

Kriegsspiel

REISSWITZ · BERLIN · 1824 · PLAYER AND DEVELOPER MANUAL · VERSION 1.0.0

In 1824 Lieutenant Georg von Reisswitz presented to the Prussian General Staff a game played on engraved survey sheets at 1:8000, with blocks cut to the true frontage of the bodies they stood for, dice, and a set of tables for fire and for combat. Its innovation was not the map. It was the third person at the table.

The umpire alone holds the true position. He resolves both parties' moves together, rules on every shot with his tables and his die, and tells each party only what its own officers can see. General von Müffling is said to have watched a game and told the room that this was no game at all but a training for war, and that he should recommend it to the whole army. He did. Every military simulation since is descended from it.

This manual is in two parts. The first is what a player needs. The second is what a developer needs: the actual figures the game uses, generated from the shipped code at build time so that nothing here can be out of date.

THE SCALE

Every distance in this game and on every ruling slip is given in paces, because that is how the 1824 rules gave them.

Quantity	Value
One pace	0.75 m
One move	2 minutes
Steps the umpire resolves a move in	4
The original survey sheets	1:8000
Situations in this package	6

PART ONE — THE PLAYER

WHAT YOU DO EACH MOVE, AND WHAT THE UMPIRE DOES WITH IT

THE ORDER OF A MOVE

A move always runs the same way. **You write orders** — address a body by clicking its block or its name, choose what it is to do, in what formation, at what pace, and at what range it may open fire, then point out the ground. **You send them**, one at a time, as many as you like. **The umpire resolves the move**: he delivers every order that has arrived, moves both parties in four steps of half a minute, resolves all fire simultaneously, rules on every body that came to blows, tests the shaken, and updates what each party has been told.

Because fire is simultaneous, both parties shoot at where the other actually was. There is no advantage in going second, because nobody does.

ORDERS TRAVEL

This is the part players find strange and then cannot do without. An order is written and handed to an orderly, who rides. Within 450 paces of your headquarters the order is given by voice and takes effect at once. Beyond that, count one move for every 900 paces he must ride. The interface writes the order out in full and states the delay *before* you send it, and the galloper is drawn crossing the sheet while he rides.

The practical consequence: a detached squadron two thousand paces off is four moves from being redirected, so you must decide now what you will want it to be doing in eight minutes' time. Keeping your headquarters near your main effort is not flavour. It is the single cheapest thing you can do to command faster than your opponent.

WHAT YOU CAN SEE

Your own blocks stand where they stand. The enemy is never drawn. What is drawn is the *report*: a hollow block at the position where he was last seen, with the front edge marked so you know which way he was facing. Close contact identifies the body and gives its strength; at distance you get no more than "foot, strength unknown".

When contact is lost the report stays on your sheet, dashed and fading, labelled with how many moves old it is, and carries a dashed ring showing how far he could have got since. A cavalry report four moves old covers a great deal of ground, and the ring says so. Reports are struck from the sheet after 20 moves.

Ground seen at	Multiplier on sighting range
Open ground, clear weather	2200 paces
A body on the march	×1.20
Skirmishers, dispersed	×0.65
Troops in timber or a village	×0.45
A battery that has fired	×1.25

A crest between two points blocks the view outright, whatever the range. Reverse slopes hide troops, which is what they are for.

THE BLOCKS

A block is drawn at the true frontage and depth of the body it stands for, turned to face where it faces. This is not decoration — it is how Reisswitz's apparatus said what a body was doing without any symbol at all, and it is why this game needs no counter key.

Body	Formation	Frontage	Depth
Musketeer battalion, 700 men	Column	37 paces	70 paces
	Line	233 paces	10 paces
	Square	85 paces	85 paces
	Skirmishers	385 paces	60 paces
Jälger, 320 men	Column	33 paces	40 paces
	Line	208 paces	10 paces
	Square	57 paces	57 paces
	Skirmishers	176 paces	60 paces
Hussar squadron, 130 horse	Column	24 paces	117 paces
	Line	88 paces	16 paces
Foot battery, 8 guns	Limbered	112 paces	90 paces
	In battery	160 paces	30 paces

Read that table once and the sheet becomes legible. A long thin bar is a battalion in line, ready to fire and slow to move. A short deep bar is the same battalion in column, quick and nearly useless at musketry. A square is a square.

MOVEMENT

Nothing moves on a grid. A body crosses the ground at the pace you set, slowed by the going and by its formation. Water is impassable except at a marked bridge, ford or causeway.

Arm	Pace	Paces a move
Infantry	March	200
	Quick	280
	Run	380
Rifles	March	215
	Quick	300
	Run	400
Cavalry	Walk	300
	Trot	600
	Gallop	900
	Charge	1000
Artillery	Walk	260
	Trot	400

Ground	Cost	Cover	Screens the view
Ploughed land	×1.00	0%	—
Meadow	×1.00	0%	—
Heath	×1.15	10%	—
Wood	×2.10	55%	yes
Orchard	×1.45	35%	yes
Marsh	×2.60	10%	—
Water	impassable	0%	—
Village	×1.60	66%	yes
Vineyard	×1.70	25%	yes

MUSKETRY

The figures below are men struck down in one move by a full battalion in line, firing on a body in line in the open. Every other case is that figure modified, and the umpire's slip names every modifier he applied.

Range	Men
0–50 paces	34
51–100 paces	25
101–150 paces	16
151–200 paces	10
201–250 paces	5.5
251–300 paces	3
301–350 paces	1.8
351–420 paces	1

THE GUNS

An eight-gun battery, one move. Canister replaces roundshot inside its band and is a different order of thing entirely — which is why cavalry that must cross a battery's front should not do it slowly.

Roundshot	Men	Canister	Men
0–300	9	0–200	62
301–600	12	201–350	44
601–900	10	351–500	27
901–1200	7	501–700	14
1201–1500	4.5		
1501–1900	2.5		

THE UMPIRE'S DIE

Whatever the tables give, the umpire spreads it across the six faces of his die. The faces average exactly one, so the tables above are what happens on the whole and not what happens every time.

Face	1	2	3	4	5	6
Multiplier	$\times 0.5$	$\times 0.75$	$\times 0.95$	$\times 1.05$	$\times 1.25$	$\times 1.50$

COMING TO BLOWS

Give a body an Attack order and point it at the enemy. The umpire takes the odds — the attack's combat value over the defence's — and reads the row against his die.

Odds	1	2	3	4	5	6
0.00 – 0.60	R	R	R	R	H	H
0.60 – 0.85	R	R	R	H	H	P
0.85 – 1.15	R	R	H	H	P	P
1.15 – 1.50	R	H	H	P	P	B

1.50 – 2.00	H	H	P	P	B	B
2.00 – 3.00	H	P	P	B	B	B
3.00 – over	P	P	B	B	B	B

***R** the attack is thrown back · **H** both hold their ground and bleed · **P** the defence gives ground · **B** the defence breaks and goes to the rear.*

Result	The attack loses	The defence loses
R	8%	4%
H	6%	6%
P	4%	8%
B	3%	14%

MORALE

A body's resolve falls as it is shot at and rises when nothing is shooting at it, faster near its commander and in company with steady troops. It is not a pass-or-fail test, so bodies wear down rather than snapping.

State	Combat value	Fire
Steady	×1.00	×1.00
Shaken	×0.78	×0.82
Wavering	×0.55	×0.58
Broken	×0.25	×0.20

A body reduced past a fifth of its establishment is taken out of the line. A broken body routs for its own rear and cannot be given orders until it rallies.

THE SITUATIONS

The Advance Guard at Mühlberg

Two advance guards feel for one another across the Rohrbach. The mill and the two villages carry the day.

	Commander	Bodies	Men	Guns
Blue	Oberst von Kleist	7	2,710	8
Red	Major von Sanders	7	2,800	8

60 moves from 9:20. Ground worth points: Mühlberg (20), Rohrsdorf (20), The mill bridge (25). Par 27 — Two equal advance guards: the umpire expects the honours divided.

The Defile at Steinbach

Red holds the causeway through the marshes. Blue must force it before the light goes.

	Commander	Bodies	Men	Guns
Blue	Gen.-Maj. von Rüchel	9	4,220	16
Red	Oberstlt. von Hüne	8	3,520	14

55 moves from 13:00. Ground worth points: The causeway (40), Bergfelde (20). Par 7 — Forcing a defile is a costly business; Red is expected to hold the causeway.

The Storm of Hohenberg

A village on a knoll, held by two battalions. Blue has the guns; Red has the walls.

	Commander	Bodies	Men	Guns
Blue	Oberst von Borcke	9	4,220	16
Red	Major von Tresckow	8	3,450	14

50 moves from 15:30. Ground worth points: Hohenberg (50), Alt-Krug (12). Par 25 — A storm column against a garrison. Blue is expected to take the village — the question is at what price, and whether Red gets away.

Rearguard on the Katzbach

Blue must hold the crossings until dark. Red must be over the water before the light fails.

	Commander	Bodies	Men	Guns
Blue	Oberstlt. von Zieten	7	2,800	8
Red	Oberst von Katzler	9	3,630	16

45 moves from 17:10. Ground worth points: Waldheim bridge (28), Grünberg bridge (28). Par 10 — The rearguard is expected to hold both bridges until the light goes.

The Cavalry Screen at Lindenau

Horse against horse on open plough, with one battery apiece and no infantry to hide behind.

	Commander	Bodies	Men	Guns
Blue	Major von Blücher	7	1,090	8
Red	Rittm. von Schill	7	1,080	8

40 moves from 7:40. Ground worth points: Lindenau (30), Vorwerk Kienitz (12), Kuhdamm (12). Par 34 — Blue has the heavier horse and is expected to win the screen.

The Wooded Heights of Grünwald

A ridge under timber. Guns cannot see into it and cavalry cannot ride through it.

	Commander	Bodies	Men	Guns
Blue	Oberst von Yorck	8	3,600	8
Red	Major von Lützow	7	2,990	8

55 moves from 11:00. Ground worth points: The forester's house (35), Grünwald (22). Par 21 — Blue is expected to clear the timber, but slowly and dearly.

HOW THE UMPIRE DECIDES IT

Ground held by one party at the close scores for that party; ground with bodies of both parties on it is contested and scores for neither. The butcher's bill counts at one point for every twenty-five men more than the enemy lost. That total is then read against **par**: what the situation ought to yield in the hands of two capable officers, measured over two hundred machine-against-machine games and proved on a separate set of seeds.

This is why the storm of Hohenberg has a par of 25. You are expected to take the village. The question the umpire is actually asking is what it cost you, and whether the garrison got away.

Account against par	Verdict
up to -45	Decisive victory to Red
-44 to -18	Victory to Red
-17 to 18	Drawn — neither party has gained the day
19 to 45	Victory to Blue
over 9999	Decisive victory to Blue

THE OPPONENT

Three grades. Aggression is deliberately *not* one of the differences between them: at this scale ground is worth far more than men, so a bolder commander simply does better, and making the trained officer cautious would make him worse. Skill is in seeing, concentrating, siting the guns, holding fire until it tells, supporting an attack, and getting the drill right.

Grade	Sees	Concentrates	Sites guns	Supports	Drill	Slips
Cadet	50%	30%	45%	0%	30%	40%
Veteran	82%	72%	85%	60%	75%	14%
Staff officer	100%	100%	100%	100%	100%	3%

A green commander opens fire at the longest range his pieces will carry and finds the cartridge boxes empty when it matters. He sends battalions in one at a time. He keeps no reserve, and has nothing to feed a broken front.

PART TWO — THE DEVELOPER

WHAT IS IN THE PACKAGE AND HOW IT FITS TOGETHER

THE FILES

Path	What it is
index.html	Entry point. Markup only — no inline style, no inline script.
css/game.css	The whole stylesheet.
js/data.js	Establishments, tables, terrain, situations. No behaviour.
js/map.js	Grows a sheet from a written brief; line of sight; sampling.
js/game.js	The umpire: orders, movement, fire, melee, morale, fog, save.
js/ai.js	The machine party. Commands from its own reports only.
js/save.js	The only file permitted to touch local storage.
js/interface.js	Drawing, camera, the order composer, the ruling slips.
assets/	Cover, icon, banner, loading plate.
screenshots/	Four captures of real play at 1920×1080.
docs/	Description, tutorial, credits, this manual.
patches/	Patch notes and the cumulative changelog.

Every script is loaded from index.html by relative path with `defer`, which preserves execution order and leaves the DOM fully parsed when the last one runs. Each module closes over its own scope: separate script tags share one global scope, so a bare top-level declaration in one file would collide with a destructure in the next — a fault that only appears once a single-file build is split, which is exactly what this package does.

NO NETWORK, NO STORAGE BUT ONE KEY

The package makes no network requests of any kind. There are no external scripts, stylesheets, fonts, images or fetches, and no data: or blob: URLs in any loadable position. Local storage is touched only in `js/save.js`, under the single key `tronsoft_kriegsspiel_save`, derived from the package slug. The store is probed before use, so a refused store degrades to playing without a save rather than throwing.

HOW THE SHEET IS MADE

Sheets are not authored. Each situation carries a written brief — ridge polylines, watercourse polylines, wood and marsh blobs, named places, and which places are joined by road — and the map is grown from it against the situation's seed. Roads are A*-pathed between the places that name them, weighted so they follow easy ground and cross water only at a marked crossing. The same seed always gives the same country.

Seeds are put through a mixing hash before use, in both the die and the map. An xorshift generator started at n and at $n+1$ runs almost in step, which quietly turns a sweep over consecutive seeds into one long game played many times — a real fault found during balancing.

THE SAVE

A saved position is the whole umpire's state: the die and its draw count, both headquarters, losses, control of ground, every party's reports, orders still on the road, and each body's position, strength, formation, resolve, fatigue, ammunition and current order — plus the machine commander's own memory, so its intentions survive too.

The per-move marks are part of that state and not scratch. The machine reads whether a body is at close quarters before letting a battalion form square, and how far a battery moved before deciding it is stuck. Leaving those out made restored games diverge several moves later, twice, and the harness now snapshots the full state at the moment of restore and plays six moves in lockstep across three situations to prove it does not.

HOW IT WAS VERIFIED

The rules harness runs static assertions and machine-against-machine sweeps with board integrity checked after every move: map geometry, roads asserted to keep dry feet, symmetry of sight, fire falling away with range, the melee table monotone in both axes, square blunting a charge, guns caught in battery, flank and rear values ordered, fog, and the lockstep restore. The interface is driven through its own controls in a headless browser at three viewports.

Measurement	Result
Rules harness	1,013 assertions
Interface smoke	204 checks at three viewports
Par fitted per situation	200 games each, proved out of sample
Skill ladder	cadet to staff officer, about 22 points of margin
Sample game (Mühlberg, ace against ace)	closed at move 38, 2793 men lost, Drawn — neither party has gained the day

EXTENDING IT

A new situation is an entry in `D.SCENARIOS` in `js/data.js`: a brief for the ground, an order of battle for each party drawn from `D.TYPES`, the ground worth points, and a par. Everything else — the sheet, the roads, the contours, the fog, the machine opponent — follows from that. Par should be measured, not guessed: it is the mean result of a large machine-against-machine sweep, and the mean rather than the median because several of these actions are bimodal and a median jumps between the humps from sample to sample.

ON THE HISTORY

The 1824 rules are in the public domain. No published edition, translation, reconstruction or commentary has been reproduced or drawn upon in making this game. The tables here were re-derived from period ballistic and establishment data and then calibrated by simulation until they behaved. Where this game departs from Reisswitz it does so knowingly — the die is six-faced rather than his special dice, morale is continuous rather than a test, and the umpire is a machine rather than a man — and where it agrees with him it is because he was right: the blocks, the separate maps, the written orders, and the man in the middle with the tables.