first-out
Protection class:	IP2x
Connector:	Standard Wago plug-in connector (removable) sub-miniature contra-connector for thermocouples
LED indicators : (only ATM-03P and ATM-04P)	- Mains power on - Alarm thresholds exceeded (2 levels per channel) - 75% memory exceeded - Memory 100% full

Input modules for ATM-Plus

The basic ATM-Plus system is manufactured standard with 16 free channel input slots for connecting any input module. This modular system configuration gives you the flexibility to start with just a few input modules and to extend the system and/or change it later up to a maximum of 16 modules per ATM-unit.

(*) Due to the special construction of the thermocouple channels it is not possible to add a thermocouple module at a later date.



Available input modules:

Code	Type	Range	Remarks	Max. resolution
ATM-A0	DC current	4-20 mA	loop powered by module	0.001 mA
ATM-A1	DC current	4-20 mA	loop must be powered externally	0.001 mA
ATM-B0	DC current	0-20 mA	—	0.001 mA
ATM-B1	DC current	0-1 A	—	0.0001 A
ATM-B2	DC current	0-5 A	—	0.001 A
ATM-C0	AC current	0-20 mA	optical isolated	0.001 mA
ATM-C1	AC current	0-1 A	optical isolated	0.0001 A
ATM-C2	AC current	0-5 A	optical isolated	0.001 A
ATM-D0	DC voltage	0-100 mV	—	0.0001 V
ATM-D1	DC voltage	0-1 V	—	0.0001 V
ATM-D2	DC voltage	0-10 V	—	0.001 V
ATM-D3	DC voltage	0-400 V	—	0.1 V
ATM-E0	AC voltage	0-100 mV	optical isolated	0.01 mV
ATM-E1	AC voltage	0-1 V	optical isolated	0.0001 V
ATM-E2	AC voltage	0-10 V	optical isolated	0.001 V
ATM-E3	AC voltage	0-400 V	optical isolated	0.1 V
ATM-F	resistance	2 wires	range to be specified in advance	—
ATM-J	RTD Ni1000	2 wires	range -50 tot +250 °C	0.01 °C
ATM-Z13	RTD Pt1000	2 wires	range -10 tot +50 °C	0.1 °C
ATM-K	RTD Pt100	2 wires	range -140 tot +600 °C	0.1 °C
ATM-K1	RTD Pt1000	2 wires	range -140 tot +600 °C	0.1 °C
ATM-N (*)	thermocouple	K	range -70 tot 1300 °C	0.1 °C
ATM-O (*)	thermocouple	J	range -200 tot 750 °C	0.1 °C
ATM-P (*)	thermocouple	S	range 0 tot 1700 °C	0.1 °C
ATM-Q (*)	thermocouple	B	range +100 tot +1800 °C	0.1 °C
ATM-S	digital	contacts	non-optical isolated	—
ATM-SG	digital	contacts	optical isolated	—
ATM-S1	digital	voltage	On status: 3 to 30 Vss, optical isolated	—
ATM-CTU	counter	voltage	On status: 3 to 30 Vss, optical isolated max. pulse frequency 5 kHz with backup battery	—
ATM-CTK	counter	contacts	Non-optical isolated max. pulse frequency 5 kHz with backup battery	—
ATM-RS	RS485	ADAM-protocol	for transmitters with RS485 output, optical isolated. Can also be used with ATAL wireless sensors	—
ATM-FU	frequency	0-5 kHz	On status: 3 to 24 Vdc galvanic separation min. pulse length 30 µs	1 Hz
ATM-FK	frequency	0-5 kHz	potential free contacts min. pulse length 30 µs	1 Hz

All DC process input modules are also available as input modules with optical isolation. When ordering the letter "G" must be noted after the product code (e.g. the input module for 0-10 Vdc signals with optical isolation has product code ATM-D2G).

Sensors

Active sensors for ATM-Plus Monitoring Systems

ATAL supplies an extensive range of passive and active temperature and relative humidity sensors and transducers for physical and electrical parameters.

A brief overview is given below:

You will find a complete overview of all available sensors on page 30 of this catalogue.



Carbon dioxide CO₂ sensors

Range:	0-10,000 ppm
Output:	0-4 Vdc (0-4000 ppm)
Power supply:	9 Vdc or battery



AC voltage

Range:	0-500 VAC
Output:	0-5 Vdc of 4-20 mA
Power supply:	9-30 Vdc



Air velocity

Range:	0-20 m/s of 0-40 m/s
Output:	0-10 Vdc of 4-20 mA
Power supply:	9-30 Vdc



Differential pressure

Range:	0-50 Pa
Output:	0-10 Vdc of 4-20mA
Power supply:	9-30 Vdc



Pressure

Range:	0-10 bar
Output:	0-10 Vdc of 4-20 mA
Power supply:	9-30 Vdc



AC current

Range:	0-30, 60 and 120 A
Output:	0-5 Vdc of 4-20mA
Power supply:	Self-powered

Accessories

Communication - signal conversion - protection

Some of the accessories that are available for the ATM-Plus units are shown below.

ATM-AC01

RS232 > RS485 Converter



For communication between the PC and the ATM-Plus system; for use by cable lengths > 10 m. Complete with power adapter, to be installed on the PC side. (Can only be used with ATM-03P and ATM-04P).

ATM-AC01U

RS-232 > USB Converter



External extension cable RS-232 > USB for communication with the ATM-Plus via the USB port.

ATM-AC06 / ATM-AC05

GSM Modem Kit



GSM modem kit for remote communication with the ATM-Plus system (ATM-AC06), excl. GSM data subscription & SIM card. Complete with antenna, power adapter and RS232 cable.

The GSM modem kit can also be supplied as GSM Alarm model (ATM-AC05), excl. GSM data subscription & SIM card. This sends an SMS message when there is an alarm situation. Complete with antenna, power adapter and RS232 cable.

ATM-AC04

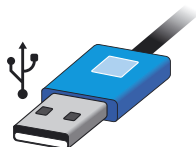
Telephone dialer



For sending an alarm via a pre-recorded message through the fixed telephone network. This telephone dialer is connected to the alarm relay contact of the ATM-03P or ATM-04P.

ATM-AC20

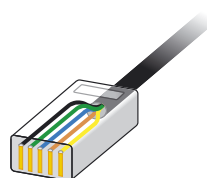
USB Interface



The ATM-Plus systems can be supplied with an integrated USB connection for communication with the PC.

ATM-AC18

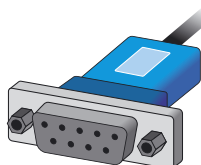
Integrated Ethernet interface



The ATM-Plus systems can be supplied with an integrated interface for communication with the PC via the Ethernet network. This option is only available for models ATM-03P and ATM-04P.

ATM-AC22

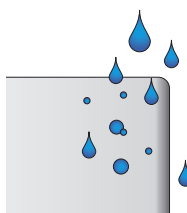
Independent RS232 "SMS port"



An additional independent RS232 "SMS port" can be supplied on the ATM-Plus systems. This is desirable if you link a PC to the ATM system continuously (via RS232, RS485, USB or Ethernet) and alarm messages must be sent simultaneously by SMS.

ATM-AC04

Splash-proof housing

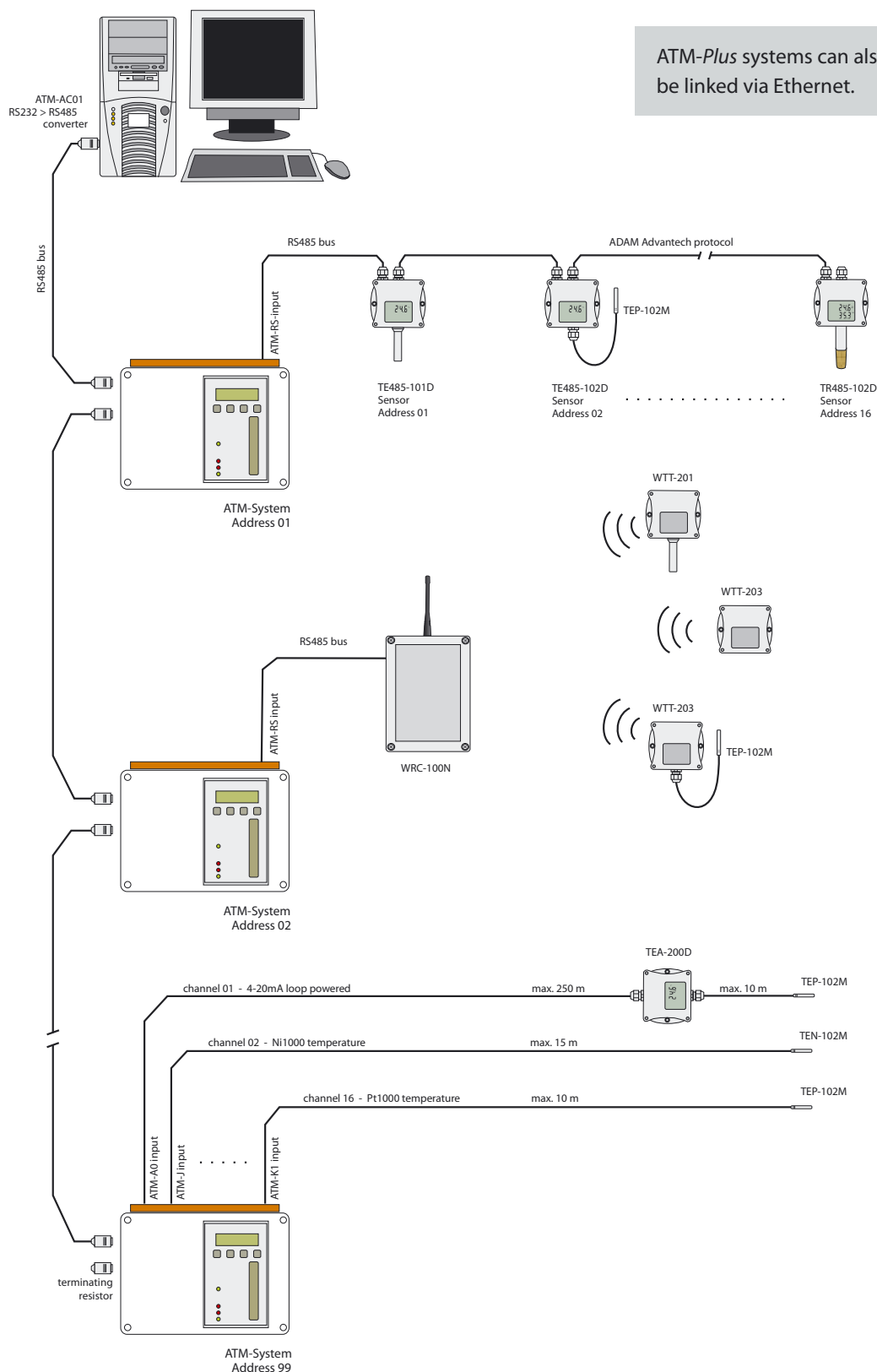


The ATM-Plus systems can be supplied in an optional special splash-proof housing (IP-55), ready fitted with cable glands. The sensors are connected internally. Size of this casing is 250 x 320 x 110 mm. This option is only available for models ATM-02P and ATM-03P.

Possible connections

The ATM-Plus is a versatile monitoring system with many communication possibilities, such as via RS232, RS485, USB, Ethernet and GSM/analogue modem. As well as this, the system can be configured on the monitoring job to meet the exact requirements by using selecting an fitting the input

modules. Sensors can be wired both in star and network form. For those applications where it is complicated to apply wired sensors, our wireless sensors provide the solution. These wireless sensors are specified on page 13. The diagram below gives an impression of the various connection possibilities.



ATM-Plus systems can also be linked via Ethernet.