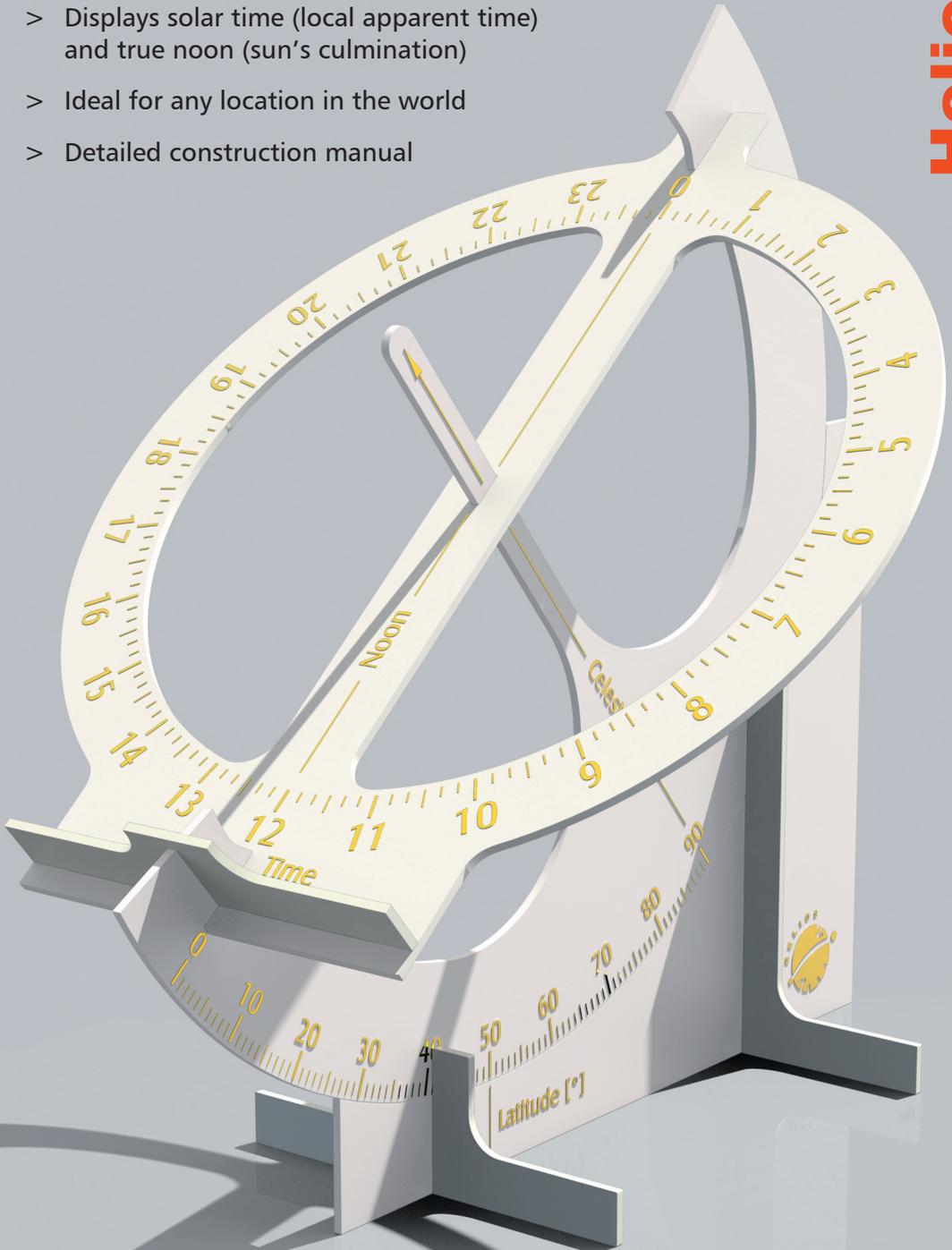


# AURORA C

- > Equatorial sundial as construction set with six parts
- > Displays solar time (local apparent time) and true noon (sun's culmination)
- > Ideal for any location in the world
- > Detailed construction manual



**Helios**  
SONNENUHREN

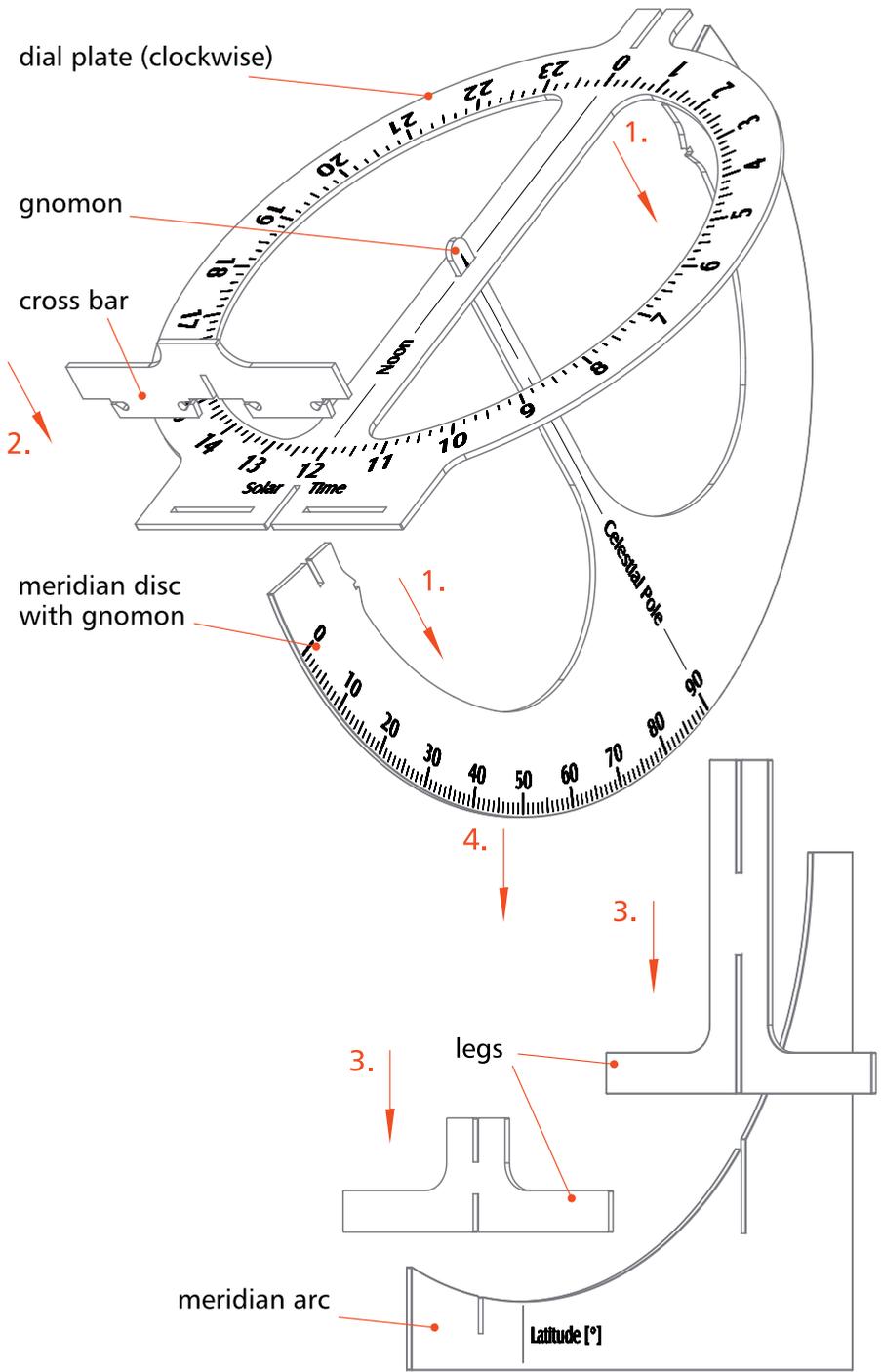


Fig. 1: Construction in four steps (northern hemisphere)

## *Sundial AURORA C*

While wristwatch time is a division of time which has been invented by man to fit in with his needs, the sundial reproduces the natural path of the sun.

When the sun reaches its daily highest position in the south after rising in the morning and continually ascending, it is noon and **AURORA C** displays 12:00 noon solar time. This so-called true noon divides the day exactly into two halves and it now takes exactly as long for the sun to set in the evening.

### *Construction*

The construction set consists of six parts and the sundial can be completed in four steps (fig. 1):

1. The sundial's dial plate is pushed onto the gnomon and then across the meridian disc via its slots, until it clicks into place. Important: For locations in the northern hemisphere, the time scale is at the top in a clockwise direction, for locations in the southern hemisphere the time scale is at the top in an anti-clockwise direction.
2. The cross bar is placed on the meridian disc to stabilise it and inserted with the anchor bolts into the two slots in the dial plate until they also click into place.
3. The two legs are slotted into the meridian arch.
4. The meridian disc with the sundial dial plate already constructed as described is then placed on the meridian arch such that the latitude for the chosen location corresponds with the marking. In the example in fig. 2, the sundial is set up for a latitude of 50.1° North.

### *Positioning and taking readings*

The **AURORA C** should be placed on a level base. Use a compass to position the sundial. If you are in the northern hemisphere, the sundial is turned so that the gnomon points north to the northern celestial pole (Pole Star), see fig. 3. On the southern hemisphere it points south to the southern celestial pole.

Since the sundial's dial plate is positioned parallel to the equator (fig. 3), the sun's shadow moves across the upper dial plate during spring and summer, you can read the time from the top. In autumn and winter the lower dial plate is illuminated, you can read the time by looking at the lower part of the sundial.

During the equinoxes on 20<sup>th</sup> / 21<sup>st</sup> March and 22<sup>nd</sup> / 23<sup>rd</sup> September, the sundial does not display the time because the sun is crossing the celestial equator and shines from the side on the dial plate.

The time which you can read in the centre of the shadow is solar time. For example, in fig. 2, the sundial displays 10:00 solar time in Frankfurt on Main (50.1°N). Two hours later true noon will occur at this location, the sun will be culminating exactly to the south.

### *Support*

If you have any questions on the installation and use of your sundial, please contact us directly.

You can reach us at the address:

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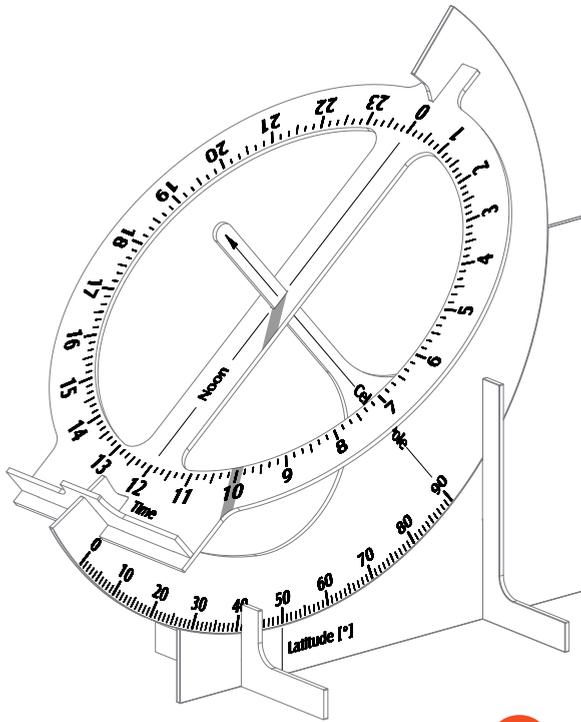


Fig. 2: The sundial displays 10:00 solar time.

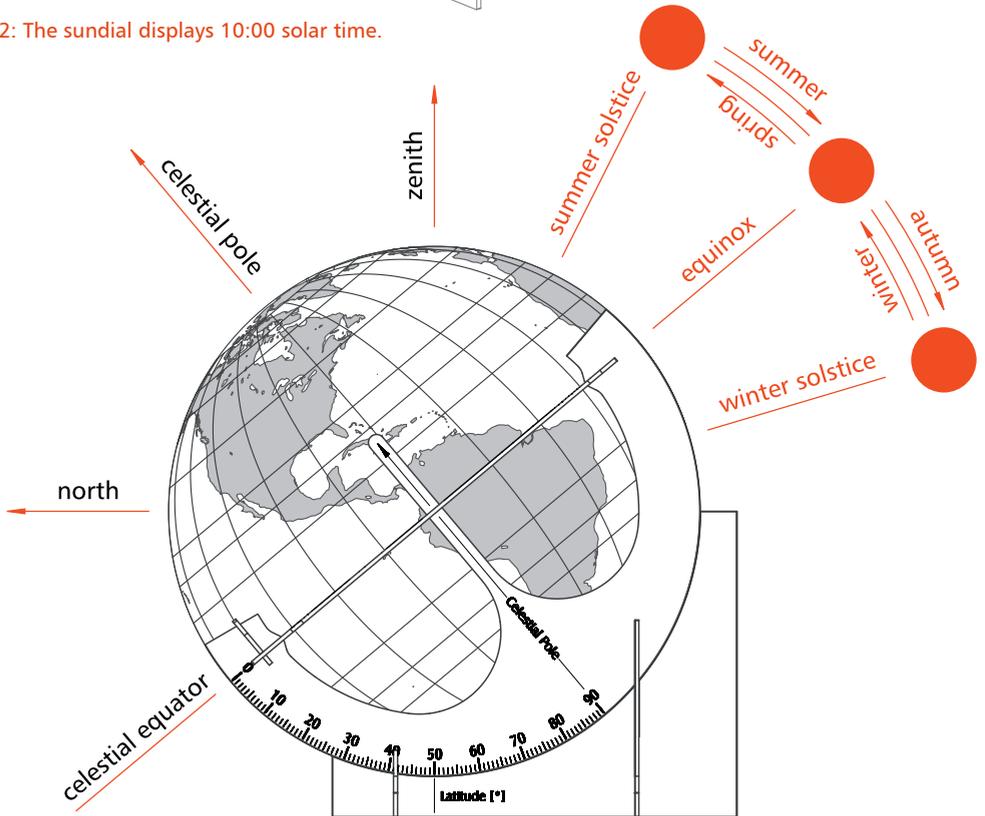


Fig. 3: The equatorial sundial is positioned like our Earth and displays the Sun's path.

City	State	Lat.	City	State	Lat.	City	State	Lat.
Abidjan	Cote d'Ivoire	5.3°N	Cartagena	Colombia	10.4°N	Hanoi	Vietnam	21.0°N
Adana	Turkey	37.0°N	Changchun	China	43.9°N	Harare	Zimbabwe	17.8°S
Addis Abeba	Ethiopia	9.1°N	Chelyabinsk	Russia	55.2°N	Harbin	China	45.8°N
Adelaide	Australia	34.9°S	Chengdu	China	30.7°N	Hiroshima	Japan	34.4°N
Ahmedabad	India	23.0°N	Chicago	United States	41.8°N	Ho Chi Minh	Vietnam	10.8°N
Aleppo	Syrian Arab Republic	36.2°N	Chiniot	Pakistan	31.7°N	Hong Kong	Hong Kong	22.3°N
Alexandria	Egypt	31.2°N	Chongqing	China	29.6°N	Houston	United States	29.8°N
Alger	Algeria	36.8°N	Cologne	Germany	50.9°N	Huaiyin	China	33.6°N
Almaty	Kazakhstan	43.3°N	Córdoba	Argentina	31.3°S	Hyderabad	India	17.4°N
Ankara	Turkey	39.9°N	Curitiba	Brazil	25.4°S	Inchon	South Korea	37.5°N
Anshan	China	41.1°N	Daegu	South Korea	35.9°N	Istanbul	Turkey	41.0°N
Baghdad	Iraq	33.3°N	Daejeon	South Korea	36.3°N	Izmir	Turkey	38.4°N
Baku	Azerbaijan	40.4°N	Dakar	Senegal	14.7°N	Jakarta	Indonesia	6.1°S
Bandung	Indonesia	7.0°S	Dalian	China	38.9°N	Jilin	China	43.9°N
Bangalore	India	13.0°N	Dallas	United States	32.8°N	Jinan	China	36.7°N
Barcelona	Spain	41.4°N	Damascus	Syrian Arab Republic	33.5°N	Jinhua	China	29.1°N
Beijing	China	39.9°N	Dar es Salaam	Tanzania	6.9°S	Kabul	Afghanistan	34.5°N
Belém	Brazil	1.5°S	Delhi	India	28.7°N	Kanpur	India	26.5°N
Belo Horizonte	Brazil	19.9°S	Dnepropetrovsk	Ukraine	48.5°N	Kawasaki	Japan	35.5°N
Beograd	Serbia and Montenegro	44.8°N	Donetsk	Ukraine	48.0°N	Kazan	Russia	55.8°N
Berlin	Germany	52.5°N	Douala	Cameroon	4.1°N	Kharkov	Ukraine	50.0°N
Bhopal	India	23.3°N	Ecatepec	Mexico	19.6°N	Khon Kaen	Thailand	16.4°N
Birmingham	United Kingdom	52.5°N	Ekaterinoburg	Russia	56.9°N	Kiev	Ukraine	50.4°N
Bogotá	Colombia	4.6°N	El Jadida	Morocco	33.2°N	Kinshasa	Congo	4.4°S
Brasília	Brazil	15.9°S	Esfahan	Iran	32.7°N	Kitakyushu	Japan	33.9°N
Brisbane	Australia	27.5°S	Fortaleza	Brazil	3.8°S	Kobe	Japan	34.7°N
București	Romania	44.5°N	Fukuoka	Japan	33.5°N	Kuala Lumpur	Malaysia	3.1°N
Budapest	Hungary	47.5°N	Giza	Egypt	30.1°N	Kwangju	South Korea	35.2°N
Buenos Aires	Argentina	34.7°S	Guadalajara	Mexico	20.7°N	Kyoto	Japan	35.0°N
Bursa	Turkey	40.2°N	Guangzhou	China	23.1°N	La Habana	Cuba	23.1°N
Busan	South Korea	35.1°N	Guatemala	Guatemala	14.6°N	La Matanza	Argentina	34.8°S
Cairo	Egypt	30.1°N	Guayaquil	Ecuador	2.2°S	Lagos	Nigeria	6.5°N
Calcutta	India	22.5°N	Hamburg	Germany	53.6°N	Lima	Peru	12.1°S
Caracas	Venezuela	10.5°N	Hangzhou	China	30.3°N	Madrid	Spain	40.4°N

Table 1: Latitudes of the world's large cities.

City	State	Lat.	City	State	Lat.	City	State	Lat.
London	United Kingdom	51.5°N	Palermo	Italy	38.1°N	St. Petersburg	Russia	59.9°N
Los Angeles	United States	34.0°N	Palmira	Colombia	3.6°N	Surabaya	Indonesia	7.2°S
Lucknow	India	26.8°N	Paris	France	48.9°N	Surat	India	21.2°N
Ludhiana	India	30.9°N	Parma	Italy	44.8°N	Suzhou	China	31.3°N
Madras	India	13.1°N	Perm	Russia	58.0°N	Sydney	Australia	33.9°S
Manaus	Brazil	3.1°S	Perth	Australia	32.0°S	Tabriz	Iran	38.1°N
Manila	Philippines	14.6°N	Philadelphia	United States	40.0°N	Taian	China	36.2°N
Maracaibo	Venezuela	10.7°N	Phoenix	United States	33.5°N	Taipei	Taiwan	25.0°N
Mashhad	Iran	36.3°N	Pórtó Alegre	Brazil	30.1°S	Taiyan	China	37.9°N
Medan	Indonesia	3.6°N	Praha	Czech Republic	50.1°N	Tanger	Morocco	35.7°N
Melbourne	Australia	37.8°S	Pune	India	18.6°N	Tangerang	Indonesia	6.2°S
Mexico City	Mexico	19.4°N	Qingdo	China	36.1°N	Tashkent	Uzbekistan	41.3°N
Minsk	Belarus	53.9°N	Quezon City	Philippines	14.7°N	Tbilisi	Georgia	41.7°N
Monterrey	Mexico	25.7°N	Quito	Ecuador	0.2°S	Tehran	Iran	35.7°N
Montevideo	Uruguay	34.9°S	Rajshahi	Bangladesh	24.4°N	Tianjin	China	39.1°N
Montreal	Canada	45.5°N	Recife	Brazil	8.1°S	Tokyo	Japan	35.7°N
Moscow	Russia	55.8°N	Rio de Janeiro	Brazil	22.9°S	Tulua	Colombia	4.1°N
Mumbai	India	19.0°N	Rostov-na-Donu	Russia	47.3°N	Ufa	Russia	54.8°N
Munich	Germany	48.1°N	Saidpur	Bangladesh	25.8°N	Ujung Pandang	Indonesia	5.2°S
Nagoya	Japan	35.1°N	Salvador	Brazil	13.0°S	Vadodara	India	22.3°N
Nagpur	India	21.2°N	Samara	Russia	53.2°N	Valencia	Venezuela	10.2°N
Nairobi	Kenya	1.3°S	San Diego	United States	32.8°N	Vienna	Austria	48.2°N
Nanjiang	China	32.1°N	Santiago	Chile	33.5°S	Warsaw	Poland	52.3°N
Netzahualcóyotl	Mexico	19.4°N	Santo Domingo	Dominican Republic	18.5°N	Weifang	China	36.7°N
New York City	United States	40.8°N	São Paulo	Brazil	23.6°S	Wuhan	China	30.6°N
Ningbo	China	29.9°N	Sapporo	Japan	43.1°N	Wuxi	China	31.6°N
Nizhny Novgorod	Russia	56.3°N	Semarang	Indonesia	7.0°S	Xian	China	34.3°N
Novosibirsk	Russia	55.1°N	Seoul	South Korea	37.5°N	Xiangfan	China	32.0°N
Odessa	Ukraine	46.5°N	Shanghai	China	31.2°N	Yangon	Myanmar	16.8°N
Okara	Pakistan	30.8°N	Sheikhu Pura	Pakistan	31.7°N	Yangzhou	China	32.4°N
Omsk	Russia	55.0°N	Shenyang	China	41.8°N	Yantai	China	37.5°N
Osaka	Japan	34.7°N	Shiraz	Iran	29.6°N	Yokohama	Japan	35.5°N
Padova	Italy	45.4°N	Singapore	Singapore	1.3°N	Zaozhuang	China	34.9°N
Palembang	Indonesia	3.0°S	Sofia	Bulgaria	42.7°N	Zibo	China	36.8°N