

DRIESCHER - Air-insulated Medium Voltage Switchgear

- Type F24 - 606519-27
- Type F24 - 756519-27
- Type F24 - 906519
- Rated voltage 24 kV
- Rated current 630 A



F 24

ELEKTROTECHNISCHE WERKE
FRITZ DRIESCHER & SÖHNE GMBH

D-85366 Moosburg • Phone: +49 8761 681-0 • Fax: +49 8761 681-137
www.driescher.de info@service@driescher.de



DRIESCHER - 24 kV Switch Panels Type F24

according to EN 62271-200

Content

- 2 General, Operating Conditions, Technical Standards
- 3 Equipment and design, Technical data
- 4 Switch panel variants F24 - 606519-27
- 5 Switch panel variants F24 - 756519-27
- 6 Switch panel variants F24 - 906519
- 8 Advantages, Auxiliary equipment, Weights

General

The metal enclosed, air insulated switchgear of Type F 24 are for universal application:

From compact ring cable units up to complex power distribution systems.

Tailored to meet the demand of municipal utility corporations and power supply companies in industry and public buildings.

The designation "F" stands for Front installation, i.e. the switches are installed directly on the base frame on the front side of the switch panel. These systems meet the specific requirements of the user in every respect and ensure a satisfactory power distribution.

The switch panels have been subjected to corresponding type testing in compliance with EN 62271-200.

The air insulated switchgear of Type F 24 are metal enclosed and meet the partition class PI as specified in EN 62271-200.

- Type F24 - 606519-27
600 mm wide, 650 mm depth and 1900 mm high
- Type F24 - 756519-27
750 mm wide, 650 mm depth and 1900 mm high
- Type F24 - 906519
900 mm wide, 650 mm depth and 1900 mm high

They can be delivered as individual panels or as a switchgear system in which the equipment, order of panels etc. can be optionally designed.

Operating conditions

The switch panels of Types F 24 are installed in closed electrical operating areas which are only to be accessed by trained personnel and instructed persons (access level A).

Installation can be carried out at levels of up to 1000 meters above sea level.

At levels above 1000 meters the rated insulating level of the switchgear must be corrected accordingly.

The switch panels are designed for use under normal operating conditions in compliance with EN 62271-1.

Technical standards

The design of the air-insulated switch panels corresponds to the requirements specified in the DIN EN 62271-200. The resistance of the switch panels to accidental arcs has been successfully verified by a neutral testing institute corresponding to IAC - AFL

16/20 kA; 1 s. The installed switches of Type H27 are designed in compliance with the corresponding switchgear standards.

The switch panels correspond to protection class IP 3X.

Equipment and design of the switch panels Type F24

Equipment

The switch panels of Type F24 are available in the following versions:

- Cable feeder panel Type FK
- Transformer feeder panel Type FT
- Metering panel Type FM
- Bus sectionalizer panel Type FÜ
- Riser panel Type FH

Switch disconnecter panels can be fitted with make-proof earthing switches.

The installed earthing switches can be manually operated, the switch disconnectors can be operated manually or with motor-operated mechanism with closed panel door.

With pressure relief in upward direction, arc barriers of 250 mm in height are mounted across the front and the side walls. Connecting cables are fed in from the bottom into the switch panels and are fastened to cross bars which are adjustable in two dimensions.

Through the optional locking of switch disconnecter and earthing switch, wrong operations are practically ruled out.

For earthing and short-circuiting there are earthing switches or spherical switch points available.

If need be, it is possible to install corresponding surge voltage protectors in the panel.

All switch panels are designed with central locking and double-bit key.

There are additional locking features available by means of profile cylinders or padlocks, if required.

Design of the switch panels

The switch panel frame is made of a screwed, hot-galvanized composite structure.

The front side of the switch panels has a single-wing door of steel plate. The door hinge can be mounted on-site optionally on the right or left. A window of compound glass is inserted in the door.

Each panel has a screwed rear wall of galvanized steel plate.

Connecting cables are introduced from below and are mounted on cross bars which can be adjusted in two dimensions.

The doors and covers of the switchgear system are painted in structural paint (available in different colours, according to customer wishes).

Technical Data

Technical data of the switch panels Type F24

Rated voltage	U_r	24	kV
Rated lightning impulse withstand voltage	U_p	125	kV
Rated short-duration power-frequency withstand voltage	U_d	50	kV
Rated (operating) current	I_r	630	A
Rated short-time current	I_k	16/20	kA
Accidental arc qualification	IAC A FL	16/20*	kA / 1s
Category for operating availability	LSC2		
Partition class	PI		

* 20 kA with pressure relief in downward direction

Switch disconnecter Type

		H27 F-EK	H27 F-SuT ¹⁾	
Rated (operating) current	I_r	630	630 / 125 ²⁾	A
Rated short-time current	I_k	16 / 20	16 ³⁾	kA
Rated impulse current	I_p	40	40 ³⁾	kA

1) Type H 27 SuT Switch disconnecter – fuse combination

2) in compliance with Driescher fuse table

3) prospective values

Further technical data available in brochure 727

Fuse recommendations for Driescher HV-HBC fuse links Type **STA** and Type **SSK**

Transformer rated power [kVA]	Fuse rated current in A	
	Rated voltage $U_r = 24$ kV Fuse gauge $e = 442^{-1}$ mm	
	mind. (A)	max. (A)
50	6,3	6,3
80	6,3	6,3
100	6,3	10
125	10	16
160	10	20
200	16	20
250	16	25
315	20	25
400	25	31,5
500	25	40
630	31,5	50
800	40	50
1000	50	63
1250		63
1600		80
2000	100, Typ SSK and tripping delay	
2500	125, Typ SSK and tripping delay	

Switch panel Type F24 - 606519-27

Dimensions:

- 600 mm wide
- 650 mm in depth
- 1900 mm high

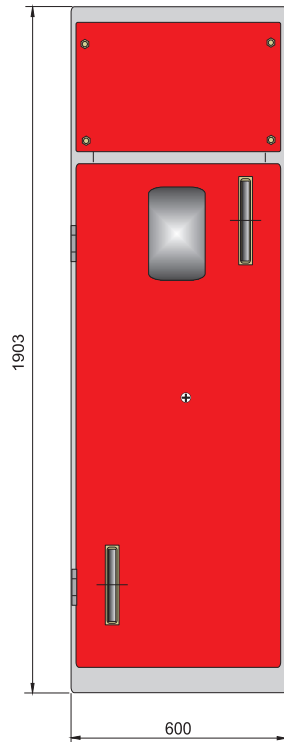


Fig. 1: Front view
FT24-606519-27

- ① Barrier cover (only for pressure relief in upward direction)
- ② Bus bar connection
- ③ Insulating material plate between the phases (only with Type 606519)
- ④ Insulating protection barrier*
- ⑤ Switch disconnecter H27
- ⑥ Voltage transformer
- ⑦ Current transformer
- ⑧ Position indicator and connectable lever for switch disconnecter
- ⑨ Position indicator and connectable lever for earthing switch
- ⑩ Earthing switch
- ⑪ HV-HBC fuse
- ⑫ Cable connection

* can be inserted with disconnected switch and when the panel door is closed.

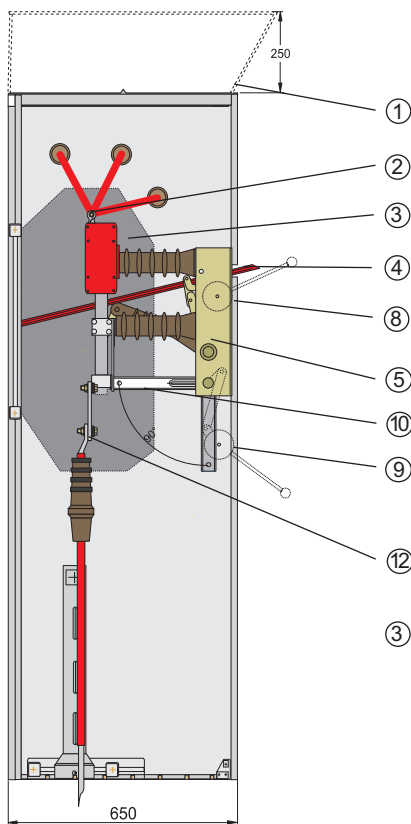


Fig. 2: Side view of cable feeder
panel FK24-606519-27
With switch disconnecter H27 EK

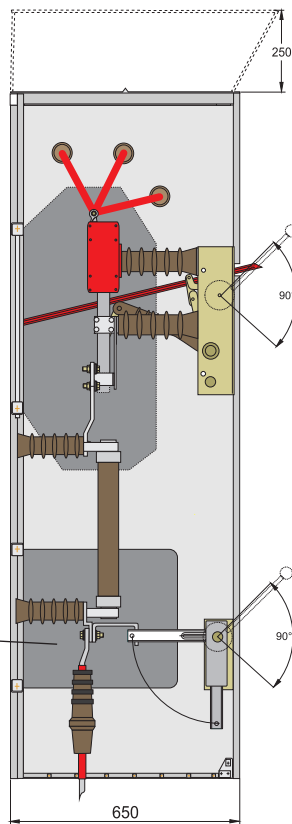


Fig. 3: Side view of transformer feeder
panel FT24-606519-27 with switch
disconnecter-fuse combination H27 SuT

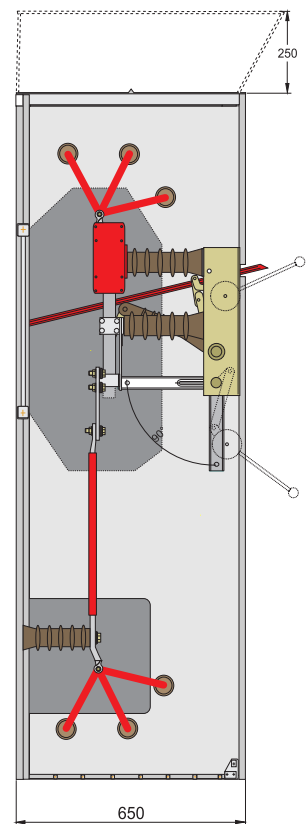


Fig. 4: Side view of Bus sectionalizer
panel FÜ24-606519-27
with switch disconnecter H27 EK

Switch panel Type F24 - 756519-27

Dimensions:

- 750 mm wide
- 650 mm depth
- 1900 mm high

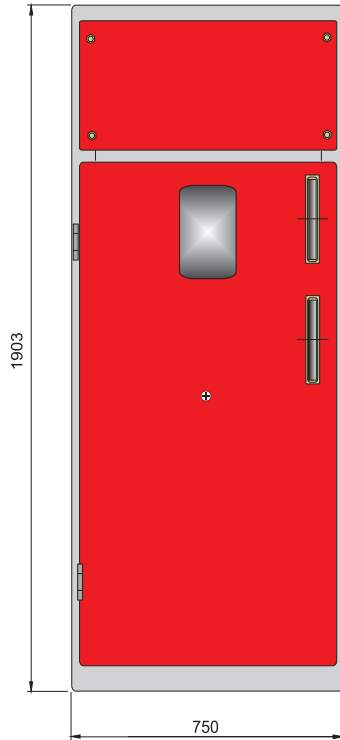


Fig. 5: Front view
FK24-756519-27

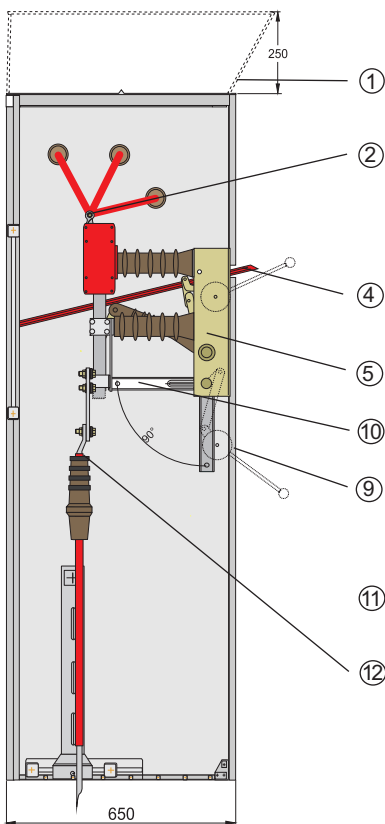


Fig. 6: Side view of cable feeder panel
FK24-756519-27
With switch disconnecter H27 EK

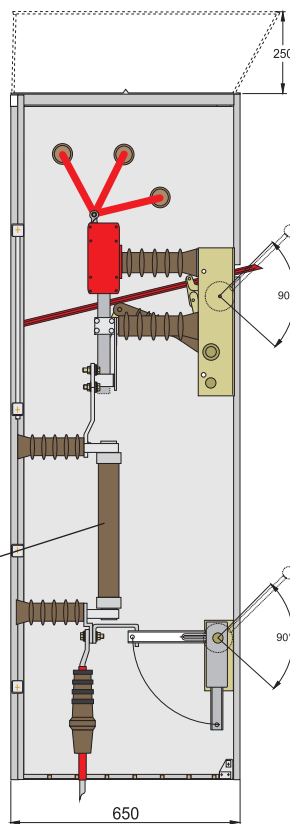


Fig. 7: Side view of transformer feed panel
FT24-756519-27 with switch disconnecter -
fuse combination H27 SuT

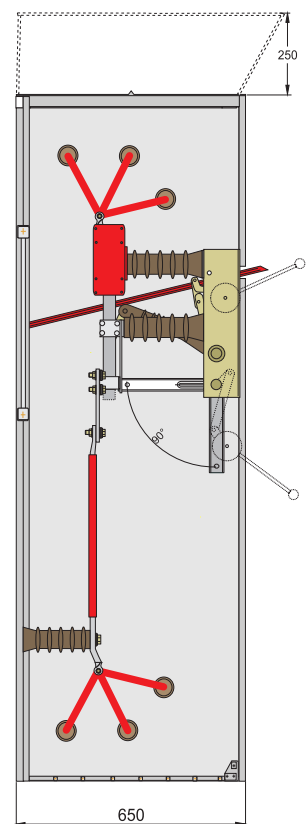


Fig. 8: Side view of bus sectionalizer
panel FÜ24-756519-27 with switch
disconnecter H27 EK

Switch panel Type F24 - 906519

Abmessungen:

- 900 mm wide
- 650 mm depth
- 1900 mm high

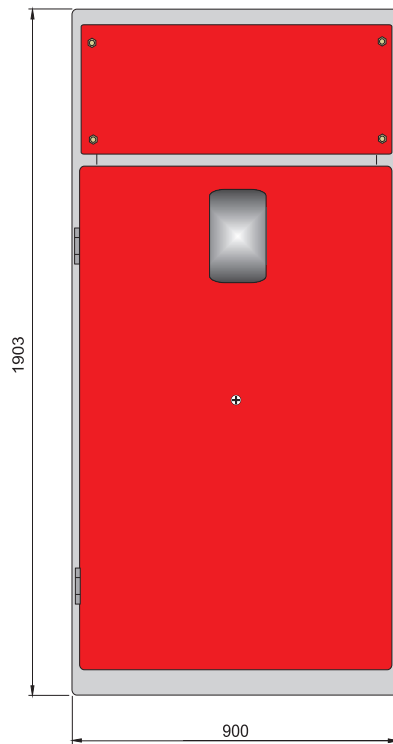


Fig. 9: Front view of measuring panel
FM24-907519

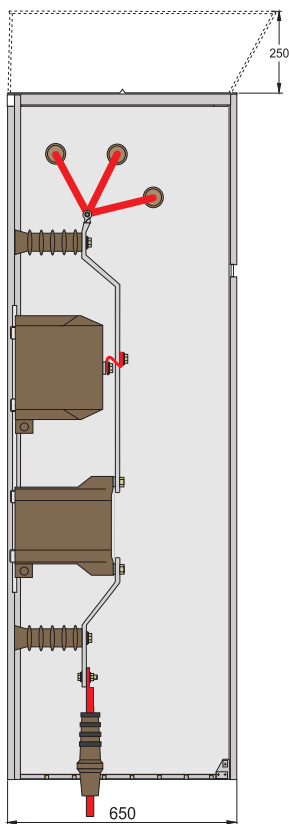


Fig.10: Side view
Measuring panel FM24-907519 with cable bridge
as well as current and voltage transformers

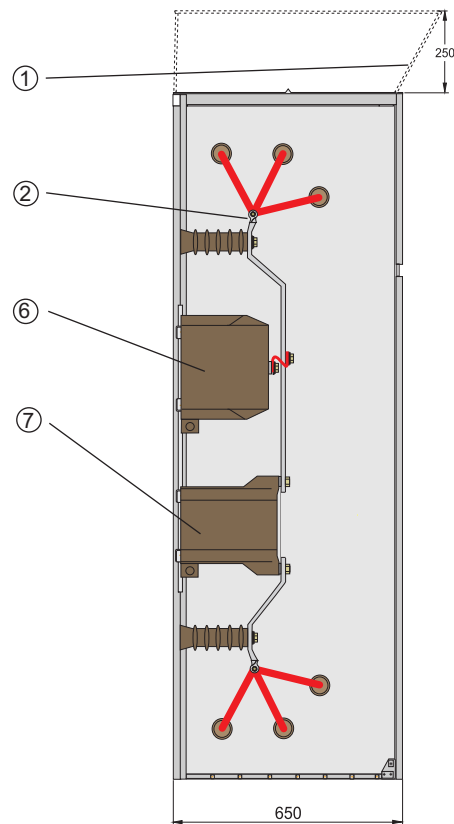


Fig. 11: Side view
Measuring panel FM24-907519 with bar lead-over
as well as current and voltage transformers

Switch panel Type F - Testreport

ELEKTROTECHNISCHE WERKE FRITZ DRIESCHER & SÖHNE GMBH
 Typprüfbericht Nr. 5180-1-786 Seite: 2 Datum: 29.07.2003

2. Technische Parameter

Durch die Typprüfungen nach DIN EN 62271-200 wurden am Schaltfeld Typ FT 24-756519-27, U, 24 kV, I, 630/125 A n. Z. HA3-101494 folgende technische Parameter nachgewiesen:

Luftisoliertes, metallgekapseltes Wechselstrom-Schaltfeld	Typ	FT 24-756519-27
Bemessungsspannung	U_r	24 kV
Bemessungs-(betriebs-)strom der Sammelschiene des Abganges	I_r	630 A 630/125 A
Bemessungsfrequenz	f_r	50 Hz
Bemessungs-Kurzzeitstrom	I_k	16 kA
Bemessungs-Kurzschlußdauer	t_k	1 s
Bemessungs-Stoßstrom	I_p	40 kA
Bemessungs-Stehblitzstoßspannung Leiter-Leiter /Leiter-Erde über die Trennstrecke	U_d	125 kV 145 kV
Bemessungs-Stehwechselspannung Leiter-Leiter/Leiter-Erde über die Trennstrecke	U_d	50 kV 60 kV
Klasse für innere Lichtbögen	IAC	A FL 16 kA 1 s
Schutzgrad		IP 3X
Kategorie der Betriebsverfügbarkeit		LSC 1
Schottungsklasse		PI

3. Zusammenfassung der Prüfergebnisse

Das geprüfte Schaltfeld vom Typ FT 24-756519-27, U, 24 kV, I, 630/125 A nach Zeichnung HA3-101494 hat die auf Seite 1 angegebenen Typprüfungen bestanden und erfüllt die Anforderungen entsprechend DIN EN 62271-200.

Moosburg, den 29.07.2004

J. Scharlach
 bestätigt
 i. A. A. Scharlach

J. Göhlsch
 Leiter Technik
 i. A. Th. Göhlsch

INSTITUT „PROFFELD FÜR ELEKTRISCHE HOCHLEISTUNGSTECHNIK“ GMBH **IPH**
 BERLIN

Unabhängiges, akkreditiertes Prüflaboratorium - Mitgliedsprüfbed bei STL und LOVAG

TYPPRÜFBERICHT

NR 1283.03264.175

Elektrotechnische Werke
 Fritz Driescher & Söhne GmbH
 Driescherstraße 3
 85368 Moosburg

AUFTRAGGEBER

Elektrotechnische Werke
 Fritz Driescher & Söhne GmbH

HERSTELLER

Metallgekapselte Wechselstrom-Schaltanlage

PRÜFOBJEKT

F24-756519

TYP

Prüfmuster

FERTIGUNGS-NR.

Bemessungsspannung	U_r	24 kV	BEMESSUNGS-DATEN NACH ANGABEN DES AUFTRAGGEBERS
Bemessungs-(betriebs-)strom	I_r	630 A	
Bemessungs-Stoßstrom	I_p	40 kA	
Bemessungs-Kurzzeitstrom	I_k	16 kA	
Bemessungs-Kurzschlußdauer	t_k	1 s	
Klasse für innere Lichtbögen	IAC	AFL 16 kA 1 s	

PRÜFVORSCHRIFT

IEC 60694: 2002-01
 DIN EN 60694 (VDE 0670 Teil 1000): 2002-09
 IEC 62271-200: 2003-11

Prüfung des Verhaltens bei Inneren Fehlern

UMFANG DER PRÜFUNG

02. Juni 2004

DATUM DER PRÜFUNG

Die den Umfang der Prüfung betreffenden Bemessungswerte des Prüfobjektes wurden nachgewiesen.
 Die Prüfung wurde BESTANDEN.

PRÜFERGEBNIS

H. Glabusch
 H. GLABUSCH
 Leiter Hochleistungs-Prüfung
 Berlin, den 04. August 2004

L.-M. Boeticher
 L.-M. BOEITCHER
 Verantwortlicher Prüflingenieur



Unabhängiges Prüflaboratorium, akkreditiert von der Deutschen Akkreditierungsstelle Technisch (DAkT) für die Bereiche Hochspannungsteile und -anlagen, Starkstromkabel und Spektromkabel-Systeme, Hochspannungsteile und -anlagen, Installationsgeräte sowie Schalt-, Regel- und Steueranlagen.

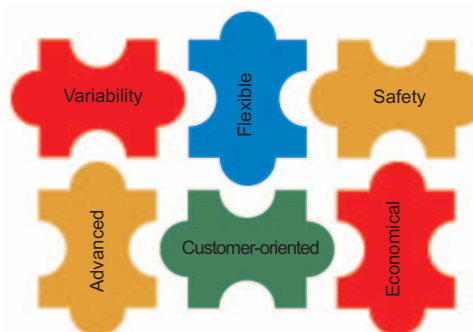


IPH - LANDSBERGER ALLEE 378 - D-12681 BERLIN - TEL. 030/54 96 02 00 - FAX 030/54 96 02 22



Advantages

- **Flexible**, through combinable features
- **Safe**, based on the high quality of our products
- **Economic**, through constant further development
- **Compact dimensions**
- **Easy operation**
- **Minimum amount of maintenance**



Auxiliary equipment

- Panel illumination
- Base
- Busbar earthing with spherical bolts
- Capacitive voltage testing system
- Installation of surge voltage protectors
- Short-circuit indicator
- Floor covers
- Additional locking options with profile cylinder and lockable operating mechanisms
- Wiring niche

Weights

Type	Designation	Weight approx. kg	Drawing No.
FK 24-606519-27	Cable feeder panel 600 mm wide	155	HA2 - 102347
FT 24-606519-27	Transformer panel 600 mm wide	170	HA2 - 102347
FÜ 24-606519-27	Bus sectionalizer panel 600 mm wide	165	HA2 - 102347
FH 24-606519-27	Riser panel 600 mm wide	125	HA2 - 102347
FK 24-756519-27	Cable feeder panel 750 mm wide	180	HA2 - 102347
FT 24-756519-27	Transformer panel 750 mm wide	195	HA2 - 102347
FÜ 24-756519-27	Bus sectionalizer panel 750 mm wide	185	HA2 - 102347
FH 24-756519-27	Riser panel 750 mm wide	145	HA2 - 102347
FM 24-906519	Measuring panel 900 mm wide	220	HA2 - 102347

For assembly, commissioning and maintenance proceed as specified in the respective instructions B786

Dimensions, weights, diagrams and descriptions in this brochure are non-binding. Subject to change without notice.

STROM • SICHER • SCHALTEN

**ELEKTROTECHNISCHE WERKE
FRITZ DRIESCHER & SÖHNE GMBH**

D-85366 Moosburg • Phone: +49 8761 681-0 • Fax: +49 8761 681-137
www.driescher.de info@service@driescher.de

