

# **BSR / ACCA 15 OBD – 201x**

## *On-Board Diagnostic Codes for HVACR Equipment*

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# Purpose

Detail a nomenclature naming schema for **FAULT** and **PERFORMANCE** codes associated with:

- Residential HVAC systems
- Commercial HVAC systems
- Refrigeration systems

To uniformly and consistently designate F & P codes for use within, and across, OEM product offerings.

# Scope

Applies to new HVACR equipment and components for use in new and existing residential and commercial buildings and commercial refrigeration applications.

## Excluded

- HVACR equipment that do not provide electronic fault / performance codes.
- Legacy equipment that were not designed / manufactured to support the naming schema.

**Component (\$4.1)**

AC = ACcumulator	CO = COmpressor	EO = Exp. device, Outdc	ID = InDucer	SA = Solar Array
AH = Air Handler	CU = Condensing Unit	EU = Econom Unit	IT = Ice Tank	SC = SubCooler
BI = Board, Indoor	CR = Capacitor, Run	FB = Furnace Burner	MT = MicroTurbine	SD = Supply Duct
BO = Board, Outdoor	CT = Cooling Tower	FI = Fan, Indoor	PA = Pump, Absorber	VB = Valve, Balancing
BS = Boiler, Steam	DB = Damper, Bypass	FO = Fan, Outdoor	PC = Pump, Condenser	VG = Valve, Gas
BW = Boiler, Water	DE = Damper, Exhaust	FR = FuRnace	PE = Pump, Evaporator	VR = Valve, Reversing
CF = Condensor Fan	DR = Damper, Return	HI = Heat exchanger, Inc	PG = Pump, Generator	VS = Valve, Split condensor
CM = Condensor Motor	DS = Damper, Supply	HO = Heat exchanger, O	RC = ReCeiver	WD = Wheel, Desiccant
CN = CoNactor	EI = Exp. device, Indoor	HR = Heat Reclaim	RD = Return Duct	WH = Wheel, Heat

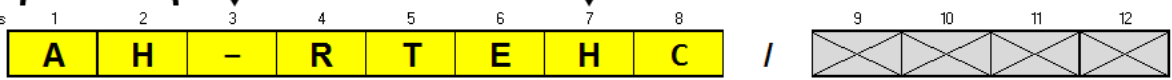
**Interim Draft**  
(11 Sep 2017)

**Component Modifier (\$4.2)** : as applicable

- [multiple stages / components / positions]  
 1 = First Stage (or, First Position, or First Unit)  
 2 = Second Stage (or, Second Position, or Second Unit)  
 ...  
 ...  
 n = "n" Stage (or, "n" Position, or "n" Unit)  
 - = Default for Base Scenario

**Performance Descriptor (\$4.5)**

- |               |                               |
|---------------|-------------------------------|
| C = Closed    | P = Polarity                  |
| G = Grounded  | R = out of expected Range     |
| H = High      | S = Shorted                   |
| L = Low       | T = Tripped                   |
| N = No signal | X = lockout / manual reset    |
| O = Open      | Y = lockout / automatic reset |
- # = Measured Operating Value



**Process (\$4.3)**

- A = Air movement / system
  - C = Combustion system
  - F = Fuel movement / System
  - L = Lubricant/oil movement/system
  - M = Moisture control system
  - P = Power production system
  - R = Refrigerant movement / system
  - W or H or F = Water movement / system
- (W = Water, H = Hydraulic, F = Fluid loop)*

**Mode of Operation (\$4.6)**

- A = Auxiliary heating mode
- C = Cooling mode
- D = Dehumidification mode
- E = Economizer mode
- F = deFrost mode
- H = Heating mode
- M = huMidification mode
- P = Purge mode
- U = Utility DR power reduction mode
- R = Reheat mode

**Additional Characters (7th digit contingent)**

- Optional Proprietary OEM Coding (\$4.7.1)
- Actual attribute values reported (\$4.7.2)

**Attribute Type (\$4.4)**

CA = Capacity (e.g., MBTU/h)	PO = Power, elec. (e.g., watts)
CC = Communications/controls	PR = PRessure
CD = Carbon Dioxide (CO <sub>2</sub> )	RH = Relative Humidity
CL = Charge Level	RS = Rotational Speed (e.g. RPM)
CM = Carbon Monoxide (CO)	SC = SubCool
CX = Composition	SH = SuperHeat
EC = Elec. Current (e.g., amps)	SM = Smoke
FR = Flame Rollout	TE = Temperature
FV = Flow Vol. (e.g., CFM, gpm)	VE = flow VElocity (e.g., FPM)
NO = Nitrogen Oxide (NO <sub>x</sub> )	VO = Voltage
OX = Oxygen (O <sub>2</sub> )	

**Example Shown:**

AH - RTEHC = Air Handler - Refrigerant Temperature High in the Cooling Mode

# Naming Schema

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(11 Sep 2017)

**Component (\$4.1)**

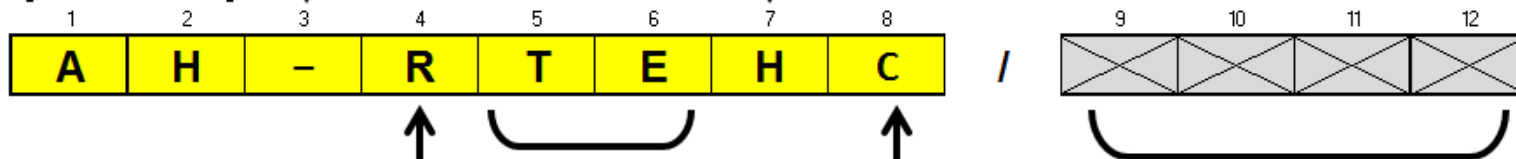
- AH = Air Handler
- CO = COmpressor
- DB = Damper, Bypass
- HO = Heat exchanger, Outdoor
- SD = Supply Duct
- VR = Valve, Reversing

**Component Modifier (\$4.2) - as applicable**

- [multiple stages / components / positions]
- 1 = First Stage (or, First Position, or First Unit)
- 2 = Second Stage (or, Second Position, or Second Unit)
- n = "n" Stage (or, "n" Position, or "n" Unit)
- = Default for Base Scenario

**Performance Descriptor (\$4.5)**

- C = Closed
- G = Grounded
- H = High
- L = Low
- N = No signal
- O = Open
- P = Polarity
- R = out of expected Range
- S = Shorted
- T = Tripped
- X = lockout / manual reset
- Y = lockout / automatic reset
- # = Measured Operating Value



**Process (\$4.3)**

- A = Air movement / system
- R = Refrigerant movement / system
- W or H or F = Water movement / system  
(W = Water, H = Hydraulic, F = Fluid loop)

**Attribute Type (\$4.4)**

- EC = Elec. Current (e.g., amps)
- FV = Flow Vol. (e.g., CFM, gpm)
- PO = Power, elec. (e.g., watts)
- PR = PRessure
- TE = Temperature
- VE = flow VElocity (e.g., FPM)
- VO = Voltage

**Mode of Operation (\$4.6)**

- C = Cooling mode
- D = Dehumidification mode
- H = Heating mode

**Additional Characters (7th digit contingent)**

- Optional Proprietary OEM Coding (\$4.7.1)
- Actual attribute values reported (\$4.7.2)

**Example Shown:**

AH - RTEHC = Air Handler - Refrigerant Temperature High in the Cooling Mode

# Example: Fault Code

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(11 Sep 2017)

**Component (§4.1)**

AH = Air Handler

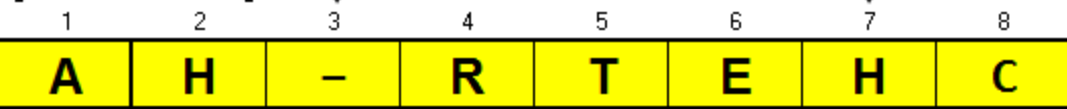
**Component Modifier (§4.2); as applicable**

- = Default for Base Scenario

**Performance Descriptor (§4.5)**

H = High

# = Measured Operating Value



**Process (§4.3)**

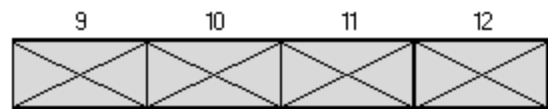
R = Refrigerant movement / system

**Attribute Type (§4.4)**

TE = Temperature

**Mode of Operation (§4.6)**

C = Cooling mode



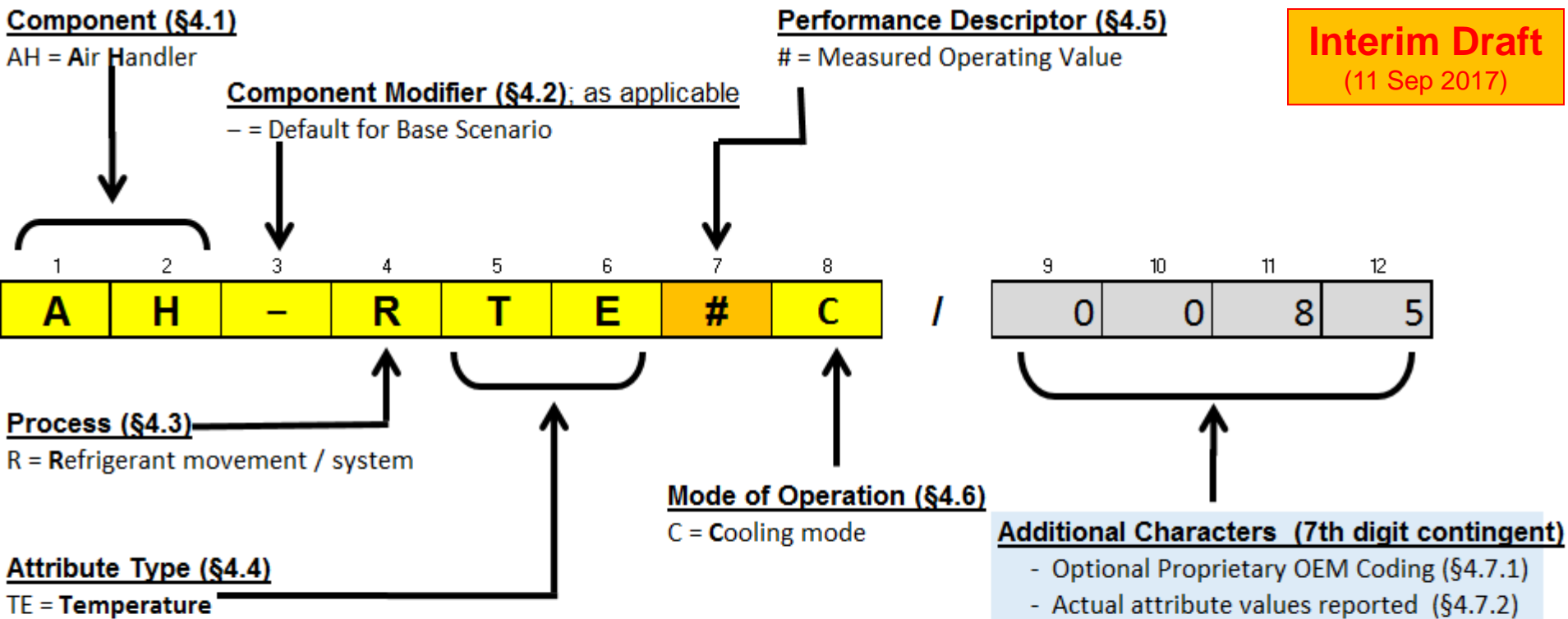
**Additional Characters (7th digit contingent)**

- Optional Proprietary OEM Coding (§4.7.1)
- Actual attribute values reported (§4.7.2)

**Example Shown:**  
**AH - RTEHC = Air Handler - Refrigerant Temperature High in the Cooling Mode**

# Example: Performance Code

**Interim Draft**  
(11 Sep 2017)



**Example Shown:**  
A H - R T E # C = Air Handler - Refrigerant Temperature in the Cooling Mode is 85°F

## Standard intent:

To the extent that HVACR equipment / components convey information regarding:

- a *fault code*, or
- an operating *performance metric*

said information is identified by the naming schema.

## Standard does not define, require, or detail:

- Any minimum set or level of fault/performance identifications.
- Any minimum equipment communication capabilities.
- Any causes / diagnostic information associated w/ the codes.



# Moving Forward

## (Anticipated Activities)

**End-Sept:** ACCA OBD Committee meets to review latest working draft.

**Nov:** Standard is released for a 45-day, ANSI Public Review Period.

**Jan 2018:** Review comments processed, changes effected, next steps ascertained.

**Questions ?**