W&T

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Manual

Startup and application

Fix Defined Firewall

valid for the following models:

#55312: Fix Defined Firewall

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Introduction

The Fixed Defined Firewall is an industrial solution for the non-reactive and secure connection of reading participants to networks with increased protection requirements. Its function consists exclusively of forwarding incoming network packets at its input to the subscriber connected at its output without interpretation. Incoming network packets at the outgoing station are rejected without exception.

By doing without its own services and a network stack, the Fixed Defined Firewall does not offer any potential threats.

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1 Legal information and safety

1.1 Legal notices

Warning concept

This manual contains notices that must be observed for your personal safety as well as to prevent damage to equipment. The notices are emphasized using a warning sign. Depending on the hazard level the warning notices are shown in decreasing severity as follows.

⚠DANGER
Indicates a hazard which results in death or severe injury if no appropriate preventive actions are taken.

⚠WARNING
Indicates a hazard which results in death or severe injury if no appropriate preventive actions are taken.

⚠CAUTION
Indicates a hazard that can result in slight injury if no appropriate preventive actions are taken.

⚠NOTE
Indicates a hazard which can result in equipment damage if no appropriate preventive actions are taken.

If more than one hazard level pertains, the highest level of warning is always used. If the warning sign is used in a warning notice to warn of personal injury, the same warning notice may have an additional warning of equipment damage appended.

Qualified personnel

The product described in this manual may be installed and placed in operation only by personnel who are qualified for the respective task.

The documentation associated with the respective task

must be followed, especially the safety and warning notices contained therein.

Qualified personnel are defined as those who are qualified by their training and experience to recognize risks when handling the described products and to avoid possible hazards.

Disposal

Electronic equipment may not be disposed of with normal waste, but rather must be brought to a proper electrical scrap processing facility.

The complete declarations of conformity for the devices described in the instructions can be found on the respective Internet data sheet page on the W&T homepage at http://www.wut.de.

Symbols on the product

Symbol	Explanation
	CE mark The product conforms to the requirements of the relevant EU Directives.
	WEEE mark The product may not be disposed of with normal waste, but rather in accordance with local disposal regulations for electrical scrap.

1.2 Safety notices

General notices

This manual is intended for the installer of the Fix Defined Firewall described in the manual and must be read and understood before starting work. The devices are to be installed and put in operation only by qualified personnel.

Intended use

⚠Danger

The Fix Defined Firewall from Wiesemann & Theis is a fix preconfigured firewall with two 100BaseT network connections. Its function is exclusively to forward incoming network pakkets to the subscriber connected at the output without interpretation. Network packets arriving at the output are rejected without exception.

Any other use or modification of the described devices is not intended.

Electrical safety

⚠WARNING

Before beginning any kind of work on the Fix Defined Firewall you must completely disconnect it from power. Be sure that the device cannot be inadvertently turned on again!

The Fix Defined Firewall may be used only in enclosed and dry rooms.

The device should not be subjected to high ambient temperatures or direct sunlight, and it should be kept away from heat sources. Please observe the limits with respect to maximum ambient temperature.

Ventilation openings must be clear of any obstacles. A distance of 10-15 cm between the Fix Defined Firewall and nearby heat sources must be maintained.

Input voltage and output currents must not exceed the rated values in the specification.

When installing be sure that no stray wires stick out through the ventilation slit of the Fix Defined Firewall into the housing. Ensure that no individual wires stand off from leads, that the lead is fully contained in the clamp and that the screws are tightly fastened. Fully tighten screws on unused terminals.

The power supply used for the Fix Defined Firewall must absolutely ensure safe isolation of the low-voltage side from the supply mains according to EN62368-1 and must have “LPS“ designation.

EMC

⚠NOTE

Only shielded network cables may be used for connecting the Fix Defined Firewall to the network.

In this case the Fix Defined Firewalls meet the noise immunity limits for industrial applications and the stricter emissions limits for households and small businesses. Therefore there are no EMC-related limitations with respect to the usability of the devices in such environments.

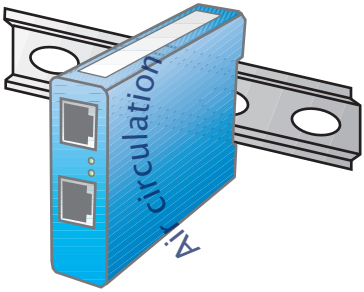
The complete Declarations of Conformity for the devices described in the manual can be found on the corresponding Internet page at the W&T homepage: http://www.wut.de.

2 Hardware, interfaces and displays

- Hardware installation
- Power supply
- Network interfaces
- LEDs

2.1 Hardware installation

The Fix Defined Firewall is mechanically designed for mounting on a standard DIN rail. Here, as well as with possible alternative mounting types, the sketched air circulation must be ensured.



The installation location must be adapted to the security requirements of the respective system environment. Physical access to the Fix Defined Firewall allows a potential attacker to disable the device or bypass its one-way function by connecting the networks directly.

2.2 Power supply

The power supply of the Fix Defined Firewall is alternatively via PoE or an external power supply. Simultaneous connection of both power supplies is not permitted. The current consumption can be taken from the technical data.

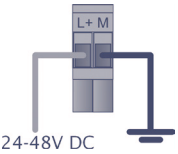
2.2.1 PoE-Versorgung

The Fix Defined Firewall can be supplied via the IN interface via PoE according to IEEE802.3af. It is a device of PoE power class 1 (power consumption from 0.44W to 3.84W).

2.2.2 External power supply

As an alternative to the PoE supply, the Fix Defined Firewall can be supplied externally via the pluggable screw terminal on the underside of the housing. The DC voltage used must be within the following range and the polarity must be observed:

- DC voltage: 24V (-10%) - 48V (+10%)



⚠WARNING

For the external supply of the Fix Defined Firewall only a potential-free power supply unit may be used. Its reference ground for the output voltage must not have a direct connection to the protective conductor.

The power supply unit used to supply the Fix Defined Firewall must guarantee a safe separation of the low voltage side from the supply network in accordance with EN62368-1 and must have the „LPS“ property.

2.3 Network interfaces

The Fix Defined Firewall has two network interfaces: IN and OUT. Both connections are used only for establishing a physical link with the connected device (computer, switch etc).

All data packets arriving at the IN port are forwarded 1:1 to the OUT port without any interpretation.

Data flow in the opposite direction from OUT to IN is not possible.

2.3.1 10/100BaseT

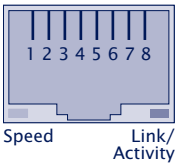
Both network connections are made via shielded RJ45 sockets and max. 100m long, shielded patch cables. The autocrossing function allows both 1:1 wired and crossed patch cables to be used to connect the LAN device(s).

Both network connections are galvanically isolated from the supply voltage by at least 500Vrms.

Autonegotiation: 100/1000BaseT, Full/Half Duplex
The network connections of the Fixed defined Firewall both work in the auto-negotiation mode. We recommend that the connected devices or switches also operate in auto-negotiation mode, so that both the transmission speed and the duplex method are negotiated automatically.

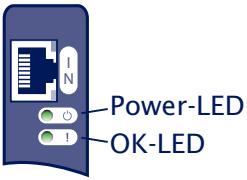
2.3.2 Link state

The link status of the network connections is indicated by two LEDs integrated in the RJ45 sockets.



- **Link/Activity (green)**
  ON = link
  Blink = data traffic (transmit or receive)
- **Speed (yellow)**
  ON = 100MBit/s
  OFF = 10MBit/s

2.4 Power- and OK LED



2.4.1 Power LED ⏻ (green)

ON: Signals the presence of the supply voltage via PoE or the external connection

2.4.2 OK LED ! (green)

ON: The firmware is working and the device is ready to forward data packets from its IN connector to the OUT connector.

3 Installation and commissioning

3.1 Function of the Fix Defined Firewall

The task of the Fixed Defined Firewall is to forward all Ethernet packets arriving at the IN interface without interpretation to the interface OUT for output. In the opposite direction, Ethernet packets arriving at the interface OUT are rejected without exception.

The Fix Defined Firewall has no own network stack, no own services and no own network addresses. It only establishes the physical link to the connected devices at both network interfaces and is otherwise not visible.

This makes it possible to connect a purely reading host at the OUT connector to a higher-level network without any reaction.

3.2 Operating the Fix Defined Firewall

The switch connected to port IN only receives a physical link on its port, but will never receive an Ethernet packet - neither from the Fixed Defined Firewall itself nor from the network device connected to OUT.

Application example: Network sniffer
For error analysis, a network record of the connection between two hosts is to be created. These hosts are located within an intranet with increased security requirements and it is not allowed to connect the foreign computer with the sniffer application and largely unknown other software environment directly to the network.

The Fix Defined Firewall ensures that the anaysis computer only receives data, but cannot send any packets into the network itself.

To ensure that the desired network packets are sent to the Fix Defined Firewall, port mirroring or port monitoring must be activated for the corresponding switch port.

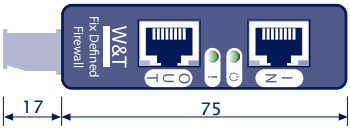
7 Appendix

- Technical data and form factor

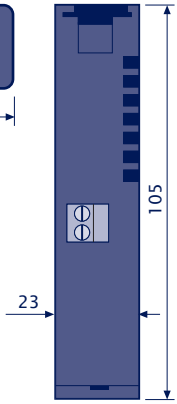
7.1 Technical data and form factor

Power supply ... Power-over-Ethernet: External power supply, screw termnal	 37-57V DC aus PSE DC 24-48V (+/-10%)
Current consumption ... Power-over-Ethernet: Ext. supply	 PoE Class 1 (0,44 W - 6,49W) typ. 80mA@24V DC max. 95mA@24V DC
Galvanic isolation	Network interface: min 500V
LAN port *IN*	10/100BaseT, RJ45, autosensing, autocrossing, PoE
LAN port *OUT*	10/100BaseT, RJ45, autosensing, autocrossing
Permissible ambient temperature ... ... Storage ... Operation, non-cascaded	 -40 ... +85°C 0 ... +50°C
Permissible rel. humidity	0 - 95% (non-condensing)
Dimensions	105 x 75 x 22mm
Weight	ca. 120g

Front view 55312



Bottom side 55312



Measure in mm, +/-1mm