







	
DOC NUMBER: <b>569-DB07-PRO-500-002</b>		CLIENT NUMBER: <b>PRD-PRO-MDE-001</b>	
CLIENT: <b>TAKEDA</b>			
PROJECT <b>BURITI EPCMV PROJECT</b>			

## CHILLED WATER DISTRIBUTION SYSTEM FOR HVAC DESCRIPTION REPORT

0	23JUL2021	ISSUED FOR CONSTRUCTION	JRM	LFF	MSS
A	30JUN2021	90% DD ISSUE	JRM	CCO	MSS
RE	DATE	DESCRIPTION	EXEC	CHECK	APPROV

 		 	
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## 1. REVISION HISTORY

Rev	Reason For Change
A	90% DD ISSUE
0	UPDATED ACCORDING TO CALCULATION REPORT, REVISION 0





## 2. PURPOSE

This document is intended to describe the process characteristics for the Chilled Water Distribution System for HVAC, Building 7A – Final Drug Product – FDP and Building 7B – Bulk Drug Substance – BDS, intended to Buriti Project, located at Hemobrás site in Goiana – Pernambuco state, Brazil.

## 3. REFERENCE

The following documents were used as reference:

Item	Number	Title
01	PRD-MEC-CLC-002	CHILLED WATER DISTRIBUTION SYSTEM FOR HVAC – CALCULATION REPORT
02	7A-M-0-5-43	P&I DIAGRAM DRUG PRODUCT CHILLED WATER – GENERATION SYSTEM
03	7A-M-0-5-44	P&I DIAGRAM DRUG PRODUCT CHILLED WATER – DISTRIBUTION SYSTEM (1/4)
04	7A-M-0-5-54	P&I DIAGRAM DRUG PRODUCT CHILLED WATER – DISTRIBUTION SYSTEM (2/4)
05	7A-M-0-5-55	P&I DIAGRAM DRUG PRODUCT CHILLED WATER – DISTRIBUTION SYSTEM (3/4)
06	7A-M-0-5-56	P&I DIAGRAM DRUG PRODUCT CHILLED WATER – DISTRIBUTION SYSTEM (4/4)
07	7B-M-0-5-43	P&I DIAGRAM DRUG SUBSTANCE CHILLED WATER – DISTRIBUTION SYSTEM (1/5)
08	7B-M-0-5-55	P&I DIAGRAM DRUG SUBSTANCE CHILLED WATER – DISTRIBUTION SYSTEM (2/5)
09	7B-M-0-5-56	P&I DIAGRAM DRUG SUBSTANCE CHILLED WATER – DISTRIBUTION SYSTEM (3/5)
10	7B-M-0-5-57	P&I DIAGRAM DRUG SUBSTANCE CHILLED WATER – DISTRIBUTION SYSTEM (4/5)
11	7B-M-0-5-58	P&I DIAGRAM DRUG SUBSTANCE CHILLED WATER – DISTRIBUTION SYSTEM (5/5)

 		 	
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#### 4. PROCESS DESCRIPTION

The Chilled Water Generation System was sized to feed the HVAC's equipment for buildings 7A and 7B, based on the following conditions:

- **DESIGN CONDITION** – Sizing Criterion for chillers, lines, valves and pumps - 100% of the capacity of all HVAC's equipment and an oversizing of 0.9%, where the excess of flowrate is diverted to balancing valves (Building 7A and Building 7B).
- **MAXIMUM OPERATING CONDITION** –90% of the capacity of all HVAC's equipment operating at the same time.
- **MINIMUM OPERATING CONDITION** – 70% of the Air Handling Units (AHU) and Fan Coils Units (FCU) capacities, plus 50% of the Dedicated Outdoor Air Systems (DOAS) capacities operating at the same time.

It is a closed system, with the equipment shown below:

- 3 Primary pumps – P-CH-7A-1/ 2/ 3 (2 pumps are operating and the other is stand-by). Each pump was sized for the flow rate of 238.00 m<sup>3</sup>/hr and the HEAD of 20 mlc. Total flow of 476.00 m<sup>3</sup>/hr.
- 3 Chillers of 530 TR each one – CH-7A-1/ 2/ 3 (2 chillers operating and 1 as stand-by).
- 1 Air Separator (sized for the total flow rate of 481.00 m<sup>3</sup>/hr).
- 2 Secondary Pumps for Building 7A – P-CH-7A-4/ 5 (1 pump is operating and the other is stand-by). Each pump was sized for the maximum flow rate of 224.00 m<sup>3</sup>/hr and the HEAD of 20 mlc.
- 2 Secondary Pumps for Building 7B – P-CH-7A-6/ 7 (1 pump is operating and the other is stand-by). Each pump was sized for the maximum flow rate of 257.00 m<sup>3</sup>/hr and the HEAD of 26 mlc.
- 6 Air Handling Units (AHU), 17 Fan Coils Units (FCU) and 1 Dedicated Outdoor Air Systems (DOAS) for Building 7A.
- 9 Air Handling Units (AHU), 22 Fan Coils Units (FCU) and 1 Dedicated Outdoor Air Systems (DOAS) for Building 7B.
- 1 Pressurized expansion tank and make-up system – TK-7A-1.
- 1 Chemical dosing system.





#### 4.1 CHILLER

The Chillers (CH-7A-1/ 2/ 3) are located on the Second Floor on the building 7A, where two of them are operating at the same time with a total thermal load of 3,175,940.60 kcal/hr and a total flow rate of 481.00 m<sup>3</sup>/hr.

##### 4.1.1 Chilled Water Side

The water is pumped by the Primary pumps P-CH-7A-1/ 2/ 3 for the Chillers CH-7A-1/ 2/ 3 to reduce the temperature from 12.2°C to 5.5°C and, after that, it is sent to secondary pumps P-CH-7A-4/ 5 (Building 7A) and P-CH-7B-6/ 7 (Building 7B) to be distributed for HVAC's equipment in each building.





The Primary pumps have manometer at the suction and discharge lines, and they are supplied with frequency inverter, but they work with a constant flow rate (240.50 m<sup>3</sup>/hr each pump)

 		 	
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Each Chiller has the following instruments:

EQUIPMENT	INLET LINE		OUTLET LINE	
	INSTRUMENT	FUNCTION	INSTRUMENT	FUNCTION
CH-7A-1	TIT-960075	Temperature Indication	TIT-9600120	Temperature Indication
		High Temperature Alarm		High Temperature Alarm
		Low Temperature Alarm		Low Temperature Alarm
	FIT-960075	Flow Indication	XV-9600120	Automatic on-off Valve is closed when the chiller is out of operation
		Low Flow Alarm		
		Low flow – shuts down the chiller		
	PIT-960075 (1)	Pressure Indication	PIT-9600120 (1)	Pressure Indication
CH-7A-2	TIT-960076	Temperature Indication	TIT-9600135	Temperature Indication
		High Temperature Alarm		High Temperature Alarm
		Low Temperature Alarm		Low Temperature Alarm
	FIT-960076	Flow Indication	XV-9600135	Automatic on-off Valve is closed when the chiller is out of operation
		Low Flow Alarm		
		Low flow – shuts down the chiller		
	PIT-960076 (2)	Pressure Indication	PIT-9600135 (2)	Pressure Indication
CH-7A-3	TIT-960077	Temperature Indication	TIT-9600150	Temperature Indication
		High Temperature Alarm		High Temperature Alarm
		Low Temperature Alarm		Low Temperature Alarm
	FIT-960077	Flow Indication	XV-9600150	Automatic on-off Valve is closed when the chiller is out of operation
		Low Flow Alarm		
		Low flow – shuts down the chiller		
	PIT-960077 (3)	Pressure Indication	PIT-9600150 (3)	Pressure Indication

Notes:

 		 	
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- (1) If high differential pressure or low differential pressure, the PDS-9600165 shutdowns the chiller.
- (2) If high differential pressure or low differential pressure, the PDS-9600166 shutdowns the chiller.
- (3) If high differential pressure or low differential pressure, the PDS-9600167 shutdowns the chiller.

At the main line, after the chillers there are the following instruments:

INSTRUMENT	LINE	FUNCTION
PIT-960059	10"-CW1S-960074-CS1-CC	Pressure Indication / Control (1)
FIT-960006	10"-CW1S-960006-CS1-CC	Flow Indication Low Flow Alarm
TT-960006	10"-CW1S-960006-CS1-CC	Temperature Transmitter High Temperature Alarm Low Temperature Alarm
FIT-960001	10"-CW1S-960001-CS1-CC	Flow Indication Low Flow Alarm
TT-960041	10"-CW1S-960001-CS1-CC	Temperature Transmitter High Temperature Alarm Low Temperature Alarm

Notes:

- (1) Pressure Transmitter at secondary pump suction to maintain constant the pressure of 0.5 barG, opening or closing the by-pass valve (PV-960059).

## 4.2 PRIMARY PUMPS





Primary pumps (P-CH-7A-1/ 2/ 3) are sized for a capacity of 240.50 m<sup>3</sup>/hr (two in operation and other stand-by) and a HEAD of 20.0 meters for each pump, with frequency inverter. Although these pumps have a frequency inverter, they will operate with a speed fixed.

At the suction and discharge of each pump is installed a manometer, as bellow:

EQUIPMENT	INLET	OULET LINE	FUNCTION
P-CH-7A-1	PI-960030	PI-960050	Pressure Indication
P-CH-7A-2	PI-960040	PI-960051	Pressure Indication
P-CH-7A-3	PI-960058	PI-960052	Pressure Indication

This system has a motorized valve (PV-960059) that recirculates the excess flow rate through the primary pump and the chiller. When the flow rate of the secondary pumps reduces, this pressure is controlled by pressure transmitter (PIT-960059) that opens the motorized valve that it keeps the suction pressure constant in 0.5 barG.

The drainage of the pumping system goes to wastewater treatment.

 		 	
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#### 4.3 PRESSURIZED EXPANSION TANK AND MAKE-UP SYSTEM

Pressurized expansion tank (TK-7A-1) with nominal capacity 0.5 m<sup>3</sup> to compensate the fluid thermal expansion due to increase of temperature in the system.

In case of loss fluid in the system, it is necessary to supply water through make-up system.

The Chilled Water System for HVAC is a closed system with make-up of Industrial Water. The make-up is supplied on the second floor (Line 1"-DW-960070-PP1-NI) with a flow rate of 67 LPM (4 m<sup>3</sup>/hr), a pressure of 1.1 barG at ambient temperature. There is a manual battery limit valve with a diameter of 1" (HV-960070).

The Make-up system has the following instruments:

MAKE-UP SYSTEM		INSTRUMENT	FUNCTION
Industrial Water	- Inlet Line	XV-960070	Automatic on-off valve to be opened at the low pressure (PSL-960078) and closed at high pressure (PSH-960078)

The expansion tank has the following instruments:

EXPANSION TANK		INSTRUMENT	FUNCTION
Pressurized Expansion Tank	- Outlet Line	PSV-960058	Pressure Safety Valve for relief system

#### 4.4 AIR SEPARATOR SYSTEM

Air separator flow rate is the same operating primary pumps 481.00 m<sup>3</sup>/hr (240.50 m<sup>3</sup>/hr each pump), located in the discharge of the primary pumps on the Second Floor.

It was considered air separator pressure drop 0,08 bar, according to information from the reference supplier.

The air separator prevents the accumulation of air in the system, and it keeps the system running efficiently, avoiding downtime and maintenance cost.





#### 4.5 CHEMICAL FEEDING SYSTEM

The chemical feeding system is formed by chemical dosing tank (TK-7A-7), chemical dosing pump (BM-7A-7) and a spill containment pallet (CN-7A-7).

The system is efficient in the prevention of slime generation, scaling and corrosion. It is used when make-up of industrial water is required. The chemical dosing is made by flexible hose connected to the manual block valve (HV-9600157) in the inlet line of Industrial Water (Line 3/4"-DW-960070-CS1-CC).

The chemical feeding system has the following instruments:

CHEMICAL DOSING SYSTEM		INSTRUMENT	FUNCTION
Containment Pallet	CN-7A-7	LSH-9600158	High Level Alarm (Chemical Spill)
Motor Pump	M-BM-7A-7	HS-9600158	On/Off – Hand Switch
Chemical Dosing Tank	TK-7A-7	LSL-9600157	Low Level Alarm

 		 	
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## 4.6 SECONDARY PUMPS

### 4.6.1 BUILDING 7A

Secondary pumps (P-CH-7A-4/ 5) are sized for a capacity of 224.00 m<sup>3</sup>/hr (one in operation and other stand-by) and a HEAD of 20.0 meters for each pump, with frequency inverter.

At the suction and discharge of each pump is installed a manometer, as bellow:

EQUIPMENT	INLET	OULET LINE	FUNCTION
P-CH-7A-4	PI-960001	PI-960002	Pressure Indication
P-CH-7A-5	PI-960053	PI-960054	Pressure Indication

The Secondary Pumps feed the HVAC's equipment for Building 7A. They are located next to chillers and primary pumps, and they are controlled by Differential Pressure (PDIT-9600234), maintaining constant the pressure drop at the main distribution header, pressure drop defined 1.29 bar on Calculation Report.

Differential Pressure shall be installed at a distance of 2/3 of the main distribution pipe total length, ensuring the operation of the pumps and the circulation of chilled water to all equipment for the design and minimum operation conditions.

The drainage of the pumping system goes to wastewater treatment.

### 4.6.2 BUILDING 7B

Secondary pumps (P-CH-7B-6/ 7) are sized for a capacity of 257.00 m<sup>3</sup>/hr (one in operation and other stand-by) and a HEAD of 26.0 meters for each pump, with frequency inverter.

At the suction and discharge of each pump is installed a manometer, as bellow:

EQUIPMENT	INLET	OULET LINE	FUNCTION
P-CH-7B-6	PI-960006	PI-960007	Pressure Indication
P-CH-7B-7	PI-960055	PI-960056	Pressure Indication

The Secondary Pumps feed the HVAC's equipment for Building 7B. They are located next to chillers and primary pumps, and they are controlled by Differential Pressure PDIT-960008, maintaining constant the pressure drop at the main distribution header, pressure drop defined 1.61 bar on Calculation Report.

Differential Pressure shall be installed at a distance of 2/3 of the main distribution pipe total length, ensuring the operation of the pumps and the circulation of chilled water to all equipment for the design and minimum operation conditions.





The drainage of the pumping system goes to wastewater treatment.

## 4.7 BALANCING VALVES

Along the Chilled Water System, balancing valves were considered, as bellow:

- By-pass at the end of the header distribution.
- Balancing valves at the pump discharge



 		 	
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The manual valves will be manually adjusted in the field, the valve must be adjusted to the design condition, according to the numbers of turns to be defined by manufacturer, according to the sizing performed in the Calculation Report.

#### 4.8 EQUIPMENT CONTROL

For each HVAC equipment it was considered:





- Temperature control valves – Motorized pressure independent balancing and control valves with on off control were used for diameters of ¾". For diameters starting in 1", were used the same valves with modulating control.
- Temperature and pressure indicators in the supply and return lines, as well as manual block valve.

#### 4.9 CONSUMERS

##### 4.9.1 BUILDING 7A

The Chilled Water Distribution system for HVAC has the following consumers in the building 7A with their respective operational characteristic:





TAG	Vol. Flow Rate (m³/hr)	Mass. Flow Rate (kg/hr)	P in (barG)	P out (barG)	ΔP (bar)
AHU-7A-01	18.98	18,979.89	1.90	1.40	0.50
AHU-7A-02	10.43	10,429.94	1.83	1.33	0.50
AHU-7A-03	15.77	15,769.91	1.92	1.42	0.50
AHU-7A-04	16.58	16,578.05	1.83	1.33	0.50
AHU-7A-05	14.80	14,799.91	1.85	1.35	0.50
AHU-7A-06	20.41	20,409.88	1.83	1.33	0.50
DOAS-7A-01 (1/2)	37.27	37,265.48	1.82	1.32	0.50
DOAS-7A-01 (2/2)	35.80	35,804.09	1.83	1.33	0.50
FCU-A1026-1	1.30	1,295.99	1.94	1.44	0.50
FCU-A1026-2	1.30	1,295.99	2.32	1.82	0.50
FCU-A1026-3	1.30	1,295.99	2.71	2.21	0.50
FCU-A1027-1	1.30	1,295.99	2.03	1.53	0.50
FCU-A1027-2	1.30	1,295.99	2.41	1.91	0.50
FCU-A1027-3	1.30	1,295.99	2.80	2.30	0.50
FCU-A1030-1	1.30	1,295.99	2.90	2.40	0.50
FCU-A1041-1	6.48	6,479.96	3.01	2.51	0.50
FCU-A1041-2	6.48	6,479.96	3.00	2.50	0.50
FCU-A1043-1	2.16	2,159.99	2.97	2.47	0.50
FCU-A1043-2	2.16	2,159.99	2.96	2.46	0.50
FCU-A1043-3	2.16	2,159.99	2.93	2.43	0.50
FCU-A1043-4	2.16	2,159.99	2.92	2.42	0.50
FCU-A2024-1	1.30	1,295.99	2.44	1.94	0.50
FCU-A3302-1	1.30	1,295.99	1.71	1.21	0.50

 		 	
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TAG	Vol. Flow Rate (m³/hr)	Mass. Flow Rate (kg/hr)	P in (barG)	P out (barG)	ΔP (bar)
FCU-A3003-1	5.48	5,474.97	1.74	1.24	0.50
FCU-A3003-2	5.48	5,474.97	1.74	1.24	0.50

The HVAC equipment are controlled by the following control valves, to supplied by the HVAC package:





Valve	Vol. Flow Rate		Mass. Flow Rate (kg/hr)	P in (barG)	P out (barG)	ΔP (bar)
	(m³/hr)	(lpm)				
TV-9600213	1.30	21.61	1,296.00	1.52	1.02	0.50
TV-9600215	1.30	21.61	1,296.00	1.90	1.43	0.47
TV-9600217	1.30	21.61	1,296.00	2.29	1.84	0.45
TV-9600004	16.59	276.44	16,578.10	1.32	0.66	0.66
TV-9600005	14.81	246.79	14,799.90	1.34	0.61	0.73
TV-9600225	1.30	21.61	1,296.00	2.40	1.85	0.55
TV-9600221	6.48	108.05	6,480.00	2.50	2.06	0.44
TV-9600223	6.48	108.05	6,480.00	2.50	2.05	0.46
TV-960020	2.16	36.02	2,160.00	2.47	1.97	0.50
TV-9600187	2.16	36.02	2,160.00	2.46	2.00	0.46
TV-9600191	2.16	36.02	2,160.00	2.43	2.02	0.41
TV-9600193	2.16	36.02	2,160.00	2.42	2.05	0.37
TV-9600227	5.48	91.29	5,475.00	1.24	0.40	0.84
TV-9600229	5.48	91.29	5,475.00	1.24	0.40	0.84
TV-9600003	15.78	262.96	15,769.90	1.41	0.62	0.80
TV-9600231	1.30	21.61	1,296.00	1.93	1.28	0.65
TV-9600001	18.99	316.49	18,979.90	1.39	0.64	0.75
TV-9600233	1.30	21.61	1,296.00	1.21	0.43	0.78
TV-9600006	20.42	340.33	20,409.90	1.33	0.65	0.68
TV-960027	37.28	621.39	37,265.50	1.32	0.66	0.65
TV-9600331	35.82	597.03	35,804.10	1.32	0.67	0.65
TV-9600237	1.30	21.61	1,296.00	1.44	1.21	0.22
TV-9600239	1.30	21.61	1,296.00	1.82	1.62	0.19
TV-9600241	1.30	21.61	1,296.00	2.20	2.03	0.18
TV-9600002	10.44	173.92	10,429.90	1.32	0.72	0.60

 		 	
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#### 4.9.2 BUILDING 7B

The Chilled Water Distribution system for HVAC has the following consumers in the building 7B with their respective operational characteristic:

TAG	Vol. Flow Rate (m³/hr)	Mass. Flow Rate (kg/hr)	P in (barG)	P out (barG)	ΔP (bar)
AHU-7B-01	7.38	7,379.96	2.18	1.68	0.50
AHU-7B-02	24.43	24,429.85	2.48	1.98	0.50
AHU-7B-03	20.98	20,979.87	2.43	1.93	0.50
AHU-7B-04	15.97	15,973.01	2.32	1.82	0.50
AHU-7B-05	6.41	6,413.41	2.14	1.64	0.50
AHU-7B-06	2.92	2,919.98	2.16	1.66	0.50
AHU-7B-07	2.66	2,662.17	2.44	1.94	0.50
AHU-7B-08	9.08	9,075.58	2.49	1.99	0.50
AHU-7B-09	18.06	18,059.89	2.41	1.91	0.50
DOAS-7B-01 (1/2)	40.48	40,478.46	2.36	1.86	0.50
DOAS-7B-01 (2/2)	38.89	38,891.07	2.36	1.86	0.50
FCU-B1014-1	1.30	1,295.99	3.26	2.76	0.50
FCU-B1014-2	1.30	1,295.99	3.23	2.73	0.50
FCU-B1014-3	1.30	1,295.99	3.21	2.71	0.50
FCU-B1014-4	1.30	1,295.99	3.20	2.70	0.50
FCU-B1015-1	1.30	1,295.99	2.27	1.77	0.50
FCU-B1015-2	1.30	1,295.99	2.65	2.15	0.50
FCU-B1015-3	1.30	1,295.99	3.03	2.53	0.50
FCU-B1029-1	1.30	1,295.99	3.28	2.78	0.50
FCU-B1031-1	2.16	2,159.99	3.30	2.80	0.50
FCU-B1031-2	2.16	2,159.99	3.30	2.80	0.50
FCU-B1031-3	2.16	2,159.99	3.30	2.80	0.50
FCU-B1031-4	2.16	2,159.99	3.28	2.78	0.50
FCU-B1031-5	2.16	2,159.99	3.25	2.75	0.50
FCU-B1032-1	1.30	1,295.99	2.27	1.77	0.50
FCU-B1032-2	1.30	1,295.99	2.65	2.15	0.50
FCU-B1032-3	1.30	1,295.99	3.03	2.53	0.50
FCU-B1033-1	6.71	6,709.96	3.31	2.81	0.50
FCU-B1033-2	6.71	6,709.96	3.30	2.80	0.50
FCU-B3010-1	1.30	1,295.99	2.03	1.53	0.50
FCU-B3011-1	5.98	5,979.96	2.03	1.53	0.50
FCU-B3011-2	5.98	5,979.96	2.03	1.53	0.50
FCU-B1034-1	0.46	460.00	3.33	2.83	0.50

 		 	
DOC NR: <b>569-DB07-PRO-500-002</b>		CLIENT NR: <b>PRD-MEC-MDE-001</b>	
TITLE:			SHEET 12 of 12
<b>CHILLED WATER DISTRIBUTION SYSTEM FOR HVAC – DESCRIPTIVE REPORT</b>			REV.: <b>0</b>

The HVAC equipment are controlled by the following control valves, to supplied by the HVAC package:

Valve	Vol. Flow Rate		Mass. Flow Rate (kg/hr)	P in (barG)	P out (barG)	ΔP (bar)
	(m³/hr)	(lpm)				
TV-960012	24.44	407.362	24,429.90	1.98	0.60	1.38
TV-960013	20.99	349.835	20,979.90	1.93	0.64	1.29
TV-960018	9.08	151.333	9,075.60	1.99	0.60	1.39
TV-960019	18.07	301.145	18,059.90	1.93	0.62	1.31
TV-960017	2.66	44.3917	2,662.20	1.93	0.63	1.30
TV-960028	40.50	674.97	40,478.50	1.86	0.75	1.10
TV-9600337	38.91	648.5	38,891.10	1.86	0.76	1.10
TV-960014	15.98	266.347	15,973.00	1.82	0.78	1.03
TV-9600253	1.30	21.61	1,296.00	1.77	1.40	0.36
TV-9600255	1.30	21.61	1,296.00	2.14	1.82	0.32
TV-9600257	1.30	21.61	1,296.00	2.53	2.23	0.30
TV-960021	2.16	36.0167	2,160.00	2.80	2.23	0.57
TV-9600175	2.16	36.0167	2,160.00	2.80	2.26	0.54
TV-9600265	6.71	111.887	6,710.00	2.81	2.35	0.46
TV-9600267	6.71	111.887	6,710.00	2.79	2.38	0.41
TV-9600299	0.46	7.67	460.00	2.83	2.37	0.46
TV-9600271	1.30	21.61	1,296.00	2.75	2.42	0.33
TV-9600273	1.30	21.61	1,296.00	2.72	2.46	0.26
TV-9600275	1.30	21.61	1,296.00	2.70	2.49	0.21
TV-9600277	1.30	21.61	1,296.00	2.69	2.51	0.18
TV-9600261	2.16	36.0167	2,160.00	2.73	2.34	0.40
TV-9600263	1.30	21.61	1,296.00	2.78	2.33	0.44
TV-9600179	2.16	36.0167	2,160.00	2.80	2.37	0.43
TV-9600181	2.16	36.0167	2,160.00	2.78	2.40	0.38
TV-9600281	5.98	99.715	5,980.00	1.53	0.90	0.62
TV-9600283	5.98	99.715	5,980.00	1.53	0.92	0.60
TV-960011	7.38	123.058	7,380.00	1.68	0.97	0.71
TV-9600287	1.30	21.61	1,296.00	1.52	0.84	0.68
TV-960016	2.92	48.69	2,920.00	1.66	1.00	0.66
TV-960015	6.42	106.942	6,413.40	1.64	1.02	0.61
TV-9600293	1.30	21.61	1,296.00	1.77	1.46	0.31
TV-9600295	1.30	21.61	1,296.00	2.14	1.87	0.27
TV-9600297	1.30	21.61	1,296.00	2.53	2.28	0.25