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QTH-Locator

Das **Maidenhead Locator System** ist ein geographisches Koordinaten System welches von Funkamateuren verwendet wird. Dr. John Morris, G4ANB, der ursprüngliche Erfinder, und eine Gruppe an VHF Managers riefen bei einem Treffen in Maidenhead (England 1980) das Maidenhead System ins Leben. Das Maidenhead Locator System ersetzte das alte QRA Locator System. Das Maidenhead System wird heute weltweit genutzt. Das Maidenhead (QTH-Locator) System ermöglicht die schnelle Übermittlung der Positionen zwischen Funkamateuren in einer Funkverbindung.

Maidenhead Locator werden werden landläufig als *grid locators* = *Gitter Position* oder *grid squares* = *Gitterfelder* bezeichnet, trotzdem das sie einer nicht rechteckige Form und keiner Rektangularprojektion entsprechen.

Beschreibung des Systems

Der Maidenhead Locator komprimiert die Länge und Breite in eine kurze Abfolge von Zeichen. Die Positionsinformation wird beim Maidenhead Locator in eine geringere Genauigkeit umgewandelt um die zu übertragende Anzahl der Zeichen für Sprache, Morse und digitale Funkübertragung gering zu halten.

Das gewählte Kodierungsverfahren nutzt abwechselnde Paare von Zeichen und Ziffern die folgendermaßen aussehen:

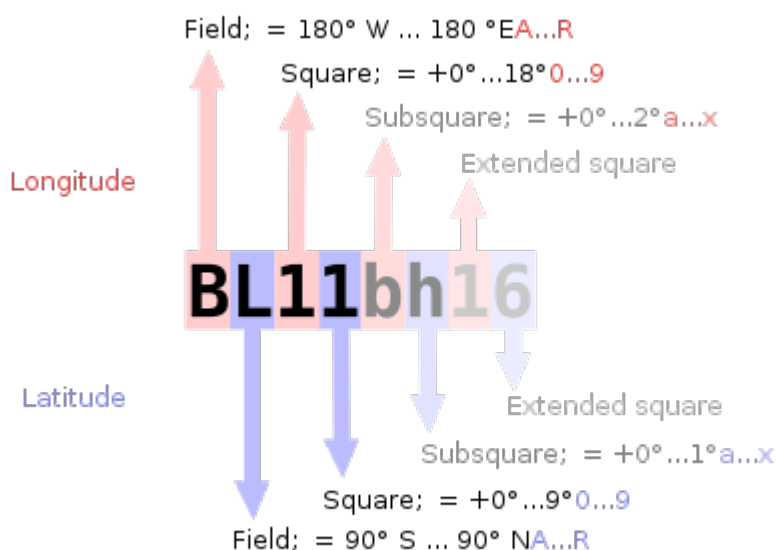
JN67bh16

In jedem Paar codiert das erste Zeichen die Länge und das zweite Zeichen die Breite. These character pairs have also traditional names, and in the case of letters, the range of characters (or "encoding base number") used in each pair does vary.

Um negative Zahlen bei den Daten zu vermeiden wurde das System so spezifiziert das die Breite vom Süd zum Nordpole und die Länge ostwärts vom Greenwich Längengrad gemessen wird vom Anfangsmeridian ein "falsches Ost" von 180 Grad und dem Äquator ein falsches Nord von 90 Grad verliehen.

Um die händische Eingabe zu Vereinfachen, die Basis für das erste Paar von Buchstaben (traditionell Feld genannt) war 18, dadurch wird der Globus in 18 Zonen mit einer Breite von jeweils 10° und in 18 Zonen der Länge in jeweils 20°. Die Zonen werden mit Buchstaben von "A" bis "R" kodiert.

Das erste Nummernpaar, genannt Square folgt dem ersten Buchstabenpaar und nutzt eine 10er Nummernbasis

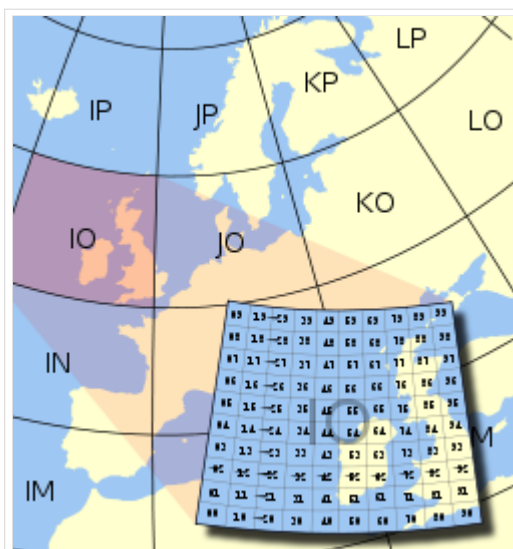


AL	BR	CR	DR	FR	GR	HR	IR	JR	KR	LR	MR	NR	OR	PR	QR	RR
AN	BN	CN	DN	EN	FN	GN	HN	IN	JN	KN	LN	MN	NN	ON	PN	QN
AO	BO	CO	DO	EO	FO	GO	HO	IO	JO	KO	LO	MO	NO	PO	QO	RO
AP	BP	CP	DP	EP	FP	GP	HP	IP	JP	KP	LP	MP	NP	OP	PP	QP
AN	BN	CN	DN	EN	FN	GN	HN	IN	JN	KN	LN	MN	NN	ON	PN	QN
AL	BL	CL	DL	EL	FL	GL	HL	IL	JL	KL	LL	ML	NL	OL	PL	QL
AR	BR	CR	DR	ER	FR	GR	HR	IR	JR	KR	LR	MR	NR	OR	PR	QR
AI	BI	CI	DI	EI	FI	GI	HI	II	JI	KI	LI	MI	NI	OI	PI	QI
AR	BR	CR	DR	ER	FR	GR	HR	IR	JR	KR	LR	MR	NR	OR	PR	QR
AG	BG	CG	DG	EG	FG	GG	HG	IG	JG	KG	LG	MG	NG	OG	PG	QG
AF	BF	CF	DF	EF	FF	GF	HF	IF	JF	KF	LF	MF	NF	OF	PF	QF
AO	BO	CO	DO	EO	FO	GO	HO	IO	JO	KO	LO	MO	NO	PO	QO	RO
AC	BC	CC	DC	EC	FC	GC	HC	IC	JC	KC	LC	MC	NC	OC	PC	QC
AD	BD	CD	DD	ED	FD	GD	HD	ID	JD	KD	LD	MD	ND	OD	PD	QD
AA	BA	CA	DA	EA	FA	GA	HA	IA	JA	KA	LA	MA	NA	OA	PA	QA

The first pair of numbers, called a *square* and placed after the first pair of letters, uses a base number of 10, and is encoded using the digits "0" to "9". This is where the alternative name "grid squares" comes from. Each of these squares represents 1° of latitude by 2° of longitude.

For additional precision, each square can optionally be sub-divided further, into *subsquares*. These are encoded into a second pair of letters, often (but not always) presented in lowercase, and again, to make manual calculations from degrees and minutes easier, 24 was chosen as the base number, giving these subsquares dimensions of 2.5' of latitude by 5' of longitude. The letters used are "A" through "X".

The resulting Maidenhead subsquare locator string is hence composed of two letters, two digits, and two more letters. To give an example, W1AW, the **American Radio Relay League's Hiram Percy Maxim Memorial Station** in **Newington, Connecticut**, is found in grid locator **Vorlage:Coor Maidenhead**. Two points within the same Maidenhead subsquare are always less than 12 km apart, which means a Maidenhead locator can give significant precision from just six easily transmissible characters.



Fields are divided into 100 squares each.

For even more precise location mapping, two additional digits were proposed and ratified as an *extended locator*, making it altogether eight characters long, and dividing *subsquares* into even smaller ones. Such precision has uses in very short communication spans. Beyond this, no common definition exists to extend the system further into even smaller squares. Most often the extending is done by repeating alternating subsquare and square rules (base numbers 24 and 10 respectively). However, other bases for letter encodings have also been observed, and therefore such *extended extended* locators might not be compatible.

The Maidenhead locator system has been explicitly based on the **WGS 84 geodetic datum** since 1999.

Before that time, it was usually based on each user's

local national datum, which do differ slightly from one another and WGS 84. As a result, stations very near the edges of squares at denoted precision may have changed their locators when changing over to the use of WGS 84.

To summarize:

- Character pairs encode **longitude** first, and then **latitude**.
- The first pair (a *field*) encodes with base 18 and the letters "A" to "R".
- The second pair (*square*) encodes with base 10 and the digits "0" to "9".
- The third pair (*subsquare*) encodes with base 24 and the letters "A" to "X".
- The fourth pair (*extended square*) encodes with base 10 and the digits "0" to "9".

- The fifth and subsequent pairs are not formally defined, but recycling the third and fourth pair algorithms is one possible definition:

BL11bh16oo66

On **shortwave** frequencies, positions are reported at *square* precision, and on VHF and UHF, *subsquare* precision is used. More precise position reports are very rarely used.

Use by radio amateurs

Today, individual radio amateurs and organizations around the world recognize and use Maidenhead locators. Many utilities exist to convert latitude and longitude to locators, as this is a favorite **hack** for programmers who are also radio amateurs. Commercially available (civil) **Global Positioning System** receivers are frequently able to display Maidenhead locators.

Maidenhead locators are used as part of the formulas for scoring in many **VHF** amateur radio **contests**. Grid locators are also the basis of earning many awards like the; American Radio Relay League's **VHF/UHF Century Club**, URE TTLOC, etc. operating award.

In IARU Region 1 rules, VHF distances are calculated from maidenhead subsquare centers using a *spherical* Earth. This results in a small error in distance, but makes calculations quite simpler, and given the inherent imprecision in the used input data, it is not the biggest error source.

External links

- [ARRLWeb: Grid Locators and Grid Squares](#)
- [ARRLWeb: Calculate Grid Square](#)
- [On-line locator database with over 135,000 callsigns](#)
- [From the field hunter's web page: An explanation of the system and how it came into being.](#)
- [Maidenhead Grid Squares](#)
- [Find grid square and lat/long for any address or ham call sign, plotted on Google Maps](#)
- [Find your QTH locator with GoogleMaps](#)
- [Find QTH locator or grid square with GoogleMaps and approximate distance between two squares](#)
- [Generate a KML file from a Maidenhead coordinate](#)
- [Perl module for converting between geographic coordinates and Maidenhead locator and calculating distance and bearing](#)
- [Hamlib, a portable library for converting between geographic coordinates and Maidenhead locator and calculating distance and bearing](#)
- [C# class for converting between geographic coordinates and Maidenhead locator and calculating distance and bearing](#)
- [A small Java application to display the current Grid Locator for phones with GPS capability such as the Nokia N95](#)

QUELLE: en.wikipedia.org