**Mess- und Fördertechnik**
Gwinner GmbH & Co

Superior Flow Computer Technology

# Flow Computer and Loading Control System

# MFX 4

The MFX_4 reflects the vast experience of M+F, one of the pioneers
of Flow Computers for custody transfer measurement.

The MFX_4 incorporates proven technology never before used in the
design of industrial Flow Computers.

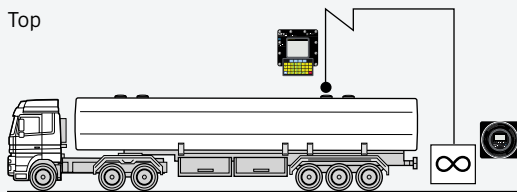# Designed for many challenges:
## MFX_4 Applications

The Flow Computer System MFX_4 is the 4th generation of M+F's Flow Computer series. There are more than 10.000 MFX Flow Computers in operation throughout the world.

The MFX_4 Flow Computer is capable of covering a wide variety of applications, ranging from truck loading, pipeline metering/proving to multi-component blending applications.
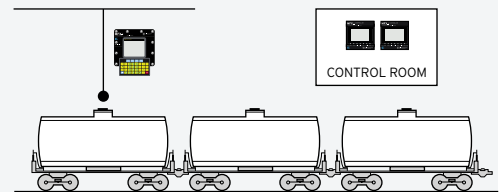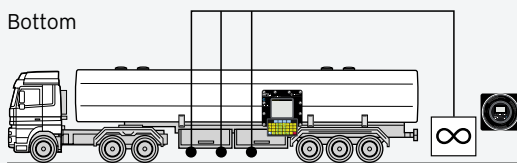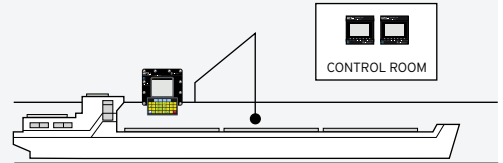
## MFX_4          Applications

| Truck Loading | Top |  | Rail Car Loading | CONTROL ROOM |
| --- | --- | --- | --- | --- |

| | Bottom |  | Ship / Barge | CONTROL ROOM |
| --- | --- | --- | --- | --- |

| Pipeline Metering | SCADA   CONTROL ROOM |  | Blending | SCADA   CONTROL ROOM |
| --- | --- | --- | --- | --- |

| On Truck Applications | Heating Oil Truck |  | Refueller | |
| --- | --- | --- | --- | --- |
| | COMPACT | | COMPACT | |
| | | | Dispenser | |
| | | | COMPACT | |
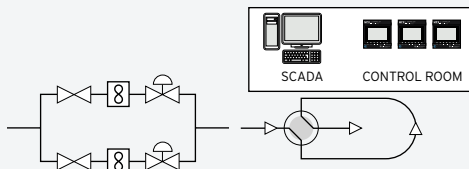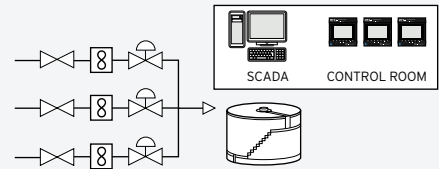
[04]    [MFX_4]
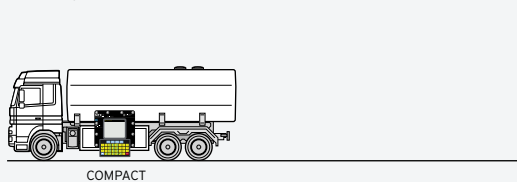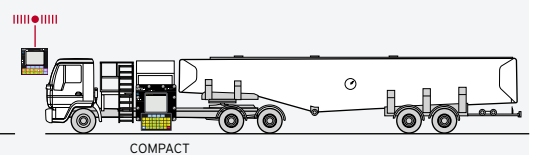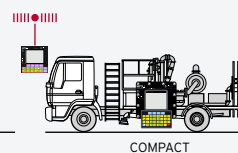
The MFX_4's flexibility comes from its vast number of optional features.

# Superior capabilities:
## MFX_4 Features



MFX_4 Controller is the
Flow Computer Module



MFX_4 Terminal is the
Human-Machine-Interface Module

## Standard Features

Single or multi product operation

Flow control for digital or analog valves

Dual pulse security

Configurable inputs/outputs

Automatic temperature and pressure compensation

Preset for batching with automatic trip correction

Meter factor calculation and meter curve linearisation
  [4 points per product]

Configurable pulse outputs

Graphic display with multi-language capability

Automatic error handling and reporting

Integrated log-book for selected events

Manual or automatic mode selection

Configurable I/O sequencing

7 security levels

Field bus communication CANopen

LAN communication Ethernet TCP/IP

Serial interfaces RS232 / RS485 / RS422

Storage of up to 200 transactions per meter

Remote maintenance via diagnostic interface

Approvals [Ex]: ATEX; [W&M]: OIML, PTB; and many int'l approvals

## Optional Features

Interface to density meter
  • frequency direct from density meter
  • 4-20 mA 24 bit from density converter

Inline blending ratio and sequential

Multi-product blending [max. 16 products]

Additive control
  • Integrated controller analog and digital for
    max. 10x additives [e.g. M+F CBU]
  • Serial interface to smart additive controller
    [e.g. M+F / Lubrizol]

Pipeline metering application

Meter prover application

Integrated ID card reader
  • Proximity/transponder
  • Wiegand

PC-based features:
  • OPC server
  • Metering and proving controller MPC
  • Multi product blending controller

PC-based service tools
  • MFX_4 Explorer
  • Remote maintenance and diagnostic tools

# The MFX_4 Architecture:
## Modules

The system architecture of MFX_4 is modular: its functions are distributed among individual modules that communicate via CANopen.

These modules are available in [Ex] and non-[Ex] housings and can be positioned and configured in exactly the way that is required by the application.

- The core module is the Flow Computer, the MFX_4 Controller.
- The Human-Machine-Interface is the MFX_4 Terminal with integrated TCP/IP interface.
- The CUT and EDI are gateways to TCP/IP.

Fiscal Documentation

## Fiscal PC UPC or Fiscal printer

In many countries, a fiscal document printer is required by the Weights & Measures authorities. Such a printer can now be replaced by a W&M-approved PC system, the UPC.

Its database query functions allow for easy retrieval of history data.

It connects to the MFX_4 via TCP/IP.

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Flow Computer

## MFX_4 Controller

Field                                    Rack

Controller                               Controller
[Ex]                                     Rack mounted



- Flow computer for 1 or 2 meter positions
- Digital and analog I/Os
- Densitometer frequency input
- Blending Multi-component
- Additive Injection
- Ethanol and Bio-Diesel Blending
- Preset

### Interfaces

- CANopen
- RS232/485

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Human-Machine-Interface [HMI]

## MFX_4 Terminal

Field                                    Field/Rack

Terminal                                 Terminal
[Ex]                                     non-[Ex]



- Large graphical display
- Alphanumeric keypad
- Configurable menu's
- Multi language capability
- Card reader Proximity technology
- Card reader Wiegand technology

### Interfaces

- CANopen
- RS232
- RS485 4 wire
- TCP/IP with 5 ports in parallel

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Flow Computer and HMI combined in one [Ex] housing

## MFX_4 Compact

Field

Compact                                  Compact
[Front]                                  [Back]



The MFX_4 Compact combines a Controller module with a Terminal module in one [Ex]-proof housing.

This product is especially suited to small installations where a one-box-design is preferable.

Integrated ID-Card Readers

## MFX_4 Terminal as Access Controller

### Features

Due to its integrated card readers and TCP/IP connectivity, the MFX_4 Terminal can also be used as a separate Access Controller, i.e. for entry and exit gates.

- [Ex] and non-[Ex]-versions
- Wiegand and Proximity card readers included
- Large and small display/LED versions available
- Stand alone with predefined operator prompts, and/or remote operator prompt sequencing

Proximity Card Reader

Wiegand Card Reader



[See Datasheet:
"MFX_4 Access Controller [Ex]" and
"MFX_4 Access Controller non-[Ex]"]

Communication Gateways

### MFX_4 DDI
Rack

I/O Extension



The MFX_4 DDI I/O Exten-sion Module connects to CANopen and offers eight additional I/Os either digital or analog.
[See example 7 on page 13]

### MFX_4 EDI
Rack

EDI



The MFX_4 EDI is the gateway between the MFX_4 modules [CANopen] and a Local Area Network [TCP/IP].

EDI versions:
- CANopen to Ethernet
- CANopen to serial printer
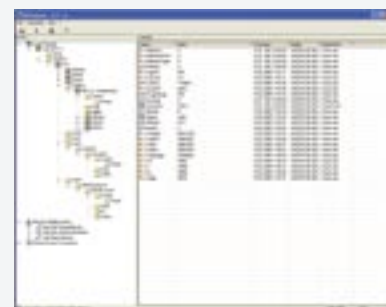
### MFX_4 CUT
Rack

CUT



The MFX_4 CUT module offers the same interfaces as the MFX_4 Terminal and is used when a HMI like the MFX_4 Terminal is not required.

### MFX_4 OPC Server

OPC Server



The MFX_4 OPC Server is a PC-program [MS Windows-based] that can run on the same PC as the Terminal Automation System [TAS]. It offers complete access to all process data of the MFX_4. The TAS can read and write to tables on the OPC Server without the need to directly inter-face to the MFX_4.

This industry standard field communication is used by a wide variety of instrumentation vendors and guarantees flexibility when adjusting TAS and SCADA systems to the field instruments.
[See page 16-17: "OPC Server for MFX_4"]

# Connecting to the Field and Remotely:
# Communication

Due to its superior communication capabilities, the MFX_4 System is very flexible when communicating with the field and remotely. Remote maintenance via the internet or SCADA system becomes a standard feature.

## Attached to the Local Area Network

The MFX_4 system can communicate to SCADA and Terminal Automation systems [TAS] via TCP/IP on a Local Area Network [LAN].

The SCADA or automation system does not need to know the proprietary communication protocols of the MFX_4. It interfaces with the OPC Server on the LAN.

It can thus read and write data in the tables of the OPC Server which can be installed on the same machine as the automation system, or can be accessed via the LAN from another machine.
[See page 18: "Communication between MFX_4 and Terminal Automation"]

Alternatively, the MFX_4 can communicate with the SCADA or Automation System in a more traditional manner via RS232 or RS485 serial communication.
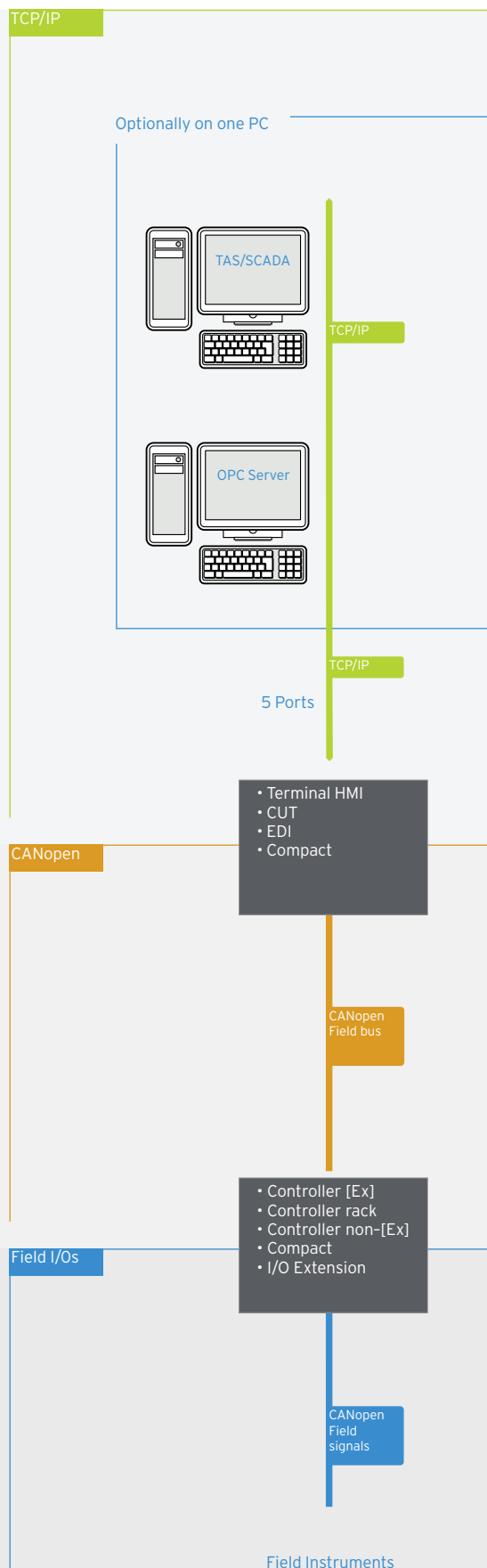
## Communication via CANopen Field Bus

The MFX_4 modules communicate via the fieldbus CANopen. This ultra fast and highly secured bus system has been field proven for many years and is widely used in industrial areas where high speed data exchange is required [i.e. the automotive industry]. Baud Rates are selectable between 10 kbaud and 1.000 kbaud, offering any speed required in an automation environment.

The CANopen controllers are integrated into all MFX_4 modules.

## Connection to the Field Instruments

The field instruments connect directly into the MFX_4 Controller.

The MFX_4 design allows for optimum integration of field I/Os into the system: i.e. densitometer frequency signals can be directly connected without the need for an extra converter.

TCP/IP

Optionally on one PC

TAS/SCADA

TCP/IP

OPC Server

TCP/IP

5 Ports

• Terminal HMI
• CUT
• EDI
• Compact

CANopen

CANopen Field bus

• Controller [Ex]
• Controller rack
• Controller non-[Ex]
• Compact
• I/O Extension

Field I/Os

CANopen Field signals

Field Instruments

# Flexible Modular Design:
## Configuration Examples

## Scalability

The same MFX_4 can be used for low-cost, simple applications and for complex, high-tech solutions.

The smallest system requires a single Controller for the control of up to two metering points.

No matter how complex the application, the same modules of the MFX_4 System cover the requirement. This allows for scalability to grow and expand to ever more complex installations.
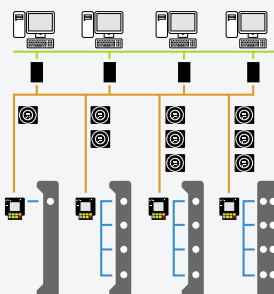
### One Controller for one or two metering points

Controller rack mounted



### MFX_4 Compact for one metering point



### More complex installation with many loading bays and connection to Ethernet
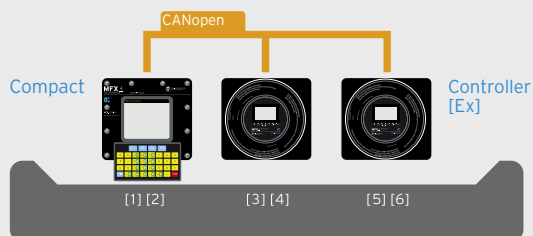


## Configuration Examples

For simple installations, all modules are installed on the load rack. There is no automation system installed and the operation is semi-automatic using only the MFX_4 Terminal.

### Example 1: All modules on the load rack

The MFX_4 Compact is used together with two MFX_4 Controllers. The Compact, like the Controllers, can operate up to two meter runs. The operator uses the HMI of the Compact for all meter runs on the loading bay.
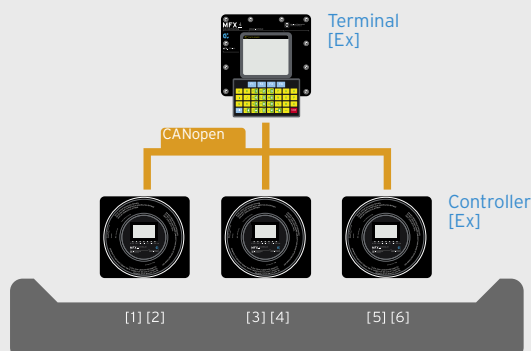
Field



Compact                                    Controller [Ex]

CANopen

[1] [2]          [3] [4]          [5] [6]

### Example 2: All modules on the load rack

The MFX_4 Terminal is installed together with 3 MFX_4 Controllers. It serves as the HMI for all meter runs.

Field



Terminal [Ex]

CANopen                                    Controller [Ex]

[1] [2]          [3] [4]          [5] [6]

# Configuration Examples

## Example 3: All modules on the load rack, with connection to an automation system

In this installation, an automation system [TAS] has been added. The communication between the MFX_4 modules and the automation system runs via an EDI. The EDI converts the CANopen data to TCP/IP for use on an Ethernet LAN.

Attached to the LAN, there is an OPC Server for the MFX_4 system installed. The automation system TAS communicates via OPC with the MFX_4. It has no direct connection to the field. If the TAS does not support OPC technology, it can directly communicate peer to peer via TCP/IP or via serial interface RS232 and/or RS485 with the MFX_4.

This configuration includes fiscal documentation [required by W&M authorities in some countries] that can be either a fiscal printer or a PC-based UPC. Either of the two possibilities are connected to the CANopen bus via an EDI.
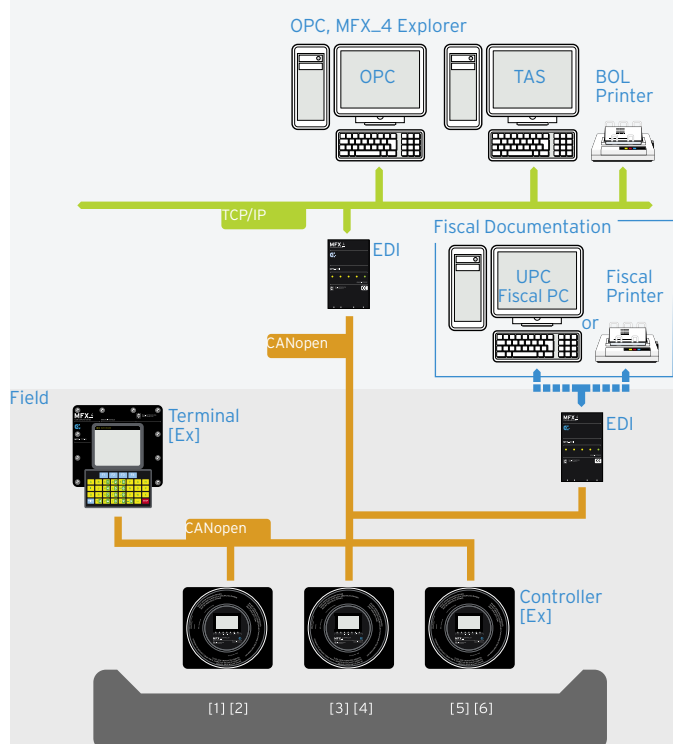
## Example 4: Combined bottom- and top loading rack

In installations where it is preferable to operate in different places, more than one MFX_4 Terminal can be connected to the same metering positions:

I.e., in the period of conversion from top- to bottom loading, there can be a requirement for combined load racks that are able to alternatively load top and bottom loading trucks.

On such load racks, the MFX_4's modular design allows for the installation of one Terminal on the top and another Terminal on the bottom of the load rack.

If required by the local W&M authorities, the fiscal documentation in this example is installed on the LAN on TCP/IP. In this case, either a fiscal printer or a UPC are directly connected to the Ethernet LAN and a separate EDI is used for this dedicated communication to the MFX_4.
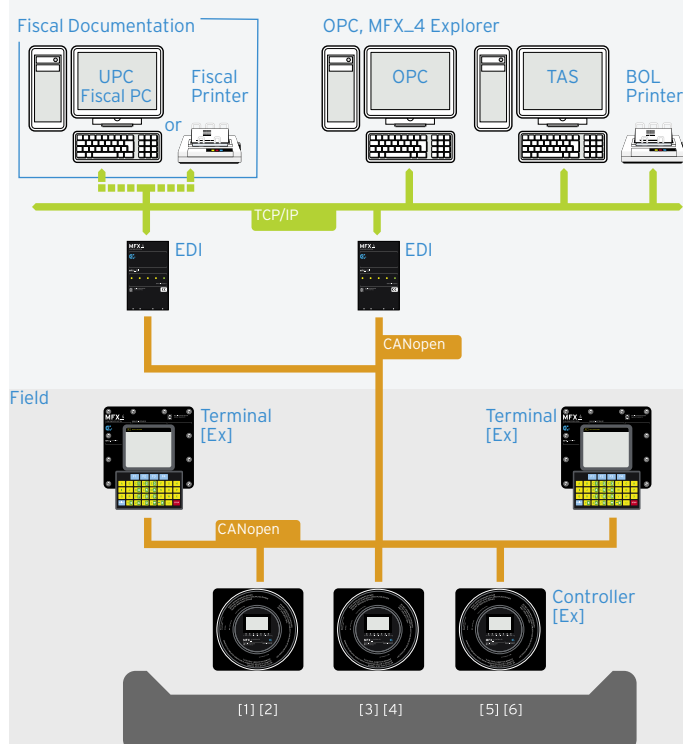
# Flexible Modular Design:
# Configuration Examples [cont'd]

## Configuration Examples

### Example 5: Aircraft Refuelling
### MFX_4 on a refueller truck

In Aircraft Refuelling applications, the MFX_4 is installed on the refueller or dispenser truck. Together with the Controller, one [Ex]-Terminal is located in the refuelling zone of the truck.

Another non-[Ex]-Terminal is located in the driver's cabin, together with standard W-LAN communication. This allows the truck fleet management system to send orders to the Terminal in the cabin.

Also, the transaction data can be sent via W-LAN to a central system for Leakage Detection or further data processing.
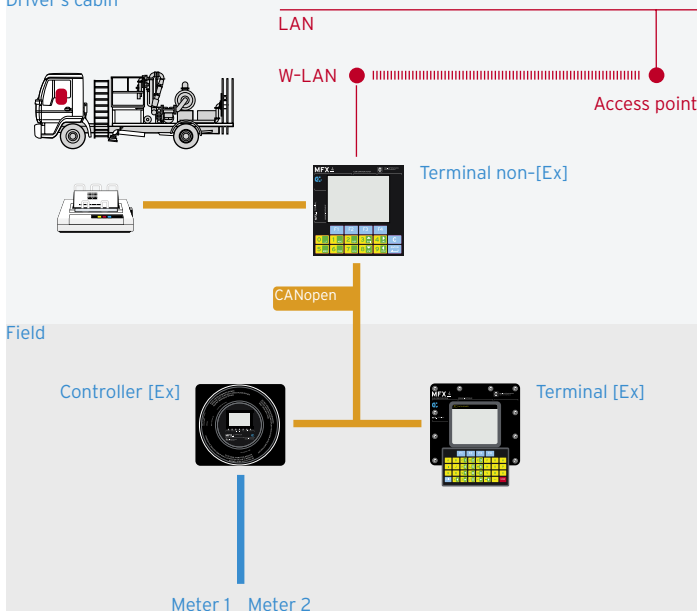
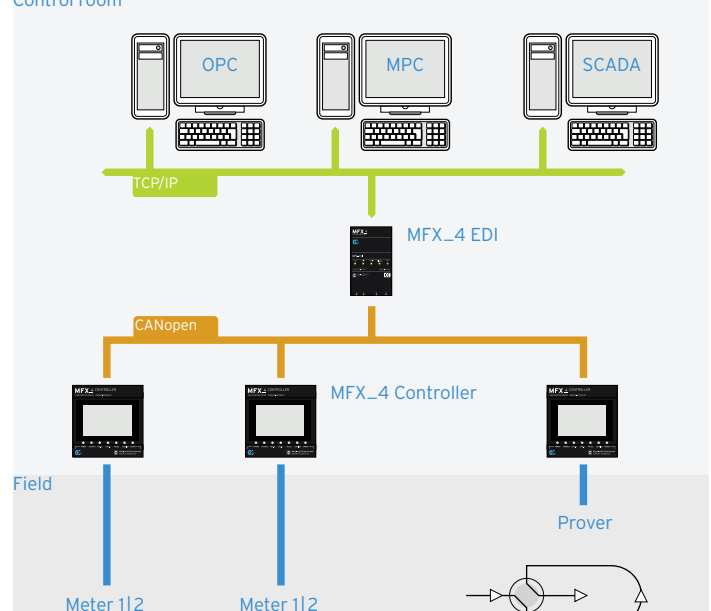### Example 6: Pipeline metering and Prover control

The MFX_4 System offers an option for high-performance Pipeline Metering Systems, with integrated prover control and dual chronometry.

A PC-based Metering and Proving Control Manager MPC offers complete supervision and control of the proving process and communicates via TCP/IP with the Controllers.

Due to its integrated database, there is a wide variety of configurable reports and history overviews. Also, the MPC offers a comprehensive visualisation of the proving process.

[See page 22: "MPC Manager"]



Driver's cabin

LAN

W-LAN                                    Access point

Terminal non-[Ex]

CANopen

Field

Controller [Ex]          Terminal [Ex]

Meter 1   Meter 2



Control room

OPC          MPC          SCADA

TCP/IP

MFX_4 EDI

CANopen

MFX_4 Controller

Field

Meter 1|2          Meter 1|2

Prover

## Single Meter Integrity

If other Presets fail, a complete island is out of operation.
With MFX_4's single meter integrity, only one meter position
is affected in the case of an interruption.

Advantages:
- Higher performance
- Availability
- Easy to configure
- Easily expandable
- Lower cost of spare parts and maintenance
- Lower cost for wiring and cabling
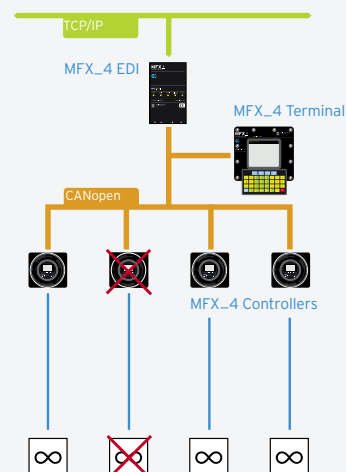  [no additional junction boxes]

### Other Presets:

Single island integrity
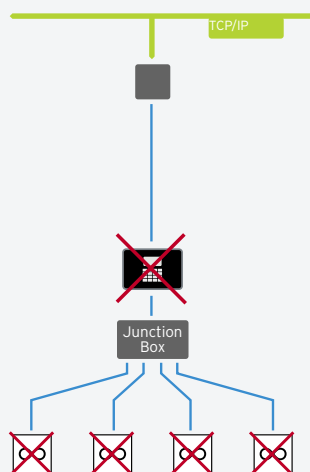
### MFX_4 System:

Single island integrity and single
meter integrity

## Configuration Examples

Example 7: MFX_4 on Load Rack for Trucks

This example shows a truck loading terminal with four loading islands.
The MFX_4 Terminals [Ex] are located at the loading bays of
the islands. [Note: Island 4 has a right and a left lane, thus using two
Terminals.]

For further I/O requirements on these loading islands, an extra
MFX_4 DDI I/O Extension is attached to the CANopen bus.

Each Controller manages one or two metering positions. The MFX_4
EDI units are gateways to the TCP/IP LAN network. On the LAN,
the OPC Server makes all data of the MFX_4 available for read/write
to the TAS/SCADA systems.

The UPC on the LAN is a legal data memory which can replace the
compulsory fiscal printer.
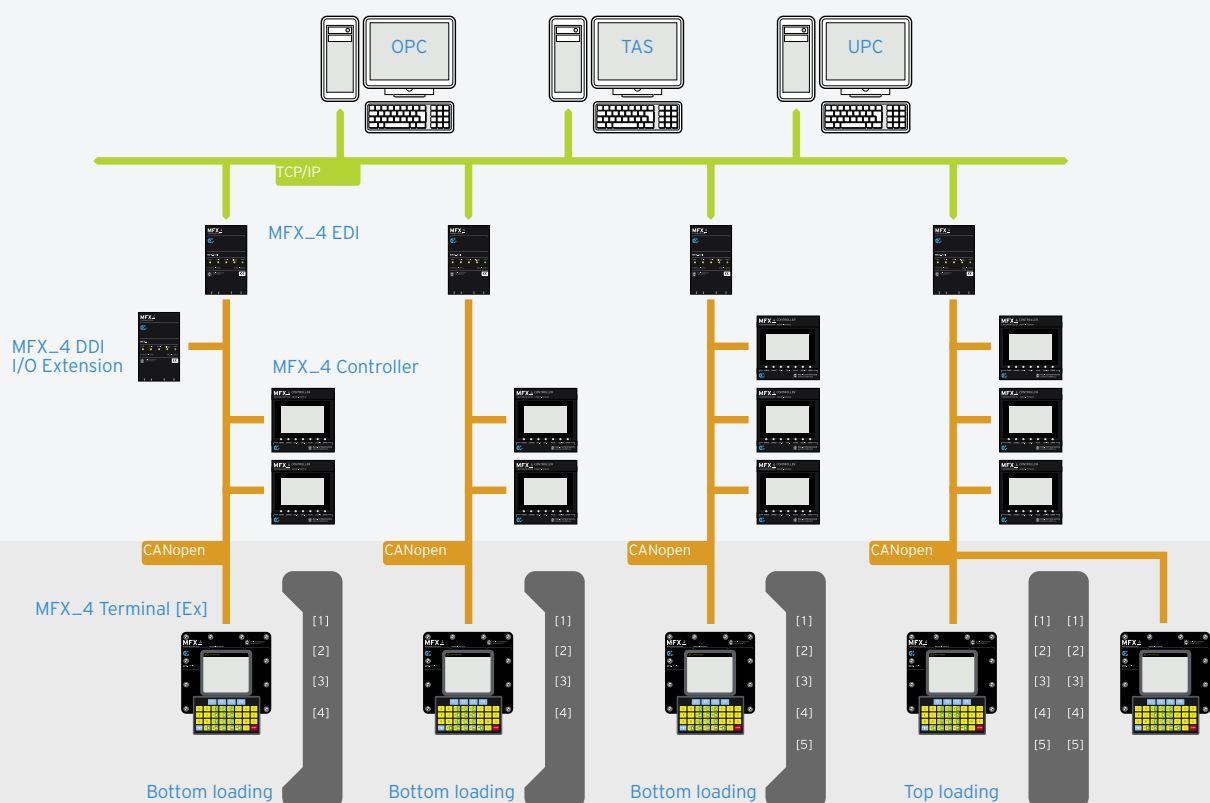
# The MFX_4 as a Blending Controller:
## Application Examples

The MFX_4 offers full functioniality as a blending controller, for a blending of up to twelve different product streams, in order to obtain a final product of precisely defined proportions. The Blending can be either in-line or sequential.
For the blending control, the MFX_4 uses PID algorithms and allows for Flow Pacing. Ratio control can be performed based on Gross Volume, Net Volume or Mass.

Typical applications are:
- Blending for Truck Loading
- Blending for Ethanol [Bio] and Bio-Diesel during loading
- Multi-product Blending systems
- Bunker Blending
- Additive Blending
- Additive Injection of up to 10 additives

Main features:
- Flushing to clean pipe after batch [optional]
- Controlled and Wild Stream Blending
- Stored recipes
- Meter data and Process data per meter position
- Total quantity for each Blending Batch
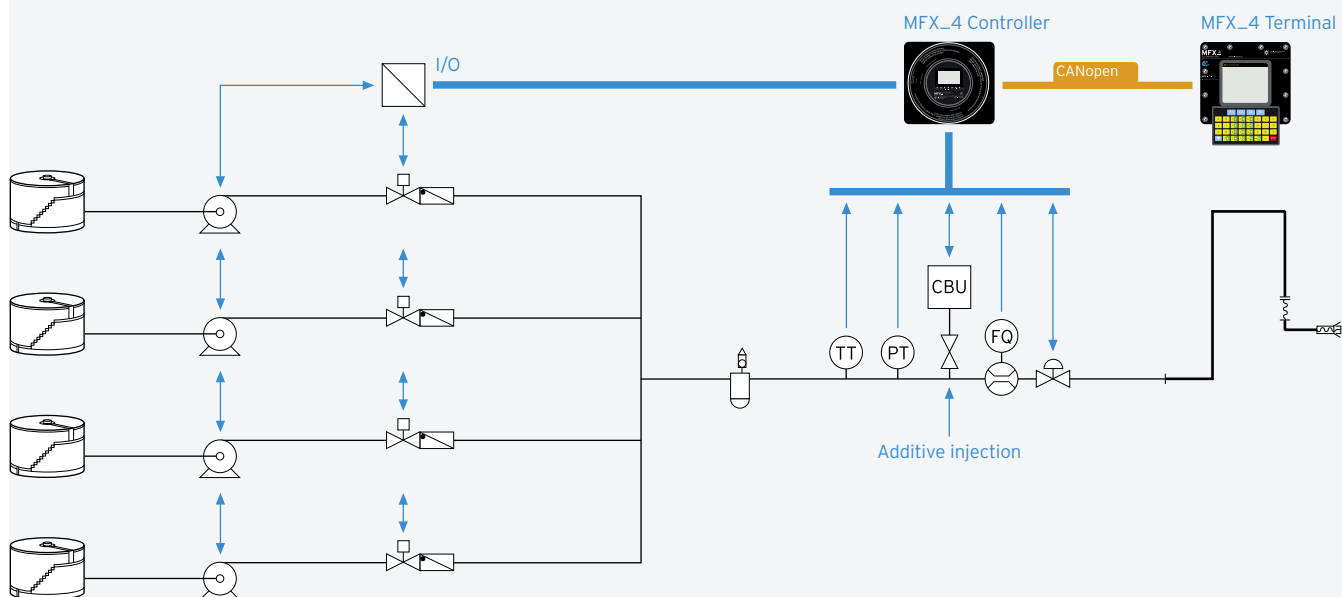- Simultaneous additive injection and blending with one Additive Controller

## Application Examples

Example 1: Ratio in-line Blending for up to 12 products

- Multi master controller
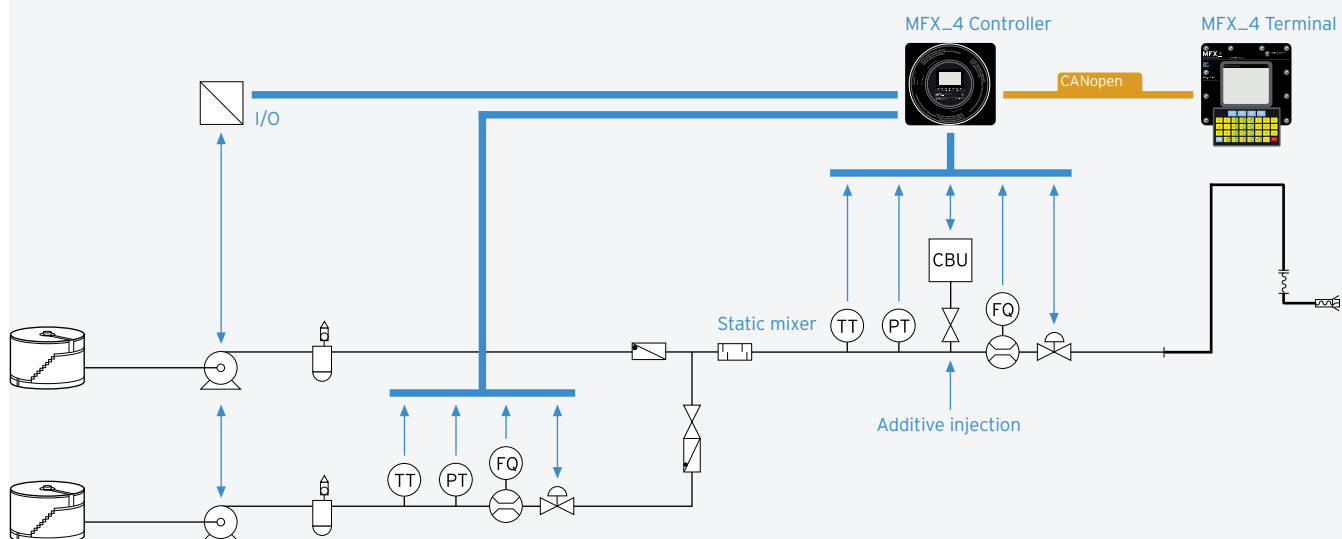- Independent temperature, pressure etc. for each stream

[15]            [MFX_4]
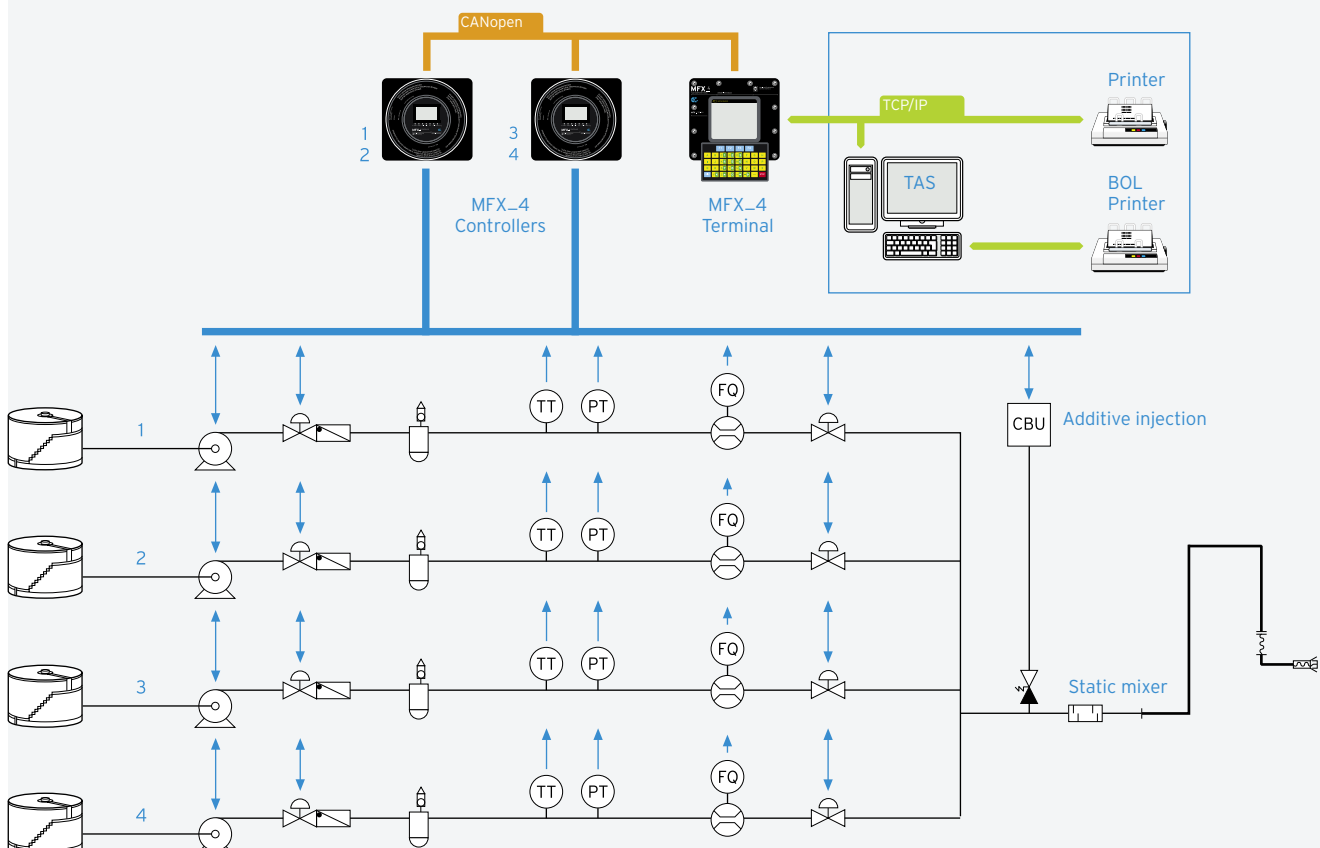
# Application Examples

## Example 2: Sequential Blending of max. 8 products



## Example 3: Wild Stream in-line Blending, i.e. for Ethanol or Bio-Diesel Blending

# Standardised communication with the field
## OPC Server for MFX_4

The MFX_4 System can be connected to an OPC Server via TCP/IP on the LAN. The OPC Server is a program that runs on a PC, either separate or on the same PC as the automation system.

The OPC Server makes all data from the MFX_4 Flow Computer available for other systems [like Terminal Automation or SCADA Systems] to use. The data is easily accessible to an OPC Client through read/write tables.

Communication between MFX_4 and OPC Server is at high speed and fulfills all requirements for automation systems.

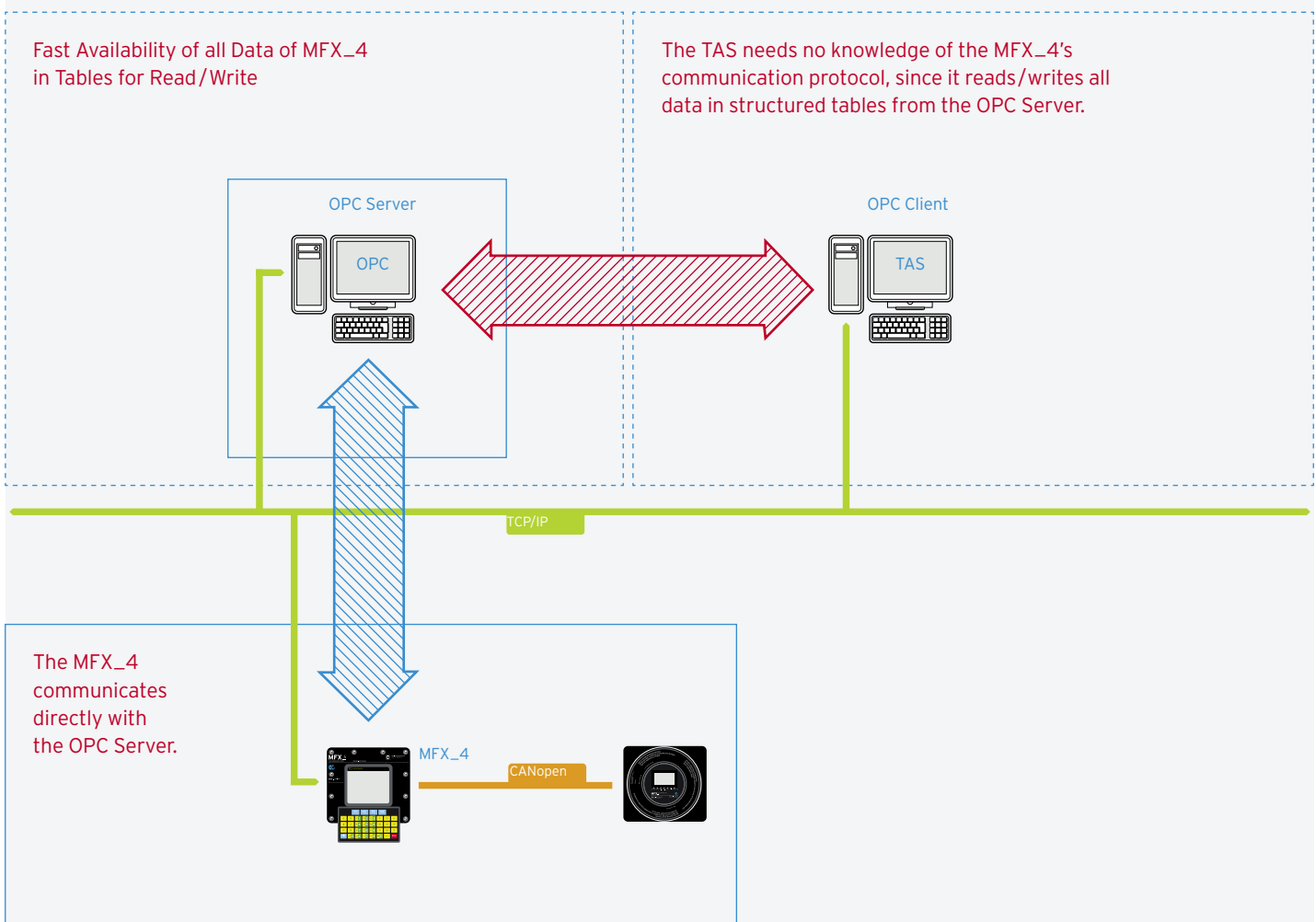By accessing the data from tables on the OPC Server, the Automation System does not require proprietary protocol drivers for the field instruments. Thus, the OPC technology makes communication more transparent and flexible in case of future changes to the field instrumentation.

OPC is an international standard for field-to-control room communication. Many major suppliers of field instrumentation are offering OPC Servers and Clients for their products.

www.opcfoundation.org

### Communication between MFX_4 and TAS via OPC Server

Fast Availability of all Data of MFX_4 in Tables for Read/Write

The TAS needs no knowledge of the MFX_4's communication protocol, since it reads/writes all data in structured tables from the OPC Server.

OPC Server

OPC

OPC Client

TAS

TCP/IP

The MFX_4 communicates directly with the OPC Server.

MFX_4

CANopen

[17]                    [MFX_4]

The OPC structure is similar to that of the MS Windows Explorer. Without knowledge of the field instrument, the SCADA System's OPC client can access all process data in a hierarchical structure, as shown in the example below.

An example of data exchange between TAS and MFX_4 during loading operations



The TAS system has written the preset values into the relevant OPC table.

The OPC Server transmits the preset values for the next load to the MFX_4.



After loading is completed, the MFX_4 transmits the data to the OPC Server where it is made available to the TAS.

The TAS reads this data from the relevant tables.

# Communication between MFX_4 and Terminal Automation

There are several ways to connect a Terminal Automation System [TAS] with the MFX_4.

Ideally, the TAS communicates on a LAN via the OPC Server with the MFX_4. But there are also other possibilities to connect the automation level with the flow computer.

## TAS peer to peer with MFX_4

The TAS can communicate directly with the MFX_4 using the serial interfaces RS232 or RS485. It uses M+F's MCO1 protocol [full duplex].

In case of this kind of connection to the MFX_4, the TAS needs to handle handshake communication. Also, the TAS needs to be programmed in such a way to handle this proprietary protocol.
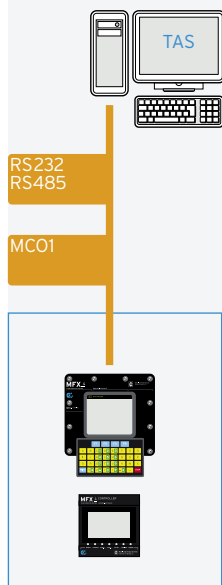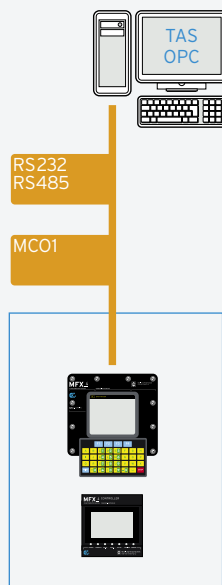
## TAS peer to peer with OPC

## OPC peer to peer with MFX_4

The TAS communicates directly with the MFX_4's OPC Server.

In fact, the OPC Server can run on the same PC as the TAS.

The OPC Server can communicate directly with the MFX_4 using RS232 or RS485.

The OPC Server communicates with the MFX_4, using the MCO1 protocol.

## TAS on LAN with OPC

## OPC on LAN with MFX_4

The TAS communicates on the LAN with the MFX_4's OPC Server. The OPC Server can run on the same PC as the TAS.

The OPC Server communicates with the MFX_4 using TCP/IP on the LAN.

Advantages:

- TAS does not use proprietary protocol and handshake with MFX_4
- All MFX_4 data available on OPC in tables for read/write
- In case of changes of flow computers in the field, no need for reprogramming of TAS communication
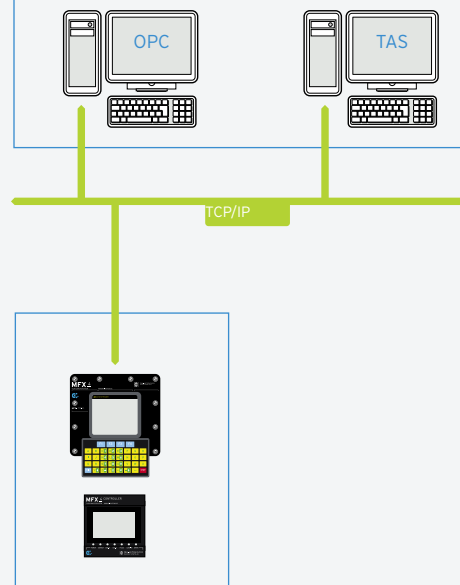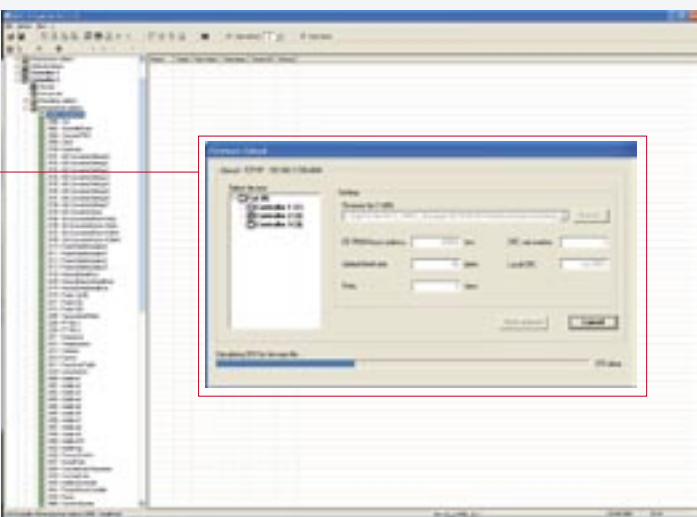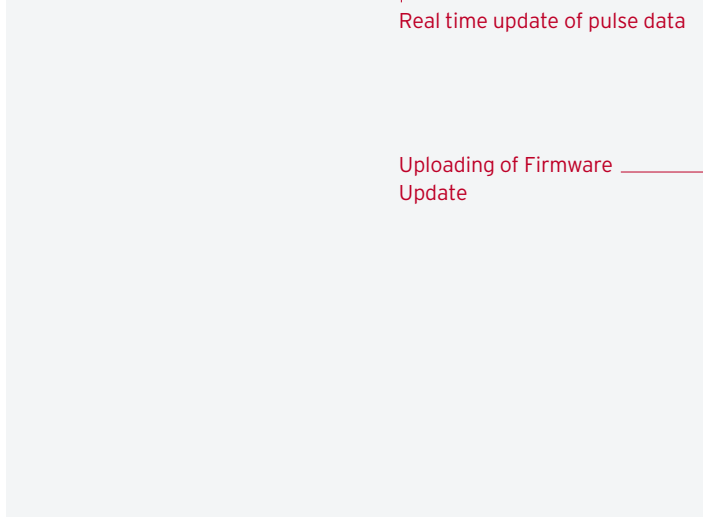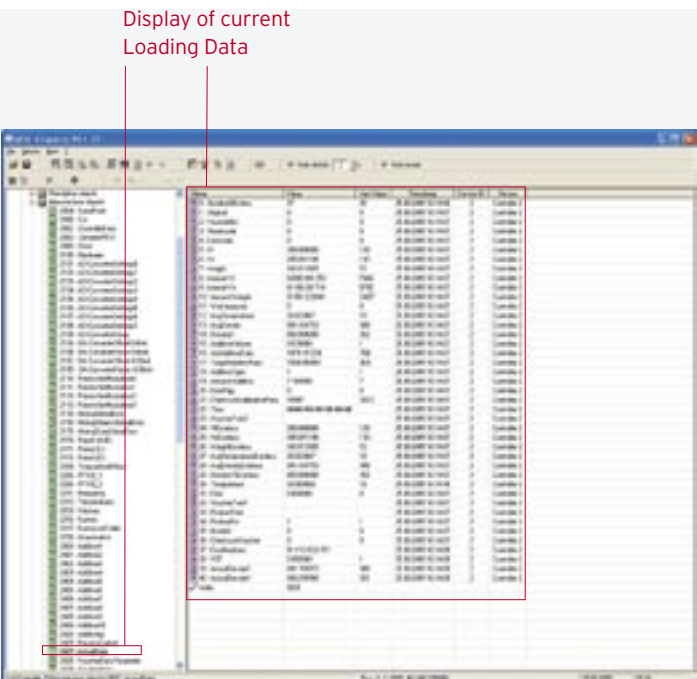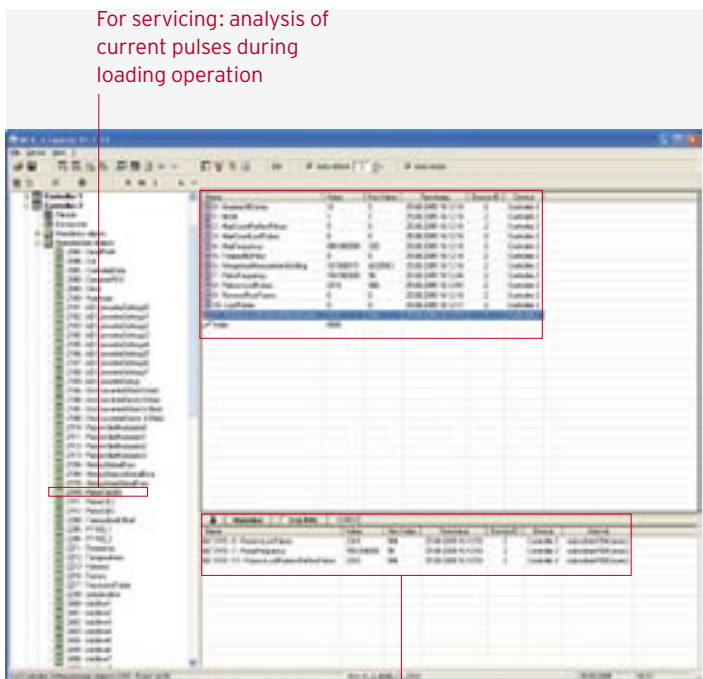
# Configuring the MFX_4 with Explorer or keypad

Further to accessing the MFX_4 via the keypad for parameter setting, the MFX_4 Explorer offers a highly effective way of accessing all data on the Flow Computer. It is a PC–based application software that can communicate directly or remotely with the MFX_4.

This software is used as the main access tool by operators and service personnel for configuring the MFX_4. It also provides a wide variety of additional features that make the MFX_4 simple and flexible to use.

Its layout offers easy navigation through its many functions.

The program provides the following functionality

· Parameter setting

· Logging of communication

· Log book [data history]

· Parameter and configuration data base

· Setting of prover variables

· Access to all variables of the OPC Server for MFX_4

· Firmware Upload

For servicing: analysis of current pulses during loading operation

Display of current Loading Data



Real time update of pulse data

Uploading of Firmware Update

# Remote Maintenance with the MFX_4 Explorer

Due to the MFX_4's TCP/IP communication capabilities, the system can easily be serviced via the internet over large distances, even internationally.

Using the MFX_4 Explorer as a service tool, it is possible to access the MFX_4 during full loading operations, to analyse the real-time data. It is also possible to view and alter parameter settings and upload firmware updates via this software.

Since uploads are separately possible for the weights and measures or for the general part of the software, it is possible to upload firmware updates without breaking the calibration seal.

## Remote Maintenance via the internet

**International Service Support**

Service LAN at M+F

Virtual Private Network

VPN

Terminal LAN of operator
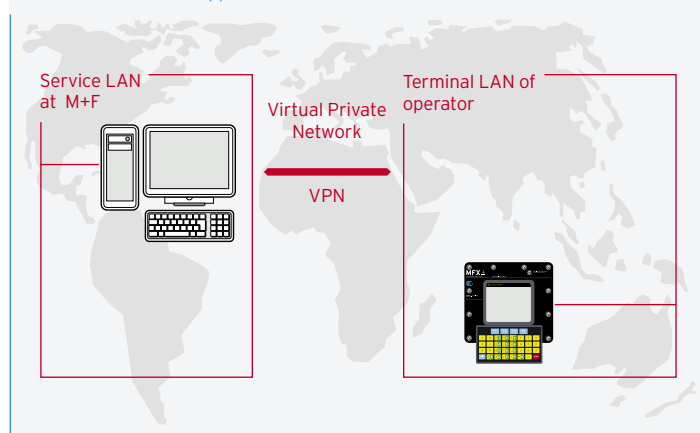
**Central Service Support of Oil Company**

Service LAN

Service Head-Quarter

Virtual Private Network

VPN

LAN of Terminals
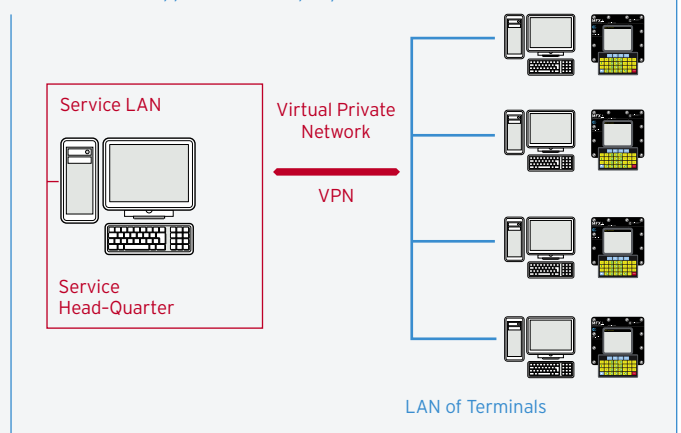
# Metering and Proving Control Manager
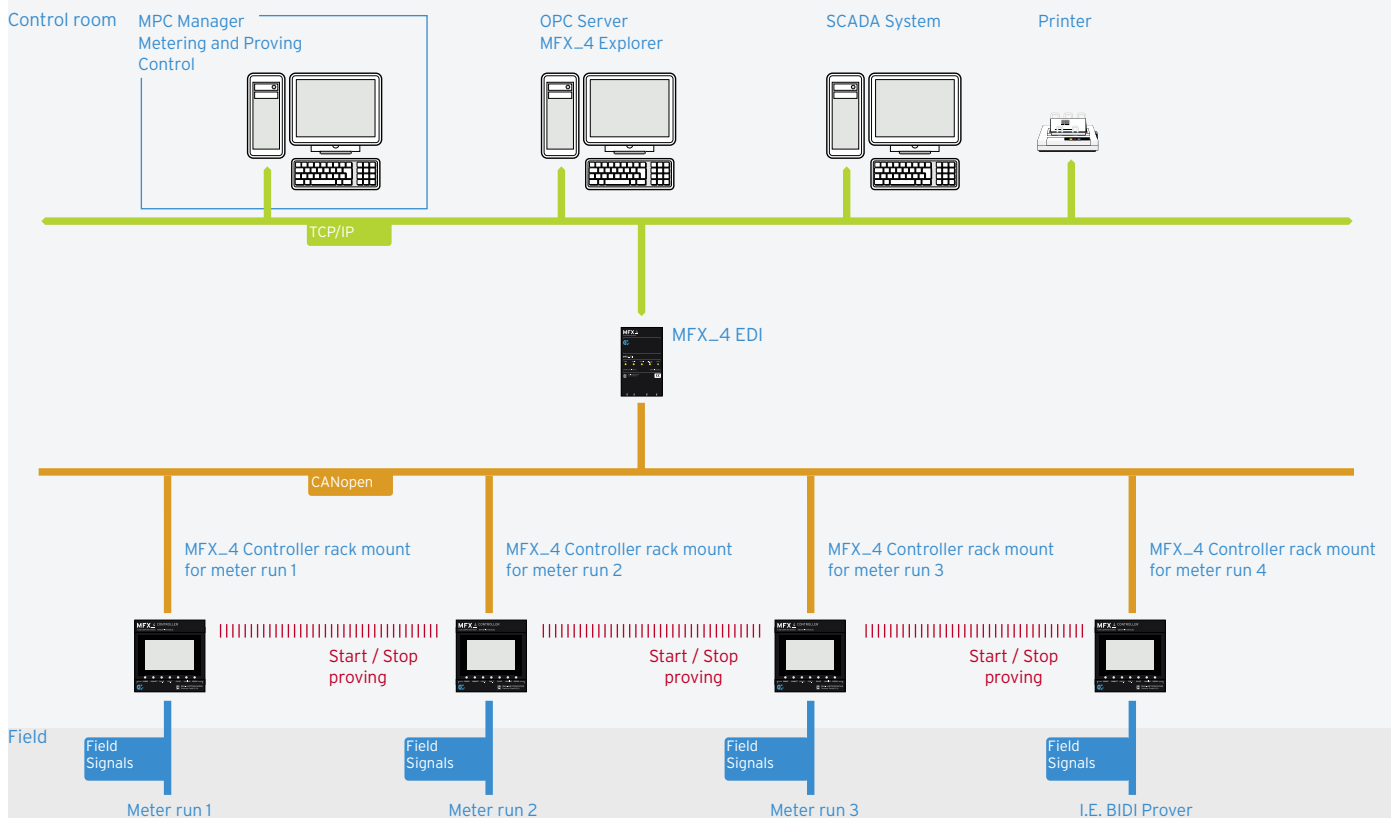# MPC Manager

PC application program for batch and prover handling in
conjunction with Flow Computer MFX_4

In a typical pipeline metering system, an MFX_4 Controller is dedi-
cated to each meter run as well as the prover. Since the MFX_4 Con-
troller offers optional functionality like dual chronometry, the same
flow computers can be used for the meter- and prover-dedicated
units.

The Start/Stop signals from the prover are directly connected to all
MFX_4 Controllers within a system, allowing the controllers to
monitor the pulses from the relevant meters. All other communica-
tion is directed via the CANopen field bus to the OPC Server located
in the TCP/IP Local Area Network [LAN].

Due to the MFX_4's direct link via TCP/IP communications, all
process control functions can be handled on the LAN. This applies to
the Pipeline Process Manager program and the SCADA system; all
existing data from the field instrumentation can be accessed via the
OPC Server for the MFX_4 system.

## Typical configuration for Pipeline Metering and Proving



Control room — MPC Manager Metering and Proving Control — OPC Server MFX_4 Explorer — SCADA System — Printer

TCP/IP

MFX_4 EDI

CANopen

MFX_4 Controller rack mount for meter run 1 — MFX_4 Controller rack mount for meter run 2 — MFX_4 Controller rack mount for meter run 3 — MFX_4 Controller rack mount for meter run 4

Start / Stop proving — Start / Stop proving — Start / Stop proving

Field

Field Signals — Field Signals — Field Signals — Field Signals

Meter run 1 — Meter run 2 — Meter run 3 — I.E. BIDI Prover

# Dual Chronometry

Dual Chronometry increases the pulse resolution of the
flowmeter by dividing each pulse into accurate sub-pulses.

Advantage: Higher accuracy of measurement.
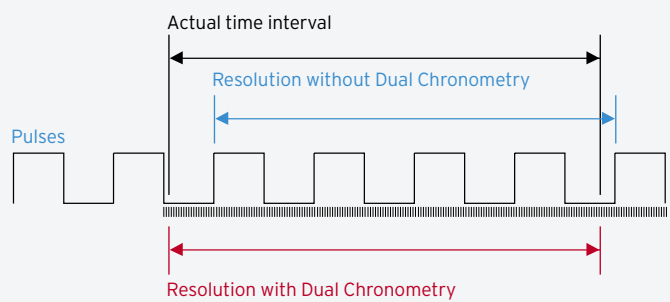
# Technical Data

The MFX_4 Controller is the Flow Computer module in the MFX_4 system. It is available in two different housing versions, although the technical specifications of the electronics are the same for all versions.

The MFX_4 Controller can both be installed in the field [in hazardous or non-hazardous areas] or inside a rack in the control room.

MFX_4 Controller
in [Ex]-housing



The Controller has a two row display which remains active after power-off [OIML-requirement]. The first row always shows the measured quantity, whereas the second row can display several configurable values like Density, Temperature, Net Volume and others.

MFX_4 Controller
in rack-version



# MFX_4 Compact

Approvals [Ex]: ATEX; [W&M]: OIML, PTB; and many int'l approvals

- Dual Pulse Security

I/Os per meter position

- 2x Pulse Input for Additive/Blending
- 2x RTD Pt100 4wire
- 2x Analog Input 4-20 mA [expandable – refer data sheet]
- 2x Analog Output 4-20 mA [expandable – refer data sheet]
- 1x direct Density Input [Frequency]

I/Os per Controller

- 12x digital Output AC and DC relais [expandable – refer data sheet]
- 7x digital Opto-Input [expandable – refer data sheet]
- 3x Pulse Output [expandable – refer data sheet]
- 2x Communication Port
    - 1x CANopen [baud rate selectable from 10 kbaud to 1.000 kbaud]
    - 1x RS232/RS485
- Outputs for Control valves with PID
- Boolean Algebra

Display

- LCD backlit
- 2 [4] rows 16 characters
- 5 Status LEDs
- 5 minutes display power backup [OIML requirement]

Power Supply

- [Ex]: 110-240 VAC, +10, -15%, 50/60 Hz; rack version: 24 DC +-10%

Power Consumption

- 15 VA

Operating Temperature

- -30/40°C to +60°C

Housing

- Explosion Proof EEX d IIB T6 IP65
- Rack mounted [non-Ex] IP20

Optional

- Plug-in Boards available to expand the number of digital and analog I/Os

Diverse

- Permanent data storage after power off
- permanent self diagnostics, parameter and RAM check

[See "Data Sheet MFX_4 Controller [Ex]" and "MFX_4 Controller rack"]

# Technical Data

The MFX_4 Terminal is the Human-Machine-Interface [HMI] between the Flow Computer and the operator in the field.

It is ruggedly designed for rough field operation and offers a large graphic display which can display clearly

MFX_4 Terminal
[Ex]-version

The Terminal has a graphic display that can display any desired process data in large or small characters, either Latin or Cyrillic, Chinese, etc. It offers windows technology and features soft keys as part of the alphanumeric keypad. The display format is configurable for any applications.

MFX_4 Terminal
Non-[Ex]-version

# MFX_4 Terminal

readable characters in any languages. The Terminal's robust keypad has large pushbuttons with a notable 'click' even when used with gloves.

The Terminal can also be used as a stand-alone Access Controller for security control within a terminal.

Approvals [Ex]: ATEX; and many int'l approvals

Display

- Large, Full Graphic Display ¼ VGA
- LED backlit

Keypad

- Alphanumeric
- 32 keys + 4 Soft Keys

Communication

- 1x Ethernet [TCP/IP] 5 ports
- 2x CANopen Field Bus [baud rate configurable from 10 kbaud to 1.000 kbaud]
- 1x RS232
- 1x RS485

I/Os

- 4x digital inputs, 4x relais outputs [option] for i.e. access/barrier control

Integrated Batch/Card Readers

- Transponder [Proximity]
- Wiegand

Multi-Language

- English, German, Russian, Chinese traditional and simplified, others on request

Power Supply

- 24 VDC +-10%

Power Consumption

- 15 VA

Explosion Proof

- EEX d IIB T6 IP65

Operating Temperature

- -30/40°C to +60°C

[See "Datasheet MFX_4 Terminal [Ex]" and "MFX_4 Terminal non-[Ex]"]

# Technical Data

# MFX_4 Compact

Combining the MFX_4 Controller with the
MFX_4 Terminal in "One Box"

MFX_4 Compact
[Ex]-version

Front



Technical Data MFX_4 Compact

Approvals [Ex]: ATEX; [W&M]: OIML, PTB; and many int'l approvals

• Technical data same as MFX_4 Controller and MFX_4 Terminal

Explosion Proof

• EEX d IIB T6 IP65

Power Supply

• 24 VDC +-10% or 110-240 VAC, +10, -15%, 50/60 Hz

Power Consumption

• 15 VA

Integrated Batch/Card Readers

• Proximity/Transponder
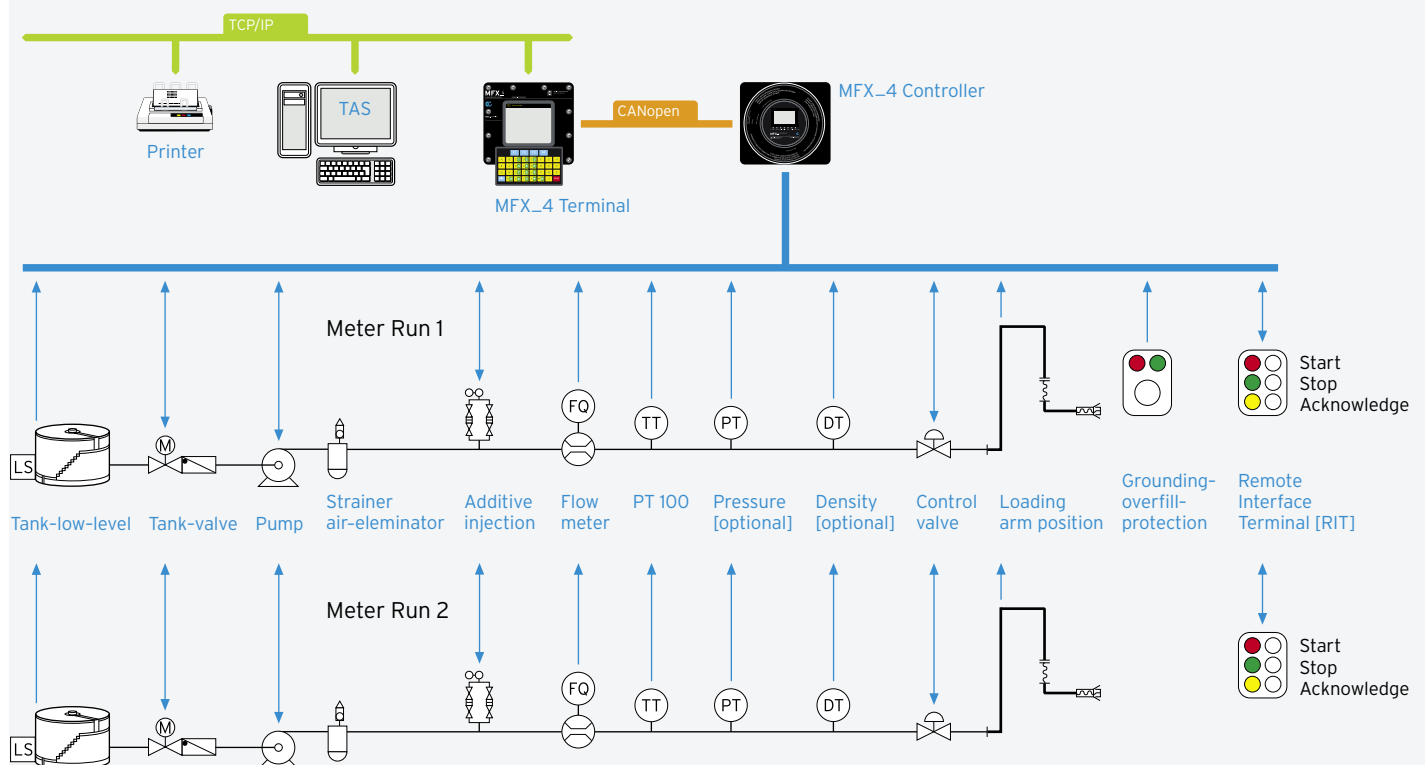
• Wiegand

MFX_4 Compact
[Ex]-version

Back



On its front side, the MFX_4 Compact offers
the same graphical display and alphanumeric
keypad as the MFX_4 Terminal.

On the backside, the MFX_4 Compact is
identical with the MFX_4 Controller.

# Field I/Os:
## Typical Schematics for Bottom Loading Application

The MFX_4 offers a wide variety of available field I/Os which can be even further extended by using I/O extension units. This schematic shows an example of typical I/Os in a bottom loading application for trucks.

### Bottom Loading Application



TCP/IP

Printer

TAS

MFX_4 Terminal

CANopen

MFX_4 Controller

Meter Run 1

Start
Stop
Acknowledge

LS

Tank-low-level   Tank-valve   Pump   Strainer air-eleminator   Additive injection   Flow meter   PT 100   Pressure [optional]   Density [optional]   Control valve   Loading arm position   Grounding-overfill-protection   Remote Interface Terminal [RIT]

Meter Run 2

Start
Stop
Acknowledge

LS

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