

# Meteorology

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# METAR

METAR stands for **MET**eorological **A**erodrome **R**eport and is a coded weather report at a specific time with a development forecast (trend). In Germany, the METAR is always published 20 and 50 minutes after the hour. Reports between these time periods are called SPECI and have the same format as a METAR. A SPECI is only published if certain values have changed significantly compared to the last METAR. The trend at the end of each METAR is always valid for the next two hours.

We will use the following example below:

```
EDDF 301650Z AUTO 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA NOSIG
```

## Location identification and observation time

```
EDDF 301650Z AUTO 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA NOSIG
```

A METAR always begins with the ICAO location identifier of the airport (in this case Frankfurt/Main EDDF), followed by the observation time. The latter is given as the day of the month with the time in hours and minutes (here the 30th of the month at 1650z).

## Auto METAR

```
EDDF 301650Z AUTO 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA NOSIG
```

Since 2022, all METARs for international airports in Germany and some regional airports have been generated automatically. This means that all values are generated by measuring instruments and are not entered by a weather observer. The letter group **AUTO** shows this.

## Surface wind

```
EDDF 301650Z AUTO 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA NOSIG
```

This is the average value of the surface wind within the last 10 minutes before the observation time. The measurement is taken in the landing zone of the active runway.

The **first three digits** always express the direction of the wind rounded to 10 degrees on the compass rose. The **following two digits** indicate the speed with the corresponding unit (KT, MPS, KMH).

Calm winds are reported as 00000KT and transmitted as "Wind calm".

## Gusts

19006**G20KT**

Gusts that exceed the average wind speed by at least 10 KT are indicated in the METAR. This information is separated from the regular wind by a G (Gusts). If the gusts are greater than 99 KT, this is coded as GP99KT.

## Variable wind

**VRB**02KT  
19006KT **130V270**

Up to an average ground wind of 3 KT and a change of direction between 60° and 180°, the wind direction is coded as **VRB**. If the change exceeds 180° and it is not possible to determine a clear mean wind direction (e.g. during thunderstorms), VRB can also be used independently of the wind speed.

If the wind fluctuates between 60° and 180° and the mean wind is greater than 3 KT, the directional extremes of the fluctuations are indicated

## Ground visibility

EDDF 301650Z AUTO 19006KT 130V270 **9999** FEW036 11/02 Q1012 RESHRA NOSIG

The visibility is the maximum prevailing visibility which is reached or exceeded for at least half of the airfield area. The areas do not have to be connected.

The visibility is specified in 50 m (up to 800 m), 100 m (800 m - 5000 m) and 1 km (above 5 km) steps. If the value lies between two levels, it is always rounded down to the smaller level.

A visibility of more than 10 km is always coded as **9999**.

6000 **1400N**

If visibility varies greatly on the ground, the lowest visibility can also be reported with its direction.

# Runway visual range (RVR)

R25R/1200U R25C/1300D R25L/1000U

If the prevailing visibility or one of the runway visual ranges is less than 1500 m, the runway visual range (RVR) of all runways is always indicated in the METAR.

This message begins with the corresponding runway, followed by the measured visual range in meters. This is followed by the change trend over the last 10 minutes (U = upward trend, D = downward trend, N = no trend).

If the runway visibility is greater than 2000 m, this is coded as P2000. If it is less than 50 m, the coding is M0050.

# Weather

EDDF AUTO 301650Z 19006KT 130V270 9999 -RA FEW036 11/02 Q1012 TEMPO +TSRA 1500

The following table shows the various abbreviations for general weather phenomena.

### Precipitation

Report	Explanation
DZ	Sprühregen / drizzle
RA	Regen / rain
SN	Schnee / snow
PL	Eiskörner / ice pellets
GS	Frostgraupel / snow pellets
GR	Hagel / hail
SG	Schneegriesel / snow grains

### Obscuration

Report	Explanation
FG	Nebel / fog (Sichtweite unter 1 Kilometer oder weniger)
BR	Feuchter Dunst / mist (Sichtweiten zwischen 1 und 5 Kilometer)

<b>HZ</b>	trockener Dunst / haze
<b>FU</b>	Rauch / fume
<b>SA</b>	Sand / sand
<b>DU</b>	Staub / dust

**Intensity / Descriptor**

Report	Explanation
<b>SH</b>	Schauer / shower
<b>FZ</b>	gefrierend / freezing
<b>TS</b>	Gewitter / thunderstorm
<b>MI</b>	flach / shallow
<b>BC</b>	einzelne Schwaden / patches
<b>PR</b>	partiell / partial
<b>BL</b>	fegend / blowing
	moderate Intensität / moderate (ohne +/-)
-	leichte Intensität / light
+	schwere Intensität / heavy
<b>VC</b>	in der Nähe / vicinity

Clouds

EDDF AUTO 301650Z 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA NOSIG

Here the degree of coverage and the height (in 1/100 ft) of the cloud layer below 5000 FT AGL is reported. Up to three groups can be used. In the case of significant cloud types (e.g. thunderstorm clouds and their preliminary stages), these are added directly to the altitude information as CB (Cumulonimbus) and TCU (Towering Cumulus), even with a base above 5000 FT AMSL.

The degree of cloud cover is coded in eighths and indicates how much of the sky is covered with clouds. At and above a 5/8 (BKN) cloud cover, we speak of a ceiling.

Abbreviation	Meaning	English	German
<b>NSC</b>	0/8	no significant clouds	keine sig. Bewölkung (wolkenlos)

<b>FEW</b>	1/8 bis 2/8	few	gering bewölkt
<b>SCT</b>	3/8 bis 4/8	scatterd	aufgelockert
<b>BKN</b>	5/8 bis 7/8	broken	durchbrochen
<b>OVC</b>	8/8	overcast	bedeckt

The indication **CAVOK** (clouds and visibility OK) replaces the groups visibility, runway visual range, weather and clouds if the visibility is more than 10 km everywhere, there is no significant weather and there is no cloud cover below 5000 FT AGL.

If the sky is not recognizable, the vertical visibility is always indicated as **VV///** (measurement not possible) instead of cloud cover.

# Temperature and dew point

EDDF AUTO 301650Z 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA NOSIG

The temperature and dew point are always specified together. The dew point indicates the humidity content of the air. The smaller the difference between the two (also known as the *spread*), the greater the relative humidity and the higher the probability of clouds.

# Air pressure

EDDF AUTO 301650Z 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA NOSIG

The QNH is the air pressure reduced to sea level (MSL) using the ICAO standard atmosphere. With "Q", the air pressure is coded with the unit hPa, as is usual in Europe. An "A" shows the setting in inches/inch, as used in North America or at US military airfields in Germany.

# Additional indications

EDDF AUTO 301650Z 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA NOSIG

In some cases, additional information can be found before the trend. The most common is **RE** followed by other weather phenomena. This stands for Recent, i.e. weather that has occurred since the last report. For example, RESHRA means "recent rain showers". Sometimes, you might also find a **WS** followed by a runway, which indicates a wind shear.

# Trend

EDDF AUTO 301650Z 19006KT 130V270 9999 FEW036 11/02 Q1012 RESHRA **NOSIG**

The trend predicts significant aeronautical meteorological changes only in terms of wind, visibility, weather and clouds within the next two hours if these meet defined criteria (threshold values). As with the TAF, there are the following change groups:

### **TEMPO**

Temporary, significant fluctuation of one or more weather parameters.

### **BECMG**

Consistent, significant change in one or more parameters across the threshold values, lasting at least until the end of the forecast period. The following time groups can also be used: FM (from - beginning), TL (until - ending), AT (at - around) followed by the time in the format HHMM (rarely used).

### **NOSIG**

No significant change in the forecast period.

**TEMPO** 20015G25KT TSRA  
**BECMG** 1400 SN  
**BECMG FM1515** BKN010

## Further informationen

The Deutsche Wetterdienst (DWD) offers a [helpful document](#) for decoding METAR and TAF.

Alte METARs, TAFs and SPECIs are available at [OGIMET](#).

Processing of current METARs and TAFs auf [metar-taf.com](#)

# ATIS

ATIS stands for **A**utomatic **T**erminal **I**nformation **S**ervice and provides pilots with up-to-date information about the airport. The ATIS can be listened to via the respective frequency or retrieved in text form (e.g. via datalink), this also works on Vatsim.

In addition to the METAR, information on the current runways, approaches (e.g. ILS, RNP) and the transition level (TRL) and possibly other information is distributed in the ATIS. It is therefore important to keep the ATIS up to date at all times.

Each ATIS has a code letter (A to Z) which can be used to check if the report is up to date. With each new report, the code letter counts up alphabetically. This allows the pilot and controller to check whether they have the same report. Due to the METAR, which is reissued every 30 minutes, the ATIS is also automatically updated at least every 30 minutes. If the runway direction or other information changes, the ATIS is also updated.

The pilot must listen to the ATIS before startup and before approach to the airport. The current code letter must be communicated to Approach Control for approaches and to Delivery for departures.

At German airports, the departure frequency is usually indicated on VATSIM in the ATIS if the pilot has to switch to it automatically after take-off. Exceptions to this are Frankfurt, Munich, Leipzig and Berlin, where the handoff is performed manually by the tower controller.

“ HAMBURG INFORMATION P MET REPORT TIME 1920 EXPECT ILS APPROACH  
RUNWAY 23 RUNWAYS IN USE 23 FOR LANDING 33 FOR TAKE OFF TRL 70 WHEN  
PASSING 2000 FEET CONTACT BREMEN RADAR ON FREQUENCY 119.510 WIND  
310 DEGREES 6 KNOTS VISIBILITY 10 KILOMETERS LIGHT RAIN CLOUDS FEW  
3600 FEET SCATTERED 4900 FEET TEMPERATURE 12 DEW POINT 10 QNH 1011  
TREND NOSIG INFORMATION P OUT

## ATIS Setup Euroscope

Controllers must create their ATIS directly in Euroscope. ATIS reports are already predefined by the FIRs in the starter packages. Additional codes for further, possibly airport-specific information, which can be published in the ATIS, are available under the following links:

[ATIS FIR Bremen](#)

[ATIS FIR Langen](#)

[ATIS FIR München](#)





# TAF

TAF stands for **T**erminal **A**erodrome **F**orecast and is a weather forecast for an airport with regard to certain parameters that will change during the forecast period. It contains all meteorological information that is important for flight operations. The validity period of the TAFs varies between 9, 12, 18 or 24 hours depending on the airport and is completely reissued at regular intervals. The syntax of the TAF is largely the same as the METAR.

We use the following example for further explanations:

```
“ EDDF 041100Z 0412/0518 22020G35KT 9999 SCT040
  TEMPO 0412/0416 22030G40KT SHRA BKN030CB
  BECMG 0418/0420 22015G25KT
  TEMPO 0510/0518 26020G35KT SHRA BKN030CB
  PROB30 TEMPO 0512/0518 TSRA
```

## Base status

A TAF always starts with the base status. This always includes the surface wind, prevailing horizontal visibility, significant weather and cloud cover. Next to the location identifier and the time when the TAF was created is the validity period. In this case, this TAF is valid from the 4th of the month at 12z until the next day at 18z.

```
“ EDDF 041100Z 0412/0518 22020G35KT 9999 SCT040
  TEMPO 0412/0416 22030G40KT SHRA BKN030CB
  BECMG 0418/0420 22015G25KT
  TEMPO 0510/0518 26020G35KT SHRA BKN030CB
  PROB30 TEMPO 0512/0518 TSRA
```

Ideally, the basic status of the TAF at the start of the validity period corresponds to the current METAR at that time.

## Change groups

The change groups indicate how the weather will change over the forecast period. Only significant changes to the basic status or the previous change group are taken into account if defined threshold values are exceeded or not reached. The coding again corresponds to METAR coding.

“ EDDF 041100Z 0412/0518 22020G35KT 9999 SCT040  
TEMPO 0412/0416 22030G40KT SHRA BKN030CB  
BECMG 0418/0420 22015G25KT  
TEMPO 0510/0518 26020G35KT SHRA BKN030CB  
PROB30 TEMPO 0512/0518 TSRA

### **TEMPO**

One or more weather parameters fluctuate significantly within the specified period and each fluctuation lasts no longer than half the period to which the TEMPO group refers.

### **BECMG**

A change in weather starts at the beginning of the BECMG period and is completed by the end of the BECMG period. After the change period, the weather of the BECMG group is a new base status.

### **PROB**

Probability of temporary fluctuation (30% or 40%), only when used with TEMPO. Smaller probabilities are not listed, larger ones are described with BECMG or TEMPO.

### **FM**

Change from a certain point in time.

## Further information

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Processing of current METARs and TAFs at [metar-taf.com](#)