

CARRIER · AQUAFORCE 30XA · INSTALLATION & O&M

Carrier 30XA Air Cooled Screw Chiller

Controls and BMS-integration guide for the Carrier 30XA Air Cooled Screw Chiller (AquaForce 30XA) — models 30XA-080, 30XA-140, 30XA-200, 30XA-300, 30XA-400, 30XA-500, as commissioned by MHM Engineering. It describes the operator interface, setpoints, sequence of operation, alarm handling and the points MHM exposes to the building-management system.

Read before installation. Isolate the 415 V / 3 ph / 50 Hz supply before working inside the control panel. Keep this guide with the equipment log; MHM commissioning is required for the warranty to apply.

1. Controller features on this model

- Microprocessor controller with Modbus RTU — Leaving-water setpoint, alarms and run hours are readable on the panel and shared to a BMS over RS-485.
- Electronic expansion valve — Stable superheat control at 25–100% load and during Dhaka summer ambient swings up to 42 °C.

2. Operator interface

- Main screen shows unit status, entering/leaving chilled-water temperature, active setpoint, capacity % and circuit pressures; touch any value to open its detail page.
- Access levels: User (view, start/stop, setpoint within limits), Service (MHM password — timers, staging, sensor offsets), Factory (locked).
- Local/Remote/Network switch: Local = panel start; Remote = dry-contact enable; Network = BMS command.

3. Setpoints and limits

- Leaving chilled-water setpoint: 7 °C default (process plants 5–12 °C). Do not set below 5 °C without glycol.
- Setpoint reset: outdoor-air or return-water reset raises the setpoint at part load and saves 2–3% energy per °C.
- Demand limit: BMS 0–100% cap on compressor capacity for peak-shaving.
- Minimum off / on times and anti-recycle timers protect compressors — never bypass them.

4. Sequence of operation

- Enable □ chilled-water pump proven by flow switch □ controller waits for flow-stable delay □ lead circuit starts at minimum capacity.
- Capacity loads in steps to hold leaving-water temperature within the deadband; second circuit starts when the first exceeds the balance point; lead/lag rotates on run hours.
- On stop command the unit unloads, pumps down where applicable, and releases the pump after the post-run delay.

5. BMS integration points (Modbus RTU / BACnet)

- Commands: unit enable, setpoint (write), demand limit (write), alarm reset.
- Status: run status, capacity %, entering/leaving water temperatures, suction/discharge pressures per circuit, compressor run hours and starts, general alarm, alarm code.
- Wiring: RS-485 twisted pair with screen earthed at one end, 120 □ termination at both ends, address and baud rate set on the controller network page. MHM provides the point list with addresses at handover.

6. Alarms

- Alarms show on the panel with code, time and value; a general alarm relay closes for the BMS.
- Automatic-reset alarms (e.g. low water flow) clear when the condition returns; manual-reset alarms (high pressure, phase fault) need a cause check before reset.
- Keep the last 50 alarms in the log and export them for MHM before any reset after a repeated trip.

7. Maintenance schedule

Interval	Tasks
Monthly	Review alarm and event log; compare sensor readings with a reference thermometer; check setpoints have not drifted from the commissioning record.
Quarterly	Test flow-switch and remote-enable interlocks; verify BMS commands and status against the point list; back up the controller configuration.
Yearly	MHM service: controller firmware check, sensor recalibration, sequence review for the season's load, battery replacement where fitted.

8. Troubleshooting

Symptom	Likely cause	Action
Unit shows Ready but does not start	No remote enable / BMS command, timer active, pump interlock not proven	Check mode switch, enable contact, flow switch
Setpoint cannot be changed	Access level, BMS has write priority, limit reached	Log in as User, release BMS write, check limits
BMS reads no data	Address/ baud mismatch, termination missing, polarity reversed	Match network settings, add terminators, swap A/B
Repeated high-pressure alarms	Condenser problem, not a control fault	Follow the O&M guide condenser checks before resetting

9. Safety

- Isolate the 415 V / 3 ph / 50 Hz supply before working inside the control panel.
- Only MHM service engineers may use the Service password; unauthorised changes void the warranty.
- Never bridge safety inputs (flow switch, high-pressure, phase monitor) to make a unit run.

Appendix — model data

Model	Capacity (TR)	Capacity (kW)	Input power (kW)	Compressors	L × W × H (mm)	Weight (kg)
30XA-080	80	281	93.7	1 × screw	4300 × 2250 × 2300	3450
30XA-140	140	492	160.1	2 × screw	6600 × 2250 × 2300	5600
30XA-200	200	703	228.4	2 × screw	8900 × 2250 × 2300	7300
30XA-300	300	1055	342.2	2 × screw	11950 × 2250 × 2300	10400
30XA-400	400	1407	457.0	3 × screw	14150 × 2250 × 2300	13100
30XA-500	500	1758	571.5	4 × screw	16600 × 2250 × 2300	15900

Service and spares — MHM Engineering

24-hour breakdown line +880 1321-206755 · sales@mhmmachineries.com. Annual maintenance contracts include the schedule above, genuine spares from Dhaka stock and a commissioning-grade report after every visit.