METAR Format (FM-15)

Surface Meterological Airways Format

Syntax:

METAR

This defines the product type. This can either be the string "**METAR**" for a regularly reported observation (such as an hourly) or "**SPECI**" for a special observation.

CCCC

CCCC is the 4 letter ID uniquely defining the reporting station, for example KORD for O'Hare airport in Chicago.

TIME

The full universal time (UTC) that the observation was taken. The format is:

*ddhhmm*Z.

dd is the day of the month, *hh* is the hour, *mm* is the minute.

AUTO

This is an optional grouping used to specify a station as being automated.

WIND

The wind group

*dddss*KT or *dddssGgg*KT

The value *ddd* is the wind direction in degrees. The value *ss* is the wind speed. The units are defined by the string "KT" which is knots. Some reports may have "MPS" for meters per second. If wind gusts are reported, they are specified with the group "G*gg*".

VISIBILITY

The visibility group

*vv*SM or *vv*KM

This specifies the visibility is either statue miles "SM" or kilometers "KM". The visibility can be partial values such as "1 1/2SM" or "3/16SM".

WEATHER

The weather group

iiddppooxx

ii is intensity group

ii	Description
-	light
	moderate
+	heavy
VC	in the vicinity

dd is the descriptor group

dd	Description
MI	shallow
PR	partial
BC	patches
DR	low drifting
BL	blowing
SH	shower
TS	thunderstorm
FZ	freezing

pp is the precipitation group

pp	Description
DZ	drizzle
RA	rain
SN	snow
SG	snow grains
IC	ice crystals
PE	ice pellets
GR	hail
GS	small hail/snow pellets
UP	unknown

oo is the obscuration group

oo	Description
BR	mist
FG	fog
FU	smoke
VA	volcanic ash
DU	dust
SA	sand
HZ	haze
PY	spray

xx is the misc group

xx	Description
PO	dust whirls
SQ	squalls
FC	funnel cloud/tornado/waterspout
SS	duststorm

CLOUDS

The cloud levels

ccchhtt

ccc is the coverage
CLR or SKC = clear
FEW = 1/8 coverage
SCT = 2,3,4/8 coverage
BKN = 5,6,7/8 coverage
OVC = overcast
VV = vertical visibility for obscuration

hhh is the height of base in 30m or 100ft increments. ie 30 = 3000 feet

tt is an optional type
CU = cumulus
CB = cumulonumbus
TCU = towering cumulus

CI = cirrus

CAVOK = clear skies, unlimited visibility

TEMP/DEW

is the temperature and dewpoint in Celsius

TT/DD

negative values are preceded with a M (M03 = -3)

ALTIMETER

is the altimeter setting

Q*pppp* = altimeter in whole mb

A*pppp* = altimeter in .01 in Hg

REMARKS

The remark section:

RMK *xxxx xxxx xxxx...*

Remark	Description
AO1	AMOS station
AO2	ASOS station
OBS TAKEN +*xx*	minute offset for observation time
SLP*ppp*	Sea level pressure in .1 mb (142 = 1014.2 mb)
WEA:*www*	Additional present weather information
T*ttttdddd*	Current temperature/dewpoint in .1C T01720144 = temp=17.2C, dew=14.4C, first digit 1 for negative
1*xxxx*	6 hour max temp in .1C, first digit 1 for negative
2*nnnn*	6 hour min temp in .1C, first digit 1 for negative
4/*sss*	Snow coverage in inches
4*xxxxnnnn*	24 hour max/min temps in .1C, first digit 1 for negative
5*tppp*	Pressure tendency in .1 mb for 3 hours, *t* is the trend
6*pppp*	6 hour precipitation in .01 inches
7*pppp*	24 hour precipitation in .01 inches
8/*lmh*	Cloud type for low, medium, high
933*sss*	New snow coverage, water equivalent
98*mmm*	Equivalent sunshine for day in minutes
CITY *tt*	City temperature
PCPN *pppp* P*pppp*	1 hour precipitation
PK WND *sss/nn*	Peak wind, sss is speed, nn is the time
PRESFR	Pressure falling rapidly
PRESRR	Pressure rising rapidly
SNOINCR *xxx*	Snow increasing rapidly, where *xxx* is amount of snow in last hour
WSHFT *nn*	Wind shift at time nn

Examples

CCCC	TIME	WIND	VIS	WEA	CLOUD	TT/DD	ALT	REMARKS
KLAF	030445Z	35007KT	15SM		SKC	17/13	A2986	

KLAF = Station Identifier
030445Z = Time (ddhhmmZ)
35007KT = Winds (350 deg at 7 knots)
15SM = Visibility (15 statute miles)
SKC = Clear skies
17/13 = Temperature/Dewpoint in Celsius
A2986 = Altimieter setting (29.86 in Hg)

CCCC	TIME	WIND	VIS	WEA	CLOUD	TT/DD	ALT	REMARKS
KLAF	021915Z COR	22010KT	7SM	TSRA	BKN055	30/17	A2974	RMK T W MOVG NE

TSRA = Weather (TS-Thunderstorm RA-Rain)
BKN055 = Cloud level (Broken at 5500 feet)

CCCC	TIME	WIND	VIS	WEA	CLOUD	TT/DD	ALT	REMARKS
KLAF	021950Z	30008KT	7SM	-RA	BKN065CB	25/21	A297	RMK TE40

BKN065CB = Cloud level (Broken at 6500 feet with cumulonimbus)

CCCC	TIME	WIND	VIS	WEA	CLOUD	TT/DD	ALT	REMARKS
LTCC	022250Z	32003KT			CAVOK	24/10	Q1011	NOSIG=

CAVOK = Cloud/Visibility (OK=Clear with unlimited visibility)
Q1011 = Altimeter setting (1011 mb)

CCCC	TIME	WIND	VIS	WEA	CLOUD	TT/DD	ALT	REMARKS
KFHU	022336Z	33011G25	35SM	TS VCSH	FEW040 SCT060CB BKN100 BKN250	31/14	A3003	RMK WSHFT 27 FRQ LTGICCG TS N MOV W SHRA N AND NE-SE=

33011G25 = Winds (330 at 11 Gusts to 25)
TS VCSH = Weather (TS=Thunderstorm, VC=Vicinty, SH=Shower)
FEW040 = Clouds (FEW=few clouds or 1/8 coverage at 4000 feet)

CCCC	TIME	WIND	VIS	WEA	CLOUD	TT/DD	ALT	REMARKS
KIND	022356Z	26009KT	10SM		CLR	24/20	A2973	RMK AO2 SLP062 60000 T02440200 10317 20228 56009 $=

AO2 = ASOS station
SLP062 = Sea level pressure (062=1006.2 mb)
60000 = 6 hour precipitation (0000=trace)
T02440200 = Current temperature/dewpoint (temp=0244=24.4C,dew=0200=20.0C)
10317 = 6 hour max temp (317=31.7C)
20228 = 6 hour min temp (228=22.8C)
56009 = Pressure tendency (6009=falling .9 mb in last 3 hours)