

## WS 800F D MD



## Medical Station WS 800F D MD

This IEC 60601-1 (2nd Edition) compliant multifunctional master station has been developed for applications in clean rooms. The amplifier provides the necessary volume in areas with high ambient noise.

The Intercom station is protected from the dust, dirt or water jets which may occur in these environments. The special foil on the front panel has a dirt-repellent effect and can be

quickly and easily cleaned using normal cleaning agents and disinfectants. Large foil-type buttons make operation with protective gloves easy.

**Typical applications:** Clean rooms, medical areas with IEC 60601-1 (2nd Edition) requirement.

### WS 800F D MD

Digital station with Mono-LCD display with white backlight, back-lit alphanumeric standard keypad, function buttons, electret microphone with multifunction LED, loudspeakers 2x8 Ω, 3 inputs for floating contacts and 2 relay outputs (connection as "make" or "break" contact), protection classification IP 65, polycarbonate construction, front panel with closed-sealed membrane surface.

# Technical Data – Benefits

## TECHNICAL DATA

IP rating:	IP 65
Conformity:	IEC 60601-1:1988 and A1+A2 EN 60601-1-2:2007
Front panel:	Polycarbonate with closed-sealed membrane surface
Microphone:	Omnidirectional electret microphone for max. 7 m (23 ft) speaking distance
Loudspeaker:	Special membrane type for optimal sound quality, sound pressure: 85 dB/1 W/1 m (3.28 ft), 2 x 8 Ω
Amplifier:	integrated class “D” amplifier with 2.5W
Sound pressure:	max. 99 dB
Input:	3 inputs for floating contacts (detection of 5 input states)
Output:	2 relay outputs (switch-over contacts) 30 V / 1 A
Call indication:	multifunction LED (colours: red, green, blue)
Keypad:	alphanumeric full keypad, white backlight activation force: 3 N, 1 x 10 <sup>6</sup> cycles
Display:	Mono-LCD display, 128 x 64 pixel, white backlight
Transmission bandwidth:	16 kHz
Operating temperature range:	-20° C to 60° C (-4° F to 140° F)
Storage-/Transport temperature range:	-20° C to 60° C (-4° F to 140° F)
Storage-/Transport air pressure range:	860 hPa to 1060 hPa
Storage-/Transport humidity:	up to 95% not condensing
Relative humidity:	up to 95% not condensing
Connection:	pluggable screw terminals
Power supply:	external supply 24 VDC, 630 mA power consumption: max. 4 W <i>Power supply unit in extent of supply:</i> 24 VDC, max. 15 W
Cabling:	star feed, 2-wire, twisted
Signalling:	2B + D (2 x 64 kBit/s speech, 16 kBit/s data)
Mounting:	flush mount kit WSFB 50P surface mount kit WSSH 50P
Measurements:	with flush mount kit: W 165 mm (6.5 in), H 280 mm (11 in), D 13 mm (0.51 in) with surface mount kit: W 165 mm (6.5 in), H 280 mm (11 in), D 51 mm (2 in)
Weight incl. package:	approx. 820 g (1.80 lbs)
Colour:	front panel: light-grey (like RAL 7035) front panel frame: graphite-grey (like RAL 7024)

## EXTENT OF SUPPLY

- Intercom Terminal
- Medical power supply unit
- Locking block with screw
- Short reference
- Operating instructions

## BENEFITS

- IEC 60601-1 (2nd Edition) compliant
- Anti-bacterial foil surface
- Resistant to cleaning agents and disinfectants
- Polycarbonate construction
- Mono-LCD display
- Back-lit full keypad and function buttons
- Protection classification IP 65
- Supports DSP-Features such as OpenDuplex®, Audio Monitoring and Microphone-/Loudspeaker Surveillance

## LINE LENGTH

Cable type	
Ethernet cable e.g. Cat. 5 Loop resistance: 125 Ω/km Capacity: 44 nF/km (13.4 nf/1000 ft)	max. 2800 m/9186 ft
Telecommunication cable e.g. F-YAY; ø 0.6 mm; AWG: 22 Loop resistance: 133 Ω/km Capacity: 100 nF/km (30.5 nf/1000 ft)	max. 2800 m/9186 ft

## SYSTEM REQUIREMENTS

### FULL SCOPE OF OPERATION **only with GE 800 / GE 300:**

- GE 800 (min. PRO 800 1.1) with G8-GED (min. G3-8-SUB 3.2)
- GE 300 (min. PRO 800 1.1) with G3-GED (min. G3-8-SUB 3.2)
- Configuration software min. CCT 800 1.1

### BACKWARDS COMPATIBILITY **to GE 700 / GE 200:**

- GE 700 (min. Pro 5.0) with G7-GED-4 (min. software 02.2)
- GE 200 (min. Pro 5.0) with G2-GED-4
- Detected as EE 811A or EE 811 (depending on Pro-Software) – therefore they can only be used with the feature scope of the respective station.
- To be able to use both relay outputs, “Configuration CCT” has to be carried out (*see page 3*)
- *Firmware download only possible with GE700-UPG!*



# Installation

## PRECAUTIONS

- For power supply of the WS 800F D MD, the power supply unit Traco Power TMT 15124C in the extent of supply must be used (medical power supply unit with max. 15 W)!
- For installation of the power supply unit Traco Power TMT 15124C the corresponding installation conditions have to be observed!
- The operation of the power supply unit Traco Power TMT 15124C with additional medical devices can lead to higher electromagnetic emissions or to less electromagnetic immunity of the WS 800F D MD.
- For the external power supply, additional "Configuration CCT" is mandatory (see below)!
- When opening the stations ESD precautions must be observed.
- The stations may only be opened by authorised service engineers.

## CONFIGURATION CCT

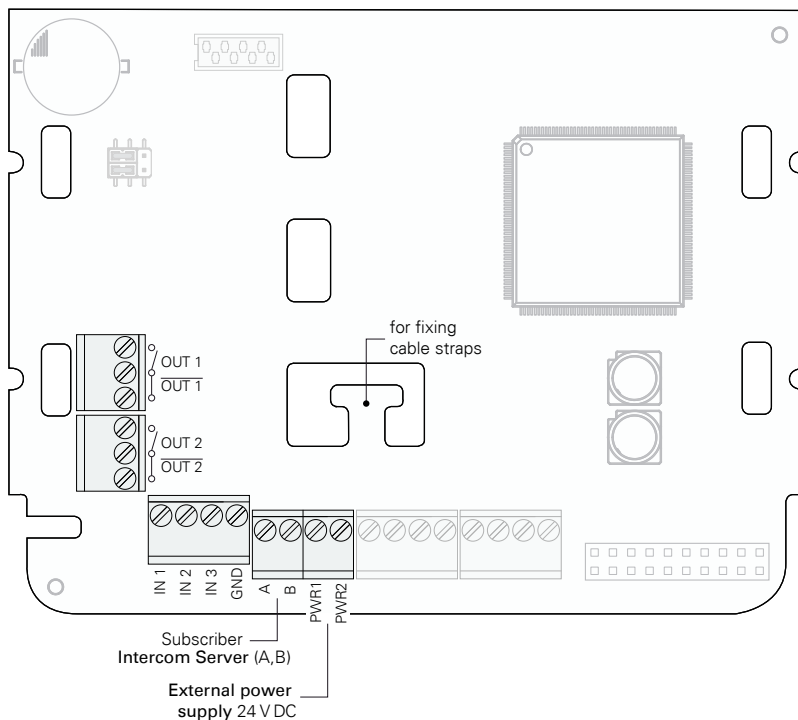
### External power supply:

- For the external power supply of the station, it is mandatory to activate the checkbox "External power supply" via the configuration software CCT 800 at "Subscriber" – "Station properties" – "WS series" – "WS 800"; tab "Display, Keypad, General".

### Use of 2 relay outputs at GE 700/GE 200:

- To be able to use both relay outputs at a GE 700/GE 200 Intercom Server, the station type "EE342" or "EE342A" has to be configured for the WS station via the configuration software CCT at "Station properties".
- Thus, the relay outputs "OUT 1" and "OUT 2" can be activated at "Station properties" – "EE342".

## CONNECTION

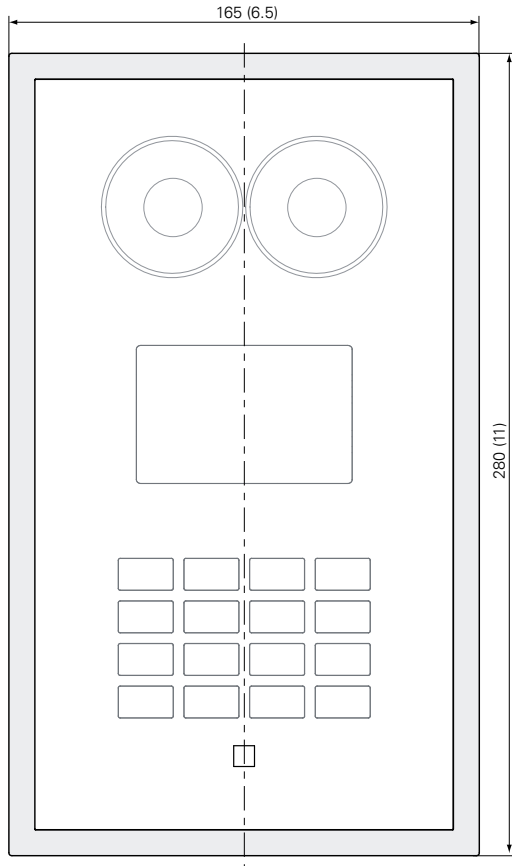


# Installation

## MEASUREMENTS FRONT PANEL

Measurements in mm (inch), not to scale!

Depth: 13 (0.51)  
cavity wall mounting: 15 (0.59) (*= shadow gap between front panel & wall*)

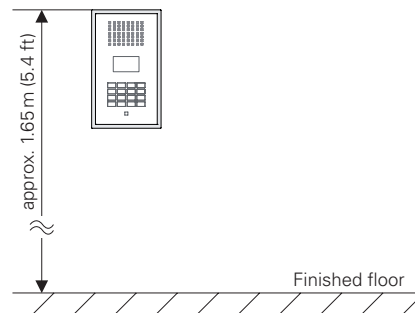


## MOUNTING INSTRUCTIONS

- Do not expose the station to extreme temperature (see "Technical Data" on page 2).
- For flush mounting a flush mount kit WSFB 50P (available separately) is required.
- For surface mounting a surface mount kit WSSH 50P (available separately) is required.

### Recommended Mounting height

The upper edge of the station approx. 1.65 m (5.4 feet) from the finished floor. Please adapt the mounting height to the individual needs.



## LOCKING FRONT PANEL

The front panel of the station has to be locked as described below (example with surface mount box):

1. Insert the locking block into the surface mount box or into the mounting frame of the flush mount box (see above)
2. Press on station front panel
3. Screw on the screw via the notch at the bottom face side of the station front panel

**Note:** The locking of the front panel is also possible at the top face side.

# Features with GE 800/GE 300

## FULL SCOPE OF OPERATION WITH GE 800/GE 300

- At Intercom Servers GE 700/GE 200, the station WS 800FDMD behave like a EE 811A or EE 811. I.e. the following features of the WS series are also available with Intercom Servers GE 700/GE 200 min. Pro 06.1:
  - Multifunction LED
  - Display backlight
  - Higher volume 0–11 (incl. Voltage Monitoring)
- The following features of the WS series can be operated with Intercom Servers GE 800/GE 300 (**min. PRO 800 1.1**) only:
  - Keypad backlight
  - Higher volume 12 (incl. Voltage Monitoring)

## MULTIFUNCTION LED

The WS 800FDMD includes a multifunctional LED, that can display the colours RED, GREEN and BLUE. With the configuration software CCT 800 the LED can be configured individually and separately for:

- Tone Signals – e.g. error tone, privacy tone, “waiting signal for busy” etc.
- Operating states – e.g. emergency call, “state group call”, “state conference listen” etc.

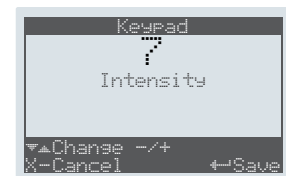
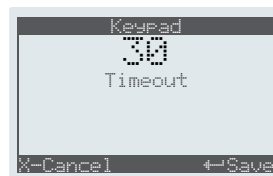
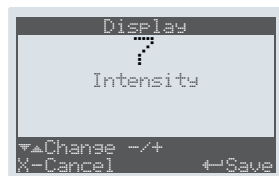
For LED indication of the tone signals / operating states, the following configurations are possible:

Mode of LED indication	Colour for permanent LED / 1 <sup>st</sup> colour for blink rhythm	2 <sup>nd</sup> colour for blink rhythm
Selection of a blink rhythm or permanent LED	Selection of Red/Green/Blue or no colour	Selection of Red/Green/Blue or no colour

## KEYPAD- AND DISPLAY BACKLIGHT

Following configurations can be carried out separately for the keypad backlight and the display backlight, via the menu of the station or the configuration software **CCT 800** (min. **1.1**):

- Intensity of the backlight in 10 levels from 0–9
- Timeout in seconds 1 to 999, after which the backlight shall be deactivated at inactivity
  - If “0” is configured for the timeout, the backlight switch-off is deactivated



**Notes:**

- The keypad- and display backlight will be deactivated automatically after 4 seconds, if the button **X** is pressed in idle mode of the station (no matter which timeout for the backlight is configured)
- In idle mode the contrast of the display can be set with the arrow buttons.

## HIGHER VOLUME

- When operating the stations at Intercom Servers GE 800/GE 300, volume levels from **0–12** are available. (operation at GE 700/GE 200 up to Pro 06.1 → only volume levels 0–9; GE 700/GE 200 as of Pro 06.1 → volume levels 0–11).
- These volume levels are available for the different conversation modes and tones.



# EN 60601-1 Conformity

## GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC EMISSIONS – FOR ALL ME EQUIPMENT AND ME SYSTEMS

Guidance and manufacturer's declaration – electromagnetic emissions		
The WS 800F D MD is intended for use in the electromagnetic environment specified below. The customer or the user of the WS 800F D MD should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The WS 800F D MD uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	
Harmonic emissions IEC 61000-3-2	Not applicable	The WS 800F D MD is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Not applicable	


## GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY – FOR ALL ME EQUIPMENT AND ME SYSTEMS

Guidance and manufacturer's declaration – electromagnetic immunity			
The WS 800F D MD is intended for use in the electromagnetic environment specified below. The customer or the user of the WS 800F D MD should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/ burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % $U_T$ (>95 % dip in $U_T$ ) for 0,5 cycle 40 % $U_T$ (60 % dip in $U_T$ ) for 5 cycles 70 % $U_T$ (30 % dip in $U_T$ ) for 25 cycles <5 % $U_T$ (>95 % dip in $U_T$ ) for 5 s	<5 % $U_T$ (>95 % dip in $U_T$ ) for 0,5 cycle 40 % $U_T$ (60 % dip in $U_T$ ) for 5 cycles 70 % $U_T$ (30 % dip in $U_T$ ) for 25 cycles <5 % $U_T$ (>95 % dip in $U_T$ ) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the WS 800F D MD requires continued operation during power mains interruptions, it is recommended that the WS 800F D MD be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE $U_T$ is the a.c. mains voltage prior to application of the test level.			



# EN 60601-1 Conformity

## GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY – FOR ME EQUIPMENT AND ME SYSTEMS THAT ARE NOT LIFE-SUPPORTING

Guidance and manufacturer's declaration – electromagnetic immunity			
The WS 800F D MD is intended for use in the electromagnetic environment specified below. The customer or the user of the WS 800F D MD should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
			<p>Portable and mobile RF communications equipment should be used no closer to any part of the WS 800F D MD, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p><b>Recommended separation distance:</b></p>
Conducted RF IEC 61000-4-6	3 V <sub>rms</sub> 150 kHz to 80 MHz	3 V	$d = 1.17\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1.17\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz <p>where <math>P</math> is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and <math>d</math> is the recommended separation distance in metres (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,<sup>a</sup> should be less than the compliance level in each frequency range.<sup>b</sup></p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
<p><sup>a</sup> Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the WS 800F D MD is used exceeds the applicable RF compliance level above, the WS 800F D MD should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or re-locating the WS 800F D MD.</p> <p><sup>b</sup> Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</p>			

# EN 60601-1 Conformity

## RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT AND THE ME EQUIPMENT OR ME SYSTEM – FOR ME EQUIPMENT AND ME SYSTEMS THAT ARE NOT LIFE-SUPPORTING

Recommended separation distances between portable and mobile RF communications equipment and the WS 800F D MD

The WS 800F D MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the WS 800F D MD can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the WS 800F D MD as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1.17\sqrt{P}$	80 MHz to 800 MHz $d = 1.17\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.73
1	1.17	1.17	2.3
10	3.70	3.70	7.27
100	11.7	11.7	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance  $d$  in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where  $P$  is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.





