EURO Solar Collector L20 MQ AR

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 07/19/13

SolarKeymark
011-7S1404F

Figure 1 EURO L20 MQ AR – first choice for long collector strips

Product Features

Collector with 4 pipe connectors for the simple setup of long collector strips. Serial connection of up to 10 collectors possible. Collector fields of up to 50 m² can be easily realized by combining groups in parallel and serial connection.

Powerful
- Highly transparent low-iron solar glass
- Laser fused meander absorber with highly selective vacuum coating
- 60 mm backside insulation

Durable High Quality Material
- Anodized aluminum frame in silver or black
- Solid aluminum back sheet
- Aluminum absorber sheet with copper pipe register
- Temperature resistent mineral wool with low content of binders and heat conducting group 040

Sophisticated Design Details
- Straight forward connection method with o-ring and clamp
- All around seamless side insulation
- UV-resistant EPDM glass-sealing with vulcanized corner joints

Flexible Installation
- Suitable for on-roof and flat-roof (free standing) setup
- Horizontal orientation

Figure 2 Collector cross-section

Figure 3 Collector connection

1. Technische Daten

RESURGAM. CITY OF PORTLAND, MAINE
Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 07/19/13

Table 1 Characteristic	EURO L20 MQ AR
Gross area / aperture area (light collecting area acc. to EN 12975)	2.61 / 2.37 m²
Dimensions (L x D x H)	2151 x 1215 x 110 mm
Collector efficiency (expected)	η_o = 84.2 %; k_1 = 3.62 W/m²K; k_2 =0.016 W/m²K²
Incident angle modifier (50°)	k_{dir} = 92.8 %, k_{diff} = 87 %
Annual collector yield (ITW 5 m²)	502 kWh/m²a
Collector encasing	Anodized aluminium frame, aluminium back, 60 mm back-side insulation, all-around seamless side insulation
Specific heat capacity	6.8 kJ/m²K
Glass cover and light transmissivity	4 mm anti reflective sunarc® solar safety glass; τ = 96 %
Absorber	Meander absorber made from aluminium heat absorber sheet and copper pipes, LASER fused
Absorber coating	Highly selective vacuum coating, α = 95 %, ε = 5 %
Absorber volume	2.3 liter
Heat carrier	DC20 (Propylen glycol with inhibitors), mixing ratio depends on application and region (climate)
Operational pressure	max. 10 bar
Stagnation temperature (expected)	207 °C
Solar sensor	Receptacle, 6 mm internal diameter
Collector connection	Clamp with o-ring and fitting 22 mm
Certificate / Mark	CE-mark; SolarKeymark No. 011-7S1404F; Blue Angel RAL-UZ73 (application filed)
Max. allowable pressure / suction forces	3.4 kN/m²
Racking options	On-roof and free standing (horizontally, 10 – 85°)
Weight	50 kg

Figure 4 Pressure losses for one collector and ten collectors in parallel connection, depending on the specific volume flow. Heat carrier: 40 % glycol and 60 % water at 40 °C.

Figure 5 Efficiency characteristics acc. to EN 12975

Figure 6 Dimensions (mm)

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 07/19/13

2. Planning Notes

2.1 Snow and Wind Loads

Please make sure to conform to the Eurocode 1, Part 2-4: Wind actions (ENV 1991-2-4: 1994) and the ISO Draft International standard 4354, "Wind actions on structures" as well as BS EN 1991-1-3 regarding snow loads (also part of EUROCODE 1). Structurally the EURO L20 MQ can be considered identical to the C20 AR and C20 HTF. Please contact our technical support in case of doubt.

Table 2 Dimensioning Examples for Snow/Wind Load Zones 1-2 *

Building height (m)	Altitude above sea level (m)	On-roof mounting (no. of rafter-brackets / collector)	Free standing setup (kg/m² collector area)
10	400	4	140
10	800	6	140
10-20	400	4	185
10-20	800	6	185

* 45° inclination, mounting in corner and edge areas of roofs not considered

2.2 Mutual Shadowing of Free Standing Collectors

The following table is based upon a solar altitude of 25°, therefore parts of the collector can be shadowed in winter, depending on location.

Table 3 Shadowing Distances

Distances (m)	Collector inclination α	
	35°	55°
A	1.49	2.13
B	1.0	0.7
C	3.49	3.53

Figure 7 Shadowing distances of collectors set up behind one another with inclination α and shadowing angle β

2.3 Connection Options

The collector strips consist of max. 10 collectors in parallel connection.
Piping layout and pump dimension must be planned on a project-by-project base.

Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 07/19/13

Figure 8 Field dimensions, without considering protruding connection parts on both outer sides

Figure 9 Leave approx. 30 mm space after the sixth collector to allow for thermal expansion. Hereunto use the longer field compensator (part no. 819 102 49); order separately.

Figure 10 Collector strip diagonally connected at both ends, with V = 35 l/m²h

Figure 11 Connector strip with connections at one side at V = 35 l/m²hh

Figure 12 Parallel connection of collector strips at V = 35 l/m²h

Figure 13 Serial connection of 2 collector strips, ***only with Low-Flow, V = 15 l/m²h!***

Figure 14 Parallel connection of two collector strips connected at one and the same side (max 5 EURO L20 MQ each)