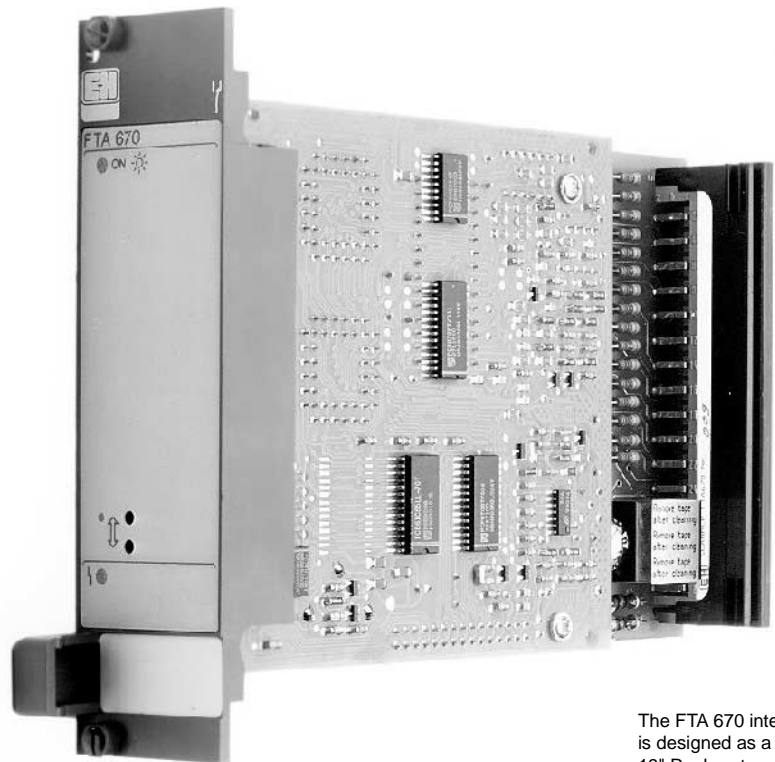# Field Communication
FTA 670 digital interface

16-channel Rackbus interface for 24 V binary logic devices

The FTA 670 interface is designed as a 7 HP, 19" Racksyst card.

Application

The FTA 670 digital interface allows up to 16 binary 24 V logic devices to be linked up to the Rackbus in an industrial environment, e. g., Endress+Hauser and foreign devices with:

- PNP-output
- NPN-output
- relay output.

The FTA 670 interface is designed as a 19" Racksyst card without operating elements. It is configured either on-site with a Commulog VU 260 Z handheld terminal or remotely via a ZA 67... gateway by personal computer, programmable logic controller or process control system.

Features and Benefits

- Integrates existing 24 V logic equipment into digital control systems
- Accepts foreign and Endress+Hauser transmitters without Rackbus connection.
- Valve or limit switch status available to controlling system.
- 16 electrically isolated input channels.
- Green LED on front panel indicates operational readiness.
- Alarm relay for fault condition.
- Configuration by operating matrix

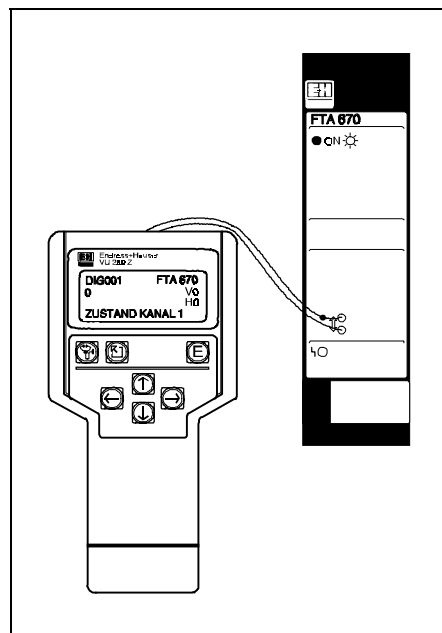# Endress+Hauser

Nothing beats know-how

Measuring System
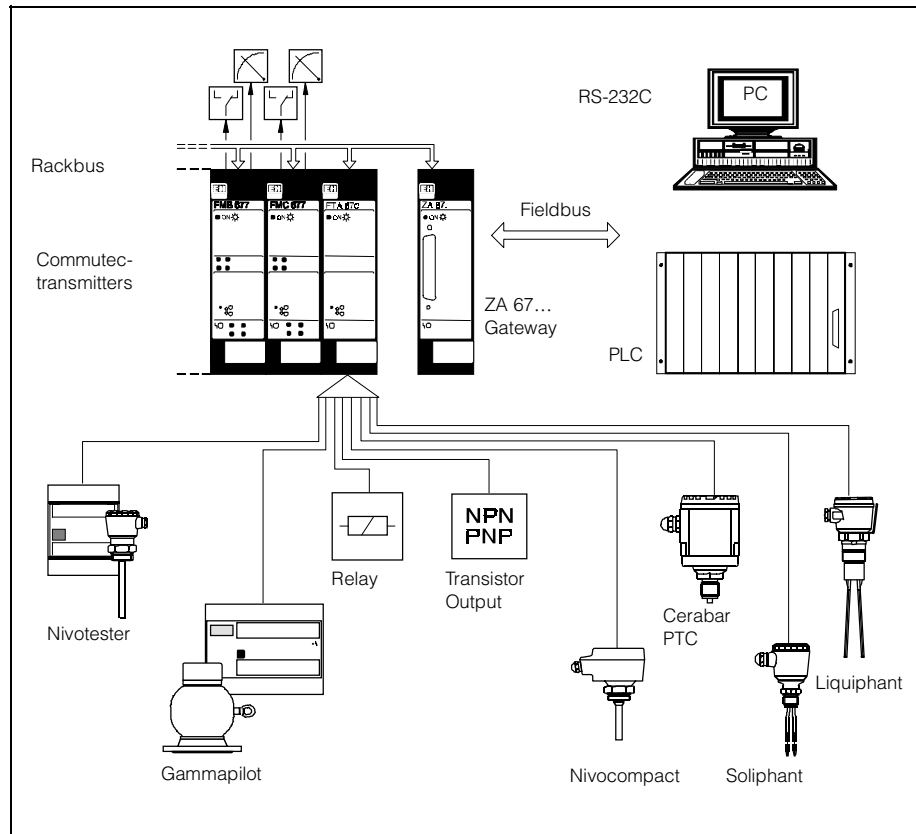
A complete measuring
system comprises, e. g.,
- up to 16x 24 V binary
  logic devices
- FTA 670 interface
- ZA 67 … gateway
- Personal computer,
  PLC or PC system

Measuring System
A complete measuring system
comprises:

- up to 16x 24 V binary logic devices
- FTA 670 interface
- ZA 67… Gateway as interface to
  personal computer, PLC or PC system

The FTA 670 can also be operated as
a stand-alone unit, whereby the logical
status of the connected devices is read
on-site by a Commulog handheld
terminal.

24 V Binary Logic Devices
Any 24 V logic device with PNP-, NPN-
or relay output can be connected to the
FTA 670 interface. For Endress+Hauser
instrumentation these include:

- Compact level switches such as
  Nivocompact FTC/FTW, Soliphant FTM
  and Liquiphant FTL
- Cerabar PTC process pressure
  switches
- Minipac transmitters such as
  Nivotester FTC/FTW/FTR, Gammapilot
  FTG and others.
- Flow, analysis and temperature
  measuring equipment with relay
  output. (Not suitable for bulk flow
  meters with pulse counters.)

ZA 67… Gateway
The ZA 67… Gateway interfaces the
Rackbus system to the digital control
system. The following types are
available or in preparation:

- ZA 672 Modbus Gateway with ZA 370
  RS-232C/RS-422 adapter or ZA 371
  20 mA current loop adapter.
- ZA 673 Profibus Gateway
- ZA 74 FIP-Bus Gateway

Further Gateways are planned.

When plugged into the
communication sockets,
the Commulog
VU 260 Z can be used
to interrogate and
configure the FTA 670.
ZA 67… operation is
disabled during this time.

Installation

Pin assignment diagram for FTA 670 interface
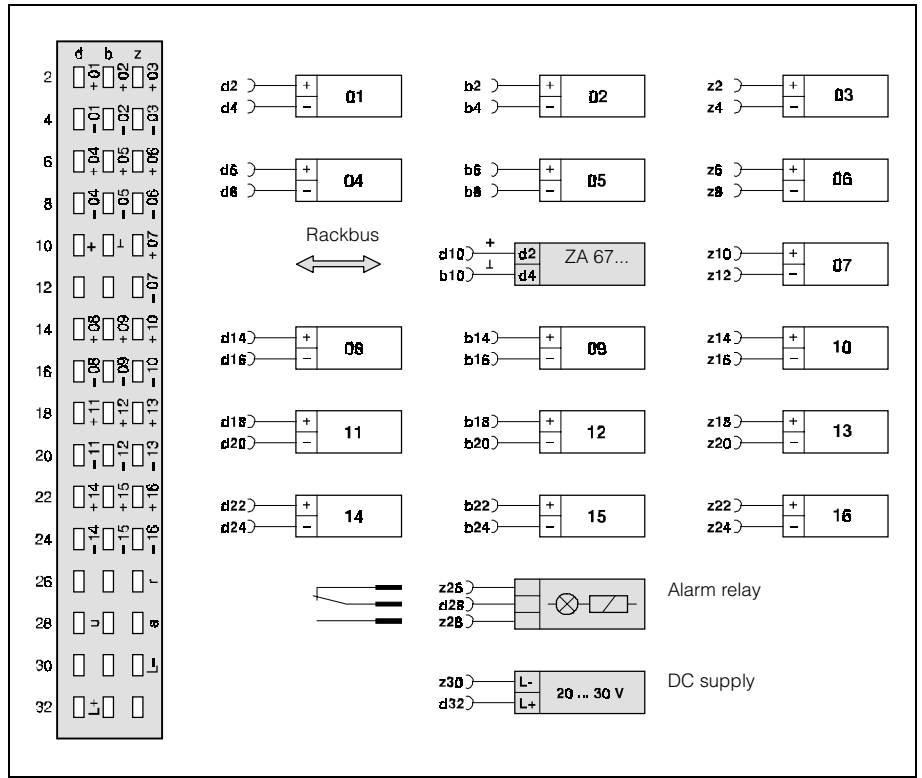
Electrical Connection

The diagram above shows the electrical connections to be made for the FTA interface.

- Suggestions for wiring PNP-, NPN- and relay circuits are shown below.
- All input channels are electrically isolated.

System Connection

Details on connecting up the measuring system can be taken from the ZA 67… operating manual, e. g. BA 054 for ZA 672 Modbus gateway, or Technical Information sheet. In general the electromagnetic compatibility of the device is good. For hints on installation in the vicinity of heavy interference see TI 241F/00/e.

Hardware Configuration

Before the FTA 670 interface card is inserted in the rack its Rackbus address must be set at the address DIP-switch (see diagram on next page):

- Each switch is assigned a value as follows:

Switch	1	2	3	4	5	6
Value off	0	0	0	0	0	0
Value on	1	2	4	8	16	32

- E.g., Switches 2 and 4 on = Rackbus address 10.

The Rackbus address chosen must be unoccupied.

Suggestions for wiring
① PNP-circuits
② NPN-circuits
③ relay and switching circuits
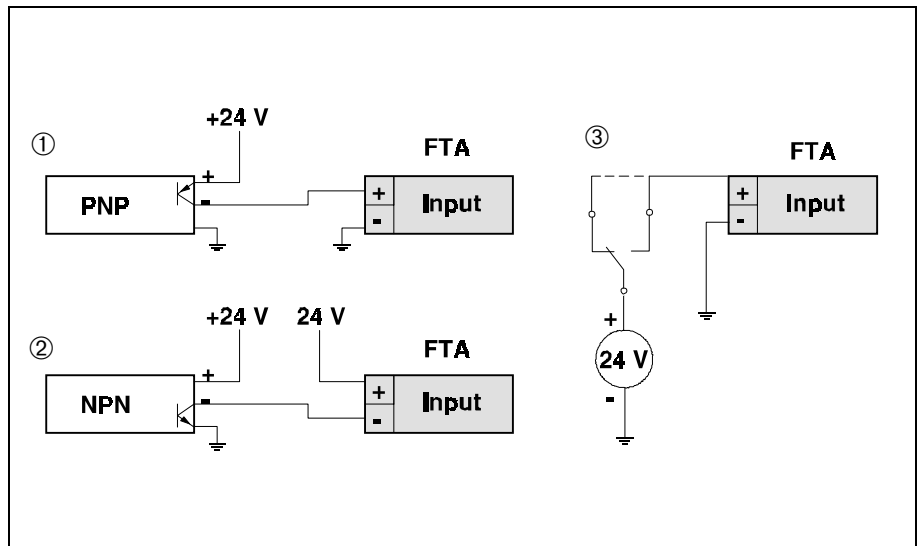
Configuration

The FTA 670 interface is configured and interrogated by means of an operating matrix. Each parameter is allocated a field in the matrix and can be called up selecting the appropriate vertical and horizontal parameter. The matrix can be accessed by:

- the Commulog handheld terminal or
- a personal computer, PLC or control system communicating via a ZA 67… gateway.

If a personal computer is used, the Commutec Operating Program, see »Supplementary Documentation«, provides easy access to all matrix positions.

Details of Commulog VU 260 Z and Commutec Program operation can be taken from the operating instructions supplied with these products.

Significance of operating matrix for FTA 670

| | Display field |
| | Input field |

	H0	H1	H2	H3	H4	H5	H6	H7	H8	H9
V0	Status Channel 1	Status Channel 2	Status Channel 3	Status Channel 4	Status Channel 5	Status Channel 6	Status Channel 7	Status Channel 8	Status Channel 1…8	Status Channel 9…16
V1	Set Channel 1 0:pos, 1:neg	Set Channel 2 0:pos, 1:neg	Set Channel 3 0:pos, 1:neg	Set Channel 4 0:pos, 1:neg	Set Channel 5 0:pos, 1:neg	Set Channel 6 0:pos, 1:neg	Set Channel 7 0:pos, 1:neg	Set Channel 8 0:pos, 1:neg		
V2	Status Channel 9	Status Chan. 10	Status Chan. 11	Status Chan. 12	Status Chan. 13	Status Chan. 14	Status Chan. 15	Status Chan. 16		
V3	Set Chan. 9 0:pos, 1:neg	Set Chan. 10 0:pos, 1:neg	Set Chan. 11 0:pos, 1:neg	Set Chan. 12 0:pos, 1:neg	Set Chan. 13 0:pos, 1:neg	Set Chan. 14 0:pos, 1:neg	Set Chan. 15 0:pos, 1:neg	Set Chan. 16 0:pos, 1:neg		
V4										
V5										
V6										
V7										
V8										Parameter lock
V9	Diagnostics	Last Diag. code		Software No.	Rackbus address	Reset				
VA	Tag. No.									

Configuration

Before it can operate correctly, the FTA 670 must be told the kind of logic to be expected at each channel. Four modes are possible:

- 0 = positive logic (default)
  −30…+5 V for »0« signal
  +13…+30 V for »1« signal
- 1 = negative logic
  −30…+5 V for »1« signal
  +13…+30 V for »0« signal
- 2 = simulation »0« signal
- 3 = simulation »1« signal.

The parameters are entered at positions V1H0…V1H7 for channels 1…8 and V3H0…V3H7 for channels 9…16.

Tag No.

The Tag. No. of the measuring point can be entered at position VAH1. The Tag. No. appears in Commulog display and Commutec Operating Program.
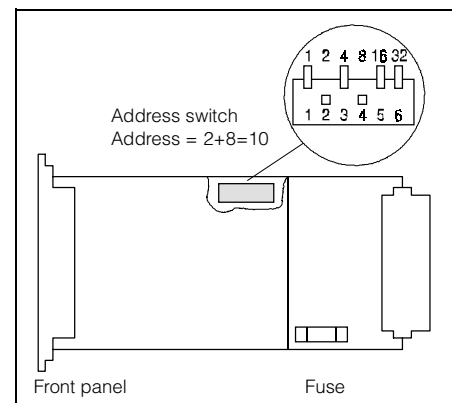
A unique address must be set at the address DIP-switch, see »Installation«
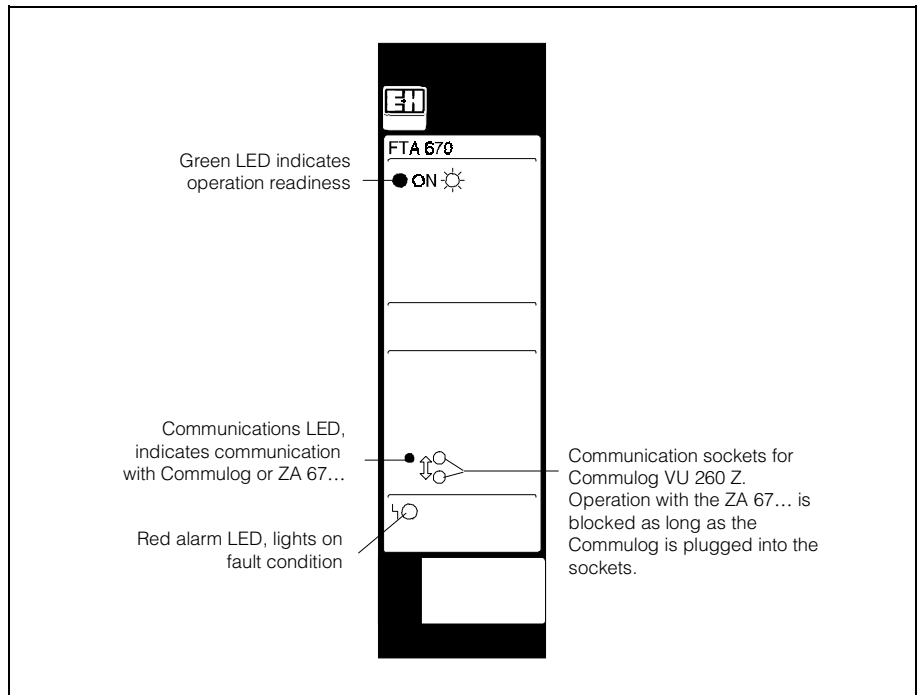
Parameter Lock

The parameter matrix can be protected from unauthorized access by entering a number < 670 or > 679 at V8H9. The lock is disabled by entering a number between 670 and 679 inclusive.

Reset

The FTA 670 interface can be reset by entering a number between 670 and 679 at V9H5. On reset, the default values are set at all channels.

Address switch
Address = 2+8=10

Front panel   Fuse

Operation

Green LED indicates operation readiness

Communications LED, indicates communication with Commulog or ZA 67…

Red alarm LED, lights on fault condition

Communication sockets for Commulog VU 260 Z. Operation with the ZA 67… is blocked as long as the Commulog is plugged into the sockets.

Front panel of FTA 670 interface

Commulog VU 260 Z

Plug the Commulog into the communication sockets and switch on. The required matrix field can be selected by pressing the cursor keys:

- Fields V0H0…V0H7 contain the status of digital inputs on channels 1…8
- Fields V2H0…V2H7 the status of channels 9…16.

ZA 67… Gateway

The status of each channel can be read at the gateway by entering the FTA 670 Rackbus address as well as the vertical and horizontal matrix position of the desired value in the autoscan buffer list. The measured value at the selected field can then be read by transmitting its list position.

- Fields V0H0…V0H7 contain the status of digital inputs on channels 1…8
- Fields V2H0…V2H7 the status of channels 9…16.

Fields V0H8 contains a test sum, which when converted to 8-bit binary notation, reveals the status of channels 1…8 in one command. For example:
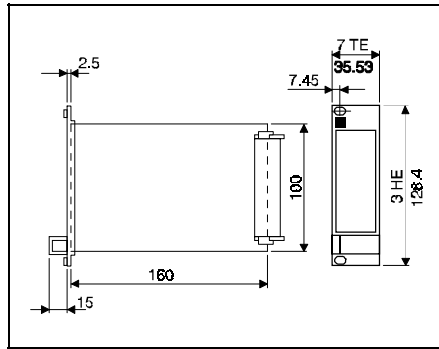
- Test sum = 187
  Binary equivalent = 1011 1011

Channel	1	2	3	4	5	6	7	8
Status	1	0	1	1	1	0	1	1

- Field V0H9 contains the same information for channels 9…16.

Fault Condition

On fault condition the alarm relay de-energises and the red alarm LED lights. An error code can be read at V9H0. V9H1 contains the previous error code.

Error Messages

The Table below lists error messages and their significance.

Code	Significance
E 101 - 106	Hardware fault Contact Endress+Hauser
E 107	Battery voltage too low Replace battery (call Service)

Technical Data

Dimensions of FTA 670 interface card

Mounting

The FTA 670 digital interface is a Racksyst plug-in card which must be installed outside explosion hazardous areas in a rack or protective housing, for example:
- 19" rack for mounting up to 12 x 7 HP modules in the control room,
- Half 19" wide field housing with Protection IP 65,

Power Supply

- DC supply voltage: 24 V (–4 V…+6 V) Residual ripple: max 1 V within tolerance
- Current: approx. 90 mA, max. 120 mA, integrated fine-wire fuse
- Power consumption: 2.5 VA
- Status: green LED lights when on.

Construction

Plug-in card to DIN 41 494 (Eurocard).
- Frontpanel: black synthetic with blue field inlay, grip and tag space
- Degree of Protection to DIN 40 050: panel IP 20; board IP 00
- Electromagnetic compatibility Interference emission to EN 50 081-2 Interference immunity to EN 50 082-1 and EN 61 326 (E 1995)
- Dimensions: see diagram
- Weight: approx. 0.2 kg
- Permissible ambient temperature:
  Operation: 0 ℃…+70 ℃
  Storage: –20 ℃…+85 ℃

Electrical Connection

Multipoint plug to DIN 41 612, Part 3, Type F (48-pole)

Digital Inputs

- 16 electrically isolated channels
- 24 VDC logic, selectable positive or negative
- –30…+5 V for »0« signal
  +13…+30 V for »1« signal
  or vica versa
- Input current per channel ca. 7 mA.

Alarm Relay

- Max. switching capacity 2.5 A, 250 VAC, 300 VA at cos $\varphi \geq 0.7$ *or* 100 VDC, 90 W

How to Order

FTA 670 digital interface	Order No. 208807-0000

Supplementary Documentation

- ☐ Rackbus
  System Information SI 014/00/e
- ☐ ZA 672 Modbus Gateway
  Technical Information TI 148/00/e
- ☐ Commulog VU 260 Z
  Technical Information TI 140/00/e

- ☐ Commutec Operating Program
  Technical Information TI 113/00/e
- ☐ Commulog VU 260 Z
  Operating Instructions BA028/00/e
- ☐ ZA 672 Modbus Gateway
  Operating Instructions BA054/00/e
- ☐ EMC Test Procedures
  Technical Information TI 241F/00/e

Endress+Hauser

Nothing beats know-how